



SAN BERNARDINO COUNTY



FINAL

SAN BERNARDINO COUNTY REGIONAL CONSERVATION INVESTMENT STRATEGY

OCTOBER 2023

Prepared by: **DUDEK**

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**San Bernardino County
Regional Conservation Investment Strategy**

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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
ACEC	Area of Critical Environmental Concern
amsl	above mean sea level
BLM	Bureau of Land Management
CDCA	California Desert Conservation Area
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFCG	California Fish and Game Code
CGO	conservation goal and objective
County	County of San Bernardino
EE Group	Environment Element Group
GIS	geographic information system
HCP	Habitat Conservation Plan
I	Interstate
MCA	mitigation credit agreement
MSHCP	Multiple Species Habitat Conservation Plan
NCCP	Natural Community Conservation Plan
SANBAG	San Bernardino Associated Governments
SAR	Santa Ana River
SBC RCIS	San Bernardino County Regional Conservation Investment Strategy
SBCFCD	San Bernardino County Flood Control District
SBCOG	San Bernardino Council of Governments
SBCTA	San Bernardino County Transportation Authority
SCAG	Southern California Association of Governments
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

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EXECUTIVE SUMMARY

The San Bernardino County Regional Conservation Investment Strategy (SBC RCIS) is a voluntary, nonregulatory framework for conservation and mitigation actions in key regions of San Bernardino County, California. The San Bernardino Council of Governments, County of San Bernardino, and the Environment Element Group, in collaboration with the Southern California Association of Governments, developed the SBC RCIS based on a set of biological and planning principles that arose from the Countywide Vision planning process. In an effort to streamline mitigation decisions and generate the best conservation outcomes, the SBC RCIS was developed to provide a regional, science-based conservation guidebook for use by public agencies, the development community, environmental groups, other interested entities, and the public when planning and carrying out conservation and mitigation actions in western San Bernardino County.

The SBC RCIS covers the Valley region, the West Desert region, and the connecting Mountain region. The conservation strategy was built around conservation elements, including Focal Species and their habitats. Conservation elements include 7 habitat groups and 16 general vegetation communities supporting 52 Focal Species.

Building off the landscape context and baseline biological information, the SBC RCIS is founded upon conservation goals and objectives that structure and focus the conservation strategy on priority actions and areas. The actions toolbox provides the suite of actions available for RCIS users to select from based on their individual conservation or mitigation needs, and the prioritization guidelines provide decision support at a regional scale for optimizing the effectiveness of conservation and mitigation actions. Following approval by the California Department of Fish and Wildlife, the SBC RCIS can be used to support more informed conservation and mitigation decisions in the SBC RCIS Area. As a voluntary and nonregulatory document, the RCIS cannot require conservation of vegetation that does not currently require mitigation under the California Environmental Quality Act by the local lead agency, including for desert scrub, transitional scrub, chaparral, or woodland, or non-native grasslands or other habitats that do not support Focal Species.

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1 INTRODUCTION

The following provides introductory information related to the development of the San Bernardino County Regional Conservation Investment Strategy (SBC RCIS), including a discussion of background, purpose and need, intended uses, RCIS Area, conservation elements, planning process, relationship to other planning, and document content and organization.

1.1 Background

The San Bernardino Countywide Vision is a comprehensive planning effort developed by the County of San Bernardino (County), local municipalities, and other stakeholders to identify and execute the vision for the County’s future. The Countywide Vision statement and goals, as adopted by the County and the San Bernardino Associated Governments (SANBAG) (now San Bernardino Council of Governments [SBCOG] and San Bernardino County Transportation Authority [SBCTA]), are oriented around nine community elements—jobs/economy, education, housing, public safety, infrastructure, quality of life, environment, wellness, and image—and stakeholder groups were formed around each element to further the visioning process.

The Environmental Element Group (EE Group) was created out of the San Bernardino Countywide Vision effort and the County’s Countywide Plan General Plan planning process. The EE Group is made up of representatives from the County of San Bernardino, SBCOG/SBCTA, Southern California Association of Governments (SCAG), the California Department of Transportation (Caltrans), Air Quality Management Districts, California Department of Fish and Wildlife (CDFW), U.S. Fish and Wildlife Service (USFWS), water districts, flood control and water conservation districts, utilities, mining companies and interests, developers, renewable energy developers, conservation groups, and other interested community organizations. A primary initiative of the EE Group is to develop a more comprehensive approach to the preservation/conservation of habitat and open space throughout the County. The Countywide Habitat Preservation/Conservation Framework Study, which was completed in 2015, set the foundation for developing a conservation strategy for San Bernardino County (Dudek 2015). Importantly, the SBCOG, County, and EE Group, in collaboration with SCAG, established the following policy and biological principles for future conservation planning in San Bernardino County.

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Policy Principles

1. Increase certainty for both the preservation/conservation of habitat as well as for land development and infrastructure permitting.
2. Recognize that San Bernardino County needs to have a growing economy to be able to afford the acquisition and ongoing management of habitat. Conservation efforts should complement other objectives such as managed growth, economic development and housing affordability.
3. Institutional structures to promote habitat protection and management should be designed to leverage private funding, easements, public funding, and other mechanisms to maximize the protection of habitat and associated species.
4. Conservation planning efforts should be led by a funded institutional structure that can provide champions to keep the process moving in a transparent, productive and timely manner.
5. Recognize that participating in a more comprehensive approach to conservation planning will be voluntary, but that participating in the more comprehensive approach will provide benefits for most of those participating.
6. Leverage existing conservation efforts.
7. Match potential tools for conservation with unique conservation and development needs within specific subareas.
8. Consider conservation planning strategies that go outside the County boundaries, if needed.
9. Don't undermine existing conservation measures, such as mitigation banks and in-lieu fee programs.

Biological Principles

1. Recognize San Bernardino County is biologically diverse.
2. Invest in the science of conservation planning.
3. The identification of conservation areas should incorporate scientifically accepted tenets of conservation biology.
4. Consider current and future endangered, threatened, and sensitive species.
5. Identify mechanism for long term, sustainable, management and monitoring.
6. Manage public access to be compatible with conservation needs.

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7. Conservation objectives in San Bernardino County can be achieved through a variety of conservation strategies.
8. Implementation mechanisms for identified conservation priority areas should produce effective rather than scattered conservation.

As the next phase of conservation planning work was proceeding in accordance with these principles, the new RCIS¹ planning tool became available that aligned well with the approaches being pursued by SBCOG, County, and EE Group. In October 2016 and again in March 2017, EE Group provided strong guidance to SBCOG and County to pursue an RCIS for San Bernardino County. In October 2016, the San Bernardino County Board of Supervisors adopted Resolution No. 2016-189 authorizing the County to pursue an RCIS under Assembly Bill 2087.

The SBC RCIS has been developed consistent with the Countywide Vision Statement:

We envision a sustainable system of high-quality education, community health, public safety, housing, retail, recreation, arts and culture, and infrastructure, in which development complements our natural resources and environment.

1.2 Purpose and Need

The purpose of the SBC RCIS is to inform science-based nonbinding and voluntary conservation and habitat enhancement actions for Focal Species, vegetation communities, ecological processes, and habitat connectivity and provide nonbinding voluntary guidance on conservation priority areas and actions to enhance streamlining and predictability of land development processes in the RCIS Area of San Bernardino County. The SBC RCIS will provide a coordinated strategy for conservation and mitigation in key regions of San Bernardino County considered high priority by SBCOG, County, and EE Group due to the land uses, development pressures, and other stressors in these areas.

1.3 Intended Uses

The intent of the CDFW RCIS program, as described in California Fish and Game Code (FGC) Section 1850, is to “promote science-based conservation, including actions to promote resiliency to the impacts of climate change and other stressors . . . [and] to create nonregulatory mechanisms to guide investments in conservation, infrastructure, and

¹ The RCIS Program was established when Assembly Bill 2087 was signed into law in September 2016 and became effective January 1, 2017. RCISs are codified in California Fish and Game Code Chapter 9, Section 1850, et seq.

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compensatory mitigation for impacts to natural resources, including impacts to threatened and endangered species, other sensitive species, natural communities, ecological processes, and connectivity.” The intended use of the SBC RCIS is to provide a regional biological conservation guidebook to public agencies, the development community, environmental groups, other interested entities, and the public for science-based nonbinding and voluntary conservation and mitigation actions in San Bernardino County.

As stated in FGC Section 1850(e-f), an RCIS is not intended “to regulate the use of land, establish land use designations, or to affect, limit, or restrict the land use authority of any public agency,” and an approved RCIS would not be “binding on independent public agency action.”

As stated in FGC Section 1855(a), an RCIS:

shall not affect the authority or discretion of any public agency and shall not be binding upon public agencies other than parties to a mitigation credit agreement. Nothing in this chapter increases or decreases the authority or jurisdiction of the [CDFW] regarding any land use, species, habitat, area, resource, plan, process, or corridor. Regional conservation investment strategies are intended to provide scientific information for the consideration of public agencies. Nothing in this chapter or any other provision of law requires any public agency, other than a public agency that is party to a mitigation credit agreement, to adopt, implement, or otherwise adhere to a regional conservation investment strategy.

Additionally, as clarified in FGC Section 1855(c), an RCIS shall not require:

a project proponent seeking to provide compensatory mitigation pursuant to [FGC] Section 1602, 2080.1, 2081, or 2835 or the California Environmental Quality Act to undertake conservation actions or habitat enhancement actions identified in a regional conservation investment strategy; implement, contribute to, fund, or otherwise comply with the actions described in a regional conservation investment strategy; require or otherwise compel a project proponent to enter into a mitigation credit agreement; or use or purchase mitigation credits established pursuant to this chapter to satisfy the compensatory mitigation requirements.

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Further, FGC Section 1855(e) states that CDFW:

shall not reject biologically appropriate and adequate compensatory mitigation proposed by a project proponent on the basis that the compensatory mitigation is not a conservation action or habitat enhancement identified in a regional conservation investment strategy.

FGC Section 1855(b) also states that:

the approval or existence of a regional conservation investment strategy, mitigation credit agreement, or credit pursuant to this chapter shall not ... constitute any of the following, for the purposes of the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code): (A) A plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. (B) A local policy or ordinance protecting biological resources. (C) An adopted local, regional, or state habitat conservation plan.

The SBC RCIS is a voluntary and nonregulatory framework, and the conservation goals and objectives (Section 3.3) and actions (Section 3.4.1) shall not be interpreted as additional requirements for project analysis or processing by any entity, including lead agencies under the California Environmental Quality Act (CEQA) or under existing laws or regulations administered by CDFW, USFWS, the U.S. Army Corps of Engineers, or the Regional Water Quality Control Board associated with endangered species or jurisdictional aquatic resources (FCG Section 1855(b)(1)(2)(3)(5)(6)). CEQA lead agencies and regulatory agencies shall not use the SBC RCIS to require additional mitigation beyond that already necessary under existing laws and regulations. The RCIS shall not require conservation of vegetation that does not currently require mitigation under CEQA by the local lead agency, including desert scrub, transitional scrub, chaparral, or woodland, or non-native grasslands or other habitats that do not support focal species (FCG Section 1851(l) and 1852(b)).

1.4 RCIS Area

The RCIS Area is the geographic area encompassed by an RCIS. For the SBC RCIS, the RCIS Area includes the Valley region, the Cajon Pass area of the Mountain region, and the West Desert region of San Bernardino County, as shown in Figure 1-1. The Valley region is the southwest corner of the county south of the San Bernardino and San Gabriel Mountains, the Cajon Pass area connects the Valley and West Desert regions through

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the Mountain region, and the West Desert region is the portion of the RCIS Area north and east of the Mountain region. The landscape context and setting for the RCIS Area are provided in Chapter 2, including a description of ecoregions and watershed boundaries used to develop the RCIS Area.

San Bernardino County spans nearly 13 million acres; developing an RCIS for the entire county was not considered necessary or feasible. To identify the preferred RCIS Area, SBCOG, County, and EE Group first divided San Bernardino County into RCIS planning areas, referred to as regions (i.e., Valley, Mountain, Desert). For the purpose of developing the RCIS, the Desert region was further subdivided into West Desert and East Desert. The relationship of these planning boundaries to ecoregional boundaries is discussed in Section 2.1, Ecoregions.

The Valley and West Desert regions were considered highest priority for inclusion in the SBC RCIS because these regions would benefit greatest from a coordinated regional conservation and mitigation strategy. The biological resources of greatest conservation concern and interest in these regions occur on lands within local land use jurisdiction where the RCIS strategy can provide the greatest conservation and mitigation streamlining benefits (see Section 2.5 for details on land ownership, designations, and jurisdiction). To develop a complete, contiguous RCIS Area connecting the Valley and West Desert regions consistent with the CDFW RCIS Guidelines (CDFW 2018), the RCIS Area (Figure 1-1) includes a landscape connection through the relatively low-elevation Cajon Pass of the Mountain region. The West Mojave ecoregion boundary and the Lytle Creek Watershed boundary were used to delineate the RCIS Area through the Cajon Pass area.

Although the Mountain region of the County outside the Cajon Pass portion is not formally addressed as part of the RCIS Area, the San Bernardino Mountain region is a characteristic element of the County landscape that supports unique habitat areas for plant and animal species and provides functions for habitat connectivity and climate change resiliency and adaptation. The resources and functions of the Mountain region are addressed and referred to, as necessary, as they pertain to SBC RCIS conservation strategy (see Chapter 3, Conservation Strategy).

The Mountain region is primarily U.S. Forest Service (USFS) land managed according to their three-tier land and resource management program: the Southern California National Forests Vision (USFS 2005a), the forest-specific land management plan for the San Bernardino National Forest (USFS 2005b), and design criteria for implementing management plan actions. Land management plan monitoring reports are issued

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annually to document and track implementation of the program. Further, the Ecological Restoration Implementation Plan (USFS 2013a) sets out the USFS Pacific Southwest Region’s vision for the implementation of stewardship actions in the wildlands and forests of Southern California for the next 15–20 years, including a specific set of actions for the San Bernardino National Forest.

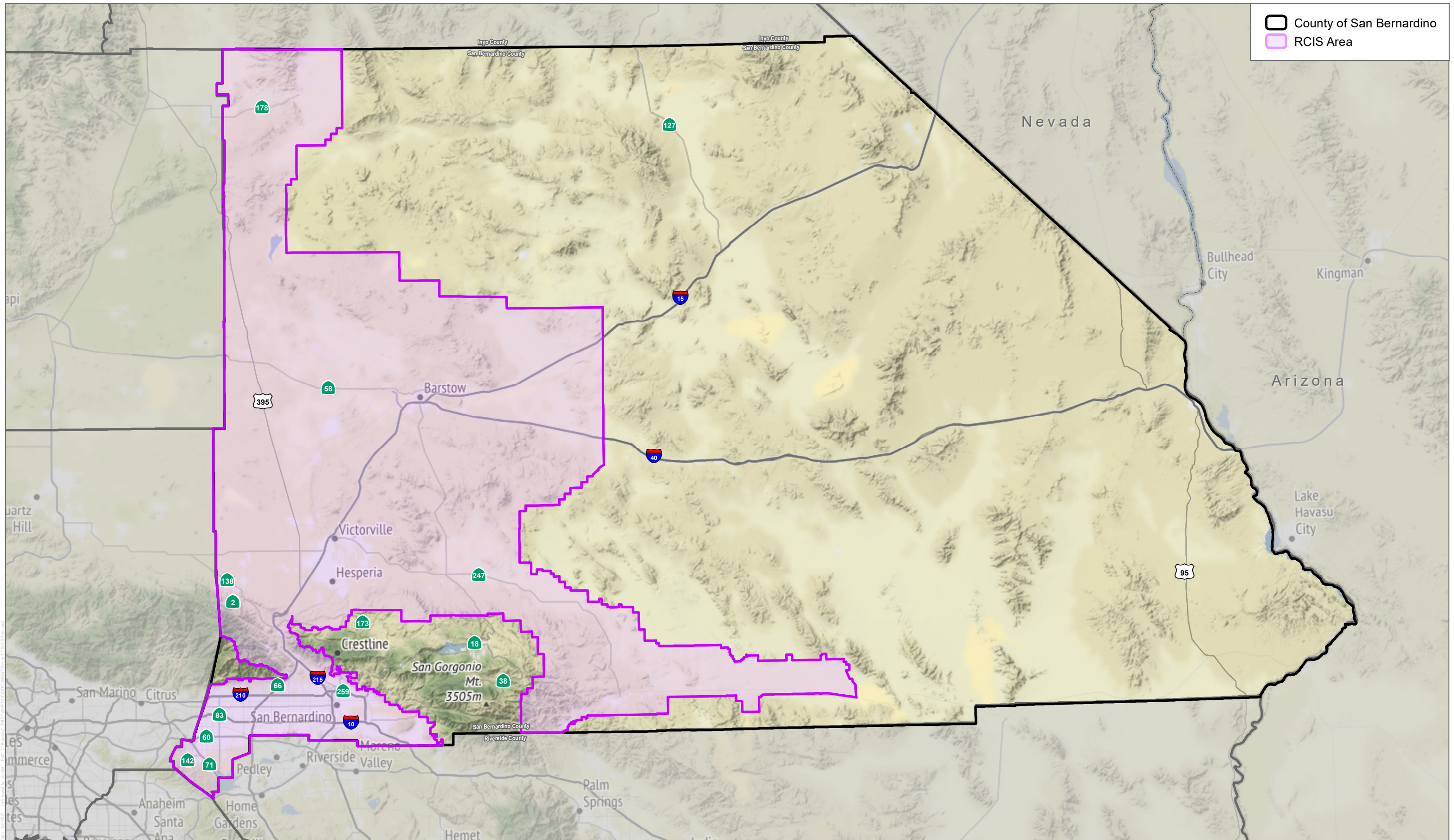
The overall purpose of the multi-tiered land management program is to “articulate the long-term vision and strategic management direction for each southern California national forest, facilitate the development of management activities that will contribute toward the realization of the national forests’ desired conditions, [and] offer the flexibility to adapt decisions to accommodate rapidly changing resource conditions” (USFS 2005a). The existing USFS land management program is an established conservation strategy being implemented for the benefit of the plant and animal species, vegetation communities, and ecological processes of the San Bernardino National Forest, and development of an RCIS that overlapped with this entire existing program was not considered a priority at this time. See Section 1.7 for a discussion of relationship of the SBC RCIS to other planning and Section 2.6 for a description of other resource conservation and management plans and programs.

Although the East Desert region of the County is not formally addressed as part of the RCIS Area, this region supports important areas for plant and animal habitat and important landscape processes and functions. The resources, processes, and functions of the East Desert region are addressed and referred to, as necessary, as they pertain to the SBC RCIS conservation strategy. The East Desert region of the County is primarily military, Bureau of Land Management (BLM), National Park Service, and State Lands Commission land managed according to agency-specific policies, processes, and programs. See Section 1.7 for a discussion of relationship of the SBC RCIS to other planning and Section 2.6 for a description of other resource conservation and management plans and programs.

The SBC RCIS conservation and mitigation approaches, strategies, and tools were developed for the RCIS Area; however, the RCIS Area does not dictate or restrict where projects’ impacts or mitigation can or should occur. Specific SBC RCIS conservation actions, if implemented as mitigation credit agreements (MCAs), must be implemented in the RCIS Area. Additionally, as described in the CDFW RCIS Guidelines, an RCIS may be amended at any time after its initial approval to incorporate additional geographic areas (CDFW 2018).

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SOURCE: Bing Maps 2020; San Bernardino County 2018



FIGURE 1-1
RCIS Area
 San Bernardino County RCIS

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1.5 Conservation Elements

As defined in the CDFW RCIS Guidelines, conservation elements are elements with ecological functions within an RCIS that are the focus of the RCIS conservation strategy. For the purposes of the SBC RCIS, the conservation elements are organized into landscape processes and features, vegetation communities, and Focal Species. The conservation elements include 16 general vegetation communities and 52 Focal Species and the landscape processes and features that support them (see Section 3.1, Conservation Elements).

Consistent with the CDFW RCIS Guidelines, the SBC RCIS has been developed using the best available scientific information for identifying and summarizing focal species and other conservation elements (see Section 3.1; Section 3.2, Conservation Inventory; Appendix A, Vegetation Communities; Appendix B, Focal Species Evaluation; Appendix C, Focal Species Summaries; and Appendix D, Key Data Descriptions), for identifying pressures and stressors on those conservation elements (see Section 2.8, Regional Pressures and Stressors, and Appendix E, Climate Change Vulnerability Assessment), and for determining the actions and priorities (see Section 3.4, and Appendix F, Countywide Habitat Preservation/Conservation Framework Development). Additionally, gaps and limitations in available scientific information is described in Section 3.1.4.

1.6 Planning Process

As briefly described in Section 1.1, Background, the RCIS planning process arose from the San Bernardino Countywide Vision process. SBCOG, County, and EE Group are the lead planning team for the RCIS. EE Group is a multidisciplinary stakeholder group composed of representatives from local municipalities and districts; staff from federal, state, and local agencies; development and industry community representatives; staff from non-governmental organizations; and the interested public.

SBCOG and County developed this SBC RCIS with support from Dudek and with input throughout the process from EE Group, the Steering Committee, other interested entities, and the public. On October 4, 2016, the Board of Supervisors of San Bernardino County passed Resolution Number 2016-189 authorizing the County, in collaboration with SANBAG (now SBCOG), to pursue an RCIS under Assembly Bill 2087. This marked the date the SBC RCIS was officially initiated. FGC Section 1854 describes the review and approval process for an RCIS. As specified in FGC Section 1854(c)(1), public agencies developing an RCIS typically would be required to file a notice of intent with the

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Governor's Office of Planning and Research; however, a notice of intent is not necessary for the SBC RCIS because it was initiated prior to 2017.

EE Group meetings were held regularly prior to RCIS development and during the development of the preliminary draft SBC RCIS in September 2016, March 2017, and November 2017. In December 2018, a preliminary draft SBC RCIS was released to the public and posted on the SBCOG website (www.gosbcta.com). On March 4, 2019, an officially noticed public meeting for the SBC RCIS was held at the SBCTA board room. All SBCOG member jurisdictions (24 cities/towns and the County), the entire EE Group, CDFW, implementing of regional habitat conservation plans in the RCIS Area, and all agencies, organizations, and individuals who had filed a written request for notices with CDFW (as of the date this list was provided by CDFW; January 30, 2019) were notified 30-days prior to the public meeting. No written public comments were received during the public meeting.

On April 3, 2019, a preliminary draft SBC RCIS was submitted to CDFW for completeness review; however, CDFW did not accept the submittal at that time because it was not accompanied by the required RCIS fees. In 2020, SBCOG received grant funding from the Wildlife Conservation Board to continue the SBC RCIS, and the SBC RCIS planning process was re-initiated in September 2020. An SBC RCIS Steering Committee was formed in 2020 consisting of SBCOG, the County, SCAG, the EE Group chairs, CDFW, USFWS, a City representative, The Nature Conservancy, and the Defenders of Wildlife. Steering Committee meetings were held throughout 2020 and 2021 in preparing this Draft SBC RCIS. The Steering Committee served as the technical review team for the SBC RCIS, as recommended by the CDFW RCIS Guidelines, to ensure that the best available scientific information was used and to identify gaps in scientific information. EE Group meetings were held during the latest drafting of the RCIS on December 2, 2020, and June 22, 2021. During these meetings, the EE Group members were presented with a status and summary on content of the SBC RCIS including the RCIS Area, focal species, land designations and mapping, goals and objectives, RCIS actions, and outreach efforts. Comments received during the planning process for the 2018 preliminary draft and comments from the Steering Committee, EE Group, and other entities from 2019 through 2022 were considered and incorporated in developing this Draft SBC RCIS.

Targeted outreach was conducted throughout the SBC RCIS planning process. During the first phase of the planning process to develop the Countywide Habitat Preservation/Conservation Framework Study (Appendix F), outreach meetings were conducted with the Local Agency Formation Commission, towns and cities (Adelanto, Apple Valley, Barstow, Big Bear Lake, Chino Hills, Colton, Fontana, Hesperia, Highland, Ontario,

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Rancho Cucamonga, Redlands, Victorville, Yucaipa, and Yucca Valley), the County (Land Use Services, Public Works, and Special Districts), CDFW, USFWS, SCAG, water districts (San Bernardino Valley Water Conservation District and San Bernardino Valley Municipal Water District), resource conservation districts (Inland Empire Resource Conservation District and Mojave Desert Resource Conservation District), Southern California Gas Company, and BLM.

During development of the preliminary draft SBC RCIS and the Draft SBC RCIS, outreach meetings were conducted with industry groups (Building Industry Association and California Construction and Industrial Materials Association) and environmental groups (California Native Plant Society, Center for Biological Diversity, Defenders of Wildlife, Mojave Desert Land Trust, and The Nature Conservancy). The planning area and Focal Species list was developed in part by soliciting feedback through a survey to all EE Group members, and input was also gathered from local experts on the Focal Species and habitat value mapping. In addition to the EE Group meetings and targeted outreach, SBC RCIS updates and information were shared with the public through the project web portal, including an interactive web map viewer. Feedback and comments received during the targeted outreach were considered and incorporated in developing this Draft SBC RCIS.

As envisioned by the RCIS legislation and as codified in FGC Chapter 9, Section 1850 et seq., Regional Conservation Assessments may optionally be prepared to support RCIS development. A Regional Conservation Assessment is an assessment that provides information and analyses that document the ecosystems, ecosystem functions, species, habitat, protected and conserved areas, and habitat linkages within an ecoregion to provide the appropriate context for nonbinding, voluntary conservation strategies and actions (CDFW 2018). As noted in the RCIS background provided in Section 1.1, early planning work supporting the SBC RCIS included the Countywide Habitat Preservation/Conservation Framework Study (Appendix F), which included data gathering, outreach, and development of a conservation framework that contained many of the elements of a Regional Conservation Assessment. Additionally, numerous resource conservation and management plans and programs have been developed in the RCIS Area, as listed in Section 2.6, that were used to inform development of the SBC RCIS.

The RCIS legislation and FGC Chapter 9, Section 1850 et seq., also describe MCAs as part of the overall RCIS program. MCAs are agreements that may be developed between CDFW and one or more persons or entities that identify the types and numbers of credits the persons or entities propose to create by implementing one or more conservation actions or habitat enhancement actions (CDFW 2018). MCAs may only be developed

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within approved RCIS Areas. The SBC RCIS has been prepared with the information required to support future MCA development.

The Draft RCIS was submitted to CDFW for completeness review on March 31, 2023, and the RCIS submittal fee was processed on April 7, 2023. The Notification of Completeness letter from CDFW for the Draft SBC RCIS was provided on May 8, 2023. On June 6, 2023, CDFW initiated the 60-day public review period for the Public Draft SBC RCIS, and notifications were sent on that date by CDFW to all interested RCIS parties and by SBCOG/SBCTA to the EE Group and all elected officials in the RCIS Area. CDFW also began its substantive review of the Public Draft SBC RCIS at that time. The public comment period on the Public Draft SBC RCIS closed on August 4, 2023. All written public comments received on the Public Draft SBC RCIS were compiled, and those comments and responses to comments are provided in Appendix G. The CDFW substantive review letter on the Public Draft SBC RCIS was provided on October 4, 2023. This Final SBC RCIS addresses CDFW's substantive review comments and the public's written comments.

1.7 Relationship to Other Planning

Numerous programs and planning efforts addressing biological resources and land uses in San Bernardino County have been developed at the federal, state, and local levels. At the federal level, the RCIS Area includes military lands, BLM lands, USFS lands, and a small acreage of National Park Service lands. The RCIS Area also includes California State Parks land, California State Lands Commission lands, and CDFW-owned lands. Further, the RCIS Area includes lands owned by local governments, a small acreage of tribal lands, and private lands. Lands under the jurisdiction of local governments include unincorporated County lands and lands within cities and towns, including Adelanto, Apple Valley, Barstow, Chino, Chino Hills, Colton, Fontana, Grand Terrace, Hesperia, Highland, Loma Linda, Montclair, Ontario, Rancho Cucamonga, Redlands, Rialto, San Bernardino, Twentynine Palms, Upland, Victorville, Yucaipa, and Yucca Valley. See Section 2.5 for detailed information on land ownership, designations, and jurisdictions within San Bernardino County.

As described in Section 1.3, Intended Uses, the SBC RCIS does not affect the authority or discretion of any public agency and is not binding upon public agencies. Therefore, the SBC RCIS does not change in any way the land use policies, designations, decisions, or recommendations of other federal, state, or local planning. Additionally, mitigation/conservation banks and in-lieu fee programs are not affected by the RCIS program do not need to go through the RCIS Mitigation Credit Agreement process to be used as

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mitigation. See Section 2.6 for a description of the existing resource conservation and management plans and programs in and around the RCIS Area.

1.8 Document Content and Organization

The SBC RCIS was developed consistent with the legislative requirements of the RCIS program and the CDFW RCIS Guidelines (CDFW 2018). FGC Section 1852(e) describes that an RCIS shall consider working lands; reasonably foreseeable development of infrastructure, housing, renewable energy; and any draft natural community conservation plans in the RCIS Area, and these considerations were incorporated into the SBC RCIS. FGC Section 1852(c) describes the specific required components of an RCIS, and the following lists these required components (in *italics*) and the location of this information in the SBC RCIS.

- (1) *An explanation of the conservation purpose of and need for the strategy.*

SBC RCIS Section 1.1 and Section 1.2, Purpose and Need.

- (2) *The geographic area of the strategy and rationale for the selection of the area, together with a description of the surrounding ecoregions and any adjacent protected habitat areas or linkages that provide relevant context for the development of the strategy.*

SBC RCIS Section 1.4, RCIS Area, and Chapter 2.

- (3) *The focal species included in, and their current known or estimated status within, the strategy.*

SBC RCIS Section 3.1, Appendix A, Appendix B, and Appendix C.

- (4) *Important resource conservation elements within the strategy area, including, but not limited to, important ecological resources and processes, natural communities, habitat, habitat connectivity, and existing protected areas, and an explanation of the criteria, data, and methods used to identify those important conservation elements.*

SBC RCIS Section 3.1.

- (5) *A summary of historic, current, and projected future stressors and pressures in the strategy area, including climate change vulnerability, on the focal species, habitat, and other natural resources, as identified*

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in the best available scientific information, including, but not limited to, the State Wildlife Action Plan.

SBC RCIS Section 2.8, Appendix C, and Appendix E.

- (6) *Consideration of major water, transportation and transmission infrastructure facilities, urban development areas, and city, county, and city and county general plan designations that accounts for reasonably foreseeable development of major infrastructure facilities, including, but not limited to, renewable energy and housing in the strategy area.*

SBC RCIS Section 2.7, Land Uses and Reasonably Foreseeable Development.

- (7) *Provisions ensuring that the strategy will be in compliance with all applicable state and local requirements and does not preempt the authority of local agencies to implement infrastructure and urban development in local general plans.*

SBC RCIS Section 1.3; Section 3.4; Section 3.5, Consistency with Approved Conservation Plans and Recovery Plans; and Chapter 4, Implementation Framework.

- (8) *Conservation goals and measurable objectives for the focal species and important conservation elements identified in the strategy that address or respond to the identified stressors and pressures on focal species.*

SBC RCIS Section 3.3, Conservation Goals and Objectives.

- (9) *Conservation actions, including a description of the general amounts and types of habitat that, if preserved or restored and permanently protected, could achieve the conservation goals and objectives, and a description of how the conservation actions and habitat enhancement actions were prioritized and selected in relation to the conservation goals and objectives.*

SBC RCIS Section 3.4.1, Actions.

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- (10) *Provisions ensuring that the strategy is consistent with and complements any administrative draft natural community conservation plan, approved natural community conservation plan, or federal habitat conservation plan that overlaps with the strategy area.*

SBC RCIS Section 3.5.

- (11) *An explanation of whether and to what extent the strategy is consistent with any previously approved strategy or amended strategy, state or federal recovery plan, or other state or federal approved conservation strategy that overlaps with the strategy area.*

SBC RCIS Section 2.6, Section 3.3, and Section 3.5.

- (12) *A summary of mitigation banks and conservation banks approved by the department or the United States Fish and Wildlife Service that are located within the strategy area or whose service area overlaps with the strategy area.*

SBC RCIS Section 2.6.

- (13) *A description of how the strategy's conservation goals and objectives provide for adaptation opportunities against the effects of climate change for the strategy's focal species.*

SBC RCIS Section 3.3, Section 3.4.1, Appendix C, and Appendix E.

- (14) *Incorporation and reliance on, and citation of, the best available scientific information regarding the strategy area and the surrounding ecoregion, including a brief description of gaps in relevant scientific information, and use of standard or prevalent vegetation classifications and standard ecoregional classifications for terrestrial and aquatic data to enable and promote consistency among regional conservation investment strategies throughout California.*

SBC RCIS Chapter 2; Section 3.1; Chapter 6, References; Appendix A through Appendix E.

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2 LANDSCAPE CONTEXT AND SETTING

San Bernardino County spans the Valley, Mountain, and Desert regions of Southern California, containing unique and varied landscape processes and features that support a rich and diverse assemblage of vegetation communities and plant and wildlife species. See Section 1.4 for a description of the RCIS Area, including a description of the West Desert region that is included in the RCIS Area and the East Desert region that is excluded from the RCIS Area. This section provides an overview of the broad landscape context and setting within which the SBC RCIS was developed. The landscape context and setting for the SBC RCIS includes a description of ecoregions (Section 2.1) and climate (Section 2.2); geomorphology, topography, and soils (Section 2.3); hydrology (Section 2.4); land ownerships, designations, and jurisdictions (Section 2.5); other resource conservation and management plans and programs (Section 2.6); land uses and reasonably foreseeable development (Section 2.7); and regional pressures and stressors (Section 2.8). Figure 2-1 provides a reference map for place names and other features referenced in this chapter and throughout this document.

2.1 Ecoregions

San Bernardino County is geographically divided into the Valley region, the Mountain region, and the Desert region. These geographic divisions generally follow ecoregional boundaries defined by the U.S. Department of Agriculture, with the Valley and Mountain regions occurring in the Southern California mountains and valleys ecoregion section and the Desert region occurring in the Mojave Desert ecoregion section (USDA 2007), as shown in Figure 2-2, RCIS Area Landscape Context. For the purposes of RCIS planning, the desert region was split into the West Desert and the East Desert. The RCIS Area was developed in consideration of these ecoregions and includes the Valley region, the Cajon Pass area of the Mountain region, and the West Desert region.

The Valley region is located in the inland coastal plain south of the San Bernardino and San Gabriel Mountains. The Valley is the most populated region of San Bernardino County and is located in the southwest portion of the county that extends to Riverside County to the south, Orange County to the southwest, and Los Angeles County to the west. The Valley region is primarily located in the Fontana Plain-Calimesa Terraces ecoregion subsection; the Santa Ana Mountains and the Perris Valley and Hills ecoregion subsections overlap with the southern edges of the Valley (USDA 2007).

The Mountain region separates the Valley from the Desert and is characterized by predominantly National Forest lands. The San Gorgonio Mountains and San Gabriel

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Mountains ecoregion subsections comprise the Mountain region (USDA 2007). The RCIS Area includes the lower-elevation Cajon Pass area of the Mountain region.

The Desert region is the largest of the three geographic regions and occurs north of the San Bernardino and San Gabriel Mountains, extending east to the Arizona state line. Kern and Los Angeles Counties are located to the west, with Inyo County and the Nevada state line to the north and east. West Desert was separated from East Desert using ecoregion boundaries and land ownership patterns. In the north, the eastern edge of the West Desert region is the boundary for the U.S. Army's Fort Irwin National Training Center. In the central portion of the County, the West Desert was separated from the East Desert where BLM Wilderness Study Area and the Mojave National Preserve boundaries begin east of Newberry Springs. In the south, the West Desert region includes the Morongo Basin north of Joshua Tree National Park and excludes the U.S. Marine Corps Air Ground Combat Center Twentynine Palms. The West Desert region is predominantly located in the Mojave Desert ecoregion section. Foothills of the Little San Bernardino–Bighorn Mountain and San Gorgonio Mountain ecoregion subsections also occur in the West Desert region (USDA 2007).

2.2 Climate

Climate varies considerably across the RCIS Area. The Valley region has a Mediterranean climate, with hot, dry summers and cool winters. Summers are warm, with the average daily maximum temperatures in July and August reaching approximately 96°F (WRCC 2017a). In the valley, the City of San Bernardino receives an average of approximately 16 inches of rain annually, with the majority of the rainfall occurring November through April and in occasional thunderstorms during the summer months (WRCC 2017a).

In the Mountain region, annual rainfall amounts for the San Bernardino Mountains average approximately 22 inches near Big Bear Lake, with an average of 62 inches of snowfall (WRCC 2017b). The majority of precipitation in the mountain region occurs between November and March. Summers are relatively dry with few thunderstorms. In winter months, snow typically occurs above 3,000 feet above mean sea level (amsl) and is frequent above 5,000 feet amsl. Rainfall and snowmelt in the mountains is a crucial source for the regional streams and rivers that feed the Santa Ana River and Mojave River.

Climate variability within the Desert region is influenced by elevation, topography, latitude, and proximity to water bodies. The desert climate is characterized by hot, dry summers and mild to cold winters. Precipitation events are primarily from winter frontal storms

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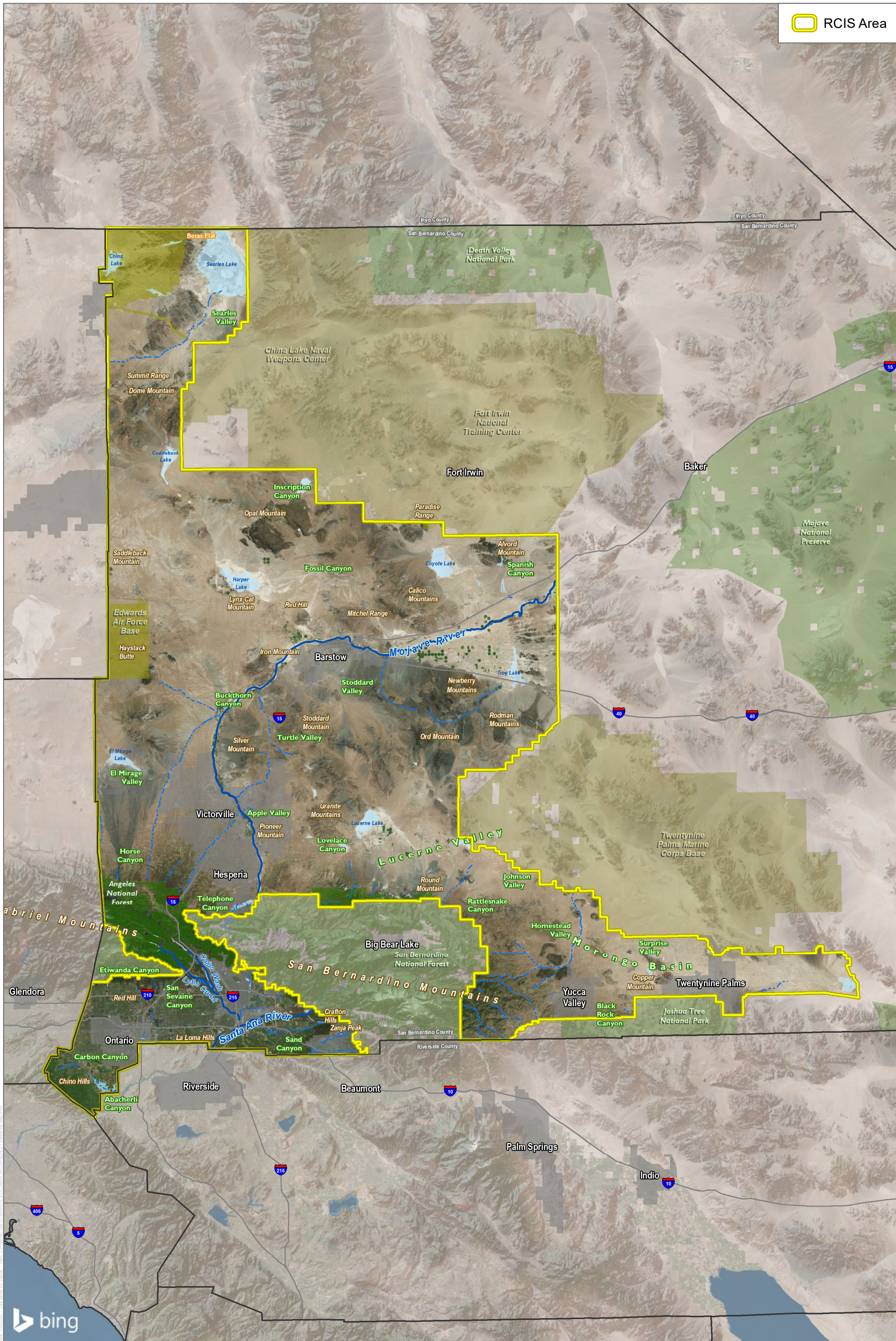
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moving east off the Pacific Ocean and sporadic summer convective monsoons. Winter storms generally bring widespread rainfall of longer duration and lower intensity than summer monsoons, which generate isolated, high-intensity, short-duration rainfall. The Mojave Desert is considered a “cold” or winter desert, with about 50% to 70% of annual precipitation occurring during the winter (Redmond 2009; Lichvar and McColley 2008). The Desert region experiences more extreme temperature variations than the other regions (Randall et al. 2010; Webb et al. 2009).

In addition to being geographically and seasonally variable, rainfall amounts are also related to topography and elevation. Annual rainfall within the valleys of the Mojave Desert ranges from approximately 2 to 5 inches and annual rainfall ranges from 10 to 30 inches in the mountain ranges (Redmond 2009). Inter-annual climate variability in the Mojave Desert is also related to cyclical processes including El Niño Southern Oscillation and drought cycles.

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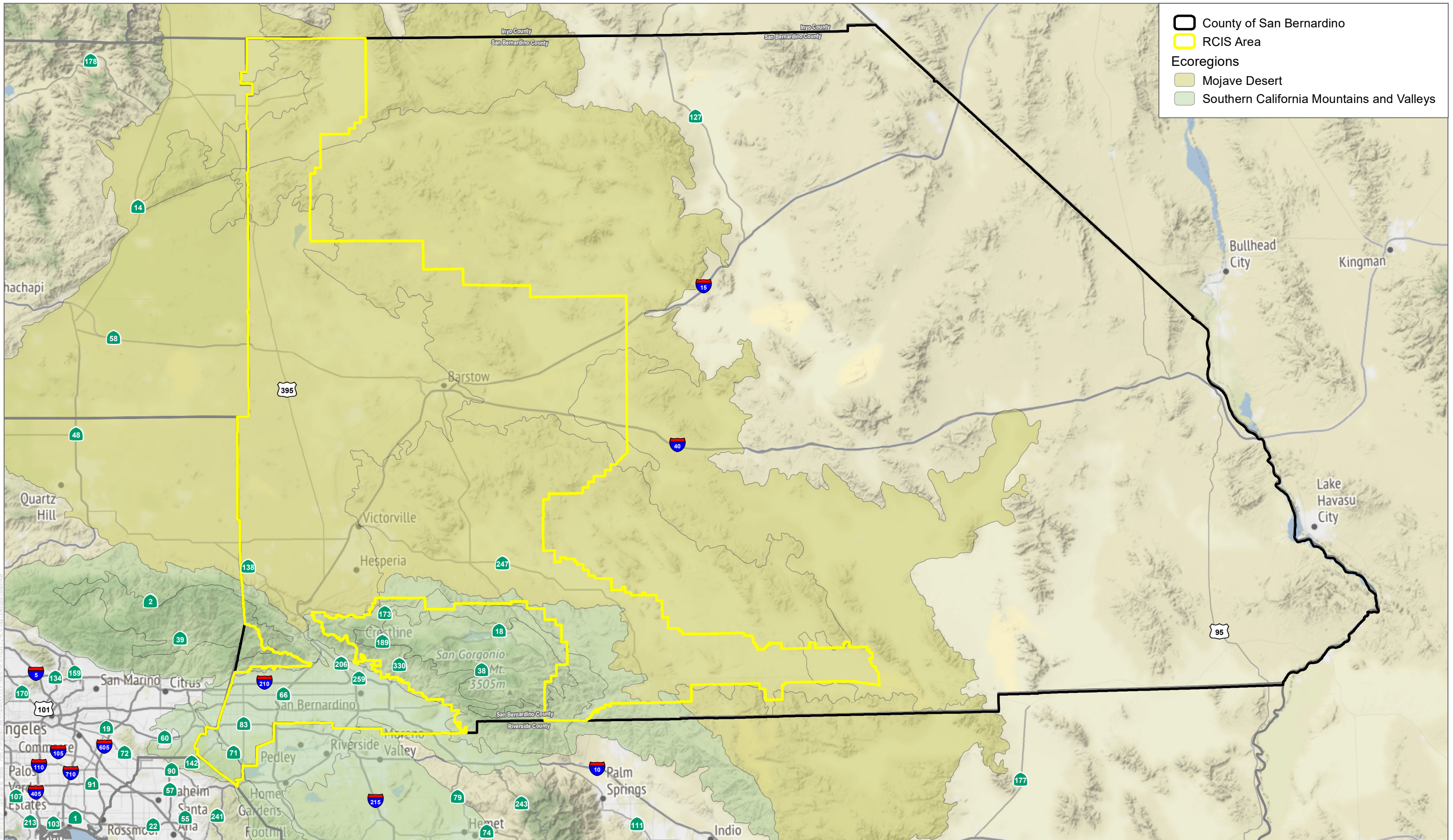


SOURCE: Bing Maps 2018; USGS 2018; CDFW 2018



FIGURE 2-1
Reference Map
San Bernardino County RCIS

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- County of San Bernardino
- RCIS Area
- Ecoregions**
- Mojave Desert
- Southern California Mountains and Valleys

SOURCE: ESRI 2018; USDA 2018



FIGURE 2-2
RCIS Area Landscape Context
 San Bernardino County RCIS

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2.3 Geomorphology, Topography, and Soils

Landforms and topography of the RCIS Area are shown in Figure 2-3. The Valley region is composed of inland coastal plain and mountain foothills. Elevation in the Valley ranges from approximately 4,000 feet amsl above Rancho Cucamonga to around 500 feet amsl in the Prado Basin. A majority of the topography in the Valley region is flat to gently rolling. More varied topography and landforms in the Valley are found in the Santa Ana Mountain foothills of Chino Hills State Park in the southwest, the Loma Linda Hills and Crafton Hills in the southeast, and the San Gabriel and San Bernardino Mountain foothills that bound the Valley to the north. The Valley region contains a variety of soil types and textures primarily composed of alluvium derived from granite (USDA 2015). Alluvial deposits and active fluvial processes combine in the Valley region where hydrologic features like the Santa Ana River, Cajon Wash, Lytle Creek, and other tributaries drain from the San Bernardino Mountains into the valley basin. The Valley region also contains the Colton Dunes (composed of the Delhi soil series) that provide habitat for the Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*), which once covered approximately 40 square miles in northwestern Riverside and southwestern San Bernardino Counties. Currently, the dunes occur only in fragmented areas in the southern portion of the Valley around Colton, Rialto, and Fontana, likely as a result of disconnection from wind-blown sand sources (USFWS 1997a).

The Mountain region is composed of the San Bernardino and San Gabriel mountain ranges that both rise above 10,000 feet amsl and descend gradually to the Mojave Desert to the north and the Valley region to the south. These mountains are part of the Transverse Ranges of the Southern California mountain chain. Geomorphology of the Mountain region is characterized by steep slopes and ridgelines dissected by deep canyons with unstable hillslope rock debris (USGS 2006). This region has a variety of shallow soil types primarily consisting of decomposed granite and sandy loam (USDA 2015). Carbonate soils, or soils with higher alkalinity, can also be found in various portions of the Mountain region, most notably from White Mountain to Blackhawk Mountain, including the limestone cliffs of Cushenbury Canyon. Carbonate soils also provide habitat for rare and threatened plant species.

The Desert region is primarily characterized by low elevation, remote mountain ranges surrounded by desert plains. These mountains ranges often have alluvial fans associated with them, where a fan-shaped buildup of sediment protrudes from the base of the of mountains toward the valley floor. Alluvial fans originate from flash-flood debris and stream sediment accretion (Harden 2004). Other significant landforms within the desert include mountains, plateaus, basins, dunes, and playas. The West Desert region is

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characterized primarily by relatively flat desert plains with elevations around 3,000 feet amsl and scattered low-elevation mountains ranging up to about 4,500 feet amsl. Geomorphological landforms in the Desert region are shaped by aeolian (wind) processes; fluvial, alluvial, and lacustrine (water) processes; and mass-wasting (gravity) processes (Miller et al. 2009). Alluvial fans are formed primarily through fluvial and debris flow processes; dunes and sand sheets are formed through aeolian processes; playas and washes are formed through fluvial, lacustrine, and aeolian processes; and hillslope materials are formed primarily through mass wasting.

Fluvial processes, in addition to aeolian processes, create and sustain dune habitats. Fluvial process areas (i.e., sand source, fluvial sand transport, and fluvial sediment deposition areas) and aeolian process areas (i.e., aeolian sand transport corridors) are important for maintaining dune systems.

2.4 Hydrology

The dominant aquatic feature within the Valley region is the Santa Ana River. The upstream reaches of the Santa Ana River watershed originate in the San Bernardino Mountains, and the entire Valley region is located within this watershed. The Santa Ana River is the largest river fully contained within Southern California. It begins in the San Bernardino Mountains before passing through Seven Oaks Dam in the foothills above the valley. The river then flows 96 miles to the Pacific Ocean, alternating between its natural state and being contained in flood control channels. Key tributaries within the area include City Creek, Day Creek, Etiwanda Creek, Plunge Creek, San Sevaine Creek, Lytle Creek, Cajon Wash, San Timoteo Wash, and Mill Creek. The southern and western portions of the Mountain region are part of the Santa Ana River watershed, and the northern portion of the Mountain region is part of the Mojave River watershed. Numerous creeks and tributaries drain the Mountain region in the RCIS Area, including upper reaches of Lytle Creek and Cajon Wash and Crowder Creek.

The major hydrologic feature of the West Desert region is the Mojave River. The Mojave River is an intermittent river, with the majority of the water flow occurring underground. The river's source starts within the San Bernardino Mountains and terminates at Soda Lake approximately 110 miles to the northeast. Though water in the Mojave River flows primarily underground, it comes to the surface in areas with impermeable rock substrata, such as the upper and lower narrows near Victorville and in the Afton Canyon area northeast of Barstow. Other linear drainage channels occur throughout the San Bernardino foothills and desert mountains in the West Desert region, and flowing surface water in these features (e.g., discontinuous ephemeral channels in alluvial fans,

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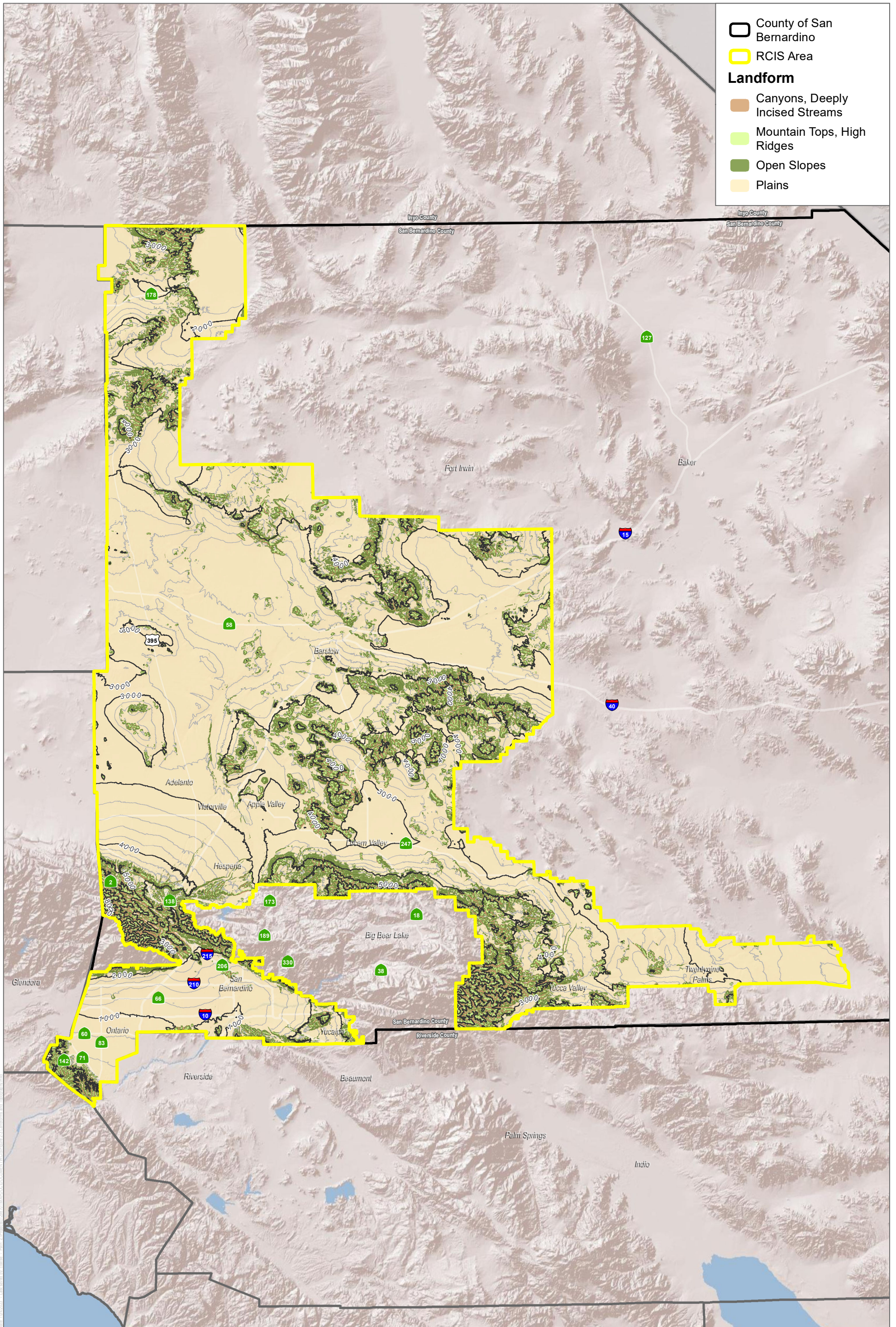
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braided channels) is infrequent and usually the result of precipitation and flash-flood events. Other important hydrologic features of the West Desert include dry lakes/playas (e.g., Searles, Harper, El Mirage, and Lucerne) and seeps/springs. Anthropogenic modifications to hydrology from urbanization, water conveyance, and storage also exist throughout the Desert region. Major watersheds and hydrologic features in the RCIS Area are shown in Figure 2-4, Hydrology.

Identification of fluvial features in arid areas requires careful consideration of the landforms and fluvial patterns that would be anticipated to occur, and usually requires a team of professionals to identify the extent and course of the features. Maintaining continuous flow paths from mountains to terminus is critical to maintaining the landforms and processes that contribute to species habitats, even when flows only rarely extend along the entire course. Springs, seeps and similar areas of groundwater or subsurface flow emergence should be provided a high level of protection around the orifice but also in the areas providing recharge or flow to these features.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; Penrod et al. 2012

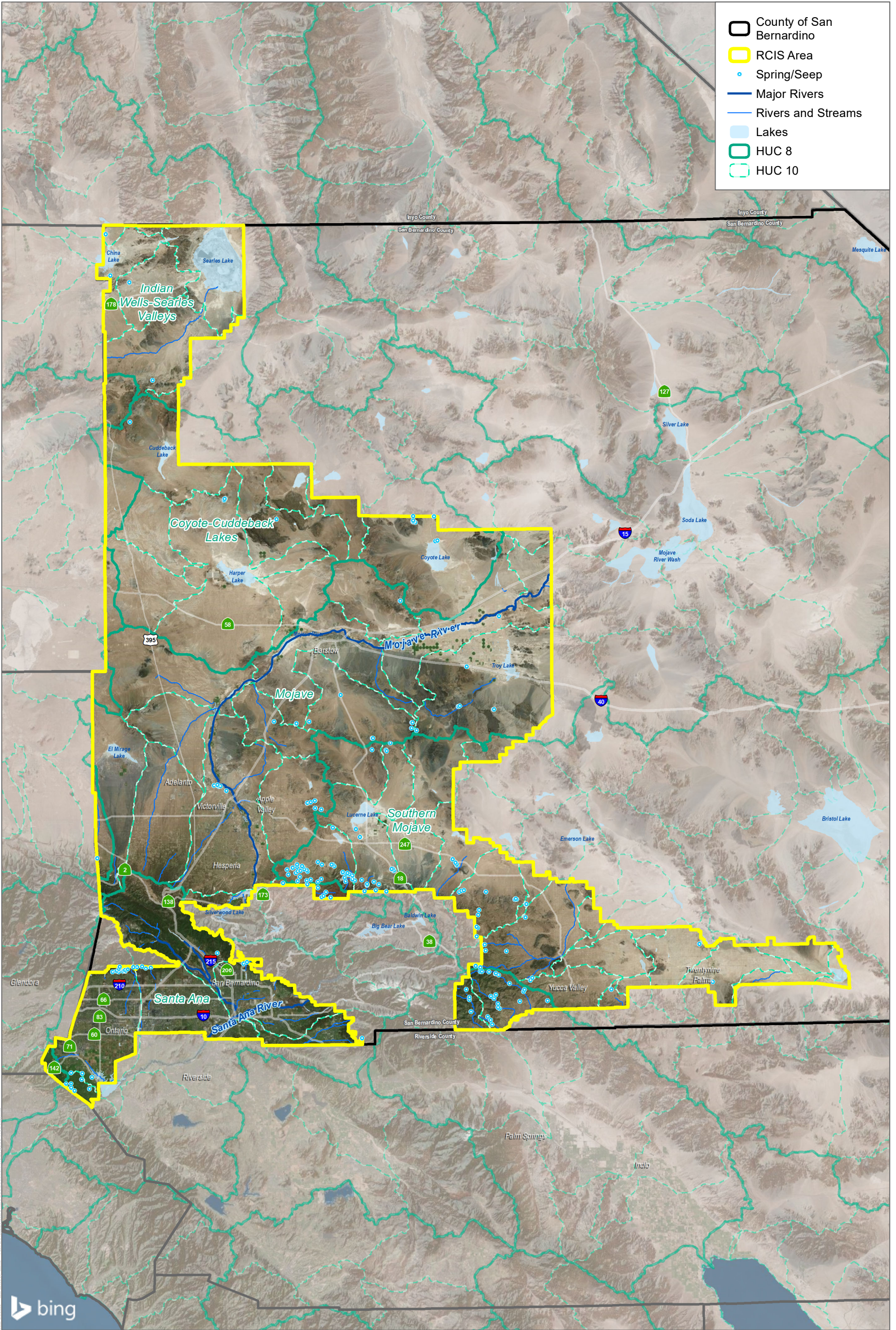


FIGURE 2-3

Landforms and Topography

San Bernardino County RCIS

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SOURCE: Bing Maps 2018; USGS NHD 2018; CEC 2018



FIGURE 2-4

Hydrology

San Bernardino County RCIS

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2.5 Land Ownerships, Designations, and Jurisdictions

San Bernardino County is characterized by a complex mixture of various land ownerships, designations, and jurisdictions (Figure 2-5, Land Ownership and Jurisdiction, and Figure 2-6, Land Designations). Table 2-1 summarizes the land ownership patterns in the RCIS Area by region. The Valley region of the RCIS Area is nearly all private land (95%). Approximately 3% of the Valley region is composed of state lands (Chino Hills State Park) and the remainder of the Valley region is made up of federal, local government, and tribal lands. The Desert region of the RCIS Area is characterized by approximately 57% public lands and 43% private lands. Public lands are predominantly BLM-administered lands, which make up 49% of the Desert region in the RCIS Area. The portion of the Mountain region in the RCIS Area is 83% USFS land and 16% private, and the remainder is in other federal, state, or local government ownership.

Table 2-1
Land Ownership in the RCIS Area by Region

Land Ownership	Desert (acres)	Mountain (acres)	Valley (acres)	Total (acres)
Federal	1,811,272	104,790	5,659	1,921,722
Bureau of Land Management	1,579,951	151	1,033	1,581,134
Military	231,003	0	4,451	235,455
National Park Service	118	0	0	118
US Forest Service	200	104,639	175	105,015
State	43,795	129	10,816	54,740
Local Government	603	231	359	1,282
Tribal	163	0	171	333
Private	1,380,386	20,362	294,588	1,695,336
Total	3,236,218	125,602	311,593	3,673,413

Notes: Land ownership derived from the San Bernardino County Plan Base, which is a composite geographic information system (GIS) layer created using data from the San Bernardino Countywide Plan (PlaceWorks 2019) and used in the SBC RCIS to characterize and map land ownership, jurisdiction, and designations and is based on existing data from the County, SBCOG, BLM, State Parks, U.S. Protected Area Dataset, and California Protected Areas Dataset. The acreage summary provided here is approximate and intended to support landscape-scale assessment of land ownership patterns in the RCIS Area. Land ownership data differs in quality, resolution, and accuracy from different sources; every effort was made to use data from authoritative sources.

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Using the Plan Base² and the Local Conserved Land³ layers created for San Bernardino County, numerous public land designations and other land designations have been established, as described below. Table 2-2 summarizes the land designations in the RCIS Area by region.

- **National Monuments, National Parks, National Preserves, and National Refuges:** The Antiquities Act of 1906 (16 USC 431 et seq.) grants the president authority to designate national monuments to protect objects of historic or scientific interest. Most national monuments are established by the president; however, Congress has also occasionally established national monuments protecting natural and historic features. BLM, National Park Service, USFS, and USFWS manage national monuments. The Wilderness Act of 1964 (PL 88–577) established the National Wilderness Preservation System of areas to be designated by Congress. BLM-administered lands were brought under the direction of the Wilderness Act with the passage of the Federal Land Policy and Management Act of 1976, as amended (43 USC 1701 et seq.). The SBC RCIS Area includes portions of the Mojave Trails National Monument, San Gabriel Mountains National Monument, Sand to Snow National Monument, and a small portion of the Joshua Tree National Park.
- **BLM Wilderness Areas:** A BLM wilderness area is an area of public lands that Congress has designated for BLM to manage as a component of the National Wilderness Preservation System in accordance with the Wilderness Act of 1964. The Wilderness Act of 1964 also outlines accepted and prohibited uses of designated wilderness areas. The 1994 Desert Protection Act designated certain BLM-administered public lands as Wilderness areas (BLM 1999). The SBC RCIS Area includes portions of the Bighorn Mountain Wilderness, Black Mountain Wilderness, Cleghorn Lakes Wilderness, Cucamonga Wilderness, Golden Valley Wilderness, Grass Valley Wilderness, Joshua Tree Wilderness, Newberry

² Plan Base is a composite geographic information system (GIS) layer based on data from the San Bernardino Countywide Plan (PlaceWorks 2019) and used in the SBC RCIS to characterize and map land ownership, jurisdiction, and designations and is based on existing data from the County, SBCOG, BLM, State Parks, U.S. Protected Area Dataset, and California Protected Areas Dataset.

³ Local Conserved Land is a composite GIS layer assembled from public sources and from outreach to local entities to map locally conserved lands in the County, including lands managed by The Nature Conservancy, Wildlands Inc., The Wildlands Conservancy, Mojave Desert Land Trust, Wildlife Heritage Foundation, Transition Habitat Conservancy, Inland Empire Resource Conservation District, and Land Veritas and conservation easements compiled from the San Bernardino Department of Public Works, City of Fontana, City of Rancho Cucamonga, City of Colton, and as inventoried by the California Conservation Easement Database. Additional local conserved lands may exist or may be conserved in the future that are not described or reflected in the mapping based on information available at the time of RCIS preparation.

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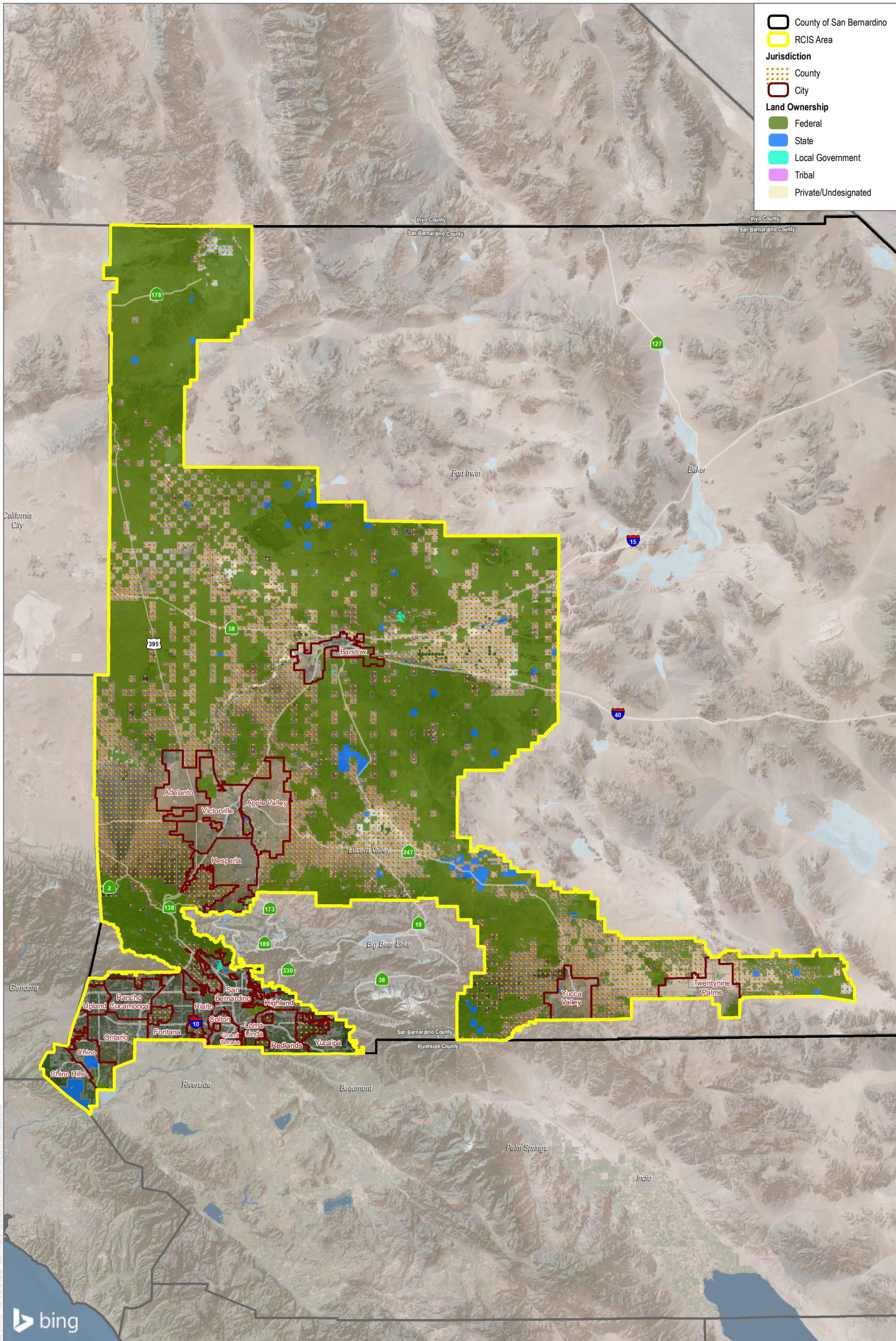
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Mountains Wilderness, Rodman Mountains Wilderness, San Gorgonio Wilderness, Sheep Mountain Wilderness, and Sheephole Valley Wilderness.

- **BLM National Conservation Lands:** In June 2000, the Department of the Interior and BLM established the National Landscape Conservation System to provide for coordinated protection of BLM’s conservation lands. The Omnibus Public Land Management Act of 2009 (P.L. 111-11) congressionally established the National Landscape Conservation System to “conserve, protect and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of current and future generations.” The National Landscape Conservation System includes areas administered by BLM such as national monuments, conservation areas, wilderness study areas, components of the National Trails System, components of the National Wild and Scenic Rivers System, components of the National Wilderness Preservation System, and public land within the California Desert Conservation Area (CDCA) administered by BLM for conservation purposes (Section 202 of the Act). Within the CDCA, as part of the Desert Renewable Energy Conservation Plan Land Use Plan Amendment (BLM 2016a, 2016b), BLM National Conservation Lands were also established, including in the SBC RCIS Area.
- **CDFW Lands:** CDFW lands includes lands owned and/or managed by CDFW. The SBC RCIS Area includes the West Mojave Desert Ecological Reserve, King Clone Ecological Reserve, and Camp Cady Wildlife Area.
- **California State Parks:** California State Parks include lands managed within the California State Parks system. The SBC RCIS Area includes the Chino Hills State Park, Silverwood Lake State Recreational Area, and Wildwood Canyon. In October 2021, Senate Bill 266 was signed into law requiring the California Department of Parks and Recreation to accept the transfer of approximately 1,530 acres contiguous to Chino Hills State Park and expanding the park by nearly 10%, mostly in located in the SBC RCIS Area.

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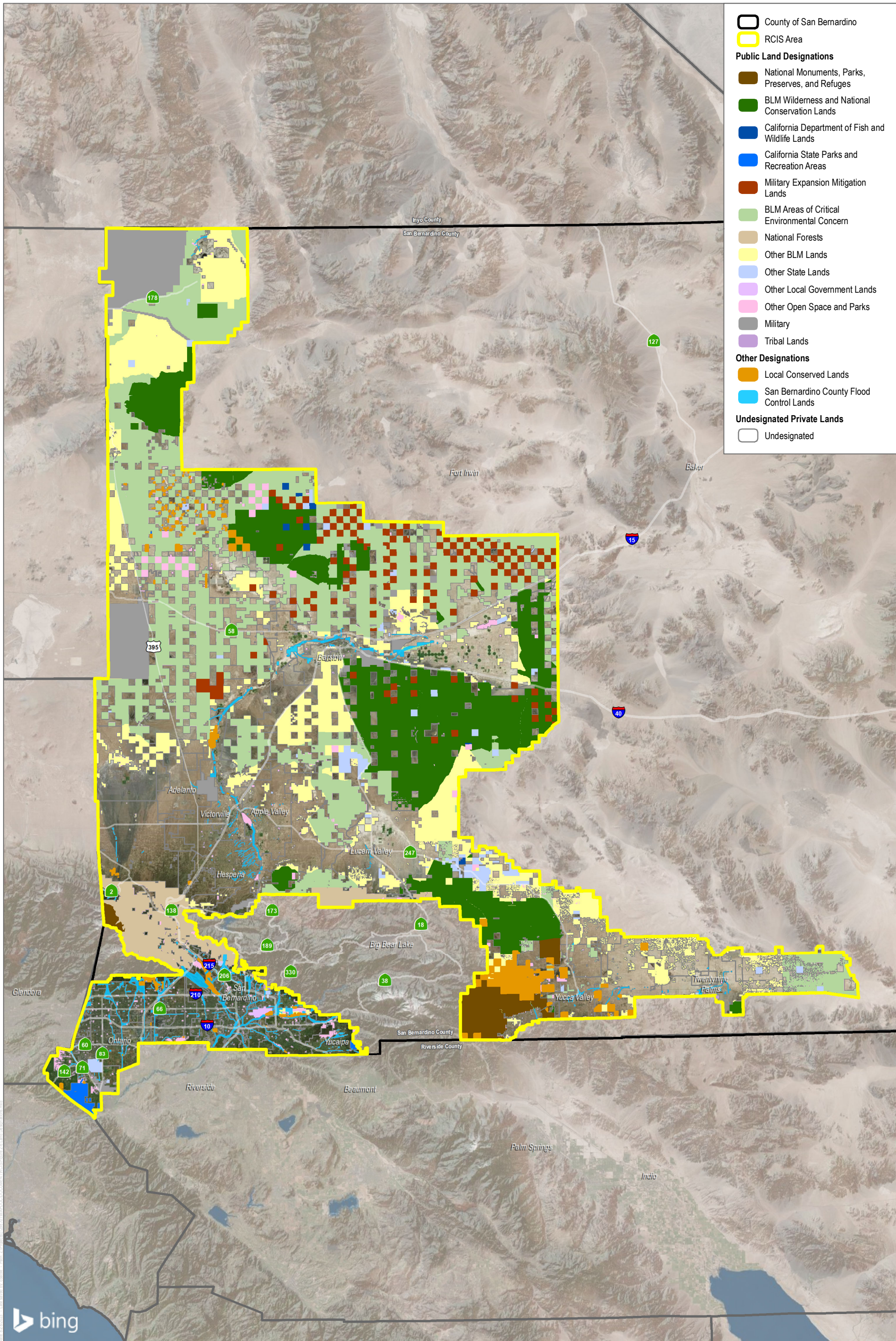
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SOURCE: Bing Maps 2018; San Bernardino County 2018; BLM 2018

FIGURE 2-5
Land Ownership and Jurisdiction
 San Bernardino County RCIS

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SOURCE: Bing Maps 2018; San Bernardino County 2018; BLM 2018



FIGURE 2-6
Land Designations
San Bernardino County RCIS

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- **BLM Areas of Critical Environmental Concern:** Section 201 of the Federal Land Policy and Management Act required the Secretary of the Interior to prepare and maintain an inventory of the public lands and their resources and other values, giving priority to designation and protection of Areas of Critical Environmental Concern (ACECs). Section 601 of the Federal Land Policy and Management Act established the CDCA and instructed the Secretary of the Interior to prepare and implement a comprehensive, long-range plan for the management, use, development, and protection of the public lands within the CDCA. The CDCA Plan was approved in 1980 to meet this congressional direction and has been amended multiple times (BLM 1999). The CDCA Plan provides a multiple-use management blueprint for approximately 25 million acres in Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, and San Bernardino Counties, of which 10 million acres are managed by BLM. The SBC RCIS Area includes all or portions of 34 ACECs.
- **Military Expansion Mitigation Lands:** These include lands conserved as mitigation for expansion of Department of Defense installations in the Desert region.
- **National Forests:** National Forests are federal lands managed by USFS according to the Forest and Rangeland Renewable Resource Planning Act of 1974, as amended (16 USC 1600 et seq.) and National Forest Management Act of 1976, as amended (P.L. 94-588). In Southern California, National Forests are managed under a three-tier land and resource management program: the Southern California National Forests Vision (USFS 2005a), the forest-specific land management plan for the San Bernardino National Forest (USFS 2005b), and design criteria for implementing management plan actions. The SBC RCIS Area includes portions of the San Bernardino National Forest and Angeles National Forest.
- **Other BLM Lands, Other State Lands, and Other Local Government Lands:** These lands include other public lands not included in the land designations described above. Other BLM Lands are lands administered by the BLM including open off-highway vehicle recreation areas, renewable energy development areas, and general public lands. Other State Lands are lands administered by the California State Lands Commission. Other Local Government Lands are lands administered by the County or cities/towns.
- **Local Conserved Land:** Local conserved land includes mitigation banks, land trust lands, and other conservation easements in the RCIS Area. These areas are considered permanently protected and managed for resource conservation and include lands managed by The Nature Conservancy, Wildlands Inc., The Wildlands Conservancy, Mojave Desert Land Trust, Wildlife Heritage Foundation, Transition

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Habitat Conservancy, Inland Empire Resource Conservation District, and Land Veritas and other conservation easements compiled from the San Bernardino Department of Public Works, City of Fontana, City of Rancho Cucamonga, City of Colton, and as inventoried by the California Conservation Easement Database. Additional local conserved lands may exist or may be conserved in the future that are not described or reflected in the mapping based on information available at the time of RCIS preparation.

- **Other Open Space and Parks:** These lands include other areas maintained in open space or for park uses.
- **San Bernardino County Flood Control District Lands:** These lands include fee-owned parcels and easements held by the San Bernardino County Flood Control District (SBCFCD). The primary functions of SBCFCD lands are to provide flood protection for public safety, water conservation, and construction of storm protection facilities. SBCFCD lands are not available for conservation outside the needs of SBCFCD for mitigation, as required for permitting.
- **Military:** These are lands administered by the Department of Defense and include portions of Edwards Air Force Base, Naval Air Weapons Station China Lake, Fort Irwin National Training Center, Marine Corps Logistics Base Barstow, the former George Air Force Base (now the Southern California Logistics Airport), the Prado Dam and Reservoir lands, and the Mojave River Forks Dam lands.
- **Tribal:** These are tribal lands, including portions of the San Manuel Reservation lands.
- **Undesignated:** These are private lands with no resource protection or management designation.

As Table 2-2 shows, nearly 85% of the Valley region in the RCIS is private lands with no public land designations. This contrasts with the Desert region of the RCIS Area that is composed of over 55% public land designations and the Mountain region of the RCIS Area that is composed of nearly 86% public land designations.

Table 2-2
Land Designations in the RCIS Area by Region

Designation Type	Land Designation	Desert (acres)	Mountain (acres)	Valley (acres)	Total (acres)
Public Land	National Monuments, Parks, Preserves, and Refuges	49,311	5,531	0	54,842
Public Land	BLM Wilderness and NCLs	472,471	2	0	472,472

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**Table 2-2
Land Designations in the RCIS Area by Region**

Designation Type	Land Designation	Desert (acres)	Mountain (acres)	Valley (acres)	Total (acres)
Public Land	CDFW Lands	4,203	0	0	4,203
Public Land	California State Parks and Recreation	61	211	7,962	8,234
Public Land	BLM ACECs	704,177	96	0	704,273
Public Land	Military Expansion Mitigation Lands	85,901	0	0	85,901
Public Land	National Forests	124	99,018	162	99,304
Public Land	Other BLM Lands	357,745	53	1,026	358,824
Public Land	Other State Lands	36,514	41	3,495	40,051
Public Land	Other Local Government Lands	77	6	2,029	2,112
Public Land	Other Open Space and Parks	33,238	1,630	10,099	44,967
Public Land	San Bernardino County Flood Control District Lands	9,158	799	16,424	26,381
Other	Local Conserved Land	40,609	219	3,928	44,755
Other	Military	149,577	0	2,353	151,931
Other	Tribal	163	0	140	303
Other	Undesignated Private Lands	1,292,890	17,996	263,974	1,574,860
Total		3,236,218	125,602	311,593	3,673,413

Notes: BLM = Bureau of Land Management; NCL = National Conservation Lands; CDFW = California Department of Fish and Wildlife; ACEC = Area of Critical Environmental Concern.

Land designation derived from the San Bernardino County Plan Base, which is a composite geographic information system (GIS) layer created for the San Bernardino Countywide Plan and used in the SBC RCIS to characterize and map land ownership, jurisdiction, and designations and is based on existing data from the County, SBCOG, BLM, State Parks, U.S. Protected Area Dataset, California Protected Areas Dataset and Conservation Easement Database. Local Conserved Land is a composite GIS layer assembled from public sources and from outreach to local entities to map locally conserved lands in the County, including lands managed by The Nature Conservancy, Wildlands Inc., The Wildlands Conservancy, Mojave Desert Land Trust, Transition Habitat Conservancy, Inland Empire Resource Conservation District, and Land Veritas and conservation easements compiled from the San Bernardino Department of Public Works, City of Fontana, City of Rancho Cucamonga, City of Colton, and the California Conservation Easement Database. Additional local conserved lands may exist or may be conserved in the future that are not described or reflected in the mapping based on information available at the time of RCIS preparation. The acreage summary provided here is approximate and intended to support landscape-scale assessment of land designation patterns in the County. Land designation data differs in quality, resolution, and accuracy from different sources; every effort was made to use data from authoritative sources.

2.6 Other Resource Conservation and Management Plans and Programs

As described in Section 1.3, the intended use of the SBC RCIS is to provide a regional biological conservation guidebook to public agencies, the development community, environmental groups, other interested entities, and the public for science-based nonbinding and voluntary conservation and mitigation actions in San Bernardino County. The SBC RCIS was developed to be consistent with and to complement existing resource conservation and management plans and programs in the RCIS Area. Figure 2-7 illustrates the key existing habitat conservation programs in and around the RCIS Area. Table 2-3 provides a summary

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of the existing resource conservation and management planning and programs relevant to the SBC RCIS at the federal, state, and regional/local levels.

**Table 2-3
Existing Resource Conservation and Management Planning and
Programs Relevant to the SBC RCIS**

Planning Level	Existing Plan/Program	Description
Federal	USFWS Recovery Plans for Federally Listed Species	USFWS has prepared recovery plans for several federally listed SBC RCIS Focal Species, including the following: Amphibians: California red-legged frog (USFWS 2002a), arroyo toad (USFWS 1999) Reptiles: desert tortoise (Mojave population) (USFWS 2011) Birds: least Bell's vireo (USFWS 1998a), southwestern willow flycatcher (USFWS 2002b) Invertebrates: Delhi Sands flower-loving fly (USFWS 1997a) Fish: Santa Ana sucker (USFWS 2017a), Mohave tui chub (USFWS 1984) Plants: Gambel's watercress (USFWS 1998b), marsh sandwort (USFWS 1998b), Parish's daisy (USFWS 1997b) USFWS recovery plans are referred to in the Focal Species summaries (Appendix C) and were used in the development of RCIS actions (Section 3.4.1). See Section 3.5 for the evaluation of consistency of the SBC RCIS with these recovery plans.
Federal	USFWS-designated Critical Habitat for Federally Listed Species	USFWS has designated critical habitat for several federally listed SBC RCIS Focal Species, including the following: Amphibians: California red-legged frog, arroyo toad Reptiles: desert tortoise (Mojave population) Birds: coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo Mammals: San Bernardino kangaroo rat Fish: Santa Ana sucker Plants: Lane Mountain milk-vetch, Parish's daisy USFWS critical habitat is referred to in the Focal Species summaries (Appendix C) and was used in identifying Focal Species habitat described in Section 3.1.3.2 and in providing guidelines for prioritizing actions in Section 3.4.2.
Federal	USFS Land and Resource Management Plans	National Forest lands in the SBC RCIS Area are managed according to the Land Management Plan, Part 1: Southern California National Forest Vision (USFS 2005a) and Land Management Plan, Part 2: San Bernardino National Forest Strategy (USFS 2005b). National Forest designations are described in public ownership and designations (Section 2.5) and were used in the conservation inventory (Section 3.2).
Federal	NPS General Management Plans	Only a very small portion of Joshua Tree National Park is included in the SBC RCIS Area, which is managed according to the Joshua Tree National Park General Management Plan (NPS 1995). National Park designations are described in public ownership and designations (Section 2.5) and were used in the conservation inventory (Section 3.2).

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**Table 2-3
Existing Resource Conservation and Management Planning and
Programs Relevant to the SBC RCIS**

Planning Level	Existing Plan/Program	Description
Federal	BLM Resource Management Plans	BLM Resource Management Plans specify the management of BLM lands in the SBC RCIS Area, including DRECP (BLM 2016a, 2016b), West Mojave Resource Management Plan (BLM 2006), and CDCA Plan as amended (BLM 1999). BLM land designations are described in public ownership and designations (Section 2.5) and were used in the conservation inventory (Section 3.2).
Federal	DOD Integrated Natural Resource Management Planning	Natural Resource Management Planning for DOD installations in the SBC RCIS Area, including Marine Corps Air Ground Combat Center Twentynine Palms (UCR 1993), Fort Irwin National Training Center, Edwards Air Force Base (Edwards Air Force Base 2002), Naval Air Weapons Station China Lake (Tierra Data Systems 2014), Marine Corps Logistics Base Barstow (Vernadero Group 2017). Military lands where these planning documents apply are described in public ownership and designations (Section 2.5).
Federal	DOD Readiness and Environmental Protection Integration (REPI)	DOD created the REPI Program in response to the development of lands and loss of habitat in the vicinity of its installations, ranges, and airspace that can lead to restrictions or costly and inadequate training and testing alternatives. DOD works with state and local governments, conservation organizations, and willing private landowners to address these challenges to the military mission through the REPI program. REPI projects are ongoing in the SBC RCIS Area for Edwards Air Force Base, Marine Corps Air Ground Combat Center Twentynine Palms, and Naval Air Weapons Station China Lake (DOD 2021). Military lands where this program has been implemented is described in public ownership and designations (Section 2.5).
State	CDFW State Wildlife Action Plan	The CDFW State Wildlife Action Plan provides a statewide framework for conserving the state's wildlife by sustaining the floral and faunal biodiversity. SBC RCIS occurs in the Desert Province and Southern California Province of the State Wildlife Action Plan (CDFW 2015). The CDFW State Wildlife Action Plan was used in the SBC RCIS in identifying regional pressures and stressors (Section 2.8), selecting Focal Species (Section 3.1.3), and developing RCIS actions (Section 3.4.1).
State	California Desert Biological Conservation Framework	The California Desert Biological Conservation Framework (CEC et al. 2016) is an interagency (i.e., CEC, CDFW, BLM, and USFWS) product of a collaborative, multiyear planning effort designed to provide a biological conservation foundation to support conservation strategies and decisions across the California deserts. The Biological Conservation Framework Map, which represents "important areas for implementing conservation actions in the California deserts", was used to identify areas of moderate to high habitat value in the desert region of the SBC RCIS, as described in Section 3.4.2.

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**Table 2-3
Existing Resource Conservation and Management Planning and
Programs Relevant to the SBC RCIS**

Planning Level	Existing Plan/Program	Description
State	CDFW Conservation Strategy for the Mohave Ground Squirrel, <i>Xerospermophilus mohavensis</i>	The conservation strategy developed by CDFW for the Mohave ground squirrel identifies important areas for the species including core populations areas, peripheral population areas, and linkages (CDFW 2019). This conservation strategy was used in developing the species summary (Appendix C) and the species' important areas were part of the Biological Conservation Framework Map (CEC et al. 2016) used to identify areas of moderate to high habitat value in the desert region of the SBC RCIS, as described in Section 3.4.2. Conservation measures from this conservation strategy have been incorporated into RCIS actions for the species (Section 3.4.1)
State	Chino Hills State Park Management Plan	The Chino Hills State Park 1999 General Plan describes management of the state park located in the Valley Region of the SBC RCIS Area. Chino Hills State Park, where this planning document applies, is described in public ownership and designations (Section 2.5).
Regional/Local	County of San Bernardino 2020 Policy Plan	The Natural Resources Element of the County of San Bernardino Countywide Plan – 2020 Policy Plan (County of San Bernardino 2020) includes policies to ensure that San Bernardino County would protect and preserve its biological resources. The biological resources goal (Goal NR-5) of the 2020 Policy Plan is “An interconnected landscape of open spaces and habitat areas that promotes biodiversity and healthy ecosystems, both for their intrinsic value and for the value placed on them by residents and visitors.” The SBC RCIS has been developed consistent with this goal, and the conservation goals and objectives (Section 3.3) and actions and priorities (Section 3.4) provide a framework for achieving this goal in the SBC RCIS Area.
Regional/Local	SANBAG Countywide Habitat Preservation/Conservation Framework Study	The Countywide Habitat Preservation/Conservation Framework Study (Appendix F) was a foundational document prepared prior to the RCIS for San Bernardino County. This study contained many of the elements of a Regional Conservation Assessment, which is not required but is described as a precursor step in the RCIS development process. The Framework Study is provided in Appendix F.
Regional/Local	SCAG Regional Comprehensive Plan and Connect SoCal	SCAG Regional Comprehensive Plan (SCAG 2008) Open Space and Habitat–Natural Lands Goal is to ensure a sustainable ecology by protecting and enhancing the region’s open space infrastructure and mitigate growth and transportation related impacts to natural lands. The Connect SoCal Plan (SCAG 2020) prioritizes natural and farm lands conservation as one of its main goals, which is to promote conservation of natural and agricultural lands and restoration of habitats. The SBC RCIS has been developed to be consistent with these goals, and the conservation goals and objectives (Section 3.3) and actions and priorities (Section 3.4) provide a framework for achieving these goals in the SBC RCIS Area.

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**Table 2-3
Existing Resource Conservation and Management Planning and
Programs Relevant to the SBC RCIS**

Planning Level	Existing Plan/Program	Description
Regional/Local	Morongo Basin Conservation Priorities Report	In 2012, the Conservation Priorities Report was prepared for the Morongo Basin portion of the Desert region of the SBC RCIS Area (Sonoran Institute and Morongo Basin Open Space Group 2012). This report identified high priority and moderate-high priority areas in the Morongo Basin based on wildlife connectivity, community identity, and protection of the military mission and Joshua Tree National Park mission. The habitat linkages used in this report are included in the habitat linkages mapped in Figure 3-1, are described as part of the Conservation Elements in Section 3.1.1, and are the focus of certain RCIS actions in Section 3.4.1. Additionally, parcels acquired and conserved in the Morongo Basin since this report was produced are included in the Local Conserved Land inventory described in Section 2.5.
Regional/Local	TNC Mojave Desert Ecoregional Assessment	This assessment identifies areas of conservation value in the Mojave Desert by modeling ecological core areas, ecologically intact areas, moderately degraded areas, and highly converted areas (Randall et al. 2010). The intactness analysis used in the Mojave Desert Ecoregional Assessment was evaluated for consistency in developing the Biological Conservation Framework Map (CEC et al. 2016), which was used to identify areas of moderate to high habitat value in the desert region of the SBC RCIS as described in Section 3.4.2.
Regional/Local	Draft Upper Santa Ana River HCP	In progress; Covers the Santa Ana River Watershed including all of Valley region and part of Mountain region; primarily addresses aquatic species/resources. A public review draft of this HCP was released in May 2021 but it has not been finalized or approved. See Section 2.6.1 for more detail on this plan.
Regional/Local	Upper Santa Ana River Wash Habitat Conservation Plan (Wash HCP)	The Wash HCP covers approximately 6 miles of the upper Santa Ana River Wash area in Valley region of the SBC RCIS. This HCP has been finalized and approved (ICF 2020). See Section 2.6.2 for more detail on this plan and Section 3.5 for the evaluation of consistency of the SBC RCIS with this approved HCP.
Regional/Local	Draft Apple Valley MSHCP/NCCP	In progress; The Apple Valley MSHCP/NCCP is a conservation plan being developed for the Town of Apple Valley, its sphere of influence, and adjacent lands. An administrative draft of the MSHCP/NCCP has not been released. See Section 2.6.3 for more detail on this plan.
Regional/Local	Antelope Valley RCIS	The Antelope Valley RCIS includes the Antelope Valley portion of the western Mojave Desert within Los Angeles County adjacent to the SBC RCIS, as shown in Figure 2-7.
Regional/Local	North Fontana Interim MSHCP Policy	This policy allows the City of Fontana to develop parcels in North Fontana under the California Environmental Quality Act if no listed species occur on the property, and requires mitigation fees for impacts to Riversidean alluvial fan sage scrub or Riversidean sage scrub vegetation communities.

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**Table 2-3
Existing Resource Conservation and Management Planning and
Programs Relevant to the SBC RCIS**

Planning Level	Existing Plan/Program	Description
Regional/Local	Other Local HCPs	23 HCPs have been approved by USFWS in the SBC RCIS Area as of 2021 (USFWS 2021). These approved HCPs were generally single-project HCPs addressing single-species issues. HCPs have been developed in the RCIS Area to obtain take for Delhi Sands flower-loving fly (10 approved HCPs), San Bernardino kangaroo rat (5 approved HCPs), and desert tortoise (8 approved HCPs). Where these projects resulted in permanent protection of lands through an inventoried conservation easement, those lands are included in the Local Conserved Land inventory described in Section 2.5 and used in the conservation inventory in Section 3.2. See Section 3.5 for a general review of consistency of the SBC RCIS with these small, non-regional approved HCPs.
Regional/Local	Planning by Municipalities	Individual general plans and land use policies and programs developed by cities and towns, including conservation and open space elements and overlays, steep slope and hillside ordinances, and other local resource protections. These plans were canvassed during development of Countywide Habitat Preservation/Conservation Framework Study (Appendix F) during development of the foundation for the SBC RCIS.
Regional/Local	Existing Mitigation and Conservation Banks	Existing mitigation and conservation banks in the SBC RCIS Area consist of the Cajon Creek Conservation Bank, Soquel Canyon Mitigation Bank, Colton Dunes Conservation Bank, Lytle Creek Conservation Bank, Black Mountain Conservation Bank, and Angeles Block Delhi Sands Flower-loving Fly Mitigation Bank. These lands are included in the Local Conserved Land inventory described in Section 2.5 and were included as part of the conservation inventory in Section 3.2. The Cajon Creek Conservation Bank has credits for jurisdictional waters, Riversidean alluvial fan sage scrub habitat, and the following special-status species: Santa Ana River woollystar, slender-horned spineflower, San Bernardino kangaroo rat, coastal California gnatcatcher, Parry's spineflower, coastal western whiptail, orange-throated whiptail, Blainville's (coast) horned lizard, coast patch-nosed snake, coastal rosy boa, San Bernardino ringneck snake, coastal cactus wren, California horned lark, ferruginous hawk, Los Angeles pocket mouse, northwestern San Diego pocket mouse, southern grasshopper mouse, San Diego desert woodrat, San Diego black-tailed jackrabbit, and spotted bat. Soquel Canyon Mitigation Bank has credits for jurisdictional waters and habitat and special-status species impacts associated with riparian habitats, oak woodlands, walnut woodlands, grasslands, coastal sage scrub, and chaparral. Colton Dunes Conservation Bank has credits for the Delhi Sands flower-loving fly. Lytle Creek Conservation Bank has credits for Riversidean alluvial fan sage scrub habitat, San Bernardino kangaroo rat, and Santa Ana River woollystar. Black Mountain Conservation Bank has credits for jurisdictional waters of the state, desert tortoise, Mohave ground squirrel, burrowing owl, desert kitfox, American badger, and golden eagle foraging habitat. Angeles Block Mitigation Bank provides credits for Delhi Sands flower-loving fly.

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**Table 2-3
Existing Resource Conservation and Management Planning and
Programs Relevant to the SBC RCIS**

Planning Level	Existing Plan/Program	Description
Regional/Local	Resource Conservation District Planning	Resource conservation planning and implementation conducted by Inland Empire RCD and Mojave Desert RCD. Where these activities are associated with permanent protection of lands through an inventoried conservation easement, those lands are included in the Local Conserved Land inventory described in Section 2.5 and used in the conservation inventory in Section 3.2.
Regional/Local	Santa Ana Watershed Project Authority	Joint Powers Authority classified as a Special District that plans and implements resource management in the Santa Ana River Watershed; Member Agencies include Eastern Municipal Water District, Inland Empire Utilities Agency, Orange County Water District, San Bernardino Valley Municipal Water District, and the Western Municipal Water District
Regional/Local	Flood Control District Planning	The SBCFCD manages fee-owned lands and easement lands throughout the SBC RCIS Area, including portions of the Santa Ana River Watershed, according to the Santa Ana Watershed Stormwater Resource Plan. Lands managed by SBCFCD are described in Section 2.5 and used in the conservation inventory in Section 3.2. The primary functions of SBCFCD lands are to provide flood protection for public safety, water conservation, and construction of storm protection facilities. SBCFCD lands are not available for conservation outside the needs of SBCFCD for mitigation as required for permitting.
Regional/Local	Land Trust Planning	Land acquisition, planning, and management conducted by The Nature Conservancy, Mojave Desert Land Trust, Transition Habitat Conservancy, Wildlands Inc., The Wildlands Conservancy, and Wildlife Heritage Foundation.

Notes: USFWS = U.S. Fish and Wildlife Service; SBS RCIS = San Bernardino County Regional Conservation Investment Strategy; USFS = U.S. Forest Service; NPS = National Park Service; BLM = Bureau of Land Management; DRECP = Desert Renewable Energy Conservation Plan; CDCA = California Desert Conservation Area; DOD = Department of Defense; CDFW = California Department of Fish and Wildlife; CEC = California Energy Commission; RCA = Regional Conservation Assessment; SANBAG = San Bernardino Associated Governments; SCAG = Southern California Association of Governments; TNC = The Nature Conservancy; HCP = Habitat Conservation Plan; NCCP = Natural Community Conservation Plan; MSHCP = Multiple Species Habitat Conservation Plan; RCD = Resource Conservation District; SBCFCD = San Bernardino County Flood Control District.

2.6.1 Upper Santa Ana River Habitat Conservation Plan

The Upper Santa Ana River (SAR) HCP addresses the potential effects of water agency activities on sensitive species and habitats in the Upper SAR watershed. The HCP was developed for 11 water agencies, including the City of Rialto Public Works, East Valley Water District, Inland Empire Utilities Agency, Metropolitan Water District of Southern California, Orange County Water District, Rialto Utility Authority, Riverside Public Utilities, San Bernardino Municipal Water Department, San Bernardino Valley Water Conservation District, West Valley Water District, and Western Municipal Water District of Riverside County. The Upper SAR HCP Area was developed to ensure natural resources could be

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adequately assessed at a regional scale, and includes approximately 862,966 acres located in San Bernardino and Riverside Counties.

The goal of the Upper SAR HCP is to conserve covered species and their habitats, sustain the functionality of natural communities and habitats for covered species, maintain and improve habitat connectivity in the HCP Preserve System, and to actively manage lands to maintain or improve conditions for covered species. There are 20 covered species under the HCP, including 18 covered wildlife and 2 covered plant species. Of the covered species in the Upper SAR HCP, 13 are Focal Species of the SBC RCIS. Covered activities include the construction, infrastructure, development, and operations and maintenance of water conservation facilities, water infrastructure development, flood control, habitat restoration, and solar energy activities. The covered activities are divided into five types: water reuse projects; groundwater recharge, well, and water conveyance infrastructure; solar energy development; routine operations and maintenance; and habitat enhancement, management, and monitoring. To protect, enhance, and restore habitat for covered species, the Upper SAR HCP will conserve and manage nearly 1,350 acres of native habitat in the HCP Preserve System for covered species. A public review draft of this HCP was released in May 2021 but it has not been finalized or approved.

2.6.2 Upper Santa Ana River Wash Habitat Conservation Plan

The Upper SAR Wash HCP (Wash HCP) (ICF 2020) addresses the conservation of five species and their habitat within the Upper SAR Wash Land Management Plan Area associated with impacts from operations and maintenance activities, mining, and transportation improvements. The scope of the Wash HCP covers the San Bernardino Valley Water Conservation District, the City of Redlands, the City of Highland, SBCFCD, Cemex Inc., and Robertson’s Ready-mix. The 4,892-acre plan area is located in southwestern San Bernardino County, California, about 1 mile downstream of the Seven Oaks Dam. The plan area extends from about 6 miles west of Greenspot Road in the City of Highland to Alabama Street in the City of Redlands.

The goal of this HCP is to balance water conservation, aggregate mining, recreation activities, and other public services with the conservation of natural communities and special-status plant and wildlife populations. Species covered by the HCP are the Santa Ana River woollystar (*Eriastrum densifolium* ssp. *sanctorum*), slender-horned spineflower (*Dodecahema leptoceras*), San Bernardino kangaroo rat, coastal California gnatcatcher (*Polioptila californica californica*), and coastal cactus wren (*Campylorhynchus brunneicapillus*). All of these species except the coastal cactus wren are Focal Species of the SBC RCIS. Covered activities include operation and

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maintenance of water resource and flood control facilities, roadway and trail improvements, mining activities, and HCP implementation activities.

The HCP includes objectives to conserve habitats that will sustain populations of the covered species, as well as other special-status species, and to conserve habitat linkages across and to areas outside the plan area. The HCP provides for the conservation of approximately 1,170 acres during phase 1 of the HCP and approximately 488 acres during phase 2 of the HCP.

To maintain, restore, and enhance habitat for covered species, the Wash HCP includes measures to control invasive plants, re-vegetate select areas to enhance native vegetation, control invasive animals and pathogens, and maintain and restore fluvial processes. The HCP has specific objectives for one covered species (slender-horned spineflower) that involve developing an experimental program to address issues unique to maintenance and enhancement of existing populations. See Section 3.5.1 for the consistency evaluation of the SBC RCIS to this approved regional HCP.

2.6.3 Apple Valley Multiple Species Habitat Conservation Plan/Natural Community Conservation Plan

The Apple Valley Multiple Species Habitat Conservation Plan (MSHCP)/Natural Community Conservation Plan (NCCP) that is currently in preparation aims to provide for the conservation of covered species and allow appropriate compatible economic growth and development within the planning area. The 221,180-acre planning area located in southwestern San Bernardino County includes the Town of Apple Valley, its Sphere of Influence, and additional San Bernardino County lands to the north and east. Located in the western Mojave Desert between the City of Victorville on the west, the City of Hesperia and Lucerne Valley to the southwest and southeast, and Barstow to the north, the planning area is a desert environment composed of low mountains, foothills, dry lakes, and alluvial fans.

This MSHCP/NCCP would address nine covered species—desert tortoise (*Gopherus agassizii*), burrowing owl (*Athene cunicularia*), golden eagle (*Aquila chrysaetos*), least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), desert kit fox (*Vulpes macrotis arsipus*), desert bighorn sheep (*Ovis canadensis nelsoni*), and western Joshua tree (*Yucca brevifolia*)—which are all Focal Species under the SBC RCIS. Covered activities under this plan may include agricultural activities and other land uses over which the town and County have control of, and minimization and mitigation activities

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including habitat restoration, actions, and adaptive habitat management and monitoring activities in the planning area.

The planning area will connect conserved lands in the MSHCP/NCCP area to other conserved habitat in the Mojave Desert. The area is strategically located at the intersection of three significant wildlife linkages and will facilitate wildlife movement and gene flow across a wider regional landscape. The MSHCP/NCCP will contain objectives to preserve and enhance conservation areas and habitat linkages. Additionally, the plan will preserve diversity of plant and animal communities, minimize and mitigate take of covered species, and provide an adaptive management and monitoring strategy to assess and respond to changing ecological conditions. An administrative draft of this MSHCP/NCCP has not been released.

2.7 Land Uses and Reasonably Foreseeable Development

Consistent with FGC Section 1852(c)(6), the SBC RCIS was developed in consideration of major water, transportation, and transmission infrastructure facilities; urban development areas; and city, county, and city and county general plan designations that account for reasonably foreseeable development of major infrastructure facilities including renewable energy and housing. Figure 2-8 provides a compiled map of the community development, transportation, energy, and other existing and reasonably foreseeable development in the RCIS Area. Land uses and reasonably foreseeable development, combined with the land ownership, designations, and jurisdiction information presented in Section 2.5, were used to develop the conservation inventory (Section 3.2), conservation goals and objectives (Section 3.3), and conservation actions and priorities (Section 3.4) by identifying the locations where reasonably foreseeable development would likely occur in order to make the SBC RCIS conservation strategy more implementable and achievable.

As illustrated by new legislation and programs, residential development to meet the demand for housing is a priority for the State of California (California Office of Governor 2021) and local governments (County of San Bernardino 2021). SCAG Connect SoCal (SCAG 2020) is a Regional Transportation Plan/Sustainable Communities Strategy for the Southern California region, including San Bernardino County, which identifies the general location of land uses, residential densities and housing need, forecasted regional development patterns, and an associated regional transportation plan. SBCOG/SBCTA provides input for the San Bernardino County region into the SCAG Connect SoCal planning, and this information on land use, housing, and transportation were considered in the development of the SBC RCIS.

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Housing Elements were also considered in identifying the potential reasonably foreseeable residential and associated development relevant to the SBC RCIS. California's Housing Element Law requires that local governments develop a strategic vision and policy guide designed to help address the comprehensive housing needs of each city/county over a forecast period. As a part of the housing element update process, each region throughout California is assigned a number of housing units that they must plan for, otherwise referred to as the Regional Housing Needs Allocation (RHNA). Housing needs are defined by State law and broken down into income levels to meet the needs of households earning varying incomes.

Under the current, adopted SCAG Region 6th Cycle RHNA Allocation Plan (SCAG 2021), San Bernardino County's RHNA allocation of 138,110 units is divided among each city/county in San Bernardino County, representing its "fair share" of the RHNA. Through each city/county's 6th Cycle Housing Element, it must identify sites with adequate capacity at appropriate densities to accommodate its fair share of the RHNA, typically focusing first on high opportunity sites in areas with the least conflicts with environmental resources. While each city/county must identify adequate capacity to accommodate its share of the RHNA, the city/county is not responsible for production of those units. Instead, as the permitting agency, each city/county must commit to a series of programs to create a regulatory environment that is conducive of housing production on identified sites. The SBC RCIS was developed with consideration of this need for housing development in the region. The SBC RCIS is a voluntary, nonregulatory framework that would not prevent or preclude housing development or otherwise change the capacity of the County or cities in the RCIS Area to accommodate its fair share of the RHNA allocation. Further, if future housing development impacts biological resources, the SBC RCIS would provide the tools and action options for developers to more efficiently identify agreeable compensatory mitigation.

Existing and reasonably foreseeable residential, commercial, and industrial development would be anticipated to be concentrated in the 22 incorporated towns and cities, their spheres of influence, and within the community plan areas of the unincorporated County. The cities/towns and their spheres of influence and the community plan areas of the County are shown in Figure 2-8 (PlaceWorks 2019).

Transportation facilities exist throughout the RCIS Area, including freeways, highways, other roadways, and railroads. Reasonably foreseeable transportation activities and development projects in the RCIS Area include operation and maintenance activities associated with existing facilities, planned Federal Transportation Improvement Program projects, planned California Department of Transportation projects, planned railroad

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projects including the Brightline West project (Brightline West 2021; USDOT FRA 2021), and transit identified in the SCAG Connect SoCal (SCAG 2020). Planned California Department of Transportation projects for the period from 2017/2018 through 2026/2027 for the Mojave Desert region are also described in the Advance Mitigation Program Mojave Desert Ecoregion Section Regional Advance Mitigation Needs Assessment and are incorporated here by reference (California Department of Transportation 2020). The transportation network in the RCIS Area is shown in Figure 2-8.

Existing energy infrastructure occurs throughout the RCIS Area. Operation and maintenance activities on existing energy infrastructure is ongoing, and new energy development is foreseeable in the region, particularly in the vicinity of existing generating facilities, substations, and transmission lines as shown in Figure 2-8 based on data from the California Energy Commission. Within unincorporated lands, the County Renewable Energy and Conservation element, as amended, specifies objectives and policies related to the siting of utility-scale renewable energy. On public BLM lands, the Desert Renewable Energy Conservation Plan (DRECP) BLM Land Use Plan Amendment identified 88,000 acres of Development Focus Areas where utility-scale renewable energy (solar, wind, or geothermal) development was suitable and allowable (BLM 2016a, 2016b).

Other existing and reasonably foreseeable development in the RCIS Area includes operations, maintenance, and development of water infrastructure and operations and development of mining and mineral resource exploration and extraction, as shown in Figure 2-8 based on data from the U.S. Geological Survey and BLM.

2.8 Regional Pressures and Stressors

The 2015 California State Wildlife Action Plan includes a standardized set of anthropogenic pressures and stressors on the biological resource conservation elements (CDFW 2015). Pressures are natural or human-induced drivers that could result in changing ecological conditions. Stressors are degraded key ecological attributes that result from the negative impact of a pressure. The pressures and stressors within the RCIS Area are discussed below based on those known for the South Coast and Desert provinces (CDFW 2015) that affect Focal Species and the other conservation elements (i.e., vegetation communities, hydrological processes and features, aeolian processes and features, and habitat connectivity and wildlife movement).

Table 2-4 lists the pressures on each of the SBC RCIS Focal Species and the other conservation elements, including annual/perennial non-timber crops; catastrophic geologic events (e.g., earthquakes, landslides); climate change; commercial and

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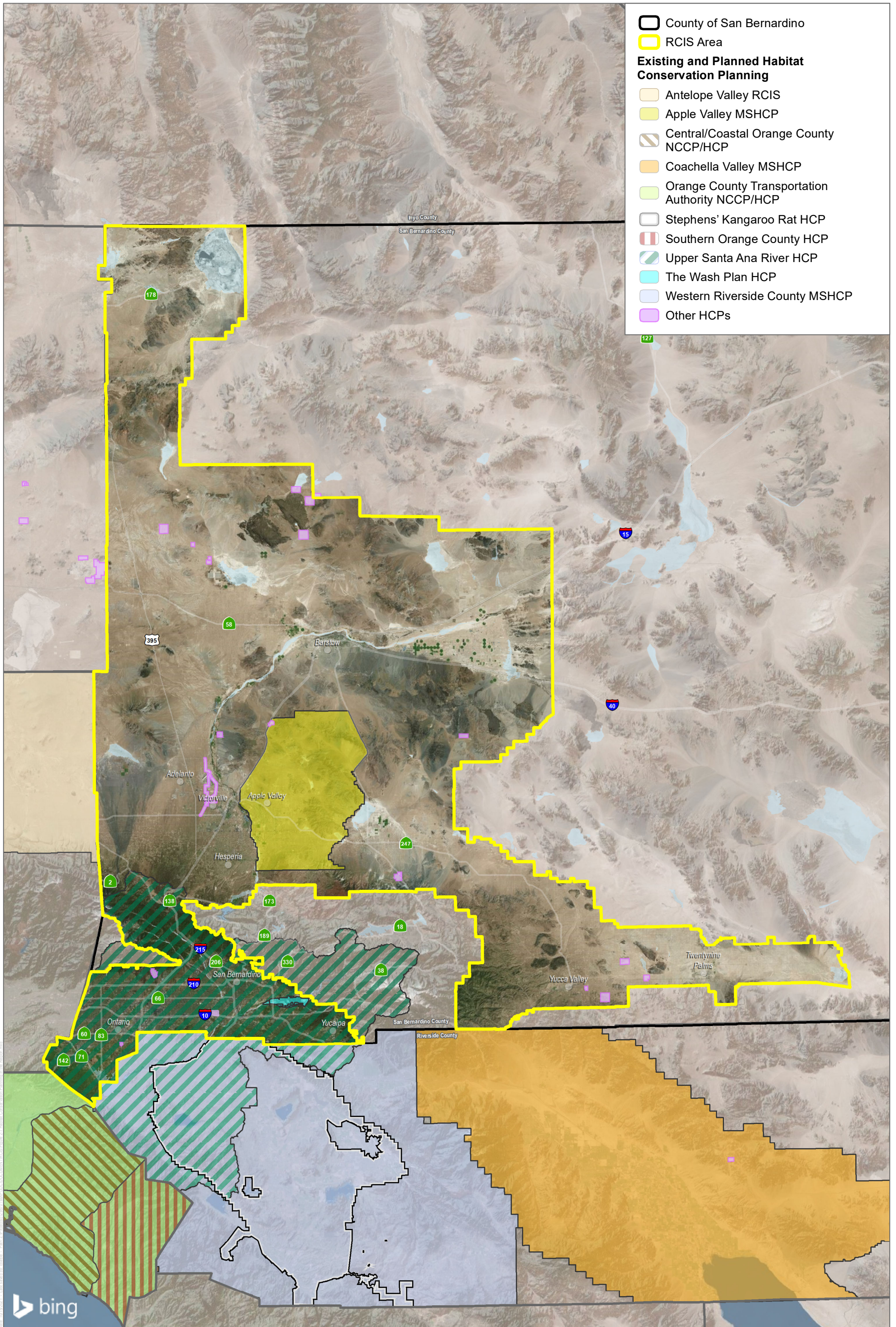
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industrial areas; dams and water management/use; fire and fire suppression; garbage, solid waste, household sewage, urban waste water, and airborne pollutants; housing, urban areas, roads, and railroads; industrial and military effluent; invasive plants and animals; livestock, farming, and ranching; mining and quarrying; military activities; parasites, pathogens, and disease; recreational activities; and utility and service lines.

These pressures and stressors can directly impact Focal Species and their habitats as summarized in the Focal Species summaries (Appendix C) and Climate Change Vulnerability Assessment (Appendix E). Additionally, as summarized in the Focal Species summaries (Appendix C) and Climate Change Vulnerability Assessment (Appendix E), these pressures and stressors can affect the quality and function of vegetation communities, degrade and impair the ecological function of hydrological processes and features and Aeolian processes and features, and reduce the capacity of habitat linkages to function for habitat connectivity and wildlife movement.

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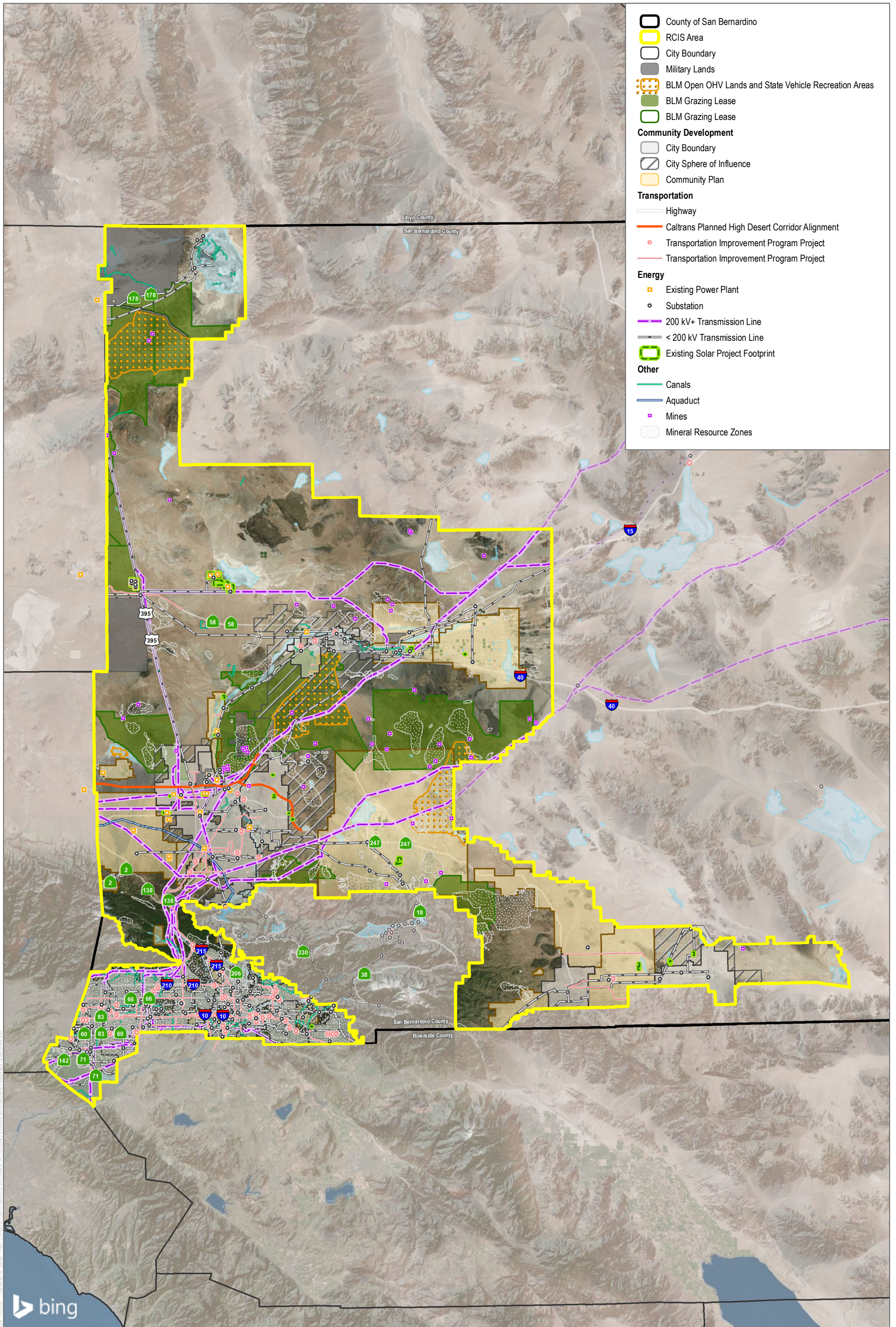
SOURCE: Bing Maps 2018; County of Orange 2018; San Bernardino County 2018

FIGURE 2-7

Habitat Conservation Planning in the Region

San Bernardino County RCIS

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SOURCE: Bing Maps 2018; San Bernardino County 2018; CEC 2018; BLM 2018

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**Table 2-4
Pressures on Conservation Elements in the RCIS Area**

Conservation Element Type	Conservation Element	Annual / Perennial Non-Timber Crops	Catastrophic Geologic Events	Climate Change	Commercial And Industrial Areas	Dams and Water Management / Use	Fire and Fire Suppression	Garbage, Solid Waste, Household Sewage Urban Waste Water, and Airborne Pollutants	Housing, Urban Areas, Roads, and Railroads	Industrial and Military Effluents	Invasive Plants/Animals	Livestock, Farming, and Ranching	Mining and Quarrying	Military Activities	Parasites / Pathogens / Disease	Recreational Activities	Utility and Service Lines
Focal Species	Arroyo toad	X	X	X	—	X	—	X	X	—	X	—	X	—	X	X	—
Focal Species	Blainville's (coast) horned lizard	X	—	X	—	—	X	—	X	—	X	X	X	—	—	X	X
Focal Species	California red-legged frog	—	X	X	—	X	—	X	X	—	X	—	X	—	X	X	—
Focal Species	Desert tortoise	X	—	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Focal Species	Mojave fringe-toed lizard	X	—	X	—	—	—	—	X	—	X	X	X	X	—	X	X
Focal Species	San Bernardino ringneck snake	X	—	X	—	X	X	X	X	—	X	X	X	—	—	X	X
Focal Species	Western pond turtle	—	X	X	—	X	—	X	X	—	X	—	X	—	X	X	—
Focal Species	Western spadefoot	X	X	X	—	X	X	X	X	—	X	—	X	—	X	X	—
Focal Species	Bell's sage sparrow	X	—	—	—	—	X	—	X	—	—	—	—	—	—	—	—
Focal Species	Burrowing owl	X	—	—	X	—	—	—	X	—	—	—	—	X	—	—	X
Focal Species	Coastal California gnatcatcher	X	—	—	—	—	X	—	X	—	X	—	X	—	—	—	—
Focal Species	Golden eagle	X	—	—	—	—	—	—	X	—	—	—	—	X	—	—	X
Focal Species	LeConte's thrasher	X	—	X	X	—	X	—	X	—	X	X	X	X	—	—	X
Focal Species	Least Bell's vireo	—	X	X	—	X	X	X	X	X	X	X	X	X	X	X	—
Focal Species	Southwestern willow flycatcher	—	X	X	—	X	X	X	X	X	X	X	X	X	—	X	—
Focal Species	Swainson's hawk	X	—	X	—	—	X	—	X	—	—	X	X	X	—	—	X
Focal Species	Tricolored blackbird	X	—	—	—	—	—	—	X	X	X	X	X	X	—	—	X
Focal Species	Western yellow-billed cuckoo	—	X	X	—	X	—	X	X	X	X	X	X	X	—	X	—
Focal Species	White-tailed kite	X	—	—	—	—	X	—	X	—	—	X	—	—	—	—	—
Focal Species	Arroyo chub	—	X	—	—	X	—	X	X	—	X	—	X	—	—	X	—
Focal Species	Mohave tui chub	—	X	X	—	X	—	—	X	—	X	—	—	X	—	—	—
Focal Species	Santa Ana speckled dace	—	X	X	—	X	—	X	X	—	X	—	X	—	—	X	—
Focal Species	Santa Ana sucker	—	X	X	—	X	—	X	X	—	X	—	X	—	—	X	—
Focal Species	Delhi Sands flower-loving fly	—	—	X	X	—	—	X	X	—	X	—	—	—	—	X	—
Focal Species	Victorville shoulderband	—	—	X	—	—	—	—	X	X	X	—	X	—	—	—	—
Focal Species	American badger	X	—	—	X	—	X	—	X	—	—	X	X	X	—	—	X
Focal Species	Desert bighorn sheep	X	—	X	—	—	X	—	X	—	—	X	X	X	X	X	X
Focal Species	Desert kit fox	X	—	—	X	—	—	—	X	—	X	X	X	X	X	X	X
Focal Species	Los Angeles pocket mouse	X	—	X	—	X	X	—	X	—	—	—	X	—	—	X	—
Focal Species	Mohave ground squirrel	X	—	X	X	X	X	X	X	X	X	X	X	X	—	X	X
Focal Species	Mojave River vole	—	—	X	—	X	X	—	X	X	X	X	—	—	—	X	—

**Table 2-4
Pressures on Conservation Elements in the RCIS Area**

Conservation Element Type	Conservation Element	Annual / Perennial Non-Timber Crops	Catastrophic Geologic Events	Climate Change	Commercial And Industrial Areas	Dams and Water Management / Use	Fire and Fire Suppression	Garbage, Solid Waste, Household Sewage, Urban Waste Water, and Airborne Pollutants	Housing, Urban Areas, Roads, and Railroads	Industrial and Military Effluents	Invasive Plants/Animals	Livestock, Farming, and Ranching	Mining and Quarrying	Military Activities	Parasites / Pathogens / Disease	Recreational Activities	Utility and Service Lines
Focal Species	Mountain lion (Southern California/Central Coast Evolutionary Significant Unit)	X	—	X	—	—	X	—	X	—	—	X	—	—	—	X	—
Focal Species	Pallid bat	X	—	—	X	—	—	—	X	—	—	X	—	X	—	X	X
Focal Species	San Bernardino kangaroo rat	X	—	X	X	X	X	—	X	X	X	—	X	—	—	X	—
Focal Species	Townsend's big-eared bat	X	—	—	X	—	—	—	X	—	—	X	X	X	—	—	X
Focal Species	Alkali mariposa-lily	X	—	X	X	X	—	X	X	X	X	X	X	X	—	X	X
Focal Species	Barstow woolly sunflower	X	—	X	X	—	—	X	X	—	X	X	—	X	—	X	X
Focal Species	Desert cymopterus	X	—	X	X	—	—	X	X	—	—	X	—	X	—	X	X
Focal Species	Gambel's watercress	—	X	X	—	—	—	X	X	—	X	—	—	—	—	—	—
Focal Species	Intermediate mariposa-lily	X	—	X	—	—	—	X	X	—	—	—	—	—	—	—	—
Focal Species	Lane Mountain milk-vetch	X	—	X	—	—	—	X	X	—	X	X	—	X	—	X	X
Focal Species	Marsh sandwort	—	X	X	—	—	—	X	X	—	—	—	—	—	—	—	—
Focal Species	Mojave monkeyflower	X	—	X	—	—	—	X	X	—	—	X	X	X	—	X	X
Focal Species	Parish's daisy	X	—	X	X	—	X	X	X	—	—	—	X	—	—	X	X
Focal Species	Parry's spineflower	X	—	X	—	—	—	X	X	—	—	—	—	—	—	—	—
Focal Species	Plummer's mariposa-lily	X	—	X	—	—	—	X	X	—	—	—	—	—	—	—	—
Focal Species	San Bernardino aster	—	X	X	—	—	—	X	X	—	—	—	—	—	—	—	—
Focal Species	Santa Ana River woollystar	X	—	X	—	X	X	X	X	—	X	—	—	—	—	X	—
Focal Species	Short-joint beavertail	X	—	X	—	—	X	X	X	—	X	—	X	—	—	X	X
Focal Species	Slender-horned spineflower	X	—	X	—	X	X	X	X	—	X	—	—	—	—	X	—
Focal Species	Western Joshua tree	X	—	X	X	—	X	X	X	—	X	X	X	X	X	X	X
Focal Species	White-bracted spineflower	X	—	X	—	—	—	X	X	—	—	—	—	—	—	—	X
Other Conservation Elements	Vegetation communities, including rare and high-priority natural communities	X	X	X	X	X	X	X	X	X	X	X	X	X	—	X	X
Other Conservation Elements	Hydrological processes and features	X	X	X	X	X	—	X	X	X	X	X	X	X	—	X	X
Other Conservation Elements	Aeolian processes and features	X	—	—	X	X	—	—	X	—	X	X	X	X	—	X	X
Other Conservation Elements	Habitat connectivity and wildlife movement	X	—	X	X	X	X	—	X	—	X	X	X	X	—	X	X

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Urban and Rural Development

San Bernardino County has exhibited a growth rate of 25.1% between the years 2000 and 2016 (SCAG 2017) and the region is one of the fastest growing in the United States (County of San Bernardino 2005). Urban, rural, and agricultural development can result in direct habitat loss, degradation of adjacent habitat, fragmentation, and the overall decrease in habitat quality of residual natural lands (CDFW 2015; Randall et al. 2010). Beyond the direct stressor of loss of natural lands to development, indirect effects of development could include increased human access to natural lands, further presence of non-native plant and wildlife species into adjacent natural lands, and increased light pollution (CDFW 2015; Webb et al. 2009).

Transportation Corridors and Roadways

The urban and suburban metropolitan areas and urban/agricultural areas with the RCIS Area are linked by highways, utility corridors, and railroads, which facilitate secondary roads and other vehicular routes to serve as these linkages. Major transportation corridors in the Mojave Desert include Interstate (I) 15 running southwest/northeast; I-40, Highway 58, and Highway 247 running east/west; and Highway 395 and Highway 127 running north/south. In the Valley region, I-10, State Route 210, and State Route 60 are the major transportation corridors running east/west. Running north/south is I-215, continuation of I-15, and State Route 18, which extends into the Mountain region. Railroad corridors in the RCIS include systems operated by Metrolink, BNSF, and Union Pacific. Transportation corridors and roadways create fragmented habitats and can restrict wildlife movement, lead to direct mortality due to collisions, and lead to direct habitat loss (CDFW 2015).

Water Conveyance

Across California, water needs associated with development and agriculture lead to the management and altering of the state's limited water resources (CDFW 2015). Water management includes groundwater withdrawals; irrigation systems; water diversion through dams, canals, and aqueducts; and channelization associated with stormwater infrastructure (CDFW 2015). Water diversion, stormwater conveyances, and groundwater extraction can alter naturally occurring hydrologic processes that could reduce abundance of native riparian species, reduce the diversity and abundance of riparian-dependent wildlife, alter sediment deposition patterns, alter naturally occurring water filtration, increase soil salinity, increase the risk of flooding and erosion, increase frequency and magnitude of wildfire, act as barriers to wildlife movement, and reduce the forage availability and water access for wildlife and livestock (CDFW 2015; Dudley 2009).

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Wetland, riparian, and aquatic habitats are known to support a high number of special-status species and overall rich and diverse biological communities (CDFW 2015).

Utilities and Other Infrastructure

As the demand for accessible and reliable utilities continues to grow, additional development of energy generation facilities and associated infrastructure has the potential to cause further habitat fragmentation, disturbance, and habitat loss (CDFW 2015). California has responded to the need to reduce greenhouse gas emissions and plans to increase development of renewable sources such as wind, solar, hydroelectric, biomass, and geothermal (CDFW 2015). Most existing and sited utility-scale renewable energy farms are located in undeveloped lands primarily in the desert region of California; these energy farms require further development of access roads and transmission infrastructure, increasing the risk of damage to natural lands (CDFW 2015). Energy generation facilities and associated infrastructure can further cause dust and dust suppression (e.g., chemical suppressants); noise; light pollution; altered microclimates, topography, and drainage; pollution and hazardous materials; water consumption; soil disruption; increased fire risk; increased public access; direct wildlife collision; and increased predation on sensitive species (76 FR 62214–62258; BLM and DOE 2010; CDFW 2015; Cryan 2011; Hunt et al. 1998; Lovich and Ennen 2011; Randall et al. 2010; Webb et al. 2009).

Grazing

California Farmland Mapping and Monitoring Program data show that a majority of undeveloped land within San Bernardino County is suitable for livestock grazing (California Department of Conservation 2016). In the Mojave Desert, livestock grazing occurs both on privately owned land and on several large livestock allotments located on BLM and USFS land (Randall et al. 2010). Grazing can cause decreases in water quality, streambank erosion, modified channel morphology, disturbance to riparian vegetation and wildlife, soil disturbance and upland erosion, upland and riparian vegetation trampling, and reduction of native vegetative cover (Belsky et al. 1999; Randall et al. 2010; Webb et al. 2009). However, thoughtfully managed grazing can be beneficial as a conservation tool, and collaboration between land managers and ranchers can lead to successful mutualistic relationships between human use and the preservation/conservation of habitat (CDFW 2015). In certain circumstances, permanent retirement/relinquishment of grazing leases can reduce the pressures and stressors on resources and serve as a valuable action.

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Mining

Mining is a key factor in the San Bernardino County economy (County of San Bernardino 2016), with active mines in the Valley, Mountain, and Desert regions. Resources that have been or are currently being extracted include borates, tungsten, talc, copper, zinc, coal, calcite, lead, strontium, uranium, precious metals (e.g., gold and silver), gem-quality non-metals, and building materials (e.g., sand, gypsum, decorative rock, cinders, and gravel) (Randall et al. 2010). Mining can cause surface disturbance, which can lead to damage of soils and biological crusts; this in turn can increase erosion, which could alter both air and water quality (Randall et al. 2010). Of the various forms of mining, open pit and strip mining have been shown to be the most detrimental to nearby habitats (Randall et al. 2010). With mining also comes access roads, which can result in further disturbances such as fragmentation and invasive species encroachment (Randall et al. 2010). Further, mining operations often require large amounts of water to function, and gravel and sand mining in particular can alter natural hydrology patterns, since these forms of mining occur in alluvial fans, mountain foothills, and desert washes (Randall et al. 2010).

Military Uses

Military lands cover approximately 233,400 acres of the RCIS Area, with the majority occurring within the Desert region. The Desert region supports several military installations and training areas, including Naval Air Weapons Station China Lake, National Training Center Fort Irwin, Edwards Air Force Base, Marine Corps Logistics Base Barstow, and Marine Corps Air Ground Combat Center Twentynine Palms (OPR 2006). Military training and testing activities include ground troop activities, tracked vehicle maneuvers, bombing strikes, and other various weapons testing and training (CDFW 2015). In some areas, disturbance caused by military maneuvers conducted almost 70 years ago is still visible in the form of soil erosion, surface scarring, and vegetation removal (Pavlik 2008). Relocation of desert tortoise (*Gopherus agassizii*) associated with the expansion of Fort Irwin resulted in high desert tortoise mortality and a decrease in tortoise population numbers as compared to adjacent monitoring areas (Pavlik 2008; Randall et al. 2010). Conversely, military installations provide indirect benefits to conservation goals by restricting public access and providing a buffer against encroaching developments (Randall et al. 2010).

Recreational Uses

The varied landscapes of San Bernardino County are used for a wide variety of recreational uses, including hiking, biking, camping, fishing, hunting, winter sports, off-highway vehicles, and rockhounding. Recreational uses have the potential to cause

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disturbance within the natural lands on which they occur (CDFW 2015). Potential impacts include soil disturbance, contamination of waterways and habitat due to anthropogenic waste, and disruption of wildlife foraging and breeding due to human presence (CDFW 2015). Off-highway vehicle use can cause significant surface disruption (Webb et al. 2009; Randall et al. 2010), which in turn can lead to greater wind and water erosion and facilitate the invasion of non-native plant species. Off-highway vehicle use can also alter hydrology and water runoff patterns, disrupt wildlife activities, and contribute to habitat loss and fragmentation (Brooks and Lair 2009; Randall et al. 2010).

Non-Native Species

Non-native plant species occur throughout all vegetation communities in San Bernardino County, and anthropogenic activities can spread and promote the invasion of these exotic, invasive species that often outcompete native plant species. Similarly, non-native animal species can degrade species habitat and disrupt ecological systems through predation, out-competing natives for resources, spreading diseases, and even changing the natural processes of the land (CDFW 2015). Further, it is anticipated that invasion by non-native species, especially grasses, will be compounded with climate change (Sandel and Dangermond 2011).

Climate Change

Climate change is affecting ecosystems in California and should be considered in conservation and management decisions that influence the state's natural resources (CDFW 2015). Effects on natural lands stemming from climate change include "changes in the duration, frequency, or severity of extreme events, such as wildfire, storms, floods, and extreme temperatures" (CDFW 2015). Species and sensitive habitats that have restricted adaptive capacity to these rather rapid changes are more vulnerable to the adverse effects associated with climate change. Climate change extremes compound the pressures and stressors discussed previously and make previous observed outcomes more uncertain in the future (CDFW 2015). See Appendix E for the climate change vulnerability assessment prepared for the SBC RCIS, which details the vulnerabilities of the Focal Species and vegetation communities to climate change.

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3 CONSERVATION STRATEGY

The conservation strategy contains the central components of the SBC RCIS and was developed consistent with CDFW RCIS Guidelines and FGC Section 1852(c). The conservation strategy includes a description of the conservation elements (Section 3.1), which are the landscape processes and features, vegetation communities, and Focal Species for which the strategy was developed. The conservation inventory in Section 3.2 evaluates the level of existing protection and conservation for the conservation elements; this analysis was used to inform development of the conservation goals and objectives provided in Section 3.3. Section 3.4 identifies and describes the conservation actions and priorities of the RCIS Area. The implementation framework for the SBC RCIS conservation strategy is provided in Chapter 4. The following provides a summary of the approach to developing the SBC RCIS conservation strategy.

Approach to Developing the Conservation Strategy

The overall intent of the SBC RCIS conservation strategy is to establish a framework that structures information on conservation elements and priorities to support implementation of coordinated conservation and mitigation actions across the RCIS Area. The SBC RCIS conservation strategy is intended to be consistent with, and in fact complement and leverage, the wide array of existing resource conservation and management programs, planning, and designations in federal, state, and local jurisdictions of the RCIS Area (see Section 2.6). As a voluntary and non-binding document decoupled from regulatory permitting processes (see Section 1.3), the SBC RCIS conservation strategy is intended to provide direction on conservation priorities and actions that may be implemented by entities seeking to make conservation investments or fulfill mitigation obligations.

The SBC RCIS conservation strategy was developed following a systematic process (Margules and Pressey 2000) of compiling biodiversity information for the planning area, identifying conservation targets, reviewing existing conservation areas, and selecting RCIS actions and priorities. To develop a conservation strategy of this nature for a planning area of this size and complexity, the conservation strategy development followed an organize, synthesize, and convey approach.

- **Organize:** Beginning in 2014 with the initiation of the Countywide Habitat Preservation/Conservation Framework Study (Appendix F), a reference library of plans, studies, research papers, and mapping was compiled, maintained, and used to develop the conservation strategy. See Appendix F for the 2015 Countywide Habitat Preservation/Conservation Framework Study. A GIS geodatabase for the

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project was also developed to house all digital mapping data for the SBC RCIS. This information and data were assembled from SBCOG, County, SCAG, local municipalities, local districts, CDFW, USFWS, other resource agencies, researchers, and other public sources. Information and data used to describe the landscape context and setting are cited in Chapter 2. Information and data used to describe the landscape processes and features, vegetation communities, and Focal Species are cited in Section 3.1. Hundreds of plans, studies, papers, and data layers have been organized to support the SBC RCIS.

- **Synthesize:** Integrating and deriving meaning from the vast amounts of information available for the RCIS was a key step in developing the SBC RCIS conservation strategy. The Plan Base and Local Conserved Land layers are composite GIS coverages used to synthesize and describe land ownership, designations, jurisdictions, and protected status across the RCIS Area. Key information about the conservation elements has been synthesized in the description of these resources in Section 3.1, vegetation communities (Appendix A), the Focal Species list evaluations (Appendix B), and the Focal Species summaries (Appendix C). Key data layer descriptions are provided in Appendix D. A Climate Change Vulnerability Assessment was developed and is provided in Appendix E. A synthesis of existing conservation and conservation is provided in Section 3.2, and conservation objectives for the conservation elements, which synthesize information into priority areas for conservation, are provided in Section 3.3.
- **Convey:** Expressing the conservation strategy in a consumable way that is easily understood can streamline implementation of conservation and mitigation actions. Section 3.4 provides the toolbox of actions and prioritization factors for optimizing conservation outcomes. A framework for how these actions and priorities would be implemented is outlined in Chapter 4.

3.1 Conservation Elements

The following describes the conservation elements for the SBC RCIS. A conservation element is defined as “An element that is identified and analyzed in an RCIS that will benefit from conservation actions and habitat enhancement actions set forth in the RCIS.” (CDFW 2018). For the purposes of the SBC RCIS, the conservation elements are organized into landscape processes and features, vegetation communities, and Focal Species.

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Conservation elements include 52 Focal Species: 3 amphibians, 5 reptiles, 4 fish, 2 invertebrates, 11 birds, 10 mammals, and 17 plants (Section 3.1.3). The process for selecting the Focal species is described in Section 3.1.3.1.

Other conservation elements are also defined as including “major and unique natural communities, biodiversity, habitat connectivity, ecosystem functions, and water resources” (CDFW 2018). The other conservation elements of the SBC RCIS were identified through stakeholder input, direction from the Steering Committee, and from existing literature and available data for the RCIS Area. Other conservation elements include the vegetation communities, including the rare or other high-priority natural communities within them, aggregated into habitat groups as described in Section 3.1.2. Additionally, other conservation elements include the important landscape processes and features in the RCIS Area, including the hydrological processes and features, aeolian processes and features, and habitat connectivity and wildlife movement (Section 3.1.1).

For the primary purpose of organizing and conveying conservation element information in the SBC RCIS conservation strategy, habitat groups were established. Habitat groups are logical assemblages of conservation elements that are addressed by a conservation strategy. Habitat groups provide a straightforward way of aggregating information on vegetation communities, Focal Species, and the associated landscape processes throughout the SBC RCIS (Table 3-1).

The Focal Species were selected based on the approach described in Section 3.1.3 to include those species that best represent the important landscape features, ecological processes, and habitats of the RCIS Area. Therefore, the Focal Species assigned to each habitat group are intended to be representative of those habitats, and a Focal Species may be representative of more than one habitat group. Spatially, the habitat groups can be mapped based on the mapping of the vegetation communities that comprise each group; however, the mapping of each habitat group was not used to map the distribution of the Focal Species. As described in Section 3.1.3, Focal Species–specific habitat areas have been developed for each species to map their potential distribution in the RCIS Area.

Table 3-1
Habitat Groups for the Focal Species

Habitat Group	General Vegetation Communities	Focal Species	
Desert Scrub	Sonoran and Mojavean desert scrub Alkali scrub Barren	desert tortoise burrowing owl golden eagle LeConte’s thrasher	Townsend’s big-eared bat alkali mariposa-lily Barstow woolly sunflower desert cymopterus

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**Table 3-1
Habitat Groups for the Focal Species**

Habitat Group	General Vegetation Communities	Focal Species	
		American badger desert bighorn sheep desert kit fox Mohave ground squirrel pallid bat	western Joshua tree Mojave monkeyflower Lane Mountain milk-vetch Parish's daisy
Dune and Playa	Desert dunes Playas	Mojave fringe-toed lizard Delhi Sands flower-loving fly	pallid bat Barstow woolly sunflower
Grassland	Native grasslands Non-native grasslands	Blainville's (coast) horned lizard San Bernardino ringneck snake western spadefoot burrowing owl golden eagle Swainson's hawk tricolored blackbird	white-tailed kite Delhi Sands flower-loving fly American badger mountain lion pallid bat intermediate mariposa-lily Plummer's mariposa-lily Parry's spineflower
Riparian and Wetland	Riparian Riparian and desert wash Wetlands and waters	arroyo toad California red-legged frog western pond turtle least Bell's vireo southwestern willow flycatcher Swainson's hawk tricolored blackbird white-tailed kite yellow-billed cuckoo Victorville shoulderband arroyo chub	Mohave tui chub Santa Ana sucker Santa Ana speckled dace Mojave River vole mountain lion pallid bat Townsend's big-eared bat alkali mariposa-lily Gambel's watercress marsh sandwort San Bernardino aster
Riversidean Alluvial Fan Sage Scrub	Riversidean alluvial fan sage scrub	Blainville's (coast) horned lizard San Bernardino ringneck snake western spadefoot Bell's sage sparrow burrowing owl coastal California gnatcatcher	golden eagle white-tailed kite Los Angeles pocket mouse mountain lion San Bernardino kangaroo rat Santa Ana River woollystar slender-horned spineflower white-bracted spineflower
Transitional Scrub, Chaparral, and Woodland	Chaparral Coastal scrub Forest and woodlands Great basin scrub Joshua tree woodland Juniper woodlands	Blainville's (coast) horned lizard San Bernardino ringneck snake western spadefoot Bell's sage sparrow burrowing owl coastal California gnatcatcher	pallid bat desert cymopterus intermediate mariposa-lily western Joshua tree Lane Mountain milk-vetch Mojave monkeyflower Parish's daisy Parry's spineflower

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**Table 3-1
Habitat Groups for the Focal Species**

Habitat Group	General Vegetation Communities	Focal Species	
		golden eagle LeConte's thrasher Swainson's hawk white-tailed kite American badger desert bighorn sheep mountain lion	Plummer's mariposa-lily San Bernardino aster short-joint beavertail white-bracted spineflower
Developed and Agriculture	Agriculture Barren Developed and disturbed areas Eucalyptus naturalized forest	burrowing owl tricolored blackbird Swainson's hawk	mountain lion pallid bat

Note: Individual Focal Species may be members of more than one habitat group.

3.1.1 Landscape Processes and Features

Key landscape processes and features that maintain habitat areas for Focal Species in the RCIS Area are described below.

Hydrological Processes and Features

The riparian, wetland, and Riversidean alluvial fan sage scrub habitat groups are supported by hydrologic features that maintain the aquatic and terrestrial habitat quality for Focal Species. Section 2.4 provides the hydrology context and setting, including a discussion of important rivers and creeks, alluvial fan areas and terraces, flood channel and reservoirs, dry lakes, seep/springs, and other important features supported by these processes. Pressures and stressors on hydrological processes and features in the RCIS Area are described in Section 2.8 and in the Focal Species summaries (Appendix C).

Aeolian Processes and Features

In addition to hydrologic processes, aeolian (wind-driven) processes are a strong influence on the landforms, particularly in the Desert region. Dune and playa habitats and features are created and maintained by these processes. Section 2.3 provides the landscape context and setting related to aeolian processes, include a description of important sand transport corridors and deposition areas (e.g., dunes, sheets, hummocks). Pressures and stressors on aeolian processes and features in the RCIS Area are described in Section 2.8 and in the Focal Species summaries (Appendix C).

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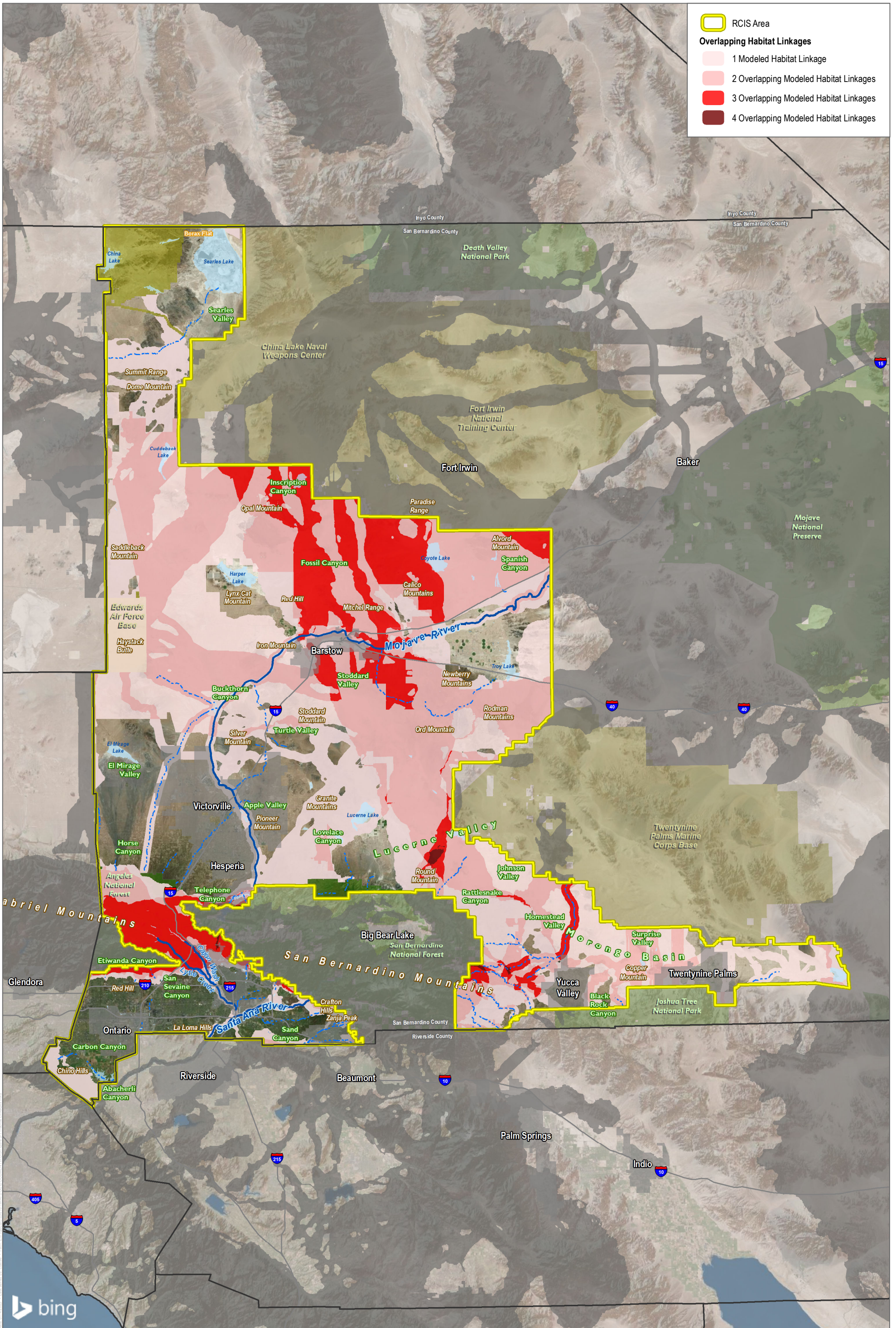
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Habitat Connectivity and Wildlife Movement

A well-accepted principle of conservation biology is that interconnected blocks of habitat are better than isolated habitat blocks. Terrestrial wildlife species typically occupy habitat patches most favorable for them within a landscape matrix, and they may move between favorable habitat patches through less favorable areas. These wildlife movement areas between larger habitat patches are generally referred to as habitat linkages or movement corridors. Movement ecology is species- and scale-specific and often includes short-term individual movements, such as foraging within an organism's home range; long-term dispersal, or one-time emigration and immigration events between disparate populations; and seasonal or periodic migration. Corridors and habitat linkages can allow for long- or short-term movements, dispersal, and migration depending on the life history requirements and ability of a particular species to travel through a landscape. Locations that serve as corridors or habitat linkages for some species may serve as core habitat for other species.

Riparian and wetland habitats typically associated with rivers, creeks, and other drainages form linkages that provide important habitat connectivity and wildlife movement functions. In the Desert region, ephemeral watercourses lacking riparian or wetland vegetation also provide important linkages for terrestrial species. Additionally, regional habitat connectivity modeling has been conducted that provides insights into least-cost pathways (i.e., pathways of least resistance for wildlife movement) for the movement of terrestrial wildlife between core areas. Figure 3-1 depicts a composite habitat linkage layer developed from the multiple regional habitat connectivity modeling efforts⁴ done for San Bernardino County, which shows where one or more habitat connectivity models have identified habitat linkages. The foothills of the Valley region are identified as important for wildlife movement based on these habitat connectivity models. In the Valley region, the Santa Ana River and its tributaries, Lytle Creek, Cajon Wash, Chino Hills, and the foothill areas are known to provide habitat linkages. The entire Mountain region surrounding Cajon Pass in the RCIS Area provides habitat linkage, and I-15 in the Cajon Pass area has been identified as a wildlife movement barrier by CDFW (CDFW 2020a).

⁴ Climate Resilient Connectivity for the South Coast Ecoregion of California (Jennings et al. 2019), California Essential Habitat Connectivity Project (Spencer et al. 2010), South Coast Wildlands Desert Linkage Network (Penrod et al. 2012), South Coast Wildlands Joshua Tree Twenty Nine Palms Wildlife Corridors (Penrod et al. 2008), South Coast Wildlands Missing Linkages Wildlife Corridors (Beier et al. 2006), Desert Tortoise Conservation Areas and Linkages (Averill-Murray et al. 2013), and Conservation Biology Institute West Mojave ecoregion connectivity modeling for large and small species (CBI 2017).



SOURCE: Bing Maps 2018; San Bernardino County 2018; Beier et al. 2006, Penrod et al. 2008, Spencer et al. 2010, Penrod et al. 2012, Averill-Murray et al. 2013, CBI 2017, Jennings et al. 2019



FIGURE 3-1

Habitat Linkages

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Figure 3-1 illustrates that there are numerous pathways connecting core habitat areas of the Desert region with overlapping pathway potential indicating an area's importance for wildlife movement, including the Mojave River corridor, the Granite Mountains linkage in the Lucerne Valley, Johnson Valley, Stoddard Valley, the Ord-Rodman area, Morongo Basin, and much of the northern Desert region within the RCIS Area. Pressures and stressors on habitat connectivity and wildlife movement in the RCIS Area are described in Section 2.8 and in the Focal Species summaries (Appendix C). Additionally, the Greater I-10 Linkage Implementation Workshop Report (Penrod et al. 2021) uses some of the same data for identifying habitat linkages as is used in Figure 3-1 and provides details on wildlife habitat linkage needs, opportunities, and threats for planning RCIS actions (Section 3.4.1) related to wildlife movement in the Valley, Mountain, and Desert regions within the RCIS Area.

Other Important Landscape Features

Other important landscape features in the RCIS Area include the following:

- San Bernardino Mountain foothills: These areas support important habitat for Focal Species, provide important connectivity to the Mountain region, and occur on an elevational gradient that can provide climate refugia and allow for species adaptation to changing climate conditions.
- Valley region hills: the Chino Hills, Jurupa Hills, and Crafton Hills are areas that provide Focal Species habitat, habitat connectivity, and elevational gradients that can allow for species adaptation to changing climate conditions.
- Other desert mountain ranges: Other mountain ranges in the West Desert region, for example the Granite Mountains south of Barstow, provide important habitat for Focal Species (e.g., golden eagle [*Aquila chrysaetos*]) and are also along elevational gradients that can provide climate refugia and allow for species adaptive to changing climate conditions.
- Working lands: Working lands generally refers to land uses associated with farming or ranching that typically includes a mixture of agricultural habitats, riparian/wetland habitats, and/or grasslands that can be important for Focal Species. Important working lands (i.e., working lands with the potential to support Focal Species) in the RCIS Area are located in the Prado Basin and east valley areas like Redlands, Mentone, and Yucaipa. Important working lands in the Desert region are located in El Mirage Valley and Newberry Springs/lower Mojave River Valley.
- Delhi Sands formations: Remaining habitat areas for the Delhi Sands flower-loving fly.

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3.1.2 Vegetation Communities

Vegetation communities are described by a classification scheme based on the plant species growing together with characteristically uniform structures and habitats, consistent species compositions, and recurrence across the landscape (Jennings et al. 2009). A hierarchical, seamless National Vegetation Classification Standard–based vegetation community dataset was developed for San Bernardino County from multiple sources⁵ and used for the SBC RCIS, as well as for the County of San Bernardino Countywide Plan (County of San Bernardino 2019).

Consistent with RCIS Guidelines related to the use of standard vegetation classifications, the SBC RCIS vegetation community dataset was developed by using available data consistent with CDFW’s natural community list (CDFG 2010), based on the Manual of California Vegetation, Second Edition (Sawyer et al. 2009) developed by CDFW’s Vegetation Classification and Mapping Program (VegCAMP). The majority of the RCIS Area (i.e., the entire desert region) is covered by data developed by VegCAMP consistent with standard vegetation classifications. According to VegCAMP, the Mountain and Valley regions of the RCIS Area are considered unclassified areas of the state for which no datasets were available using the current standards (CDFW 2022). To address this, best available data for the Mountain and Valley regions was “crosswalked” with the Manual of California Vegetation. See Appendix A for a detailed listing of the alliance associated with each vegetation community in the RCIS Area.

Vegetation communities are described below at two levels: at the general vegetation community level and the mid-level vegetation type level. Appendix A provides the corresponding vegetation alliance for each mid-level vegetation type. As described above in Section 3.1.1, Landscape Processes and Features, these vegetation communities may be aggregated into habitat groups. Fine-scale alliance-level vegetation information was not available for the entire SBC RCIS; however, alliance-level information was used in the development of the SBC RCIS where it was available. Vegetation communities that potentially contain sensitive alliances⁶ are noted in the discussion of each vegetation community below. Table 3-2a provides a summary of the 7 habitat groups and 17 general vegetation communities by region in the RCIS Area, and Table 3-2b provides a summary of general vegetation communities and mid-level vegetation types by habitat group in the RCIS Area. Figure 3-2 shows the habitat groups and general vegetation communities in the

⁵ CDFW Alliance-level mapping of the Desert Renewable Energy Conservation Plan (AIS 2013; VegCAMP et al. 2013), Classification and Assessment with Landsat of Visible Ecological Groupings (USFS 2014), and SANBAG existing land-use layer (SANBAG 2012).

⁶ Alliances are given a rarity ranking standardized by Natural Heritage methodology based on a 1 to 5 scale, ranging from critically imperiled (1) to demonstrably secure (5). Alliances with a state ranking of S1 through S3 were considered sensitive.

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RCIS Area. Pressures and stressors on vegetation communities in the RCIS Area are described in Section 2.8 and in the Focal Species summaries (Appendix C) and Climate Change Vulnerability Assessment (Appendix E).

Table 3-2a
Habitat Groups and General Vegetation Communities by
Region in the RCIS Area

Habitat Group General Vegetation Community	Valley (acres and percent of region)		Mountains (acres and percent of region)		Desert (acres and percent of region)		Total (acres)
Desert Scrub		0.0%	2,356	2.0%	2,537,399	78.3%	2,539,755
Alkali Scrub		0.0%		0.0%	192,003	5.9%	192,003
Barren (cliffs, outcrops, badlands)		0.0%		0.0%	38,679	1.2%	38,680
Sonoran and Mojavean Desert Scrub		0.0%	2,356	2.0%	2,306,716	71.1%	2,309,072
Dune and Playa		0.0%		0.0%	81,697	2.5%	81,697
Desert Dunes		0.0%		0.0%	17,076	0.5%	17,076
Playa		0.0%		0.0%	64,621	2.0%	64,621
Grassland	37,283	11.7%	298	0.3%	68,974	2.1%	106,554
Native Grasslands	564	0.2%		0.0%	44	0.0%	608
Non-Native Grassland	36,719	11.5%	298	0.3%	68,930	2.1%	105,946
Riparian and Wetland	2,877	0.9%	1,420	1.2%	33,272	1.0%	37,569
Riparian and Desert Wash	1,366	0.4%	446	0.4%	23,559	0.7%	25,371
Wetlands and Waters	1,511	0.5%	974	0.8%	9,713	0.3%	12,198
Riversidean Alluvial Fan Sage Scrub	18,838	5.9%	807	0.7%	3	0.0%	19,648
Riversidean Alluvial Fan Sage Scrub	18,838	5.9%	807	0.7%	3	0.0%	19,648
Transitional Scrub, Chaparral, and Woodland	35,962	11.3%	104,851	89.5%	279,087	8.6%	419,900
Chaparral	16,329	5.1%	66,541	56.8%	26,741	0.8%	109,611
Coastal Scrub	16,999	5.3%	444	0.4%	21,428	0.7%	38,871
Forest and Woodlands	2,561	0.8%	29,476	25.1%	40,033	1.2%	72,070
Great Basin Scrub		0.0%	7,860	6.7%	62,824	1.9%	70,684
Joshua Tree Woodland		0.0%	498	0.4%	78,622	2.4%	79,120
Juniper Woodlands	72	0.0%	32	0.0%	49,440	1.5%	49,544
Developed and Agriculture	224,362	70.3%	7,483	6.4%	242,043	7.5%	473,888
Agriculture	21,245	6.7%	158	0.1%	16,746	0.5%	38,149
Barren (unvegetated)	460	0.1%	1,642	1.4%	1	0.0%	2,104

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**Table 3-2a
Habitat Groups and General Vegetation Communities by
Region in the RCIS Area**

Habitat Group General Vegetation Community	Valley (acres and percent of region)		Mountains (acres and percent of region)		Desert (acres and percent of region)		Total (acres)
Developed and Disturbed Areas	202,467	63.4%	5,683	4.8%	225,296	6.9%	433,445
Eucalyptus Naturalized Forest	190	0.1%		0.0%		0.0%	190
RCIS Area Total	319,322		117,215		3,242,473		3,679,010

Notes: Habitat groups provide a straightforward way of aggregating assemblages, vegetation communities, and Focal Species for the purposes of SBC RCIS planning. San Bernardino County Vegetation Communities dataset summarized by General Vegetation Community based on CDFW Alliance-level mapping of the Desert Renewable Energy Conservation Plan (AIS 2013; VegCAMP et al. 2013), Classification and Assessment with Landsat of Visible Ecological Groupings (USFS 2014), and SANBAG existing land-use layer (SANBAG 2012).

**Table 3-2b
Vegetation Communities and Land Covers by Habitat Group
in the RCIS Area**

Habitat Group ¹	Habitat Group General Vegetation Community Mid-Level Vegetation Type	Acreage
DS	Alkali Scrub	192,003
DS	North American warm desert bedrock cliff and outcrop	3,428
DS	Shadscale – saltbush cool semi-desert scrub	48,113
DS	Southwestern North American salt basin and high marsh	140,462
DS	Barren (cliffs, outcrops, badlands)	38,680
DS	Sonoran and Mojavean Desert Scrub	2,309,072
DS	Arizonan upland Sonoran desert scrub	2,578
DS	Creosote bush	115
DS	Desert buckwheat	1,128
DS	Desert mixed shrub	1,130
DS	Intermontane deep or well-drained soil scrub	48,408
DS	Intermontane seral shrubland	6,363
DS	Lower Bajada and Fan Mojavean – Sonoran desert scrub	2,126,700
DS	Mojave and Great Basin upper bajada and toeslope	107,641
DS	Mojavean semi-desert wash scrub	11,005
DS	Sonoran-Coloradan semi-desert wash woodland/scrub	4,003
DP	Desert Dunes	17,076
DP	North American warm desert dunes and sand flats	17,076
DP	Playa	64,621
DP	North American warm desert alkaline scrub and herb playa and wet flat	55,233
DP	Southwestern North American salt basin and high marsh	9,388

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Table 3-2b
Vegetation Communities and Land Covers by Habitat Group
in the RCIS Area

Habitat Group ¹	Habitat Group General Vegetation Community Mid-Level Vegetation Type	Acreage
GRS	Native Grasslands	608
GRS	Alkaline mixed grasses	564
GRS	Southern great basin semi-desert grassland	44
GRS	Non-Native Grassland	105,946
GRS	Annual grasses and forbs	36,703
GRS	California annual and perennial grassland	67,822
GRS	California annual forb/grass vegetation	1,057
GRS	Developed and disturbed areas	19
GRS	Non-native/invasive grass	170
GRS	Perennial grasses and forbs	176
RW	Riparian and Desert Wash	25,371
RW	Baccharis (riparian)	96
RW	California sycamore	132
RW	Fan palm	2
RW	Fremont cottonwood	80
RW	Madrean warm semi-desert wash woodland/scrub	9,825
RW	Mojavean semi-desert wash scrub	1,705
RW	Riparian mixed hardwood	589
RW	Riparian mixed shrub	11
RW	Sonoran-Coloradan semi-desert wash woodland/scrub	2,482
RW	Southwestern North American riparian evergreen and deciduous woodland	3,210
RW	Southwestern North American riparian/wash scrub	6,299
RW	White alder	56
RW	Willow	702
RW	Willow (shrub)	181
RW	Wetlands and Waters	12,198
RW	Agriculture pond or water feature	137
RW	Arid West freshwater emergent marsh	104
RW	Californian warm temperate marsh/seep	409
RW	Intermittent lake or pond	44
RW	Intermittent stream channel	1,099
RW	Madrean warm semi-desert wash woodland/scrub	5,660
RW	Open water	1
RW	Perennial lake or pond	52
RW	Reservoir	2
RW	Riparian	224

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Table 3-2b
Vegetation Communities and Land Covers by Habitat Group
in the RCIS Area

Habitat Group ¹	Habitat Group General Vegetation Community Mid-Level Vegetation Type	Acreage
RW	River/stream/canal	229
RW	Southwestern North American salt basin and high marsh	846
RW	Tule – cattail	10
RW	Urban or industrial impoundment	115
RW	Water (general)	674
RW	Waterway	41
RW	Wet meadows	100
RW	Wetland	2,451
RAFSS	Riversidean Alluvial Fan Sage Scrub	19,648
RAFSS	Riversidean alluvial scrub	14,782
RAFSS	Scalebroom	4,866
TSCW	Chaparral	109,611
TSCW	Birchleaf mountain mahogany	1,655
TSCW	Californian mesic chaparral	1,590
TSCW	Californian xeric chaparral	13,806
TSCW	Ceanothus mixed chaparral	6,343
TSCW	Chamise	11,986
TSCW	Curleaf mountain mahogany	51
TSCW	Great Basin – mixed chaparral transition	4,067
TSCW	Lower montane mixed chaparral	31,111
TSCW	Manzanita chaparral	736
TSCW	Scrub oak	11,810
TSCW	Semi-desert chaparral	8,558
TSCW	Soft scrub mixed chaparral	3,249
TSCW	Sumac shrub	1,523
TSCW	Tucker/muller scrub oak	317
TSCW	Upper montane mixed chaparral	1,843
TSCW	Western Mojave and Western Sonoran Desert borderland chaparral	10,968
TSCW	Coastal Scrub	38,871
TSCW	Buckwheat	7,380
TSCW	California sagebrush	8,391
TSCW	Central and south coastal California seral scrub	827
TSCW	Central and south coastal Californian coastal sage scrub	20,537
TSCW	Coastal cactus	93
TSCW	Encelia scrub	1,643
TSCW	Forest and Woodlands	72,070

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**Table 3-2b
Vegetation Communities and Land Covers by Habitat Group
in the RCIS Area**

Habitat Group ¹	Habitat Group General Vegetation Community Mid-Level Vegetation Type	Acreage
TSCW	Bigcone Douglas-fir	3,885
TSCW	Black oak	455
TSCW	California bay	10
TSCW	California walnut	284
TSCW	Californian broadleaf forest and woodland	44
TSCW	Californian montane conifer forest	37,784
TSCW	Canyon live oak	6,746
TSCW	Coast live oak	1,664
TSCW	Coastal mixed hardwood	231
TSCW	Coulter pine	84
TSCW	Eastside pine	1,225
TSCW	Great Basin pinyon – juniper woodland	2,135
TSCW	Interior live oak	166
TSCW	Interior mixed hardwood	94
TSCW	Jeffrey pine	1,234
TSCW	Knobcone pine	6
TSCW	Mixed conifer – fir	4,702
TSCW	Mixed conifer – pine	4,774
TSCW	Ponderosa pine	69
TSCW	Singleleaf pinyon pine	6,249
TSCW	Subalpine conifers	119
TSCW	White fir	110
TSCW	Great Basin Scrub	70,684
TSCW	Basin sagebrush	357
TSCW	Blackbush	758
TSCW	Great Basin – desert mixed scrub	137
TSCW	Great Basin mixed scrub	3,931
TSCW	Intermontane deep or well-drained soil scrub	7,277
TSCW	Intermontane seral shrubland	11,779
TSCW	Inter-mountain dry shrubland and grassland	42,221
TSCW	Intermountain mountain big sagebrush shrubland and steppe	1,239
TSCW	Mojave and Great Basin upper bajada and toeslope	198
TSCW	Rabbitbrush	2,786
TSCW	Joshua Tree Woodland	79,120
TSCW	Joshua tree	618
TSCW	Mojave and Great Basin upper bajada and toeslope	78,502

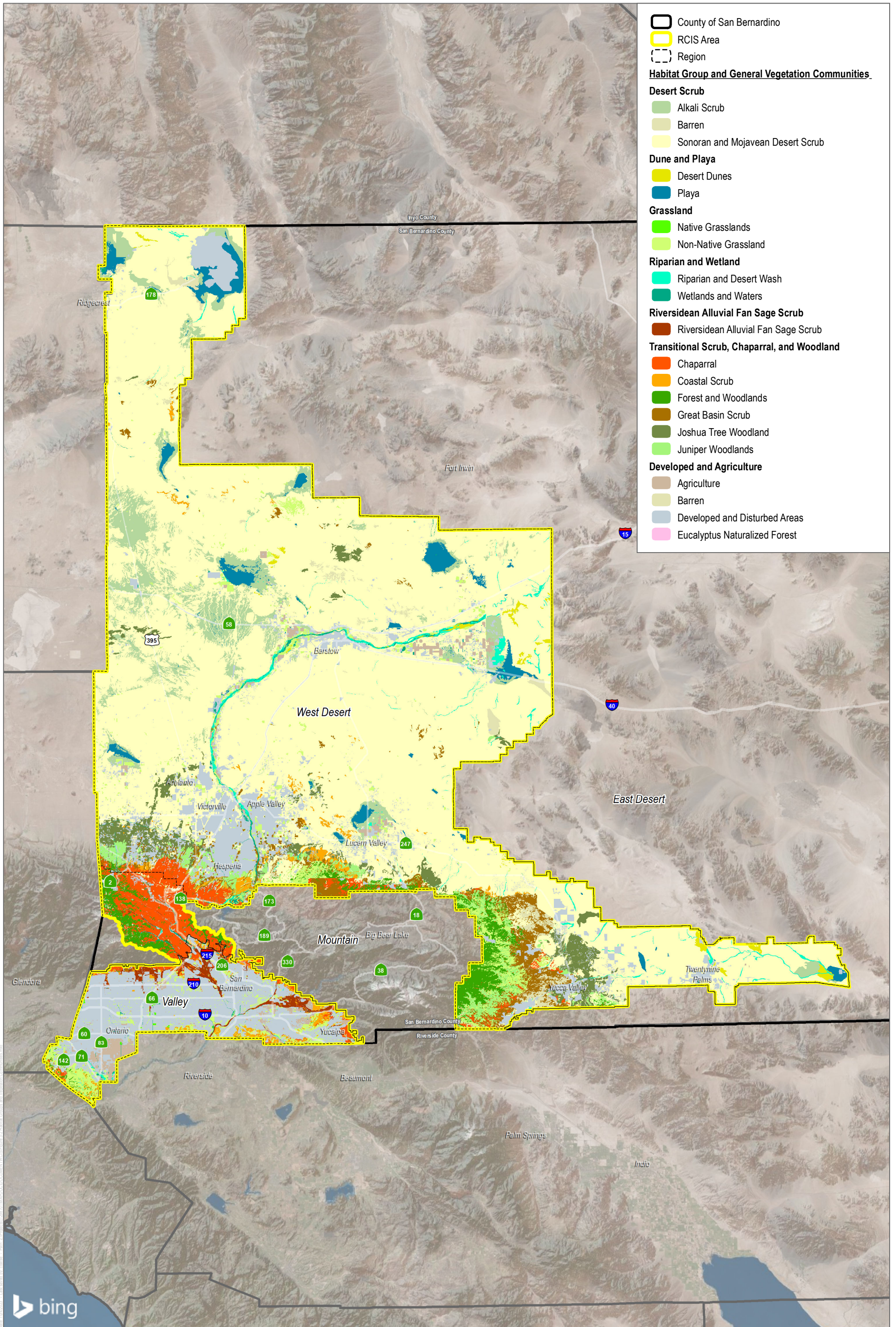
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Table 3-2b
Vegetation Communities and Land Covers by Habitat Group
in the RCIS Area

Habitat Group ¹	Habitat Group General Vegetation Community Mid-Level Vegetation Type	Acreage
TSCW	Juniper Woodlands	49,544
TSCW	California juniper (shrub)	1,356
TSCW	Great Basin pinyon – juniper woodland	48,188
DA	Agriculture	38,149
DA	Barren (unvegetated)	2,104
DA	Developed and Disturbed Areas	433,445
DA	Eucalyptus Naturalized Forest	190
RCIS AREA TOTAL		3,679,010

Notes: San Bernardino County Vegetation Communities dataset summarized by General Vegetation Community and Mid-level Vegetation Type based on CDFW Alliance-level mapping of the Desert Renewable Energy Conservation Plan (AIS 2013; VegCAMP et al. 2013), Classification and Assessment with Landsat of Visible Ecological Groupings (USFS 2014), and SANBAG existing land-use layer (SANBAG 2012).

¹Habitat Groups: DS = Desert Scrub; DP = Dune and Playa; GRS = Grassland; RW = Riparian and Wetland; RAFSS = Riversidean Alluvial Fan Sage Scrub; TSCW = Transitional Scrub, Chaparral, and Woodland; DA = Developed and Agriculture



SOURCE: Bing Maps 2018; VegCAMP 2013, USFS 2014, SANBAG 2012



FIGURE 3-2
Habitat Groups and Vegetation Communities
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Desert Scrub

Desert scrub is the most common habitat group in the RCIS Area and covers more than 78% of the Desert region. Sonoran and Mojavean desert scrub communities are the most common desert scrub group, which are largely composed of lower Bajada and fan Mojavean–Sonoran desert scrub. Alkali scrub occurs in some of those central pockets, primarily west of Barstow, but also around waterbodies, such as Searles Lake, China Lake, Dale Lake, and Lucerne Lake. Barren areas, which include cliffs, outcrops, badlands, desert pavement, and other areas largely devoid of vegetation but that still provide habitat value, are mainly south of Searles Valley, between Morongo and Yucca Valleys, and north of Yucca Valley. The following sensitive desert scrub alliances and associations occur in the Desert region (AIS 2013; VegCAMP et al. 2013): *Achnatherum speciosum*, *Encelia (actoni, virginensis)*, *Gutierrezia sarothrae*, *Krascheninnikovia lanata*, *Lycium cooperi*, *Menodora spinescens*, *Purshia tridentata*, *Yucca brevifolia*, *Yucca brevifolia–Juniperus californica/Ephedra nevadensis* woodland association, and *Yucca brevifolia/Larrea tridentata–Yucca schidigera/Pleuraphis rigida* woodland association.

Dune and Playa

Dunes and playas occur primarily in the Desert region. Desert dunes occur east of Barstow associated with the Mojave River. Playas occur at Searles Lake, China Lake, and north and east of Barstow, as well as Lucerne Lake and Rabbit Lake east of Apple Valley. In the southern portion of the Desert region, playas occur at Dale Lake east of Twentynine Palms and Coyote Lake west of Twentynine Palms. The following sensitive dune communities occur in the Desert region (AIS 2013; VegCAMP et al. 2013): *Panicum urvilleanum*, *Pleuraphis rigida* alliance, and *Prosopis glandulosa*.

Grassland

Grasslands occur over approximately 12% of the Valley region and 2% of the Desert region. Non-native grasslands are substantially more common than native grasslands. Possible sensitive grassland alliances that could occur in the Valley region include *Bromus carinatus – Elymus glaucus*, *Centromadia (pungens)*, *Danthonia californica*, *Deinandra fasciculata*, *Elymus glaucus montane*, *Festuca idahoensis*, *Festuca rubra*, *Glyceria (elata, striata)*, *Heterotheca (oregona, sessiliflora)*, *Hordeum brachyantherum*, *Mimulus (guttatus)*, *Muhlenbergia rigens*, *Poa secunda*, *Selaginella bigelovii*, *Sporobolus airoides*, *Trifolium variegatum*.

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Riparian and Wetland

Riparian and wetland areas only occur over approximately 1% of the Valley, Mountain, and Desert regions of the RCIS Area. They generally occur along linear hydrologic features, such as the Santa Ana River, Lytle Creek, Mojave River, and other smaller tributaries and drainages. Seeps and springs support important wetland communities, particularly in the Desert region. Riparian and wetland areas also include mountain streams, ephemeral lakes, and desert washes.

Possible sensitive riparian alliances include *Platanus racemosa* within California sycamore, *Washingtonia filifera* within fan palm, and *Populus fremontii* within Fremont cottonwood. Willow sensitive alliances that could occur include *Salix laevigata* and *Salix gooddingii*; sensitive alliances dominated by shrub willows that would be possible include *Salix lemmonii* and *Salix lutea*. Sensitive riparian wash vegetation communities mapped in the Desert region (AIS 2013; VegCAMP et al. 2013) include *Brickellia incana*, *Chilopsis linearis*, *Chilopsis linearis* association, *Ephedra californica*, *Ericameria paniculata*, *Forestiera pubescens*, *Hyptis emoryi*, *Lepidospartum squamatum*, *Prosopis glandulosa*, *Prunus fasciculata*, *Psoralea argyrea*, and *Sambucus nigra*. The following sensitive wetland communities could occur: *Schoenoplectus americanus*, *Bolboschoenus maritimus*, *Scirpus microcarpus*, *Allenrolfea occidentalis*, *Atriplex parryi*, *Carex (aquatilis, lenticularis)*, *Carex barbarae*, *Carex densa*, *Carex douglasii*, *Carex echinata*, *Carex heteroneura*, *Carex integra*, *Carex jonesii*, *Carex luzulina*, *Carex microptera*, *Carex serratodens*, *Eleocharis acicularis*, *Frankenia salina*, *Isocoma acradenia*, *Juncus nevadensis*, and *Juncus (oxymeris, xiphioides)*.

Riversidean Alluvial Fan Sage Scrub

Riversidean alluvial fan sage scrub covers nearly 6% of the Valley region and also occurs in the Cajon Pass area of the Mountain region. It generally occurs in the alluvial fans that come out of the foothills of the San Bernardino Mountains. There is also an extensive area in the northeastern portion of the Valley region that runs along the Santa Ana River to the southwest. Scalebroom tends to occur more centrally along the watercourse of the alluvial fan, while the Riversidean alluvial scrub occurs more broadly within the floodplain. Riversidean alluvial fan sage scrub is considered locally sensitive due to the rare plants and small mammals that it supports, including the state- and federally listed slender-horned spineflower and Santa Ana River woollystar (Barbour and Wirka 1997).

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Transitional Scrub, Chaparral, and Woodland

Approximately 11% of the Valley region, 90% of the Mountain region, and 9% of the Desert region in the RCIS Area is composed of transitional scrub, chaparral, and woodland. Scrub, chaparral, and woodland communities occur in the foothill and transitional areas of the San Bernardino Mountains. The following sensitive transitional scrub, chaparral, and woodland alliances may occur in the Valley region: *Ceanothus (oliganthus, tomentosus)*, *Ceanothus greggii*, *Ceanothus verrucosus*, *Adenostoma fasciculatum – Salvia apiana*, *Adenostoma fasciculatum – Xylococcus bicolor*, *Encelia californica – Eriogonum cinereum* alliance, *Juglans californica* alliance. Joshua tree woodland primarily occurs in the foothills of the San Bernardino Mountains and around and north of Yucca Valley and Joshua Tree. Joshua tree woodland also occurs west of China Lake Naval Weapons Center, north of Barstow, and west of Barstow. Juniper woodlands occur in the foothills of the San Bernardino Mountains and around Yucca Valley and Joshua Tree. Other sensitive transitional scrub, chaparral, and woodland vegetation communities in the Desert region include (AIS 2013; VegCAMP et al. 2013) *Fremontodendron californicum*, *Prunus ilicifolia*, *Ericameria linearifolia*, and *Eriogonum wrightii*.

Developed and Agriculture

Areas of development and agriculture occupy 70% of the Valley region, 6% of the Mountain region, and 8% of the Desert region in the RCIS Area. Agriculture and other working lands in the Valley region occur primarily in the Prado Basin, Redlands, and Mentone. Developed areas of the Desert region are concentrated in areas of Adelanto, Apple Valley, Barstow, Hesperia, Joshua Tree, Victorville, and Yucca Valley. Agriculture in the Desert region generally occurs north and east of Barstow.

3.1.3 Focal Species

3.1.3.1 Focal Species Selection Process

Focal Species are those species that will benefit from the conservation actions and habitat enhancement actions set forth in the RCIS. Focal Species were selected using a robust selection process involving compiling, prioritizing, refining, and finalizing a preliminary species list. In addition, stakeholder and technical expert feedback was crucial in vetting and ensuring that the final Focal Species collectively identified the most representative species of the major and unique natural community types and ecosystem functions that are characteristic of the conservation needs in the RCIS Area. The Focal Species were

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identified according to the selection process guidance of the RCIS Guidelines (CDFW 2018) and using the following three-step selection process:

Step 1: Compile a preliminary species list

Step 2: Prioritize and apply screening criteria

Step 3: Refine and finalize the Focal Species list

Step 1: Compile a Preliminary Species List

The first step in the process was to compile a comprehensive preliminary species list using the best available scientific information. The species on the preliminary list were compiled from the following pertinent and reputable resources:

- Species identified in the State Wildlife Action Plan: Species of Greatest Conservation Need (CDFW 2015)
- Species identified in the Complete List of Amphibian, Reptile, Bird, and Mammal Species in California (CDFW 2016)
- Plant and animal species listed, proposed for listing, or candidates for listing as endangered or threatened under the federal Endangered Species Act (CDFW 2020b, 2020c)
- Plant and animal species that are listed under the California Endangered Species Act as endangered or threatened or are candidates for listing (CDFW 2020b, 2020c)
- CDFW Animal Species of Special Concern (CDFW 2020d)
- California Fully Protected Animals (CDFW 2020d, 2020e)
- Additional species identified by the California Natural Diversity Database special plants and special animal lists (CDFW 2020d, 2020f)
- Native game species managed under CDFW's Game Management Programs (CDFW 2020g)
- Species specially protected under the California Wildlife Protection Act of 1990 (i.e., mountain lion [*Puma concolor*])
- USFS Management Indicator Species (USFS 2005a)
- Species formally listed by USFS as Sensitive Species (USFS 2013b, 2013c)

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- Species formally listed by USFWS as Birds of Conservation Concern (USFWS 2008)
- Species listed by BLM as sensitive (BLM 2014)

After initial compilation, the preliminary species list included a total of 4,243 species, including 440 invertebrates, 110 fish, 78 amphibians, 135 reptiles, 720 birds, 334 mammals, and 2,426 plants. This list generally included the plant and wildlife species known to occur in California, including both common and special-status species.

Step 2: Prioritize and Apply Screening Criteria

Once the preliminary list of species was compiled, the list was refined for further consideration. The first step in refining the species list was to prioritize species based on the following criteria:

- **Native Species.** All species included in the Focal Species list must be native
- **Occurrences.** Species with known occurrences⁷ within the following ecoregions (USDA 2007): Southern California mountains and valleys and Mojave Desert
- **Status.** Species were further prioritized based on federal- or state-listing status. Priority 1 includes federal- or state-listed species (threatened, endangered, candidate, state rare, Fully Protected), Priority 2 includes CDFW Species of Special Concern or California Rare Plant Rank List 1 and 2, and Priority 3 includes all other status labels (e.g., CDFW Watch List, USFWS Birds of Conservation Concern, USFS Sensitive, California Rare Plant Rank List 3 and 4)

Of the 4,243 species described in the preliminary list, 221 native species had documented occurrences within the stated ecoregions. Of these 221 species, 52 were Priority 1 species, 164 were Priority 2 species, and 5 were Priority 3 species. The Focal Species evaluation for the list of 221 species is provided as Appendix B and described below.

Step 3. Refine and Finalize the Focal Species list

Each of the 221 species were further evaluated based on a review of available species data, species life history, habitat requirements, and occurrences within the RCIS Area.

⁷ A composite species occurrence dataset was developed for the County from multiple sources, including CDFW California Natural Diversity Database (CDFW 2021a), USFWS, USFS, BLM, San Bernardino County Museum, San Bernardino County Department of Public Works, Upper SAR HCP, VertNET, and California Consortium of Herbaria. The data attributes were standardized across all sources for taxa, common name, scientific name, status, and source. Additionally, the data were geospatially processed and attributed to identify potential duplicate points in close proximity of each other (i.e., points of the same species from different sources within 100 feet will be coded as potential duplicates).

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Other considerations included evaluating whether a species is a climate vulnerable species, whether it is covered by other regional conservation planning documents, and whether designated critical habitat is present within the RCIS Area. The evaluation process considered the overall goal of the Focal Species list, which was to develop a list that consists of a range of native species with conservation needs within the RCIS Area, and that includes federal- and state-listed species, wide-ranging species, climate-vulnerable species, and representatives from major taxonomic groups.

All species addressed as Focal Species in the preliminary draft RCIS (December 2018) have been retained as Focal Species. The 2018 list of Focal Species was developed through an extensive outreach and stakeholder input process, including several stakeholder meetings addressing Focal Species, a stakeholder survey soliciting Focal Species input, interviews with local experts, release of a recommended Focal Species list, and a revised Focal Species list based on stakeholder-recommended modifications. Additionally, the Focal Species list includes five additional plant species not addressed in the 2018 preliminary draft: desert cymopterus (*Cymopterus deserticola*), intermediate mariposa-lily (*Calochortus weedii* var. *intermedius*), Parry's spineflower (*Chorizanthe parryi* var. *parryi*), Plummer's mariposa-lily (*Calochortus plummerae*), and white-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*). The resulting Focal Species list for the SBC RCIS includes 52 species, as discussed below. The 169 species not considered Focal Species that are listed in Appendix B would benefit from the SBC RCIS conservation strategy because these other species have overlapping habitat affiliations with the Focal Species and/or occur within the vegetation communities addressed by the SBC RCIS.

3.1.3.2 Focal Species

After a robust species selection process, described above, 52 Focal Species were identified including 3 amphibians, 5 reptiles, 4 fish, 2 invertebrates, 11 birds, 10 mammals, and 17 plants (Table 3-3). In accordance with CDFW RCIS Guidelines, the selected Focal Species represent all major and unique natural communities and ecosystem functions that characterize the conservation needs in the RCIS Area. It is the goal that this RCIS will result in a comprehensive, cohesive, and connected regional conservation outcome with enhanced adaptation to pressures and stressors.

Appendix C includes the Focal Species summaries developed and referenced with the best available scientific literature. Each of the 52 species summaries includes regulatory status, a species distribution map and description of occurrences, ecological requirements, and a discussion of pressures and stressors. Each Focal Species summary includes an inset map showing the species' range (based on the CDFW California Wildlife

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Habitat Relationship System for wildlife and known occupied U.S. Geological Survey 7.5-minute quadrangles for plants) and occurrence records in San Bernardino County, and a map of the Focal Species' habitat area. In addition to the species-specific summary of pressures and stressors provided in Appendix C, pressures and stressors on Focal Species in the RCIS Area are described in Section 2.8.

Table 3-3
Focal Species List for the SBC RCIS

Taxa	Common Name	Scientific Name	Status	SBC RCIS Habitat Group
Amphibian and Reptile	Arroyo toad	<i>Anaxyrus californicus</i>	FT, CDFW:SSC	Riparian and Wetland
Amphibian and Reptile	Blainville's (coast) horned lizard	<i>Phrynosoma blainvillii</i>	BLM:S, CDFW:SSC	Grassland; Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland
Amphibian and Reptile	California red-legged frog	<i>Rana draytonii</i>	FT, CDFW:SSC	Riparian and Wetland
Amphibian and Reptile	Desert tortoise	<i>Gopherus agassizii</i>	FT, SC ¹	Desert Scrub
Amphibian and Reptile	Mojave fringe-toed lizard	<i>Uma scoparia</i>	BLM:S, CDFW:SSC	Dune and Playa
Amphibian and Reptile	San Bernardino ringneck snake	<i>Diadophis punctatus modestus</i>	USFS:S	Grassland; Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland
Amphibian and Reptile	Western pond turtle	<i>Emys marmorata</i>	BLM:S, CDFW:SSC, USFS:S	Riparian and Wetland
Amphibian and Reptile	Western spadefoot	<i>Spea hammondi</i>	USFWS: under review, BLM:S, CDFW:SSC	Grassland; Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland
Bird	Bell's sage sparrow	<i>Artemisiospiza belli</i>	CDFW:WL, USFWS:BCC	Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland
Bird	Burrowing owl	<i>Athene cunicularia</i>	BLM:S, CDFW:SSC, USFWS:BCC	Desert Scrub; Grassland; Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland; Developed and Agriculture
Bird	Coastal California gnatcatcher	<i>Poliopitila californica</i>	FT, CDFW:SSC	Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland
Bird	Golden eagle	<i>Aquila chrysaetos</i>	BLM:S, CDFW:FP, CDFW:WL, CDF:S, USFWS:BCC	Desert Scrub; Grassland; Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland
Bird	LeConte's thrasher	<i>Toxostoma lecontei</i>	BLM:S, USFWS:BCC, CDFW:SSC	Desert Scrub; Transitional Scrub, Chaparral, and Woodland

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**Table 3-3
Focal Species List for the SBC RCIS**

Taxa	Common Name	Scientific Name	Status	SBC RCIS Habitat Group
Bird	Least Bell's vireo	<i>Vireo bellii pusillus</i>	FE, SE	Riparian and Wetland
Bird	Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE, SE	Riparian and Wetland
Bird	Swainson's hawk	<i>Buteo swainsoni</i>	ST, BLM:S, USFWS:BCC	Grassland; Riparian and Wetland; Transitional Scrub, Chaparral, and Woodland; Developed and Agriculture
Bird	Tricolored blackbird	<i>Agelaius tricolor</i>	ST, BLM:S, USFWS:BCC, CDFW: SSC	Grassland; Riparian and Wetland; Developed and Agriculture
Bird	Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	FT, SE, BLM:S, USFS:S, USFWS:BCC	Riparian and Wetland
Bird	White-tailed kite	<i>Elanus leucurus</i>	BLM:S, CDFW:FP	Grassland; Riparian and Wetland; Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland
Fish	Arroyo chub	<i>Gila orcuttii</i>	CDFW:SSC, USFS:S	Riparian and Wetland
Fish	Mohave tui chub	<i>Siphateles bicolor mohavensis</i>	FE, SE, CDFW:FP	Riparian and Wetland
Fish	Santa Ana speckled dace	<i>Rhinichthys osculus</i> ssp. 8 ²	USFWS: under review, CDFW:SSC, USFS:S	Riparian and Wetland
Fish	Santa Ana sucker	<i>Catostomus santaanae</i>	FT	Riparian and Wetland
Invertebrate	Delhi Sands flower-loving fly	<i>Rhaphiomidas terminatus abdominalis</i>	FE	Dunes and Playas; Grassland
Invertebrate	Victorville shoulderband	<i>Helminthoglypta mohaveana</i>	CDFW:SA	Riparian and Wetland
Mammal	American badger	<i>Taxidea taxus</i>	CDFW:SSC, CDFW furbearing mammal provisions	Desert Scrub; Grassland; Transitional Scrub, Chaparral, and Woodland
Mammal	Desert bighorn sheep	<i>Ovis canadensis nelsoni</i>	BLM:S, CDFW:FP, USFS:S, Limited hunting	Desert Scrub; Transitional Scrub, Chaparral, and Woodland
Mammal	Desert kit fox	<i>Vulpes macrotis arsipus</i>	CDFW Non-game furbearer ³	Desert Scrub; Dune and Playa; Grassland; Riparian and Wetland; Transitional Scrub, Chaparral, and Woodland
Mammal	Los Angeles pocket mouse	<i>Perognathus longimembris brevinasus</i>	CDFW:SSC	Riversidean Alluvial Fan Sage Scrub

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**Table 3-3
Focal Species List for the SBC RCIS**

Taxa	Common Name	Scientific Name	Status	SBC RCIS Habitat Group
Mammal	Mohave ground squirrel	<i>Xerospermophilus mohavensis</i>	ST, BLM:S	Desert Scrub
Mammal	Mojave River vole	<i>Microtus californicus mohavensis</i>	CDFW:SSC	Riparian and Wetland
Mammal	Mountain lion (Southern California/Central Coast Evolutionary Significant Unit)	<i>Puma concolor</i>	SC, ⁴ CDFW Specially Protected Mammal ⁵	Grassland; Riparian and Wetland; Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland; Developed and Agriculture
Mammal	Pallid bat	<i>Antrozous pallidus</i>	BLM:S, CDFW:SSC, USFS:S	Desert Scrub; Dune and Playa; Grassland; Riparian and Wetland; Transitional Scrub, Chaparral, and Woodland; Developed and Agriculture
Mammal	San Bernardino kangaroo rat	<i>Dipodomys merriami parvus</i>	FE, SC ⁶ CDFW:SSC	Riversidean Alluvial Fan Sage Scrub
Mammal	Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM:S, CDFW:SSC, USFS:S	Desert Scrub; Riparian and Wetland; Transitional Scrub, Chaparral, and Woodland; Developed and Agriculture
Plant	Alkali mariposa-lily	<i>Calochortus striatus</i>	BLM:S, USFS:S, CRPR 1B.2	Desert Scrub; Riparian and Wetland
Plant	Barstow woolly sunflower	<i>Eriophyllum mohavense</i>	BLM:S, CRPR 1B.2	Desert Scrub; Playa and Dune
Plant	Desert cymopterus	<i>Cymopterus deserticola</i>	BLM:S, CRPR 1B.2	Desert Scrub; Transitional Scrub, Chaparral, and Woodland
Plant	Gambel's watercress	<i>Nasturtium gambelii</i>	FE, ST, CRPR 1B.1	Riparian and Wetland
Plant	Intermediate mariposa-lily	<i>Calochortus weedii</i> var. <i>intermedius</i>	USFS:S, CRPR 1B.2	Grassland; Transitional Scrub, Chaparral, and Woodland
Plant	Lane Mountain milk-vetch	<i>Astragalus jaegerianus</i>	FE, CRPR 1B.1	Desert Scrub; Transitional Scrub, Chaparral, and Woodland
Plant	Marsh sandwort	<i>Arenaria paludicola</i>	FE, SE, CRPR 1B.1	Riparian and Wetland
Plant	Mojave monkeyflower	<i>Diplacus mohavensis</i>	BLM:S, CRPR 1B.2	Desert Scrub; Transitional Scrub, Chaparral, and Woodland
Plant	Parish's daisy	<i>Erigeron parishii</i>	FT, CRPR 1B.1	Desert Scrub; Transitional Scrub, Chaparral, and Woodland
Plant	Parry's spineflower	<i>Chorizanthe parryi</i> var. <i>parryi</i>	BLM:S, USFS:S, CRPR 1B.1	Grassland; Transitional Scrub, Chaparral, and Woodland
Plant	Plummer's mariposa-lily	<i>Calochortus plummerae</i>	CRPR 4.2	Grassland; Transitional Scrub, Chaparral, and Woodland
Plant	San Bernardino aster	<i>Symphotrichum defoliatum</i>	USFS:S, CRPR 1B.2	Riparian and Wetland

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**Table 3-3
Focal Species List for the SBC RCIS**

Taxa	Common Name	Scientific Name	Status	SBC RCIS Habitat Group
Plant	Santa Ana River woollystar	<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>	FE, SE, CRPR 1B.1	Riversidean Alluvial Fan Sage Scrub
Plant	Short-joint beavertail	<i>Opuntia basilaris</i> var. <i>brachyclada</i>	BLM:S, USFS:S; CRPR 1B.2	Transitional Scrub, Chaparral, and Woodland
Plant	Slender-horned spineflower	<i>Dodecahema leptoceras</i>	FE, SE, CRPR 1B.1	Riversidean Alluvial Fan Sage Scrub
Plant	Western Joshua tree	<i>Yucca brevifolia</i>	SC; ⁷ CA Native Desert Plant Act, local ordinances ⁸	Desert Scrub; Transitional Scrub, Chaparral, and Woodland
Plant	White-bracted spineflower	<i>Chorizanthe xanti</i> var. <i>leucotheca</i>	BLM: S, USFS:S, CRPR 1B.2	Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland

- ¹ As of October 14, 2020, the desert tortoise is considered a candidate species and under consideration by California Fish and Game Commission for a status change from Threatened to Endangered under the California Endangered Species Act (CESA).
- ² Formerly *Rhinichthys osculus* spp. 3, which did not account for other undescribed subspecies outside of California. See notes in CDFW Special Animals List (CDFW 2020d).
- ³ Desert kit fox may not be taken at any time (14 CCR 460).
- ⁴ Mountain lion (Southern California/Central Coast Evolutionary Significant Unit) is considered a candidate species and under consideration by California Fish and Game Commission for listing under CESA.
- ⁵ See FGC Sections 4800–4810.
- ⁶ This species is a candidate species for listing as Endangered under CESA.
- ⁷ This species is a candidate species for listing under CESA.
- ⁸ SBC General Plan – Protections under the San Bernardino General Plan and development code.

FT – Federally Threatened

FE – Federally Endangered

ST – State Threatened

SE – State Endangered

SC – State Candidate

SSC – Species of Special Concern

FP – Fully Protected

WL – Watch List

CDFW – California Department of Fish and Wildlife

CDFW:SA – List in the CDFW Special Animals List

CDF:S – California Department of Forestry and Fire Protection “Sensitive”

BLM:S – Bureau of Land Management “Sensitive”

USFS:S – U.S. Forest Service “Sensitive”

USFWS:BCC – U.S. Fish and Wildlife Service “Bird of Conservation Concern”

CRPR – California Rare Plant Rank

1B.1 – Plants Rare, Threatened, or Endangered in California and Elsewhere; Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)

1B.2 – Plants Rare, Threatened, or Endangered in California and Elsewhere; Moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)

The information in Appendix C provides detailed information regarding the Focal Species, including information on occurrence in the RCIS Area and San Bernardino County, species range, habitat associations, and pressures and stressors. To have GIS-based mapping of Focal Species distributions for use in developing the SBC RCIS, a Focal

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Species habitat dataset was developed. For species with existing, reliable species distribution models, these existing datasets were used, including models and predicted habitat layers developed by the U.S. Geological Survey, University of California Davis, Conservation Biology Institute, and CDFW. For species without existing, reliable species distribution models covering the RCIS Area, simple coverages were developed using available appropriate species-specific information, including vegetation community associations, range information, occurrence information, designated critical habitat, soils, and elevation. These species habitat coverages are intended to represent a reasonable approximation of the potentially suitable habitat areas for each Focal Species in the RCIS Area, based on existing information, to be used as a tool for RCIS development. In cases where existing models were not available, the habitat areas are not the product of statistically rigorous modeling. These species habitat areas should not be used to determine where species occur or do not occur. Appendix D provides detailed information on the data sources and approach to developing the species habitat areas for each Focal Species. Table 3-4 provides an acreage summary of the Focal Species habitat in the RCIS Area. Focal Species habitat area maps are included in the Focal Species summary for each species in Appendix C.

**Table 3-4
Focal Species Habitat by Region in the RCIS Area**

Taxa	Focal Species Habitat	Desert (acres)	Mountains (acres)	Valley (acres)	RCIS Area Total (acres)
Amphibian and Reptile	Arroyo toad	189,038	56,329	126,993	372,360
Amphibian and Reptile	Blainville's (coast) horned lizard	89,480	63,901	85,521	238,902
Amphibian and Reptile	Desert tortoise	2,412,963	0	0	2,412,963
Amphibian and Reptile	Mojave fringe-toed lizard	122,190	0	0	122,190
Amphibian and Reptile	San Bernardino ringneck snake	0	807	18,838	19,645
Amphibian and Reptile	Western pond turtle	37,702	1,420	2,877	41,999
Amphibian and Reptile	Western spadefoot	0	19,594	86,789	106,382
Bird	Bell's sage sparrow	141,478	82,912	92,082	316,473
Bird	Burrowing owl	3,179,937	38,977	272,943	3,491,858
Bird	Coastal California gnatcatcher	0	90	32,206	32,297
Bird	Golden eagle	3,237,424	117,018	319,221	3,673,663
Bird	LeConte's thrasher	2,716,781	5,549	0	2,722,330
Bird	Least Bell's vireo	37,702	1,420	2,877	41,999
Bird	Southwestern willow flycatcher	37,702	1,420	2,877	41,999
Bird	Swainson's hawk	35,854	478	0	36,332
Bird	Tricolored blackbird	54,437	1,578	24,123	80,137
Bird	Western yellow-billed cuckoo	37,702	1,420	2,877	41,999
Bird	White-tailed kite	144,716	2,319	78,405	225,440

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**Table 3-4
Focal Species Habitat by Region in the RCIS Area**

Taxa	Focal Species Habitat	Desert (acres)	Mountains (acres)	Valley (acres)	RCIS Area Total (acres)
Fish	Arroyo chub	0	0	2,184	2,184
Fish	Mohave tui chub	216	0	0	216
Fish	Santa Ana speckled dace	0	0	2,250	2,250
Fish	Santa Ana sucker	0	0	2,184	2,184
Invertebrate	Delhi Sands flower-loving fly	0	0	2,327	2,327
Invertebrate	Victorville shoulderband	10,526	0	0	10,526
Mammal	American badger	3,018,392	99,909	130,437	3,248,738
Mammal	Desert bighorn sheep	1,460,900	53	0	1,460,953
Mammal	Desert kit fox	750,393	0	0	750,393
Mammal	Los Angeles pocket mouse	0	807	18,838	19,645
Mammal	Mohave ground squirrel	1,212,354	0	0	1,212,354
Mammal	Mojave River vole	10,526	0	0	10,526
Mammal	Mountain lion	189,343	85,399	124,408	399,150
Mammal	Pallid bat	341,882	65,085	232,214	639,181
Mammal	San Bernardino kangaroo rat	0	807	18,838	19,645
Mammal	Townsend's big-eared bat	77,779	5,769	9,785	93,332
Plant	Alkali mariposa-lily	3,867	0	0	3,867
Plant	Barstow woolly sunflower	140,239	0	0	140,239
Plant	Desert cymopterus	157,876	0	0	157,876
Plant	Intermediate mariposa-lily	4	5,539	62,765	68,307
Plant	Western Joshua tree	1,292,037	36,852	0	1,328,889
Plant	Lane Mountain milk-vetch	35,568	0	0	35,568
Plant	Mojave monkeyflower	162,619	0	0	162,619
Plant	Parish's daisy	157,694	9,729	3,374	170,797
Plant	Parry's spineflower	18	8,574	126,718	135,310
Plant	Plummer's mariposa-lily	65,779	45,541	72,810	184,131
Plant	San Bernardino aster	37,702	1,420	2,877	41,999
Plant	Santa Ana River woollystar	0	807	18,838	19,645
Plant	Short-joint beavertail	12,479	16,915	0	29,393
Plant	Slender-horned spineflower	0	807	18,838	19,645
Plant	White-bracted spineflower	100,987	3,694	36,056	140,738

Note: Focal Species habitat areas were developed from existing available species distribution models and species habitat affiliations. Focal Species that lacked sufficient information to develop habitat areas in the RCIS Area included California red-legged frog, Gambel's watercress, and marsh sandwort.

To understand how Focal Species richness was distributed across the RCIS Area, a Focal Species habitat “heat map” was prepared (Figure 3-3). The Focal Species heat map was prepared by simply overlaying all the species habitat coverages and counting the

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overlapping species habitats. The Focal Species richness values range from 0 to 21: areas of 0–5 overlapping species were considered to have low Focal Species richness, areas with 6–10 overlapping species were considered to have moderate Focal Species richness, and areas with 11 or more overlapping species were considered to have high Focal Species richness. Table 3-5 provides a summary of Focal Species richness.

**Table 3-5
Focal Species Richness in the RCIS Area**

Focal Species Richness Class ¹	Acreage
Low	107,133
Moderate	2,644,698
High	665,078

Notes: Low = 0–5 Focal Species, Moderate = 6–10 Focal Species, High = 11 or more Focal Species.

¹ Focal Species richness calculated based on overlaying the Focal Species habitat areas.

3.1.4 Gaps and Limitations in Scientific Information

The conservation strategy for the SBC RCIS was developed based on the best available scientific information for the RCIS Area; however, there are gaps and limitations in this available data and information. As new data and information become available, the goals and objectives, conservation actions, and priorities of the conservation strategy may be updated.

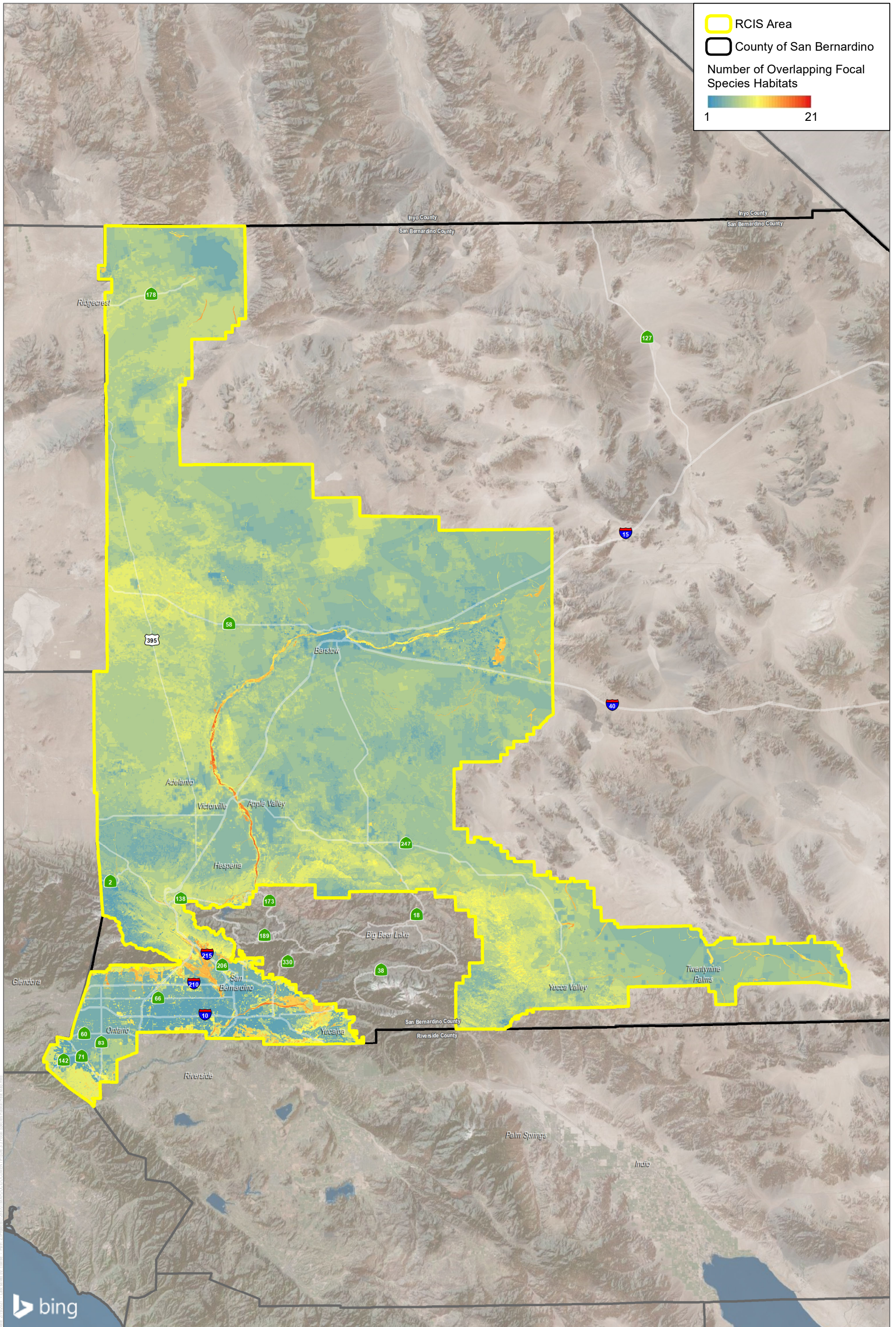
- Focal Species occurrences and habitat areas: Focal Species occurrence information was derived from the California Natural Diversity Database (CDFW 2021a), USFWS, and other sources (see Appendix C and Appendix D). These occurrence data are “presence only” data with varying degree of spatial accuracy, and the lack of occurrence data for a species does not indicate a lack of species occurrence. Additionally, these data are compiled from surveys where they were conducted and large portions of the RCIS Area lack comprehensive species surveys. The Focal Species habitat areas were developed from existing species distribution models and from known species habitat relationships (see Appendix D) and these may overestimate or underestimate habitat used by the species.
- Wildlife movement and habitat linkages: Habitat linkage information was derived from landscape-scale linkage modeling from multiple existing sources (see Appendix D). These data sources are appropriate for use in regional conservation planning; however, wildlife movement is species-specific and is inherently local and facilitated or constrained by on-the-ground features such as suitable

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connected habitat, underpasses and culverts, topography, developments including roadways and canals/aqueducts, and human activities.

- Climate change effects: The vulnerability of Focal Species and other conservation elements to the effects of climate change is assessed in Appendix E based on the existing information available; however, this is an active area of research and all effects of climate change are not fully understood. Resiliency and adaptive capacities are resource specific and will depend on a number of factors including the rate and magnitude of the changing climate.



SOURCE: Bing Maps 2018; San Bernardino County 2018



FIGURE 3-3
Focal Species Habitat Heat Map
 San Bernardino County RCIS

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3.2 Conservation Inventory

A conservation inventory was conducted to inform the development of conservation goals and objectives (CGOs) (Section 3.3) and RCIS actions (Section 3.4.1) for the SBC RCIS. The CDFW RCIS Guidelines specify that a spatial analysis be conducted to “identify the degree to which conservation elements are captured in existing protected areas” (CDFW 2018). This section is intended to provide a landscape-scale inventory of the patterns of resource protection and management across the RCIS Area to inform development of the conservation strategy. The results of this inventory provide insights on the relative protection or lack of protection for habitat groups and Focal Species habitat. See Section 3.2.3 for a discussion of analysis limitations.

3.2.1 Inventory Approach

Conservation Inventory Land Designations

As described in Section 2.5, the land base of the RCIS Area has been grouped into several categories of lands based on land ownership, jurisdiction, and designations. Using the Plan Base and the Local Conserved Land layers developed from publicly available sources for San Bernardino County (see Section 2.5), the conservation inventory in Section 3.2.2 was broken into two components: (1) a public lands inventory and (2) a private lands inventory. Conducting the inventory separately for public lands and for private lands was done based on direction from the Steering Committee in order to understand the level of protection and management on public lands separately from the level of protection and management on private lands. Public lands have varying degrees of protection and management based on the public land designations, which were used to develop the conservation objectives and available actions specific to public lands. Likewise, understanding the level of protection specific to private lands informed the development of conservation objectives and actions for these lands.

Public Lands Component

The designations on public lands used in the conservation inventory included National Monuments, Parks, and Refuges; BLM Wilderness; BLM National Conservation Lands; CDFW Lands; California State Parks; BLM ACECs; Military Expansion Mitigation Lands; National Forests; other BLM lands; other state lands; other local government lands; and other open space and parks. Other land designations used in the conservation inventory included SBCFCD lands. SBCFCD lands are not available for conservation outside the needs of SBCFCD for mitigation as required for permitting. Military and tribal lands were

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excluded from the conservation inventory as these lands have separate resource management programs and were not the focus of the conservation objectives or actions under the SBC RCIS.

For the purposes of the public lands component of the conservation inventory, National Monuments, Parks, and Refuges; BLM Wilderness; BLM National Conservation Lands; CDFW Lands; and California State Parks were public land designations considered conserved for the purpose of analysis. BLM ACECs, Military Expansion Mitigation Lands, National Forests, other BLM lands, other state lands, other local government lands, other open space and parks, and SBCFCD lands were public land designations not considered conserved for purpose of analysis.

Private Lands Component

For the purposes of the private lands component of the conservation inventory, private lands within existing mitigation banks, lands trusts, and conservation easement compiled within the Local Conserved Land layer were considered conserved. All other private lands without other designations were identified as undesignated lands and were considered unconserved.

Habitat Groups

The land designations described above were then analyzed against the habitat groups (see Table 3-1) to identify the level of protection for each group. This inventory was used to focus development of the CGOs (see Section 3.3).

3.2.2 Inventory Results

In the Desert region in the RCIS Area, the conservation inventory was conducted for the 2,855,838 acres (1,729,488 acres of public lands; 1,126,349 acres of private lands; see Table 3-6) that occur outside developed and agricultural areas and excluding military lands. Overall, approximately 18.4% (525,633 acres out of 2,855,838 acres) of the Desert region in the RCIS Area is in public land designations considered conserved for the purpose of analysis, and 42.2% (1,203,856 acres out of 2,855,838 acres) is in public land designations not considered conserved for the purpose of analysis. Approximately 1.4% (40,461 acres out of 2,855,838 acres) of the Desert region in the RCIS Area is conserved in Local Conserved Lands on private lands and 38.0% (1,085,889 acres out of 2,855,838 acres) is in undesignated private lands.

In the Mountain region in the RCIS Area, the conservation inventory was conducted for the 117,534 acres (103,776 acres of public lands; 13,758 acres of private lands; see Table

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3-6) that occur outside developed areas. Overall, approximately 4.4% (5,147 acres out of 117,534 acres) of the Mountain region in the RCIS Area is in public land designations considered conserved for the purpose of analysis, and 83.9% (98,630 acres out of 117,534 acres) is in public land designations not considered conserved for purpose of analysis. Approximately 0.2% (210 acres out of 117,534 acres) of the Mountain region in the RCIS Area is conserved in Local Conserved Lands on private lands and 11.5% (13,547 acres out of 117,534 acres) is in undesignated private lands.

In the Valley region in the RCIS Area, the conservation inventory was conducted for the 86,687 acres (27,407 acres of public lands; 59,280 acres of private lands; see Table 3-6) that occur outside developed and agricultural areas and excluding military and tribal lands. Overall, approximately 9.1% (7,917 acres out of 86,687 acres) of the Valley region in the RCIS Area is in public land designations considered conserved for the purpose of analysis, and 22.5% (19,490 acres out of 86,687 acres) is in public land designations not considered conserved for purpose of analysis. Approximately 4.4% (3,794 acres out of 86,687 acres) of the Valley region in the RCIS Area is conserved in Local Conserved Lands on private lands and 64.0% (55,486 acres out of 86,687 acres) is in undesignated private lands.

The following provides an inventory of conservation for each habitat group by region in the RCIS Area.

- **Desert Scrub:** Desert scrub occurs primarily in the Desert region with a small portion in the foothills of the Mountain region. Approximately 27.7% (422,833 acres out of 1,523,927 acres) of the desert scrub habitat group on public lands in the Desert region is in public land designations considered conserved for the purpose of analysis, and approximately 72.3% (1,101,095 acres out of 1,523,927 acres) of the desert scrub habitat group on public lands in the Desert region is in public land designations not considered conserved for the purpose of analysis. In the Mountain region, no desert scrub on public lands are in public land designations considered conserved for the purpose of analysis. Approximately 1.4% (13,044 acres out of 883,792 acres) of the desert scrub habitat group on private lands in the Desert region is protected in Local Conserved Lands, and the remainder of the desert scrub habitat group (870,748) are in undesignated private lands. Approximately 107 acres of the desert scrub habitat group is in undesignated private lands in the Mountains region.
- **Dune and Playa:** Dune and playa habitat group occurs in the Desert region. Approximately 7.1% (3,650 acres out of 51,350 acres) of the dune and playa habitat

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group on public lands is in public land designations considered conserved for the purpose of analysis and the remainder (92.9%; 47,700 acres out of 51,350 acres) occurs in public land designations not considered conserved for purpose of analysis. Approximately 0.2% (32 acres out of 19,468 acres) of the dune and playa habitat group on private lands are protected in Local Conserved Lands.

- **Grassland:** Grasslands occur primarily in the Desert and Valley regions with a small portion in the Mountain region. Approximately 54.5% (15,108 acres out of 27,711 acres) of the grassland habitat group on public lands in the Desert region is in public land designations considered conserved for the purpose of analysis, and approximately 45.5% (12,603 acres out of 27,711 acres) are in public land designations not considered conserved for purpose of analysis. Approximately 52.5% (5,424 acres out of 10,325 acres) of the grassland habitat group on public lands in the Valley region is in public land designations considered conserved for the purpose of analysis with the remainder (4,900 acres) in public land designations not considered conserved for purpose of analysis. Approximately 21.2% (8,585 acres out of 40,565 acres) of the grassland habitat group on private lands in the Desert region is protected in Local Conserved Lands, which leaves approximately 78.8% (31,980 acres out of 40,565 acres) of grassland in the Desert region in undesignated private lands. Approximately 1.1% (284 acres out of 26,377 acres) of the grassland habitat group on private lands in the Valley region are protected in Local Conserved Lands, and approximately 26,094 acres (98.9%) are in undesignated private lands. Only 6 acres of grassland are in public lands considered conserved for purpose of analysis and no grasslands occur in private local conserved lands.

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**Table 3-6
Conservation Inventory of Habitat Groups in the Desert, Mountain,
and Valley Regions of the SBC RCIS Area**

Region Habitat Group ¹	Public Lands (acres)			Private Lands (acres)		
	Total Public Lands	Public Land Designations Considered Conserved for the Purpose of Analysis ²	Public Land Designations Not Considered Conserved for Purpose of Analysis ³	Total Private Lands	Local Conserved Lands ⁴	Undesignated Private Lands
Desert	1,729,488	525,633	1,203,856	1,126,349	40,461	1,085,88
Desert Scrub	1,523,927	422,833	1,101,095	883,792	13,044	870,748
Dune and Playa	51,350	3,650	47,700	19,468	32	19,436
Grassland	27,711	15,108	12,603	40,565	8,585	31,980
Riparian and Wetland	15,527	3,635	11,892	20,072	178	19,894
Transitional Scrub, Chaparral, and Woodland	110,973	80,407	30,567	162,453	18,621	143,831
Mountains	103,776	5,147	98,630	13,758	210	13,547
Desert Scrub	2,289	0	2,289	107	0	107
Grassland	274	6	268	184	0	184
Riparian and Wetland	1,068	28	1,040	528	1	527
Riversidean Alluvial Fan Sage Scrub	901	0	901	284	102	182
Transitional Scrub, Chaparral, and Woodland	99,244	5,112	94,132	12,656	108	12,548
Valley	27,407	7,917	19,490	59,280	3,794	55,486
Grassland	10,325	5,424	4,900	26,377	284	26,094

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**Table 3-6
Conservation Inventory of Habitat Groups in the Desert, Mountain,
and Valley Regions of the SBC RCIS Area**

Region Habitat Group ¹	Public Lands (acres)			Private Lands (acres)		
	Total Public Lands	Public Land Designations Considered Conserved for the Purpose of Analysis ²	Public Land Designations Not Considered Conserved for Purpose of Analysis ³	Total Private Lands	Local Conserved Lands ⁴	Undesignated Private Lands
Riparian and Wetland	1,270	145	1,126	900	13	887
Riversidean Alluvial Fan Sage Scrub	9,495	0	9,495	8,209	2,978	5,231
Transitional Scrub, Chaparral, and Woodland	6,318	2,348	3,970	23,795	520	23,275
Total	1,860,672	538,696	1,321,976	1,199,387	44,465	1,154,922

Notes:

- ¹ The Developed and Agriculture habitat group and Military and Tribal Lands excluded from the conservation inventory.
- ² Public Lands designations considered conserved for the purpose of analysis: National Monuments, Parks, and Refuges; BLM Wilderness; BLM National Conservation Lands; CDFW Lands; California State Parks and Recreation Areas.
- ³ Public Lands designations not considered conserved for the purpose of analysis: BLM ACECs, Military Expansion Mitigation Lands, National Forests, other BLM lands, other state lands, other local government lands, other open space and parks, and San Bernardino County Flood Control District lands.
- ⁴ Local Conserved Lands include primarily private lands within mitigation banks, land trust lands, and other conservation easements.

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- **Riparian and Wetland:** The riparian and wetland habitat group occurs in all three regions of the RCIS Area. Approximately 23.4% (3,635 acres out of 15,527 acres) of the riparian and wetland habitat group on public lands in the Desert region is in public land designations considered conserved for the purpose of analysis with the remainder (11,892 acres) in public land designations not considered conserved for purpose of analysis. In the Mountain region, approximately 2.6% (28 acres out of 1,068 acres) of the riparian and wetland habitat group on public lands is in public land designations considered conserved for the purpose of analysis with the remainder (1,040 acres) in public land designations not considered conserved for purpose of analysis. Approximately 11.4% (145 acres out of 1,270 acres) of the riparian and wetland habitat group on public lands in the Valley region is in public land designations considered conserved for the purpose of analysis, and 88.6% (1,126 acres out of 1,270 acres) are in public land designations not considered conserved for purpose of analysis. On private lands in the Desert region, approximately 0.9% (178 acres out of 20,072 acres) is protected in Local Conserved Lands with the remainder (19,894 acres) in undesignated private lands. In the Mountain and Valley regions on private lands, nearly all the riparian and wetland habitat group (527 acres and 887 acres, respectively) are in undesignated private lands.
- **Riversidean Alluvial Fan Sage Scrub:** The Riversidean alluvial fan sage scrub habitat group occurs primarily in the Valley region with a small portion in the Mountain region. The Riversidean alluvial fan sage scrub habitat group does not occur in public land designations considered conserved for the purpose of analysis, which 9,495 acres in the Valley region and 901 acres in the Mountain region in public land designations not considered conserved for purpose of analysis. On private lands in the Valley region, approximately 36.3% (2,978 acres out of 8,209 acres) is protected in Local Conserved Lands, which leaves approximately 63.7% (5,231 acres out of 8,209 acres) in undesignated private lands. Approximately 102 acres out of 284 acres of Riversidean alluvial fan sage scrub on private lands in the Mountain region are in local conserved lands.
- **Transitional Scrub, Chaparral, and Woodland:** This habitat group occurs in all three regions of the RCIS Area. Approximately 72.5% (80,407 acres out of 110,973 acres) of the transitional scrub, chaparral, and woodland habitat group on public lands in the Desert region is in public land designations considered conserved for the purpose of analysis and the remainder (30,567 acres) is in public land designations not considered conserved for purpose of analysis. In the Mountain region, approximately 5.2% (5,112 acres out of 99,244 acres) of the

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transitional scrub, chaparral, and woodland habitat group on public lands is in public land designations considered conserved for the purpose of analysis, which leaves 94,132 acres in public land designations not considered conserved for purpose of analysis. Approximately 37.2% (2,348 acres out of 6,318) of the transitional scrub, chaparral, and woodland habitat group on public lands in the Valley region is in public land designations considered conserved for the purpose of analysis and the remainder (3,970 acres) is in public land designations not considered conserved for purpose of analysis. On private lands in the Desert region, approximately 11.5% (18,621 acres out of 162,453 acres) are protected in Local Conserved Lands and 88.5% (143,831 acres out of 162,453 acres) are in undesignated private lands. In the Mountain region on private lands, only 108 acres are in local conserved lands and the remainder (12,548 acres) are in undesignated private lands. Approximately 2.2% (520 acres out of 23,795 acres) of transitional scrub, chaparral, and woodland are protected in Local Conserved Lands in the Valley, which leaves 97.8% (23,275 acres out of 23,795 acres) in undesignated private lands.

3.2.3 Inventory Limitations

The conservation inventory presented above was used to inform and focus development of the conservation strategy. Interpretation of the inventory results should take into consideration the following:

- For public land designations considered conserved for the purpose of analysis (i.e., National Monuments, Parks, and Refuges; BLM Wilderness; BLM National Conservation Lands; CDFW Lands; and California State Parks), the inventory did not evaluate the specific conservation and management directives or management status of each individual public land unit within these designations. Although there are differences between these designations, as described in Section 2.5, and may be differences in the conservation and management directives and status between individual land units within the same designation, the designations themselves provide sufficient basis for characterizing the conservation status of these lands at the landscape scale for the SBC RCIS.
- For other public land designations not considered conserved for purpose of analysis (i.e., BLM ACECs, National Forests, other BLM lands, other state lands, other local government lands, other open space and parks, and San Bernardino County Flood Control lands), the inventory did not evaluate the specific conservation and management status or needs for each individual public land unit

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within these designations. Although there are differences between these designations, as described in Section 2.5, and may be differences in the conservation and management status or needs between individual land units within the same designation, the designations themselves provide sufficient basis for characterizing the conservation status of these lands at the landscape scale for the SBC RCIS.

- This inventory was done at the landscape scale and does not address habitat quality or value of specific properties or resources in particular land designations.

Given these inventory limitations, actions implemented under the SBC RCIS should be prioritized according to the CGOs (Section 3.3) and the prioritization guidelines (Section 3.4.2) so that actions are provided in lands that have high value for Focal Species and ecosystem function based on critical factors such as key species populations, rarity, habitat quality, intactness, and connectivity.

3.3 Conservation Goals and Objectives

As illustrated in Exhibit 1, conservation goals are broad guiding principles that describe a desired future condition for a Focal Species or other conservation element. Conservation objectives are concise statements of target outcomes for a focal species or other conservation element (CDFW 2018).

Conservation goals and objectives may be grouped by species, ecological resources, and other conservation elements if a goal or objective addresses multiple conservation elements and their pressures. Objectives should be measurable by using standard ecologically based metrics that include both area and quality of habitat.

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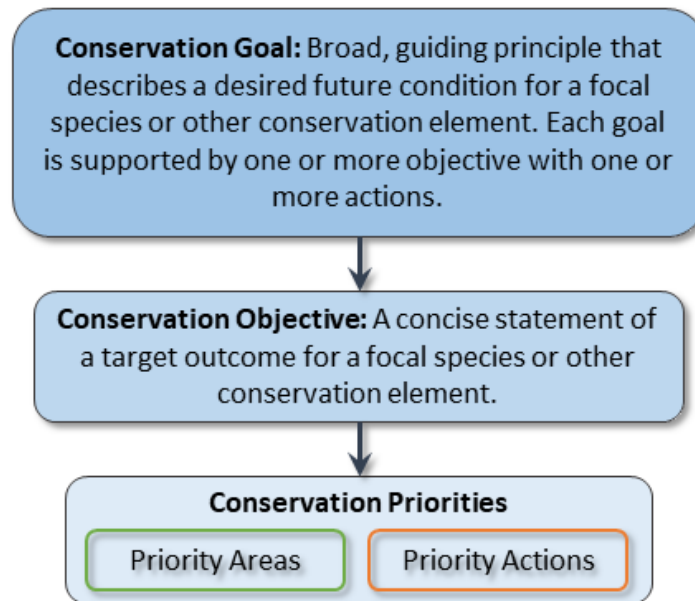


Exhibit 1. Hierarchical Structure of Conservation Goals, Objectives, and Priorities

As illustrated in Exhibit 1, development of the CGOs is key to identifying the conservation priority areas and actions. To provide a comprehensive foundation for the strategy developed for the SBC RCIS, CGOs were developed to address Focal Species, vegetation communities, and the landscape features and processes that support them. CGOs were developed using the best available information regarding the conservation elements and the landscape setting, as described in Chapter 2 and Section 3.1. Further, the CGOs were developed in consideration of existing biological and conservation planning for the RCIS Area, including existing recovery plans, habitat conservation plans, resource management planning documents, and critical habitat designations (see Section 2.6). Additionally, regional pressures and stressors (Section 2.8 and Appendix E) and resource-specific pressures and stressors were evaluated to target these specific issues in the CGOs. The conservation inventory provided in Section 3.2 was used to focus and make the objectives specific and measurable.

As the Focal Species selection process describes (see Section 3.1.3.1), the selected Focal Species are intended to best represent the habitats in the RCIS Area for the benefit of the whole suite of species that use those habitats. For the purpose of CGO development, the Focal Species and vegetation communities have been organized into

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the habitat groups (Table 3-1), as described in the introduction to the conservation elements (Section 3.1). For each habitat group below, a conservation goal was established with nested conservation objectives addressing the Focal Species, vegetation communities, and other landscape features and processes associated with each habitat group. The conservation objectives related to public lands reference specific conservation priority areas on public lands and provide measurable metrics (i.e., acreage of public lands) based on the public lands component of the conservation inventory (Section 3.2.2). The conservation objectives related to private lands reference specific conservation priority areas on private lands and provide measurable metrics (i.e., acreage of private lands) based on the private lands component of the conservation inventory (Section 3.2.2).

Table 3-6, Conservation Inventory of Habitat Groups in the Desert, Mountain, and Valley Regions of the SBC RCIS Area, provides a description of “general amounts and types of habitat,” consistent with FGC Section 1852(c)(9), where conservation actions could be implemented under the SBC RCIS to achieve the conservation goals and objectives. This inventory shows the conserved and non-conserved lands by habitat in the RCIS Area. Consistent with the CDFW RCIS Guidelines, the SBC RCIS conservation objectives are “specific and measurable” by providing an estimated inventory of non-conserved acres by habitat group and conservation priority areas in each objective where the conservation actions could be focused on public lands and/or private lands in the RCIS Area. The SBC RCIS is a voluntary and nonregulatory program, and there is no requirement to pursue or achieve the conservation goals and objectives of the SBC RCIS; however, implementation of any amount of the SBC RCIS actions identified in SBC RCIS Section 3.4.1 would contribute toward meeting these conservation goals and objectives, resulting in the greatest conservation outcomes in the RCIS Area.

The estimated inventory of habitat group acreages referenced in the conservation goals and objectives are not required to be conserved under the SBC RCIS, and individual projects only mitigate for biological resources as required by lead agencies under CEQA or the regulatory agencies under state and federal laws and regulations. The estimated acreages referenced in the conservation objectives are a “general amount” of each habitat group based on the mapping of vegetation communities; however, the capacity of these acreages to provide actual habitat for Focal Species or to be suitable as habitat mitigation for species impacts is not known and cannot be quantified. Particular habitat groups, including the desert scrub; grassland; transitional scrub, chaparral, and woodland; and developed and agriculture habitat groups, do not require mitigation under CEQA or existing laws and regulations unless required by lead agencies or regulatory

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agencies specifically to offset impacts to special-status plants or wildlife. Therefore, individual project mitigation would not contribute toward the conservation objective acreages for these habitat groups unless required under CEQA or existing laws and regulations or unless the project mitigation was provided through an MCA.

3.3.1 Desert Scrub

Goal DS-1: Sustain and enhance the biodiversity and ecological function of the desert scrub (DS) habitat group for the benefit of the vegetation communities, Focal Species, and other species associated with this habitat group.

Objective DS-1.1: Continue to protect and manage the existing acreage of DS habitats in public land designations considered conserved and in Local Conserved Lands on private lands in the following areas:

- National monuments, parks, preserves, and refuges
- BLM Wilderness and National Conservation Lands
- State Parks and CDFW lands
- Land trust and mitigation lands (The Wildlands Conservancy lands, Mojave Desert Land trust lands)

Objective DS-1.2: Implement targeted actions to increase or improve protection and/or management within the 1,103,384 acres of public land designations not considered conserved that support DS habitats in the following conservation priority areas:

- BLM ACECs
- USFS National Forests
- Other BLM lands
- Other state lands
- Other local government lands and open space and parks
- SBCFCD lands

Objective DS-1.3: Conserve DS habitats by protecting and managing, restoring, and/or enhancing DS habitats within the 870,855 acres of non-conserved undesignated private

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lands that are demonstrated to directly benefit Focal Species,⁸ focusing on the following conservation priority areas:

- Desert tortoise critical habitat units, tortoise conservation areas, and linkages between them in and around the Fremont-Kramer ACEC, Superior-Cronese ACEC, Ord-Rodman ACEC, and Pinto Mountains ACEC
- Granite Mountain region south of Barstow
- Morongo Basin
- Mountain and intermountain habitats for desert bighorn sheep (*Ovis canadensis nelsoni*), particularly those areas that support perennial and seasonal (i.e., winter storm-monsoonal runoff) streams and rivers; springs, oases, and tinajas (potholes in rocks); or artificial water catchments (guzzlers), between the North San Bernardino Mountains (Cushenbury) and Newberry Mountains to the western boundary of Twentynine Palms Marine Corps Base, Amboy area between Bristol Mountains and Bullion Mountains north of Twentynine Palms Marine Corps Base, and Johnson Valley between the Rodman Mountains and Lava Bed Mountains and the San Bernardino Mountains
- Mohave ground squirrel (*Xerospermophilus mohavensis*) key population centers (Coolgardie Mesa-Superior Valley, Edwards Air Force Base, North of Edwards, Ridgecrest, North Searles Valley, and Harper Lake) and habitat linkages (Fremont Valley/Spangler to North of Edwards, Pilot Knob to Coolgardie Mesa-Superior Valley, Harper Lake to Coolgardie Mesa-Superior Valley, and Edwards Air Force Base to North of Edwards and Harper Lake)
- Other contiguous, intact areas supporting DS habitats, particularly areas supporting Focal Species, contributing to habitat connectivity, or facilitating ecological processes as identified in the conservation prioritization provided in Section 3.4.2

3.3.2 Dune and Playa

Goal DP-1: Sustain and enhance the biodiversity and ecological function of the dune and playa (DP) habitat group for the benefit of the vegetation communities, Focal Species, and other species associated with this habitat group.

⁸ Desert tortoise, burrowing owl, golden eagle, LeConte's thrasher, American badger, desert bighorn sheep, desert kit fox, Mohave ground squirrel, pallid bat, Townsend's big-eared bat, alkali mariposa-lily, Barstow woolly sunflower, desert cymopterus, western Joshua tree, Mojave monkeyflower, Lane Mountain milk-vetch, and Parish's daisy.

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Objective DP-1.1: Continue to protect and manage the existing acreage of DP habitats in public land designations considered conserved in the following areas:

- BLM Wilderness
- BLM National Conservation Lands
- Land trust and mitigation lands

Objective DP-1.2: Implement targeted actions to increase or improve protection and/or management in the 47,700 acres of public land designations not considered conserved that support DP habitats, and the ecological processes that support DP habitats, in the following conservation priority areas, primarily BLM ACECs and other BLM lands:

- Coyote Dry Lake
- Cuddeback Dry Lake
- El Mirage Dry Lake
- Harper Dry Lake
- Lucerne Dry Lake
- Rabbit Dry Lake
- Troy Dry Lake
- Searles Lake
- Sand deposits associated with the Mojave River east of Barstow
- Other sand dunes, sheets, or deposits in West Desert region, particularly those in Johnson Valley and the Morongo Basin

Objective DP-1.3: Conserve DP habitats by protecting and managing, restoring, and/or enhancing DP habitats, and the ecological processes that support DP habitats, within the 19,436 acres of non-conserved undesignated private lands that are demonstrated to directly benefit Focal Species,⁹ focusing on the conservation priority areas listed under Objective DP-1.2.

⁹ Mojave fringe-toed lizard, Delhi Sands flower-loving fly, desert kit fox, pallid bat, and Barstow woolly sunflower.

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3.3.3 Grassland

Goal GRS-1: Sustain and enhance the biodiversity and ecological function of the grassland (GRS) habitat group for the benefit of the vegetation communities, Focal Species, and other species associated with this habitat group.

Objective GRS-1.1: Continue to protect and manage the existing acreage of GRS habitats in public land designations considered conserved and Local Conserved Lands in the following areas:

- National monuments, parks, preserves, and refuges
- BLM Wilderness National Conservation Lands
- State Parks and CDFW lands
- Land trust and mitigation lands

Objective GRS-1.2: Implement targeted actions to increase or improve protection and/or management in the 17,772 acres of public land designations not considered conserved that support GRS habitat in the following conservation priority areas:

- BLM ACECs
- USFS National Forests
- Other BLM lands
- Other state lands
- Other local government lands and open space and parks, focusing on areas around the Prado Basin, Jurupa Hills, Colton conservation areas, and Crafton Hills
- SBCFCD lands

Objective GRS-1.3: Conserve GRS habitats by protecting and managing, restoring, and/or enhancing GRS habitats within the 58,257 acres of non-conserved undesignated private lands that are demonstrated to directly benefit Focal Species,¹⁰ focusing on the following conservation priority areas:

- Chino Hills
- Jurupa Hills

¹⁰ Blainville's (coast) horned lizard, San Bernardino ringneck snake, western spadefoot, burrowing owl, golden eagle, Swainson's hawk, tricolored blackbird, white-tailed kite, Delhi Sands flower-loving fly, American badger, desert kit fox, mountain lion, pallid bat, intermediate mariposa-lily, Plummer's mariposa-lily, and Parry's spineflower.

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- Crafton Hills
- San Timoteo Canyon
- Loma Linda Hills
- Reche Canyon
- Other contiguous, intact areas supporting grassland in the RCIS Area supporting Focal Species or contributing to habitat connectivity as identified in the conservation prioritization provided in Section 3.4.2

3.3.4 Riparian and Wetland

Goal RW-1: Sustain and enhance the biodiversity and ecological function of the riparian and wetland (RW) habitat group for the benefit of the vegetation communities, Focal Species, and other species associated with this habitat group.

Objective RW-1.1: Continue to protect and manage the existing acreage of RW habitats in public land designations considered conserved and Local Conserved Lands in the following areas:

- National monuments, parks, preserves, and refuges
- BLM Wilderness National Conservation Lands
- State Parks and CDFW lands
- Land trust and mitigation lands

Objective RW-1.2: Implement targeted actions to increase or improve protection and/or management in the 14,057 acres of public land designations not considered conserved that support RW habitats in the following conservation priority areas:

- BLM ACECs
- USFS National Forests
- Other BLM lands
- Other state lands
- Other local government lands and open space and parks
- SBCFCD lands, focusing on the priority areas of Devil’s Canyon, Lytle Creek, Cajon Wash, Santa Ana River, City Creek, Mill Creek, Mojave River and tributaries, Morongo Basin drainages, and other drainages and floodways supporting RW habitats

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Objective RW-1.3: Conserve RW habitats by protecting and managing, establishing (creating), restoring, and/or enhancing RW habitats within the 21,307 acres of non-conserved undesignated private lands that are demonstrated to directly benefit Focal Species,¹¹ focusing on the following conservation priority areas:

- Santa Ana River corridor
- Lytle Creek
- Cajon Wash
- San Timoteo Creek
- Chino Hills State Park
- Prado Basin
- Loma Linda hills
- City Creek
- Plunge Creek
- Mill Creek
- Mojave River and tributaries, particularly from Mojave Narrows Regional Park to Helendale
- Oro Grande
- Big and Little Morongo Canyons in the Morongo Basin
- Little Horsethief Creek and the West Fork Mojave River, in the foothills south of Hesperia in the Summit Valley and Telephone Canyon area
- Wetlands and water features associated with agricultural fields near El Mirage and Newberry Springs
- Seeps and springs wherever they occur, including, but not limited to, those at Box Springs and Rabbit Springs in the Lucerne Valley, Whiskey Springs and Cushenbury Springs in the San Bernardino Mountain foothills, Paradise Springs northeast of Barstow, and in the Morongo Basin

¹¹ Arroyo toad, California red-legged frog, western pond turtle, least Bell's vireo, southwestern willow flycatcher, Swainson's hawk, tricolored blackbird, white-tailed kite, yellow-billed cuckoo, Victorville shoulderband, arroyo chub, Mohave tui chub, Santa Ana sucker, Santa Ana speckled dace, desert kit fox, Mojave River vole, mountain lion, pallid bat, Townsend's big-eared bat, alkali mariposa-lily, Gambel's watercress, marsh sandwort, and San Bernardino aster.

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- Other tributaries supporting RW habitats, particularly areas supporting Focal Species or contributing to habitat connectivity as identified in the conservation prioritization provided in Section 3.4.2

3.3.5 Riversidean Alluvial Fan Sage Scrub

Goal RAFSS-1: Sustain and enhance the biodiversity and ecological function of the Riversidean alluvial fan sage scrub (RAFSS) habitat group for the benefit of the vegetation communities, Focal Species, and other species associated with this habitat group.

Objective RAFSS-1.1: Continue to protect and manage the existing acreage of RAFSS habitat in Local Conserved Lands in the following areas:

- Land trust, conservation easement, mitigation banks (e.g., Woolly Star Preserve, Vulcan HCP conservation areas, Lytle Creek Conservation Bank, San Sevaine Preserve, North Etiwanda Preserve)

Objective RAFSS-1.2: Implement targeted actions to increase or improve protection and/or management in the 10,395 acres of public land designations not considered conserved that support RAFSS habitats in the following conservation priority areas:

- USFS National Forests
- Other BLM lands
- Other state lands
- Other local government lands and open space and parks
- SBCFCD lands, focusing on the priority areas of Devil’s Canyon, Lytle Creek, Cajon Wash, Santa Ana River, City Creek, Mill Creek, and other drainages and floodways supporting RAFSS

Objective RAFSS-1.3: Conserve RAFSS habitats by protecting and managing, establishing (creating), restoring, and/or enhancing RAFSS habitats within the 5,413 acres of non-conserved undesignated private lands that are demonstrated to directly benefit Focal Species,¹² focusing on the following conservation priority areas:

- Upper Santa Ana River wash
- Lytle Creek

¹² Blainville's (coast) horned lizard, San Bernardino ringneck snake, western spadefoot, Bell's sage sparrow, burrowing owl, coastal California gnatcatcher, golden eagle, white-tailed kite, Los Angeles pocket mouse, mountain lion, San Bernardino kangaroo rat, Santa Ana River woollystar, slender-horned spineflower, and white-bracted spineflower.

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- Cajon Wash
- Reche Canyon
- San Timoteo Canyon
- Other contiguous, intact foothill areas supporting RAFSS, including in northern Rancho Cucamonga, Fontana, Highland, and other areas supporting Focal Species or contributing to habitat connectivity as identified in the conservation prioritization provided in Section 3.4.2

3.3.6 Transitional Scrub, Chaparral, and Woodland

Goal TSCW-1: Sustain and enhance the biodiversity and ecological function of the transitional scrub, chaparral, and woodland (TSCW) habitat group for the benefit of the vegetation communities, Focal Species, and other species associated with this habitat group.

Objective TSCW-1.1: Continue to protect and manage the existing acreage of TSCW habitats in public land designations considered conserved and Local Conserved Lands over the next 10 years in the following priority areas:

- National monuments, parks, preserves, and refuges (Sand to Snow National Monument, Big Morongo Canyon National Preserve)
- BLM Wilderness National Conservation Lands (San Gorgonio Wilderness Area, Bighorn Mountain Wilderness Area)
- State Parks and CDFW lands (Chino Hills State Park, Wildwood Canyon State Park)
- Land trust and mitigation lands (North Etiwanda Preserve, Transition Habitat Conservancy lands, The Wildlands Conservancy lands, Mojave Desert Land trust lands, Oak Glen Preserve)

Objective TSCW-1.2: Implement targeted actions to increase or improve protection and/or management in the 128,668 acres of public land designations not considered conserved that support TSCW habitats in the following conservation priority areas:

- BLM ACECs (Granite Mountain Corridor ACEC, Juniper Flats ACEC)
- USFS National Forests (San Bernardino National Forest)
- Other BLM lands
- Other state lands

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- Other local government lands and open space and parks (Crafton Hills, Jurupa Hills, Glen Helen Regional Park, Mojave River Forks Regional Park)
- SBCFCD lands

Objective TSCW-1.3: Conserve TSCW habitats by protecting and managing, restoring, and/or enhancing TSCW habitats within the 179,654 acres of non-conserved undesignated private lands that are demonstrated to directly benefit Focal Species,¹³ focusing on the following conservation priority areas:

- Chino Hills
- Foothills of northern Rancho Cucamonga, Fontana, Highland, and Yucaipa
- Crafton Hills
- San Timoteo Canyon
- Loma Linda Hills
- Reche Canyon
- Jurupa Hills
- TSCW habitat areas in the northern San Bernardino Mountain foothills and Little San Bernardino Mountains
- TSCW habitat areas in the foothills south of Apple Valley, particular areas supporting Joshua tree woodland or juniper woodland or areas supporting Focal Species, contributing to habitat connectivity, or facilitating ecological processes
- TSCW habitat areas in the foothills west of Hesperia in the Baldy Mesa and Phelan area, particular areas supporting Joshua tree woodland or juniper woodland or areas supporting Focal Species, contributing to habitat connectivity, or facilitating ecological processes
- Other contiguous, intact areas of TSCW habitat, particularly areas supporting Focal Species or contributing to habitat connectivity as identified in the conservation prioritization provided in Section 3.4.2

¹³ Blainville's (coast) horned lizard, San Bernardino ringneck snake, western spadefoot, Bell's sage sparrow, burrowing owl, coastal California gnatcatcher, golden eagle, LeConte's thrasher, Swainson's hawk, white-tailed kite, American badger, desert bighorn sheep, desert kit fox, mountain lion, pallid bat, desert cymopterus, intermediate mariposa-lily, western Joshua tree, Lane Mountain milk-vetch, Mojave monkeyflower, Parish's daisy, Parry's spineflower, Plummer's mariposa-lily, San Bernardino aster, short-joint beavertail, and white-bracted spineflower.

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3.3.7 Developed and Agriculture

Goal DA-1: Sustain and enhance the biodiversity and ecological function of the developed and agriculture (DA) habitat group for the benefit of the Focal Species and other species associated with this habitat group.

Objective DA-1.1: Conserve DA habitats by protecting, managing, or otherwise maintaining DA habitats that are demonstrated to directly benefit Focal Species,¹⁴ focusing on the following conservation priority areas:

- Prado Basin
- Agricultural lands in areas of Redlands, Mentone, and Yucaipa
- El Mirage valley agricultural areas
- Newberry Springs/lower Mojave River Valley agricultural areas

3.4 Conservation Actions and Priorities

As shown in Exhibit 1, the CGOs provide the foundation for identifying the actions and priorities of the SBC RCIS. Contributions toward meeting the conservation objectives can be achieved through implementation of a variety RCIS actions. The selection of the appropriate actions, which are described in Section 3.4.1, will depend on the specific conservation or mitigation need in each situation. To assure that the conservation and mitigation actions achieve the greatest regional conservation benefit, conservation prioritization guidelines are provided in Section 3.4.2.

3.4.1 Actions

The CDFW State Wildlife Action Plan identified 11 statewide categories of actions to advance biological conservation objectives in the state (CDFW 2015). These included the following:

- **Planning Actions:** Data Collection and Analysis, Partner Engagement, Management Planning, Environmental Review, Land Use Planning, Law and Policy
- **Land Acquisition/Protection Actions:** Land Acquisition, Easement, and Lease; Economic Incentives
- **Land Management Actions:** Direct Management, Outreach and Education, Training and Technical Assistance

¹⁴ Burrowing owl, tricolored blackbird, Swainson's hawk, mountain lion, and pallid bat.

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Some of these statewide conservation categories, like data collection and analysis and partner engagement, are precursor actions necessary prior to conservation/mitigation action implementation. Other statewide conservation categories, like law and policy, are outside the purview of actions under the SBC RCIS. In identifying the suite of conservation and mitigation actions available for this region, the whole suite of potential available actions was considered.

Table 3-7 was developed to organize and summarize the SBC RCIS actions and link those actions to the conservation objectives and conservation elements (e.g., Focal Species, vegetation communities) for the SBC RCIS. The information provided in this table is intended to provide the action toolbox for entities seeking to implement actions or needing to implement mitigation in these regions. Section 3.4.2 provides a discussion regarding the prioritization of actions in the SBC RCIS. Table 3-7 includes Action IDs with a description of the applicable specific actions; not all specific actions listed under each Action ID must be implemented and the intent is for specific actions to be selected based on the site-specific or project-specific needs.

As indicated in FGC Section 1855(b), neither this RCIS nor any MCA adopted pursuant to it modifies, in any way, (a) the standards for issuance of incidental take permits or consistency determinations under the California Endangered Species Act, (b) the standards for issuance of lake or streambed alteration agreements under Section 1600 et seq., or (3) the standards under CEQA. In addition, nothing in this RCIS, nor in any MCA adopted pursuant to it, relieves a project proponent of the obligation to obtain all necessary permits, including, but not limited to, incidental take permits, consistency determinations, and lake and streambed alteration agreements, and to fulfill all avoidance, minimization, and mitigation measures required by those permits. For these reasons, CDFW and any other relevant regulatory agencies need to be consulted prior to implementing any actions in this RCIS that have any potential for impacts to regulated resources (such as listed species under the California Endangered Species Act or streambeds) to determine if any permits are needed. For all actions that involve surveys, the surveys need to be conducted by a qualified biologist according to CDFW-approved protocols or in accordance with established accepted protocols and with proper authorization.

The actions in Table 3-7 are not required to be implemented by any applicant or land use agency. Notwithstanding the SBC RCIS, individual projects would only implement mitigation as required by lead agencies under CEQA or the regulatory agencies under state and federal laws and regulations. Particular habitat groups, including the desert scrub; grassland; transitional scrub, chaparral, and woodland; and developed and agriculture habitat groups, do not require mitigation under CEQA or existing laws and

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regulations unless required by lead agencies or regulatory agencies specifically to offset impacts to special-status plants or wildlife. Therefore, individual project mitigation would not include actions associated with these habitat groups unless required under CEQA or existing laws and regulations. The RCIS does not require conservation of vegetation that does not currently require mitigation under CEQA by the local lead agency, including desert scrub, transitional scrub/chaparral/woodland, and non-native grasslands, or other habitats that do not support focal species (FGC Section 1851(l) and Section 1852(b)).

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
Desert Scrub (DS)	DS-CA1	Coordinate with existing land managers to identify and implement management activities within public lands that would maintain and enhance habitat quality for Focal Species in desert scrub vegetation communities beyond that which is provided by the existing management regime.	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), and Figure 3-2 (Habitat Groups and Vegetation Communities) to identify the area of interest, confirm it is located within public lands and contains desert scrub habitat, and identify the management agency associated with the area of interest. Consider areas of interest with moderate to high climate change resiliency (Figure E-1, Terrestrial Climate Change Resilience) and/or areas of low exposure, which are areas likely to remain suitable over time (Figure E-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix E). See conservation priority areas described in Objective DS-1.2. • Specific Actions. Review the current management plans and activities, then implement and fund actions that would protect, maintain, and/or enhance desert scrub habitat quality beyond that which is currently provided. Actions include: <ul style="list-style-type: none"> ○ DS-CA1-01: Biological Surveys. Identify areas supporting Focal Species by funding and implementing surveys to identify presence, distribution, and/or abundance of Focal Species and to assess the habitat quality within the area of interest. Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, habitat quality, information on Focal Species and other conservation elements, and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the 	DS-1.2	<p>DS DS Focal Species¹</p> <p>DS Focal Species and Habitat Prioritization Notes: Actions should prioritize listed species, species of concern, and Species of Greatest Conservation Need described in the SWAP (CDFW 2015, Appendix D), which include DS Focal Species desert tortoise, burrowing owl, LeConte’s thrasher, American badger, desert bighorn sheep, Mohave ground squirrel, pallid bat, Townsend’s big-eared bat, Lane Mountain milkvetch, Parish’s daisy, and western Joshua tree and their habitats. See Species Accounts in Appendix C for species-specific habitat requirements and Section 3.4.2, Guidelines for Prioritizing Actions.</p>

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>appropriate season and in accordance with established accepted protocols and authorizations, if they exist.</p> <ul style="list-style-type: none"> ○ DS-CA1-02: Habitat Protection. Install wildlife-friendly fencing to restrict human access and activities. Fencing must allow for movement of all wildlife species. Fencing plans will take into consideration the movement and safety of wildlife to inform need, type, and locations of fencing. If fencing is employed as a management action, design and install it such that it shall not affect sand transport function or other fluvial and geomorphic processes. In certain situations, it may be important to consider installation of wildlife exclusion fencing, such as along highways and to appropriately funnel movement to crossing structures to prevent vehicular strikes. Post signage to inform the public on exclusionary fencing, and develop educational materials to distribute to the public related to protections and exclusions. ○ DS-CA1-03: Conservation Durability Agreements. Develop and implement durability agreements with public land management entities for the protection and management of public lands for the purpose of habitat conservation. ○ DS-CA1-04: Grazing Removal. Develop and implement grazing lease relinquishment agreements to remove grazing pressures on desert tortoise and other Focal Species' habitats. ○ DS-CA1-05: Habitat Monitoring and Management. Conduct regular (annual or bi-annual) monitoring of Focal Species and habitat quality; after each monitoring effort biologists produce a monitoring report documenting methods, 		

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Table 3-7
RCIS Actions Summary

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>results, and any recommendations; implement management recommendations to maintain habitat conditions.</p> <ul style="list-style-type: none"> ○ DS-CA1-06: Habitat Enhancement. Develop and implement a Habitat Enhancement Plan that would describe methods and actions targeted to enhance habitat for Focal Species of interest. Actions should enhance habitat quality in areas supporting or that may support Focal Species (e.g., native plant restoration/enhancement of disturbed or low quality habitat, non-native plant species removal). The plan should be supported by initial biological surveys (described above) and describe the areas targeted for enhancement along with long-term (at least 5 consecutive years) monitoring actions, success criteria, and adaptive monitoring actions. The goal of the enhancement plan would be to enhance degraded habitat adjacent to moderate to high quality habitat to support occupancy of Focal Species. Degraded habitat may include areas of low quality habitat or fragmented areas targeted for enhancement to support habitat linkages. ● Coordinate with Land Managers. Throughout the processes described above, parties should coordinate with existing land managers for site specific development and implementation of localized actions to protect, maintain, and enhance habitat quality for Focal Species. Coordination includes the submittal of any reports developed for the area of interest to the public land managers. 		
Desert Scrub (DS)	DS-CA2	Acquire, through fee title or conservation easement, unprotected lands for Focal Species,	<ul style="list-style-type: none"> ● Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), Figure 3-2 (Habitat Groups and Vegetation Communities), and Figure 3-4B (Habitat Value) to identify private/undesignated lands with Desert Scrub habitat of interest for acquisition. Consider areas of interest 	DS-1.3	DS DS Focal Species

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
		focusing on identified desert scrub conservation priority areas.	<p>with moderate to high climate change resiliency (Figure E-1, Terrestrial Climate Change Resilience) and/or areas of low exposure, which are likely to remain suitable over time (Figure D-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix E). See conservation priority areas described in Objective DS-1.3.</p> <ul style="list-style-type: none"> • Specific Actions. Implement and fund actions for areas occupied by or suitable for Focal Species in conservation priority areas. Actions include: <ul style="list-style-type: none"> ○ DS-CA2-01: Biological Surveys. Identify conservation priority areas within the areas of interest. Conservation priority areas are described in Objective DS-1.3. Within these areas, identify locations supporting Focal Species by funding and implementing surveys to identify presence, distribution, and/or abundance of Focal Species, and to assess the habitat quality within the area of interest. Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, habitat quality, information on Focal Species and other conservation elements and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance with established accepted protocols and authorizations, if they exist.² ○ DS-CA2-02: Resource Management Plan. Develop and implement a long-term Resource Management Plan that 		See DS Focal Species and Habitat Prioritization notes under DS-CA1.

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>describes the proposed long-term monitoring and management of the land for the benefit of landscape and biological features along with success criteria and adaptive management strategies. Implementation of the plan will require funding through endowment or other long-term funding mechanisms. Funding details will also need to be described in the plan. If applicable, coordinate with resource agencies (USFWS and CDFW) in the development of this Plan.</p> <ul style="list-style-type: none"> ○ DS-CA2-03: Habitat Preservation. At a localized level and based on the biological surveys, consider areas suitable for preservation. See Objective DS-1.3 and Section 3.4.2, Guidelines for Prioritizing Actions. Acquire, through fee title, conservation easement or other protective mechanism, unprotected habitat areas for conservation. Provide long-term funding for management and monitoring of acquired/conserved land. Implement the final and approved Resource Management Plan. 		
Desert Scrub (DS)	DS-CA3	Enhance habitat quality for Focal Species in desert scrub habitat degraded by invasive plant species (e.g., Sahara mustard) through the implementation of invasive plant control actions.	<ul style="list-style-type: none"> ● Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), Figure 3-2 (Habitat Groups and Vegetation Communities), and Figure 3-4A (San Bernardino County RCIS Habitat Value) to identify land ownership and areas of interest with desert scrub. See conservation priority areas described in Objective DS-1.2 and DS-1.3. ● Specific Actions. Implement and fund actions that would enhance areas occupied by or suitable for Focal Species in conservation priority areas. Actions include: <ul style="list-style-type: none"> ○ DS-CA3-01: Biological Surveys. Identify conservation priority areas within the areas of interest. Conservation priority areas are described in Objective DS-1.3. Within these 	DS-1.2 DS-1.3	DS DS Focal Species See DS Focal Species and Habitat Prioritization notes under DS-CA1.

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>areas identify locations of desert scrub habitat degraded by invasive species. Suitable locations should be identified through site-specific assessments that identify the basic opportunities and constraints for restoration and biological resources on site, assess riparian and wetland conditions and suitability for Focal Species, and establish baseline conditions and suitability for restoration. Survey products include a survey report documenting methods, results, and figures displaying the distribution of invasive plant abundance and location of habitat potentially supporting Focal Species. The report and figures should include results from any literature/database searches.</p> <ul style="list-style-type: none"> ○ DS-CA3-02: Invasive Species Management Plan. Based on the biological surveys develop and implement an Invasive Species Management Plan to guide the identification, removal, and monitoring of areas proposed for enhancement. Consult the Land Manager's Guide to Developing an Invasive Plant Management Plan (USFWS and Cal-IPC 2018) in developing the plan. The plan should include a discussion on the control methods, including herbicides, hand removal, and mechanical means, required to be successful in invasive species removal. The plan should include details regarding native plant seeding or plantings along with success criteria and adaptive management procedures. ▪ Note: The California Invasive Species Advisory Committee provides an all-taxa list of invasive species found in the state (CISAC 2021). In addition, the Appendix F of the State Wildlife Action Plan (CDFW 2015) provides a list of conservation strategies and actions from the National Invasive Species Council, objectives and implementation 		

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			tasks from the National Invasive Species Management Plan, conservation strategies and actions by the Invasive Species Council of California, and recommended actions from Stopping the Spread: A Strategic Framework for Protecting California from Invasive Species (ISCC 2011).		
Desert Scrub (DS)	DS-CA4	Enhance wildlife movement and habitat connectivity by implementing actions that improve wildlife access across/around barriers to movement.	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), Figure 3-2 (Habitat Groups and Vegetation Communities), Figure 3-1 (Habitat Linkages), and Figure 3-4A (San Bernardino County RCIS Habitat Value) to identify the area of interest within public lands or undesignated private lands within desert scrub habitat. Identify and coordinate with the management agency or landowners in the area of interest. See conservation priority areas described in Objectives DS-1.2 and DS-1.3 as well as in existing literature and databases. • Specific Actions. Implement and fund specific wildlife movement and connectivity enhancement actions in prioritized locations. <ul style="list-style-type: none"> ○ DS-CA4-01: Wildlife Movement Studies. Identify general areas of interest where studies will be conducted, per above. Perform reconnaissance surveys to review areas of potential interest to identify existing landscape features that would facilitate or provide barriers to movement and narrow down the scope and focus of the surveys (e.g., candidate areas of potential movement where enhancement may be beneficial). Perform movement studies to identify movement and use in the areas of interest. Studies should minimally include camera and sign/track studies and the following studies, as applicable: road mortality, highway noise/light, drone flight for game trail and landscape feature mapping. Following the completion of movement studies, prepare and provide a report documenting the methods and results of literature 	DS-1.2 DS-1.3	DS Focal Species DS Focal Species and Habitat Prioritization notes: Actions should prioritize Focal Species based on key conservation areas (described in DS-1.3) including desert tortoise, Mohave ground squirrel, and desert bighorn sheep (see Species Accounts in Appendix C for species-specific habitat requirements and Section 3.4.2, Guidelines for Prioritizing Actions).

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>review, investigations/movement studies, existing structures or features that facilitate or provide barriers to movement, land use ownership and management conflicts or restrictions, specific management actions for enhancing wildlife movement, and prioritization of those actions.</p> <ul style="list-style-type: none"> ○ DS-CA4-02: Wildlife Movement Enhancement. Enhance existing habitat connections/linkages through the construction of connections or improvements of existing but underutilized connections; construct safe roadway passages; implement safe roadway management actions; implement wildlife friendly deterrents to discourage or redirect roadway use to safe passage areas (e.g., culverts, overpasses, fencing to guide movements and prevent vehicle collisions); install “smart” signage alerting vehicles when wildlife are approaching roadways; install signage where roadways are difficult to fence; and/or remove wildlife movement corridor obstructions/barriers that prevent corridor use or entrapment. ○ DS-CA4-03: Wildlife Movement Preservation. Acquire, through fee title, conservation easement, or other protective mechanism, unprotected wildlife movement areas to limit human activity and disruption. Provide long-term funding for management and monitoring of acquired/conserved land. ○ DS-CA4-04: Wildlife Movement Monitoring and Management. Fund and implement management actions to maintain wildlife movement over the long term. Conduct follow-up wildlife studies (e.g., before-after-control-impact studies) to assess the success of actions. 		
Desert Scrub (DS)	DS-CA5	Implement conservation and mitigation actions for	<p>Desert tortoise Implement actions consistent with the most recent recovery plan (e.g., USFWS 2011 Revised Recovery Plan for the Mojave Population of the</p>	DS-1.2 DS-1.3	desert tortoise Mohave tui chub

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
		<p>federally listed desert scrub Focal Species consistent with USFWS Recovery Plans or the most current guidance.</p>	<p>Desert Tortoise [<i>Gopherus agassizii</i>]), which are summarized below as the following actions:</p> <ul style="list-style-type: none"> • DS-CA5-01: Inventory lands to assess population density and distribution for land conservation. • DS-CA5-02: Acquire, through fee title or conservation easement, suitable habitat lands for conservation that would connect functional habitat or improve/restore habitat and management of surrounding areas for desert tortoise; connect blocks of desert tortoise habitat to maintain gene flow between populations; install and maintain tortoise-barrier fencing and signage around conserved lands and along highways to exclude human activities, grazing, vehicular use, and other threats from access to tortoise habitat. • DS-CA5-03: Implement non-native invasive species removal programs, trash and debris removal activities to reduce predator attraction to areas, environmental educational programs to inform the public, and regular patrols of occupied desert tortoise habitat to prevent intentional or unintentional harm to the species or its habitat. • DS-CA5-04: Implement an adaptive management program on managed and conserved lands. <p>Lane Mountain milk-vetch</p> <p>Implement actions consistent with the most recent guidance documents (e.g., USFWS 2008 Lane Mountain Milk-Vetch [<i>Astragalus jaegerianus</i>] 5-Year Review: Summary and Evaluation) and where applicable the Integrated Natural Resources Management Plan (on military lands) and West Mojave Plan, which are summarized below as the following actions:</p> <ul style="list-style-type: none"> • DS-CA5-05: Inventory lands to assess population density and distribution for land conservation. 		<p>Lane Mountain milk-vetch Parish's daisy</p>

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<ul style="list-style-type: none"> • DS-CA5-06: Acquire, through fee title or conservation easement, suitable habitat lands for conservation and implement conservation and enhancement activities (e.g., non-native species removal); establish fencing around conserved lands to limit disturbance by human activities or grazing. • DS-CA5-07: Develop management plans to guide management activities in maintaining and enhancing habitat for extant populations. • DS-CA5-08: Fund and implement studies to assess the presence and abundance of seed banks at extant populations. • DS-CA5-09: Fund and implement basic life history studies (e.g., studies on soil seed bank ecology to understand patch dynamics within each population, understand seed dispersal and dispersers). • DS-CA5-10: Fund and carry out efforts to store seed from all extant populations in a long-term seed-storage facility (sponsored by the Center for Plant Conservation). <p>Parish's daisy Implement actions consistent with the most recent recovery plan (e.g., USFWS 1997 San Bernardino Mountains Carbonate Plants Draft Recovery Plan), which are summarized below as the following actions:</p> <ul style="list-style-type: none"> • DS-CA5-11: Since majority of populations occur on federal lands (and in areas of interest for mining activities), work with land managers to implement actions for the protection, conservation, and management of lands (as described under DS-CA1). • DS-CA5-12: Fund and implement surveys on private lands to identify habitat supporting Focal Species, collect data on species abundance and distribution within private or federal managed lands, and identify areas of interest for protecting, maintaining, or enhancing habitat quality and connectivity. 		

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<ul style="list-style-type: none"> • DS-CA5-13: Developing a site- and species-specific management plan within the greater land management area to clearly guide maintaining, protecting, or enhancing habitat. <p>Please see the species-specific recovery plan (https://ecos.fws.gov/ecp/) for each of these species for additional conservation and mitigation actions that would benefit these species.</p>		
Desert Scrub (DS)	DS-CA6	Implement conservation and mitigation actions for Mohave ground squirrel consistent with the Conservation Strategy for Mohave Ground Squirrel (CDFW 2019) or the most current guidance.	<p>Mohave Ground Squirrel</p> <ul style="list-style-type: none"> • DS-CA6-01: Designate public lands for long-term conservation of Mohave ground squirrel habitat within Mohave ground squirrel core population areas, peripheral population areas, and linkages. See Action DS-CA1, above. • DS-CA6-02: For private lands within Mohave ground squirrel core population areas, peripheral population areas, and linkages, work with willing landowners to secure protection of Mohave ground squirrel habitat, either through conservation easement or purchase. See Action DS-CA2, above. • DS-CA6-03: Implementation habitat restoration projects in high priority sites within Mohave ground squirrel core population areas, peripheral population areas, and linkages. • DS-CA6-04: Establish protections for areas projected to remain suitable and/or become suitable for Mohave ground squirrel in the future, as described in CDFW 2019. 	DS-1.2 DS-1.3	Mohave ground squirrel
Desert Scrub (DS)	DS-CA7	Implement conservation and mitigation actions for western Joshua tree	<p>Western Joshua Tree</p> <ul style="list-style-type: none"> • DS-CA7-01: Provide long-term protection of western Joshua tree woodlands and other habitats supporting western Joshua trees on public lands through implementation of durability agreements with the existing land management entities and fund development and implementation of long-term management plans on those lands. See Action DS-CA1, above. 	DS-1.2 DS-1.3	western Joshua tree

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<ul style="list-style-type: none"> • DS-CA7-02: Acquire and preserve private lands, through fee title or conservation easement from willing sellers, supporting western Joshua tree woodlands and other habitats with western Joshua trees and fund development and implementation of long-term management plans on those lands. Prioritize lands with large patches of western Joshua tree woodlands, that are contiguous with other conserved lands, and that provide climate change refugia for the species for long-term viability and species persistence. See Action DS-CA2, above. • DS-CA7-03: Develop and implement a western Joshua tree population augmentation plan, which would use locally collected seed or cuttings propagated in a nursery, grown as container plants, and planted and maintained in suitable habitat areas. Detailed specifications for each stage of plan would be developed, including materials collections, propagation, planting, watering and maintenance, and monitoring. Performance criteria would be developed. Suitable habitat areas for population augmentation would be on public or private lands with sufficient habitat protections and long-term management. • DS-CA7-04: Develop and implement enhancement plans on public or private lands to improve habitat quality in western Joshua tree woodlands and other habitats supporting western Joshua trees, including actions that manage for invasive non-native plant species and wildfires. See Action DS-CA3, above. • DS-CA7-05: Manage unauthorized access through fencing, signage, patrolling, or other measures on lands supporting western Joshua tree woodlands and other habitats with western Joshua trees to prevent activities that can degrade habitat from off-highway vehicles, debris dumping, and wildfire ignition. 		

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<ul style="list-style-type: none"> • DS-CA7-06: Implement measures consistent with the Western Joshua Tree Conservation Act (CFGC 1927-1927.12) or the most current CDFW guidance related to western Joshua tree. 		
Desert Scrub (DS)	DS-CA8	Implement conservation and mitigation actions for burrowing owl consistent with the Staff Report on Burrowing Owl Mitigation (CDFG 2012) or the most current guidance.	<p>Burrowing Owl</p> <ul style="list-style-type: none"> • Identify Area of Interest. Determine the area of interest where implementation of surveys, conservation, and mitigation actions for burrowing owls will occur. This may be any development areas directly and indirectly impacted by a project, adjacent areas up to 150 meters or more where effects could extend off site, and/or areas proposed for conservation (Appendix C; CDFG 2012). With the support of biologists, review literature and databases to determine the locations of burrowing owl occurrences. In addition, use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), and Figure 3-2 (Habitat Groups and Vegetation Communities) to identify land ownership and areas of interest. • Specific Actions. Implement actions for areas occupied by or suitable for burrowing owl. Actions should include: <ul style="list-style-type: none"> ○ DS-CA8-01: Habitat Assessments and Surveys. Carry out actions described in the most recent guidance for burrowing owl mitigation. This includes performing literature and database review and habitat assessments, which includes documenting suitably sized burrows (Appendix C, CDFG 2012); if present, coordinate with CDFW and perform follow-up protocol breeding season surveys between February 1 and August 31 (Appendix D, CDFG 2012). ○ DS-CA8-02: Actions. Develop a Mitigation Management Plan for the persistence of burrowing owls on mitigation sites. The plan should address the items in Appendix F of CDFG 	DS-1.2 DS-1.3	burrowing owl

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RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			2012 including topics related to non-native invasive species removal programs; trash and debris removal activities to reduce predator attraction to areas; environmental educational programs to inform the public and stakeholders; prohibiting the use of rodenticides, poisons, and herbicides; supporting the expansion of fossorial populations (e.g., ground squirrel populations); fencing key nesting locations to reduce human presence and activities; protecting and enhancing nesting through the placement of artificial burrows; protecting and enhancing foraging habitat; minimizing or preventing unnatural causes of burrowing owl population declines (e.g., nest burrow destruction, chemical control of rodent hosts and prey); and adopting success criteria and adaptive management strategies. The plan should address self-sustaining ecosystems that can support burrowing owls and that would require minimal long-term management.		
Desert Scrub (DS)	DS-CA9	Use approved mitigation/conservation banks and in-lieu fee programs to mitigate for desert scrub vegetation and associated Focal Species, as applicable and available within defined service areas. If applicable, implement actions	<ul style="list-style-type: none"> • Specific mitigation banks and in-lieu fee information can be found on regulatory agencies websites, such as CDFW Conservation and Mitigation Banking (https://wildlife.ca.gov/Conservation/Planning/Banking) or Regulatory In Lieu Fee and Bank Information Tracking System (https://ribits.ops.usace.army.mil/ords/f?p=107:2). RCIS Figure 2-6 (Land Designations) also identifies the broad regional locations of Local Conserved Lands, which includes existing mitigation banks. • Coordinate with the appropriate bank/in-lieu fee program for information on available credits and pricing related to desert scrub and associated Focal Species mitigation. Purchase credits for mitigation needs. 	DS-1.1	DS DS Focal Species

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Table 3-7 RCIS Actions Summary

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
		identified in existing, approved HCP.	<ul style="list-style-type: none"> For projects and activities covered within an existing, approved HCP and for permittees under those plans, implement actions identified in the applicable HCP (see Section 2.6 and Section 3.5.1). 		
Dune and Playa (DP)	DP-CA1	Coordinate with existing land managers to identify and implement management activities within public lands that would maintain and enhance habitat quality for Focal Species in dune and playa vegetation communities beyond that which is provided by the existing management regime.	<ul style="list-style-type: none"> Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), and Figure 3-2 (Habitat Groups and Vegetation Communities) to identify the area of interest, confirm it is located within public lands and contains dune and playa habitat, and identify the management agency associated with the area of interest. Consider areas of interest with moderate to high climate change resiliency (Figure E-1, Terrestrial Climate Change Resilience) and/or areas of low exposure, which are areas likely to remain suitable over time (Figure E-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix E). See conservation priority areas described in Objective DP-1.2. Specific Actions. Review the current management plans and activities, then implement and fund actions that would protect, maintain, and/or enhance dune and playa habitat quality beyond that which is currently provided. Actions include: <ul style="list-style-type: none"> DP-CA1-01: Biological Surveys. Identify areas supporting Focal Species by funding and implementing surveys to identify presence, distribution, and/or abundance of Focal Species and assess the habitat quality within the area of interest. Note: Biological surveys should be area specific, as DP Focal Species are generally endemic to specific area or specific soil characteristics (i.e., Mojave fringe-toed lizard inhabits areas of fine wind-blown sand and sparse creosote scrub on loose sand dunes; Delhi Sands flower-loving fly is endemic to Colton Dunes and occurs in other dune and playa formations on fine sandy substrates; Barstow woolly sunflower is 	DP-1.2	<p>DP DP Focal Species³</p> <p>DP Focal Species and Habitat Prioritization notes: Given that DP Focal Species are generally endemic, prioritization may consider focused efforts on those with a wider area of potential habitat. This would include the Mojave fringe-toed lizard and Barstow woolly sunflower. (see Species Accounts in Appendix C for species-specific habitat requirements and Section 3.4.2, Guidelines for Prioritizing Actions).</p>

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>endemic to the west-central Mojave Desert and occurs in Mojavean desert scrub, creosote bush scrub, chenopod scrub, and desert playas, with a preference for open, flat, barren sites with sandy or rocky soils and margins of alkali sinks and depressions distributed among saltbush or creosote bush scrub) (see Species Accounts in Appendix C). Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, information on Focal Species and other conservation elements, and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance with established accepted protocols and authorizations, if they exist.</p> <ul style="list-style-type: none"> ○ DP-CA1-02: Habitat Protection. Install wildlife-friendly fencing to restrict human access and activities. Fencing must allow for movement of all wildlife species. Fencing plans will take into consideration the movement and safety of wildlife to inform need, type, and locations of fencing. If fencing is employed as a management action, design and install it such that it shall not affect sand transport function or other fluvial and geomorphic processes. In certain situations, it may be important to consider installation of wildlife exclusion fencing, such as along highways and to appropriately funnel movement to crossing structures to prevent vehicular strikes. Post signage to inform the public on exclusionary fencing, 		

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>and develop educational materials to distribute to the public related to protections and exclusions.</p> <ul style="list-style-type: none"> ○ DP-CA1-03: Habitat Monitoring and Management. Conduct regular (annual or bi-annual) monitoring of Focal Species and habitat quality; after each monitoring effort biologists produce a monitoring report documenting methods, results, and any recommendations; implement recommended management actions to maintain habitat conditions. ○ DP-CA1-04: Habitat Enhancement. Develop and implement a Habitat Enhancement Plan which would describe methods and actions targeted to enhance habitat for Focal Species of interest. Actions should enhance habitat quality in areas supporting or that may support Focal Species (e.g., native plant restoration/enhancement of disturbed or low quality habitat, non-native plant species removal). The plan should be supported by initial Biological Surveys (described above) and describe the areas targeted for enhancement along with long-term (at least 5 consecutive years) monitoring actions, success criteria, and adaptive monitoring actions. The goal of the enhancement plan would be to enhance degraded habitat adjacent to moderate to high quality habitat to support occupancy of Focal Species. Degraded habitat may include areas of low quality habitat or fragmented areas targeted for enhancement to support habitat linkages. ● Coordinate with Land Managers. Throughout the processes described above, parties should coordinate with existing land managers for site specific development and implementation of localized actions to protect, maintain, and enhance habitat quality for Focal Species. Coordination includes the submittal of any 		

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			reports developed for the area of interest to the public land managers.		
Dune and Playa (DP)	DP-CA2	Acquire, through fee title or conservation easement, unprotected lands for Focal Species, focusing on identified dune and playa conservation priority areas. These may also include sand sources, fluvial sand transport areas, fluvial sand deposition areas, and aeolian sand transport corridor areas.	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), Figure 3-2 (Habitat Groups and Vegetation Communities, and Figure 3-4B (Habitat Value) to identify private/undesignated lands with DP habitat of interest for acquisition. Consider areas of interest with moderate to high climate change resiliency (Figure D-1, Terrestrial Climate Change Resilience) and/or areas of low exposure, which are areas likely to remain suitable over time (Figure D-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix D). See conservation priority areas described in Objectives DP-1.2 and DP-1.3. • Specific Actions. Implement and fund actions for areas occupied by or suitable for Focal Species in conservation priority areas. Actions include: <ul style="list-style-type: none"> ○ DP-CA2-01: Biological Surveys. Identify conservation priority areas within the areas of interest. Conservation priority areas are described in Objectives DS-1.2 and DP-1.3. Note: Biological surveys should be area specific, as DP Focal Species are generally endemic to specific area or specific soil characteristics (see details in Action DP-CA1). Within these areas, identify locations supporting Focal Species by funding and implementing surveys to identify presence, distribution, and/or abundance of Focal Species. Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, habitat quality, information on Focal Species and other conservation elements, and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat 	DP-1.3	<p>DP DP Focal Species</p> <p>See DP Focal Species and Habitat Prioritization notes under DP-CA1.</p>

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance with established accepted protocols and authorizations, if they exist. The report should identify any areas contributing to habitat connectivity or ecological processes.²</p> <ul style="list-style-type: none"> ○ DP-CA2-02: Resource Management Plan. Develop and implement a long-term Resource Management Plan that describes the proposed long-term monitoring and management of the land for the benefit of landscape and biological features along with success criteria and adaptive management strategies. Implementation of the plan will require funding through endowment or other long-term funding mechanisms. Funding details will also need to be described in the plan. If applicable, coordinate with resource agencies (USFWS and CDFW) in the development of this plan. ○ DP-CA2-03: Habitat Preservation. At a localized level and based on the biological surveys, consider areas suitable for preservation. See Objectives DP-1.2 and DP-1.3 and Section 3.4.2, Guidelines for Prioritizing Actions. Acquire, through fee title, conservation easement or other protective mechanism, unprotected habitat areas for conservation. Provide long-term funding for management and monitoring of acquired/conserved land. Implement the final and approved Resource Management Plan, which should include measures to monitor and maintain groundwater levels to support playa groundwater-dependent vegetation. 		

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
Dune and Playa (DP)	DP-CA3	Implement actions that maintain or restore the sand supply, transport, and/or deposition functions of the dune and playa systems.	<ul style="list-style-type: none"> • DP-CA3-01: System Assessment, Maintenance, and Restoration. Fund studies to understand the site-specific processes related to sediment transport and deposition. The assessments should identify the sand supply, transport, and/or deposition functions of the DP system and include eolian system maps of the RCIS Area, where not currently available. Implement recommended actions to maintain or restore functions, such as installing sand fences in areas of sand accumulation, removing existing obstacles to sand migration, avoiding/minimizing new construction of obstacles to sand migration, planting native vegetation, and including an environmental educational component to inform the public of closed/sensitive areas or guidelines for further protection. 	DP-1.2 DP-1.3	dune and playa DP Focal Species See DP Focal Species and Habitat Prioritization notes under DP-CA1.
Dune and Playa (DP)	DP-CA4	Implement conservation and mitigation actions for Delhi Sands flower-loving fly consistent with the USFWS Recovery Plan for the species (USFWS 2019) or the most current guidance.	<p>Delhi Sands flower-loving fly</p> <p>Implement actions consistent with the most recent recovery plan (e.g., USFWS 2019 Recovery Plan Amendment for Delhi Sands Flower-Loving Fly [<i>Rhaphiomidas terminatus abdominalis</i>]). There are three recovery units for Delhi Sands flower-loving fly: Ontario, Jurupa, and Colton. The recovery plan indicates that downlisting recovery needs to have eight areas of suitable and occupied habitat protected, managed and conserved across the three Recovery Units, and that each of the eight areas be at least 20 hectares (50 acres). Efforts should focus on funding surveys to identify areas of potentially restorable habitat (underdeveloped lands), shown in Figure 1 of the Recovery Plan (USFWS 2019), summarized as the following actions:</p> <ul style="list-style-type: none"> • DP-CA4-01: In areas with suitable or potentially restorable habitat, acquire, through fee title or conservation easement, these lands for conservation. Lands may be purchased as “stepping stones” to link preserves (vs. continuous “habitat corridors”). 	DP-1.2 DP-1.3	Delhi Sands flower-loving fly

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Table 3-7 RCIS Actions Summary

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<ul style="list-style-type: none"> • DP-CA4-02: Manage the acquired lands for reproduction by restoring or enhancing habitat and minimally establishing both the suspected primary adult feeding plant (<i>Eriogonum fasciculatum</i>) and the plant associated with oviposition (<i>Heterotheca grandiflora</i>). • DP-CA4-03: Develop a long-term management plan that at minimum includes ongoing survey efforts to measure the success of the established plants and presence of the species. The plan should address measures and actions to remove invasive, non-native Argentine ants (<i>Linepithema humile</i>), which could adversely affect the species (see USFWS 2019). In addition, since little is known of the species' life history and habitat, management should be adaptive and closely coordinated with USFWS. 		
Dune and Playa (DP)	DP-CA5	Use approved mitigation/conservation banks and in-lieu fee programs to mitigate for dune vegetation and associated Focal Species, as applicable and available within defined service areas. If applicable, implement actions identified in existing, approved HCP.	<ul style="list-style-type: none"> • Specific mitigation banks and in-lieu fee information can be found on regulatory agencies websites, such as CDFW Conservation and Mitigation Banking (https://wildlife.ca.gov/Conservation/Planning/Banking) or Regulatory In Lieu Fee and Bank Information Tracking System (https://ribits.ops.usace.army.mil/ords/f?p=107:2). RCIS Figure 2-6 (Land Designations) also identifies the broad regional locations of Local Conserved Lands, which include existing mitigation banks. • Coordinate with the appropriate bank/in-lieu fee program for information on available credits and pricing related to dune habitat and associated Focal Species mitigation. Purchase credits for mitigation needs. • For projects and activities covered within an existing, approved HCP and for permittees under those plans, implement actions identified in the applicable HCP (see Section 2.6 and Section 3.5.1). 	DP-1.1	dune Delhi Sands flower-loving fly
Grassland (GRS)	GRS-CA1	Coordinate with existing land	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), and Figure 3-2 	GRS-1.2	native grasslands non-native grasslands

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RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
		managers to identify and implement management activities within public lands that would maintain and enhance habitat quality for Focal Species in grassland vegetation communities beyond that which is provided by the existing management regime.	<p>(Habitat Groups and Vegetation Communities) to identify the area of interest, confirm it is located within Public Land and contains grassland habitat, and identify the management agency associated with the area of interest. Consider areas of interest with moderate to high climate change resiliency (Figure E-1, Terrestrial Climate Change Resilience) and/or areas of low exposure, which are likely to remain suitable over time (Figure E-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix E). See conservation priority area described in Objective GRS-1.2.</p> <ul style="list-style-type: none"> • Specific Actions. Review the current management plans and activities, then implement and fund actions that would protect, maintain, and/or enhance grassland habitat quality beyond that which is currently provided. Actions include: <ul style="list-style-type: none"> ○ GRS-CA1-01: Biological Surveys. Identify areas supporting Focal Species by funding and implementing surveys to identify presence, distribution, and/or abundance of Focal Species and assess the habitat quality within the area of interest. Biological surveys related to grasslands should strive to understand the extent to which grassland (native and non-native) habitats are utilized by Focal Species. This would involve focusing on landscape and habitat features supporting Focal Species (e.g., burrows for burrowing owl; prey populations for golden eagle; prey deer populations for mountain lion; prey and nesting trees for Swainson’s hawk and white-tail kite) and facilitating movement. Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, habitat quality, information on Focal Species and other conservation elements, and identification of a reference site(s), as 		<p>GRS Focal Species⁴</p> <p>GRS Focal Species and Habitat Prioritization notes: Actions should prioritize Focal Species that require or would benefit from large expanses of habitat. These include mountain lion, burrowing owl, Swainson’s hawk, white-tailed kite, and American badger. However, for many of these species additional habitat features are required to support life history cycles in addition to grasslands. See Species Accounts in Appendix C for species-specific habitat requirements and Section 3.4.2, Guidelines for Prioritizing Actions.</p>

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance with established accepted protocols and authorizations, if they exist.</p> <ul style="list-style-type: none"> ○ GRS-CA1-02: Habitat Protection. Install wildlife-friendly fencing to restrict human access and activities. Fencing must allow for movement of all wildlife species. Fencing plans will take into consideration the movement and safety of wildlife to inform need, type, and locations of fencing. If fencing is employed as a management action, design and install it such that it shall not affect sand transport function or other fluvial and geomorphic processes. In certain situations, it may be important to consider installation of wildlife exclusion fencing, such as along highways and to appropriately funnel movement to crossing structures to prevent vehicular strikes. Post signage to inform the public on exclusionary fencing, and develop educational materials to distribute to the public related to protections and exclusions. ○ GRS-CA1-03: Habitat Monitoring and Management. Conduct regular (annual or bi-annual) monitoring of Focal Species and habitat quality; after each monitoring effort biologists produce a monitoring report documenting methods, results, and any recommendations; implement management recommendations to maintain habitat conditions. ○ GRS-CA1-04: Habitat Enhancement. Develop and implement a Habitat Enhancement Plan that describes 		

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>methods and actions targeted to enhance habitat for Focal Species of interest. Actions should enhance habitat quality in areas supporting or that may support Focal Species (e.g., native plant restoration/enhancement of disturbed or low quality habitat, non-native plant species removal). The plan should be supported by initial Biological Surveys (described above) and describe the areas targeted for enhancement along with long-term (at least 5 consecutive years) monitoring actions, success criteria, and adaptive monitoring actions. The goal of the enhancement plan would be to enhance degraded habitat adjacent to moderate to high quality habitat to support occupancy of Focal Species. Degraded habitat may include areas of low quality habitat or fragmented areas targeted for enhancement to support habitat linkages. See Action DS-CA4 on actions related to wildlife movement and linkage studies.</p> <ul style="list-style-type: none"> • Coordinate with Land Managers. Throughout the processes described above, parties should coordinate with existing land managers for site-specific development and implementation of localized actions to protect, maintain, and enhance habitat quality for Focal Species. Coordination includes the submittal of any reports developed for the area of interest to the public land managers. 		
Grassland (GRS)	GRS-CA2	Acquire, through fee title or conservation easement, unprotected lands for Focal Species, focusing on identified grassland	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), Figure 3-2 (Habitat Groups and Vegetation Communities), and Figure 3-4B (Habitat Value) to identify private/undesignated lands with grassland habitat of interest for acquisition. Consider areas of interest with moderate to high climate change resiliency (Figure E-1, Terrestrial Climate Change Resilience) and/or areas of low exposure, which 	GRS-1.3	native grasslands non-native grasslands GRS Focal Species

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
		conservation priority areas.	<p>are likely to remain suitable over time (Figure E-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix E). See conservation priority area described in Objective GRS-1.2.</p> <ul style="list-style-type: none"> • Specific Actions. Implement and fund actions for areas occupied by or suitable for Focal Species in conservation priority areas. Actions include: <ul style="list-style-type: none"> ○ GRS-CA2-01: Biological Surveys. Identify conservation priority areas within the areas of interest. Conservation priority areas are described in Objective GRS-1.3. Within these areas identify locations supporting Focal Species by funding and implementing surveys to identify presence, distribution, and/or abundance of Focal Species. See Action DS-CA4 on actions related to wildlife movement and linkage studies. Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, habitat quality, information on Focal Species and other conservation elements, and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance with established accepted protocols and authorizations, if they exist. The report should identify any areas contributing to habitat connectivity or ecological processes.² ○ GRS-CA2-02: Resource Management Plan. Develop and implement a long-term Resource Management Plan that 		See GRS Focal Species and Habitat Prioritization notes under GRS-CA1.

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**Table 3-7
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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>describes the proposed long-term monitoring and management of the land for the benefit of landscape and biological features, along with success criteria and adaptive management strategies. Implementation of the plan will require funding through endowment or other long-term funding mechanisms. Funding details will also need to be described in the plan. If applicable, coordinate with resource agencies (USFWS and CDFW) in the development of this plan.</p> <ul style="list-style-type: none"> ○ GRS-CA2-03: Habitat Preservation. At a localized level and based on the biological surveys, consider areas suitable for preservation. See Objective DS-1.3 and Section 3.4.2, Guidelines for Prioritizing Actions. Acquire, through fee title, conservation easement or other protective mechanism, unprotected habitat areas for conservation. Provide long-term funding for management and monitoring of acquired/conserved land. Implement the final and approved Resource Management Plan. 		
Grassland (GRS)	GRS-CA3	Enhance habitat quality for Focal Species in grassland habitat degraded by invasive plant species through the implementation of invasive plant control actions.	<ul style="list-style-type: none"> ● Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), Figure 3-2 (Habitat Groups and Vegetation Communities), and Figure 3-4A (San Bernardino County RCIS Habitat Value) to identify land ownership and areas of interest with grasslands. See conservation priority areas described in Objective GRS-1.2 and GRS-1.3. ● Specific Actions. Implement and fund actions that would enhance areas occupied by or suitable for Focal Species in conservation priority areas. Actions include: <ul style="list-style-type: none"> ○ GRS-CA3-01: Biological Surveys. Implement and fund biological surveys to identify areas supporting special-status plants and Focal Species. Biological surveys should document 	GRS-1.2 GRS-1.3	<p>native grasslands non-native grasslands GRS Focal Species</p> <p>See GRS Focal Species and Habitat Prioritization notes under GRS-CA1. Invasive plant control methods may have the potential to impact special-status species, if present. Therefore,</p>

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>the location, distribution, and abundance of any special-status plants and Focal Species, along with general grassland composition throughout the study area (e.g., point intercept, sampling plots); areas of significant non-native invasive species occurrences should be noted for future control efforts. Biological surveys related to grasslands should strive to understand the extent to which grassland (native and non-native) habitats are utilized by Focal Species in order to understand habitat enhancement methods in relation to species habitat requirements (e.g., burrows for burrowing owl; prey populations for golden eagle; prey deer populations for mountain lion; prey and nesting trees for Swainson’s hawk and white-tail kite). Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, information on Focal Species and other conservation elements, and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance with established accepted protocols and authorizations, if they exist.</p> <ul style="list-style-type: none"> ○ GRS-CA3-02: Invasive Species Management Plan. Based on the biological surveys, develop and implement an Invasive Species Management Plan to guide the identification, removal, and monitoring of areas proposed for enhancement. Consult the Land Manager’s Guide to Developing an Invasive Plant Management Plan (USFWS and CIPC 2018) in developing the plan. The plan should include a discussion of the control 		<p>survey efforts should seek to identify these locations and understand suitable control methods to avoid impacts to these species.</p>

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>methods, including herbicides, hand removal, and mechanical means, required to be successful in invasive species removal. In addition, the plan should include details regarding native plant seeding or plantings along with success criteria and adaptive management procedures.</p> <ul style="list-style-type: none"> ○ Note: The California Invasive Species Advisory Committee provides an all-taxa list of invasive species found in the state (CISAC 2021). In addition, Appendix F of the State Wildlife Action Plan (CDFW 2015) provides a list of conservation strategies and actions from the National Invasive Species Council, objectives and implementation tasks from the National Invasive Species Management Plan, conservation strategies and actions by the Invasive Species Council of California, and recommended actions from Stopping the Spread: A Strategic Framework for Protecting California from Invasive Species (ISCC 2011). 		
Grassland (GRS)	GRS-CA4	Implement conservation and mitigation actions for burrowing owl consistent with the Staff Report on Burrowing Owl Mitigation (CDFG 2012) or the most current guidance.	<ul style="list-style-type: none"> ● See details described under Action DS-CA8. 	GRS-1.2 GRS-1.3	burrowing owl
Grassland (GRS)	GRS-CA5	Implement conservation and mitigation actions for Delhi Sands flower-	<ul style="list-style-type: none"> ● See details described under Action DP-CA4. 	GRS-1.2 GRS-1.3	Delhi Sands flower-loving fly

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
		loving fly consistent with the USFWS Recovery Plan for the species (USFWS 2019) or the most current guidance.			
Grassland (GRS)	GRS-CA6	Use approved mitigation/conservation banks and in-lieu fee programs to mitigate for grassland vegetation and associated Focal Species, as applicable and available within defined service areas. If applicable, implement actions identified in existing, approved HCP.	<ul style="list-style-type: none"> • Specific mitigation banks and in-lieu fee information can be found on regulatory agencies websites, such as CDFW Conservation and Mitigation Banking (https://wildlife.ca.gov/Conservation/Planning/Banking) or Regulatory In Lieu Fee and Bank Information Tracking System (https://ribits.ops.usace.army.mil/ords/f?p=107:2). RCIS Figure 2-6 (Land Designations) also identifies the broad regional locations of Local Conserved Lands, which include existing mitigation banks. • Coordinate with the appropriate bank/in-lieu fee program for information on available credits and pricing related to grassland and associated Focal Species mitigation. Purchase credits for mitigation needs. • For projects and activities covered within an existing, approved HCP and for permittees under those plans, implement actions identified in the applicable HCP (see Section 2.6 and Section 3.5.1). 	GRS-1.1	native grasslands non-native grasslands GRS Focal Species
Riparian and Wetland (RW)	RW-CA1	Coordinate with existing land managers to identify and implement management activities within public lands that would maintain and enhance	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), and Figure 3-2 (Habitat Groups and Vegetation Communities) to identify the area of interest, confirm it is located within public lands and contains riparian and/or wetland habitat, and identify the management agency associated with the area of interest. Consider areas of interest with moderate to high climate change resiliency (Figure E-1, Terrestrial Climate Change Resilience) and/or areas of low 	RW-1.2	riparian wetlands and waters RW Focal Species ⁵ RW Focal Species and Habitat Prioritization notes: Many RW Focal Species have specific

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
		habitat quality for Focal Species in riparian and wetland vegetation communities beyond that which is provided by the existing management regime.	<p>exposure, which are likely to remain suitable over time (Figure E-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix E). See conservation priority areas described in Objective RW-1.2.</p> <ul style="list-style-type: none"> • Specific Actions. Review the current management plans and activities, then implement and fund actions that would protect, maintain, and/or enhance riparian and wetland habitat quality beyond that which is currently provided. Actions include: <ul style="list-style-type: none"> ○ RW-CA1-01: Fluvial Geomorphology Studies. In order to enhance habitat beyond current management regime it is important to understand the processes and features that direct or contribute to existing flow and channel geometry. This involves funding and implementing fluvial geomorphology studies, which should provide information on the physical and flow characteristics of the area of interest (creek, stream, river) and provide recommendations for restoration or enhancement or improvement beyond the existing management activities. ○ RW-CA1-02: Water Quality Assessments. Water quality is often central to understanding the health of riparian ecosystems. This action involves funding and implementing water quality studies to identify the existing water quality issues and concerns related to the area of interest and the watershed and, if available, incorporate geotechnical information relevant to soil infiltration. The study should also consider downstream receiving waters, on-site drainage management areas based on the best available topographical information, and groundwater recharge systems, and identify existing any storm drain lines and catch basins in or near the area of interest. 		microhabitat requirements and blanket conservation of riparian habitat or wetland habitat may not provide the necessary features to support the life cycles for individual Focal Species (e.g., arroyo toad vs. California red-legged frog). However, in general, studies and efforts should consider project resources, site-specific characteristics, and known occurrences, and consider the likelihood of success of maintaining and/or enhancing RW habitat for Focal Species. See Species Accounts in Appendix C for species-specific habitat requirements and Section 3.4.2, Guidelines for Prioritizing Actions.

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<ul style="list-style-type: none"> ○ RW-CA1-03: Biological Surveys. Identify areas supporting Focal Species by funding and implementing surveys to identify presence, distribution, and/or abundance of Focal Species and to assess habitat quality within the area of interest (creek, stream, river, wetland). Riparian systems are also known for providing habitat corridors and linkages across landscapes. Surveys should consider implementing wildlife movement studies to understand utilizations of the habitat for movement (see details under Action DS-CA4). Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, information on Focal Species and other conservation elements, and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance with established accepted protocols and authorizations, if they exist. ○ RW-CA1-04: Habitat Protection. Install wildlife-friendly fencing to restrict human access and activities. Fencing must allow for movement of all wildlife species. Fencing plans will take into consideration the movement and safety of wildlife to inform need, type, and locations of fencing. If fencing is employed as a management action, design and install it such that it shall not affect sand transport function or other fluvial and geomorphic processes. In certain situations, it may be important to consider installation of wildlife exclusion fencing, 		

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>such as along highways and to appropriately funnel movement to crossing structures to prevent vehicular strikes. Post signage to inform the public on exclusionary fencing, and develop educational materials to distribute to the public related to protections and exclusions.</p> <ul style="list-style-type: none"> ○ RW-CA1-05: Habitat Monitoring and Management. Conduct regular (annual or bi-annual) monitoring of habitat, water quality, and geomorphological impairment improvements; produce a monitoring report documenting methods, results, and any recommendations; management to consider recommendations for maintaining system conditions. ○ RW-CA1-06: Habitat Enhancement. Develop and implement a Riparian/Wetland Enhancement Plan that describes methods and actions targeted to enhance habitat, water quality, and geomorphological systems (as necessary). The plan should be supported by initial surveys (described above) and describe the areas targeted for enhancement along with long-term (at least 5 consecutive years) monitoring actions, success criteria, and adaptive monitoring actions. The goal of the enhancement plan would be to enhance degraded systems and provide monitoring to meet success criteria. ● Coordinate with Land Managers. Throughout the processes described above, parties should coordinate with existing land managers for site-specific development and implementation of localized actions to protect, maintain, and enhance creek and system quality for Focal Species. Coordination includes the submittal of any reports developed for the area of interest to the public land managers. 		

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
Riparian and Wetland (RW)	RW-CA2	Acquire, through fee title or conservation easement, unprotected lands for Focal Species, focusing on identified riparian and wetland conservation priority areas.	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), Figure 3-2 (Habitat Groups and Vegetation Communities), and Figure 3-4B (Habitat Value) to identify private/undesignated lands with riparian and/or wetland habitat of interest for acquisition. Consider areas of interest with moderate to high climate change resiliency (Figure E-1, Terrestrial Climate Change Resilience) and/or areas of low exposure, which are likely to remain suitable over time (Figure E-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix E). See conservation priority areas described in Objective RW-1.3. • Specific Actions. Implement and fund actions for areas occupied by or suitable for Focal Species in conservation priority areas. Actions include: <ul style="list-style-type: none"> ○ See Specific Actions under Action RW-CA1. ○ RW-CA2-01: Resource Management Plan. Develop and implement a long-term Resource Management Plan that describes the proposed long-term monitoring and management of the land for the benefit of landscape and biological features, along with success criteria and adaptive management strategies. Implementation of the plan will require funding through endowment or other long-term funding mechanisms. Funding details will also need to be described in the plan. If applicable, coordinate with resource agencies (USFWS and CDFW) in the development of this plan. ○ RW-CA2-02: Habitat Preservation. At a localized level and based on the biological surveys, consider areas suitable for preservation. See Objective RW-1.3 and Section 3.4.2, Guidelines for Prioritizing Actions. Coordinate with 	RW-1.3	<p>riparian wetlands and waters RW Focal Species</p> <p>See RW Focal Species and Habitat Prioritization notes under RW-CA1.</p>

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			landowners for the acquisition and dedication of land for conservation. Acquire, through fee title, conservation easement or other protective mechanism, unprotected habitat areas for conservation. Provide long-term funding for management and monitoring of acquired/conserved land. Implement the final and approved Resource Management Plan.		
Riparian and Wetland (RW)	RW-CA3	Create and restore riparian and wetland habitat through the development and implementation of habitat restoration plans in suitable locations in conservation priority areas.	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), Figure 3-2 (Habitat Groups and Vegetation Communities), and Figure 3-4A (San Bernardino County RCIS Habitat Value) to identify the area of interest that contains riparian and/or wetland habitat and identify the management agency associated with the area of interest. Consider areas of interest with moderate to high climate change resiliency (Figure E-1, Terrestrial Climate Change Resilience) and/or areas of low exposure, which are likely to remain suitable over time (Figure E-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix E). See conservation priority areas described in Objective RW-1.2 and RW-1.3. • RW-CA3-01: Develop and Implement Habitat Restoration Plan(s). Prepare Habitat Restoration Plan(s) in suitable locations in conservation priority areas. Suitable locations should be identified through site-specific assessments that identify the basic opportunities and constraints for restoration and biological resources on site, assess riparian and wetland conditions and suitability for Focal Species, and establish baseline conditions and suitability for restoration. Each plan should describe its purpose; site assessment methods and results; site preparation, cutting, seeding, and/or planting methods; maintenance (e.g., erosion control, 	RW-1.2 RW-1.3	<p>riparian wetlands and waters RW Focal Species</p> <p>RW Focal Species and Habitat notes: Generally, the restoration of native vegetation would benefit multiple Focal Species.</p>

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			invasive species control, herbivore control, public trespassing); measures to minimize impacts to sensitive species; performance criteria; monitoring (including adaptive management); and reporting requirements.		
Riparian and Wetland (RW)	RW-CA4	Enhance habitat quality for Focal Species in riparian and wetland habitat degraded by invasive plant species (e.g., arundo, tamarisk) through the implementation of invasive plant control actions.	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), and Figure 3-2 (Habitat Groups and Vegetation Communities) to identify land ownership and areas of interest with riparian and wetland habitat. • Specific Actions. Implement and fund actions for areas occupied by or suitable for Focal Species in conservation priority areas. Actions include: <ul style="list-style-type: none"> ○ RW-CA4-01: Biological Surveys. Identify conservation priority areas within the areas of interest. Conservation priority areas are described in Objectives RW-1.2 and RW-1.3. Within these areas, identify locations of riparian and wetland habitat degraded by invasive plant species. Suitable locations should be identified through site-specific assessments that identify the basic opportunities and constraints for restoration and biological resources on site, assess riparian and wetland conditions and suitability for Focal Species, and establish baseline conditions and suitability for restoration. Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, information on Focal Species and other conservation elements, and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database 	RW-1.2 RW-1.3	<p>riparian wetlands and waters RW Focal Species</p> <p>RW Focal Species and Habitat notes: Generally, the removal of invasive plants would enhance riparian vegetation and benefit multiple Focal Species.</p>

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance with established accepted protocols and authorizations, if they exist.</p> <ul style="list-style-type: none"> ○ RW-CA4-02: Invasive Species Management Plan. Based on the biological surveys, develop and implement an Invasive Species Management Plan to guide the identification, removal, and monitoring of areas proposed for enhancement. Consult the Land Manager’s Guide to Developing an Invasive Plant Management Plan (USFWS and CIPC 2018) in developing the plan. The plan should include a discussion on the control methods, including herbicides, hand removal, and mechanical means, required to be successful in invasive species removal. The plan should include details regarding native plant seeding or plantings along with success criteria and adaptive management procedures. <ul style="list-style-type: none"> ▪ Arundo control methods should consider the most recent scientific methods shown to be successful. Manual removal may not be successful depending on the extend and growth of rhizome masses, and mechanical means may introduce greater impacts than benefits in riparian habitat. A combination of manual cuttings and chemical applications (dilute glyphosate) may be successful (OVLC 2021). Consult informational sources for control decisions for tamarisk (e.g., USDA 2010). ▪ The California Invasive Species Advisory Committee provides an all-taxa list of invasive species found in the state (CISAC 2021). In addition, Appendix F of the State Wildlife Action Plan (CDFW 2015) provides a list of conservation strategies and actions listed from the National Invasive Species Council, objectives and implementation tasks from 		

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			the National Invasive Species Management Plan, conservation strategies and actions by the Invasive Species Council of California, and recommended actions from Stopping the Spread: A Strategic Framework for Protecting California from Invasive Species (ISCC 2011).		
Riparian and Wetland (RW)	RW-CA5	Enhance habitat quality for Focal Species in riparian and wetland habitat degraded by invasive aquatic species (e.g., bullfrog, African clawed frog, cowbird) through the implementation of invasive animal control actions.	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), and Figure 3-2 (Habitat Groups and Vegetation Communities) to identify land ownership and areas of interest with riparian and wetland habitat. • Specific Actions. Implement and fund actions for areas occupied by or suitable for Focal Species in conservation priority areas. Actions include: <ul style="list-style-type: none"> ○ RW-CA5-01: Biological Surveys. Identify conservation priority areas within the areas of interest. Conservation priority areas are described in Objectives RW-1.2 and RW-1.3. Within these areas, identify locations of riparian and wetland habitat degraded by invasive animal species. Suitable locations should be identified through site-specific assessments that identify the basic opportunities and constraints for restoration and biological resources on site, assess riparian and wetland conditions and suitability for Focal Species, and establish baseline conditions and suitability for animal control actions. Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, information on Focal Species and other conservation elements, and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and 	RW-1.2 RW-1.3	<p>riparian wetlands and waters RW Focal Species</p> <p>RW Focal Species and Habitat notes: Generally, the removal of invasive aquatic animal species would enhance habitat quality and benefit multiple Focal Species.</p>

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance with established accepted protocols and authorizations, if they exist.</p> <ul style="list-style-type: none"> ○ RW-CA5-02: Invasive Aquatic Species Management Plan. Based on the biological surveys, develop and implement an Invasive Aquatic Species Management Plan to guide the identification, removal, and monitoring of areas proposed for enhancement. Consult the California Aquatic Invasive Species Management Plan (CDFG 2008) for general plan framework involving five strategies: prevention, early detection and monitoring, rapid response and eradication, long-term control and management, and education and outreach. As noted in CDFG 2008, management approaches need to consider the life history of specific invasive aquatic species to develop specific management actions. <ul style="list-style-type: none"> ▪ The California Invasive Species Advisory Committee provides an all-taxa list of invasive species found in the state (CISAC 2021). In addition, Appendix F of the State Wildlife Action Plan (CDFW 2015) provides a list of conservation strategies and actions listed from the National Invasive Species Council, objectives and implementation tasks from the National Invasive Species Management Plan, conservation strategies and actions by the Invasive Species Council of California, and recommended actions from Stopping the Spread: A Strategic Framework for Protecting California from Invasive Species (ISCC 2011). 		
Riparian and Wetland (RW)	RW-CA6	Enhance wildlife movement and habitat connectivity by	<ul style="list-style-type: none"> • See Action DS-CA4 for actions related to wildlife movement and linkage studies. 	RW-1.2 RW-1.3	Focal Species

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
		implementing actions that improve wildlife access to and through riparian and wetland areas.			<p>RW Focal Species and Habitat notes: Actions should prioritize Focal Species based on key conservation areas (described in RW-1.2 and 1.3) and potential for wide range movements (e.g., mountain lion) or potential for improvements based on riparian corridor habitat use (e.g., least Bell's vireo, southwestern willow flycatcher, yellow-billed cuckoo). See Species Accounts in Appendix C for species-specific habitat requirements and Section 3.4.2, Guidelines for Prioritizing Actions.</p>

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Riparian and Wetland (RW)	RW-CA7	Implement conservation and mitigation actions for federally listed riparian and wetland Focal Species consistent with USFWS Recovery Plans or the most current guidance.	<p>Arroyo toad Implement actions consistent with the most recent recovery plan (e.g., USFWS 1999 Recovery Plan for the Arroyo Southwestern Toad [<i>Bufo microscaphus californicus</i>]), which are summarized as the following actions:</p> <ul style="list-style-type: none"> • RW-CA7-01: Assess project area potential to support the arroyo toad and request input from USFWS and other relevant agencies early in a project's design. • RW-CA7-02: Implement measures to avoid and/or reduce impacts on this species and/or its habitat including the following: (1) implement Worker Environmental Awareness Training; (2) use pre-existing access routes and limit work to daylight hours; (3) minimize footprint disturbance; (4) develop a water pollution control plan; (5) delineate limits of construction; (6) avoid stream channels or sand and gravel bars, banks, and adjacent upland habitats used by the species; (7) avoid construction during the breeding season if avoidance of habitat is not possible; (8) if stream flow diversion is necessary, use sandbags or other methods for minimal impacts; (9) stage storage and fueling in uplands with minimal risk of drainage into riparian areas or other sensitive habitats; (10) do not deposit erodible fill materials into stream channels or banks; (11) have a project biologist perform periodic site inspections; (12) minimize removal of native vegetation; (13) permanently remove bullfrogs and other invasive aquatic species; (14) keep the project site free of debris; and (15) USFWS may authorize qualified biologists to relocate individual arroyo toads out of harm's way. Notify USFWS if dead or injured arroyo toads are located. • RW-CA7-03: Implement actions associated with the five parts of the recovery strategy, including (1) stabilize and maintain populations by protecting sufficient breeding and nonbreeding habitat; (2) 	RW-1.2 RW-1.3	arroyo toad California red-legged frog Mohave tui chub Santa Ana sucker least Bell's vireo southwestern willow flycatcher Gambel's watercress Marsh Sandwort Parish's daisy

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>monitor the status of existing populations to ensure recovery actions are successful; (3) identify and secure, by appropriate management and monitoring, additional suitable arroyo toad habitat and populations; (4) conduct research to determine the population dynamics and ecology of the species to guide management efforts and determine the best methods for reducing threats; and (5) develop and implement an outreach program.</p> <ul style="list-style-type: none"> • RW-CA7-04: Adaptive management is an important component of the recovery strategy for the arroyo toad consisting of (1) assessment of the available information; (2) establishment of goals, objectives, and criteria; (3) determination and implementation of tasks to achieve the objectives; (4) establishment of a monitoring program; (5) evaluation of the results of the monitoring activities; and (6) changing the tasks as appropriate. Tasks that are not successful should be modified or deleted. Only those tasks that are successful should be continued and incorporated into future plans. <p>California red-legged frog Implement actions consistent with the most recent recovery plan (e.g., USFWS 2002 Recovery Plan for the California Red-Legged Frog [<i>Rana aurora draytonii</i>]). Recovery strategies differ per recovery unit due to recovery needs and resources/population dynamic differences within each unit. Therefore, focus recovery implementation within suitable habitats in each recovery unit, if possible. The RCIS Area is within the Southern Transverse and Peninsular Ranges Recovery Unit. Where possible, focus recovery actions in the single Core Area within the RCIS range: Forks of the Mojave.</p> <p>The overall strategy for recovery of the California red-legged frog includes (1) protecting existing populations by reducing threats through preservation, (2) restoring and creating habitat that will be protected and managed in perpetuity, (3) surveying and monitoring populations</p>		

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			<p>and conducting research on the biology of and threats to the subspecies, and (4) reestablishing populations of the subspecies within its historic range.</p> <p>Implement the following guidelines and consult the Recovery Plan detailed guidelines when developing watershed management and protection plans and mitigation measures for development projects, during Section 7 consultations under the Endangered Species Act, and during regional conservation planning, which are summarized as the following actions:</p> <ul style="list-style-type: none"> • RW-CA7-05: Protect suitable habitats and buffers in perpetuity. • RW-CA7-06: Develop and implement guidelines for maintaining adequate water flow regimes, particularly in suitable habitat downstream of impoundments, water diversions, and residential/industrial developments. • RW-CA7-07: Develop and implement best management practices to prevent or minimize adverse impacts from in-stream and stream bank activities associated with mining operations. • RW-CA7-08: Control/eliminate non-native species/predators (plants, vertebrates, invertebrates) using methods that are determined to be the most effective. • RW-CA7-09: Reduce the detrimental effects of livestock grazing and increase incidental benefits associated with livestock grazing on public and private lands. • RW-CA7-10: Reduce the effects of timber harvest activities on the California red-legged frog and its habitat. • RW-CA7-11: Develop site-specific guidelines for recreational activities to reduce or eliminate impacts where these activities pose an ongoing threat to habitat quality. 		

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			<ul style="list-style-type: none"> • RW-CA7-12: Decrease the exposure of the California red-legged frog and their habitat to contaminants. • RW-CA7-13: Develop guidelines for fire management practices (i.e., prescribed burns, emergency fire suppression, emergency water use) to decrease incidental impacts to the California red-legged frog. • RW-CA7-14: Develop and implement best management practices to prevent or minimize adverse impacts to the California red-legged frog from in-stream and stream bank activities associated with flood control actions. • RW-CA7-15: Implement watershed management and protection plans using cooperative agreements and existing incentive programs. • Mohave tui chub Implement actions consistent with the most recent recovery plan (e.g., USFWS 1984 Recovery Plan for the Mohave Tui Chub, <i>Gila bicolor mohavensis</i>), which are summarized as the following actions: <ul style="list-style-type: none"> • RW-CA7-16: Preserve and enhance existing populations and their habitats (range currently extends from Ridgecrest south to Victorville and east to Mojave National Preserve; presumed extant at Soda Springs, China Lake, Mojave River, Mojave National Preserve). • RW-CA7-17: Establish and protect populations in suitable new or restored habitats. • RW-CA7-18: Implement life history and ecology studies to determine life history requirements, population genetics, and other goals for the management and recovery of the species. • RW-CA7-19: Implement environmental educational programs to inform the public of this species status and recovery efforts. 		

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>Santa Ana sucker Implement actions consistent with the most recent recovery plan (e.g., USFWS 2017 Recovery Plan for the Santa Ana Sucker [<i>Catostomus santaanae</i>]), which are summarized as the following actions:</p> <ul style="list-style-type: none"> • RW-CA7-20: Develop and implement a rangewide monitoring protocol to accurately and consistently document populations (quantitatively and qualitatively), occupied habitat, and threats. • RW-CA7-21: Conduct research projects specifically designed to inform management actions and Santa Ana sucker recovery. • RW-CA7-22: Increase the abundance and develop a more even distribution of Santa Ana suckers within its current range by reducing threats to the species and its habitat. • RW-CA7-23: Expand the current range of the Santa Ana sucker by restoring Santa Ana sucker habitat for all life stages (as appropriate), and by reintroducing populations (where appropriate) within the species' historical range. <p>Least Bell's vireo Implement actions consistent with the most recent recovery plan (e.g., USFWS 1998 Draft Recovery Plan for the Least Bell's Vireo [<i>Vireo bellii pusillus</i>]). Recovery efforts should focus on addressing two major causes of decline: habitat loss and degradation and brown-headed cowbird nest parasitism, which are summarized as the following actions:</p> <ul style="list-style-type: none"> • RW-CA7-24: Protect and manage riparian and adjacent upland habitats within the least Bell's vireos historical range. • RW-CA7-25: Conduct research. • RW-CA7-26: Develop and evaluate least Bell's vireo habitat restoration techniques. • RW-CA7-27: Increase and improve occupied, suitable, and potential breeding habitat. 		

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<ul style="list-style-type: none"> • RW-CA7-28: Evaluate progress of recovery, evaluate effectiveness of management and recovery actions, and revise management plans. • RW-CA7-29: Provide public information and education. <p>Additionally, to address a pressure and stressor for this species:</p> <ul style="list-style-type: none"> • RW-CA7-30: Control and eliminate non-natives, including brown-headed cowbird, arundo, and tamarisk. <p>Southwestern willow flycatcher Implement actions consistent with the most recent recovery plan (e.g., USFWS 2002 Final Recovery Plan, Southwestern Willow Flycatcher [<i>Empidonax traillii extimus</i>]), which are summarized as the following actions:</p> <ul style="list-style-type: none"> • RW-CA7-31: Increase and improve occupied, suitable, and potential breeding habitat; • RW-CA7-32: Increase metapopulation stability. • RW-CA7-33: Improve demographic parameters. • RW-CA7-34: Minimize threats to wintering and migration habitat. • RW-CA7-35: Survey and monitor. • RW-CA7-36: Conduct research. • RW-CA7-37: Provide public education and outreach. • RW-CA7-38: Assure implementation of laws, policies, and agreements that benefit the flycatcher. • RW-CA7-39: Track recovery progress. <p>Gambel's watercress and marsh sandwort Implement actions consistent with the most recent recovery plans (e.g., USFWS 1998 Recovery Plan for Marsh Sandwort [<i>Arenaria paludicola</i>] and Gambel's Watercress [<i>Rorippa gambelii</i>], and the 2019 Recovery Plan Amendment for Marsh Sandwort [<i>Arenaria paludicola</i>] and</p>		

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Table 3-7 RCIS Actions Summary

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>Gambel's Watercress [<i>Rorippa gambelii</i>]. RW-CA7-38: Protect, maintain, and enhance habitats, which are summarized as the following actions:</p> <ul style="list-style-type: none"> • RW-CA7-40: Monitor and document species populations and habitat characteristics. • RW-CA7-41: Conduct research on the ecology and biology of the species. • RW-CA7-42: Expand existing populations. • RW-CA7-43: Establish new populations. • RW-CA7-44: Evaluate progress and update management and recovery guidelines. 		
Riparian and Wetland (RW)	RW-CA8	Use approved mitigation/conservation banks and in-lieu fee programs to mitigate for riparian and wetland vegetation and associated Focal Species, as applicable and available within defined service areas. If applicable, implement actions identified in existing, approved HCP.	<ul style="list-style-type: none"> • Specific mitigation banks and in-lieu fee information can be found on regulatory agencies websites, such as CDFW Conservation and Mitigation Banking (https://wildlife.ca.gov/Conservation/Planning/Banking) or Regulatory In Lieu Fee and Bank Information Tracking System (https://ribits.ops.usace.army.mil/ords/f?p=107:2). RCIS Figure 2-6 (Land Designations) also identifies the broad regional locations of Local Conserved Lands, which include existing mitigation banks. • Coordinate with the appropriate bank/in-lieu fee program for information on available credits and pricing related to riparian and wetland habitat and associated Focal Species mitigation. Purchase credits for mitigation needs. • For projects and activities covered within an existing, approved HCP and for permittees under those plans, implement actions identified in the applicable HCP (see Section 2.6 and Section 3.5.1). 	RW-1.1	riparian wetlands and waters RW Focal Species
Riversidean Alluvial Fan	RAFSS-CA1	Coordinate with existing land	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), and Figure 3-2 	RAFSS-1.2	RAFSS RAFSS Focal Species ⁶

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
Sage Scrub (RAFSS)		managers to identify and implement management activities within Public Lands that would maintain and enhance habitat quality for Focal Species in RAFSS vegetation communities beyond that which is provided by the existing management regime.	<p>(Habitat Groups and Vegetation Communities) to identify the area of interest, confirm it is located within Public Land and contains RAFSS habitat, and identify the management agency associated with the area of interest. Consider areas of interest with high climate change resiliency (Figure E-1, Terrestrial Climate Change Resilience) and/or areas of low exposure, which are areas likely to remain suitable over time (Figure E-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix E). See conservation priority areas described in Objective RAFSS-1.2.</p> <ul style="list-style-type: none"> • Specific Actions. Review the current management plans and activities, then implement and fund actions that would protect, maintain, and/or enhance RAFSS habitat quality beyond that which is currently provided. Actions include: <ul style="list-style-type: none"> ○ RAFSS-CA1-01: Biological Surveys. Identify areas supporting Focal Species by funding and implementing surveys to identify presence, distribution, and/or abundance of Focal Species and to assess the habitat quality within the area of interest. Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, information on Focal Species and other conservation elements, and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance with established accepted protocols and authorizations, if they exist. 		<p>RAFSS Focal Species and Habitat</p> <p>Prioritization notes: Actions should prioritize Focal Species considered “umbrella” species (e.g., mountain lion) or those with limited ranges and/or habitats (e.g., San Bernardino kangaroo rat, Los Angeles pocket mouse, western spadefoot, Santa Ana River woolly star) and their habitats (see Species Accounts in Appendix C for species-specific habitat requirements and Section 3.4.2, Guidelines for Prioritizing Actions).</p>

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<ul style="list-style-type: none"> ○ RAFSS-CA1-02: Habitat Protection. Install wildlife-friendly fencing to restrict human access and activities. Fencing must allow for movement of all wildlife species. Fencing plans will take into consideration the movement and safety of wildlife to inform need, type, and locations of fencing. If fencing is employed as a management action, design and install it such that it shall not affect sand transport function or other fluvial and geomorphic processes. In certain situations, it may be important to consider installation of wildlife exclusion fencing, such as along highways and to appropriately funnel movement to crossing structures to prevent vehicular strikes. Post signage to inform the public on exclusionary fencing, and develop educational materials to distribute to the public related to protections and exclusions. ○ RAFSS-CA1-03: Habitat Monitoring and Management. Conduct regular (annual or bi-annual) monitoring of Focal Species and habitat quality; after each monitoring effort biologists produce a monitoring report documenting methods, results, and any recommendations; implement management recommendations to maintain habitat conditions. ○ RAFSS-CA1-04: Habitat Enhancement. Develop and implement a Habitat Enhancement Plan that describes methods and actions targeted to enhance habitat for Focal Species of interest. Actions should enhance habitat quality in areas supporting or that may support Focal Species (e.g., native plant restoration/enhancement of disturbed or low quality habitat, non-native plant species removal). The plan should be supported by initial Biological Surveys (described above) and describe the areas targeted for enhancement along with long-term (at least 5 consecutive years) monitoring 		

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>actions, success criteria, and adaptive monitoring actions. The goal of the enhancement plan would be to enhance degraded habitat adjacent to moderate to high quality habitat to support occupancy of Focal Species. Degraded habitat may include areas of low quality habitat or fragmented areas targeted for enhancement to support habitat linkages.</p> <ul style="list-style-type: none"> • Coordinate with Land Managers. Throughout the processes described above, parties should coordinate with existing land managers for site-specific development and implementation of localized actions to protect, maintain, and enhance habitat quality for Focal Species. Coordination includes the submittal of any reports developed for the area of interest to the public land managers. 		
Riversidean Alluvial Fan Sage Scrub (RAFSS)	RAFSS-CA2	Acquire, through fee title or conservation easement, unprotected lands for Focal Species, focusing on identified RAFSS conservation priority areas.	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), Figure 3-2 (Habitat Groups and Vegetation Communities), and Figure 3-4B (Habitat Value) to identify private/undesignated lands with RAFSS habitat of interest for acquisition. Consider areas of interest with moderate to high climate change resiliency (Figure E-1, Terrestrial Climate Change Resilience), areas of low exposure, which are areas likely to remain suitable over time (Figure E-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix E), and/or areas in the alluvial fan that support downstream fluvial or geomorphic processes. See conservation priority areas described in Objective RAFSS-1.3. • Specific Actions. Implement and fund actions for areas occupied by or suitable for Focal Species in conservation priority areas. Actions include: 	RAFSS-1.3	<p>RAFSS RAFSS Focal Species</p> <p>See RAFSS Focal Species and Habitat Prioritization notes under RAFSS-CA1.</p>

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<ul style="list-style-type: none"> ○ RAFSS-CA2-01: Biological Surveys. Identify conservation priority areas within the areas of interest. Conservation priority areas are described in Objective RAFSS-1.3. Within these areas, identify locations supporting Focal Species by funding and implementing surveys to identify presence, distribution, and/or abundance of Focal Species. Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, information on Focal Species and other conservation elements, and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance with established accepted protocols and authorizations, if they exist. The report should identify any areas contributing to habitat connectivity or ecological processes.² ○ RAFSS-CA2-02: Resource Management Plan. Develop and implement a long-term Resource Management Plan that describes the proposed long-term monitoring and management of the land for the benefit of landscape and biological features, along with success criteria and adaptive management strategies. Implementation of the plan will require funding through endowment or other long-term funding mechanisms. Funding details will also need to be described in the plan. If applicable, coordinate with resource agencies (USFWS and CDFW) in the development of this plan. 		

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<ul style="list-style-type: none"> ○ RAFSS-CA2-03: Habitat Preservation. At a localized level and based on the biological surveys, consider areas suitable for preservation. See Objective RAFSS-1.3 and Section 3.4.2, Guidelines for Prioritizing Actions. Acquire, through fee title, conservation easement or other protective mechanism, unprotected habitat areas for conservation. Provide long-term funding for management and monitoring of acquired/conserved land. Implement the final and approved Resource Management Plan. 		
Riversidean Alluvial Fan Sage Scrub (RAFSS)	RAFSS-CA3	Create and restore RAFSS habitat through the development and implementation of habitat restoration plans in suitable locations in conservation priority areas.	<ul style="list-style-type: none"> ● Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), Figure 3-2 (Habitat Groups and Vegetation Communities), and Figure 3-4A (San Bernardino County RCIS Habitat Value) to identify the area of interest that contains RAFSS habitat and identify the management agency associated with the area of interest. Consider areas of interest with moderate to high climate change resiliency (Figure E-1, Terrestrial Climate Change Resilience) and/or areas of low exposure, which are areas likely to remain suitable over time (Figure E-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix E). See conservation priority areas described in Objectives RAFSS-1.2 and RAFSS-1.3. ● RAFSS-CA3-01: Develop and Implement Habitat Restoration Plan(s). Prepare Habitat Restoration Plan(s) in suitable locations in conservation priority areas. Suitable locations should be identified through site-specific assessments that identify the basic opportunities and constraints for restoration and biological resources on site, assess RAFSS conditions and suitability for Focal Species, and establish baseline conditions and suitability for restoration. The plans should describe their purpose; site 	RAFSS-1.2 RAFSS-1.3	RAFSS RAFSS Focal Species RAFSS Focal Species and Habitat notes: Generally, the restoration of native vegetation would benefit multiple Focal Species.

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Table 3-7 RCIS Actions Summary

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			assessment methods and results; site preparation, cutting, seeding, and/or planting methods; maintenance (e.g., erosion control, invasive species control, herbivore control, public trespassing); measures to minimize impacts to sensitive species; performance criteria; monitoring (including adaptive management); and reporting requirements. Restoration of RAFSS should focus on restoring flow and flood regimes in creeks and rivers (fluvial and geomorphic processes) to reestablish vegetation succession to benefit RAFSS Focal Species.		
Riversidean Alluvial Fan Sage Scrub (RAFSS)	RAFSS-CA4	Enhance habitat quality for Focal Species in RAFSS habitat degraded by invasive plant species through the implementation of invasive plant control actions.	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), and Figure 3-2 (Habitat Groups and Vegetation Communities) to identify land ownership and areas of interest with RAFSS habitat. • Specific Actions. Implement and fund actions for areas occupied by or suitable for Focal Species in conservation priority areas. Actions include: <ul style="list-style-type: none"> ○ RAFSS-CA4-01: Biological Surveys. Identify conservation priority areas within the areas of interest. Conservation priority areas are described in Objectives RAFSS-1.2 and RAFSS-1.3. Within these areas identify locations of RAFSS habitat degraded by invasive plant species. Suitable locations should be identified through site-specific assessments that identify the basic opportunities and constraints for restoration and biological resources on site, assess RAFSS conditions and suitability for Focal Species, and establish baseline conditions and suitability for restoration. Survey products include a survey report documenting methods, results, and figures displaying the distribution of invasive plant abundance and location of habitat potentially supporting Focal Species. 	RAFSS-1.2 RAFSS-1.3	RAFSS RAFSS Focal Species RAFSS Focal Species and Habitat notes: Generally, the removal of invasive plants would enhance riparian vegetation and benefit multiple Focal Species.

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>The report and figures should include results from any literature/database searches.</p> <ul style="list-style-type: none"> ○ RAFSS-CA4-02: Invasive Species Management Plan. Based on the biological surveys, develop and implement an Invasive Species Management Plan to guide the identification, removal, and monitoring of areas proposed for enhancement. Consult the Land Manager’s Guide to Developing an Invasive Plant Management Plan (USFWS and CIPC 2018) in developing the plan. The plan should include a discussion on the control methods, including herbicides, hand removal, and mechanical means, required to be successful in invasive species removal. The plan should include details regarding native plant seeding or plantings along with success criteria and adaptive management procedures. 		
Riversidean Alluvial Fan Sage Scrub (RAFSS)	RAFSS-CA5	Enhance wildlife movement and habitat connectivity by implementing actions that improve wildlife access to and through RAFSS areas.	<ul style="list-style-type: none"> ● See Action DS-CA4 on actions related to wildlife movement and linkages studies. 	RAFSS-1.2 RAFSS-1.3	<p>RAFSS Focal Species and Habitat</p> <p>Prioritization notes: Actions should prioritize Focal Species based on key conservation areas (described in RAFSS-1.3), including mountain lion. See Species Accounts in Appendix C for species-specific habitat requirements and</p>

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
					Section 3.4.2, Guidelines for Prioritizing Actions.
Riversidean Alluvial Fan Sage Scrub (RAFSS)	RAFSS-CA6	Implement conservation and mitigation actions for San Bernardino kangaroo rat consistent with the San Bernardino Kangaroo Rat 5-Year Review: Summary and Evaluation (USFWS 2009) or the most current guidance.	<p>San Bernardino Kangaroo Rat Due to the high level of habitat loss for the species, actions should focus on conserving remaining habitat, restoring and enhancing habitat and managing conserved habitat to protect SBKR from habitat fragmentation and loss due to urban development, OHV use, trash dumping, aggregate mining, and an increase in predators such as domestic and feral cats associated with urban development.</p> <ul style="list-style-type: none"> • RAFSS-CA6-01: Work with land managers to identify habitat management, restoration, and enhancement opportunities for San Bernardino kangaroo rat. See Action RAFSS-CA1 above. • RAFSS-CA6-02: Protect additional San Bernardino kangaroo rat habitat, including upland refugia habitat to support San Bernardino kangaroo rat during flood events. Occupied floodplains and adjacent upland habitat should be conserved to ensure protection of populations large enough to remain viable in the long term. See Actions RAFSS-CA2, RAFSS-CA3, and RAFSS-CA4 above. • RAFSS-CA6-03: Monitor San Bernardino kangaroo rat populations throughout occupied, potentially occupied, and historically occupied sites to track its recovery. Systematic sampling efforts for a minimum of 5 years at each occupied and potentially occupied site would provide basic data to estimate occupancy and relative abundance through time. Standard survey protocols for San Bernardino kangaroo rat population abundance or density trends need to be developed. 	RAFSS-1.2 RAFSS-1.3	San Bernardino kangaroo rat
Riversidean Alluvial Fan	RAFSS-CA7	Use approved mitigation/conservation banks and in-lieu	<ul style="list-style-type: none"> • Specific mitigation banks and in-lieu fee information can be found on regulatory agencies websites, such as CDFW Conservation and Mitigation Banking 	RAFSS-1.1	RAFSS RAFSS Focal Species

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Table 3-7 RCIS Actions Summary

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
Sage Scrub (RAFSS)		fee programs to mitigate for RAFSS vegetation and associated Focal Species, as applicable and available within defined service areas. If applicable, implement actions identified in existing, approved HCP.	<p>(https://wildlife.ca.gov/Conservation/Planning/Banking) or Regulatory In Lieu Fee and Bank Information Tracking System (https://ribits.ops.usace.army.mil/ords/f?p=107:2). RCIS Figure 2-6 (Land Designations) also identifies the broad regional locations of Local Conserved Lands, which include existing mitigation banks.</p> <ul style="list-style-type: none"> • Coordinate with the appropriate bank/in-lieu fee program for information on available credits and pricing related to RAFSS and associated Focal Species mitigation. Purchase credits for mitigation needs. • For projects and activities covered within an existing, approved HCP and for permittees under those plans, implement actions identified in the applicable HCP (see Section 2.6 and Section 3.5.1). 		
Transitional Scrub, Chaparral, and Woodland (TSCW)	TSCW-CA1	Coordinate with existing land managers to identify and implement management activities within public lands that would maintain and enhance habitat quality for Focal Species in TSCW vegetation communities beyond that which is provided by the existing management regime.	<ul style="list-style-type: none"> • Identify Area of Interest. Use Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), and Figure 3-2 (Habitat Groups and Vegetation Communities) to identify the area of interest, confirm it is located within a Public Land and contains TSCW habitat, and identify the management agency associated with the area of interest. Consider areas of interest with moderate to high climate change resiliency (Figure E-1, Terrestrial Climate Change Resilience) and/or areas of low exposure, which are areas likely to remain suitable over time (Figure E-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix E). See conservation priority areas described in Objective TSCW-1.2. • Specific Actions. Review the current management plans and activities, then implement and fund actions that would protect, maintain, and/or enhance TSCW habitat quality beyond that which is currently provided. Actions include: 	TSCW-1.2	<p>TSCW TSCW Focal Species⁷</p> <p>TSCW Focal Species and Habitat Prioritization notes: Actions should prioritize Focal Species considered “umbrella” species, such as the American badger, desert bighorn sheep, mountain lion, and western Joshua tree. See Species Accounts in Appendix C for species-specific habitat requirements and</p>

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<ul style="list-style-type: none"> ○ TSCW-CA1-01: Biological Surveys. Identify areas supporting Focal Species by funding and implementing surveys to identify presence, distribution, and/or abundance of Focal Species and to assess the habitat quality within the area of interest. Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, information on Focal Species and other conservation elements, and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance with established accepted protocols and authorizations, if they exist. ○ TSCW-CA1-02: Habitat Protection. Install wildlife-friendly fencing to restrict human access and activities. Fencing must allow for movement of all wildlife species. Fencing plans will take into consideration the movement and safety of wildlife to inform need, type, and locations of fencing. If fencing is employed as a management action, design and install it such that it shall not affect sand transport function or other fluvial and geomorphic processes. In certain situations, it may be important to consider installation of wildlife exclusion fencing, such as along highways and to appropriately funnel movement to crossing structures to prevent vehicular strikes. Post signage to inform the public on exclusionary fencing, and develop educational materials to distribute to the public related to protections and exclusions. 		Section 3.4.2, Guidelines for Prioritizing Actions.

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<ul style="list-style-type: none"> ○ TSCW-CA1-03: Habitat Monitoring and Management. Conduct regular (annual or bi-annual) monitoring of Focal Species and habitat quality; after each monitoring effort biologists produce a monitoring report documenting methods, results, and any recommendations; implement management recommendations to maintain habitat conditions. ○ TSCW-CA1-04: Habitat Enhancement. Develop and implement a Habitat Enhancement Plan that describes methods and actions targeted to enhance habitat for Focal Species of interest. Actions should enhance habitat quality in areas supporting or that may support Focal Species (e.g., native plant restoration/enhancement of disturbed or low quality habitat, non-native plant species removal). The plan should be supported by initial Biological Surveys (described above) and describe the areas targeted for enhancement along with long-term (at least 5 consecutive years) monitoring actions, success criteria, and adaptive monitoring actions. The goal of the enhancement plan would be to enhance degraded habitat adjacent to moderate to high quality habitat to support occupancy of Focal Species. Degraded habitat may include areas of low quality habitat or fragmented areas targeted for enhancement to support habitat linkages. ● Coordinate with Land Managers. Throughout the processes described above, parties should coordinate with existing land managers for site-specific development and implementation of localized actions to protect, maintain, and enhance habitat quality for Focal Species. Coordination includes the submittal of any reports developed for the area of interest to the public land managers. 		

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Table 3-7 RCIS Actions Summary

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
Transitional Scrub, Chaparral, and Woodland (TSCW)	TSCW-CA2	Acquire, through fee title or conservation easement, unprotected lands for Focal Species, focusing on identified TSCW conservation priority areas.	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), Figure 3-2 (Habitat Groups and Vegetation Communities), and Figure 3-4B (Habitat Value) to identify private/undesignated lands with TSCW habitat of interest for acquisition. Consider areas of interest with moderate to high climate change resiliency (Figure E-1, Terrestrial Climate Change Resilience) and/or areas of low exposure, which are areas likely to remain suitable over time (Figure E-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix E). See conservation priority areas described in Objective TSCW-1.3. • Specific Actions. Implement and fund actions for areas occupied by or suitable for Focal Species in conservation priority areas. Actions include: <ul style="list-style-type: none"> ○ TSCW-CA2-01: Biological Surveys. Identify conservation priority areas within the areas of interest. Conservation priority areas are described in Objective TSCW-1.3. Within these areas, identify locations supporting Focal Species by funding and implementing surveys to identify presence, distribution, and/or abundance of Focal Species. Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, information on Focal Species and other conservation elements, and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance 	TSCW-1.3	<p>TSCW TSCW Focal Species</p> <p>See TSCW Focal Species and Habitat Prioritization notes under TSCW-CA1.</p>

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Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>with established accepted protocols and authorizations, if they exist. The report should identify any areas contributing to habitat connectivity or ecological processes.²</p> <ul style="list-style-type: none"> ○ TSCW-CA2-02: Resource Management Plan. Develop and implement a long-term Resource Management Plan that describes the proposed long-term monitoring and management of the land for the benefit of landscape and biological features, along with success criteria and adaptive management strategies. Implementation of the plan will require funding through endowment or other long-term funding mechanisms. Funding details will also need to be described in the plan. If applicable, coordinate with resource agencies (USFWS and CDFW) in the development of this plan. ○ TSCW-CA2-03: Habitat Preservation. At a localized level and based on the biological surveys, consider areas suitable for preservation. See Objective TSCW-1.3 and Section 3.4.2, Guidelines for Prioritizing Actions. Acquire, through fee title, conservation easement or other protective mechanism, unprotected habitat for conservation. Provide long-term funding for management and monitoring of acquired/conserved land. Implement the final and approved Resource Management Plan. 		
Transitional Scrub, Chaparral, and Woodland (TSCW)	TSCW-CA3	Create and restore TSCW habitat through the development and implementation of habitat restoration plans in suitable locations in	<ul style="list-style-type: none"> ● Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), Figure 3-2 (Habitat Groups and Vegetation Communities), and Figure 3-4A (San Bernardino County RCIS Habitat Value) to identify the area of interest that contains TSCW habitat and identify the management agency associated with the area of interest. Consider areas of interest with moderate to high climate change resiliency (Figure E-1, 	TSCW-1.2 TSCW-1.3	<p>TSCW TSCW Focal Species</p> <p>TSCW Focal Species and Habitat notes: Generally, the restoration of native vegetation</p>

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RCIS Actions Summary

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
		conservation priority areas.	<p>Terrestrial Climate Change Resilience) and/or areas of low exposure, which are areas likely to remain suitable over time (Figure E-2, Vegetation Climate Exposure Refugia) as described in the RCIS Climate Change Vulnerability Assessment (Appendix E). See conservation priority areas described in Objectives TSCW-1.2 and TSCW-1.3.</p> <ul style="list-style-type: none"> • TSCW-CA3-01: Develop and Implement Habitat Restoration Plan(s). Prepare Habitat Restoration Plan(s) in suitable locations in conservation priority areas. Suitable locations should be identified through site-specific assessments that identify the basic opportunities and constraints for restoration and biological resources on site, assess TSCW conditions and suitability for Focal Species, and establish baseline conditions and suitability for restoration. The plans should describe their purpose; site assessment methods and results; site preparation, cutting, seeding, and/or planting methods; maintenance (e.g., erosion control, invasive species control, herbivore control, public trespassing); measures to minimize impacts to sensitive species; performance criteria; monitoring (including adaptive management); and reporting requirements. 		would benefit multiple Focal Species.
Transitional Scrub, Chaparral, and Woodland (TSCW)	TSCW-CA4	Enhance habitat quality for Focal Species in TSCW habitat degraded by invasive plant species through the implementation of invasive plant control actions.	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), and Figure 3-2 (Habitat Groups and Vegetation Communities) to identify land ownership and areas of interest with TSCW. • Specific Actions. Implement and fund actions for areas occupied by or suitable for Focal Species in conservation priority areas. Actions include: <ul style="list-style-type: none"> ○ TSCW-CA4-01: Biological Surveys. Identify conservation priority areas within the areas of interest. Conservation priority areas are described in Objectives TSCW-1.2 and 	TSCW-1.2 TSCW-1.3	<p>TSCW TSCW Focal Species</p> <p>See TSCW Focal Species and Habitat Prioritization notes under TSCW-CA1.</p>

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>TSCW-1.3. Within these areas, identify locations of TSCW habitat degraded by invasive species. Suitable locations should be identified through site-specific assessments that identify the basic opportunities and constraints for restoration and biological resources on site, assess TSCW conditions and suitability for Focal Species, and establish baseline conditions and suitability for restoration. Survey products include a survey report documenting methods and results, and figures displaying the distribution of invasive plant abundance and location of habitat potentially supporting Focal Species. The report and figures should include results from any literature/database searches.</p> <ul style="list-style-type: none"> ○ TSCW-CA4-02: Invasive Species Management Plan. Based on the biological surveys, develop and implement an Invasive Species Management Plan to guide the identification, removal, and monitoring of areas proposed for enhancement. Consult the Land Manager's Guide to Developing an Invasive Plant Management Plan (USFWS and CIPC 2018) in developing the plan. The plan should include a discussion on the control methods, including herbicides, hand removal, and mechanical means, required to be successful in invasive species removal. The plan should include details regarding native plant seeding or plantings, along with success criteria and adaptive management procedures. <ul style="list-style-type: none"> ▪ The California Invasive Species Advisory Committee provides an all-taxa list of invasive species found in the state (CISAC 2021). In addition, Appendix F of the State Wildlife Action Plan (CDFW 2015) provides a list of conservation strategies and actions listed from the National Invasive 		

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			Species Council, objectives and implementation tasks from the National Invasive Species Management Plan, conservation strategies and actions by the Invasive Species Council of California, and recommended actions from Stopping the Spread: A Strategic Framework for Protecting California from Invasive Species (ISCC 2011).		
Transitional Scrub, Chaparral, and Woodland (TSCW)	TSCW-CA5	Enhance wildlife movement and habitat connectivity by implementing actions that improve wildlife access to and through TSCW areas, focusing on the identified conservation priority areas.	<ul style="list-style-type: none"> See Action DS-CA4 on actions related to wildlife movement and linkages studies. 	TSCW-1.2 TSCW -1.3	TSCW Focal Species See TSCW Focal Species and Habitat Prioritization notes under TSCW-CA1.
Transitional Scrub, Chaparral, and Woodland (TSCW)	TSCW-CA6	Implement conservation and mitigation actions for western Joshua tree	<ul style="list-style-type: none"> See details described under Action DS-CA7 	TSCW-1.2 TSCW -1.3	western Joshua tree
Transitional Scrub, Chaparral, and Woodland (TSCW)	TSCW-CA7	Use approved mitigation/conservation banks and in-lieu fee programs to mitigate for TSCW vegetation and associated Focal	<ul style="list-style-type: none"> Specific mitigation banks and in-lieu fee information can be found on regulatory agencies websites, such as CDFW Conservation and Mitigation Banking (https://wildlife.ca.gov/Conservation/Planning/Banking) or Regulatory In Lieu Fee and Bank Information Tracking System (https://ribits.ops.usace.army.mil/ords/f?p=107:2). RCIS Figure 2-6 	TSCW-1.1	TSCW TSCW Focal Species

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
		Species, as applicable and available within defined service areas. If applicable, implement actions identified in existing, approved HCP.	<p>(Land Designations) also identifies the broad regional locations of Local Conserved Lands, which include existing mitigation banks.</p> <ul style="list-style-type: none"> • Coordinate with the appropriate bank/in-lieu fee program for information on available credits and pricing related to TSCW and associated Focal Species mitigation. Purchase credits for mitigation needs. • For projects and activities covered within an existing, approved HCP and for permittees under those plans, implement actions identified in the applicable HCP (see Section 2.6 and Section 3.5.1). 		
Developed and Agriculture (DA)	DA-CA1	Coordinate with existing land managers and land owners of working lands to identify and implement management activities that would maintain and enhance habitat quality for Focal Species in agricultural areas and other developed areas.	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), and Figure 3-2 (Habitat Groups and Vegetation Communities) to identify the area of interest, confirm it contains DA habitat, and identify the management agency associated with the area of interest. See conservation priority areas described in Objective DA-1.1. • Specific Actions. Review the current management plans and activities, then implement and fund actions that would protect, maintain, and/or enhance DA habitat quality beyond that which is currently provided. Actions include: <ul style="list-style-type: none"> ○ DA-CA1-01: Biological Surveys. Identify areas supporting Focal Species by funding and implementing surveys to identify presence, distribution, and/or abundance of Focal Species and the assess the habitat quality within the area of interest. Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, information on Focal Species and other conservation elements, and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or 	DA-1.1	<p>DA areas DA Focal Species⁸</p> <p>DA Focal Species and Habitat Prioritization notes: Actions should prioritize burrowing owl, Swainson’s hawk, mountain lion, and tricolored blackbird and their habitats (see Species Accounts in Appendix C for species-specific habitat requirements and Section 3.4.2, Guidelines for Prioritizing Actions).</p>

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance with established accepted protocols and authorizations, if they exist.</p> <ul style="list-style-type: none"> ○ DA-CA1-02: Habitat Protection. Install wildlife-friendly fencing to restrict human access and activities. Fencing must allow for movement of all wildlife species. Fencing plans will take into consideration the movement and safety of wildlife to inform need, type, and locations of fencing. If fencing is employed as a management action, design and install it such that it shall not affect sand transport function or other fluvial and geomorphic processes. In certain situations, it may be important to consider installation of wildlife exclusion fencing, such as along highways and to appropriately funnel movement to crossing structures to prevent vehicular strikes. Post signage to inform the public on exclusionary fencing, and develop educational materials to distribute to the public related to protections and exclusions. ○ DA-CA1-03: Habitat Monitoring and Management. Conduct regular (annual or bi-annual) monitoring of Focal Species and habitat quality; after each monitoring effort biologists produce a monitoring report documenting methods, results, and any recommendations; implement management recommendations to maintain habitat conditions. ○ DA-CA1-04: Habitat Enhancement. Develop and implement a Habitat Enhancement Plan that describes methods and actions targeted to enhance habitat for Focal Species of interest. Actions should enhance habitat quality in areas 		

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Table 3-7 RCIS Actions Summary

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>supporting or that may support Focal Species (e.g., native plant restoration/enhancement of disturbed or low quality habitat, non-native plant species removal). The plan should be supported by initial Biological Surveys (described above) and describe the areas targeted for enhancement along with long-term (at least 5 consecutive years) monitoring actions, success criteria, and adaptive monitoring actions. The goal of the enhancement plan would be to enhance degraded habitat adjacent to moderate to high quality habitat to support occupancy of Focal Species. Degraded habitat may include areas of low quality habitat or fragmented areas targeted for enhancement to support habitat linkages.</p> <ul style="list-style-type: none"> • Coordinate with Land Managers. Throughout the processes described above, parties should coordinate with existing land managers for site-specific development and implementation of localized actions to protect, maintain, and enhance habitat quality for Focal Species. Coordination includes the submittal of any reports developed for the area of interest to the public land managers. 		
Developed and Agriculture (DA)	DA-CA2	Acquire easements or other agreements to maintain working lands in existing conditions in areas suitable for Focal Species, focusing on identified DA conservation priority areas.	<ul style="list-style-type: none"> • Identify Area of Interest. Use RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), and Figure 3-2 (Habitat Groups and Vegetation Communities) to identify private/undesignated lands with DA habitat of interest for consideration. See conservation priority areas described in Objective DA-1.1. • Specific Actions. With approval from landowners, implement and fund actions for areas suitable for and potentially occupied by Focal Species in conservation priority areas. Actions include: <ul style="list-style-type: none"> ○ DA-CA2-01: Biological Surveys. Identify conservation priority areas within the areas of interest. Conservation 	DA-1.1	<p>DA areas DA Focal Species</p> <p>See DA Focal Species and Habitat Prioritization notes under DA-CA1.</p>

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>priority areas are described in Objective DA-1.1. Within these areas, identify locations with suitable habitat and/or that support Focal Species by funding and implementing surveys to identify presence, distribution, and/or abundance of Focal Species. Survey products include a survey report with habitat mapping (i.e., figures), including, but not limited to, information on Focal Species and other conservation elements, and identification of a reference site(s), as applicable. Report should identify and recommend localized areas of high-quality habitat suitable for further protecting or maintaining, or areas that would benefit Focal Species from enhancing habitat quality. The report and figures should include results from any literature/database searches. Surveys for Focal Species must be conducted in the appropriate season and in accordance with established accepted protocols and authorizations, if they exist. The report should identify any areas contributing to habitat connectivity or ecological processes.²</p> <ul style="list-style-type: none"> ○ DA-CA2-02: Coordinate with Landowners. For this action it is imperative to work with landowners to understand existing long-term land use plans. Where possible, work with landowners to maintain working lands in areas suitable for Focal Species. A Resource Management Plan may be developed as part of an easement or agreement with landowners. This plan would describe the proposed long-term monitoring and management of the land for the benefit of landscape and biological features, along with success criteria and adaptive management strategies. Implementation of the plan would require funding through endowment or other long-term funding mechanisms. Funding details would also need 		

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**Table 3-7
RCIS Actions Summary**

Habitat Group	Action ID	RCIS Action	Specific RCIS Actions	Applicable Conservation Objective	Applicable Conservation Elements
			<p>to be described in the Plan. If applicable, coordinate with resource agencies (USFWS and CDFW) in the development of this plan.</p> <ul style="list-style-type: none"> ○ DA-CA2-03: Habitat Preservation. At a localized level and based on the biological surveys, consider areas suitable for preservation through easements or other landowner agreements. See Objective DA-1.1 and Section 3.4.2, Guidelines for Prioritizing Actions. Coordinate with landowners for the acquisition through fee title, conservation easement or other protective mechanism. Provide long-term funding for management and monitoring of acquired/conserved land. Implement the final and approved Resource Management Plan. 		

Notes:

- ¹ Desert tortoise, burrowing owl, golden eagle, LeConte's thrasher, American badger, desert bighorn sheep, desert kit fox, Mohave ground squirrel, pallid bat, Townsend's big-eared bat, alkali mariposa-lily, Barstow woolly sunflower, desert cymopterus, western Joshua tree, Mojave monkeyflower, Lane Mountain milkvetch, Parish's daisy.
- ² Ecological processes are biological, physical, and chemical processes which sustain ecological systems. Examples include primary production (e.g., plant photosynthesis), hydrologic cycle, nutrient cycling, species interactions, organism movements, and natural disturbances. Many forms of ecological processes sustain biodiversity. See EPA 2021 and Bennett et al. 2009.
- ³ Mojave fringe-toed lizard, Delhi Sands flower-loving fly, desert kit fox, pallid bat, Barstow woolly sunflower.
- ⁴ Blainville's (coast) horned lizard, San Bernardino ringneck snake, western spadefoot, burrowing owl, golden eagle, Swainson's hawk, tricolored blackbird, white-tailed kite, Delhi Sands flower-loving fly, American badger, desert kit fox, mountain lion, pallid bat, intermediate mariposa-lily, Plummer's mariposa-lily, Parry's spineflower.
- ⁵ Arroyo toad, California red-legged frog, western pond turtle, least Bell's vireo, southwestern willow flycatcher, Swainson's hawk, tricolored blackbird, white-tailed kite, yellow-billed cuckoo, Victorville shoulderband, arroyo chub, Mohave tui chub, Santa Ana sucker, Santa Ana speckled dace, desert kit fox, Mojave River vole, mountain lion, pallid bat, Townsend's big-eared bat, alkali mariposa-lily, Gambel's watercress, marsh sandwort, San Bernardino aster.
- ⁶ Blainville's (coast) horned lizard, San Bernardino ringneck snake, western spadefoot, Bell's sage sparrow, burrowing owl, coastal California gnatcatcher, golden eagle, white-tailed kite, Los Angeles pocket mouse, mountain lion, San Bernardino kangaroo rat, Santa Ana River woollystar, slender-horned spineflower, white-bracted spineflower.
- ⁷ Blainville's (coast) horned lizard, San Bernardino ringneck snake, western spadefoot, Bell's sage sparrow, burrowing owl, coastal California gnatcatcher, golden eagle, LeConte's thrasher, Swainson's hawk, white-tailed kite, American badger, desert bighorn sheep, desert kit fox, mountain lion, pallid bat, desert cymopterus, intermediate mariposa-lily, western Joshua tree, Lane Mountain milkvetch, Mojave monkeyflower, Parish's daisy, Parry's spineflower, Plummer's mariposa-lily, San Bernardino aster, short-joint beavertail, white-bracted spineflower.
- ⁸ Burrowing owl, tricolored blackbird, Swainson's hawk, mountain lion, pallid bat.

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3.4.2 Guidelines for Prioritizing Actions

Section 3.4.1 and Table 3-7 describe the SBC RCIS action toolbox, which provides a valuable synthesis of the suite of actions available for the conservation and mitigation that would contribute toward achieving regional conservation objectives for the conservation elements. The following guidelines for prioritizing conservation/mitigation actions were developed to provide decision support when multiple potential actions or geographic locations may fulfill a conservation/mitigation need.

Numerous considerations must be evaluated by landowners, project proponents, and decision makers when planning conservation and mitigation actions. Actions implemented to fulfill individual conservation/mitigation needs should also, to the extent possible, contribute toward achieving the SBC RCIS conservation goals and objectives.

To provide decision support for conservation and mitigation action prioritization, habitat value mapping was developed that identifies areas of moderate to high habitat value for the SBC RCIS conservation elements in the RCIS Area. All else being equal, actions within areas of moderate to high habitat value would provide the greatest contribution to the conservation strategy for the region and would be considered priority.

- Desert Region Habitat Value Mapping: Mapping of areas of moderate to high habitat value in the Desert Region is based on the Biological Conservation Framework Map from the California Desert Biological Conservation Framework (CEC et al. 2016). The Biological Conservation Framework Map was developed by CDFW, USFWS, BLM and California Energy Commission and represents “important areas for implementing conservation actions in the California deserts” (CEC et al. 2016). Within the RCIS Area, the mapping of areas of moderate to high habitat value based on CEC et al. 2016 includes important areas for desert tortoise, Mohave ground squirrel, and desert bighorn sheep; dunes and sand resources; hydrologic features; and West Mojave corridors, rare natural communities, and environmental gradients that occur outside of existing protected areas¹⁵ and disturbed lands.
- Mountain and Valley Region Habitat Value Mapping: Mapping of areas of moderate to high habitat value in the Mountain and Valley regions was based on

¹⁵ CEC et al. 2016 defines these as BLM Wilderness Areas, National Parks and National Preserves, National Monuments, National Wildlife Refuges, Wild and Scenic Rivers, Wilderness Study Area, California State Parks, CDFW Conservation Areas, and conservancy lands and privately held conservation areas.

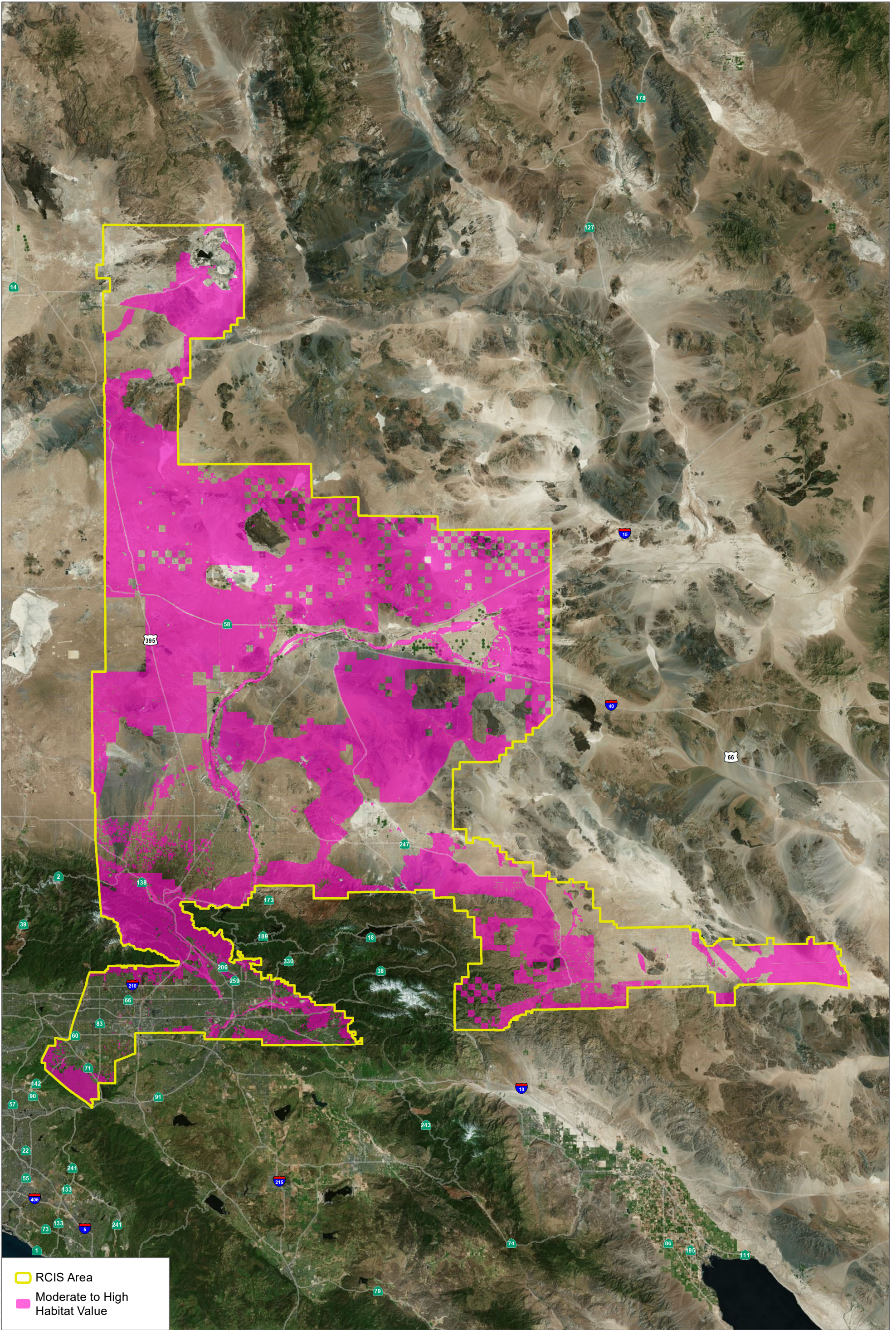
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an overlay of eight habitat value factors¹⁶ including: Focal Species occurrences with a 400-foot buffer (see Section 3.1.3.2, Appendix C, and Appendix D); Focal Species habitat areas (see Section 3.1.3.2, Appendix C, and Appendix D); USFWS-designated critical habitat for Focal Species (see Section 2.6 and Appendix C); vegetation communities (see Section 3.1.2); habitat linkages (see Section 3.1.1); hydrologic features (see Section 2.4); landforms providing climate resilience including canyons, deeply incised channels, mountain tops and ridgelines, and slopes (see Section 2.4); and areas with a CDFW ACE-III Terrestrial Climate Change Resilience Rank of moderate or higher (see Appendix E). Areas with three or more overlaying habitat value factors, excluding developed and disturbed areas, were mapped as areas of moderate to high habitat value in the Mountain and Valley regions.

Figure 3-4A depicts the areas of moderate to high habitat value in the RCIS Area. Figure 3-4B depicts the areas of moderate to high habitat value in the RCIS Area outside of the land designations. These maps are not intended to represent a reserve design or influence where conservation, mitigation, or development should or should not occur. Conservation/mitigation and land use decisions depend on a variety of considerations that are unique to each situation, and Figures 3-4A and 3-4B are intended only to provide landscape-scale guidance to consider when making conservation and mitigation decisions in the RCIS Area.

¹⁶ Focal Species occurrence localities, Focal Species habitat areas, and San Bernardino County vegetation communities mapping is based on the datasets described in Appendix C. Critical habitat is based on USFWS 2017b. Hydrologic features are based on the National Hydrography dataset (USGS 2017). Land facets are derived from a digital elevation model (USGS 2007) as in Beier and Brost (2010). CDFW ACE-III dataset is provided through the CDFW BIOS service.

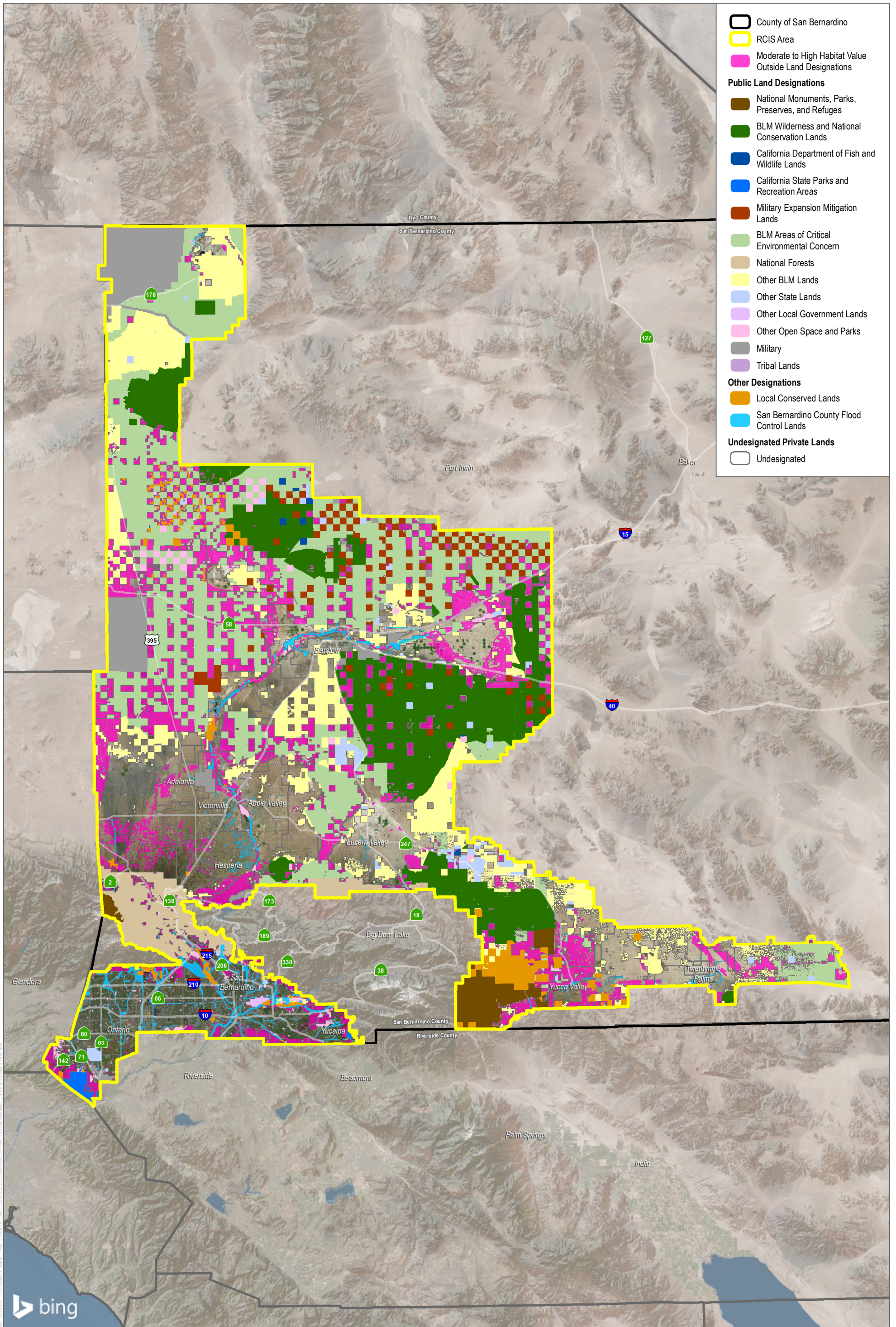


SOURCE: Bing Maps 2018



FIGURE 3-4A
San Bernardino County RCIS Habitat Value
 San Bernardino County RCIS

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SOURCE: Bing Maps 2018; San Bernardino County 2018; BLM 2018



FIGURE 3-4B
 San Bernardino County RCIS Habitat Value with Land Designations
 San Bernardino County RCIS

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3.5 Consistency with Conservation Plans and Recovery Plans

An RCIS shall be consistent with and complement draft NCCPs, approved NCCPs, federal HCPs, and approved state or federal recovery plans that overlap the RCIS Area.

As described in Section 2.6, the Wash HCP is the only approved regional, multiple species HCP in the SBC RCIS Area (ICF 2020). Additionally, 23 small, non-regional approved HCPs occur in the SBC RCIS Area as of 2021 (USFWS 2021). The Upper SAR HCP (not finalized or approved) and the Apple Valley MSHCP/NCCP (administrative draft not released) are in preparation. Approved recovery plans for the following Focal Species are relevant to the SBC RCIS: California red-legged frog (*Rana draytonii*) (USFWS 2002a), arroyo toad (*Anaxyrus californicus*) (USFWS 1999), desert tortoise (Mojave population) (USFWS 2011); least Bell's vireo (*Vireo bellii pusillus*) (USFWS 1998a), southwestern willow flycatcher (*Empidonax traillii extimus*) (USFWS 2002b), Delhi Sands flower-loving fly (USFWS 1997a), Santa Ana sucker (USFWS 2017a), Mohave tui chub (*Gila bicolor mohavensis*) (USFWS 1984), Gambel's watercress (*Rorippa gambelii*) (USFWS 1998b), marsh sandwort (*Arenaria paludicola*) (USFWS 1998b), and Parish's daisy (*Erigeron parishii*) (USFWS 1997b).

3.5.1 Approved Habitat Conservation Plans

Upper Santa Ana River Wash Habitat Conservation Plan

As described in Section 2.6.2, the Wash HCP was developed for the San Bernardino Valley Water Conservation District and other permittees to address conservation and the effects of covered activities in the nearly 4,900-acre area of the Upper SAR wash downstream of Seven Oaks Dam in the Cities of Highland and Redlands. The Wash HCP addresses four covered species that are also SBC RCIS Focal Species: coastal California gnatcatcher, San Bernardino kangaroo rat, Santa Ana River woollystar, and slender-horned spineflower. The SBC RCIS was developed to be consistent and compatible with existing approved HCPs in the RCIS Area, including the Wash HCP. See Table 3-8 for a detailed evaluation of the consistency of the SBC RCIS with the Wash HCP.

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**Table 3-8
SBC RCIS Consistency with the Santa Ana River Wash HCP**

SBC RCIS Conservation Goals and Objectives	SBC RCIS Actions	Santa Ana River Wash HCP Biological Goals, Objectives, and Actions	Consistency Evaluation
<p>Goal RAFSS-1: Sustain and enhance the biodiversity and ecological function of the Riversidean alluvial fan sage scrub (RAFSS) habitat group for the benefit of the vegetation communities, Focal Species, and other species associated with this habitat group.</p> <p>Objective RAFSS-1.1: Continue to protect and manage RAFSS habitat in Local Conserved Lands over the next 10 years in the following areas: land trust, conservation easement, mitigation banks (e.g., Woolly Star Preserve, Vulcan HCP conservation areas, Lytle Creek Conservation Bank, San Sevaine Preserve, North Etiwanda Preserve).</p> <p>Objective RAFSS-1.2: Implement targeted actions to increase or improve protection and/or management in conservation priority areas within the 10,395 acres of public land designations not considered conserved that support RAFSS habitats in the following areas over the next 10 years: USFS National Forests, Other BLM lands, Other state lands, Other local government lands and open space and parks, SBCFCD lands, focusing on the priority areas of Devil's Canyon, Lytle Creek, Cajon Wash, Santa Ana River, City Creek, Mill Creek, and other drainages and floodways supporting RAFSS.</p> <p>Objective RAFSS-1.3: Conserve RAFSS vegetation communities and reduce the threat of habitat loss for Focal Species that utilize RAFSS habitat by protecting and managing, establishing (creating), restoring, and/or enhancing</p>	<p>RAFSS-CA1: Coordinate with existing land managers to identify and implement management activities within public lands that would maintain and enhance habitat quality for Focal Species in RAFSS vegetation communities beyond that which is provided by the existing management regime.</p> <p>RAFSS-CA2: Acquire, through fee title or conservation easement, unprotected lands for Focal Species, focusing on identified RAFSS conservation priority areas.</p> <p>RAFSS-CA3: Create and restore RAFSS habitat through the development and implementation of habitat restoration plans in suitable locations in conservation priority areas.</p> <p>RAFSS-CA4: Enhance habitat quality for Focal Species in RAFSS habitat degraded by invasive plant species through the implementation of invasive plant control actions.</p> <p>RAFSS-CA5: Enhance wildlife movement and habitat connectivity by implementing actions that improve wildlife access to and through RAFSS areas.</p> <p>RAFSS-CA6: Implement conservation and mitigation actions for San Bernardino kangaroo rat consistent with the San Bernardino Kangaroo Rat 5-Year Review: Summary and Evaluation (USFWS 2009) or the most current guidance.</p> <p>RAFSS-CA7: Use approved mitigation/conservation banks and in-lieu fee programs to</p>	<p>Goals:</p> <ul style="list-style-type: none"> -Maintain or restore self-sustaining populations of the species covered by the Wash Plan. -Sustain the ecological processes necessary to maintain the functionality of the natural communities and habitats that the Covered Species depend upon. -Maintain connectivity among subpopulations of Covered Species in the Plan Area to minimize fragmentation of their habitat. -Minimize negative impacts on Covered Species and their habitats from off-highway vehicle (OHV) use, illegal dumping, edge effects, exotic species and other disturbances. -Actively manage conserved lands within the Plan Area for the benefit of Covered Species, including control of non-native plant species, selective vegetation thinning, and habitat enhancement. <p>Objectives and Actions:</p> <p><u>Coastal California Gnatcatcher</u></p> <p>CAGN Objective 1: Permanently conserve and manage high, medium, and low quality gnatcatcher habitat within the Plan Area.</p> <p>CAGN Action 1A: Permanently conserve and manage 47.6 acres of high quality habitat on District Conserved Lands (including 12.3 acres on SBCFCD Conserved Lands). Permanently conserve and manage an additional 65.4 acres of medium quality habitat on District Conserved Lands (including 34.7 acres on SBCFCD Conserved Lands). Provide for the additional management of 22.8 acres high quality and 124.8 acres of medium quality habitat to support breeding and wintering gnatcatchers on District Managed Lands.</p> <p>CAGN Action 1B: Permanently conserve and manage 603.3 acres of low quality habitat on District Conserved Lands (including 72.3 acres on SBCFCD Conserved Lands). Provide for the additional management of 428.2 acres low quality to provide for gnatcatcher connectivity and dispersal. Note: Additional high or medium quality habitat in surplus above the required acreages in CAGN Action 1A may be counted toward meeting these acreage requirements.</p> <p>CAGN Objective 2: Control non-native annual grasses and other invasive plant species for the benefit of gnatcatcher.</p> <p>CAGN Action 2: In habitat identified as suitable breeding and/or winter territory control invasive plant species to ≤20% cover.</p> <p>CAGN Objective 3: Maintain the quality of habitat to encourage occasional use of the suitable habitat (e.g., at least once in any 8-year period, which is the approximate rain cycle)</p> <p>CAGN Objective 4: Maintain nesting pairs of gnatcatcher in the Plan Area or, if they are not present, the structural components of gnatcatcher habitat required for nesting.</p> <p>CAGN Action 4: Based on the results of baseline surveys for gnatcatcher, manage occupied or otherwise suitable habitat to maintain at least two nesting pairs of gnatcatchers, or maintain the structural components of gnatcatcher habitat required for nesting (as defined in the AMMP).</p> <p>CAGN Objective 5: Prevent nesting gnatcatcher from being impacted by Covered Activities.</p> <p>CAGN Action 5: In gnatcatcher habitat, between February 15 and August 30 prior to conducting Covered Activities resulting in significant vegetation disturbance, a qualified biologist will conduct pre-activity nest surveys. The area to be disturbed and a 500-foot buffer will be surveyed for 5 consecutive days to determine if gnatcatchers are nesting in or near the construction or operations and maintenance area. If gnatcatchers are nesting, a 300-foot buffer will be established between the Covered Activity and the nest area. No Covered activities will take place within the buffer area until nesting is complete.</p> <p>CAGN Objective 6: Determine the status and distribution of gnatcatcher in the HCP Preserve, monitor long-term trends, and assess the effectiveness of management actions.</p> <p>CAGN Action 6A: Establish survey plots and initiate 3 years of baseline surveys for gnatcatcher in the HCP Preserve within 1 year of permit issuance.</p> <p>CAGN Action 6B: After baseline surveys are completed, survey for gnatcatcher in permanent and random sampling plots within the HCP Preserve every 3 years as described in the monitoring plan.</p> <p>CAGN Action 6C: Compare sample plots in management treatment areas to those in untreated areas to assess the results of management actions.</p> <p><u>San Bernardino Kangaroo Rat</u></p> <p>SBKR Objective 1: Permanently conserve and manage SBKR habitat (including all SBKR habitat suitability types) within the Plan Area.</p> <p>SBKR Action 1: Permanently conserve and manage 121.4 acres of high suitability habitat on District Conserved Lands (including 3.6 acres on SBCFCD Conserved Lands). Permanently conserve and manage an additional 122.1 acres of medium suitability habitat on District Conserved Lands (including 36.6 acres on SBCFCD Conserved Lands). Permanently conserve and manage an additional 191.8 acres of low suitability habitat on District Conserved Lands (including 59.4 acres on SBCFCD Conserved Lands). Permanently conserve and manage an additional 321.4 acres of very low suitability habitat on District Conserved Lands (including 22.4 acres on SBCFCD Conserved Lands). Permanently conserve and manage an additional 183.1 acres of ecological process area habitat on District Conserved Lands (including 61.8 acres on SBCFCD Conserved Lands). Provide for the additional management of 170.4 acres high suitability habitat, 105.6 acres of medium suitability habitat, 126.1 acres of low suitability habitat, 237.7</p>	<p>The SBC RCIS goal for RAFSS (Goal RAFSS-1) is to sustain and enhance biodiversity and ecological function for the benefit of the Focal Species; this is consistent and compatible with the overall goals of the Wash HCP.</p> <p>SBC RCIS Objective RAFSS-1.1 focuses on continuing to protect and manage existing conserved lands with RAFSS habitat, including the Woolly Star Preserve, which is conserved land within the Wash HCP Area. Therefore, this objective is consistent and compatible with the Wash HCP objectives.</p> <p>SBC RCIS Objective RAFSS-1.2 focuses on implementation of actions within public lands to increase or improve protection or management of RAFSS habitat, including on other local government lands, other open space, and SBCFCD lands along the Santa Ana River. This objective is consistent and compatible with Wash HCP objectives, including CAGN Objectives 1 through 6, SBKR Objectives 1 through 7, SHSF Objectives 1 through 10, and SARWS Objectives 1 through 7.</p> <p>SBC RCIS Objective RAFSS-1.3 focuses on protecting and managing, establishing, restoring, and/or enhancing RAFSS habitat on private lands. The Wash HCP focuses on lands owned or managed by public entities and the plan has specific permittees; therefore, this SBC RCIS objective is largely inapplicable. Nonetheless, the conservation objective is consistent and compatible with the Wash HCP.</p> <p>SBC RCIS Conservation Action RAFSS-CA1 involves coordinating with existing land managers to identify and implement management activities on public lands to maintain and enhance RAFSS habitat for</p>

Table 3-8
SBC RCIS Consistency with the Santa Ana River Wash HCP

SBC RCIS Conservation Goals and Objectives	SBC RCIS Actions	Santa Ana River Wash HCP Biological Goals, Objectives, and Actions	Consistency Evaluation
<p>RAFSS habitat in the 5,413 acres of undesignated private lands that support these habitats over the next 10 years that directly benefit Focal Species and habitat connectivity for this habitat group, focusing on the following conservation priority areas: Upper Santa Ana River wash, Lytle Creek, Cajon Wash, Reche Canyon, San Timoteo Canyon, Other contiguous, intact foothill areas supporting RAFSS, including in northern Rancho Cucamonga, Fontana, Highland, and other areas supporting Focal Species or contributing to habitat connectivity as identified in the conservation prioritization analysis provided in Section 3.4.2.</p>	<p>mitigate for RAFSS vegetation and associated Focal Species, as applicable and available within defined service areas. If applicable, implement actions identified in existing, approved HCP.</p>	<p>acres of very low suitability habitat, and 42.9 acres of ecological process area habitat to support SBKR on District Managed Lands. Note: Additional high or medium suitability habitat in surplus above the required acreages may be used to meet the low or very low suitability acreage requirements.</p> <p>SBKR Objective 2: Maintain and increase the quality of SBKR habitat in the HCP Preserve.</p> <p>SBKR Action 2: In low, medium, and high suitability habitat areas, control non-native grasses and other invasive plants to ≤20% cover average over any 3-year period.</p> <p>SBKR Objective 3: Maintain a stable or increasing population of SBKR in the HCP Preserve.</p> <p>SBKR Action 3: Maintain or increase the SBKR population in 70% of the high, medium, and low SBKR types of habitat as measured over any 8-year period (approximate rain cycle).</p> <p>SBKR Objective 4: Maintain and increase connectivity between SBKR populations in the HCP Preserve.</p> <p>SBKR Action 4A: Create a crossing for SBKR over the D-Dike in the 1938 and 1969 Santa Ana River breakout area between Plunge Creek and the Santa Ana River.</p> <p>SBKR Action 4B: Prioritize non-native grass control and thin shrubs as needed to enhance connectivity for SBKR between Plunge Creek and the Santa Ana River.</p> <p>SBKR Objective 5: Prevent SBKR habitat and individuals within the HCP Preserve from being impacted by Covered Activities.</p> <p>SBKR Action 5: In low, medium, and high suitability SBKR habitat, qualified biologists and/or biological monitors will monitor new construction and operations and maintenance resulting in ground disturbance to ensure that the Covered Activities are confined to the allotted footprint.</p> <p>SBKR Objective 6: Minimize loss of individual SBKR resulting from permanent habitat impacts.</p> <p>SBKR Action 6: In areas where ground disturbance will occur in medium or high suitability habitat, SBKR will be captured and relocated out of harm's way. For sites less than 3 acres or that are narrow and linear (e.g., a pipeline), captured animals will be immediately released in the nearest safe location outside the construction area. For sites larger than 3 acres, a suitable translocation site will be identified in advance of construction, and temporary burrows will be created for the translocated animals. With the exception of short-term construction activities such as road grading, where animals can be trapped and temporarily held until the work is completed, barrier fencing will be placed and maintained around construction areas until the Covered Activity is complete.</p> <p>SBKR Objective 7: Determine the status and distribution of San Bernardino kangaroo rat in the HCP Preserve, monitor long-term trends, and assess the effectiveness of management actions.</p> <p>SBKR Action 7A: Initiate 3 years of baseline surveys for SBKR in the HCP Preserve within 1 year of permit issuance.</p> <p>SBKR Action 7B: After baseline surveys are completed, survey for SBKR in permanent and random sampling plots within the HCP Preserve every 3 years as described in the monitoring plan.</p> <p>SBKR Action 7C: Compare sample plots in management treatment areas to those in untreated areas to assess the results of management actions.</p> <p><u>Slender-horned Spineflower</u></p> <p>SHSF Objective 1: Permanently conserve and manage spineflower localities known to be occupied within the District Conserved and District Managed Lands of the HCP Preserve.</p> <p>SHSF Action 1A: Permanently conserve 20 extant patches of spineflower within District Conserved and District Managed Lands in the HCP Preserve.</p> <p>SHSF Action 1B: Permanently conserve 36 historic spineflower locations within the District Conserved and District Managed Lands in the HCP Preserve.</p> <p>SHSF Objective 2: Permanently conserve and manage spineflower habitat to preserve ecological processes that maintain spineflower habitat and to accommodate future changes in spineflower distribution in response to environmental conditions or management actions undertaken for the benefit of spineflower or other Covered Species preserve ecological processes.</p> <p>SHSF Action 2: Permanently conserve and manage 100 acres of spineflower habitat adjacent to extant and historic spineflower occurrences and/or other habitat determined through modeling and subsequent on-site evaluation to be suitable. Suitable habitat will be determined using known characteristics of spineflower habitat; for example, areas associated with RAFSS on benches and terraces away from active flood channels in areas receiving little surface disturbance from flooding, but subject to sheet or overland flows, association with junipers, and cryptogamic soils (in the HCP Preserve), and those determined in the course of adaptive management.</p> <p>SHSF Objective 3: Develop a robust science-based Spineflower Restoration Program to address issues unique to the maintenance and enhancement of existing slender-horned spineflower populations and the potential establishment of new populations within the HCP Preserve.</p> <p>SHSF Action 3: The Conservation District will develop an initial experimental Spineflower Restoration Plan that will be reviewed and approved by the HCP Preserve Management Committee within 2 years of issuance of the incidental take permit. It will serve as the basis for developing a more long-term plan and strategy</p> <p>SHSF Objective 4: Establish and maintain a minimum of six new patches of spineflower in the HCP Preserve covering at least 35 square meters each in 5 years of any 8-year period. Patch size definitions and quantification methods will follow SAIC (2010). Aggregate mining of the contingency parcel may proceed after this objective has been met twice; that is, 5 years out of 8 for two 8-year cycles, without inclusion of sub-patches or outliers.</p>	<p>Focal Species beyond existing management levels. Specific actions implemented under RAFSS-CA1 would be coordinated with existing land managers, and, if implemented with any relationship to the Wash HCP, would be consistent and compatible.</p> <p>SBC RCIS Action RAFSS-CA2 involves acquiring unprotected lands through fee title or conservation easements. The Wash HCP focuses on lands owned or managed by public entities and the plan has specific permittees; therefore, this SBC RCIS action is largely inapplicable. Nonetheless, private lands acquired and protected as an action under the SBC RCIS would be consistent and compatible with the Wash HCP actions related to habitat conservation and management, including CAGN Action 1A, CAGN Action 1B, SBKR Action 1, SHSF Action 1A, SHSF Action 1B, SHSF Action 2, SARWS Action 1A, and SARWS Action 1B.</p> <p>SBC RCIS Actions RAFSS-CA3, RAFSS-CA4, and RAFSS-CA5 involve actions that create, restore, or enhance habitat or habitat function for RAFSS. These actions are consistent and compatible with the Wash HCP actions related to habitat restoration and enhancement, including CAGN Action 2, CAGN Action 4, SBKR Action 2, SBKR Action 3, SBKR Action 4A, SBKR Action 4B, SHSF Action 3, SHSF Action 4, SHSF Action 5, SHSF Action 6A, SHSF Action 6B, SARWS Action 2, SARWS Action 3, and SARWS Action 5.</p> <p>SBC RCIS Action RAFSS-CA6 involves implementing actions identified in the USFWS 5-Year Review of the San Bernardino kangaroo rat, which is consistent and compatible with the Wash HCP actions related to this species</p>

Table 3-8
SBC RCIS Consistency with the Santa Ana River Wash HCP

SBC RCIS Conservation Goals and Objectives	SBC RCIS Actions	Santa Ana River Wash HCP Biological Goals, Objectives, and Actions	Consistency Evaluation
		<p>SHSF Action 4: Utilize the restoration methods identified in the Spineflower Restoration Program and implement SHSF Objective 5, below, to establish new spineflower patches.</p> <p>SHSF Objective 5: Enhance and maintain all known patches of spineflower in the District Conserved and District Managed Lands. Patch sizes (after SAIC 2010), as measured annually, are to be stable or increasing across any 8-year period.</p> <p>SHSF Action 5: Utilize the restoration methods identified in the Spineflower Restoration Program (SHSF Objective 3) and implement SHSF Objective 6, below, to enhance extant spineflower patches.</p> <p>SHSF Objective 6: Reduce invasive plant cover in suitable spineflower habitat.</p> <p>SHSF Action 6A: Invasive plant cover (non-native grasses and other invasive plants) will be reduced to and maintained at ≤3% in the area within 15 meters of spineflower patches. This standard will be achieved within 3 years of any spineflower occurrence coming into conservation or management by the HCP and will be maintained thereafter.</p> <p>SHSF Action 6B: Outside of the treatment areas within 15 meters of spineflower patches, invasive plant cover will be reduced to and maintained at ≤15% cover in conserved spineflower habitat.²⁴ Invasive plant control will be carried out in concentric rings beginning next to the spineflower patches and then moving out from them.</p> <p>SHSF Objective 7: Detect spineflower populations in areas planned for permanent impacts and salvage and store seeds and potentially underlying soil for use in habitat enhancement and restoration within the HCP Preserve.</p> <p>SHSF Action 7: Pre-Covered Activity surveys for spineflower will be conducted by a qualified botanist in areas where permanent impacts will occur using the CDFW rare plant survey protocol. If spineflower are not detected, no additional surveys are required after the first survey. However, if spineflower plants are detected, seed will be collected and stored for future use in restoration and enhancement projects. Seed collection will occur for at least four seasons prior to ground disturbance. Seed collection and storage will be by an entity that has a Memorandum of Understanding with the USFWS to process and handle the seeds of endangered plant taxa. The HCP Preserve staff or an entity contracted by a Permittee may collect spineflower seed on behalf of the entity holding the Memorandum of Understanding if they first obtain clearance from the Wildlife Agencies, and they receive supervised instruction in the collection and handling of spineflower seed. Soil will also be collected if research indicates it would be of value to restoration efforts.</p> <p>SHSF Objective 8: Protect spineflower populations in the vicinity from being impacted by Covered Activities.</p> <p>SHSF Action 8: When Covered Activities will take place within 50 meters of known occurrences of spineflower, a temporary fence will be erected to protect them. A qualified botanist and/or biological monitor will monitor construction activities, maintain the markers limiting construction, and maintain the fence protecting the spineflower, to prevent accidental disturbance.</p> <p>SHSF Objective 9: Better determine the location and extent of spineflower suitable habitat in the HCP Preserve.</p> <p>SHSF Action 9: Model spineflower suitable habitat using variables such as slope, aspect, soil type and shrub cover. Refine the model as new information becomes available</p> <p>SHSF Objective 10: Determine the current extent and location of spineflower occurrences in the HCP Preserve and monitor population trends over time.</p> <p>SHSF Action 10A: Establish monitoring plots and conduct 3 years of baseline surveys for spineflower in suitable habitat.</p> <p>SHSF Action 10B: Map the size and extent of each extant occurrence during the baseline survey and estimate the number individuals from sample quadrats.</p> <p>SHSF Action 10C: After baseline surveys are completed, survey for spineflower in permanent and random sampling plots every year as described in the management and monitoring plan.²⁵</p> <p>SHSF Action 10D: Compare sample plots in management treatment areas to those in untreated areas to assess the results of management actions.</p> <p><u>Santa Ana River Woolly-star</u></p> <p>SARWS Objective 1: Permanently conserve known occupied woolly-star habitat.</p> <p>SARWS Action 1A: Permanently conserve and manage 204.3 acres of habitat containing woollystar in the HCP Preserve.</p> <p>SARWS Action 1B: Permanently conserve at least 50 additional acres of suitable habitat adjacent to occupied habitat to preserve ecological processes that maintain woolly-star habitat and to accommodate future changes in woolly-star distribution in response to environmental conditions or management's actions undertaken for the benefit of woolly-star or other Covered Species.</p> <p>SARWS Objective 2: Maintain the quality of woolly-star occupied areas and expand the current woolly-star distribution in the HCP Preserve including 99.9 acres on District Conserved Lands (include 5.4 acres of SBCFCD Conserved Lands) and 104.5 acres on District Managed Lands.</p> <p>SARWS Action 2: Control non-native annual grasses and other invasive plants to ≤20% average cover for the benefit of woolly-star on suitable unoccupied habitat throughout the HCP Preserve.</p>	<p>including SBKR Action 1, SBKR Action 2, SBKR Action 3, SBKR Action 4A, SBKR Action 4B, SBKR Action 5, SBKR Action 6, SBKR Action 7A, SBKR Action 7B, and SBKR Action 7C.</p> <p>SBC RCIS Action RAFSS-CA7 involves the use of existing mitigation/conservation banks and in-lieu fee programs and, if applicable, the implementation of actions in existing, approved HCPs. RAFSS-CA6 directly references implementation of actions from existing approved HCPs, if applicable; therefore, this action is consistent and compatible with the Wash HCP.</p>

**Table 3-8
SBC RCIS Consistency with the Santa Ana River Wash HCP**

SBC RCIS Conservation Goals and Objectives	SBC RCIS Actions	Santa Ana River Wash HCP Biological Goals, Objectives, and Actions	Consistency Evaluation
		<p>SARWS Objective 3: Increase the average density of woolly-star in occupied patches in the HCP Preserve as measured over any 8-year period, which is the approximate rain cycle.</p> <p>SARWS Action 3: Control non-native annual grasses and other invasive plants in, adjacent to woolly-star patches, and broadcast woolly-star seed harvested from woolly-star plants in areas where permanent impacts will occur.</p> <p>SARWS Objective 4: Detect woolly-star populations in areas where Covered Activities will result in permanent impacts, and salvage and store its seed for use in habitat enhancement and restoration within the HCP Preserve.</p> <p>SARWS Action 4: Pre-Covered Activity surveys will be conducted by a qualified botanist in areas where permanent impacts will occur using the CDFW rare plant survey protocol. If woollystar plants are detected, seed will be collected the season prior to ground disturbance and stored for future use in restoration and enhancement projects.²⁶</p> <p>SARWS Objective 5: Enhance the distribution of woolly-star by planting collected seeds in selected areas of suitable habitat.</p> <p>SARWS Action 5: The Preserve Manager in consultation with the Preserve Management Committee will select one or more sites within suitable woolly-star habitat that have achieved invasive plant control objectives, for planting salvaged woolly-star seeds when they become available. Planting will be scheduled and implemented as part of the annual work plan and will follow currently accepted planting methods and timing.</p> <p>SARWS Objective 6: Protect woolly-star patches near Covered Activity disturbance areas from being impacted.</p> <p>SARWS Action 6: When Covered Activities take place within 50 meters of known occurrences of woolly-star, a temporary fence will be erected to protect them. A qualified botanist and/or biological monitor will monitor construction activities, maintain the markers limiting construction, and maintain the fence protecting the woolly-star, to prevent accidental disturbance.</p> <p>SARWS Objective 7: Determine the current extent and location of woolly-star in the HCP Preserve, monitor population trends over time, and assess the effectiveness of management actions.</p> <p>SARWS Action 7A: Establish monitoring plots and conduct 3 years of baseline surveys for woolly-star in the HCP Preserve.</p> <p>SARWS Action 7B: After baseline surveys are completed, survey for woolly-star in permanent and random sampling plots every 5 years as described in the management and monitoring plan.</p> <p>SARWS Action 7C: Compare sample plots in management treatment areas to those in untreated areas to assess the results of management actions.</p>	

Notes: SBC RCIS conservation goals and objectives from Section 3.3 that are relevant to the Wash HCP are those associated with the Riversidean alluvial fan sage scrub (RAFSS) habitat group. SBC RCIS Focal Species associated with this habitat group and these conservation goals and objectives include Blainville's (coast) horned lizard, San Bernardino ringneck snake, western spadefoot, Bell's sage sparrow, burrowing owl, coastal California gnatcatcher, Los Angeles pocket mouse, mountain lion, San Bernardino kangaroo rat, Santa Ana River woollystar, slender-horned spineflower, and white-bracted spineflower. The Wash HCP covers four of the SBC RCIS Focal Species: coastal California gnatcatcher, San Bernardino kangaroo rat, Santa Ana River woollystar, and slender-horned spineflower. This consistency evaluation compares the SBC RCIS conservation goals, objectives, and actions for RAFSS to the Wash HCP biological goals, objectives, and actions for coastal California gnatcatcher, San Bernardino kangaroo rat, Santa Ana River woollystar, and slender-horned spineflower.

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Small, Non-Regional HCPs

Based on USFWS records, 23 small, non-regional HCPs have been approved in the SBC RCIS Area as of 2021 (USFWS 2021), in addition to the Upper Santa Ana River Wash Habitat Conservation Plan, described above. These approved HCPs were generally single project HCPs addressing single species issues. HCPs have been developed in the RCIS Area for Delhi Sands flower-loving fly (10 approved HCPs), San Bernardino kangaroo rat (5 approved HCPs), and desert tortoise (8 approved HCPs). Where these projects resulted in permanent protection of lands through an inventoried conservation easement, those lands are included in the Local Conserved Land inventory described in Section 2.5 and used in the conservation inventory in Section 3.2.2. The SBC RCIS is consistent and compatible with these small, non-regional HCPs.

3.5.2 Approved Recovery Plans

Approved recovery plans for the following Focal Species are relevant to the SBC RCIS: California red-legged frog (USFWS 2002a), arroyo toad (USFWS 1999), desert tortoise (Mojave population) (USFWS 2011); least Bell's vireo (USFWS 1998a), southwestern willow flycatcher (USFWS 2002b), Delhi Sands flower-loving fly (USFWS 1997a), Santa Ana sucker (USFWS 2017a), Mohave tui chub (USFWS 1984), Gambel's watercress (USFWS 1998b), marsh sandwort (USFWS 1998b), and Parish's daisy (USFWS 1997b).

California Red-Legged Frog

California red-legged frog is an SBC RCIS Focal Species in the riparian and wetland habitat group with an approved USFWS recovery plan (USFWS 2002a). SBC RCIS Action RW-CA7 (Table 3-7) specifies the implementation of conservation and mitigation actions for federally listed riparian and wetland Focal Species consistent with USFWS recovery plans or the most current guidance, including the following for California red-legged frog:

- Implement actions consistent with the most recent recovery plan (e.g., USFWS 2002 Recovery Plan for the California Red-legged Frog [*Rana aurora draytonii*]). Recovery strategies differ per recovery unit due to recovery needs and resources/population dynamic differences within each unit. Therefore, focus recovery implementation within suitable habitats in each recovery unit, if possible. The RCIS Area is within the Southern Transverse and Peninsular Ranges

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Recovery Unit. Where possible, focus recovery actions in the single Core Area within the RCIS range: Forks of the Mojave.

- The overall strategy for recovery of the California red-legged frog includes (1) protecting existing populations by reducing threats through preservation, (2) restoring and creating habitat that will be protected and managed in perpetuity, (3) surveying and monitoring populations and conducting research on the biology of and threats to the subspecies, and (4) reestablishing populations of the subspecies within its historic range.
- Implement the following guidelines and consult the Recovery Plan detailed guidelines when developing watershed management and protection plans and mitigation measures for development projects, during Section 7 consultations under the Endangered Species Act, and during regional conservation planning:
 - (1) protect suitable habitats and buffers in perpetuity; (2) develop and implement guidelines for maintaining adequate water flow regimes, particularly in suitable habitat downstream of impoundments, water diversions, and residential/industrial developments; (3) develop and implement best management practices to prevent or minimize adverse impacts from in-stream and stream bank activities associated with mining operations; (4) control/eliminate non-native species/predators (plants, vertebrates, invertebrates) using methods that are determined to be the most effective; (5) reduce the detrimental effects of livestock grazing and increase incidental benefits associated with livestock grazing on public and private lands; (6) reduce the effects of timber harvest activities on the California red-legged frog and its habitat; (7) develop site-specific guidelines for recreational activities to reduce or eliminate impacts where these activities pose an on-going threat to habitat quality; (8) decrease the exposure of the California red-legged frog and their habitat to contaminants; (9) develop guidelines for fire management practices (i.e., prescribed burns, emergency fire suppression, emergency water use) to decrease incidental impacts to the California red-legged frog; (10) develop and implement best management practices to prevent or minimize adverse impacts to the California red-legged frog from in-stream and stream bank activities associated with flood control actions; and (11) implement watershed management and protection plans using cooperative agreements and existing incentive programs.

Therefore, the SBC RCIS is considered consistent and compatible with the USFWS recovery plan for California red-legged frog.

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Arroyo Toad

Arroyo toad is an SBC RCIS Focal Species in the riparian and wetland habitat group with an approved USFWS recovery plan (USFWS 1999). SBC RCIS Action RW-CA7 (Table 3-7) specifies the implementation of conservation and mitigation actions for federally listed riparian and wetland Focal Species consistent with USFWS recovery plans or the most current guidance, including the following for arroyo toad:

- Implement actions consistent with the most recent recovery plan (e.g., USFWS 1999 Recovery Plan for the Arroyo Southwestern Toad [*Bufo microscaphus californicus*]).
- Assess project area potential to support the arroyo toad; and request input from USFWS and other relevant agencies early in a project's design.
- Implement measures to avoid and/or reduce impacts on this species and/or its habitat including the following: (1) implement Worker Environmental Awareness Training; (2) use pre-existing access routes and limit work to daylight hours; (3) minimize footprint disturbance; (4) develop a water pollution control plan; (5) delineate limits of construction; (6) avoid stream channels or sand and gravel bars, banks, and adjacent upland habitats used by the species; (7) avoid construction during the breeding season if avoidance of habitat is not possible; (8) if stream flow diversion is necessary, use sandbags or other methods for minimal impacts; (9) stage storage and fueling in uplands with minimal risk of drainage into riparian areas or other sensitive habitats; (10) do not deposit erodible fill materials into stream channels or banks; (11) have a project biologist perform periodic site inspections; (12) minimize removal of native vegetation; (13) permanently remove bullfrogs and other invasive aquatic species; (14) keep the project site free of debris; and (15) USFWS may authorize qualified biologists to relocate individual arroyo toads out of harm's way. Notify USFWS if dead or injured arroyo toads are located.
- Implement actions associated with the five parts of the recovery strategy, including (1) stabilize and maintain populations by protecting sufficient breeding and nonbreeding habitat; (2) monitor the status of existing populations to ensure recovery actions are successful; (3) identify and secure, by appropriate management and monitoring, additional suitable arroyo toad habitat and populations; (4) conduct research to determine the population dynamics and ecology of the species to guide management efforts and determine the best methods for reducing threats; and (5) develop and implement an outreach program.
- Adaptive management is an important component of the recovery strategy for the arroyo toad consisting of (1) assessment of the available information;

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(2) establishment of goals, objectives, and criteria; (3) determination and implementation of tasks to achieve the objectives; (4) establishment of a monitoring program; (5) evaluation of the results of the monitoring activities; and (6) changing the tasks as appropriate. Tasks that are not successful should be modified or deleted. Only those tasks that are successful should be continued and incorporated into future plans.

Therefore, the SBC RCIS is considered consistent and compatible with the USFWS recovery plan for arroyo toad.

Desert Tortoise

Desert tortoise is an SBC RCIS Focal Species in the desert scrub habitat group with an approved USFWS recovery plan (USFWS 2011). SBC RCIS Action DS-CA5 (Table 3-7) specifies the implementation of conservation and mitigation actions for federally listed desert scrub Focal Species consistent with USFWS recovery plans or the most current guidance, including the following for desert tortoise:

- Implement actions consistent with the most recent recovery plan (e.g., USFWS 2011 Revised Recovery Plan for the Mojave Population of the Desert Tortoise [*Gopherus agassizii*]).
- Inventory lands to assess population density and distribution for land conservation.
- Acquire, through fee title or conservation easement, suitable habitat lands for conservation that would connect functional habitat or improve/restore habitat and management of surrounding areas for desert tortoise; connect blocks of desert tortoise habitat to maintain gene flow between populations; install and maintain tortoise-barrier fencing and signage around conserved lands and along highways to exclude human activities, grazing, vehicular use, and other threats from access to tortoise habitat.
- Implement non-native invasive species removal programs, trash and debris removal activities to reduce predator attraction to areas, environmental educational programs to inform the public, and regular patrols of occupied desert tortoise habitat to prevent intentional or unintentional harm to the species or its habitat.
- Implement an adaptive management program on managed and conserved lands.

Therefore, the SBC RCIS is considered consistent and compatible with the USFWS recovery plan for desert tortoise.

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Least Bell's Vireo

Least Bell's vireo is an SBC RCIS Focal Species in the riparian and wetland habitat group with an approved USFWS recovery plan (USFWS 1998a). SBC RCIS Action RW-CA7 (Table 3-7) specifies the implementation of conservation and mitigation actions for federally listed riparian and wetland Focal Species consistent with USFWS recovery plans or the most current guidance, including the following for least Bell's vireo:

- Implement actions consistent with the most recent recovery plan (e.g., 1998 USFWS Draft Recovery Plan for the Least Bell's Vireo [*Vireo bellii pusillus*]).
- Recovery efforts should focus on addressing two major causes of decline: habitat loss and degradation and brown-headed cowbird nest parasitism.
- Specific recovery actions to implement, in coordination with USFWS, include (1) Protect and manage riparian and adjacent upland habitats within the least Bell's vireos historical range; (2) conduct research; (3) develop and evaluate least Bell's vireo habitat restoration techniques; (4) reintroduce least Bell's vireos to unoccupied habitat in their historical range through translocation; (5) evaluate progress of recovery, effectiveness of management and recovery actions, and revise management plans; and (6) provide public information and education.

Therefore, the SBC RCIS is considered consistent and compatible with the USFWS recovery plan for least Bell's vireo.

Southwestern Willow Flycatcher

Southwestern willow flycatcher is an SBC RCIS Focal Species in the riparian and wetland habitat group with an approved USFWS recovery plan (USFWS 2002b). SBC RCIS Action RW-CA7 (Table 3-7) specifies the implementation of conservation and mitigation actions for federally listed riparian and wetland Focal Species consistent with USFWS recovery plans or the most current guidance, including the following for southwestern willow flycatcher:

- Implement actions consistent with the most recent recovery plan (e.g., USFWS 2002 Final Recovery Plan, Southwestern Willow Flycatcher [*Empidonax traillii extimus*]).
- Specified recovery actions to implement, in coordination with USFWS, include (1) increase and improve occupied, suitable, and potential breeding habitat; (2) increase metapopulation stability; (3) improve demographic parameters; (4) minimize threats to wintering and migration habitat; (5) survey and monitor; (6)

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conduct research; (7) provide public education and outreach; (8) assure implementation of laws, policies, and agreements that benefit the flycatcher; (9) track recovery progress.

Therefore, the SBC RCIS is considered consistent and compatible with the USFWS recovery plan for southwestern willow flycatcher.

Delhi Sands Flower-Loving Fly

Delhi Sands flower-loving fly is an SBC RCIS Focal Species in the grassland habitat group with an approved USFWS recovery plan (USFWS 2019). SBC RCIS Action GRS-CA5 (Table 3-7) specifies the implementation of conservation and mitigation actions for Delhi Sands flower-loving fly consistent with USFWS recovery plans for the species or the most current guidance, including:

- Implement actions consistent with the most recent recovery plan (e.g., USFWS 2019 Recovery Plan Amendment for Delhi Sands Flower-Loving Fly [*Rhaphiomidas terminatus abdominalis*]).
- Given that this species is endemic to Colton Dunes, efforts should focus on funding surveys to identify areas of potentially restorable habitat (under-developed lands) shown in Figure 1 of the Recovery Plan (USFWS 2019).
- In areas with suitable or potentially restorable habitat, acquire, through fee title or conservation easement, these lands for conservation. Lands may be purchased as “stepping stones” to link preserves (vs. continuous “habitat corridors”).
- Manage the acquired lands for reproduction by restoring or enhancing habitat and minimally establishing both the suspected primary adult feeding plant (*Eriogonum fasciculatum*) and the plant associated with oviposition (*Heterotheca grandiflora*).
- Develop a long-term Management Plan that at minimum includes ongoing survey efforts to measure the success of the established plants and presence of the species. The Plan should address measures and actions to remove invasive, non-native Argentine ants (*Linepithema humile*), which could adversely affect the species (see USFWS 2019). In addition, since little is known of the species’ life history and habitat, management should be adaptive and closely coordinated with USFWS.

Therefore, the SBC RCIS is considered consistent and compatible with the USFWS recovery plan for Delhi Sands flower-loving fly.

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Santa Ana Sucker

Santa Ana sucker is an SBC RCIS Focal Species in the riparian and wetland habitat group with an approved USFWS recovery plan (USFWS 2017a). SBC RCIS Action RW-CA7 (Table 3-7) specifies the implementation of conservation and mitigation actions for federally listed riparian and wetland Focal Species consistent with USFWS recovery plans or the most current guidance, including the following for Santa Ana sucker:

- Implement actions consistent with the most recent recovery plan (e.g., USFWS 2017 Recovery Plan for the Santa Ana Sucker [*Catostomus santaanae*]).
- Coordinate with USFWS to (1) develop and implement a rangewide monitoring protocol to accurately and consistently document populations (quantitatively and qualitatively), occupied habitat, and threats; (2) conduct research projects specifically designed to inform management actions and Santa Ana sucker recovery; (3) increase the abundance and develop a more even distribution of Santa Ana suckers within its current range by reducing threats to the species and its habitat; and (4) expand the current range of the Santa Ana sucker by restoring Santa Ana sucker habitat for all life stages (as appropriate), and by reintroducing populations (where appropriate) within the species' historical range.

Therefore, the SBC RCIS is considered consistent and compatible with the USFWS recovery plan for Santa Ana sucker.

Mohave Tui Chub

Mohave tui chub is an SBC RCIS Focal Species in the riparian and wetland habitat group with an approved USFWS recovery plan (USFWS 1984). SBC RCIS Action RW-CA7 (Table 3-7) specifies the implementation of conservation and mitigation actions for federally listed riparian and wetland Focal Species consistent with USFWS recovery plans or the most current guidance, including the following for Mohave tui chub:

- Implement actions consistent with the most recent recovery plan (e.g., USFWS 1984 Recovery Plan for the Mohave Tui Chub, *Gila bicolor mohavensis*).
- Preserve and enhance existing populations and their habitats (range currently extends from Ridgecrest south to Victorville and east to Mojave National Preserve; presumed extant at Soda Springs, China Lake, Mojave River, Mojave National Preserve).
- Establish and protect populations in suitable new or restored habitats.

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- Implement life history and ecology studies to determine life history requirements, population genetics, and other goals for the management and recovery of the species.
- Implement environmental educational programs to inform the public of this species status and recovery efforts.

Therefore, the SBC RCIS is considered consistent and compatible with the USFWS recovery plan for Mohave tui chub.

Gambel's Watercress

Gambel's watercress is an SBC RCIS Focal Species in the riparian and wetland habitat group with an approved USFWS recovery plan (USFWS 1998b). SBC RCIS Action RW-CA7 (Table 3-7) specifies the implementation of conservation and mitigation actions for federally listed riparian and wetland Focal Species consistent with USFWS recovery plans or the most current guidance, including the following for Gambel's watercress:

- Implement actions consistent with the most recent recovery plans (e.g., USFWS 1998 Recovery Plan for Marsh Sandwort [*Arenaria paludicola*] and Gambel's Watercress [*Rorippa gambelii*], and the 2019 Recovery Plan Amendment for Marsh Sandwort [*Arenaria paludicola*] and Gambel's Watercress [*Rorippa gambelii*]).
- Specified recovery actions to implement include (1) protect, maintain, and enhance habitats; (2) monitor and document species populations and habitat characteristics; (3) conduct research on the ecology and biology of the species; (4) expand existing populations; (5) establish new populations; and (6) evaluate progress and update management and recovery guidelines.

Therefore, the SBC RCIS is considered consistent and compatible with the USFWS recovery plan for Gambel's watercress.

Marsh Sandwort

Marsh sandwort is an SBC RCIS Focal Species in the riparian and wetland habitat group with an approved USFWS recovery plan (USFWS 1998b). SBC RCIS Action RW-CA7 (Table 3-7) specifies the implementation of conservation and mitigation actions for federally listed riparian and wetland Focal Species consistent with USFWS recovery plans or the most current guidance, including the following for marsh sandwort:

- Implement actions consistent with the most recent recovery plans (e.g., USFWS 1998 Recovery Plan for Marsh Sandwort [*Arenaria paludicola*] and Gambel's Watercress

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[*Rorippa gambelii*], and the 2019 Recovery Plan Amendment for Marsh Sandwort [*Arenaria paludicola*] and Gambel's Watercress [*Rorippa gambelii*].

- Specified recovery actions to implement include (1) protect, maintain, and enhance habitats; (2) monitor and document species populations and habitat characteristics; (3) conduct research on the ecology and biology of the species; (4) expand existing populations; (5) establish new populations; and (6) evaluate progress and update management and recovery guidelines.

Therefore, the SBC RCIS is considered consistent and compatible with the USFWS recovery plan for marsh sandwort.

Parish's Daisy

Parish's daisy is an SBC RCIS Focal Species in the desert scrub habitat group with an approved USFWS recovery plan (USFWS 1997b). SBC RCIS Action DS-CA5 (Table 3-7) specifies the implementation of conservation and mitigation actions for federally listed desert scrub Focal Species consistent with USFWS recovery plans or the most current guidance, including the following for Parish's daisy:

- Implement actions consistent with the most recent recovery plan (e.g., USFWS 1997 San Bernardino Mountains Carbonate Plants Draft Recovery Plan)
- Since majority of populations occur on federal lands (and in areas of interest for mining activities), work with land managers to implement actions for the protection, conservation, and management of lands (as described under DS-CA1).
- Fund and implement surveys on private lands to identify habitat supporting Focal Species, collect data on species abundance and distribution within private or federal managed lands, and identify areas of interest for protecting, maintaining, or enhancing habitat quality and connectivity.
- Consider developing a site- and species-specific management plan within the greater land management area to clearly guide maintaining, protecting, or enhancing habitat.

Therefore, the SBC RCIS is considered consistent and compatible with the USFWS recovery plan for Parish's daisy.

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3.6 Adaptive Management and Monitoring Strategy Framework

The SBC RCIS must include an adaptive management and monitoring strategy framework for future MCA development. Adaptive management involves using the new information gathered through monitoring to adjust management strategies and practices to help provide for the conservation of Focal Species and their habitats. A monitoring strategy is the periodic evaluation of monitoring results to assess the adequacy of a conservation action or habitat enhancement action and to provide information to direct adaptive management activities to determine the status of the Focal Species, their habitats, or other natural resources. This section provides the adaptive management and monitoring strategy framework for developing monitoring programs and adaptive management plans for MCAs in the SBC RCIS Area; monitoring and adaptive management plans for conservation and mitigation actions implemented separate from MCAs are not required under the RCIS.

Adaptive management and monitoring is intended to ensure that RCIS actions are effective in achieving the CGOs of the SBC RCIS. The framework provided in this section outlines the important components of adaptive management and monitoring, including the baseline assessment, long-term monitoring, adaptive management, effectiveness tracking, and data management and reporting.

3.6.1 Baseline Resource Assessments

In baseline resource assessments, the biological resources in conservation/mitigation action sites are documented and mapped. These assessments establish the biological baseline for future adaptive management and monitoring. Baseline resource assessments are conducted during the appropriate seasons and typically occur during planning for conservation/mitigation actions at the site or within 2 years of securing the site. Baseline resource assessments include a review of available regional data on biological resources relevant to the site and results of field surveys to map the vegetation communities, inventory plant and wildlife species including the presence/absence of Focal Species, and assess the landscape processes and features such as hydrologic features and wildlife movement. For conservation/mitigation actions for resources regulated by federal, state, or local agencies, additional requirements may be required for the baseline resource assessment.

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3.6.2 Long-Term Monitoring

Using information gathered through the baseline resource assessment, MCA developers will prepare site-specific adaptive management and monitoring plans. The monitoring component of these plans will specify the monitoring target elements, methods, and frequency and timing. Two types of monitoring will be developed under the site-specific plans: compliance monitoring and effectiveness monitoring. CDFW will approve the monitoring elements as part of the MCA approval process.

- **Compliance monitoring:** Compliance monitoring documents that the MCA site is being maintained and that the conservation actions are being implemented in accordance with the terms of the MCA. Compliance monitoring also documents implementation of specified adaptive management and monitoring activities. Compliance monitoring is typically done on an annual basis and is reported as described in Section 3.6.4.
- **Effectiveness monitoring:** Effectiveness monitoring is used to measure success and effectiveness of the conservation actions over time. In MCAs, mitigation credits are assigned for conservation actions that benefit Focal Species or other conservation elements, and effectiveness monitoring is designed to assess and track how those actions contribute toward achieving the CGOs for those Focal Species and other conservation elements. For conservation actions involving habitat acquisition, protection, and management for Focal Species, effectiveness monitoring would track metrics such as the presence/absence of the Focal Species and the habitat quality for the Focal Species over time. For conservation actions involving habitat restoration or enhancement for Focal Species, effectiveness monitoring would track metrics such as the progress toward achieving the restoration/enhancement success criteria and the response of Focal Species within the habitat restoration/enhancement area. Effectiveness monitoring protocols and performance metrics may vary for each MCA. The site-specific adaptive management and monitoring plans will specify the effectiveness monitoring protocols, metrics, and frequencies, and may also specify a process by which monitoring protocols, metrics, and frequencies are modified as sites progress toward achieving their desired outcomes or in response to adaptive management information needs.

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3.6.3 Adaptive Management

Management of conservation/mitigation action sites typically involves both routine management and adaptive management. Routine management involves the typical management activities necessary to maintain site integrity, which may include activities such as patrolling, access management, site infrastructure maintenance, hydrologic management, invasive species management, or other activities. Routine management is defined during MCA development and in the site-specific adaptive management and monitoring plan. Adaptive management is employed to modify routine management activities or implement other management actions in response to information gathered through effectiveness monitoring to address uncertainties, changing conditions, or improve site performance. Adaptive management decision making involves evaluating the effectiveness of the monitoring program, incorporating the best available science into site management, reviewing monitoring results, adjusting management actions and monitoring approaches as necessary, and continuing the process in an iterative manner. The adaptive management decision-making process is described in the site-specific adaptive management and monitoring plan and will be implemented by the MCA developer in coordination with CDFW and other agencies as necessary.

3.6.4 Data Management and Reporting

Adaptive management and monitoring data management and reporting for each MCA is the responsibility of the MCA developer and will be specified during the MCA approval process and in the site-specific adaptive management and monitoring plan. Each MCA developer will coordinate with CDFW and the SBC RCIS Implementation Team (see Section 4.1) to share data and reports.

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4 IMPLEMENTATION FRAMEWORK

Following CDFW approval of the SBC RCIS, it will be available for use by public agencies, the development community, environmental groups, other interested entities, and the public to inform the implementation of conservation and mitigation actions in the RCIS Area.

The SBC RCIS is nonregulatory and voluntary. The SBC RCIS would be implemented by entities that execute conservation/mitigation actions consistent with the conservation and mitigation actions (see Section 3.4) that contribute toward achieving the CGOs for Focal Species (see Section 3.3). The SBC RCIS itself does not require implementation or funding to support implementation; however, if MCAs are developed under the SBC RCIS, certain implementation activities are required. These activities are described below.

4.1 Regional Conservation Investment Strategy Implementation Team

If MCAs are to be developed under the SBC RCIS, a SBC RCIS Implementation Team may be formed by SBCOG, the County, and/or the MCA sponsor. The SBC RCIS Implementation Team will serve as the primary point of contact for SBC RCIS implementation responsibilities. The Implementation Team will be available to support CDFW and RCIS users with documentation, mapping, and other data products during the implementation period. The Implementation Team can play an important role as champion of the SBC RCIS and will promote its use through communications, outreach, and partnerships in the region. The SBC RCIS Implementation Team will also be involved in coordinating adaptive management and monitoring activities across the RCIS Area and facilitating MCA development. The SBC RCIS Implementation team will be responsible for RCIS updates, extensions, and amendments, as described below.

4.2 Adaptive Management and Monitoring Strategy Implementation

The SBC RCIS Implementation Team will work with RCIS users, local municipalities and agencies, and stakeholders on a coordinated adaptive management and monitoring strategy that informs RCIS implementation over time. If MCAs (see Section 4.3) are developed under the SBC RCIS, specific adaptive management and monitoring plans will be required for the MCAs during implementation, and the effectiveness of the conservation actions in achieving the CGOs and offsetting the effects of pressures and stressors shall be tracked and reported. Section 3.6, Adaptive Management and Monitoring Strategy Framework, provides the framework for the SBC RCIS adaptive management, monitoring, evaluation, and reporting. The SBC RCIS Implementation

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Team will coordinate with MCA developers and other entities implementing conservation actions in the SBC RCIS Area to track implementation and effectiveness of adaptive management and monitoring.

4.3 Mitigation Credit Agreement Development

MCAs may be developed by any public or private entity within the RCIS Area. The MCA will identify the types and numbers of credits proposed to be created by implementing one or more conservation actions. MCA developers must independently fund and obtain CDFW approval of the MCA. Members of the SBC RCIS Implementation Team may sponsor their own MCA development and coordinate the development of MCAs by others. If an MCA is developed on public lands, it must also include written signoff from the public agency landowner approving use of those lands for the MCA.

As stated in FGC Section 1856 (b): In order for conservation actions identified in the SBC RCIS to be used to create MCAs, the SBC RCIS shall include the following:

- (1) An adaptive management and monitoring strategy for conserved habitat and other conserved natural resources.
- (2) A process for updating the scientific information used in the strategy, and for tracking the progress of, and evaluating the effectiveness of, conservation actions and habitat enhancement actions identified in the strategy, in offsetting identified threats to Focal Species and in achieving the strategy's biological goals and objectives, at least once every 10 years, until all mitigation credits are used.
- (3) Identification of a public or private entity that will be responsible for the updates and evaluation required pursuant to paragraph (2).

The SBC RCIS adaptive management and monitoring strategy is provided in Section 3.6, which also describes the process for evaluating the effectiveness of the conservation actions. As described in Section 4.4, the SBC RCIS Implementation Team will be responsible for making RCIS updates and evaluating RCIS effectiveness.

As an example of how MCAs may be developed under the SBC RCIS, the recent designation of western Joshua tree, an SBC RCIS Focal Species, as a candidate species for listing under the California Endangered Species Act has generated the interest and need for mitigation opportunities for this species, particularly in the desert region of San Bernardino County. Following approval of the SBC RCIS, public or private entities may choose to develop MCAs by implementing action DS-CA7 (Implementation conservation

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and mitigation actions for western Joshua tree) as described in Table 3-7, which includes a range of potential mitigation activities that could qualify as an MCA including long-term protection on public lands through durability agreements, acquisition and management of private lands, habitat enhancement, and access management. Entities seeking to develop an MCA would need to complete tasks in the CDFW MCA Completeness Checklist (CDFW 2021b) or be consistent with the MCA Guidelines and submit the associated MCA fees to obtain MCA approval from CDFW. Following MCA approval, mitigation credits from the MCA could be used, by the MCA developer or sold to others, to offset project impacts as mitigation under the California Endangered Species Act, the California Environmental Quality Act, or other mitigation needs.

Measurable objectives in this RCIS include metrics for tracking progress toward achieving the RCIS' goals and objectives. In describing objectives, metrics are provided with the intent of measuring, in a consistent way, the net change, from habitat restoration actions, on the habitat area and habitat quality. When implementing conservation actions and habitat enhancement actions that include habitat restoration, an MCA sponsor shall select, and submit for CDFW's approval, an appropriate metric(s) from the metrics indicated in this RCIS to measure the net change in habitat area and habitat quality.

If the MCA sponsor determines that an alternative metric, not listed in this RCIS, is more fitting for an action or objective, the MCA sponsor may make a written request to the RCIS Proponent and CDFW to consider approving that alternative metric instead of, or in addition to, one or more metrics in this RCIS. CDFW will consider the proposed alternative metric and the RCIS Proponent's recommendation, if any, when determining whether to approve the alternative metric.

Once a metric(s) is designated and approved, it must be used for both the baseline and subsequent measurements of habitat area and habitat quality. If an approved metric turns out to be faulty or problematic, the MCA sponsor may make a written request to the RCIS Proponent and CDFW to consider approving a different metric instead of, or in addition to, the approved metric(s), as set forth above. The determination to approve will be based, in part, on whether that new metric can be compared with the original baseline data in a reasonable way to compare the change in habitat area or habitat quality, as applicable.

MCA sponsors will report on relevant RCIS metrics for corresponding conservation actions and habitat enhancement actions implemented through an MCA. MCA sponsors may include additional measures and performance standards for assessing habitat quality in an MCA, consistent with the MCA Guidelines and with approval by CDFW.

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The following metrics are acceptable in this RCIS for measuring the net change in habitat area and habitat quality resulting from habitat restoration actions:

- Acreage
- Linear feet
- Vigor index (health of plant on scale of 1–4)
- Plant species percent cover (native vs. nonnative species)
- Native species diversity
- Number of individuals
- Number of populations
- Gene pool / genetic diversity
- Evidence of species presence and abundance (e.g., presence/absence, number of nests, calls, scat, and other relevant information)
- Habitat structure (e.g., number of canopy layers, percent cover, snags, and other relevant information)
- Distribution of key resources (e.g., nesting trees, ponds, host plants) (number per acre)
- Inundation duration (e.g., consecutive days)
- Water depth
- Stream flow (e.g., cubic feet per second)
- Water temperature and chemical composition
- Stream substrate composition (e.g., percent cover, gravel size, and other relevant information)
- Stream characterization (pool, riffle, run; length and width)

SBC RCIS Implementation Team shall submit an RCIS report to CDFW at the end of the RCIS ten-year term or in the updated RCIS submitted to CDFW for renewal (see Sections 4.4 and 4.5). The RCIS report or update shall document progress of conservation actions in achieving the RCIS conservation goals and objectives. The RCIS report will summarize the net change in selected metrics for the Focal Species and other conservation elements and will include a summary of progress of MCAs based on available information. Using

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available information, the RCIS report will also summarize other conservation and/or habitat enhancement actions undertaken in the RCIS Area during the reporting period.

4.4 Regional Conservation Investment Strategy Updates

RCIS updates involve incorporating the best available scientific information and data into an RCIS to keep the document current. Ongoing RCIS updates would generally be small in nature, resulting in targeted updates to document narrative, tabular information, and/or maps. An RCIS proponent may update an approved RCIS at any time, in coordination with CDFW. A thorough RCIS update would be necessary to support an RCIS extension. The SBC RCIS Implementation Team will be responsible for implementing SBC RCIS updates. If MCAs are developed, each MCA developer will evaluate effectiveness (see Section 3.6) within the MCA site and provide effectiveness evaluations, share data, and provide reporting to the SBC RCIS Implementation Team. The Implementation Team will compile data and reporting and make updates as data are available, no less than once every 10 years until all mitigation credits are used.

4.5 Regional Conservation Investment Strategy Extensions

An approved RCIS may be extended every 10 years. CDFW would consider a 10-year RCIS extension following the submittal of a thorough RCIS update. If MCAs are developed under the SBC RCIS, an RCIS report or an updated RCIS must be submitted to CDFW by the SBC RCIS Implementation Team for renewal after the end of the RCIS 10-year term. The RCIS report or updated RCIS shall evaluate progress of the actions (Section 3.4.1) toward achieving the CGOs (Section 3.3) and summarize the progress of any established MCAs in the RCIS Area.

4.6 Regional Conservation Investment Strategy Amendments

Two types of RCIS amendments have been identified: simple and complex. Simple RCIS amendments involve small or minor changes to an RCIS document that do not result in substantial changes to the RCIS. Complex amendments involve substantial RCIS changes such as boundary revisions or Focal Species additions. RCIS amendments may be proposed by the original RCIS proponents, CDFW, or third-party entities with the written support of the original proponents. RCIS amendments must be submitted to CDFW for approval.

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5 LIST OF PREPARERS AND REVIEWERS

The SBC RCIS is the product of a collaborative, multiyear effort involving numerous agencies, stakeholders from range of interests, and individuals of the public. Key contributors to the preparation of the RCIS are listed below.

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APPENDIX A
Vegetation Communities

San Bernardino County Regional Conservation Investment Strategy Vegetation Communities

Habitat Group	General Vegetation Community	Mid-Level Vegetation Type	CDFW Alliance	State Rarity	
Desert Scrub	Alkali Scrub	North American warm desert bedrock cliff and outcrop	Atriplex hymenelytra Chorizanthe rigida - Geraea canescens Desert Pavement Peucephyllum schottii - Pleurocoronis pluriseta	S4 S4 -	
		Shadscale - saltbush cool semi-desert scrub	Atriplex canescens Atriplex confertifolia	S4 S4	
		Southwestern North American salt basin and high marsh	Allenrolfea occidentalis Atriplex lentiformis Atriplex spinifera Frankenia salina Suaeda moquinii	S3 S4 S4 S3 S3	
		Barren	Barren	NA	NA
			North American warm desert bedrock cliff and outcrop	Atriplex hymenelytra Chorizanthe rigida - Geraea canescens Desert Pavement Peucephyllum schottii - Pleurocoronis pluriseta	S4 S4 -
			Arizona upland Sonoran desert scrub	NA	NA
		Sonoran and Mojavean Desert Scrub	Creosote Bush	Larrea tridentata	S5
				Larrea tridentata - Ambrosia dumosa Yucca schidigera	S5 S4
			Desert Buckwheat	Eriogonum fasciculatum - Viguiera parishii Eriogonum wrightii - Eriogonum heermanni - Buddleja utahensis	S5 S3
	Desert Mixed Shrub		Castela emoryi	S1	
			Cylindropuntia acanthocarpa / Pleuraphis rigida	-	
			Encelia (actoni, virginensis)	S3	
			Ephedra nevadensis - Lycium andersonii - Grayia spinosa	S3S4	
			Ericameria linearifolia - Cleome isomeris	S4	
			Gutierrezia sarothrae - Gutierrezia microcephala Prunus fasciculata - Salazaria mexicana	S3 S4	
	Intermontane deep or well-drained soil scrub		Ephedra nevadensis - Lycium andersonii - Grayia spinosa Ephedra viridis Krascheninnikovia lanata	S3S4 S4 S3	
	Intermontane seral shrubland		Cylindropuntia acanthocarpa / Pleuraphis rigida Encelia (actoni, virginensis) Ericameria nauseosa Ericameria teretifolia Gutierrezia sarothrae - Gutierrezia microcephala	- S3 S5 S4 S3	
	Lower Bajada and Fan Mojavean - Sonoran desert scrub		Ambrosia dumosa	S5	
			Atriplex polycarpa Encelia farinosa Larrea tridentata	S4 S4 S5	
			Larrea tridentata - Ambrosia dumosa Larrea tridentata - Encelia farinosa Pleuraphis rigida	S5 S4 S2	
	Mojave and Great Basin upper bajada and toeslope		NA	NA	
	Mojavean semi-desert wash scrub	Ambrosia salsola - Bebbia juncea	S4		
		Ephedra californica - Ephedra trifurca Ericameria paniculata Lepidospartum squamatum	S4 S3 S3		
		Prunus fasciculata - Salazaria mexicana Senegalia greggii - Hyptis emoryi - Justicia californica	S4 S3		
		North American warm desert dunes and sand flats	Dicoria canescens - Abronia villosa - Panicum urvilleanum	S1	
	Sonoran-Coloradan semi-desert wash woodland/scrub	Castela emoryi Chilopsis linearis - Psorothamnus spinosus Prosopis glandulosa - Prosopis velutina - Prosopis pubescens	S1 S3 S3		
	Dune and Playa	Desert Dunes	North American warm desert dunes and sand flats	Dicoria canescens - Abronia villosa - Panicum urvilleanum	S1
Playa		North American Warm Desert Alkaline Scrub and Herb Playa and Wet Flat	NA	NA	
		Southwestern North American salt basin and high marsh	Allenrolfea occidentalis Atriplex lentiformis Atriplex spinifera Frankenia salina Suaeda moquinii	S3 S4 S4 S3 S3	
Grassland	Native Grasslands	Alkaline Mixed Grasses	Distichlis spicata	S4	
		Southern Great Basin semi-desert grassland	NA	NA	
	Non-Native Grassland	Annual Grasses and Forbs	Amsinckia (menziesii, tessellata) - Phacelia spp. Brassica nigra - Raphanus spp.	S5 NA	
		California Annual and Perennial Grassland	Amsinckia (menziesii, tessellata) - Phacelia spp. Brassica nigra - Raphanus spp.	S5 NA	
		California annual forb/grass vegetation	Amsinckia (menziesii, tessellata) - Phacelia spp.	S5	
		Developed and Disturbed Areas	NA	NA	
		Non-Native/Invasive Grass	Avena spp. - Bromus spp.	NA	
		Perennial Grasses and Forbs	Achnatherum speciosum	S2	
			Juncus arcticus (var. balticus, mexicanus) Pleuraphis rigida	S4 S2	
		Riparian and Wetland	Riparian and Desert Wash	Baccharis (Riparian)	Baccharis emoryi - Baccharis sergiioides
California Sycamore	Platanus racemosa			S3	
Fan Palm	Washingtonia filifera			NA	
Fremont Cottonwood	Populus fremontii - Fraxinus velutina - Salix gooddingii			S3	
Madrean Warm Semi-Desert Wash Woodland/Scrub	Ambrosia salsola - Bebbia juncea			S4	
	Castela emoryi			S1	
	Chilopsis linearis - Psorothamnus spinosus			S3	
	Ephedra californica - Ephedra trifurca			S4	
	Ericameria paniculata Lepidospartum squamatum			S3 S3	
	Prosopis glandulosa - Prosopis velutina - Prosopis pubescens			S3	
	Prunus fasciculata - Salazaria mexicana Senegalia greggii - Hyptis emoryi - Justicia californica			S4 S3	
Mojavean semi-desert wash scrub	Ambrosia salsola - Bebbia juncea			S4	
	Ephedra californica - Ephedra trifurca Ericameria paniculata Lepidospartum squamatum			S4 S3 S3	
	Prunus fasciculata - Salazaria mexicana Senegalia greggii - Hyptis emoryi - Justicia californica			S4 S3	
North American warm desert dunes and sand flats	Dicoria canescens - Abronia villosa - Panicum urvilleanum			S1	
Riparian Mixed Hardwood	Sambucus nigra			S3	
Riparian Mixed Shrub	NA			NA	
Sonoran-Coloradan semi-desert wash woodland/scrub	Castela emoryi			S1	
	Chilopsis linearis - Psorothamnus spinosus Prosopis glandulosa - Prosopis velutina - Prosopis pubescens			S3 S3	
Southwestern North American riparian evergreen and deciduous woodland	Platanus racemosa			S3	
	Populus fremontii - Fraxinus velutina - Salix gooddingii			S3	
	Salix gooddingii - Salix laevigata			S3	

San Bernardino County Regional Conservation Investment Strategy Vegetation Communities

Habitat Group	General Vegetation Community	Mid-Level Vegetation Type	CDFW Alliance	State Rarity		
		Southwestern North American riparian/wash scrub	Baccharis emoryi - Baccharis sergiloides Baccharis salicifolia Rhus trilobata - Crataegus rivularis - Forestiera pubescens Salix exigua Salix lasiolepis Sambucus nigra	S3 S4 S3? S4 S4 S3		
		White Alder	Alnus rhombifolia	S4		
		Willow	Salix gooddingii - Salix laevigata Salix lasiolepis	S3 S4		
		Willow (Shrub)	Salix gooddingii - Salix laevigata Salix lasiolepis	S3 S4		
		Wetlands and Waters	Agriculture Pond or Water Feature	NA	NA	
			Arid West freshwater emergent marsh	Typha (angustifolia, domingensis, latifolia)	S5	
			Californian warm temperate marsh/steep	NA	NA	
			Intermittent Lake or Pond	NA	NA	
			Intermittent Stream Channel	NA	NA	
			Madrean Warm Semi-Desert Wash Woodland/Scrub	Ambrosia salsola - Bebbia juncea Castela emoryi Chilopsis linearis - Psoralea spinosa Ephedra californica - Ephedra trifurca Ericameria paniculata Lepidospartum squamatum Prosopis glandulosa - Prosopis velutina - Prosopis pubescens Prunus fasciculata - Salazaria mexicana Senegalia greggii - Hyptis emoryi - Justicia californica	S4 S1 S3 S4 S3 S3 S3 S4 S3	
			Open Water	NA	NA	
			Perennial Lake or Pond	NA	NA	
			Reservoir	NA	NA	
			Riparian	NA	NA	
			River/Stream/Canal	NA	NA	
	Southwestern North American salt basin and high marsh		Allenrolfea occidentalis Atriplex lentiformis Atriplex spinifera Frankenia salina Suaeda moquinii	S3 S4 S4 S3 S3		
	Tule - Cattail		Typha (angustifolia, domingensis, latifolia)	S5		
	Urban or Industrial Impoundment		NA	NA		
	Water (General)		NA	NA		
	Waterway		NA	NA		
	Wet Meadows		NA	NA		
	Wetland		NA	NA		
	Riversidean Alluvial Fan Sage Scrub		Riversidean Alluvial Scrub	Eriogonum fasciculatum – Lepidospartum squamatum alluvial fan	NA	
			Scalebroom	Lepidospartum squamatum	S3	
	Transitional Scrub, Chaparral, and Woodland		Chaparral	Birchleaf Mountain Mahogany	Cercocarpus montanus	S4
				Californian mesic chaparral	Cercocarpus montanus Prunus ilicifolia - Heteromeles arbutifolia - Ceanothus spinosus Quercus berberidifolia Quercus berberidifolia - Adenostoma fasciculatum	S4 S4 S4 S4
				Californian xeric chaparral	Adenostoma fasciculatum Adenostoma fasciculatum - Salvia mellifera Arctostaphylos glandulosa Arctostaphylos glauca Ceanothus crassifolius Ceanothus greggii - Fremontodendron californicum Ceanothus leucodermis Cercocarpus montanus Prunus ilicifolia - Heteromeles arbutifolia - Ceanothus spinosus Quercus berberidifolia Quercus berberidifolia - Adenostoma fasciculatum	S5 S4 S4 S4 S4 NA S4 S4 S4 S4 S4
				Ceanothus Mixed Chaparral	Ceanothus crassifolius Ceanothus leucodermis	S4 S4
				Chamise	Adenostoma fasciculatum	S5
				Curlleaf Mountain Mahogany	Cercocarpus ledifolius	S4
				Great Basin - Mixed Chaparral Transition	NA	NA
		Lower Montane Mixed Chaparral		Adenostoma fasciculatum - Salvia mellifera Prunus ilicifolia - Heteromeles arbutifolia - Ceanothus spinosus	S4 S4	
		Manzanita Chaparral		Arctostaphylos glandulosa Arctostaphylos glauca	S4 S4	
		Scrub Oak		Quercus berberidifolia Quercus berberidifolia - Adenostoma fasciculatum Quercus cornelius-mulleri	S4 S4 S4	
		Semi-Desert Chaparral	Ceanothus greggii - Fremontodendron californicum	NA		
		Soft Scrub Mixed Chaparral	Corethrogyne filaginifolia - Eriogonum (elongatum, nudum) Dendromecon rigida Eriodictyon crassifolium	NA S4 S3		
		Sumac Shrub	Malosma laurina	S4		
		Tucker / Muller Scrub Oak	Quercus john-tuckeri	S4		
		Upper Montane Mixed Chaparral	Arctostaphylos glandulosa Ceanothus leucodermis	S4 S4		
		Western Mojave and Western Sonoran Desert borderland chaparral	Quercus cornelius-mulleri Quercus john-tuckeri	S4 S4		
		Coastal Scrub	Buckwheat	Eriogonum fasciculatum Eriogonum fasciculatum - Viguiera parishii Eriogonum wrightii - Eriogonum heermannii - Buddleja utahensis	S5 S5 S3	
			California Sagebrush	Artemisia californica – (Salvia leucophylla) Artemisia californica – Salvia mellifera Salvia mellifera	S5 S4 S4	
Central and south coastal California seral scrub			Corethrogyne filaginifolia - Eriogonum (elongatum, nudum) Dendromecon rigida Ericameria linearifolia - Cleome isomeris Eriodictyon crassifolium	NA S4 S4 S3		
Central and South Coastal Californian coastal sage scrub			Eriogonum fasciculatum - Viguiera parishii	S5		
Coastal Cactus			Opuntia littoralis – Opuntia oricola – Cylindropuntia prolifera	S3		
Encelia Scrub			Encelia farinosa	S4		
Forest and Woodlands			Bigcone Douglas-Fir	Pseudotsuga macrocarpa	S3	
			Black Oak	Quercus kelloggii	S4	
			California Bay	Umbellularia californica	S3	
			California Walnut	Juglans californica	S3	
			Californian broadleaf forest and woodland	Quercus chrysolepis (tree) Quercus wislizeni (tree)	S5 S4	

San Bernardino County Regional Conservation Investment Strategy Vegetation Communities

Habitat Group	General Vegetation Community	Mid-Level Vegetation Type	CDFW Alliance	State Rarity	
		Californian montane conifer forest	Pseudotsuga macrocarpa	S3	
		Canyon Live Oak	Quercus chrysolepis (tree)	S5	
		Coast Live Oak	Quercus agrifolia	S4	
		Coastal Mixed Hardwood	NA	NA	
		Coulter Pine	Pinus coulteri	S2	
		Eastside Pine	NA	NA	
		Great Basin Pinyon - Juniper Woodland	Pinus monophylla - (Juniperus osteosperma)	S4	
		Interior Live Oak	Quercus wislizeni (tree)	S4	
		Interior Mixed Hardwood	NA	NA	
		Jeffrey Pine	Pinus jeffreyi	NA	
		Knobcone Pine	Pinus attenuata	NA	
		Mixed Conifer - Fir	NA	NA	
		Mixed Conifer - Pine	NA	NA	
		Ponderosa Pine	Pinus ponderosa	NA	
		Singleleaf Pinyon Pine	Pinus monophylla - (Juniperus osteosperma)	S4	
		Subalpine Conifers	NA	NA	
		White Fir	Abies concolor	NA	
		Great Basin Scrub	Basin Sagebrush	Artemisia tridentata	S5
			Blackbush	Coleogyne ramosissima	S4
			Great Basin - Desert Mixed Scrub	NA	NA
			Great Basin Mixed Scrub	NA	NA
			Intermontane deep or well-drained soil scrub	Ephedra nevadensis - Lycium andersonii - Grayia spinosa	S3S4
				Ephedra viridis	S4
	Krascheninnikovia lanata			S3	
	Intermontane seral shrubland		Cylindropuntia acanthocarpa / Pleuraphis rigida	NA	
			Encelia (actoni, virginensis)	S3	
			Ericameria nauseosa	S5	
			Ericameria teretifolia	S4	
			Gutierrezia sarothrae - Gutierrezia microcephala	S3	
	Inter-Mountain Dry Shrubland and Grassland		Achnatherum speciosum	S2	
			Cercocarpus ledifolius	S4	
			Coleogyne ramosissima	S4	
			Ephedra nevadensis - Lycium andersonii - Grayia spinosa	S3S4	
			Ephedra viridis	S4	
		Krascheninnikovia lanata	S3		
		Purshia tridentata - Artemisia tridentata	S3		
	Intermountain Mountain Big Sagebrush Shrubland and steppe	Artemisia tridentata	S5		
	Mojave and Great Basin upper bajada and toeslope	NA	NA		
		Rabbitbrush	Ericameria nauseosa Ericameria teretifolia	S5 S4	
	Joshua Tree Woodland	Joshua Tree	Yucca brevifolia	S3	
Mojave and Great Basin upper bajada and toeslope		NA	NA		
Juniper Woodlands	California Juniper (shrub)	Juniperus californica	S4		
	Great Basin Pinyon - Juniper Woodland	Pinus monophylla - (Juniperus osteosperma)	S4		
Developed and Agriculture	Agriculture	NA	NA		
	Barren	Barren	NA		
	Developed and Disturbed Areas	NA	NA		
	Eucalyptus Naturalized Forest	NA	NA		

Note: CDFW Alliance based on Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California Vegetation, Second Edition and CDFW Natural Communities List

APPENDIX B
Focal Species Evaluation

**San Bernardino County Regional Conservation Investment Strategy
Focal Species Evaluation**

Type	Common Name	Species Name	Federal Status ¹	State Status ¹	CRPR Status ¹	Other Status ¹	Priority Status ²	Climate Vulnerable Species	Upper Santa Ana River HCP ³	Wash Plan HCP ⁴	Apple Valley MSHCP/ NCCP	Designated Critical Habitat in RCIS Area?	Known to Occur in RCIS Area?	Habitat Associations	Focal Species Evaluation	Focal Species Evaluation Rationale
Focal Species																
Plants	alkali mariposa-lily	<i>Calochortus striatus</i>	-	-	1B.2	BLM:S USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Chenopod scrub, Mojavean desert scrub, Meadows and seeps; alkaline, mesic/perennial bulbiferous herb/Apr–June/230–5,230	Focal Species	2018 Preliminary Draft Focal Species; Rare plant species typically requiring mitigation and vulnerable to habitat loss.
Plants	Barstow woolly sunflower	<i>Eriophyllum mohavense</i>	-	-	1B.2	BLM:S	Priority 2	-	-	-	-	-	Yes	Chenopod scrub, Mojavean desert scrub, Playas/annual herb/Mar–May/1,640–3,145	Focal Species	2018 Preliminary Draft Focal Species; Rare plant species typically requiring mitigation and vulnerable to habitat loss.
Plants	desert cymopterus	<i>Cymopterus deserticola</i>	-	-	1B.2	BLM:S	Priority 2	-	-	-	-	-	Yes	Joshua tree woodland, Mojavean desert scrub; sandy/perennial herb/Mar–May/2,065–4,920	Focal Species	Rare plant species typically requiring mitigation and vulnerable to habitat loss.
Plants	Gambel's watercress	<i>Nasturtium gambelii</i>	Endangered	Threatened	1B.1	-	Priority 1	-	-	-	-	-	Yes	Marshes and swamps (freshwater or brackish)/perennial rhizomatous herb/Apr–Oct/16–1,080	Focal Species	2018 Preliminary Draft Focal Species; Highly imperiled federally- and state-listed species.
Plants	intermediate mariposa-lily	<i>Calochortus weedii</i> var. <i>intermedius</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Coastal scrub, Valley and foothill grassland; rocky, calcareous/perennial bulbiferous herb/May–July/344–2,805	Focal Species	One overlapping occurrence near Chino Hills State Park (CNDDB). CNPS recommended focal species.
Plants	Lane Mountain milk-vetch	<i>Astragalus jaegerianus</i>	Endangered	-	1B.1	-	Priority 1	-	-	-	-	Yes	Yes	Joshua tree woodland, Mojavean desert scrub; granitic, sandy or gravelly/perennial herb/Mar–June/2,950–3,935	Focal Species	2018 Preliminary Draft Focal Species; Federally listed species requiring agency coordination and mitigation.
Plants	marsh sandwort	<i>Arenaria paludicola</i>	Endangered	Endangered	1B.1	-	Priority 1	-	-	-	-	-	Yes	Marshes and swamps (freshwater or brackish); sandy, openings/perennial stoloniferous herb/May–Aug/10–560	Focal Species	2018 Preliminary Draft Focal Species; Highly imperiled federally- and state-listed species.
Plants	Mojave monkeyflower	<i>Diplacus mohavensis</i>	-	-	1B.2	BLM:S	Priority 2	-	-	-	-	-	Yes	Joshua tree woodland, Mojavean desert scrub; sandy or gravelly, often in washes/annual herb/Apr–June/1,965–3,935	Focal Species	2018 Preliminary Draft Focal Species; Rare plant species typically requiring mitigation and vulnerable to habitat loss

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Plants	Parish's daisy	<i>Erigeron parishii</i>	Threatened	-	1B.1	-	Priority 1	-	-	-	-	Yes	Yes	Mojavean desert scrub, Pinyon and juniper woodland; usually carbonate, sometimes granitic/perennial herb/May–Aug/2,620–6,560	Focal Species	2018 Preliminary Draft Focal Species; Federally listed plant species typically requiring agency coordination and mitigation; serves as an indicator of habitat quality for the suite of carbonate plant species of the San Bernardino Mountains
Plants	Parry's spineflower	<i>Chorizanthe parryi</i> var. <i>parryi</i>	-	-	1B.1	BLM:S USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland; sandy or rocky, openings/annual herb/Apr–June/902–4,000	Focal Species	Many occurrences in the southwestern portion of RCIS from Rancho Cucamonga to Yucaipa (CNDDDB). CNPS recommended focal species.
Plants	Plummer's mariposa-lily	<i>Calochortus plummerae</i>	-	-	4.2	-	Priority 3	-	-	-	-	-	Yes	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland; granitic, rocky/perennial bulbiferous herb/May–July/328–5,575	Focal Species	Rare plant species typically requiring mitigation and vulnerable to habitat loss, populations known from the Cajon Pass area. CNPS recommended focal species.
Plants	San Bernardino aster	<i>Symphytotrichum defoliatum</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Meadows and seeps, Marshes and swamps, Valley and foothill grassland (vernally mesic); near ditches, streams, springs/perennial rhizomatous herb/July–Nov (Dec)/7–6,690	Focal Species	2018 Preliminary Draft Focal Species; California Rare Plant Rank 1B.2 listed species typically requiring agency coordination and mitigation; an imperiled species vulnerable to habitat loss.
Plants	Santa Ana River woollystar	<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>	Endangered	Endangered	1B.1	-	Priority 1	-	X	X	-	-	Yes	Chaparral, Coastal scrub (alluvial fan); sandy or gravelly/perennial herb/Apr–Sep/299–2,000	Focal Species	2018 Preliminary Draft Focal Species; Federally- and state-listed species typically requiring agency coordination and mitigation; an imperiled

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Focal Species Evaluation**

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																species vulnerable to habitat loss.
Plants	short-joint beavertail	<i>Opuntia basilaris</i> var. <i>brachyclada</i>	-	-	1B.2	BLM:S USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland/perennial stem succulent/Apr-June (Aug)/1,390-5,905	Focal Species	2018 Preliminary Draft Focal Species; Rare plant species typically requiring mitigation and vulnerable to habitat loss in the transitional habitats.
Plants	slender-horned spineflower	<i>Dodecahema leptoceras</i>	Endangered	Endangered	1B.1	-	Priority 1	-	X	X	-	-	Yes	Chaparral, Cismontane woodland, Coastal scrub (alluvial fan); sandy/annual herb/Apr-June/656-2,490	Focal Species	2018 Preliminary Draft Focal Species; Federally- and state-listed species typically requiring agency coordination and mitigation; an imperiled species vulnerable to habitat loss.
Plants	western Joshua tree	<i>Yucca brevifolia</i>	-	Candidate	-	CA Native Desert Plant Act, local ordinances	Priority 1	-	-	-	X	-	Yes	Great Basin grassland, Great Basin scrub, Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland, Sonoran desert scrub, Valley and foothill grassland/perennial leaf succulent/Apr-May/1,310-6,560	Focal Species	2018 Preliminary Draft Focal Species; Candidate for State listing and typically requires mitigation; also serves as an umbrella species for the transitional communities and an indicator of climate change.
Plants	white-bracted spineflower	<i>Chorizanthe xanti</i> var. <i>leucotheca</i>	-	-	1B.2	BLM:S USFS:S	Priority 2	-	-	-	-	-	Yes	Coastal scrub (alluvial fans), Mojavean desert scrub, Pinyon and juniper woodland; sandy or gravelly/annual herb/Apr-June/984-3,935	Focal Species	Rare plant species typically requiring mitigation and vulnerable to habitat loss, populations known from the Cajon Pass area. CNPS recommended focal species.
Invertebrates	Delhi Sands flower-loving fly	<i>Rhaphiomidas terminatus abdominalis</i>	Endangered	-	-	-	Priority 1	-	X	-	-	-	Yes	Delhi fine sandy soils and dunes, scrub and ruderal vegetation in the sand verbena series with <50% cover	Focal Species	2018 Preliminary Draft Focal Species; Federally listed species typically requiring agency coordination and mitigation; also serves as a resource-limited indicator species for

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																dune and blown-sand communities in the Valley region.
Invertebrates	Victorville shoulderband	<i>Helminthoglypta mohaveana</i>	-	-	-	CDFW:SA	Priority 3	-	-	-	-	-	Yes	Known only from along the Mojave River in San Bernardino County	Focal Species	2018 Preliminary Draft Focal Species; Invertebrate species with very limited distribution wholly within the planning area.
Fish	arroyo chub	<i>Gila orcuttii</i>	-	-	-	CDFW:SSC USFS:S	Priority 2	-	X	-	-	-	Yes	Warm, fluctuating streams with slow-moving or backwater sections of warm to cool streams at depths >40 centimeters (16 inches); substrates of sand or mud	Focal Species	2018 Preliminary Draft Focal Species; State species of special concern; also serves as a process-limited indicator species for the aquatic and riverine processes of the Santa Ana River and other creeks in the Valley region.
Fish	Mohave tui chub	<i>Siphateles bicolor mohavensis</i>	Endangered	Endangered	-	CDFW:FP	Priority 1	X	-	-	-	-	Yes	Lacustrine ponds or pools; 4 feet min water depth; freshwater flow; mineralized and alkaline environment; habitat for aquatic invertebrate prey and egg attachment substrate; <i>Ruppia maritima</i> preferred for egg attachment and thermal refuge in summer months	Focal Species	2018 Preliminary Draft Focal Species; Highly imperiled federally endangered, state endangered and fully protected species.
Fish	Santa Ana speckled dace	<i>Rhinichthys osculus ssp. 8¹</i>	-	-	-	CDFW:SSC USFS:S	Priority 2	X	X	-	-	-	Yes	Headwaters of the Santa Ana and San Gabriel Rivers; may be extirpated from the Los Angeles River system	Focal Species	2018 Preliminary Draft Focal Species; State species of special concern; also serves as a process-limited indicator species for the aquatic and riverine processes of the Santa Ana River and other creeks in the Valley region.
Fish	Santa Ana sucker	<i>Catostomus santaanae</i>	Threatened	-	-	-	Priority 1	X	X	-	-	Yes	Yes	Small, shallow, cool, clear streams less than 7 meters	Focal Species	2018 Preliminary Draft Focal Species; Federally

¹ Formerly *Rhinichthys osculus ssp. 3*, which did not account for other undescribed subspecies outside of California. See notes in CDFW Special Animals List (CDFW 2021).

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														(23 feet) in width and a few centimeters to more than a meter (1.5 inches to more than 3 feet) in depth; substrates are generally coarse gravel, rubble, and boulder		listed species typically requiring agency coordination and mitigation; also serves as a process-limited indicator species for the aquatic and riverine processes of the Santa Ana River and the aquatic community the river system supports.
Amphibians	arroyo toad	<i>Anaxyrus californicus</i>	Endangered	-	-	CDFW:SSC	Priority 1	X	X	-	-	Yes	YES	Semi-arid areas near washes, sandy riverbanks, riparian areas, palm oasis, Joshua tree, mixed chaparral and sagebrush; stream channels for breeding (typically third order); adjacent stream terraces and uplands for foraging and wintering	Focal Species	2018 Preliminary Draft Focal Species; Federally listed species typically requiring agency coordination and mitigation; also serves a process-limited indicator species for the aquatic and riverine processes in the Mojave River and its tributaries.
Amphibians	California red-legged frog	<i>Rana draytonii</i>	Threatened	-	-	CDFW:SSC	Priority 1	-	-	-	-	Yes	YES	Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands	Focal Species	2018 Preliminary Draft Focal Species; Federally listed species currently extirpated from the Valley but Recovery Plan actions are applicable in this region
Amphibians	western spadefoot	<i>Spea hammondi</i>	-	-	-	BLM:S CDFW:SSC	Priority 2	-	X	-	-	-	YES	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley-foothill woodlands, pastures, and other agriculture	Focal Species	2018 Preliminary Draft Focal Species; State species of special concern typically requiring mitigation; serves as a dispersal-limited indicator species within suitable vernal pool, grassland, and other ephemeral wetland habitats.
Reptiles	Blainville's (coast) horned lizard	<i>Phrynosoma blainvillii</i>	-	-	-	BLM:S CDFW:SSC	Priority 2	X	-	-	X	-	Yes	Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral,	Focal Species	2018 Preliminary Draft Focal Species; State species of special concern typically

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														valley–foothill hardwood, conifer, riparian, pine–cypress, juniper, and annual grassland habitats		requiring mitigation; also serves as a dispersal-limited indicator species in the transitional habitats of the foothills and open habitats.
Reptiles	desert tortoise	<i>Gopherus agassizii</i>	Threatened	Candidate	-	-	Priority 1	-	-	-	X	Yes	Yes	Arid and semi-arid habitats in Mojave and Sonoran Deserts, including sandy or gravelly locations along riverbanks, washes, sandy dunes, canyon bottoms, desert oases, rocky hillsides, creosote flats, and hillsides	Focal Species	2018 Preliminary Draft Focal Species; Federally listed species typically requiring agency coordination and mitigation; also serves as an umbrella species for the desert scrub communities.
Reptiles	Mojave fringe-toed lizard	<i>Uma scoparia</i>	-	-	-	BLM:S CDFW:SSC	Priority 2	X	-	-	-	-	Yes	Loose wind-blown sand dunes, flats with sandy hummocks, washes, and banks of rivers	Focal Species	2018 Preliminary Draft Focal Species; State species of special concern typically requiring mitigation; also serves as a process-limited indicator species for sand transport processes associated with dunes and other sand features.
Reptiles	San Bernardino ringneck snake	<i>Diadophis punctatus modestus</i>	-	-	-	USFS:S	Priority 3	-	-	-	-	-	Yes	Moist habitats including wet meadows, rocky hillsides, gardens, farmland grassland, chaparral, mixed-conifer forest, and woodland	Focal Species	2018 Preliminary Draft Focal Species; Species serves as an umbrella species for Riversidean alluvial fan sage scrub and transitional habitats in the Valley region.
Reptiles	western pond turtle	<i>Emys marmorata</i>	-	-	-	BLM:S CDFW:SSC USFS:S	Priority 2	-	X	-	X	-	Yes	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter	Focal Species	2018 Preliminary Draft Focal Species; State species of special concern typically requiring mitigation; also serves as a indicator for slow-moving permanent water bodies.

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Birds	Bell's sage sparrow	<i>Artemisiospiza belli belli</i>	-	-	-	CDFW:WL USFWS:BC C	Priority 3	-	-	-	-	-	YES	Nests and forages in coastal scrub and dry chaparral; typically in large, unfragmented patches dominated by chamise; nests in more dense patches but uses more open habitat in winter	Focal Species	2018 Preliminary Draft Focal Species; Watch list species that serves as an umbrella species for Riversidean alluvial fan sage scrub and transitional habitats in the Valley region
Birds	burrowing owl	<i>Athene cucularia</i>	-	-	-	BLM:S CDFW:SSC USFWS:BC C	Priority 2	-	X	-	X	-	Yes	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows	Focal Species	2018 Preliminary Draft Focal Species; State species of special concern typically requiring agency coordination and mitigation; declining species vulnerable to habitat loss.
Birds	coastal California gnatcatcher	<i>Polioptila californica californica</i>	Threatened	-	-	CDFW:SSC NABCI:YW L	Priority 1	-	X	X	-	X	Yes	Nests and forages in various sage scrub communities, often dominated by California sagebrush and buckwheat; generally avoids nesting in areas with a slope of greater than 40%; majority of nesting at less than 1,000 feet above mean sea level	Focal Species	2018 Preliminary Draft Focal Species; Federally listed species typically requiring agency coordination and mitigation; declining species vulnerable to habitat loss of the remaining scrub communities in the foothills and alluvial fans of the Valley region.
Birds	golden eagle	<i>Aquila chrysaetos</i>	-	-	-	BLM:S CDF:S CDFW:FP CDFW:WL USFWS:BC C	Priority 1	-	-	-	X	-	Yes	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats	Focal Species	2018 Preliminary Draft Focal Species; Bald and Golden Eagle Protection Act and state fully protected species typically requiring agency coordination and mitigation; also serves as an area-limited indicator species that requires large foraging areas to maintain their populations.
Birds	LeConte's thrasher	<i>Toxostoma lecontei</i>	-	-	-	BLM:S CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Nests and forages in desert wash, desert scrub, alkali	Focal Species	2018 Preliminary Draft Focal Species; State

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						USFWS:BC C								desert scrub, desert succulent, and Joshua tree habitats; nests in spiny shrubs or cactus		species of special concern typically requiring mitigation; declining species vulnerable to habitat loss.
Birds	least Bell's vireo	<i>Vireo bellii pusillus</i>	Endangered	Endangered	-	-	Priority 1	X	X	-	X	Yes	Yes	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season	Focal Species	2018 Preliminary Draft Focal Species; Federally- and state-listed species typically requiring agency coordination and mitigation; also serves as an indicator species for habitat quality of riparian communities.
Birds	southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered	Endangered	-	-	Priority 1	-	X	-	X	Yes	Yes	Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration	Focal Species	2018 Preliminary Draft Focal Species; Federally- and state-listed species typically requiring agency coordination and mitigation; also serves as an indicator species for habitat quality of riparian communities.
Birds	Swainson's hawk	<i>Buteo swainsoni</i>	-	Threatened	-	BLM:S USFWS:BC C	Priority 1	X	-	-	-	-	Yes	Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture	Focal Species	2018 Preliminary Draft Focal Species; State-listed species typically requiring agency coordination and mitigation.
Birds	tricolored blackbird	<i>Agelaius tricolor</i>	-	Threatened	-	BLM:S CDFW:SSC USFWS:BC C	Priority 1	-	X	-	-	-	Yes	Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberry; forages in grasslands, woodland, and agriculture	Focal Species	2018 Preliminary Draft Focal Species; State candidate species typically requiring agency coordination and mitigation; also serves as a resource-limited indicator species for wetland communities.
Birds	western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	Threatened	Endangered	-	BLM:S USFS:S USFWS:BC C	Priority 1	X	X	-	X	Yes	Yes	Nests in dense, wide riparian woodlands and forest with well-developed understories	Focal Species	2018 Preliminary Draft Focal Species; Federally- and state-listed species typically requiring

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																agency coordination and mitigation; also serves as an indicator species for habitat quality of riparian communities
Birds	white-tailed kite	<i>Elanus leucurus</i>	-	-	-	BLM:S CDFW:FP	Priority 1	-	-	-	-	-	Yes	Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands	Focal Species	2018 Preliminary Draft Focal Species; State fully protected species typically requiring agency coordination; declining species vulnerable to habitat loss.
Mammals	American badger	<i>Taxidea taxus</i>	-	-	-	CDFW:SSC CDFW furbearing mammal provisions	Priority 2	-	-	-	-	-	Yes	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	Focal Species	2018 Preliminary Draft Focal Species; State species of special concern that serves as an area-limited indicator species with relatively large home ranges that are vulnerable to habitat loss.
Mammals	desert bighorn sheep	<i>Ovis canadensis nelsoni</i>	-	-	-	BLM:S CDFW:FP USFS:S Limited hunting	Priority 1	-	-	-	X	-	Yes	Steep slopes and cliffs, rough and rocky topography, sparse vegetation; also canyons, washes, and alluvial fans	Focal Species	2018 Preliminary Draft Focal Species; State fully protected species typically requiring agency coordination and mitigation; also serves as an area-limited indicator species requiring habitat connectivity between occupied mountain ranges to maintain their populations.
Mammals	Desert kit fox	<i>Vulpes macrotis arsipus</i>	-	-	-	CDFW non-game furbearer ²	Priority 3	-	-	-	X	-	Yes	Alluvial and riparian forest, woodland, and scrub; desert dunes and scrub; Joshua tree woodland	Focal Species	2018 Preliminary Draft Focal Species; Species of increasing conservation interest; also serves as an area-limited indicator species with relatively large home ranges that are vulnerable to habitat

² Desert kit fox may not be taken at any time (14 CCR 460).

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Type	Common Name	Species Name	Federal Status ¹	State Status ¹	CRPR Status ¹	Other Status ¹	Priority Status ²	Climate Vulnerable Species	Upper Santa Ana River HCP ³	Wash Plan HCP ⁴	Apple Valley MSHCP/ NCCP	Designated Critical Habitat in RCIS Area?	Known to Occur in RCIS Area?	Habitat Associations	Focal Species Evaluation	Focal Species Evaluation Rationale
																loss in the desert scrub communities.
Mammals	Los Angeles pocket mouse	<i>Perognathus longimembris brevinasus</i>	-	-	-	CDFW:SSC	Priority 2	-	X	-	-	-	Yes	Lower-elevation grassland, alluvial sage scrub, and coastal scrub	Focal Species	2018 Preliminary Draft Focal Species; State species of special concern typically requiring agency coordination and mitigation; declining species vulnerable to habitat loss.
Mammals	Mohave ground squirrel	<i>Xerospermophilus mohavensis</i>	-	Threatened	-	BLM:S	Priority 1	-	-	-	-	-	Yes	Desert scrub habitats including those dominated by creosote bush and burrobush, desert sink scrub, and desert saltbush scrub	Focal Species	2018 Preliminary Draft Focal Species; State-listed species typically requiring agency coordination and mitigation; declining species vulnerable to habitat loss and fragmentation in the West Desert region.
Mammals	Mohave river vole	<i>Microtus californicus mohavensis</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Wet, weedy, herbaceous areas along the Mojave River	Focal Species	2018 Preliminary Draft Focal Species; State species of special concern typically requiring mitigation; also serves a resource-limited indicator species for the buffer habitats adjacent to the Mojave River.
Mammals	Mountain lion (Southern California/Central Coast ESU)	<i>Puma concolor</i>	-	Candidate	-	CDFW Non-game furbearer, CDFW Specially Protected Mammal ³	Priority 1	-	-	-	-	-	Yes	Scrubs, chaparral, riparian, woodland, and forest; rests in rocky areas and on cliffs and ledges that provide cover; most abundant in riparian areas and brushy stages of most habitats throughout California, except deserts	Focal Species	2018 Preliminary Draft Focal Species; CDFW specially protected mammal; wide-ranging species in the Valley and indicator for terrestrial wildlife movement.

³ See California Fish and Game Code Sections 4800 – 4810.

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Mammals	pallid bat	<i>Antrozous pallidus</i>	-	-	-	BLM:S CDFW:SSC USFS:S	Priority 2	-	-	-	-	-	Yes	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees	Focal Species	2018 Preliminary Draft Focal Species; State species of special concern typically requiring mitigation.
Mammals	San Bernardino kangaroo rat	<i>Dipodomys merriami parvus</i>	Endangered	Candidate	-	CDFW:SSC	Priority 1	-	X	X	-	Yes	Yes	Sparse scrub habitat, alluvial scrub/coastal scrub habitats on gravelly and sandy soils near river and stream terraces	Focal Species	2018 Preliminary Draft Focal Species; Federally listed species typically requiring agency coordination and mitigation; also serves as a process-limited indicator species of the fluvial processes that maintain the successional habitats required by the species.
Mammals	Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	-	-	-	BLM:S CDFW:SSC USFS:S	Priority 2	-	-	-	-	-	Yes	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, man-made structures, and tunnels	Focal Species	2018 Preliminary Draft Focal Species; State species of special concern typically requiring mitigation.
Other Special-Status Species																
Plants	Alvin Meadow bedstraw	<i>Galium californicum ssp. primum</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Lower montane coniferous forest; granitic, sandy/perennial herb/May–July/4,425–5,575	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	aparejo grass	<i>Muhlenbergia utilis</i>	-	-	2B.2	-	Priority 2	-	-	-	-	-	Yes	Meadows and seeps, marshes and swamps, chaparral, coastal scrub, cismontane woodland; sometimes alkaline, sometimes serpentinite/perennial rhizomatous herb/Mar–Oct/82–7,625	Potential Conservation Benefits	Single occurrence in RCIS boundary, 1916 near Upland
Plants	appressed muhly	<i>Muhlenbergia appressa</i>	-	-	2B.2	-	Priority 2	-	-	-	-	-	Yes	Coastal scrub, Mojavean desert scrub, Valley and foothill grassland;	Potential Conservation Benefits	Single occurrence in RCIS area, southeast of Barstow in 2007.

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Type	Common Name	Species Name	Federal Status ¹	State Status ¹	CRPR Status ¹	Other Status ¹	Priority Status ²	Climate Vulnerable Species	Upper Santa Ana River HCP ³	Wash Plan HCP ⁴	Apple Valley MSHCP/NCCP	Designated Critical Habitat in RCIS Area?	Known to Occur in RCIS Area?	Habitat Associations	Focal Species Evaluation	Focal Species Evaluation Rationale
														rocky/annual herb/Apr–May/66–5,245		
Plants	ash-gray paintbrush	<i>Castilleja cinerea</i>	Threatened	-	1B.2	-	Priority 1	-	-	-	-	-	Yes	Mojavean desert scrub, Meadows and seeps, Pebble (Pavement) plain, Pinyon and juniper woodland, Upper montane coniferous forest (clay openings)/perennial herb (hemiparasitic)/June–Aug/5,905–9,710	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Baldwin Lake linanthus	<i>Linanthus killipii</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Joshua tree woodland, Meadows and seeps (alkaline), Pebble (Pavement) plain, Pinyon and juniper woodland/annual herb/May–July/5,575–7,870	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Beaver Dam breadroot	<i>Pediomelum castoreum</i>	-	-	1B.2	BLM:S	Priority 2	-	-	-	-	-	Yes	Joshua tree woodland, Mojavean desert scrub; Sandy, washes and roadcuts/perennial herb/Apr–May/2,000–5,000	Potential Conservation Benefits	Many occurrences generally from Victorville to Barstow (CNDDDB)
Plants	Big Bear Valley milk-vetch	<i>Astragalus lentiginosus var. sierrae</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Mojavean desert scrub, Meadows and seeps, Pinyon and juniper woodland, Upper montane coniferous forest; gravelly or rocky/perennial herb/Apr–Aug/5,905–8,530	Potential Conservation Benefits	Several occurrences in CNDDDB along USFS boundary. Many occurrences in USFS outside of RCIS area; restricted to higher elevations (over 4,000 feet)
Plants	Big Bear Valley phlox	<i>Phlox dolichantha</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Pebble (Pavement) plain, Upper montane coniferous forest (openings)/perennial herb/May–July/6,000–9,740	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Big Bear Valley sandwort	<i>Eremogone ursina</i>	Threatened	-	1B.2	-	Priority 1	-	-	-	-	-	Yes	Meadows and seeps, Pebble (Pavement) plain, Pinyon and juniper woodland; mesic, rocky/perennial herb/May–Aug/5,905–9,510	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Big Bear Valley woollypod	<i>Astragalus leucolobus</i>	-	-	1B.2	BLM:S	Priority 2	-	-	-	-	-	Yes	Lower montane coniferous forest, Pebble (Pavement) plain, Pinyon and juniper woodland, Upper montane coniferous forest;	Potential Conservation Benefits	Several occurrences in CNDDDB along USFS boundary. Many occurrences in USFS outside of RCIS area.

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Type	Common Name	Species Name	Federal Status ¹	State Status ¹	CRPR Status ¹	Other Status ¹	Priority Status ²	Climate Vulnerable Species	Upper Santa Ana River HCP ³	Wash Plan HCP ⁴	Apple Valley MSHCP/NCCP	Designated Critical Habitat in RCIS Area?	Known to Occur in RCIS Area?	Habitat Associations	Focal Species Evaluation	Focal Species Evaluation Rationale
														rocky/perennial herb/May–July/3,605–9,465		
Plants	black bog-rush	<i>Schoenus nigricans</i>	-	-	2B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Marshes and swamps (often alkaline)/perennial herb/Aug–Sep/492–6,560	Potential Conservation Benefits	Few occurrences along the I-15 mountain pass (CNDDDB)
Plants	Booth's evening-primrose	<i>Eremothera boothii ssp. boothii</i>	-	-	2B.3	-	Priority 2	-	-	-	-	-	Yes	Joshua tree woodland, Pinyon and juniper woodland/annual herb/Apr–Sep/2,670–7,870	Potential Conservation Benefits	Few occurrences from northern RCIS area to south of Victorville (CNDDDB)
Plants	Boyd's monardella	<i>Monardella boydii</i>	-	-	1B.2	BLM:S	Priority 2	-	-	-	-	-	Yes	Mojavean desert scrub, Pinyon and juniper woodland, Riparian scrub (desert); Usually in alluvial soils and cracks of bedrock in washes on canyon bottoms and rocky slopes/perennial shrub/Aug–Oct/4,590–5,410	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Brand's star phacelia	<i>Phacelia stellaris</i>	-	-	1B.1	-	Priority 2	-	-	-	-	-	Yes	Coastal dunes, Coastal scrub/annual herb/Mar–June/3–1,310	Potential Conservation Benefits	One occurrence near Rancho Cucamonga (CNDDDB)
Plants	bristly sedge	<i>Carex comosa</i>	-	-	2B.1	-	Priority 2	-	-	-	-	-	Yes	Coastal prairie, Marshes and swamps (lake margins), Valley and foothill grassland/perennial rhizomatous herb/May–Sep/0–2,050	Potential Conservation Benefits	One occurrence near Colton (CNDDDB)
Plants	California alkali grass	<i>Puccinellia simplex</i>	-	-	1B.2	BLM:S	Priority 2	-	-	-	-	-	Yes	Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools; Alkaline, vernal mesic; sinks, flats, and lake margins/annual herb/Mar–May/7–3,050	Potential Conservation Benefits	One occurrence east of Victorville; one north of Barstow (CNDDDB)
Plants	California satintail	<i>Imperata brevifolia</i>	-	-	2B.1	USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Coastal scrub, Mojavean desert scrub, Meadows and seeps (often alkali), Riparian scrub; mesic/perennial rhizomatous herb/Sep–May/0–3,985	Potential Conservation Benefits	One occurrence near Redlands (CNDDDB)
Plants	California saw-grass	<i>Cladium californicum</i>	-	-	2B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Meadows and seeps, Marshes and swamps Alkaline or Freshwater/perennial	Potential Conservation Benefits	One occurrence near Rancho Cucamonga (CNDDDB)

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Type	Common Name	Species Name	Federal Status ¹	State Status ¹	CRPR Status ¹	Other Status ¹	Priority Status ²	Climate Vulnerable Species	Upper Santa Ana River HCP ³	Wash Plan HCP ⁴	Apple Valley MSHCP/ NCCP	Designated Critical Habitat in RCIS Area?	Known to Occur in RCIS Area?	Habitat Associations	Focal Species Evaluation	Focal Species Evaluation Rationale
														rhizomatous herb/June–Sep/197–5,245		
Plants	chaparral ragwort	<i>Senecio aphanactis</i>	-	-	2B.2	-	Priority 2	-	-	-	-	-	Yes	Chaparral, Cismontane woodland, Coastal scrub; sometimes alkaline/annual herb/Jan–Apr(May)/49–2,620	Potential Conservation Benefits	Two occurrences - one near Loma Linda and one south of Fontana (CNDDDB)
Plants	chaparral sand-verbena	<i>Abronia villosa var. aurita</i>	-	-	1B.1	BLM:S USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Coastal scrub, Desert dunes; sandy/annual herb/(Jan)Mar–Sep/246–5,245	Potential Conservation Benefits	One occurrence in CNDDDB dated 1976 near Barstow.
Plants	Clokey's cryptantha	<i>Cryptantha clokeyi</i>	-	-	1B.2	-	Priority 2	-	-	-	-	-	Yes	Mojavean desert scrub/annual herb/Apr/2,375–4,475	Potential Conservation Benefits	Few occurrences east of Apple Valley and north to Ridgecrest (CNDDDB)
Plants	Coulter's goldfields	<i>Lasthenia glabrata ssp. coulteri</i>	-	-	1B.1	BLM:S	Priority 2	-	-	-	-	-	Yes	Marshes and swamps (coastal salt), Playas, Vernal pools/annual herb/Feb–June/3–4,000	Potential Conservation Benefits	One occurrence near Twentynine Palms (CNDDDB)
Plants	Coulter's saltbush	<i>Atriplex coulteri</i>	-	-	1B.2	-	Priority 2	-	-	-	-	-	Yes	Coastal bluff scrub, Coastal dunes, Coastal scrub, Valley and foothill grassland; alkaline or clay/perennial herb/Mar–Oct/10–1,505	Potential Conservation Benefits	One occurrence in Chino Hills.
Plants	creamy blazing star	<i>Mentzelia tridentata</i>	-	-	1B.3	-	Priority 2	-	-	-	-	-	Yes	Mojavean desert scrub; rocky, gravelly, sandy/annual herb/Mar–May/2,295–3,850	Potential Conservation Benefits	Many occurrences generally surrounding Barstow
Plants	Cushenbury buckwheat	<i>Eriogonum ovalifolium var. vineum</i>	Endangered	-	1B.1	-	Priority 1	-	-	-	-	-	Yes	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland; carbonate/perennial herb/May–Aug/4,590–8,005	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Cushenbury milk- vetch	<i>Astragalus albens</i>	Endangered	-	1B.1	-	Priority 1	-	-	-	-	-	Yes	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland; usually carbonate, rarely granitic/perennial herb/Mar–June/3,590–6,560	Potential Conservation Benefits	Several occurrences in CNDDDB along USFS boundary at high elevations; mostly restricted to higher elevations (above 4,000 feet).
Plants	Cushenbury oxytheca	<i>Acanthoscyphus parishii var. goodmaniana</i>	Endangered	-	1B.1	-	Priority 1	-	-	-	-	-	Yes	Pinyon and juniper woodland (carbonate, talus); sandy, carbonate/annual herb/May–Oct/3,995–7,795	Potential Conservation Benefits	Several occurrences in CNDDDB along USFS boundary; would be restricted to high elevations

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Plants	Cushenbury rose	<i>Rosa woodsii</i> var. <i>glabrata</i>	-	-	1B.1	-	Priority 2	-	-	-	-	-	Yes	Mojavean desert scrub (springs)/perennial shrub/(Apr)May–Aug/2,985–4,705	Potential Conservation Benefits	Two occurrences directly north of USFS boundary (CNDDDB)
Plants	Darlington's blazing star	<i>Mentzelia puberula</i>	-	-	2B.2	-	Priority 2	-	-	-	-	-	Yes	Mojavean desert scrub, Sonoran desert scrub; sandy or rocky/perennial herb/Mar–May/295–4,195	Potential Conservation Benefits	Two occurrences south of Newberry Springs (CNDDDB)
Plants	Emory's crucifixion-thorn	<i>Castela emoryi</i>	-	-	2B.2	-	Priority 2	-	-	-	-	-	Yes	Mojavean desert scrub, Playas, Sonoran desert scrub; gravelly/perennial deciduous shrub/(Apr)June–July (Sep–Oct)/295–2,375	Potential Conservation Benefits	Two occurrences east of Barstow; one occurrence east of Twentynine Palms (CNDDDB)
Plants	Fremont barberry	<i>Berberis fremontii</i>	-	-	2B.3	-	Priority 2	-	-	-	-	-	Yes	Joshua tree woodland, Pinyon and juniper woodland; Rocky, sometimes granitic/perennial evergreen shrub/Mar–May/3,755–5,640	Potential Conservation Benefits	One occurrence along the boundary of USFS land (CNDDDB); mostly restricted to higher elevations (above 4,000 feet)
Plants	frosted mint	<i>Poliomintha incana</i>	-	-	2A	-	Priority 2	-	-	-	-	-	Yes	Lower montane coniferous forest (mesic)/perennial shrub/June–July/5,245–5,575	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Greata's aster	<i>Symphotrichum greatae</i>	-	-	1B.3	-	Priority 2	-	-	-	-	-	Yes	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Riparian woodland; mesic/perennial rhizomatous herb/June–Oct/984–6,590	Potential Conservation Benefits	One occurrence along the I-15 mountain pass (CNDDDB)
Plants	Harwood's eriastrum	<i>Eriastrum harwoodii</i>	-	-	1B.2	BLM:S	Priority 2	-	-	-	-	-	Yes	Desert dunes/annual herb/Mar–June/410–3,000	Potential Conservation Benefits	Most occurrences outside RCIS area; two along the boundary east of Twentynine Palms (CNDDDB)
Plants	Horn's milk-vetch	<i>Astragalus hornii</i> var. <i>hornii</i>	-	-	1B.1	BLM:S	Priority 2	-	-	-	-	-	Yes	Meadows and seeps, Playas; lake margins, alkaline/annual herb/May–Oct/197–2,785	Potential Conservation Benefits	One occurrence in CNDDDB dated 1900 near Colton.
Plants	hot springs fimbriylis	<i>Fimbristylis thermalis</i>	-	-	2B.2	-	Priority 2	-	-	-	-	-	Yes	Meadows and seeps (alkaline, near hot springs)/perennial rhizomatous herb/July–Sep/361–4,395	Potential Conservation Benefits	Two occurrences near or along the RCIS boundary (CNDDDB)

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Plants	intermountain milkwort	<i>Polygala intermontana</i>	-	-	2B.1	-	Priority 2	-	-	-	-	-	Yes	Pinyon and juniper woodland/perennial shrub/June–July(Oct)/6,590–10,100	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	jackass-clover	<i>Wislizenia refracta ssp. refracta</i>	-	-	2B.2	-	Priority 2	-	-	-	-	-	Yes	Desert dunes, Mojavean desert scrub, Playas, Sonoran desert scrub/annual herb/Apr–Nov/1,965–2,620	Potential Conservation Benefits	One occurrence northeast of Barstow; one occurrence near Twentynine Palms (CNDDDB)
Plants	Johnston's buckwheat	<i>Eriogonum microthecum var. johnstonii</i>	-	-	1B.3	USFS:S	Priority 2	-	-	-	-	-	Yes	Subalpine coniferous forest, Upper montane coniferous forest; rocky/perennial deciduous shrub/July–Sep/6,000–9,595	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Jokerst's monardella	<i>Monardella australis ssp. jokerstii</i>	-	-	1B.1	USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Lower montane coniferous forest; Steep scree or talus slopes between breccia, secondary alluvial benches along drainages and washes/perennial rhizomatous herb/July–Sep/4,425–5,740	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	knotted rush	<i>Juncus nodosus</i>	-	-	2B.3	-	Priority 2	-	-	-	-	-	Yes	Meadows and seeps (mesic), Marshes and swamps (lake margins)/perennial rhizomatous herb/July–Sep/98–6,495	Potential Conservation Benefits	One occurrence along the western RCIS boundary in USFS land (CNDDDB)
Plants	Latimer's woodland-gilia	<i>Saltugilia latimeri</i>	-	-	1B.2	BLM:S USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Mojavean desert scrub, Pinyon and juniper woodland; rocky or sandy, often granitic, sometimes washes/annual herb/Mar–June/1,310–6,230	Potential Conservation Benefits	Several occurrences north of USFS land and east to Yucca Valley (CNDDDB)
Plants	lemon lily	<i>Lilium parryi</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Lower montane coniferous forest, Meadows and seeps, Riparian forest, Upper montane coniferous forest; mesic/perennial bulbiferous herb/July–Aug/4,000–9,005	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Lincoln rockcress	<i>Boechera lincolnensis</i>	-	-	2B.3	BLM:S	Priority 2	-	-	-	-	-	Yes	Chenopod scrub, Mojavean desert scrub; carbonate/perennial herb/Mar–May/3,605–8,870	Potential Conservation Benefits	Few occurrences along the boundary of USFS land (CNDDDB); mostly restricted to higher

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Type	Common Name	Species Name	Federal Status ¹	State Status ¹	CRPR Status ¹	Other Status ¹	Priority Status ²	Climate Vulnerable Species	Upper Santa Ana River HCP ³	Wash Plan HCP ⁴	Apple Valley MSHCP/NCCP	Designated Critical Habitat in RCIS Area?	Known to Occur in RCIS Area?	Habitat Associations	Focal Species Evaluation	Focal Species Evaluation Rationale
																elevations (above 4,000 feet)
Plants	Little San Bernardino Mtns. linanthus	<i>Linanthus maculatus ssp. maculatus</i>	-	-	1B.2	BLM:S	Priority 2	-	-	-	-	-	Yes	Desert dunes, Joshua tree woodland, Mojavean desert scrub, Sonoran desert scrub; Sandy/annual herb/Mar-May/459-4,000	Potential Conservation Benefits	Many occurrences east of Lucerne Valley to Twentynine Palms (CNDDDB)
Plants	Los Angeles sunflower	<i>Helianthus nuttallii ssp. parishii</i>	-	-	1A	-	Priority 2	-	-	-	-	-	Yes	Marshes and swamps (coastal salt and freshwater)/perennial rhizomatous herb/Aug-Oct/33-5,000	Potential Conservation Benefits	One occurrence near Colton; one occurrence in USFS land (CNDDDB)
Plants	lucky morning-glory	<i>Calystegia felix</i>	-	-	1B.1	-	Priority 2	-	-	-	-	-	Yes	Meadows and seeps (sometimes alkaline), Riparian scrub (alluvial); Historically associated with wetland and marshy places, but possibly in drier situations as well. Possibly silty loam and alkaline/annual rhizomatous herb/Mar-Sep/98-705	Potential Conservation Benefits	One occurrence near Chino Hills State Park (CNDDDB)
Plants	many-stemmed dudleya	<i>Dudleya multicaulis</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Coastal scrub, Valley and foothill grassland; often clay/perennial herb/Apr-July/49-2,590	Potential Conservation Benefits	Two occurrences in the southern portion of RCIS near Chino Hills State Park (CNDDDB)
Plants	mesa horkelia	<i>Horkelia cuneata var. puberula</i>	-	-	1B.1	USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral (maritime), Cismontane woodland, Coastal scrub; sandy or gravelly/perennial herb/Feb-July (Sep)/230-2,655	Potential Conservation Benefits	Many occurrences between Rancho Cucamonga and Colton (CNDDDB)
Plants	Mingan moonwort	<i>Botrychium minganense</i>	-	-	2B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Bogs and fens, Lower montane coniferous forest, Meadows and seeps (edges), Upper montane coniferous forest; Mesic/perennial rhizomatous herb/July-Sep/4,770-7,150	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Mojave menodora	<i>Menodora spinescens var. mohavensis</i>	-	-	1B.2	BLM:S	Priority 2	-	-	-	-	-	Yes	Mojavean desert scrub; Andesite gravel, rocky hillsides, canyons/perennial deciduous shrub/Apr-May/2,260-6,560	Potential Conservation Benefits	Several occurrences near Barstow to Twentynine Palms (CNDDDB)

**San Bernardino County Regional Conservation Investment Strategy
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Type	Common Name	Species Name	Federal Status ¹	State Status ¹	CRPR Status ¹	Other Status ¹	Priority Status ²	Climate Vulnerable Species	Upper Santa Ana River HCP ³	Wash Plan HCP ⁴	Apple Valley MSHCP/ NCCP	Designated Critical Habitat in RCIS Area?	Known to Occur in RCIS Area?	Habitat Associations	Focal Species Evaluation	Focal Species Evaluation Rationale
Plants	Nevin's barberry	<i>Berberis nevinii</i>	Endangered	Endangered	1B.1	-	Priority 1	-	-	-	-	-	Yes	Chaparral, Cismontane woodland, Coastal scrub, Riparian scrub; sandy or gravelly/perennial evergreen shrub/(Feb)Mar-June/230-2,705	Potential Conservation Benefits	Within RCIS boundary, one undated occurrence south of Loma Linda (CNDDDB)
Plants	Palmer's mariposa-lily	<i>Calochortus palmeri</i> var. <i>palmeri</i>	-	-	1B.2	BLM:S USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Lower montane coniferous forest, Meadows and seeps; mesic/perennial bulbiferous herb/Apr-July/2,325-7,840	Potential Conservation Benefits	Most occurrences on USFS lands, some overlap RCIS area along USFS boundary (CNDDDB)
Plants	Panamint Mountains buckwheat	<i>Eriogonum microthecum</i> var. <i>panamintense</i>	-	-	1B.3	BLM:S	Priority 2	-	-	-	-	-	Yes	Pinyon and juniper woodland, Subalpine coniferous forest; rocky/perennial deciduous shrub/June-Oct/6,200-10,660	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Parish's alkali grass	<i>Puccinellia parishii</i>	-	-	1B.1	-	Priority 2	-	-	-	-	-	Yes	Meadows and seeps (alkaline springs and seeps)/annual herb/Apr-May/2,295-3,280	Potential Conservation Benefits	One occurrence east of Victorville (CNDDDB)
Plants	Parish's alumroot	<i>Heuchera parishii</i>	-	-	1B.3	USFS:S	Priority 2	-	-	-	-	-	Yes	Alpine boulder and rock field, Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest; rocky, sometimes carbonate/perennial rhizomatous herb/June-Aug/4,920-12,465	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Parish's brittlescale	<i>Atriplex parishii</i>	-	-	1B.1	USFS:S	Priority 2	-	-	-	-	-	Yes	Chenopod scrub, Playas, Vernal pools; alkaline/annual herb/June-Oct/82-6,230	Potential Conservation Benefits	One occurrence along the boundary of USFS land (CNDDDB)
Plants	Parish's bush-mallow	<i>Malacothamnus parishii</i>	-	-	1A	-	Priority 2	-	-	-	-	-	Yes	Chaparral, Coastal scrub/perennial deciduous shrub/June-July/1,000-1,490	Potential Conservation Benefits	One occurrence in the City of San Bernardino (CNDDDB)
Plants	Parish's checkerbloom	<i>Sidalcea hickmanii</i> ssp. <i>parishii</i>	-	Rare	1B.2	USFS:S	Priority 1	-	-	-	-	-	Yes	Chaparral, Cismontane woodland, Lower montane coniferous forest/perennial herb/(May)June-Aug/3,280-8,195	Potential Conservation Benefits	One occurrence in USFS land along the RCIS boundary (CNDDDB)
Plants	Parish's club-cholla	<i>Grusonia parishii</i>	-	-	2B.2	-	Priority 2	-	-	-	-	-	Yes	Joshua tree woodland, Mojavean desert scrub, Sonoran desert scrub; sandy,	Potential Conservation Benefits	One occurrence east of Yucca Valley near Joshua Tree (CNDDDB)

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Type	Common Name	Species Name	Federal Status ¹	State Status ¹	CRPR Status ¹	Other Status ¹	Priority Status ²	Climate Vulnerable Species	Upper Santa Ana River HCP ³	Wash Plan HCP ⁴	Apple Valley MSHCP/ NCCP	Designated Critical Habitat in RCIS Area?	Known to Occur in RCIS Area?	Habitat Associations	Focal Species Evaluation	Focal Species Evaluation Rationale
														rocky/perennial stem succulent/May–June(July)/984–5,000		
Plants	Parish's desert- thorn	<i>Lycium parishii</i>	-	-	2B.3	-	Priority 2	-	-	-	-	-	Yes	Coastal scrub, Sonoran desert scrub/perennial shrub/Mar–Apr/443–3,280	Potential Conservation Benefits	One occurrence in the City of San Bernardino (CNDDDB)
Plants	Parish's gooseberry	<i>Ribes divaricatum var. parishii</i>	-	-	1A	-	Priority 2	-	-	-	-	-	Yes	Riparian woodland/perennial deciduous shrub/Feb–Apr/213–985	Potential Conservation Benefits	One occurrence along Warm Creek (CNDDDB)
Plants	Parish's phacelia	<i>Phacelia parishii</i>	-	-	1B.1	BLM:S	Priority 2	-	-	-	-	-	Yes	Mojavean desert scrub, Playas; clay or alkaline/annual herb/Apr–May(June–July)/1,770–3,935	Potential Conservation Benefits	One occurrence near Rancho Cucamonga (CNDDDB)
Plants	Parish's popcornflower	<i>Plagiobothrys parishii</i>	-	-	1B.1	BLM:S USFS:S	Priority 2	-	-	-	-	-	Yes	Great Basin scrub, Joshua tree woodland; alkaline, mesic/annual herb/Mar–June(Nov)/2,460–4,590	Potential Conservation Benefits	Two occurrences - east of Barstow and east of Victorville (CNDDDB)
Plants	Parish's rockcress	<i>Boechera parishii</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Pebble (Pavement) plain, Pinyon and juniper woodland, Upper montane coniferous forest; rocky, quartzite on clay, or sometimes carbonate/perennial herb/Apr–May/5,805–9,805	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Peirson's spring beauty	<i>Claytonia peirsonii ssp. peirsonii</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	subalpine coniferous forest, upper montane coniferous forest; granitic, metamorphic, scree, talus/perennial herb/(Mar) May–June/4,950–9,005	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Peruvian dodder	<i>Cuscuta obtusiflora var. glandulosa</i>	-	-	2B.2	-	Priority 2	-	-	-	-	-	Yes	Marshes and swamps (freshwater)/annual vine (parasitic)/July–Oct/49–920	Potential Conservation Benefits	One occurrence Warm Creek near Colton (CNDDDB)
Plants	pinyon rockcress	<i>Boechera dispar</i>	-	-	2B.3	-	Priority 2	-	-	-	-	-	Yes	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland; granitic, gravelly/perennial herb/Mar–June/3,935–8,330	Potential Conservation Benefits	Several occurrences along USFS land and near the Yucca Valley (CNDDDB); restricted to higher elevations (above 4,000 feet)
Plants	Pioneertown linanthus	<i>Linanthus bernardinus</i>	-	-	1B.2	-	Priority 2	-	-	-	-	-	Yes	Joshua tree woodland, Pinyon and juniper woodland/annual herb/Mar–May/3,900–4,395	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats

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Type	Common Name	Species Name	Federal Status ¹	State Status ¹	CRPR Status ¹	Other Status ¹	Priority Status ²	Climate Vulnerable Species	Upper Santa Ana River HCP ³	Wash Plan HCP ⁴	Apple Valley MSHCP/ NCCP	Designated Critical Habitat in RCIS Area?	Known to Occur in RCIS Area?	Habitat Associations	Focal Species Evaluation	Focal Species Evaluation Rationale
Plants	prairie wedge grass	<i>Sphenopholis obtusata</i>	-	-	2B.2	-	Priority 2	-	-	-	-	-	Yes	Cismontane woodland, Meadows and seeps; mesic/perennial herb/Apr–July/984–6,560	Potential Conservation Benefits	One occurrence along Warm Creek (CNDDB)
Plants	Pringle's monardella	<i>Monardella pringlei</i>	-	-	1A	-	Priority 2	-	-	-	-	-	Yes	Coastal scrub (sandy)/annual herb/May–June/984–1,310	Potential Conservation Benefits	One occurrence near Colton (CNDDB)
Plants	prostrate vernal pool navarretia	<i>Navarretia prostrata</i>	-	-	1B.2	-	Priority 2	-	-	-	-	-	Yes	Coastal scrub, Meadows and seeps, Valley and foothill grassland (alkaline), Vernal pools; Mesic/annual herb/Apr–July/10–3,965	Potential Conservation Benefits	One occurrence near Rancho Cucamonga (CNDDB)
Plants	purple-nerve cymopterus	<i>Cymopterus multinervatus</i>	-	-	2B.2	-	Priority 2	-	-	-	-	-	Yes	Mojavean desert scrub, Pinyon and juniper woodland; sandy or gravelly/perennial herb/Mar–Apr/2,590–5,905	Potential Conservation Benefits	Multiple occurrences at higher elevations east of Victorville (CNDDB)
Plants	pygmy hulsea	<i>Hulsea vestita ssp. pygmaea</i>	-	-	1B.3	USFS:S	Priority 2	-	-	-	-	-	Yes	Alpine boulder and rock field, Subalpine coniferous forest; granitic, gravelly/perennial herb/June–Oct/9,300–12,795	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Red Rock poppy	<i>Eschscholzia minutiflora ssp. twisselmannii</i>	-	-	1B.2	BLM:S	Priority 2	-	-	-	-	-	Yes	Mojavean desert scrub (volcanic tuff)/annual herb/Mar–May/2,230–4,035	Potential Conservation Benefits	One occurrence south of Ridgecrest along the western RCIS boundary (CNDDB)
Plants	Ripley's aliciella	<i>Aliciella ripleyi</i>	-	-	2B.3	-	Priority 2	-	-	-	-	-	Yes	Mojavean desert scrub (carbonate)/perennial herb/May–July/1,000–6,395	Potential Conservation Benefits	One occurrence in CNDDB dated 1978 in the northern portion of the RCIS boundary, east of Ridgecrest.
Plants	Robison's monardella	<i>Monardella robisonii</i>	-	-	1B.3	BLM:S	Priority 2	-	-	-	-	-	Yes	Pinyon and juniper woodland/perennial rhizomatous herb/(Feb)Apr–Sep(Oct)/2,000–4,920	Potential Conservation Benefits	Several occurrences in Yucca Valley (CNDDB)
Plants	Rock Creek broomrape	<i>Orobanche valida ssp. valida</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Pinyon and juniper woodland; granitic/perennial herb (parasitic)/May–Sep/3,375–6,560	Potential Conservation Benefits	Generally high elevation (above 4,000 feet), mountainous habitats
Plants	sagebrush loeflingia	<i>Loeflingia squarrosa var. artemisiarum</i>	-	-	2B.2	BLM:S	Priority 2	-	-	-	-	-	Yes	Desert dunes, Great Basin scrub, Sonoran desert scrub;	Potential Conservation Benefits	Few occurrences along the western RCIS

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														sandy/annual herb/Apr–May/2,295–5,295		boundary and Victorville area (CNDDDB)
Plants	Salina Pass wild-rye	<i>Elymus salina</i>	-	-	2B.3	-	Priority 2	-	-	-	-	-	Yes	Pinyon and juniper woodland (rocky)/perennial rhizomatous herb/May–June/4,425–7,000	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	salt marsh bird's-beak	<i>Chloropyron maritimum ssp. maritimum</i>	Endangered	Endangered	1B.2	BLM:S	Priority 1	-	-	-	-	-	Yes	Coastal dunes, Marshes and swamps (coastal salt)/annual herb (hemiparasitic)/May–Oct(Nov)/0–100	Potential Conservation Benefits	One occurrence near Colton (CNDDDB)
Plants	salt spring checkerbloom	<i>Sidalcea neomexicana</i>	-	-	2B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Coastal scrub, Lower montane coniferous forest, Mojavean desert scrub, Playas; alkaline, mesic/perennial herb/Mar–June/49–5,015	Potential Conservation Benefits	Few occurrences near San Bernardino, east of Victorville, and Twentynine Palms (CNDDDB)
Plants	San Antonio milk-vetch	<i>Astragalus lentiginosus var. antonius</i>	-	-	1B.3	USFS:S	Priority 2	-	-	-	-	-	Yes	Lower montane coniferous forest, Upper montane coniferous forest/perennial herb/Apr–July/4,920–8,530	Potential Conservation Benefits	Few occurrences in CNDDDB in USFS land along the western boundary of the RCIS; restricted to higher elevations (over 4,000 feet)
Plants	San Bernardino milk-vetch	<i>Astragalus bernardinus</i>	-	-	1B.2	BLM:S USFS:S	Priority 2	-	-	-	-	-	Yes	Joshua tree woodland, Pinyon and juniper woodland; Often granitic or carbonate/perennial herb/Apr–June/2,950–6,560	Potential Conservation Benefits	Several occurrences in CNDDDB along USFS boundary and near Yucca Valley.
Plants	San Bernardino Mountains dudleya	<i>Dudleya abramsii ssp. affinis</i>	-	-	1B.2	BLM:S USFS:S	Priority 2	-	-	-	-	-	Yes	Pebble (Pavement) plain, Pinyon and juniper woodland, Upper montane coniferous forest; granitic, quartzite, or carbonate/perennial herb/Apr–July/4,100–8,530	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	San Francisco lessingia	<i>Lessingia germanorum</i>	Endangered	Endangered	1B.1	-	Priority 1	-	-	-	-	-	Yes	Coastal scrub (remnant dunes)/annual herb/(June)July–Nov/82–360	Potential Conservation Benefits	One occurrence along the western RCIS boundary (CNDDDB)
Plants	San Gabriel linanthus	<i>Linanthus concinnus</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Lower montane coniferous forest, Upper montane coniferous forest; rocky, openings/annual herb/Apr–July/4,985–9,185	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats

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Plants	San Gabriel manzanita	<i>Arctostaphylos glandulosa ssp. gabrielensis</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral (rocky)/perennial evergreen shrub/Mar/1,950–4,920	Potential Conservation Benefits	One occurrence in CNDDDB overlaps RCIS boundary in USFS lands near Cucamonga Wilderness.
Plants	Sanford's arrowhead	<i>Sagittaria sanfordii</i>	-	-	1B.2	BLM:S	Priority 2	-	-	-	-	-	Yes	Marshes and swamps (assorted shallow freshwater)/perennial rhizomatous herb (emergent)/May–Oct (Nov)/0–2,130	Potential Conservation Benefits	One occurrence near Rancho Cucamonga (CNDDDB)
Plants	scalloped moonwort	<i>Botrychium crenulatum</i>	-	-	2B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Bogs and fens, Lower montane coniferous forest, Meadows and seeps, Marshes and swamps (freshwater), Upper montane coniferous forest/perennial rhizomatous herb/June–Sep/4,160–10,760	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Shockley's rockcress	<i>Boechera shockleyi</i>	-	-	2B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Pinyon and juniper woodland (carbonate or quartzite, rocky or gravelly)/perennial herb/May–June/2,870–7,575	Potential Conservation Benefits	Few occurrences along USFS boundary with more occurrence near Big Bear Lake and one east of Victorville (CNDDDB)
Plants	short-sepaled lewisia	<i>Lewisia brachycalyx</i>	-	-	2B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Lower montane coniferous forest, Meadows and seeps; mesic/perennial herb/(Feb)Apr–June (July)/4,490–7,545	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	silver-haired ivesia	<i>Ivesia argyrocoma var. argyrocoma</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Meadows and seeps (alkaline), Pebble (Pavement) plain, Upper montane coniferous forest/perennial herb/(May)June–Aug/4,795–9,710	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	singlewhorl burrobrush	<i>Ambrosia monogyra</i>	-	-	2B.2	-	Priority 2	-	-	-	-	-	Yes	Chaparral, Sonoran desert scrub; sandy/perennial shrub/Aug–Nov/33–1,640	Potential Conservation Benefits	One occurrence in CNDDDB dated 1961 in RCIS boundary north of Fontana.
Plants	small-flowered androstephium	<i>Androstephium breviflorum</i>	-	-	2B.2	-	Priority 2	-	-	-	-	-	Yes	Desert dunes, Mojavean desert scrub (bajadas)/perennial	Potential Conservation Benefits	Few occurrences along the eastern RCIS boundary.

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														bulbiferous herb/Mar–Apr/689–2,915		
Plants	smooth tarplant	<i>Centromadia pungens ssp. laevis</i>	-	-	1B.1	-	Priority 2	-	-	-	-	-	Yes	Chenopod scrub, Meadows and seeps, Playas, Riparian woodland, Valley and foothill grassland; alkaline/annual herb/Apr–Sep/0–2,095	Potential Conservation Benefits	Few occurrences near Redlands, Highland, and Chino Hills (CNDDDB)
Plants	southern jewelflower	<i>Streptanthus campestris</i>	-	-	1B.3	BLM:S USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland; rocky/perennial herb/(Apr)May–July/2,950–7,545	Potential Conservation Benefits	One occurrence north of Yucca Valley (CNDDDB)
Plants	southern mountain buckwheat	<i>Eriogonum kennedyi var. austromontanum</i>	Threatened	-	1B.2	-	Priority 1	-	-	-	-	-	Yes	Lower montane coniferous forest (gravelly), Pebble (Pavement) plain/perennial herb/June–Sep/5,805–9,480	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	southern mountains skullcap	<i>Scutellaria bolanderi ssp. austromontana</i>	-	-	1B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral, Cismontane woodland, Lower montane coniferous forest; mesic/perennial rhizomatous herb/June–Aug/1,390–6,560	Potential Conservation Benefits	Few occurrences along USFS land and in Victorville (CNDDDB)
Plants	spiny-hair blazing star	<i>Mentzelia tricuspis</i>	-	-	2B.1	-	Priority 2	-	-	-	-	-	Yes	Mojavean desert scrub; sandy, gravelly, slopes, and washes/annual herb/Mar–May/492–4,195	Potential Conservation Benefits	One occurrence in Barstow (CNDDDB)
Plants	thorny milkwort	<i>Polygala acanthoclada</i>	-	-	2B.3	-	Priority 2	-	-	-	-	-	Yes	Chenopod scrub, Joshua tree woodland, Pinyon and juniper woodland/perennial shrub/May–Aug/2,490–7,495	Potential Conservation Benefits	Two occurrences east of Lucerne Valley (CNDDDB)
Plants	thread-leaved brodiaea	<i>Brodiaea filifolia</i>	Threatened	Endangered	1B.1	-	Priority 1	-	-	-	-	-	Yes	Chaparral (openings), Cismontane woodland, Coastal scrub, Playas, Valley and foothill grassland, Vernal pools; often clay/perennial bulbiferous herb/Mar–June/82–3,670	Potential Conservation Benefits	One occurrence south of Arrowhead (CNDDDB).
Plants	Tidestrom's milk-vetch	<i>Astragalus tidestromii</i>	-	-	2B.2	USFS:S	Priority 2	-	-	-	-	-	Yes	Mojavean desert scrub; carbonate, sandy or gravelly/perennial herb/(Jan)Apr–July/1,965–5,855	Potential Conservation Benefits	One occurrence along USFS boundary within RCIS (dated 2010 CNDDDB).

**San Bernardino County Regional Conservation Investment Strategy
Focal Species Evaluation**

Type	Common Name	Species Name	Federal Status ¹	State Status ¹	CRPR Status ¹	Other Status ¹	Priority Status ²	Climate Vulnerable Species	Upper Santa Ana River HCP ³	Wash Plan HCP ⁴	Apple Valley MSHCP/ NCCP	Designated Critical Habitat in RCIS Area?	Known to Occur in RCIS Area?	Habitat Associations	Focal Species Evaluation	Focal Species Evaluation Rationale
Plants	triple-ribbed milk-vetch	<i>Astragalus tricarinatus</i>	Endangered	-	1B.2	-	Priority 1	-	-	-	-	-	Yes	Joshua tree woodland, Sonoran desert scrub; sandy or gravelly/perennial herb/Feb–May/1,475–3,900	Potential Conservation Benefits	Several occurrences in CNDDB near and within Morongo Valley.
Plants	upswept moonwort	<i>Botrychium ascendens</i>	-	-	2B.3	USFS:S	Priority 2	-	-	-	-	-	Yes	Lower montane coniferous forest, Meadows and seeps; mesic/perennial rhizomatous herb/(June)July–Aug/3,655–9,990	Potential Conservation Benefits	Mostly high elevation (above 4,000 feet), mountainous habitats
Plants	Ventura Marsh milk-vetch	<i>Astragalus pycnostachyus</i> var. <i>lanosissimus</i>	Endangered	Endangered	1B.1	-	Priority 1	-	-	-	-	-	Yes	Coastal dunes, Coastal scrub, Marshes and swamps (edges, coastal salt or brackish)/perennial herb/(June)Aug–Oct/3–115	Potential Conservation Benefits	One occurrence along USFS boundary within RCIS.
Plants	white rabbit-tobacco	<i>Pseudognaphalium leucocephalum</i>	-	-	2B.2	-	Priority 2	-	-	-	-	-	Yes	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland; sandy, gravelly/perennial herb/(July)Aug–Nov(Dec)/0–6,885	Potential Conservation Benefits	One occurrence near Rancho Cucamonga (CNDDB)
Plants	white-margined beardtongue	<i>Penstemon albomarginatus</i>	-	-	1B.1	BLM:S	Priority 2	-	-	-	-	-	Yes	Desert dunes (stabilized), Mojavean desert scrub (sandy)/perennial herb/Mar–May(June)/2,095–3,490	Potential Conservation Benefits	Most occurrences outside RCIS boundary; one east of Barstow along the eastern RCIS boundary (CNDDB)
Plants	woolly mountain-parsley	<i>Oreonana vestita</i>	-	-	1B.3	BLM:S USFS:S	Priority 2	-	-	-	-	-	Yes	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest; gravel or talus/perennial herb/Mar–Sep/5,295–11,480	Potential Conservation Benefits	High elevation (above 4,000 feet), mountainous habitats
Plants	Yucaipa onion	<i>Allium marvinii</i>	-	-	1B.2	BLM:S USFS:S	Priority 2	-	-	-	-	-	Yes	Chaparral (clay, openings)/perennial bulbiferous herb/Apr–May/2,490–3,490	Potential Conservation Benefits	One occurrence in CNDDB dated 1993 in RCIS boundary near Yucaipa.
Invertebrates	Crotch bumblebee	<i>Bombus crotchii</i>	-	Candidate Endangered	-	-	Priority 1	-	-	-	-	-	Yes	Open grassland and scrub communities supporting suitable floral resources.	Potential Conservation Benefits	Habitat focused on floral resources
Invertebrates	quino checkerspot butterfly	<i>Euphydryas editha quino</i>	Endangered	-	-	-	Priority 1	-	-	-	-	-	Yes	Annual forblands, grassland, open coastal scrub and chaparral; often soils with cryptogamic crusts and fine-textured clay; host plants include <i>Plantago erecta</i> ,	Potential Conservation Benefits	Few occurrences in RCIS; maybe this species habitat may be covered under other species

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														<i>Antirrhinum coulterianum</i> , and <i>Plantago patagonica</i> (Silverado Occurrence Complex)		
Invertebrates	western bumble bee	<i>Bombus occidentalis</i>	-	Candidate Endangered	-	USFS:S	Priority 1	-	-	-	-	-	Yes	Once common and widespread, species has declined precipitously from central California to southern British Columbia, perhaps from disease	Potential Conservation Benefits	Habitat focused on floral resources
Fish	steelhead - southern California DPS	<i>Oncorhynchus mykiss irideus pop. 10</i>	Endangered	-	-	-	Priority 1	-	-	-	-	-	Yes	Clean, clear, cool, well-oxygenated streams; needs relatively deep pools in migration and gravelly substrate to spawn	Potential Conservation Benefits	Other fish and aquatic Focal Species have been selected for the habitat used by this species
Amphibians	southern mountain yellow-legged frog	<i>Rana muscosa</i>	Endangered	Endangered	-	CDFW:WL USFS:S	Priority 1	X	X	-	-	-	YES	Lakes, ponds, meadow streams, isolated pools, and open riverbanks; rocky canyons in narrow canyons and in chaparral	Potential Conservation Benefits	Few occurrences in RCIS area and would be restricted to mountains/high elevation; primarily USFS lands.
Reptiles	California glossy snake	<i>Arizona elegans occidentalis</i>	-	-	-	CDFW:SSC	Priority 2	-	X	-	-	-	Yes	Commonly occurs in desert regions throughout southern California. Prefers open sandy areas with scattered brush. Also found in rocky areas.	Potential Conservation Benefits	Numerous occurrences in the Valley region; however, suitable habitats (sandy areas, scrub, desert) are well represented by Focal Species
Reptiles	coast patch-nosed snake	<i>Salvadora hexalepis virgulata</i>	-	-	-	CDFW:SSC	Priority 2	X	-	-	-	-	Yes	Brushy or shrubby vegetation; requires small mammal burrows for refuge and overwintering sites	Potential Conservation Benefits	Limited occurrences in the RCIS area.
Reptiles	coastal whiptail	<i>Aspidoscelis tigris stejnegeri</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Hot and dry areas with sparse foliage, including chaparral, woodland, and riparian areas.	Potential Conservation Benefits	Widespread across southern California; numerous occurrences in the Valley region
Reptiles	Northern California legless lizard	<i>Anniella pulchra</i>	-	-	-	CDFW:SSC USFS:S	Priority 2	X	-	-	-	-	Yes	Coastal dunes, stabilized dunes, beaches, dry washes, valley-foothill, chaparral, and scrubs; pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils	Potential Conservation Benefits	See <i>A. stebbinsi</i> .

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Reptiles	red-diamond rattlesnake	<i>Crotalus ruber</i>	-	-	-	CDFW:SSC USFS:S	Priority 2	-	-	-	-	-	Yes	Coastal scrub, chaparral, oak and pine woodlands, rocky grasslands, cultivated areas, and desert flats	Potential Conservation Benefits	Arid scrub, coastal chaparral, woodlands, grasslands, cultivated areas, slopes and flats; habitats represented by Focal Species selected.
Reptiles	San Diego banded gecko	<i>Coleonyx variegatus abbotti</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Rocky areas within coastal scrub and chaparral	Potential Conservation Benefits	Rocky areas in coastal sage and chaparral; habitats represented by Focal Species selected.
Reptiles	Southern California legless lizard	<i>Anniella stebbinsi</i>	-	-	-	CDFW:SSC USFS:S	Priority 2	X	-	-	-	-	Yes	Coastal dunes, stabilized dunes, beaches, dry washes, valley-foothill, chaparral, and scrubs; pine, oak, and riparian woodlands; associated with sparse vegetation and moist sandy or loose, loamy soils	Potential Conservation Benefits	Dry environments; sandy washes, alluvial fans; habitats represented by Focal Species selected.
Reptiles	southern rubber boa	<i>Charina umbratica</i>	-	Threatened	-	USFS:S	Priority 1	-	-	-	-	-	Yes	Montane oak-conifer and mixed-conifer forests, montane chaparral, wet meadows; usually in vicinity of streams or wet meadows	Potential Conservation Benefits	Primarily a montane species largely outside the RCIS area.
Reptiles	two-striped gartersnake	<i>Thamnophis hammondi</i>	-	-	-	BLM:S CDFW:SSC USFS:S	Priority 2	-	-	-	-	-	Yes	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	Potential Conservation Benefits	Species of aquatic habitats; habitats represented by Focal Species selected.
Birds	American peregrine falcon	<i>Falco peregrinus anatum</i>	Delisted	Delisted	-	CDF:S CDFW:FP USFWS:BC C	Priority 1	-	-	-	-	-	Yes	Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present	Potential Conservation Benefits	Year-round, wide range habitat, breeds on ledges/cliffs; Some occurrences in RCIS area; habitats represented by Focal Species selected.
Birds	American white pelican	<i>Pelecanus erythrorhynchos</i>	-	-	-	CDFW:SSC	Priority 2	X	-	-	-	-	Yes	Nests colonially on sandy, earthen, or rocky substrates on isolated islands in freshwater lakes; minimal disturbance from predators; access to foraging areas on inland marshes, lakes, or rivers; winters on shallow coastal bays, inlets, and estuaries	Potential Conservation Benefits	Wetland/water bird; migratory; habitats represented by Focal Species selected.

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Birds	bald eagle	<i>Haliaeetus leucocephalus</i>	Delisted	Endangered	-	BLM:S CDF:S CDFW:FP USFS:S USFWS:BC C	Priority 1	-	-	-	-	-	Yes	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains	Potential Conservation Benefits	Occurrences are centered around lakes (USFS land); migratory patterns vary
Birds	bank swallow	<i>Riparia riparia</i>	-	Threatened	-	BLM:S	Priority 1	-	-	-	-	-	Yes	Nests in riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with sandy soils; open country and water during migration	Potential Conservation Benefits	Migratory species and riparian habitat may be covered under other species. Note - species also associated with lakes, reservoirs, wetlands; but requires the vertical nesting substrates.
Birds	Bendire's thrasher	<i>Toxostoma bendirei</i>	-	-	-	BLM:S CDFW:SSC USFWS:BC C	Priority 2	X	-	-	-	-	Yes	Nests and forages in desert succulent shrub and Joshua tree habitat in Mojave Desert; nests in yucca, cholla, and other thorny scrubs or small trees	Potential Conservation Benefits	Desert habitats; migrant in San Bernardino; habitats represented by Focal Species selected.
Birds	black swift	<i>Cypseloides niger</i>	-	-	-	CDFW:SSC USFWS:BC C	Priority 2	-	-	-	-	-	Yes	Nests in moist crevices, caves, and cliffs behind or adjacent to waterfalls in deep canyons; forages over a wide range of habitats	Potential Conservation Benefits	Cliff nesting; found in forests and open areas; migratory; habitats represented by Focal Species selected.
Birds	black tern	<i>Chlidonias niger</i>	-	-	-	CDFW:SSC	Priority 2	X	-	-	-	-	Yes	Freshwater marsh with emergent vegetation; in the Central Valley primarily nests and forages in rice fields and other flooded agricultural fields with weeds and other residual aquatic vegetation	Potential Conservation Benefits	Wetland/water bird; migratory
Birds	brant	<i>Branta bernicla</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Nesting habitat includes the edges of saltmarshes in the low Arctic region; migratory habitats include shallow marine lakes; winter range includes intertidal mudflats in shallow marine waters with abundant eelgrass and/or green algae	Potential Conservation Benefits	Wetland/water bird; migratory; harvest species

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Birds	California black rail	<i>Laterallus jamaicensis coturniculus</i>	-	Threatened	-	BLM:S CDFW:FP USFWS:BC C	Priority 1	X	-	-	-	-	Yes	Tidal marshes, shallow freshwater margins, wet meadows, and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra Nevada foothill populations	Potential Conservation Benefits	Wetland/water bird; likely migratory
Birds	California spotted owl	<i>Strix occidentalis occidentalis</i>	-	-	-	BLM:S CDFW:SSC USFS:S USFWS:BC C	Priority 2	-	-	-	-	-	Yes	Nests and forages in dense, old-growth, multi-layered mixed-conifer, redwood, and Douglas-fir habitats	Potential Conservation Benefits	Most occurrences are in the USFS land
Birds	common loon	<i>Gavia immer</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Extirpated as a breeder from California; winters in coastal waters such as bays, channels, coves, and inlets; also winters inland at large, deep lakes and reservoirs	Potential Conservation Benefits	Wetland/water bird; migratory
Birds	fulvous whistling-duck	<i>Dendrocygna bicolor</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Nests in freshwater wetlands, especially shallow impoundments managed for rice production and temporarily flooded grasslands; also nests in pastures, haylands, and small grain fields adjacent to rice fields	Potential Conservation Benefits	Wetland/water bird; migratory; harvest species
Birds	grasshopper sparrow	<i>Ammodramus savannarum</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Nests and forages in moderately open grassland with tall forbs or scattered shrubs used for perches	Potential Conservation Benefits	Grassland habitats; migratory
Birds	gray vireo	<i>Vireo vicinior</i>	-	-	-	BLM:S CDFW:SSC USFS:S USFWS:BC C	Priority 2	-	-	-	-	-	Yes	Nests and forages in pinyon-juniper woodland, oak, and chamise and redshank chaparral	Potential Conservation Benefits	Limit occurrences in the RCIS area, thought to be extirpated from Cajon Pass region.
Birds	loggerhead shrike	<i>Lanius ludovicianus</i>	-	-	-	CDFW:SSC USFWS:BC C	Priority 2	-	-	-	-	-	Yes	Nests and forages in open habitats with scattered shrubs, trees, or other perches	Potential Conservation Benefits	Open country with short veg, pastureland; likely resident; habitats represented by Focal Species selected.
Birds	long-eared owl	<i>Asio otus</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Nests in riparian habitat, live oak thickets, other dense stands of trees, edges of	Potential Conservation Benefits	Possibly resident; dense veg, including open forests and riparian

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														coniferous forest; forages in nearby open habitats		areas, adjacent to open areas; habitats represented by Focal Species selected.
Birds	mountain plover	<i>Charadrius montanus</i>	-	-	-	BLM:S CDFW:SSC USFWS:BC C	Priority 2	-	-	-	-	-	Yes	Winters in shortgrass prairies, plowed fields, open sagebrush, and sandy deserts	Potential Conservation Benefits	Associated with short grasslands/prairies; migrant (more east-west); habitats represented by Focal Species selected.
Birds	northern harrier	<i>Circus hudsonius</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Nests in open wetlands (marshy meadows, wet lightly grazed pastures, old fields, freshwater and brackish marshes); also in drier habitats (grassland and grain fields); forages in grassland, scrubs, rangelands, emergent wetlands, and other open habitats	Potential Conservation Benefits	Meadows, marshes, uplands, grasslands, cropland; habitats represented by Focal Species selected.
Birds	olive-sided flycatcher	<i>Contopus cooperi</i>	-	-	-	CDFW:SSC USFWS:BC C	Priority 2	-	-	-	-	-	Yes	Nests in mixed-conifer, montane hardwood-conifer, Douglas-fir, redwood, red fir, and lodgepole pine habitats; usually close to water	Potential Conservation Benefits	Riparian and forest species; migratory; habitats represented by Focal Species selected.
Birds	purple martin	<i>Progne subis</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Nests and forages in woodland habitats including riparian, coniferous, and valley foothill and montane woodlands; in the Sacramento region often nests in weep holes under elevated freeways	Potential Conservation Benefits	Cavity nesting; forests, lowlands, usually avoids lowlands and grasslands; habitats represented by Focal Species selected.
Birds	redhead	<i>Aythya americana</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Nests in deep (>3 ft) permanent or semi-permanent wetlands of at least 1 acre; 75% open water; emergent tules, <i>Scirpus</i> spp., and <i>Typha</i> spp. 3 feet in height; winters in coastal estuaries and large, deep ponds, lakes, and reservoirs of the interior	Potential Conservation Benefits	Wetland/water bird; migratory; harvest species

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Birds	short-eared owl	<i>Asio flammeus</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Grassland, prairies, dunes, meadows, irrigated lands, and saline and freshwater emergent wetlands	Potential Conservation Benefits	Few occurrences; large open areas; ground nester; burrowing owl is a Focal Species
Birds	song sparrow ("Modesto" population)	<i>Melospiza melodia</i>	-	-	-	CDFW:SSC	Priority 2	X	-	-	-	-	Yes	Nests and forages in emergent freshwater marsh, riparian forest, vegetated irrigation canals and levees, and newly planted valley oak (<i>Quercus lobata</i>) restoration sites	Potential Conservation Benefits	Special-status refers to the Modesto population.
Birds	summer tanager	<i>Piranga rubra</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Nests and forages in mature desert riparian habitats dominated by cottonwoods and willows	Potential Conservation Benefits	Riparian habitats (lower elevation) mesquite/salt cedar (higher elevation); migratory; habitats represented by Focal Species selected.
Birds	Vaux's swift	<i>Chaetura vauxi</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Late-stage conifer forest and mixed-conifer/deciduous forest; nests in redwood (<i>Sequoia sempervirens</i>), Douglas-fir (<i>Pseudotsuga</i> spp.), and other conifers, and occasionally buildings and chimneys	Potential Conservation Benefits	Forest species; majority of suitable habitat is in USFS land; migratory
Birds	vermillion flycatcher	<i>Pyrocephalus rubinus</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Nests in riparian woodlands, riparian scrub, and freshwater marshes; typical desert riparian with cottonwood, willow, mesquite adjacent to irrigated fields, ditches, or pastures	Potential Conservation Benefits	Usually near water; arid scrub, farmlands, riparian, variety of habitats; migratory; habitats represented by Focal Species selected.
Birds	western snowy plover	<i>Charadrius alexandrinus nivosus</i>	Threatened	-	-	CDFW:SSC USFWS:BC C	Priority 1	X	-	-	-	-	Yes	On coasts nests on sandy marine and estuarine shores; in the interior nests on sandy, barren or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds	Potential Conservation Benefits	Wetland/water bird; migratory. Occurrences focused around Harper Lake.
Birds	willow flycatcher	<i>Empidonax traillii</i>	-	Endangered	-	USFS:S USFWS:BC C	Priority 1	-	-	-	-	-	Yes	Nests in wet meadow and montane willow riparian	Potential Conservation Benefits	Southwestern willow flycatcher already a covered species.

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Birds	yellow warbler	<i>Setophaga petechia</i>	-	-	-	CDFW:SSC USFWS:BC C	Priority 2	-	-	-	-	-	Yes	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixed-conifer habitats	Potential Conservation Benefits	Riparian habitat; migratory; habitats represented by Focal Species selected.
Birds	yellow-breasted chat	<i>Icteria virens</i>	-	-	-	CDFW:SSC	Priority 2	X	X	-	-	-	Yes	Nests and forages in dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush	Potential Conservation Benefits	Riparian and shrub habitats; migrant; habitats represented by Focal Species selected.
Birds	yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Nests in marshes with tall emergent vegetation, often along borders of lakes and ponds; forages in emergent wetlands, open areas, croplands, and muddy shores of lacustrine habitat	Potential Conservation Benefits	Associated with wetland/meadows; forages in adjacent areas; migratory
Birds	Yuma Ridgway's rail	<i>Rallus obsoletus yumanensis</i>	Endangered	Threatened	-	CDFW:FP	Priority 1	X	-	-	-	-	Yes	Freshwater marsh dominated by <i>Typha</i> spp., <i>Scirpus</i> spp., <i>Schoenoplectus</i> spp., and <i>Bolboschoenus</i> spp.; mix of riparian tree and shrub species along the marsh edge; many occupied areas are now man-made, such as managed ponds or effluent-supported marshes	Potential Conservation Benefits	Wetland/water bird; likely resident
Mammals	Ringtail	<i>Bassariscus astutus</i>	-	-	-	CDFW:FP	Priority 3	-	-	-	-	-	Yes	Mixed forests and shrublands near rocky areas or riparian habitats; forages near water and is seldom found more than 1 kilometer (0.62 mile) from a water source	Potential Conservation Benefits	Range throughout most of the RCIS area; however, riparian and shrub habitat are well represented by Focal Species
Mammals	lesser long-nosed bat	<i>Leptonycteris yerbabuena</i>	Delisted	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Sonoran desert scrub, semi-desert grasslands, lower oak woodlands	Potential Conservation Benefits	Migrates; does not hibernate; breed in Mexico; roosts in caves and mine tunnels
Mammals	northwestern San Diego pocket mouse	<i>Chaetodipus fallax fallax</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Coastal scrub, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper, and annual grassland	Potential Conservation Benefits	Range includes and greater than LA pocket mouse (a Focal Species)

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Mammals	pallid San Diego pocket mouse	<i>Chaetodipus fallax pallidus</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Desert wash, desert scrub, desert succulent scrub, and pinyon–juniper woodland	Potential Conservation Benefits	Range includes and greater than LA pocket mouse (a Focal Species)
Mammals	Palm Springs pocket mouse	<i>Perognathus longimembris bangsi</i>	-	-	-	BLM:S CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Creosote scrub, desert scrub, and grasslands; sparse to moderately dense vegetative cover	Potential Conservation Benefits	Range mostly south of RCIS area
Mammals	pocketed free-tailed bat	<i>Nyctinomops femorosaccus</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Pinyon–juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oases; roosts in high cliffs or rock outcrops with drop-offs, caverns, and buildings	Potential Conservation Benefits	Roosts in crevices (cliffs, outcrops and slopes); shrub, pine oak forest; habitats represented by Focal Species selected.
Mammals	San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed areas, and rangelands	Potential Conservation Benefits	Widespread; habitats represented by Focal Species selected.
Mammals	San Diego desert woodrat	<i>Neotoma lepida intermedia</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Coastal scrub, desert scrub, chaparral, cacti, rocky areas	Potential Conservation Benefits	Variety of dry, coastal, shrub, chamise habitats; habitats represented by Focal Species selected.
Mammals	southern grasshopper mouse	<i>Onychomys torridus ramona</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Grassland and sparse coastal scrub	Potential Conservation Benefits	Alkali desert scrub preferred; habitats represented by Focal Species selected.
Mammals	spotted bat	<i>Euderma maculatum</i>	-	-	-	BLM:S CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Foothills, mountains, desert regions of southern California, including arid deserts, grasslands, and mixed-conifer forests; roosts in rock crevices and cliffs; feeds over water and along washes	Potential Conservation Benefits	Mostly solitary; roosts in cracks, caves, rock cliffs; variety of habitats; focal species pallid bat has similar habitat (cliffs, caves, mines, etc.)
Mammals	Stephens' kangaroo rat	<i>Dipodomys stephensi</i>	Endangered	Threatened	-	-	Priority 1	-	-	-	-	-	Yes	Annual and perennial grassland habitats, coastal scrub or sagebrush with sparse canopy cover, or in disturbed areas	Potential Conservation Benefits	Distribution mostly south of the RCIS area
Mammals	western mastiff bat	<i>Eumops perotis californicus</i>	-	-	-	BLM:S CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Chaparral, coastal and desert scrub, coniferous and deciduous forest and	Potential Conservation Benefits	Cliff dwelling species; focal species pallid bat includes similar habitat

**San Bernardino County Regional Conservation Investment Strategy
Focal Species Evaluation**

Type	Common Name	Species Name	Federal Status ¹	State Status ¹	CRPR Status ¹	Other Status ¹	Priority Status ²	Climate Vulnerable Species	Upper Santa Ana River HCP ³	Wash Plan HCP ⁴	Apple Valley MSHCP/ NCCP	Designated Critical Habitat in RCIS Area?	Known to Occur in RCIS Area?	Habitat Associations	Focal Species Evaluation	Focal Species Evaluation Rationale
														woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels		
Mammals	western yellow bat	<i>Lasiurus xanthinus</i>	-	-	-	CDFW:SSC	Priority 2	-	-	-	-	-	Yes	Valley-foothill riparian, desert riparian, desert wash, and palm oasis habitats; below 2,000 feet above mean sea level; roosts in riparian and palms	Potential Conservation Benefits	Roosts in trees (e.g., cottonwood, palm trees).

Notes:

¹ Status Legend:

CDFW – California Department of Fish and Wildlife

WL – Watch List

FP – Fully Protected

SA – List in the CDFW Special Animals List

SSC – Species of Special Concern

CDF:S – California Department of Forestry and Fire Protection “Sensitive”

BLM:S – Bureau of Land Management “Sensitive”

USFWS:BCC – U.S. Fish and Wildlife Service “Bird of Conservation Concern”

USFS:S – U.S. Forest Service “Sensitive”

CRPR – California Rare Plant Rank

CRPR 1A: Plants presumed extirpated in California and either rare or extinct elsewhere

CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere

CRPR 2A: Plants presumed extirpated in California but common elsewhere

CRPR 2B: Plants rare, threatened, or endangered in California but more common elsewhere

CRPR 4: Watch List: Plants of limited distribution

.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

.3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

² Priority 1 = Federally- or State-listed species (threatened, endangered, candidate, State rare, Fully Protected); Priority 2 = CDFW Species of Special Concern or CRPR List 1 and 2; Priority 3 = Other Status (e.g., WL, BCC, none, etc.)

³ SBVMWD (San Bernardino Valley Municipal Water District). 2020. Upper Santa Ana River Habitat Conservation Plan. Stakeholder Draft. October. <http://www.uppersarhpc.com/Additional.aspx>

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APPENDIX C
Focal Species Summaries

AMPHIBIANS

Arroyo Toad (*Anaxyrus californicus*)

Habitat Group: Riparian and Wetland

Legal Status

State: CDFW Species of Special Concern

Federal: Endangered

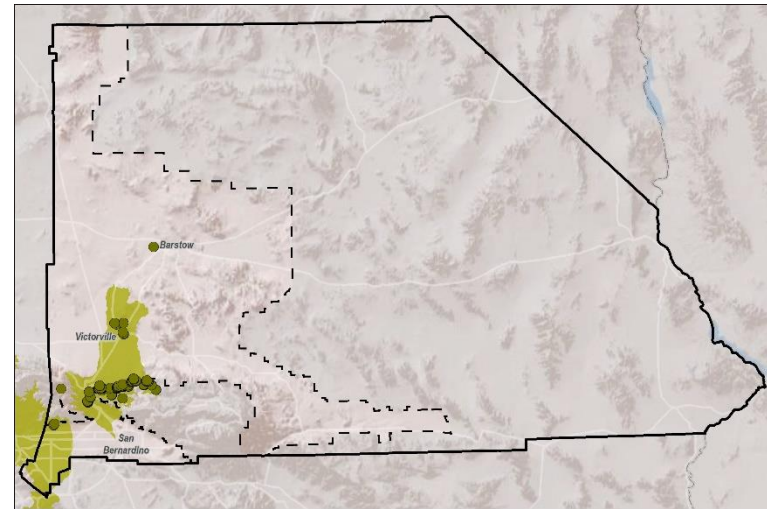
Critical Habitat: Originally designated on April 13, 2005^[1]; USFWS issued revised critical habitat on February 9, 2011^[2]

Recovery Plan: Issued by the USFWS on July 24, 1999^[3]

Distribution: The arroyo toad historically occurred along the California coast from Monterey County south to Baja California. In addition, this species was previously recorded in the desert slopes of Los Angeles, Riverside, San Bernardino, and San Diego Counties.^[4] This species current range is considerably smaller than historically recorded and extends from the southern portion of the Coast Ranges from San Luis Obispo County to Baja California and up to elevations of 1,950 meters (6,400 feet).^[4]

RCIS Distribution: In the West Desert region, this species is known from 82 occurrences in Little Horsethief Creek, the West Fork Mojave River, and the Summit Valley and Telephone Canyon foothills area.^[5,6] This species is known from 13 occurrences in the Mountain region primarily in Cajon Wash, and from 2 occurrences in the Valley region within alluvial fan habitat.^[5] The species is no longer considered to occur on the Mojave River north (downstream) of the Mojave Forks dam.^[6]

Habitat Requirements: This species requires shallow, slow-moving stream and riparian habitat, usually with extensive braided channels and sediment deposits.^[7,8] Arroyo toads may occasionally use and disperse across upland sites^[7] and burrows in sandy terraces.^[9]



Seasonal Periods for Arroyo Toad ^[4,10]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding*	—	—	✓	✓	✓	✓	✓	—	—	—	—	—
Metamorphosis	—	—	—	—	—	✓	✓	—	—	—	—	—
Aestivation**	✓	✓	—	—	—	—	—	✓	✓	✓	✓	✓

* Breeding depends on water temperature and may occur as early as January in coastal Southern California.^[3]

** Little data exists to accurately characterize overwintering activities/habitat use.^[3]

Breeding: Suitable breeding habitat consists of stream channels or shallow ponds with clear water.^[3,4,7] Streams must flow for at least 4 to 5 months for successful reproduction and recruitment.^[7,8] Breeding sites are typically located adjacent to sandy terraces.^[9]

Foraging: This species consumes nocturnally active ant species,^[7] snails, crickets, beetles, caterpillars, moths, and occasionally newly metamorphosed individuals.^[4]

Reproduction: Adults are generally active from March to July.^[4,10] Clutches of 2,000 to 10,000 eggs^[3] are deposited in shallow margins of pools with little current and vegetation adjacent.^[9] Eggs hatch in 4 to 6 days and larvae may take up to 14 days to become free swimming.^[3,11] Young typically complete metamorphosis between 72 to 80 days^[11,12] (around June to July^[7]) and remain on the bordering gravel bars until the pool dries up (approximately 3 to 8 weeks, depending on local conditions).^[9,11]

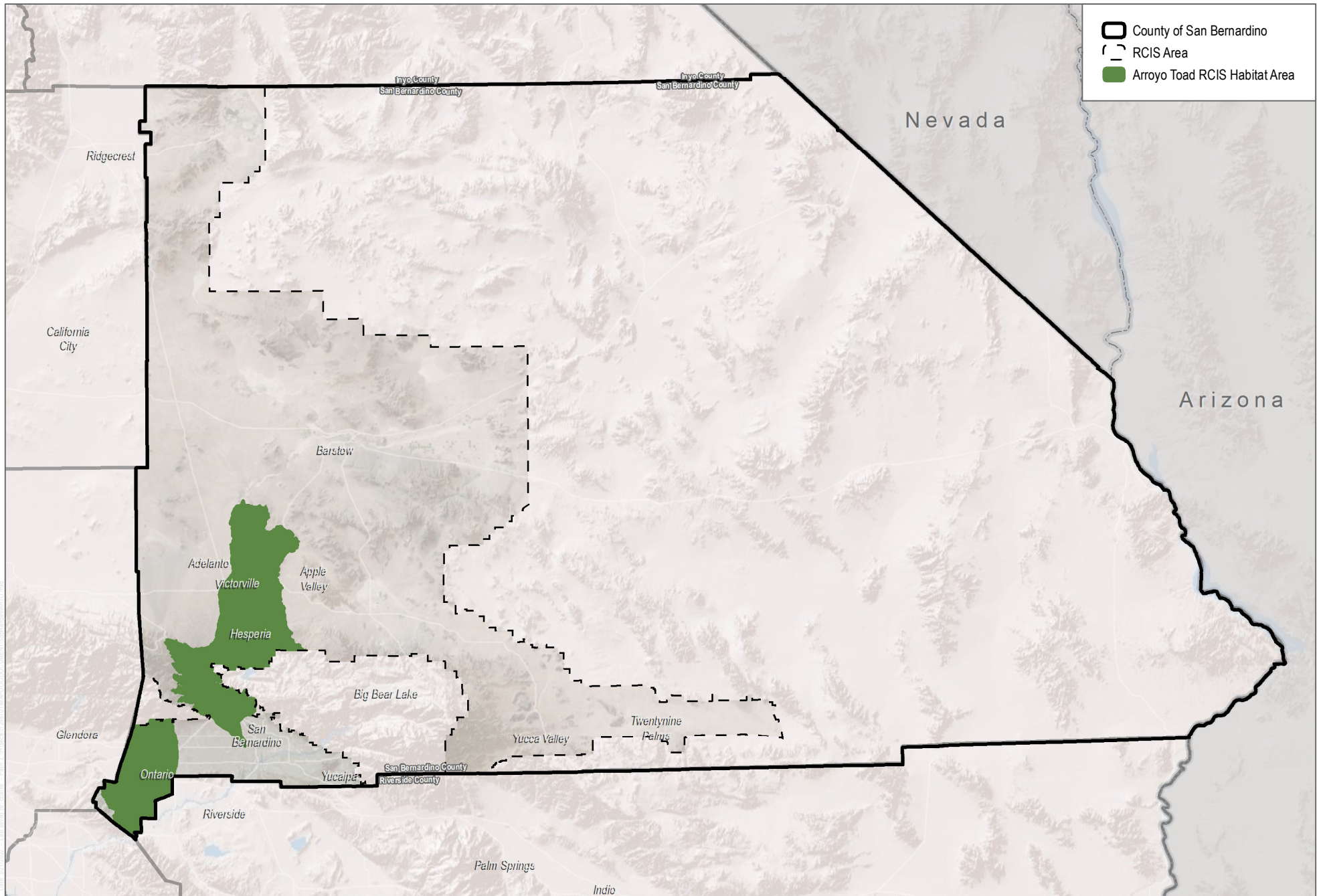
Pressures and Stressors: Primary population pressures and stressors to this species include habitat loss and alteration from changes in hydrology due to dams and reservoir construction, roads, agriculture, urbanization, flood control, water diversion, recreational activity, mining, and livestock grazing.^[13] Additional pressures including the introduction of non-native invasive plant species (e.g., giant reed [*Arundo donax*] and tamarisk [*Tamarix* sp.]), which invade riparian habitats and alter the hydrology of stream drainages.^[13] Predation by non-native aquatic species have also reduced extant populations of arroyo toad. Predatory fish prey on arroyo toad tadpoles, while bullfrogs (*Lithobates catesbeianus*) and African clawed frogs (*Xenopus laevis*) prey on all arroyo toad life stages. Diseases, such as chytrid fungus (*Batrachochytrium* sp.), have been linked to amphibian declines world-wide and may also be a population pressure on this species.^[13] Wildfires may also adversely affect arroyo toads by direct mortality, destroying upland habitat adjacent to streambeds and removing vegetation that sustain watersheds.^[13]

Additionally, pressures and stressors on other conservation elements (i.e., riparian vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive animals. These pressures and stressors can affect the quality and function of these other conservation elements important to this Focal Species.

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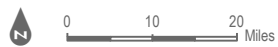


SOURCE: Bing Maps 2018; San Bernardino County 2018; CDFW BIOS DS2001 (see Appendix D)

FIGURE 1

Arroyo Toad RCIS Habitat Area

San Bernardino County RCIS



REPTILES

**Blainville’s (Coast) Horned Lizard
 (*Phrynosoma blainvillii*)**

Habitat Group: Grassland; Riversidean Alluvial Fan Sage Scrub; Transition Scrub, Chaparral, and Woodland

Legal Status

State: CDFW Species of Special Concern

Federal: BLM Sensitive

Critical Habitat: Not applicable

Recovery Plan: Not applicable

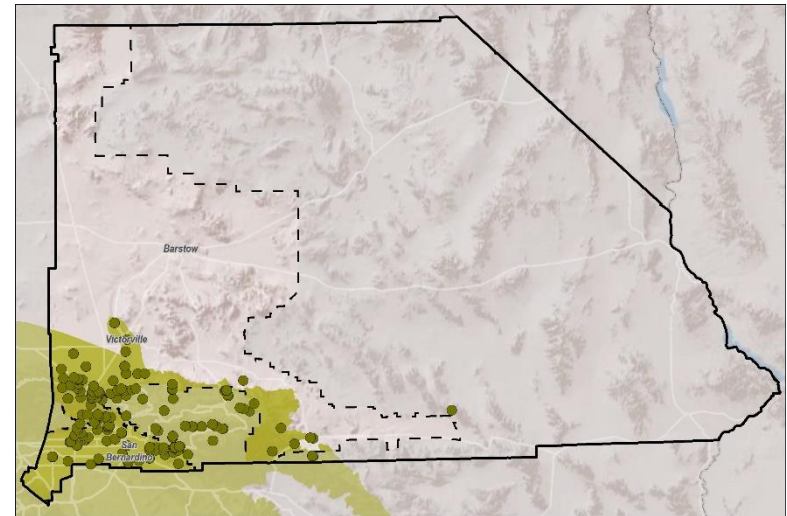
Distribution: The Blainville’s (coast) horned lizard occurs from northern Baja California, along the coast of California and into the Central Valley, and eastward to the Sierra Nevada foothills and the western edge of the Mojave Desert.^[1,2] This species inhabits elevations from sea level to 6,000 feet.^[3]

RCIS Distribution: A total of 52 occurrences are distributed throughout the Valley region and 31 occurrence records scattered throughout the Mountain region.^[4] In the West Desert region, 33 occurrences are distributed primarily in the foothill habitats of the San Gabriel and San Bernardino Mountains, and near Victorville (see inset map).^[4] The more common desert horned lizard (*Phrynosoma platyrhinos calidiarum*) occurs elsewhere throughout the desert.

Habitat Requirements: This species is found year-round in a wide range of habitats including sage scrub, dunes, alluvial scrub, annual grasslands, chaparral, oak woodlands, riparian woodlands, Joshua tree woodland, coniferous forests, and saltbush scrub.^[1]

Microhabitat: This species requires loose, fine soils for burrowing, open areas for thermoregulation, and shrubs for cover.^[1] This species is often found along sandy washes and along dirt roads.^[5]

Foraging: Ants, especially harvester ants, may make up 90% of this species diet. However, this species also consumes other small invertebrates such as spiders, termites, flies, honeybees, grasshoppers, beetles, and larvae.^[1,5]



Seasonal Periods for Coast Horned Lizard ^[1]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	—	—	✓	✓	✓	✓	✓*	—	—	—	—	—
Adult Hibernation	✓	✓	✓	—	—	—	—	✓	✓	✓	✓	✓

* Early July

Reproduction: Adults are reproductively active from March to early July with ovipositing usually occurring between April to early July.^[1,6,7] Typical clutch sizes are around 11 to 12 eggs,^[1] but may range from 6 to 49 eggs.^[7] Adults enter hibernation in late August to early September and emerge from hibernation near the end of March.^[6]

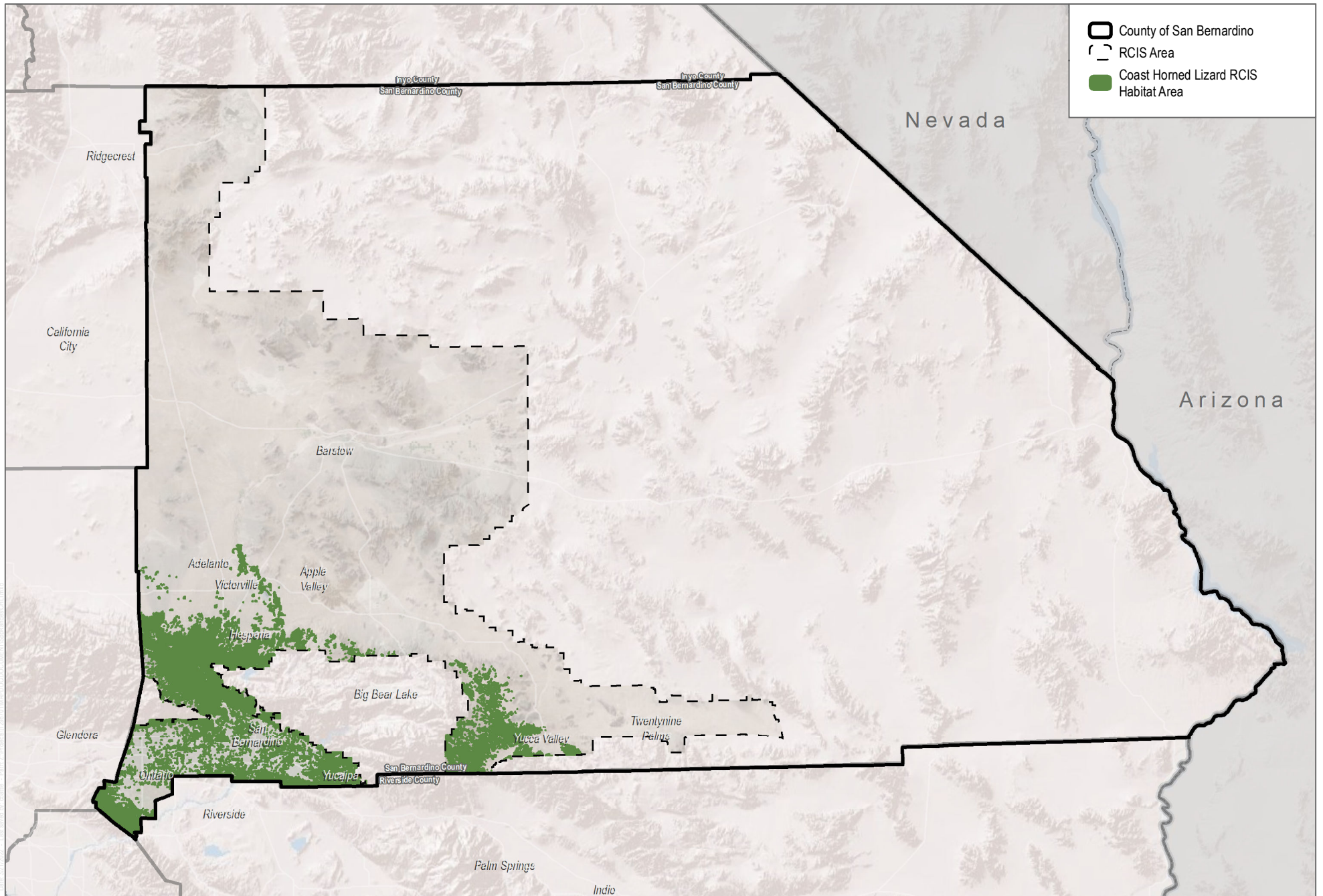
Pressures and Stressors: Primary population pressures and stressors in this species includes habitat loss and conversion from urbanization, agriculture, and energy development.^[1] In addition, off-highway vehicles and flood control structure contribute to mortality in this species. For example, Blainville's (coast) horned lizards may become trapped in erosion control blankets or directly crushed from off-road vehicles.^[1] The introduction of non-native Argentine ants (*Linepithema humile*) has also displaced this species' native ant prey populations, and studies suggest that Blainville's (coast) horned lizards do not commonly include Argentine ants in their diet.^[1,8]

Additionally, pressures and stressors on other conservation elements (i.e., grassland and scrub vegetation communities) include climate change, land uses and land use changes, and invasive animals. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; CDFW BIOS DS2409 (see Appendix D)

FIGURE 1

Coast Horned Lizard RCIS Habitat Area

San Bernardino County RCIS



AMPHIBIANS

California Red-Legged Frog (*Rana draytonii*)

Habitat Group: Riparian and Wetland

Legal Status

State: CDFW Species of Special Concern

Federal: Threatened

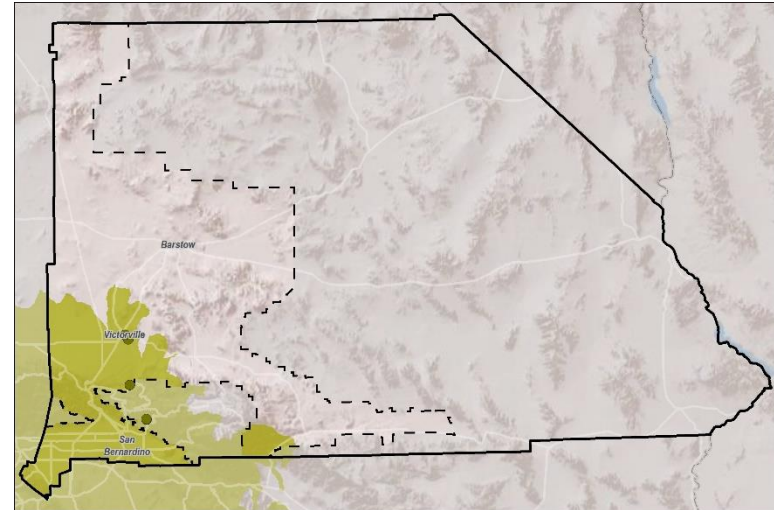
Critical Habitat: Originally designated on April 13, 2006^[1]; USFWS issued revised critical habitat on March 17, 2010^[2]

Recovery Plan: Issued by the USFWS on May 28, 2002^[3]

Distribution: The California red-legged frog is found primarily in wetlands, streams, pools, marshes, and ponds in coastal drainages of central California. This species is distributed from Marin County to Ventura County and occurs in portions of the Sierra Nevada and Cascade ranges, typically below 1,200 meters (3,936 feet) in elevation.^[7] Historically, this species range extended further north than its current range into Mendocino County.^[8]

RCIS Distribution: No occurrences for this species have been recorded in the Valley region; however, there are three occurrences for this species in the West desert region along the Mojave River (see inset map).^[9] California red-legged frog is currently considered extirpated from the County; however, this area is part of Southern California Recovery Unit for the species.^[3]

Habitat Requirements: California red-legged frog requires specific aquatic and riparian habitat components including dense emergent riparian vegetation (e.g., willows [*Salix* sp.], cattails [*Typha* sp.]) associated with deep (more than 0.7 meters), still, or slow-moving water.^[7,10,11] Adjacent vegetated terrestrial areas may provide habitat and cover during the winter.^[7] This species aestivates in small mammal burrows, moist leaf litter, or potentially any cover that provides moisture (e.g., narrow incised stream channels, logs, boulders/rocks, agricultural equipment, abandoned structures).^[7]



Seasonal Periods for California Red-Legged Frog ^[4,5,6]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding*	✓	✓	✓	✓	—	—	—	—	—	—	✓	✓
Dispersal/Aestivation*	—	—	—	—	✓	✓	✓	✓	✓	✓	—	—

* Timing and seasonal activity varies locally with climate and conditions.¹²

Breeding: Suitable breeding habitat includes dense emergent riparian vegetation associated with deep still or slow moving water.^[7,10,11]

Foraging: This species has a variable diet. Larvae likely consume algae^[12]; smaller adults consume invertebrates; and larger frogs may also consume small vertebrates (e.g., Pacific tree frog [*Pseudacris regilla*] and mice).^[6,13]

Reproduction: This species breeds from November through April with earlier breeding occurring in southern populations.^[4,5,8] This species is a prolific breeder and will lay eggs shortly after strong rainfall in the late winter and early spring.^[14] Females deposit egg clusters (usually containing 2,000–5,000 eggs per moderate sized cluster 0.08–0.11 inches in diameter^[7,12]) on emergent vertical vegetation (e.g., bulrush, cattail), and egg masses float on the surface of the water.^[14] Eggs hatch 6 to 14 days after laying,^[10,12] and larvae undergo metamorphosis 3.5 to 7 months after hatching.^[8,15,16] It is estimated that less than 1% of eggs laid reach metamorphosis.^[12]

Pressures and Stressors: Population pressures and stressors for this species include degradation and loss of habitat due to agriculture, urbanization, mining, overgrazing, recreation, timber harvesting, introduction of non-native plants, impoundments, water diversions, degradation of water quality, pesticides, recreation and off-road vehicles, and introduced predators (e.g., bullfrogs [*Lithobates catesbeianus*]).^[3] However, the primary stressors on this species include habitat loss and alteration with over 90% of historical wetlands either diked, drained, or converted to agriculture or urban development.^[5,17,18]

Additionally, pressures and stressors on other conservation elements (i.e., riparian vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive animals. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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REPTILES

Desert Tortoise (*Gopherus agassizii*)

Habitat Group: Desert Scrub

Legal Status

State: Candidate Endangered^[1]

Federal: Threatened

Critical Habitat: Designated on February 8, 1994^[2]

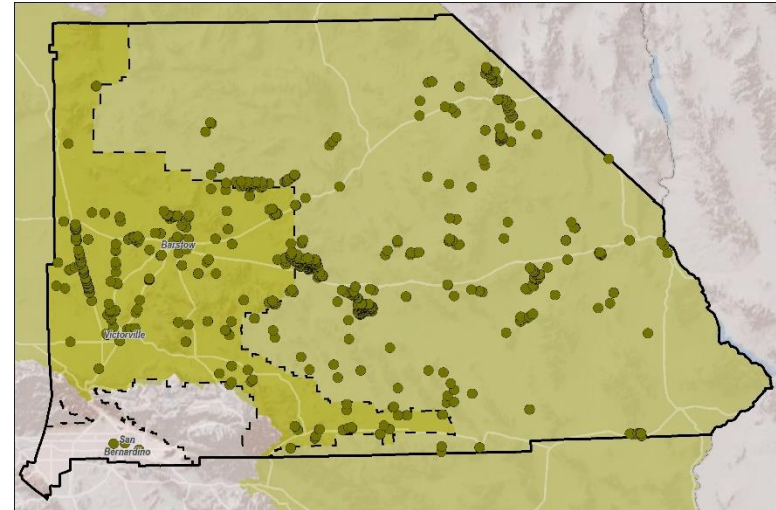
Recovery Plan: Issued by the USFWS on May 6, 2011^[3]

Distribution: The desert tortoise inhabits the Mojave, Sonoran, and Colorado deserts in the southwestern United States and near Mexico. The Colorado River has served as a geographic barrier isolating the Mojave (to the north and west of the river) and the Sonoran populations (to the south and east of the river) for millions of years.^[4] The Mojave population occurs north and west of the Colorado River in Arizona, Utah, Nevada, and California. Within California, this species resides south of the San Joaquin Valley, eastward in the Mojave and Colorado Deserts.^[3] This species occurs from below sea level to 2,225 meters (7,300 feet) in elevation.^[3]

RCIS Distribution: A total of 242 occurrences are distributed throughout the West Desert region, including the Recovery Plan-designated tortoise conservation areas (Ord-Rodman, Superior-Cronese, and Fremont Kramer) and habitat linkages between them

(i.e., Fremont Kramer to Ord-Rodman linkage and Ord-Rodman to Joshua Tree National Park linkage).^[3,5] Additionally, there are 3 occurrences in the Valley region; however, these records are likely pet individuals (see inset map).^[5] Desert tortoise populations have seen decreases in adult and juvenile density in the western and eastern Mojave and Colorado Desert recovery units.^[6]

Habitat Requirements: This species spends up to 98% of their time underground^[7] and requires soils friable enough for digging but firm enough to carve burrows that will not collapse.^[3] This species utilizes a variety of habitats including flats dominated by



Seasonal Periods for Desert Tortoise ^[10]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	—	—	—	✓	✓	—	—	✓	✓	✓	✓	—
Nesting	—	—	—	—	✓	✓	✓	—	—	—	—	—
Hibernation	✓	✓	—	—	—	—	—	—	—	—	✓	✓

creosote brush (*Larrea tridentate*) scrub, white bursage (*Ambrosia dumosa*), and saltbush scrub (*Atriplex* spp.)^[8] at lower elevations, to rocky slopes in blackbrush (*Coleogyne* spp.) scrub and juniper woodland transition zones at higher elevations.^[3,9,10] This species uses shrubs for shade during hot weather.^[11]

Foraging: This species is an herbivore and forages on winter plants (annuals and non-natives), perennial grasses, woody perennials, and cacti.^[8]

Reproduction: Desert tortoises spend most of their lives in burrows and emerge in late winter or early spring. Mating occurs during the spring and fall with nests produced during the summer.^[11] Nests are located in natural burrows, artificial burrows, and under vegetation. Clutch sizes range from two to seven eggs, and young hatch in the summer.^[12] Individuals require 13–20 years to reach sexual maturity and experience low reproductive rates during a long period of reproduction potential.^[3]

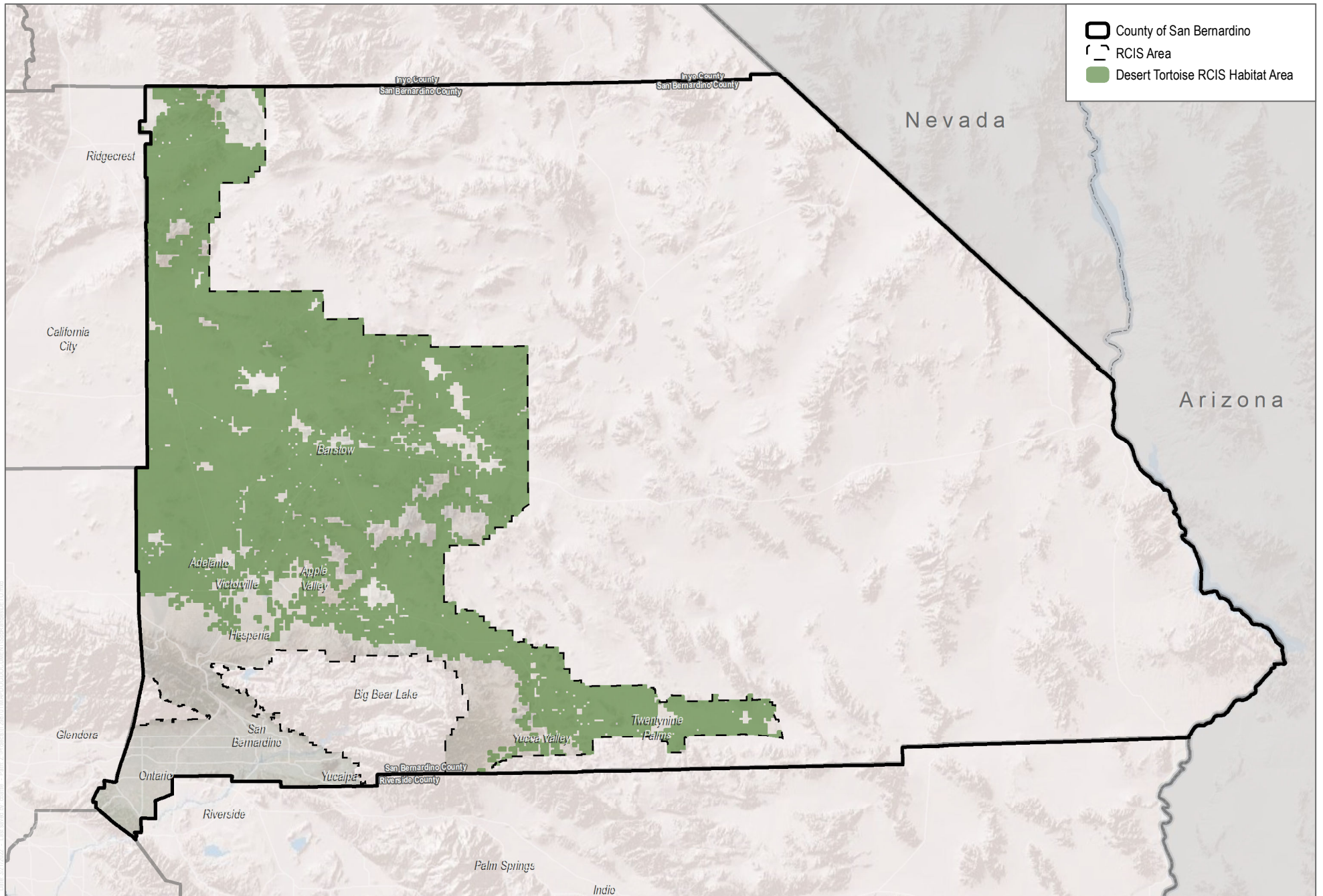
Pressures and Stressors: Population pressures and stressors include habitat loss, degradation, and fragmentation from urbanization, agricultural developments, livestock grazing, disease, predation, collecting, invasive exotic plants, energy and mineral development, off-road vehicles, military activities, fire and fire suppression, and climate change.^[8] Habitat loss and fragmentation are considered the primary pressure to this species. Development reduces the amount of suitable habitat available in the region as well as introduces species that may injure or kill tortoises, such as unconfined pets.^[8] Recovery of the species is particularly difficult because of the long reproductive time requirements for this species to reach sexual maturity and high mortality rates early in life.

Additionally, pressures and stressors on other conservation elements (i.e., desert scrub communities and habitat connectivity and wildlife movement) include climate change, land uses and land use changes, recreational activities, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; DRECP/USGS (see Appendix D)

FIGURE 1

Desert Tortoise RCIS Habitat Area

San Bernardino County RCIS



0 10 20 Miles

REPTILES

Mojave Fringe-Toed Lizard (*Uma scoparia*)

Habitat Group: Dune and Playa

Legal Status

State: CDFW Species of Special Concern

Federal: BLM Sensitive

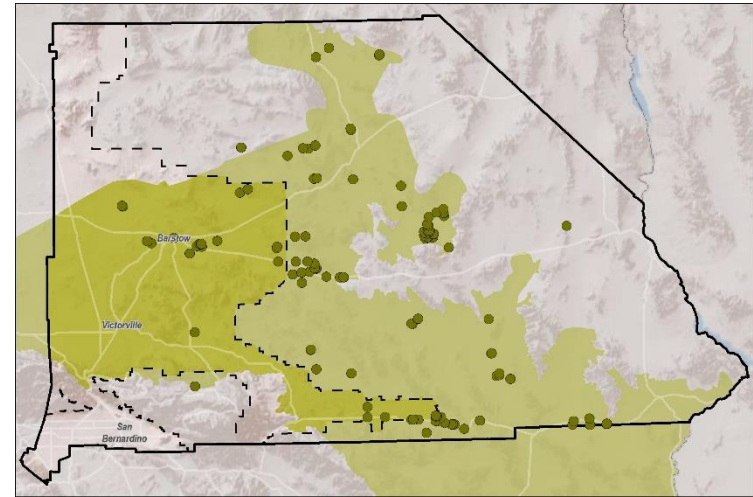
Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: The Mojave fringe-toed lizard is endemic to the Mojave and Sonoran deserts of Southern California and western Arizona.^[1,2] It is restricted to aeolian sand habitats within the deserts of Los Angeles, Riverside, Inyo, and San Bernardino counties, California, as well as in a small areas of Yuma and La Paz counties, Arizona.^[1,2,3] The majority of occurrences are associated with present-day and historical drainages associated with sand dune complexes of the Mojave and Amargosa rivers.^[3] This species elevation range extends from sea level up to 3,000 feet.^[2,4]

RCIS Distribution: A total of 43 occurrences are distributed in the West Desert region in the vicinity of Harper Dry Lake, Coyote Dry Lake, Twentynine Palms, and the Mojave River (see inset map).^[5]

Habitat Requirements: Mojave fringe-toed lizards require habitats consisting of fine, windblown sands associated with dunes, washes, riverbanks, hillsides, sandy hummocks, and the margins of dry lakes.^[1,3,6,7] These areas generally occur within creosote bush scrub, although typically sparsely vegetated.^[1,2,3,8] This species burrows up to approximately 2 inches into the sand and uses rodent burrows for cover from predators and thermoregulation, and may burrow up to 12 inches deep to hibernate.^[4]



Seasonal Periods for Mojave Fringe-Toed Lizard ^[1,4]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	—	—	—	✓	✓	✓	✓	—	—	—	—	—
Hibernation	✓	✓	—	—	—	—	—	—	—	—	✓	✓

Foraging: This species is primarily insectivorous, commonly consuming ants, beetles, grasshoppers, sand-dwelling cockroaches, hemipterans, spiders, antlion larvae, and caterpillars.^[4] This species also forages upon the flower buds, stems, leaves, and seeds of plants, particularly as adults.^[4,6]

Reproduction: Adults exhibit breeding colors from April to July.^[1] Eggs are likely buried within the sand and are present from mid-May to mid-July.^[4,8] Clutch size ranges from 2 to 5 eggs.^[1,4] Sexual maturity is reached when individuals grow to 65 to 70 millimeters, two summers after hatching.^[1] Reproductive activity depends on rainfall and subsequent food availability with females capable of having multiple clutches in wet years or none at all in years with low precipitation.^[4,8,9]

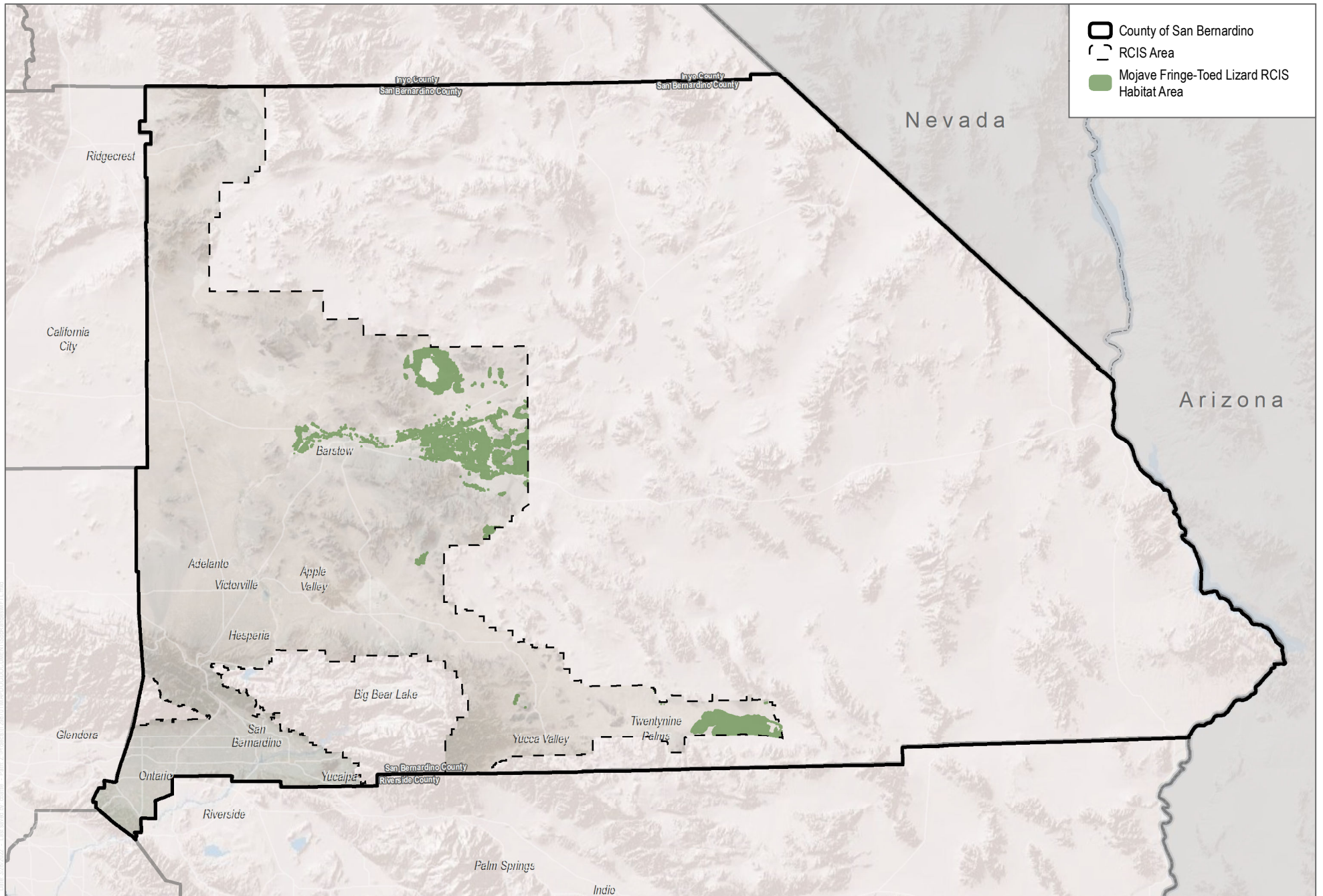
Pressures and Stressors: Primary pressure to the Mojave fringe-toed lizard is the loss of their highly sensitive loose windblown sand habitats, which require protection from direct and indirect disturbances to persist.^[10] Direct pressures to these habitats include off-highway vehicle (OHV) use, stabilization of sands by exotic species, and urbanization and indirect pressures, including sand movement control near developed areas such as sand barriers and fences.^[1,10] The decline of the Coachella Valley fringe-toed lizard (*Uma inornata*) is attributed to the aforementioned mechanisms, including development, OHVs, and disruption of sand movement.^[10] Furthermore, increased development and landfill sites around these desert areas are associated with an increase in generalized predators such as ravens (*Corvus corax*), which may place additional predation pressure on populations.^[11]

Additionally, pressures and stressors on other conservation elements (i.e., dune vegetation communities and Aeolian processes and features) include land uses and land use changes, recreational activities, and invasive plant species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; DRECP (see Appendix D)

REPTILES

San Bernardino Ringneck Snake (*Diadophis punctatus modestus*)

Habitat Group: Grassland; Riversidean Alluvial Fan Sage Scrub

Legal Status

State: Not applicable

Federal: USFS Sensitive

Critical Habitat: Not applicable

Recovery Plan: Not applicable

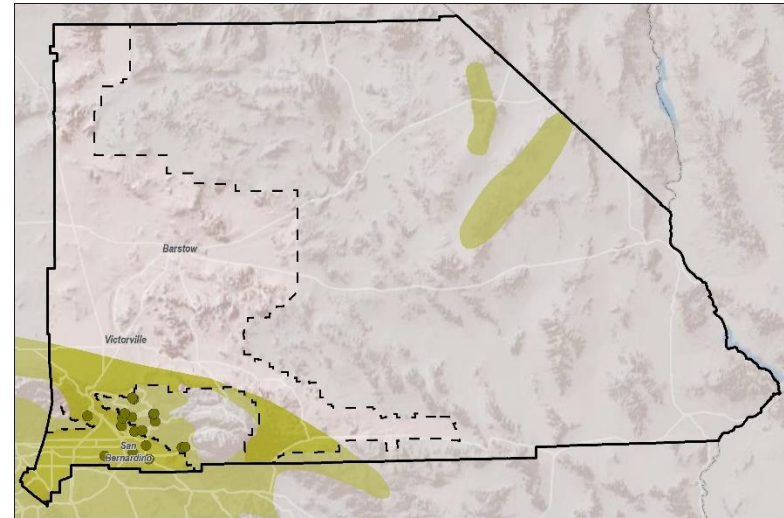
Distribution: Although ringneck snakes (*D. punctatus*) range from southern Washington to Idaho south to northern Baja California, the San Bernardino subspecies is endemic to California and occurs from mid-Santa Barbara County to San Diego County and east into the San Bernardino mountains.^[1] This species may also integrate with the northern subspecies (*D. p. pulchellus*) in northern Santa Barbara County and Kern County.

RCIS Distribution: A total of seven occurrences have been recorded in the fan and foothill and remaining habitats of the Valley region; and a total of two occurrences have been recorded within similar habitats of the Mountain region (see inset map).^[2]

Habitat Requirements: This species prefers moist habitats and is found in woodlands, forests, grasslands, chaparral, farms, and gardens.^[3] In arid locations, this species is restricted to mountains, springs, and waterways. This species is usually found on the ground under bark, rotting logs, stones, and boards.^[3]

Breeding: Little information is known for breeding habitat for this species.

Foraging: This species is carnivorous and consumes salamanders, small frogs, tadpoles, lizards, small snakes, insects, slugs, and earthworms.^[3]



Seasonal Periods for San Bernardino Ringneck Snake ^{[3-6]*}												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding*	—	—	✓	✓	✓	—	—	✓	✓	✓	—	—
Egg laying/hatching	—	—	—	—	✓	✓	✓	✓	✓	✓	—	—
Hibernation*	✓	✓	—	—	—	—	—	—	—	—	✓	✓

* Seasonal periods are estimated and apply to the full species *D. punctatus*.

Reproduction: Little is known on this species' reproductive biology. However, in general ringneck snakes are most active and aggregate for mating in the spring and early fall.^[4,5,6] This species lay eggs from June to July, often in communal nests.^[3] Females typically lay 1 to 2 clutches of 2 to 10 eggs.^[3] Eggs are usually laid in loose aerated soil, stabilized talus, or in rotting logs.^[7] Incubation may take between 42 to 56 days and hatching has been reported from August to October.^[7,8,9,10] Ringneck snakes are most active in the spring and early fall, and are primarily nocturnal.^[4] Species may aestivate during the heat of summer and generally hibernate during the winter.^[9]

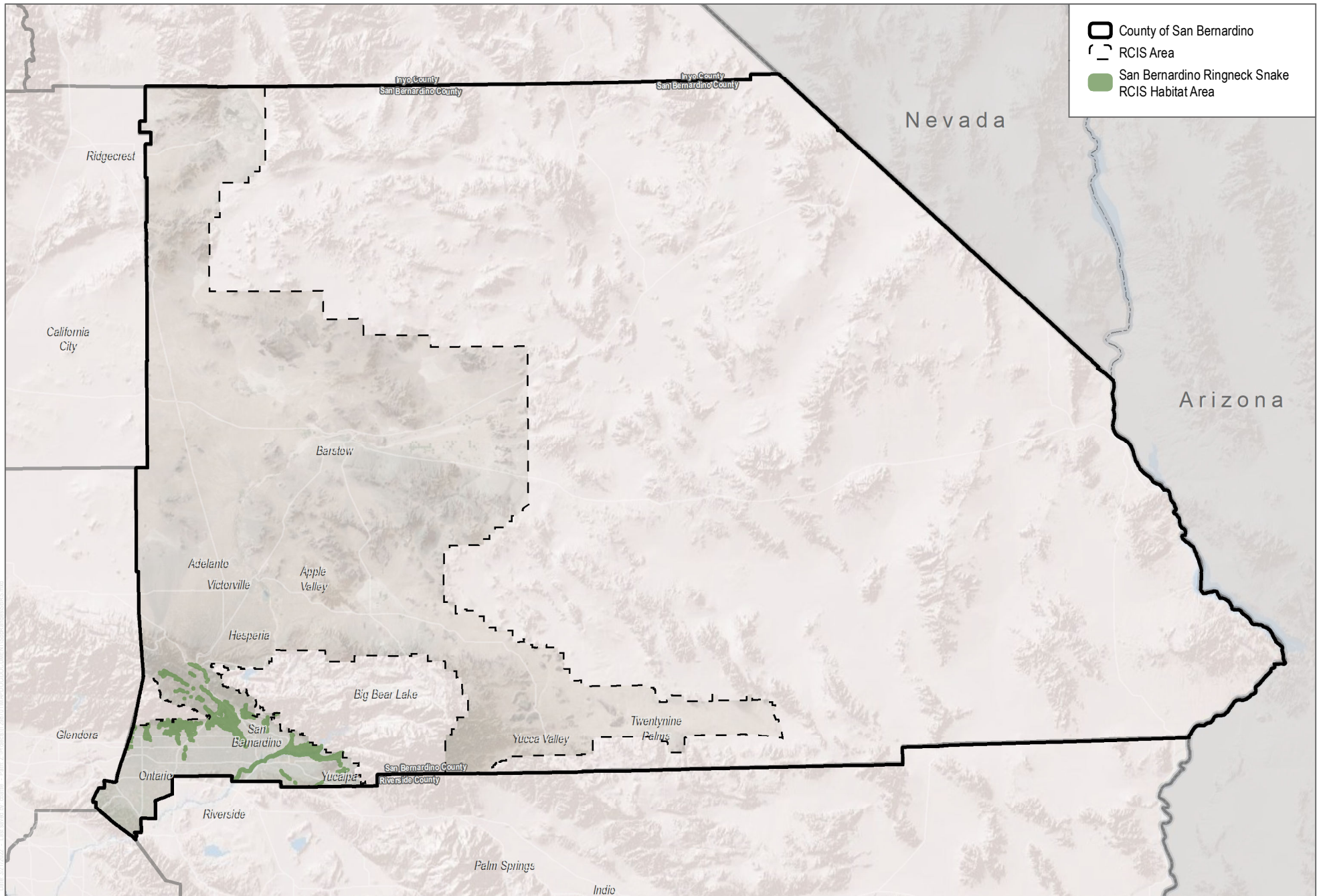
Pressures and Stressors: Little information is known for population pressures and stressors for this species. However, similar to *D. p. regalis*, since this species is dependent upon moist environments, overexploitation of groundwater or habitat alteration that reduces soil moisture content may impact populations.^[11] In addition, climate change or prolonged drought may affect the timing and quantity of rainfall, which would reduce suitable habitat for this species.^[11] Main impacts from urban development are likely habitat fragmentation and subsequent isolation of populations, since ringneck snakes are not known to disperse long distances.^[12] Urban development may also increase urban predators and increase road mortality.

Additionally, pressures and stressors on other conservation elements (i.e., grassland and scrub vegetation communities) include climate change, land uses and land use changes, and invasive animals. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities (see Appendix D)

FIGURE 1

San Bernardino Ringneck Snake RCIS Habitat Area

San Bernardino County RCIS

REPTILES

Western Pond Turtle (*Emys marmorata*)

Habitat Group: Riparian and Wetland

Legal Status

State: CDFW Species of Special Concern

Federal: USFS Sensitive; BLM Sensitive

Critical Habitat: Not applicable

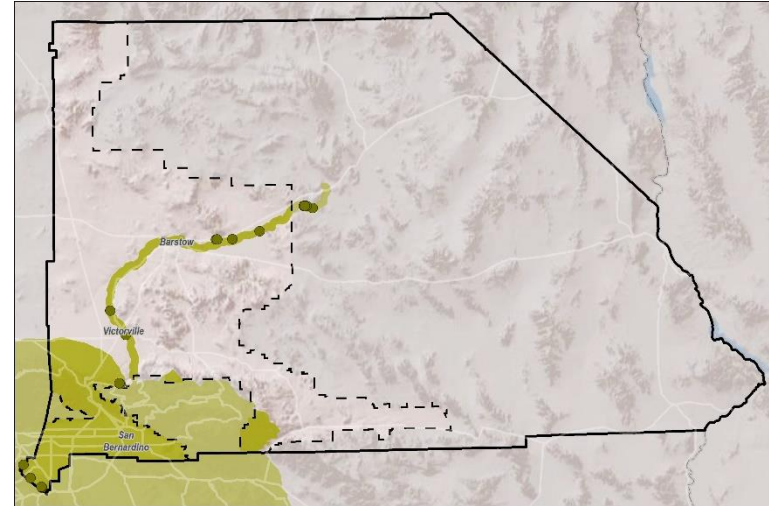
Recovery Plan: Not applicable

Distribution: The western pond turtle is restricted to aquatic environments and ranges along the Pacific coast from Washington to northern Baja California, Mexico. In California, this species is found from the Pacific coast east to the Peninsular Ranges and the Sierra Nevada foothills up to elevations of 2,048 meters (6,719 feet).^[1,2] Additional scattered populations are located as far east as the Mojave Desert in Afton Canyon and the Amargosa River.^[3]

RCIS Distribution: In the Valley region, the species is known from 6 records in the Chino Hills State Park area; in the West Desert region, the species is known from 14 records along the Mojave River and tributaries (see inset map).^[4]

Habitat Requirements: This species is primarily aquatic and occurs in ponds, lakes, marshes, rivers, streams, and irrigation ditches that have rocky or muddy bottoms and near aquatic vegetation.^[5] This species frequently basks on logs, cattail mats, and mudbanks.^[1,5] This species may also enter brackish and seawater.^[5,6,7] Pond turtles will use upland habitats for nesting and aestivation (for populations in the north or high elevations).^[1]

Breeding: Breeding typically occurs in aquatic habitats described above.^[8]



Seasonal Periods for Western Pond Turtle ^[1]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	—	—	✓	✓	✓	✓	✓	✓	✓	—	—	—
Nesting	—	—	—	✓	✓	✓	✓	✓	—	—	—	—
Movements to Overwintering Habitat and Dormancy*	✓	✓	—	—	—	—	—	—	✓	✓	✓	✓

* This species may be active year-round in the south^[5] and becomes dormant on land throughout winter in the north or high elevations.^[1]

Foraging: This species is omnivorous and eats aquatic plants, insects, worms, fish, amphibian eggs and larvae, crustaceans, mollusks, and carrion.^[1,4,8]

Reproduction: This species breeds throughout the spring, summer, and fall, and nesting typically occurs in early spring or early summer.^[1] This species lays clutches of 1 to 14 eggs between April and August. However, timing depends on location.^[1,4] Incubation typically lasts 80 to 126 days and varies with latitude.^[9,10] In Southern California, eggs typically hatch in the early fall.^[10]

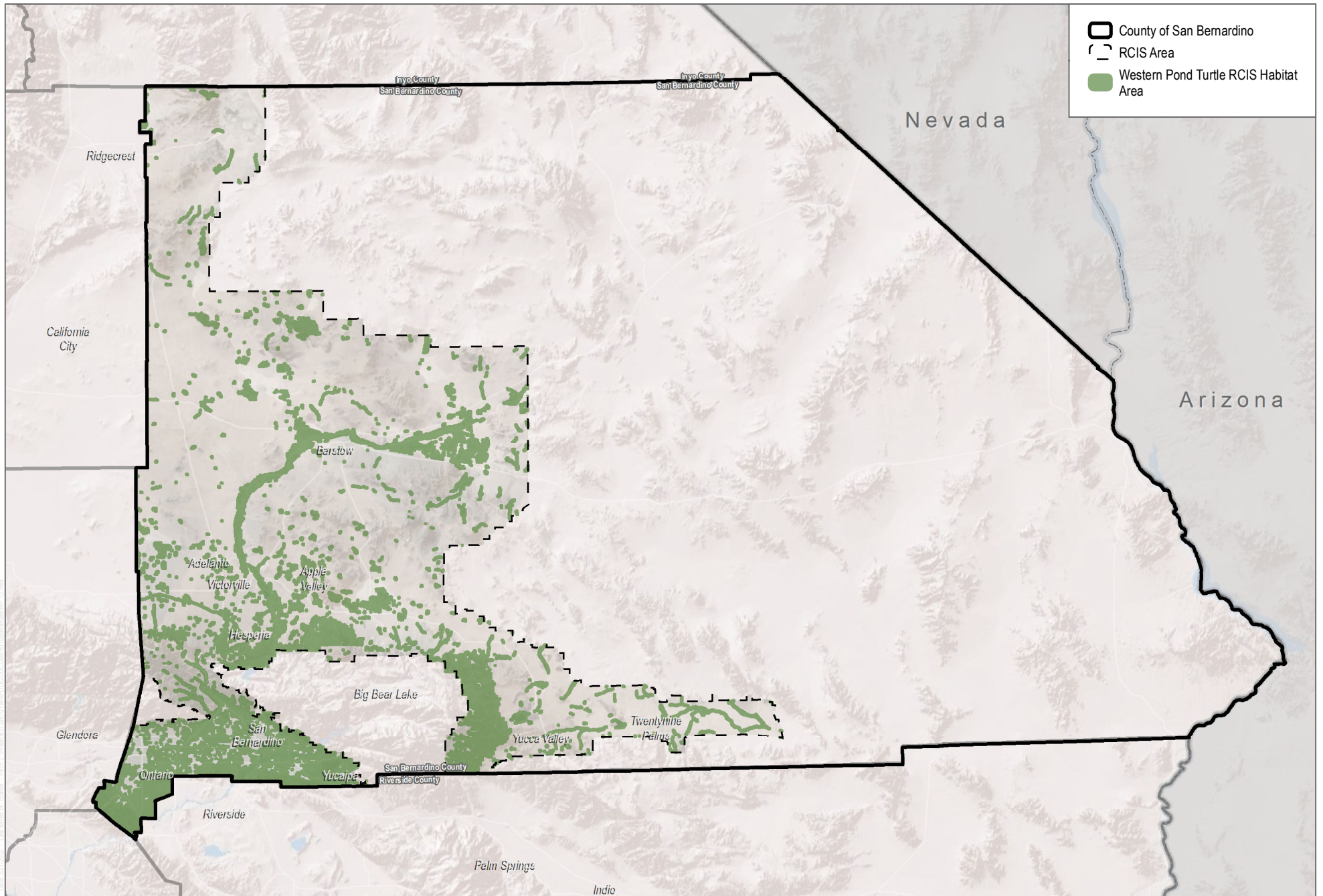
Pressures and Stressors: Primary population pressures and stressors include the loss, alteration, and degradation of aquatic habitat. Over 90% of wetland habitat within its historic range in California has been removed by agricultural development, flood control, water diversion projects, and urbanization.^[11,12,13] Competition and predation by introduced species may add pressure to this species' population.^[1] For example, the red-eared slider (*Trachemys scripta elegans*) may serve as a competitor as well as introduce diseases into western pond turtle populations,^[14] and the introduction of non-native and urban species (e.g., bullfrogs (*Lithobates catesbeianus*), bass, catfish, raccoons (*Procyon lotor*), skunks (*Spilogale gracilis*, *Mephitis mephitis*), ravens (*Corvus corax*)) may predate on western pond turtle hatchlings.^[15] Population declines in this species has also been attributed to toxic spills, grazing, off-road vehicle use, and road strikes.^[10] Connectivity issues related to urban development and flood control. Invasion of exotic plant species may alter hydrology and channel morphology degrading suitable habitat. Increased moisture in nesting upland habitat may affect nesting success since this species' eggs are unable to expand in response to increased internal pressure in moist incubation substrates.^[16]

Additionally, pressures and stressors on other conservation elements (i.e., riparian and wetland vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive animals. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities (see Appendix D)

FIGURE 1

Western Pond Turtle RCIS Habitat Area

San Bernardino County RCIS

AMPHIBIAN

Western Spadefoot (*Spea hammondi*)

Habitat Group: Grassland; Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland

Legal Status

State: CDFW Species of Special Concern

Federal: USFWS under review, BLM Sensitive

Critical Habitat: Not applicable

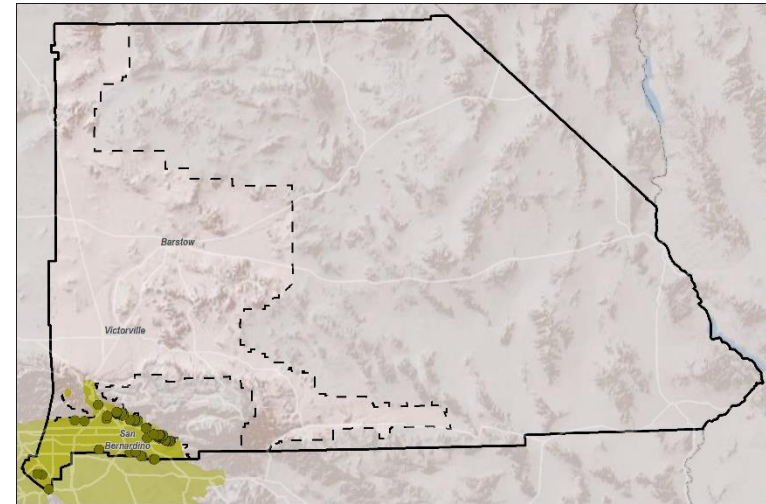
Recovery Plan: Not applicable

Distribution: The western spadefoot range includes the Central Valley, bordering foothills, and Coast Ranges south of Monterey Bay to northwestern Baja California, Mexico, including Orange County, western Riverside County, and San Diego County, California.^[1] This species typically occurs from sea level to 3,000 feet in elevation.^[1]

RCIS Distribution: A total of 59 occurrences have recorded in the fan and foothill of the Valley region, within Chino Hills State Park, near Redlands, and along the Cajon Pass (see inset map).^[2] Species is present in the Upper Santa Ana River watershed from the Seven Oaks Dam and downstream.

Habitat Requirements: This mostly fossorial species occurs in grasslands, oak woodlands, coastal sage scrub, chaparral, and vegetation in washes, floodplains, alluvial fans, playas, and alkali flats.^[1,3,4] This species prefers sandy or gravelly soils in areas with open vegetation and short grasses.^[1]

Breeding: This species aestivates in upland habitat and emerges to breed. Suitable breeding habitat includes aquatic environments, such as streams and temporary pools, including artificial water sources such as cattle ponds and vernal pools.^[1-5]



Seasonal Periods for Western Spadefoot ^[1]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding*	✓	✓	✓	✓	✓	—	—	—	—	—	—	—
Fossorial**	—	—	—	—	—	✓	✓	✓	✓	✓	✓	✓

* Timing and length depend on rainfall/region and may begin in October

** Species digs burrows or uses mammal burrows.^[10]

Foraging: Larvae are thought to be generalists consuming animals, plants and organic detritus.^[3] Adults are generalized predators and consume arthropods, beetles, moths, flies, earthworms, and other prey.^[3,6]

Reproduction: This species spends 8 to 10 months underground and enters water sources only to breed.^[7,8,9] This species breeds January to May following late winter or spring rains in streams and temporary pools.^[1] This species breeds in aggregates that can consist of over 1,000 individuals.^[7] Females lay 18 to 25 clusters consisting of 300 to 500 eggs, which hatch 3 to 4 days after laying.^[4,10,11] Metamorphosis may begin 58 days after hatching.^[5]

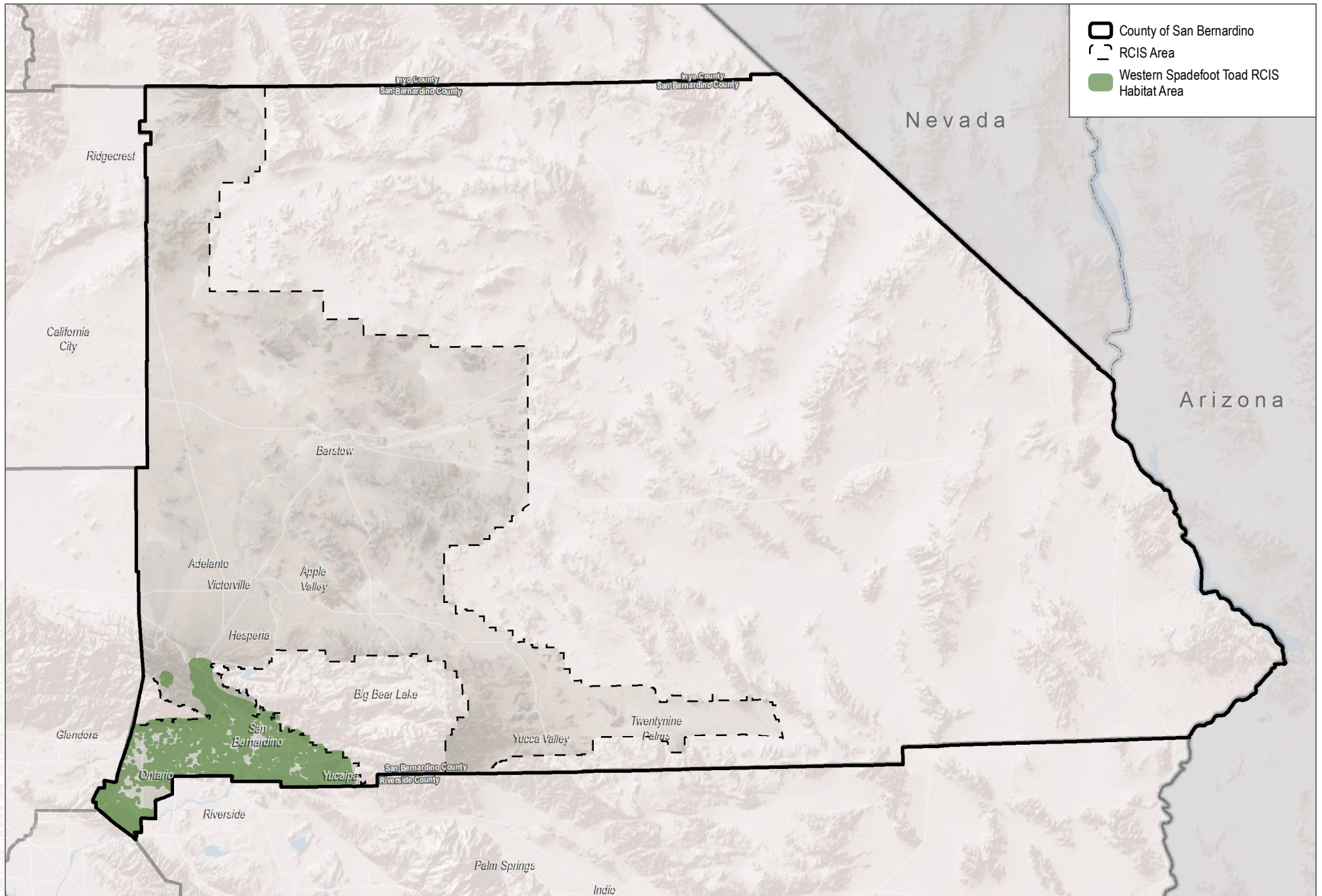
Pressures and Stressors: Primary population pressures and stressors to this species include habitat loss and fragmentation due to agriculture and urban development.^[3] It is estimated over 80% of historically occupied habitat in Southern California and 30% of habitat in Northern California has been reduced to unsuitable habitat by development and habitat conversion.^[3] Invasive species, such as crayfish (*Procambarus* sp.), bullfrogs (*Lithobates catesbeianus*), and mosquitofish (*Gambusia affinis*) may also prey upon western spadefoots at all life stages.^[3,7] This species is dependent upon temperature, rainfall cues, and temporary pools that persist long enough for metamorphosis. As a result, climate change may alter the aquatic suitability of temporary breeding environments, decrease shrubland while increasing grassland habitat,^[8,12] and serve as another stressor to this species populations.^[3] Wildfires that occur during this species dispersal may also pose a stressor to individuals and their populations.^[3]

Additionally, pressures and stressors on other conservation elements (i.e., grassland and scrub vegetation communities) include climate change, land uses and land use changes, and invasive animals. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; CDFW BIOS DS1994 (see Appendix D)

FIGURE 1

Western Spadefoot Toad RCIS Habitat Area

San Bernardino County RCIS

BIRDS

Bell's Sage Sparrow (*Artemisiospiza belli belli*)

Habitat Group: Riversidean Alluvial Fan Sage Scrub, Transitional Scrub, Chaparral, and Woodland

Legal Status

State: CDFW Watch List

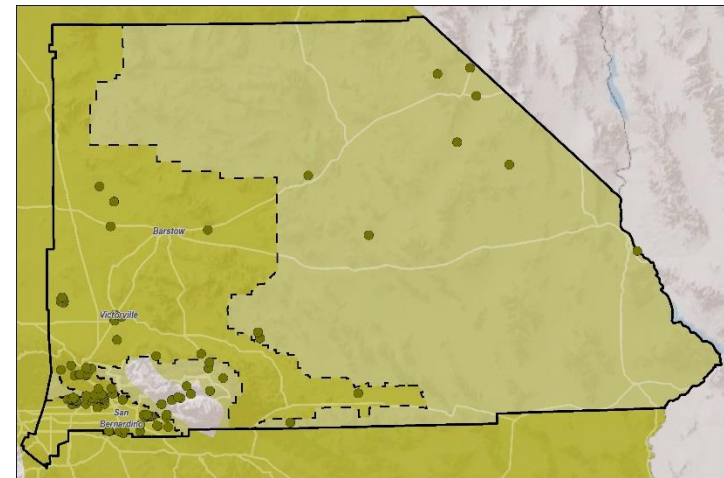
Federal: USFWS Bird of Conservation Concern

Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: The Bell's sage sparrow occurs in chaparral and coastal scrub communities along the Coast Ranges of central California and in the Transverse Ranges of Southern California. This species occurs as a non-migratory resident on the western slope of the central Sierra Nevada Range, and in the coastal ranges of California, southward from Marin County and Trinity County, extending into north-central Baja California, Mexico.^[1] The range of this subspecies overlaps with at least one other subspecies of Bell's sparrow in California (*A. b. canescens*).^[1]

RCIS Distribution*: A total of 59 occurrences have been recorded in the fan and foothill habitats of the Valley region with an additional 13 occurrences recorded in the Mountain region along Cajon Pass and 17 occurrences recorded in various locations across the West Desert region (see inset map).^[2]



Seasonal Periods for Bell's Sage Sparrow ^[3] (resident breeder)												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	—	—	✓	✓	✓	✓	✓	—	—	—	—	—
Fledges	—	—	—	✓	✓	✓	✓	✓	—	—	—	—

Habitat Requirements: This subspecies occupies semi-open habitats with evenly spaced shrubs that are 1 to 2 meters high.^[3] This subspecies is also found in big sagebrush (*Artemisia tridentata*) at higher elevations in Southern California mountains.^[3]

Breeding: This subspecies is a resident breeder in dry chaparral and coastal sage scrub habitat along coastal lowlands, inland valleys, and lower foothills of local mountains in California. In the northern part of its range, this subspecies prefers chamise chaparral (*Adenostoma fasciculatum*) and prefers big sagebrush at higher elevations.^[3]

Foraging: This subspecies is a ground-foraging omnivore during the breeding season and a ground-gleaning granivore during the non-breeding season.^[4,5]

Reproduction: Males usually sing on established territories in late January and early February. Nest building is typically conducted by females and has been observed in mid-February in Riverside County.^[3] Typically, the female alone incubates between 2 to 5 eggs for 10 to 16 days.^[3] The nestlings fledge between 9 to 10 days after hatching.^[3]

Pressures and Stressors: Primary population pressures and stressors include the loss and fragmentation of appropriate shrub habitat. This subspecies has lost suitable habitat to urbanization and agricultural conversion, especially in Southern California.^[1] Fragmentation of shrubland habitats, whether by wildfire, shrub die-off, or human-caused disturbance, significantly affects this subspecies. The Bell's sage sparrow is more likely to remain in an area that has high shrub cover, low disturbance, large patch sizes, and high within-site spatial similarity. This subspecies is vulnerable to brown-headed cowbird (*Molothrus ater*) nest parasitism,^[1] which is more frequent near habitat edges. This subspecies is also affected by fire frequencies^[6] and prefers open habitats where shrub cover is relatively low.^[7] Long-term fire suppression promotes tall, dense shrublands that are not suitable for Bell's sage sparrows.^[1] However, if fires occur too frequently, Bell's sage sparrows abandon habitats where non-native annual grasses replace shrubs.

Additionally, pressures and stressors on other conservation elements (i.e., scrub vegetation communities) include climate change, land uses and land use changes, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

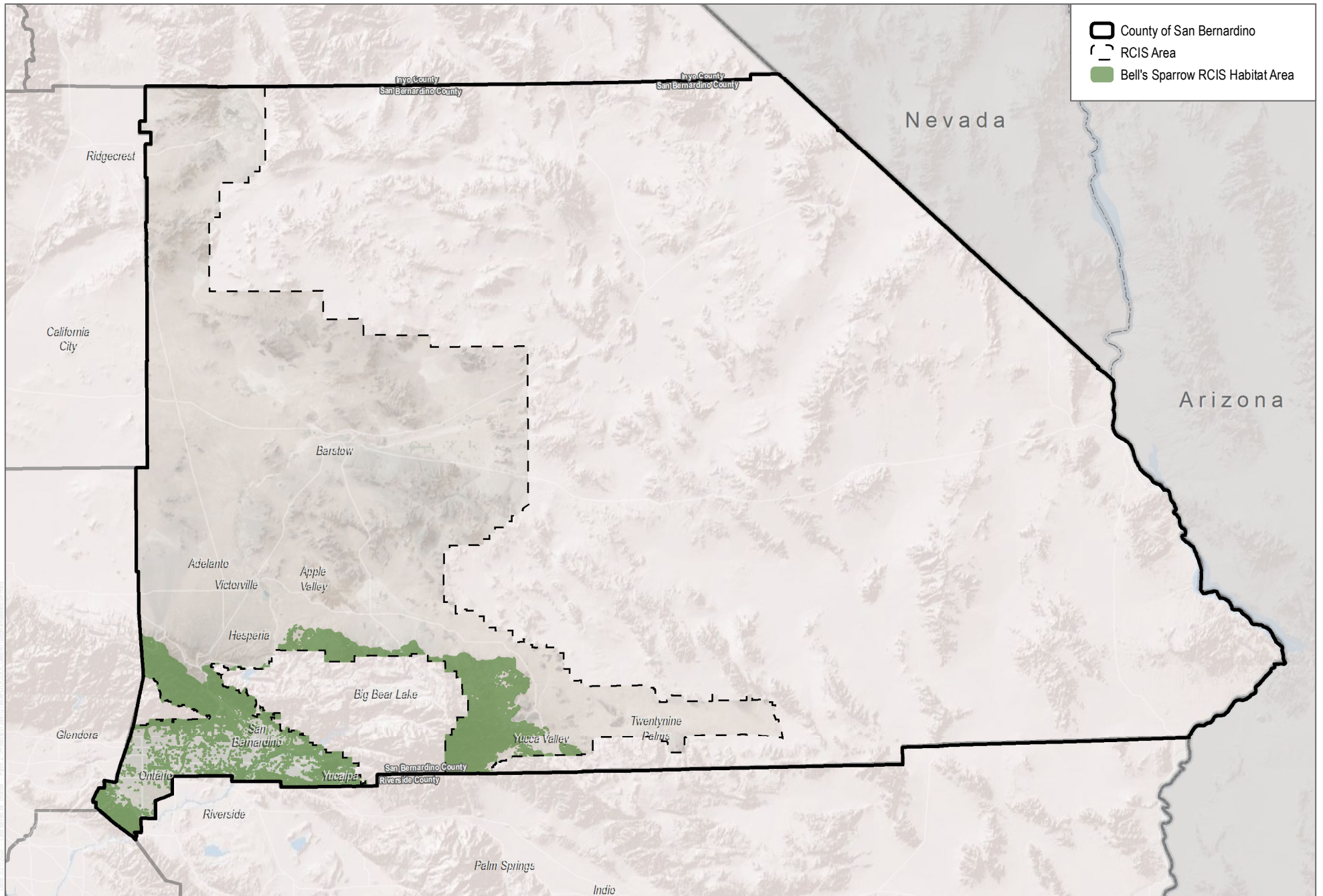
* The 2013 American Ornithologists Union's 54th supplement split the single species, *A. b.*, into two species. In addition to *A. belli belli* (n = 4), RCIS distribution numbers include the following historic species occurrences within the RICS boundary: *Amphispiza belli* (n = 73), *A. b. b.* (n = 8), and *A. b. canescens* (n = 4).

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities, USDA Ecoregions (see Appendix D)

FIGURE 1

Bell's Sparrow RCIS Habitat Area

San Bernardino County RCIS

BIRDS

Burrowing Owl (*Athene cunicularia*)

Habitat Group: Riversidean Alluvial Fan Sage Scrub; Grassland; Developed and Agriculture

Legal Status

State: CDFW Species of Special Concern

Federal: USFWS Birds of Conservation Concern; BLM Sensitive

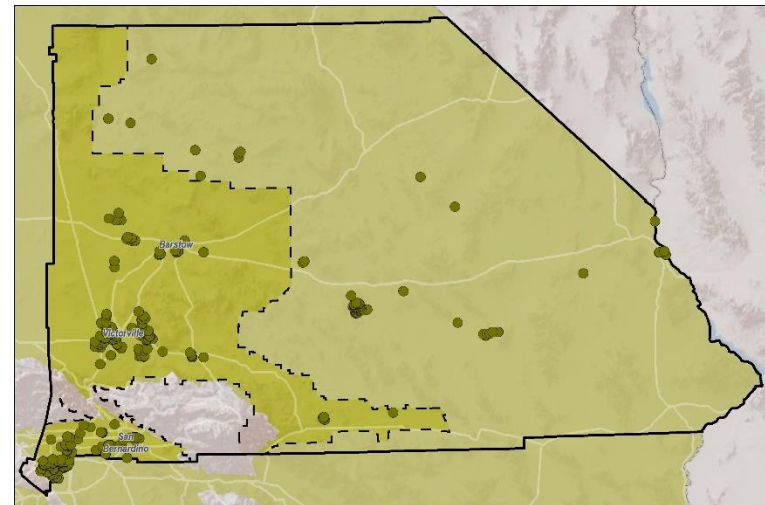
Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: The burrowing owl is distributed throughout North America.^[1] In California, this species’ range extends throughout the lowlands from the northern Central Valley to Mexico, with small, scattered populations occurring within the Great Basin and desert regions in the southwest part of the state.^[2,3] Historically, this species’ range occurred throughout most of California and the islands, except for north of Marin and mountain areas.^[4]

RCIS Distribution: A total of 136 occurrences have been recorded throughout the Valley region, particularly in open grassland and agricultural areas and around the Prado Basin.^[5] In the West Desert region, a total of 142 occurrences have been recorded, particularly in areas that have been surveyed, including in the Victor Valley area, the Barstow area, Lucerne Valley, and the Morongo Basin (see inset map).^[5] A significant amount of moderate- to good-quality habitat attributed to the historical agricultural land use exists within the cities of Ontario and Chino.

Habitat Requirements: This species is a grassland species that requires open habitat, well-drained soils, and areas with sparse vegetation.^[1,3] However, burrowing owls also inhabit a variety of landscapes including steppes, deserts, prairies, and agricultural lands, as well as along margins of airports, agricultural roadsides, parks, and golf courses.^[1,3] Suitable habitat also includes areas with burrows or burrow-like structures (e.g., culverts).^[3,6]



Seasonal Periods for Burrowing Owl ^[1]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	—	—	✓	✓	✓	✓	✓	✓	—	—	—	—
Migration	—	—	✓	✓	—	—	—	—	✓	✓	—	—
Winter Movements	✓	—	—	—	—	—	—	—	—	—	✓	✓

Breeding: Suitable breeding sites consists of low, sparse vegetation^[7,8]; are often associated with high densities of burrowing mammals,^[1] such as ground squirrels; and always have available perching sites, such as fences or raised rodent mounds.^[9]

Foraging: Burrowing owls typically forage in areas with low-growing, sparse vegetation.^[1] Burrowing owls are opportunistic and prey on arthropods, small mammals, birds, amphibians, and reptiles.^[1,10]

Reproduction: Nesting in California generally runs from February through August, with peak activity from March to July.^[3,11,12] Burrowing owls are primarily monogamous and usually breed once per year. Typically, one clutch of 6 to 12 eggs is produced per year. The female incubates the eggs for 28 to 30 days, and young fledge at around 44 days.^[1]

Pressures and Stressors: The most significant pressures and stressors to the burrowing owl is the conversion of grassland and farmland habitat to urban landscapes or unsuitable crops such as vineyards, orchards, corn fields, cotton, or similar.^[3,13] The loss of agricultural fields and similar open spaces will also place additional stress on burrowing owl populations.^[3] Vehicle collisions may be a significant cause of mortality in some areas.^[1,14] In addition, the decline of fossorial species or the extermination of fossorial pests (such as ground squirrels or rodents) across the burrowing owl range may reduce suitable nesting sites and prey abundance for this species.^[1,3] Pesticides along crop and rangelands may also affect burrowing owl individuals and populations.^[3,7]

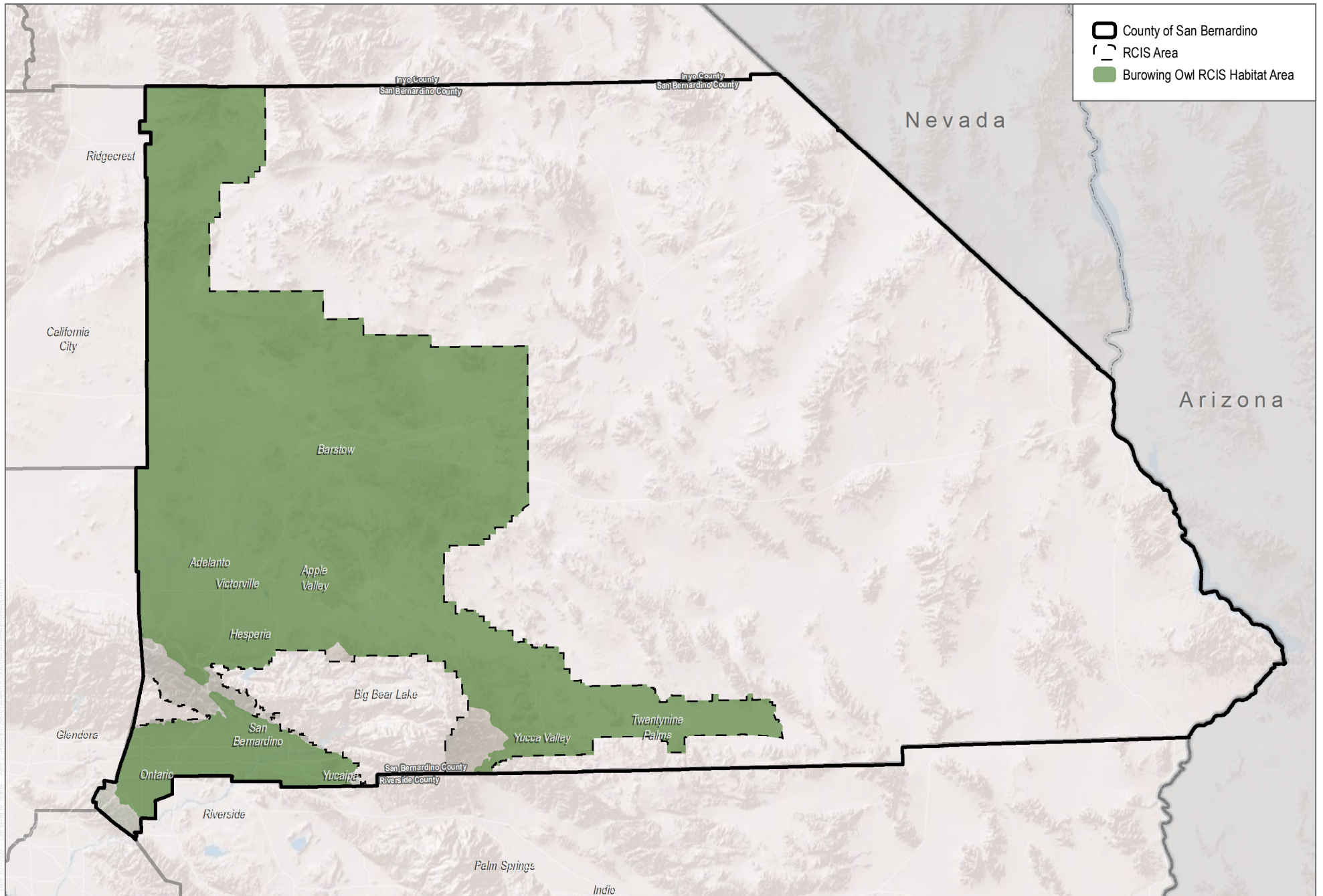
Additionally, pressures and stressors on other conservation elements (i.e., grassland and scrub vegetation communities and agricultural land covers) include climate change, land uses and land use changes, pollutants, fire and fire suppression, and invasive plants. These pressures and stressors can affect the quality and function of the vegetation communities and land covers to support habitat for this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; CDFW BIOS DS2184 (see Appendix D)

FIGURE 1

Burrowing Owl RCIS Habitat Area

San Bernardino County RCIS



BIRDS

Coastal California Gnatcatcher (*Polioptila californica californica*)

Habitat Group: Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland

Legal Status

State: CDFW Species of Special Concern

Federal: Threatened

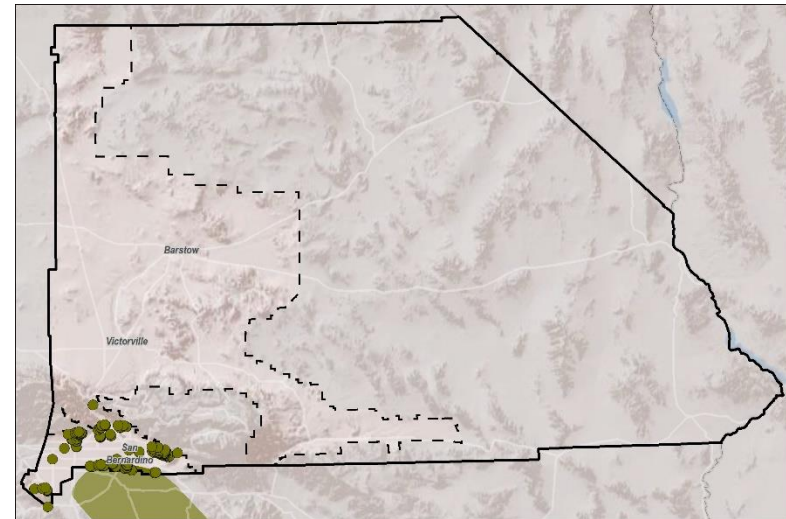
Critical Habitat: Originally designated on April 24, 2003^[1]; USFWS issued revised designation of critical habitat on December 19, 2007.^[2]

Recovery Plan: Not applicable

Distribution: The coastal California gnatcatcher occurs year-round from Southern California south to northwestern Baja California.^[3] This species is typically located below elevations of 500 meters (1,640 feet) with more than 99% of the known populations occurring below 770 meters (2,500 feet).^[4,5,6] Due to California topography, higher elevation populations are located more inland where population densities are less than coastal areas.^[4]

RCIS Distribution: A total of 181 occurrences have been recorded throughout the Valley region, particularly in scrub habitats in the foothills around Chino Hills, Nealeys Corner, Highland, and Reche Canyon.^[7] In the Mountain region, this species is known from one occurrence near Cajon (see inset map).^[7]

Habitat Requirements: In Southern California, this species is known as an obligate resident of coastal sage scrub,^[3] which consists of relatively low-growing, dry-season deciduous and succulent plants. However, this species also occurs in communities that are in close proximity to coastal sage scrub, such as chaparral, grassland, riparian, and sub-associations of coastal sage scrub (e.g., Riversidian scrub).^[8]



Seasonal Periods for Coastal California Gnatcatcher (resident breeder) ^[3,6]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	—	✓	✓	✓	✓	✓	✓	—	—	—	—	—
Fledges	—	—	✓	✓	✓	✓	✓	✓	—	—	—	—

Breeding: In Southern California, this species nests in coastal sage scrub, typically on slopes, and within shrubs, such as California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), and California sunflower (*Encelia californica*).^[3,9,10]

Foraging: This species is insectivorous and gleans prey from foliage while moving quickly through shrub.^[3] In San Diego County, most foraging occurs in California sagebrush, California buckwheat, and laurel sumac (*Malosma laurina*).^[11]

Reproduction: California gnatcatcher breeding season extends from late February to July with the most nest initiations occurring from mid-March to mid-May.^[6] Both males and females construct the nest, incubate eggs, and care for young. Incubation of typically 4 eggs occurs approximately 14 days before hatching.^[6] The nestlings fledge approximately 14 days after hatching.^[3]

Pressures and Stressors: Primary population pressures and stressors include loss and/or destruction of coastal sage scrub habitat, where as early as 1970 up to 90% of coastal sage scrub was lost due to development and land conversion.^[12,13,14] Additional stressors to coastal sage scrub communities include agricultural uses; urbanization; air pollution; increased fire frequencies; non-native grass, which can increase fire frequency; and introduction of exotics. High fire frequencies with a lag recovery time may also significantly reduce the viability of local populations of the California gnatcatcher.^[15] Predation and nest predators invoke another stressor for this species, and include predators such as snakes, squirrels, coyotes (*Canis latrans*), and urban-adapted animals.^[16] Another possible stressor includes brood parasitism by the brown-headed cowbird (*Molothrus ater*).^[16]

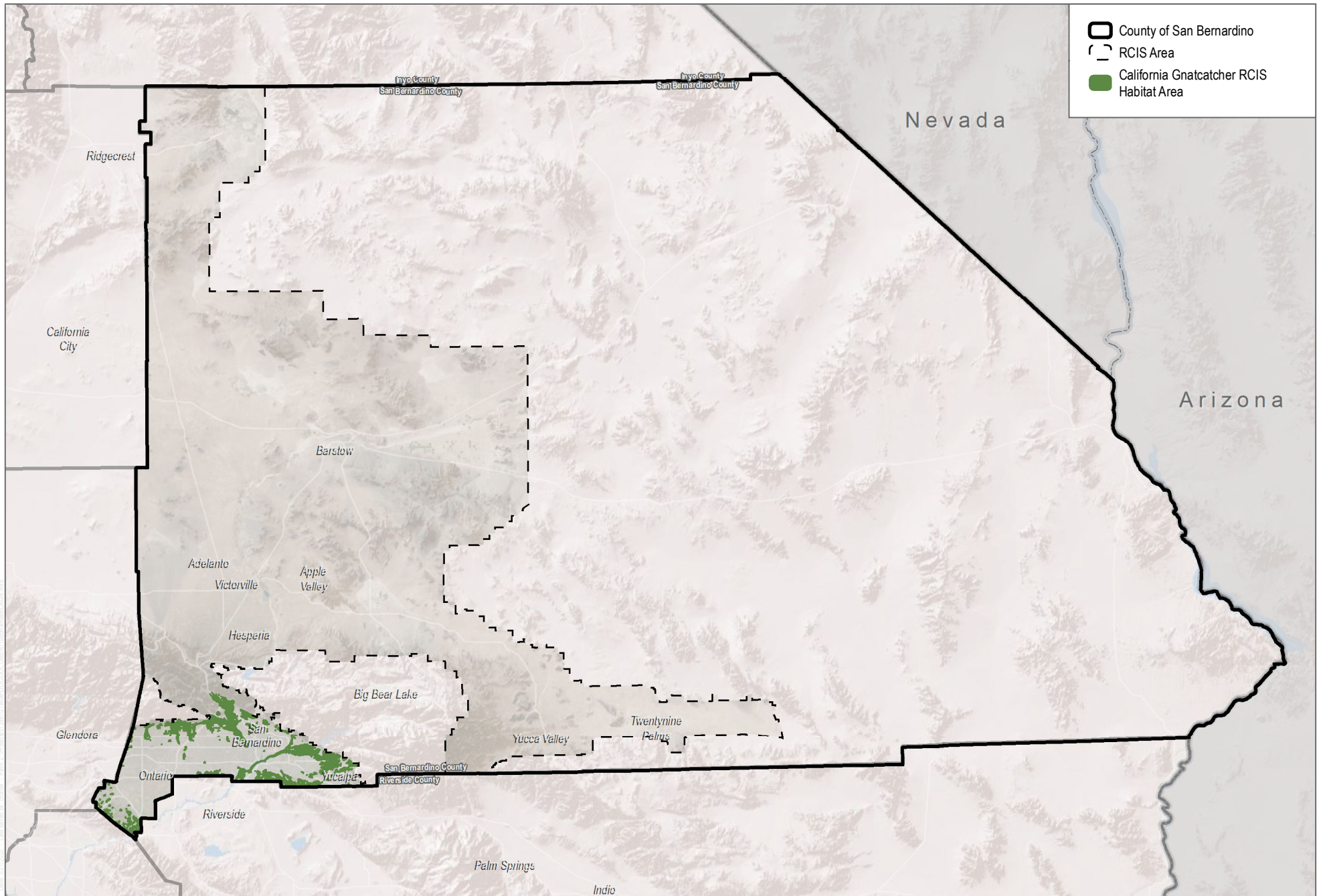
Additionally, pressures and stressors on other conservation elements (i.e., scrub vegetation communities and habitat connectivity and wildlife movement) include climate change, land uses and land use changes, pollutants, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities, USDA Ecoregions (see Appendix D)

FIGURE 1

California Gnatcatcher RCIS Habitat Area

San Bernardino County RCIS



BIRDS

Golden Eagle (*Aquila chrysaetos*)

Habitat Group: Desert Scrub; Grassland; Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland

Legal Status

State: CDFW Fully Protected; CDFW Watch List; California Department of Forestry and Fire Protection Sensitive

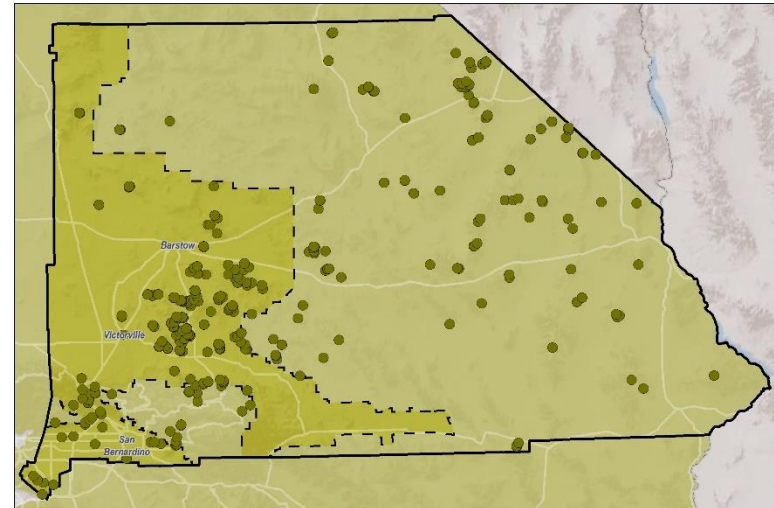
Federal: USFWS Birds of Conservation Concern; BLM Sensitive

Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: Although the golden eagle occurs in a wide range of habitats throughout North America, it is more common in the Western United States, from North Dakota south to Texas and west to the Pacific Ocean.^[1,2] This species occurs around open spaces (used for hunting) and cliffs or areas with trees (used for nesting).^[1] Generally, paired individuals in the western United States are resident and those in the northern portion of their western range migrate south for the winter.^[1,3]

RCIS Distribution: A total of 156 occurrences have been recorded in the West Desert region, particularly in the Granite Mountains area south of Barstow; however, these records include multiple alternative nest site locations that may be used by single pairs.^[4] Additionally, a total of 14 occurrences of this species are located across in the Mountain region and a total of 19 occurrences of this species have been recorded throughout in the Valley region, particularly near Chino Hills State Park (see inset map).^[4]



Seasonal Periods for Golden Eagle ^[1,4]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	✓	✓	✓	✓	✓	✓	✓	✓	—	—	—	—
Migration*	—	✓	✓	✓	—	—	—	—	✓	✓	✓	✓

* Year-round resident in southern California

Habitat Requirements: This species inhabits open and semi-open areas at elevations ranging from sea level to 3,630 meters (11,909 feet) in elevation.^[1,3] This species may be found in a variety of habitats including tundra, shrublands, grasslands, woodlands, brushlands, coniferous forests, farmlands, and riparian habitats.^[1,3]

Breeding: Typically, suitable breeding habitat consists of cliffs and large trees in open areas.^[1,5]

Foraging: This species is carnivorous and typically hunts medium-sized mammals such as hares, rabbits, and ground squirrels; and occasionally takes both smaller and larger prey.^[1]

Reproduction: In Southern California, golden eagle pairs begin constructing nests (large platforms of sticks, twigs, and vegetation) in fall and continue through the winter. Resident pairs add material to nests year round and are known to re-use or maintain alternative nesting sites. Nest construction usually begins between 1 to 3 months before egg laying. Both males and females construct nests, incubate between 1 to 3 eggs, and care for young. This species only has one brood per season but may re-nest following an unsuccessful attempt. Young may leave the nest as early as 45 days after hatching.^[1,3]

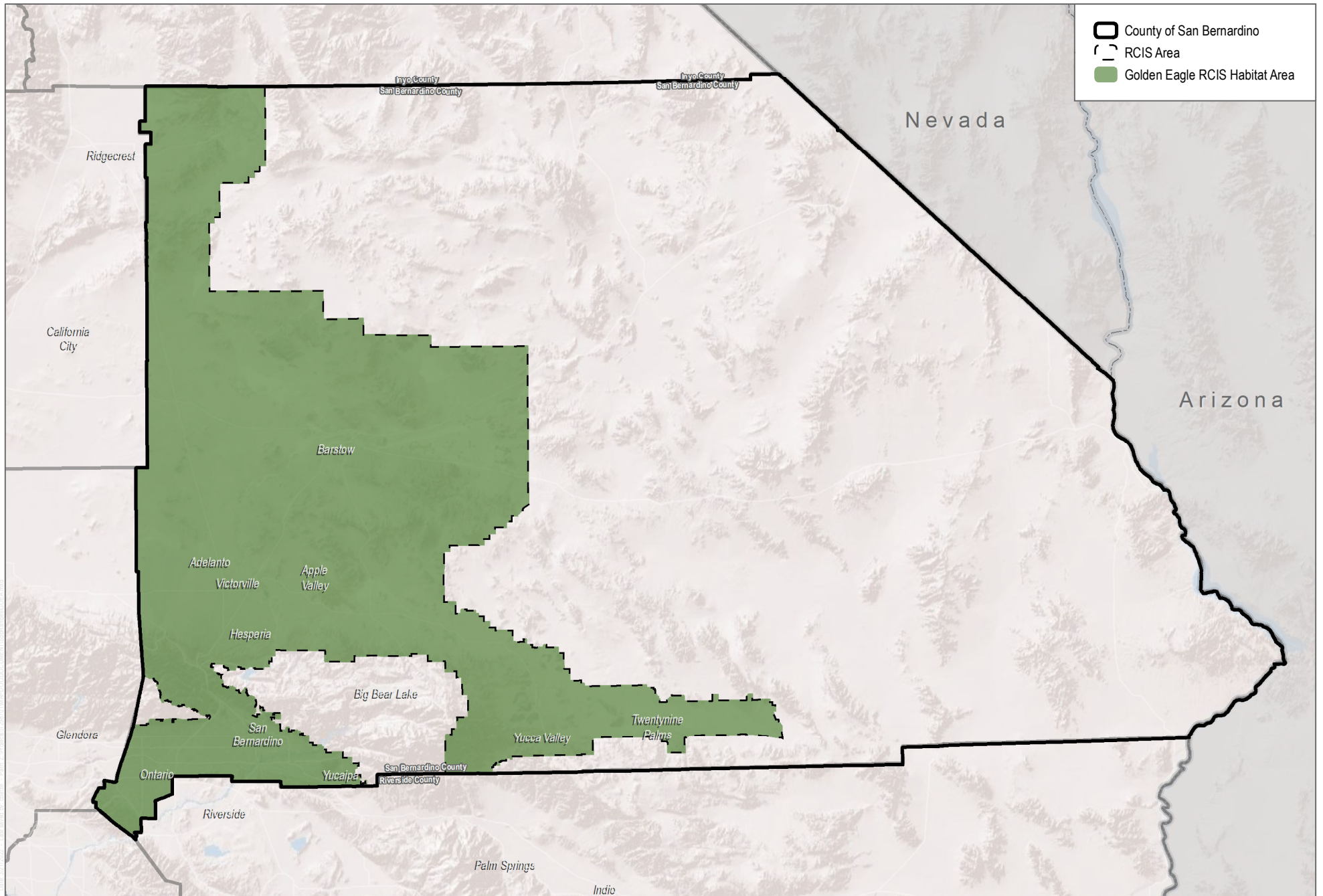
Pressures and Stressors: Primary population pressures and stressors include mortality from human activity. Over 75% of recorded deaths were directly or indirectly attributed to human activities, including accidental trauma (27%; e.g., collisions with vehicles, power lines, or other structures), electrocution (25%), gunshot (15%), and poisoning (6%).^[1,6] Other population stressors include historical shooting and trapping (where depredation of livestock was suspected), incidental trapping and poisoning, Native American harvest and religious uses, ingestion of lead, disturbances and subsequent abandonment at the nest and roosting sites, and degradation of habitat (including wildfires, land conversion and development, and urbanization).^[1]

Additionally, pressures and stressors on other conservation elements (i.e., desert scrub, grassland, scrub, and woodland vegetation communities) include climate change, land uses such as utility and service lines and land use changes, fire and fire suppression. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; CDFW BIOS DS2096 (see Appendix D)

FIGURE 1

Golden Eagle RCIS Habitat Area

San Bernardino County RCIS

BIRDS

Least Bell's Vireo (*Vireo bellii pusillus*)

Habitat Group: Riparian and Wetland

Legal Status

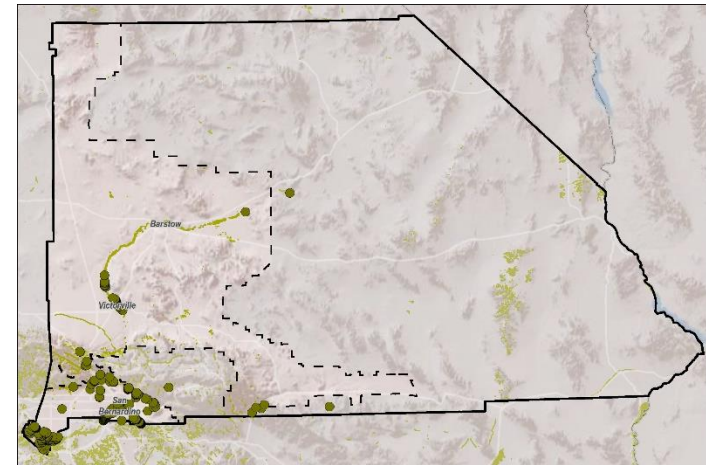
State: Endangered

Federal: Endangered

Critical Habitat: Designated on February 2, 1994^[1]

Recovery Plan: Draft issued by the USFWS on May 6, 1998^[2]

Distribution: The migratory Bell's vireo is a species that breeds in North America. The least Bell's vireo subspecies breeds in riparian habitats in the southwestern United States. Historically, this subspecies was abundant and ranged from Northern California (Red Bluff, Tehama County) south through the Sacramento Valley and Sierra Nevada foothills and into the Coast Ranges from Santa Clara County to Baja California.^[2] This subspecies breeding range has been greatly reduced from historical accounts. Currently, this subspecies' breeding range includes coastal and inland Southern California south to northern Baja California.^[6] This migratory subspecies overwinters along southern Baja California, with some winter records located in southwestern California.^[3]



RCIS Distribution: A total of 460 occurrences have been recorded throughout the Valley region, particularly along the Santa Ana River corridor, San Timoteo Creek, Chino Hills State Park, and foothill tributaries.^[7] In the West Desert region, a total of 53 occurrences have been recorded along the Mojave River corridor, particularly from Mojave Narrows to Helendale, and in Big and Little Morongo Canyons at the edge of the Morongo Basin.^[7] A total of seven occurrences are distributed in the Mountain region, located on both sides of Interstate 15 and in portions of Cajon Wash (see inset map).^[8]

Seasonal Periods for Least Bell's Vireo ^[3,4,5]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	—	—	—	✓	✓	✓	✓	—	—	—	—	—
Migration	—	✓	✓	✓	—	—	—	✓	✓	✓	—	—
Wintering	✓	✓	—	—	—	—	—	—	—	✓	✓	✓

Habitat Requirements: This subspecies is a riparian obligate and restricted to riparian scrub habitats.^[6]

Breeding: Breeding habitat for this subspecies typically includes dense, low, shrubby vegetation in early successional stages in riparian habitat (e.g., willows (*Salix* sp.), mulefat (*Baccharis salicifolia*)).^[6] Understory scrub and density from 0.6–3.0 meters above ground is the most critical structural component of this subspecies habitat.^[8, 10]

Foraging: This subspecies is insectivorous and forages throughout all layers of the canopies.^[6]

Reproduction: Males arrive at the breeding sites between mid-March to mid-April.^[6] Females arrive 1 to 2 weeks after males.^[6] Nest building, incubation, and care of young is conducted by both male and females. The pair incubates 3 to 4 eggs for an average of 14 days, and nestlings fledge between 10 to 12 days after hatching.^[6] Least Bell's vireos will readily re-nest following an unsuccessful attempt and may also re-nest after a successful attempt.^[6]

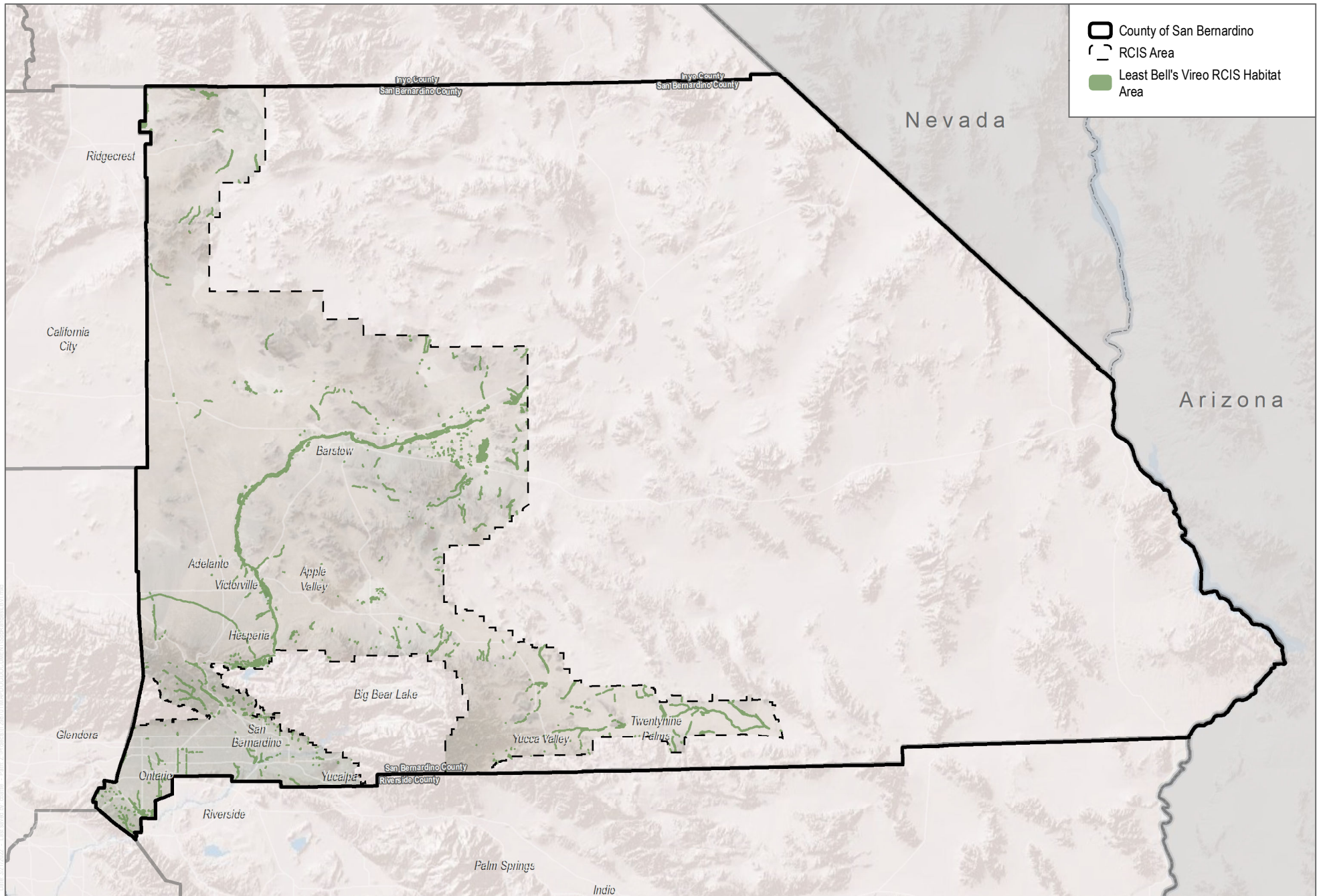
Pressures and Stressors: A major threat to least Bell's vireo populations and riparian habitats include the loss of habitat due to agricultural practices, urbanization, and exotic/invasive plant species.^[8] Land use patterns along rivers, streams, and other riparian corridors may have a strong influence on vireo presence and/or habitat suitability during the breeding season.^[6] Habitat modification (e.g., reservoir water releases into low-lying suitable riparian habitat) may also affect vireo breeding populations.^[6] Predation on nests and adults due to predator releases or introduction of non-native predators (e.g., Argentine ants [*Linepithema humile*], domestic cats) near fragmented or urbanized environments may pose pressures on this species' population.^[8] In addition, nest parasitism by the brown-headed cowbird (*Molothrus ater*) reduces the nesting success of this subspecies.^[11] Annual productivity of least Bell's vireos has been found to increase by one young for each 30% reduction in parasitism frequency.^[11]

Additionally, pressures and stressors on other conservation elements (i.e., riparian vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities (see Appendix D)

FIGURE 1

Least Bell's Vireo RCIS Habitat Area

San Bernardino County RCIS

BIRDS

LeConte's Thrasher (*Toxostoma lecontei*)

Habitat Group: Desert Scrub; Transitional Scrub, Chaparral, and Woodland

Legal Status

State: CDFW Species of Special Concern (San Joaquin Population)

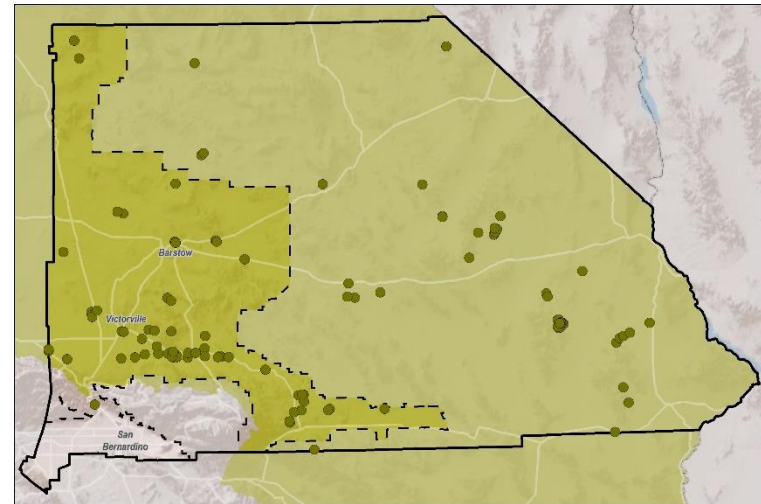
Federal: BLM Sensitive; USFWS Birds of Conservation Concern

Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: The LeConte's thrasher is a year-round permanent resident in deserts in the southwestern United States including southern Nevada, western Arizona, and Southern California. In Southern California this species is found from southern Mono County to the Mexico border, including the San Joaquin Valley, and the Mojave and Colorado deserts. This species has a patchy distribution within its range.^[1,2]

RCIS Distribution: The species is known from 71 occurrence records scattered throughout the West Desert region, including the Victor Valley and foothills, Lucerne Valley and foothills, the Morongo Basin, and scattered locations near Barstow, Kramer Junction, and Ridgecrest.^[3] Additionally, there is one occurrence record from the Mountain region located with Cajon Pass in close proximity to Interstate 15 (see inset map).^[3]



Seasonal Periods for LeConte's Thrasher ^[2]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	—	✓	✓	✓	✓	✓	—	—	—	—	—	—
Wintering	✓	—	—	—	—	—	✓	✓	✓	✓	✓	✓

Habitat Requirements: This species typically occurs in open desert wash, desert scrub, alkali desert scrub, desert succulent shrub, and Joshua tree (*Yucca brevifolia*) habitats with scattered trees.^[1] This species prefers gently rolling to well-drained slopes with bare ground or sparse grasses.^[4]

Breeding: Suitable breeding habitat consists of dense, spiny shrubs or densely branched cactus in desert wash habitat. This species may also nest in a variety of shrubs, small trees, and yucca.^[1]

Foraging: This species is insectivorous and consumes insects found in leaf litter under desert shrubs.^[2]

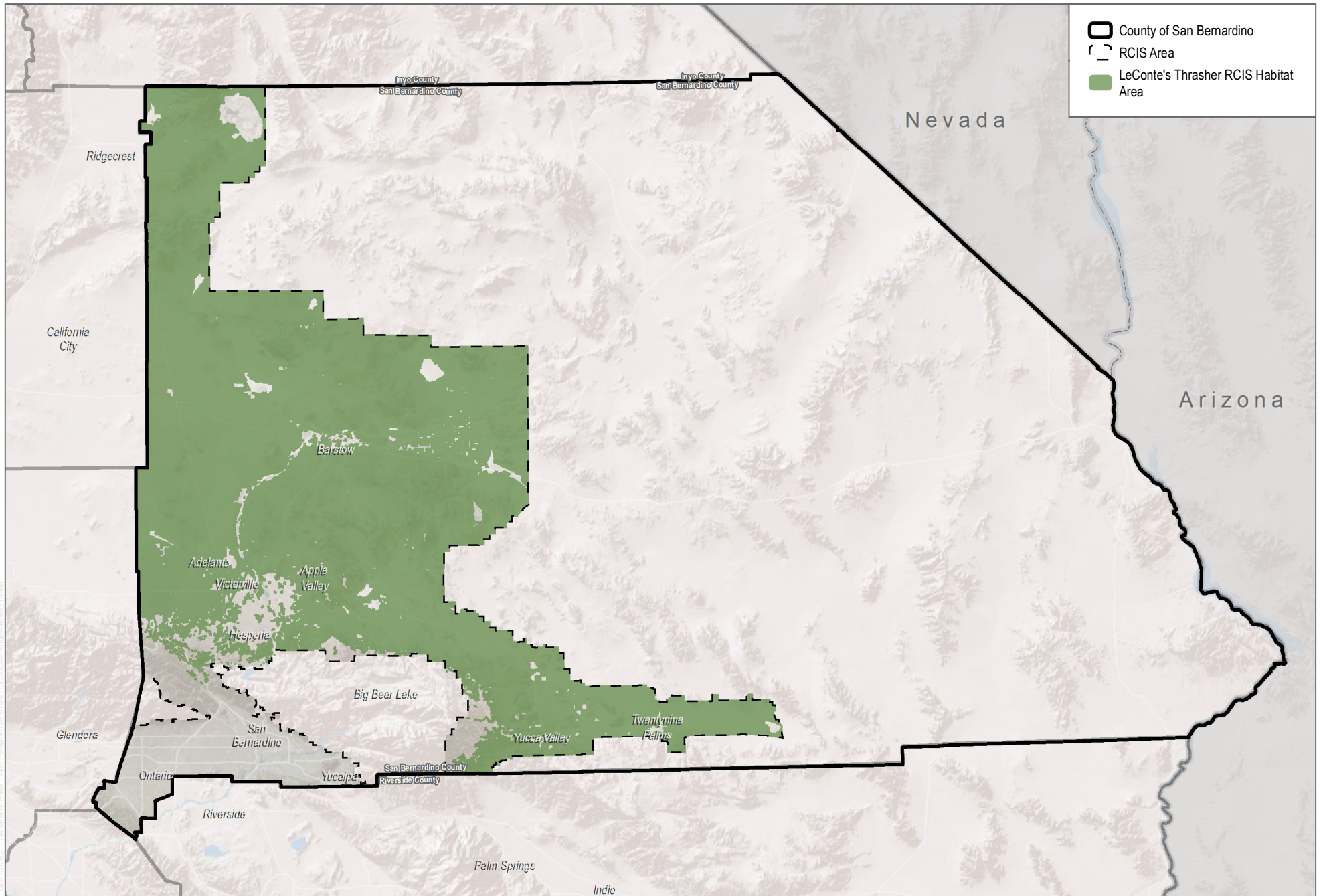
Reproduction: Pair formation has been recorded in all months in this species.^[2] Nest building may begin as early as mid- or late-January in the southern part of its range.^[2] Both males and females construct the nest, incubate between 2 to 5 eggs, and care for young that fledge around 15 days after hatching.^[2]

Pressures and Stressors: Primary population pressures and stressors include habitat loss and degradation.^[2,4] In addition, this species is vulnerable to human disturbance, shooting, trapping, pesticides, and loss of suitable habitat by development and agricultural expansion.^[1,2] Conversion of suitable habitat has also resulted in population fragmentation.^[4] Additional threats include habitat destruction from all-terrain vehicles, which remove or reduce litter around shrubs and can damage vegetation. Since water is not essential to this species diet, this species does not utilize irrigated fields, watered lawns, or other landscapes that result an unnatural increase in water to the landscape.^[2] Populations within the San Joaquin Valley, in particular, are vulnerable to becoming further isolated or severely reduced due to these population pressures and stressors.^[4]

Additionally, pressures and stressors on other conservation elements (i.e., desert scrub and woodland vegetation communities) include climate change, land uses and land use changes, recreational activities, and fire and fire suppression. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; CDFW BIOS DS2286 (see Appendix D)

FIGURE 1

LeConte's Thrasher RCIS Habitat Area

San Bernardino County RCIS

BIRDS

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

Habitat Group: Riparian and Wetland

Legal Status

State: Endangered

Federal: Endangered

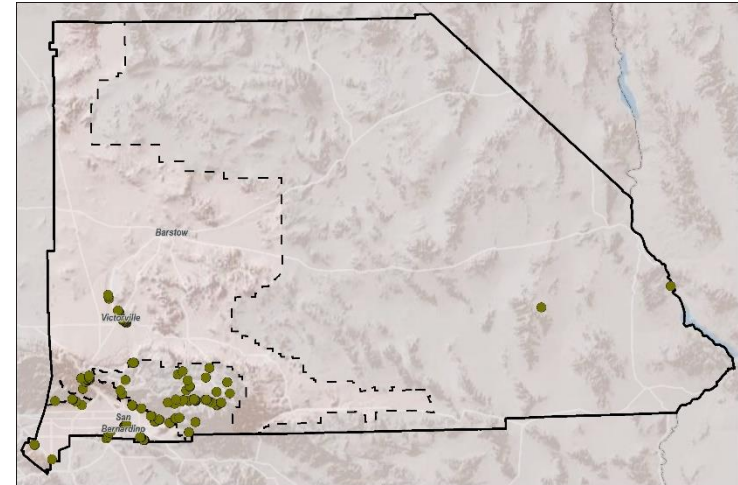
Critical Habitat: Originally designated on October 19, 2005^[1]; USFWS issued revised critical habitat on January 3, 2013^[2]

Recovery Plan: Issued by the USFWS on August 30, 2002^[3]

Distribution: The southwestern willow flycatcher subspecies breeding range includes riparian habitats in the southern one-third of California, southern Nevada, Arizona, New Mexico, western Texas, and northern Mexico.^[3,4] In California, this species' range extends as far north as the Santa Ynez River, Kern River, and the town of Independence on the Owens River.^[5] Outside of California, historical breeding has occurred in southern Nevada, southern Utah, Arizona, New Mexico, and southwestern Colorado.^[4,6] No other subspecies of willow flycatchers are known to nest in the area. Additional subspecies that may migrate through include little willow flycatchers (*E. t. brewsteri*) and Great Basin willow flycatcher (*E. t. adastus*).

RCIS Distribution: A total of 36 occurrences of this subspecies have been recorded in the Valley region along the Santa Ana River corridor, San Timoteo Creek, Chino Hills State Park, and foothill tributaries.^[7] A total of 6 occurrences of this subspecies have been recorded in the West Desert subarea, all along the Mojave River corridor from Mojave Narrows to just north of Oro Grande.^[7] The subspecies also occurs the Mountain region from 9 occurrences within Cajon Pass.^[8] This species is also known to occur within the Mojave River south of the Mojave Forks dam, just outside the RCIS Area.^[7]

Habitat Requirements: This subspecies is restricted to riparian habitats occurring along streams or in meadows.^[4,5]



Seasonal Periods for Southwestern Willow Flycatcher ^[3,8]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Arrival	—	—	—	—	✓	✓	—	—	—	—	—	—
Breeding	—	—	—	—	✓	✓	✓	✓	—	—	—	—
Fledges	—	—	—	—	—	✓	✓	—	—	—	—	—
Migration South	—	—	—	—	—	—	—	✓	✓	—	—	—

Breeding: Suitable breeding habitat consists of a dense mid-story and understory and can also include a dense canopy. However, suitable vegetation is not uniformly dense and typically includes interspersed patches of open habitat. Typical plant species associated with their habitat includes willows (*Salix* spp.), mulefat (*Baccharis salicifolia*), stinging nettle (*Urtica dioica*), cottonwood (*Populus fremontii*), tamarisk (*Tamarix* spp.), and Russian olive (*Elaeagnus angustifolia*).^[8]

Foraging: This species is insectivorous and forages at the edges or internal openings of their territory, above the canopy or over open water.^[3]

Reproduction: Males arrive at the breeding sites between early May and early June.^[3] Females arrive 1 to 2 weeks after males.^[8] Nest building is typically conducted by females and begins approximately 2 weeks after pair formation. The female incubates 3 to 4 eggs^[9] for an average of 12 to 13 days and provides the majority of care for the young. The nestlings fledge between 12 and 15 days after hatching.^[4] Southwestern willow flycatcher will typically re-nest following an unsuccessful attempt and less frequently may re-nest following a successful attempt.^[3]

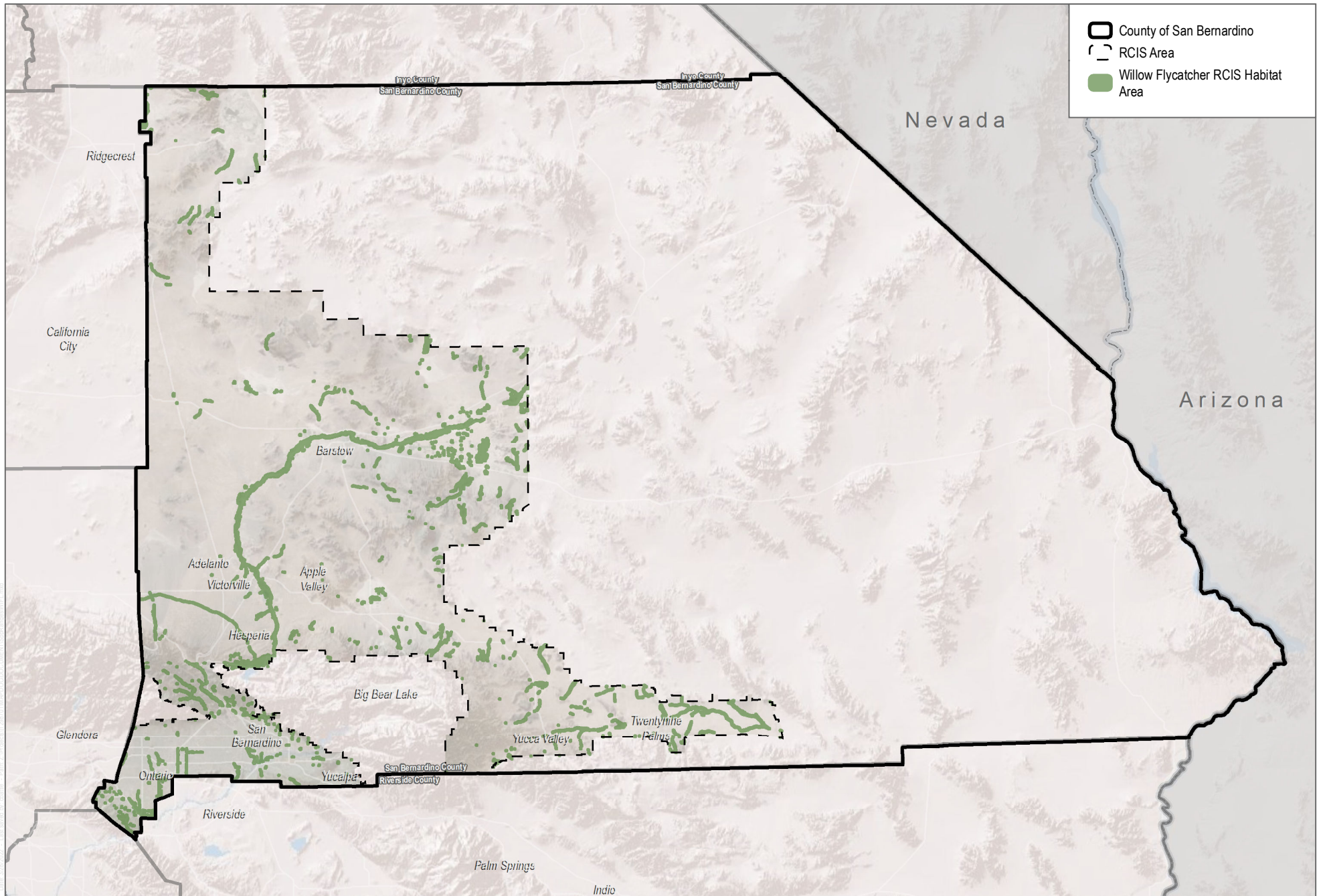
Pressures and Stressors: Primary population threats include loss, modification, and fragmentation of suitable riparian habitat.^[4] In general, increased human populations and development have resulted in a decline of riparian habitat, a habitat type that is naturally rare, patchy, and dynamic in the Southwest due to the varying hydrologic conditions of the region. The specific primary causes for loss and modification of riparian habitats have been dams and reservoirs, water diversion and groundwater pumping, channelization, flood control, agriculture, recreation, and urbanization.^[4]

Additionally, pressures and stressors on other conservation elements (i.e., riparian vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities (see Appendix D)

FIGURE 1

Willow Flycatcher RCIS Habitat Area

San Bernardino County RCIS



BIRDS

Swainson’s Hawk (*Buteo swainsoni*)

Habitat Group: Riparian and Wetland; Transitional Scrub, Chaparral, and Woodland; Developed and Agriculture

Legal Status

State: Threatened

Federal: USFWS Birds of Conservation Concern; BLM Sensitive

Critical Habitat: Not applicable

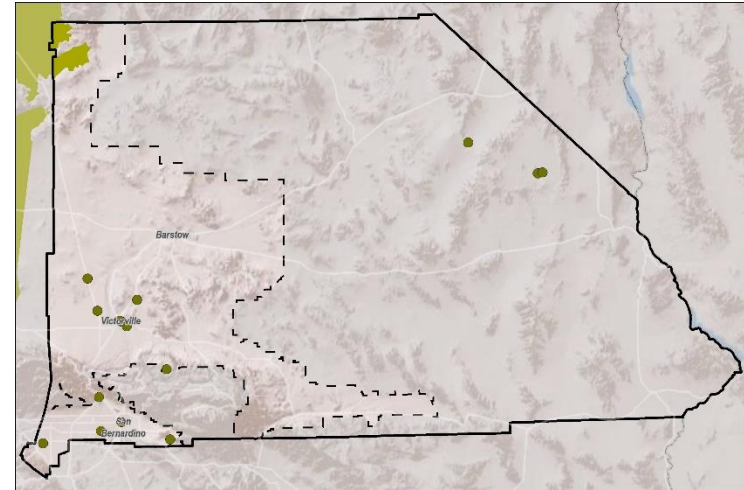
Recovery Plan: Not applicable

Distribution: The Swainson’s hawk breeds widely across North America, generally from northern Mexico to central Canada and the interior valleys of British Columbia.^[2] In the United States, this species breeds from the Great Plains west to the Great Basin and south into the southwestern deserts of New Mexico and eastern Arizona. This species also extends east to Iowa, Minnesota, and Missouri. In California, this species breeds throughout the Central Valley, western Mojave Desert, Owens Valley, and far northeastern portion of California.^[1,3] This species is migratory and mostly winters in Central and South America.^[1] Historically, this species bred in coastal Southern California, the central Coast Ranges, and the Mojave Desert; the species is now considered to be extirpated from these areas.^[1]

RCIS Distribution: A total of seven occurrences for Swainson’s hawk have been recorded in the West Desert region along the Mojave River corridor, US Route 395 corridor, and the National Forest boundary south of Lucerne Valley.^[4] Additionally, a total of five occurrences have been recorded in various locations within the Valley region (see inset map).

Habitat Requirements: This species is primarily associated with grasslands, but also found in sparse shrubland and small open woodlands.^[1]

Breeding: Suitable breeding habitat includes grasslands, shrub-steppe, desert, and agricultural areas.^[1] Swainson’s hawks generally nest in isolated trees, narrow strands of vegetation, or along riparian corridors within grassland, shrubland, or agricultural



Seasonal Periods for Swainson’s Hawk ^[1,1]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding*	—	—	—	✓	✓	✓	✓	✓	—	—	—	—
Migration	—	✓	✓	—	—	—	—	—	✓	✓	—	—
Wintering	✓	✓	—	—	—	—	—	—	—	—	✓	✓

* Central Valley breeders typically arrive earlier than other populations.

landscapes.^[5] In the desert, this species is known to use Joshua trees (*Yucca brevifolia*) and other roadside or wind row ornamental trees as suitable nesting sites.^[5] In California overall, approximately 95% of pairs breed in the Central Valley, with over 90% of breeding occurring between Modesto and Sacramento.^[6]

Foraging: Swainson's hawk forages in open grasslands, shrub steppe, and agricultural areas.^[1] In California, this species primarily preys upon small rodents but also consumes birds, snakes, and insects (particularly grasshoppers and crickets).^[7] In the western Mojave, this species chiefly preys upon Botta's pocket gopher (*Thomomys bottae*) in agricultural areas, but it also consumes a wider variety of prey in open desert grasslands and scrub.^[5]

Reproduction: Individuals arrive at breeding grounds around early March in central California. Both the male and female construct or refurbish an old nest. Female incubates between 1 to 4 eggs, and young fledge around 43 days after hatching.^[1]

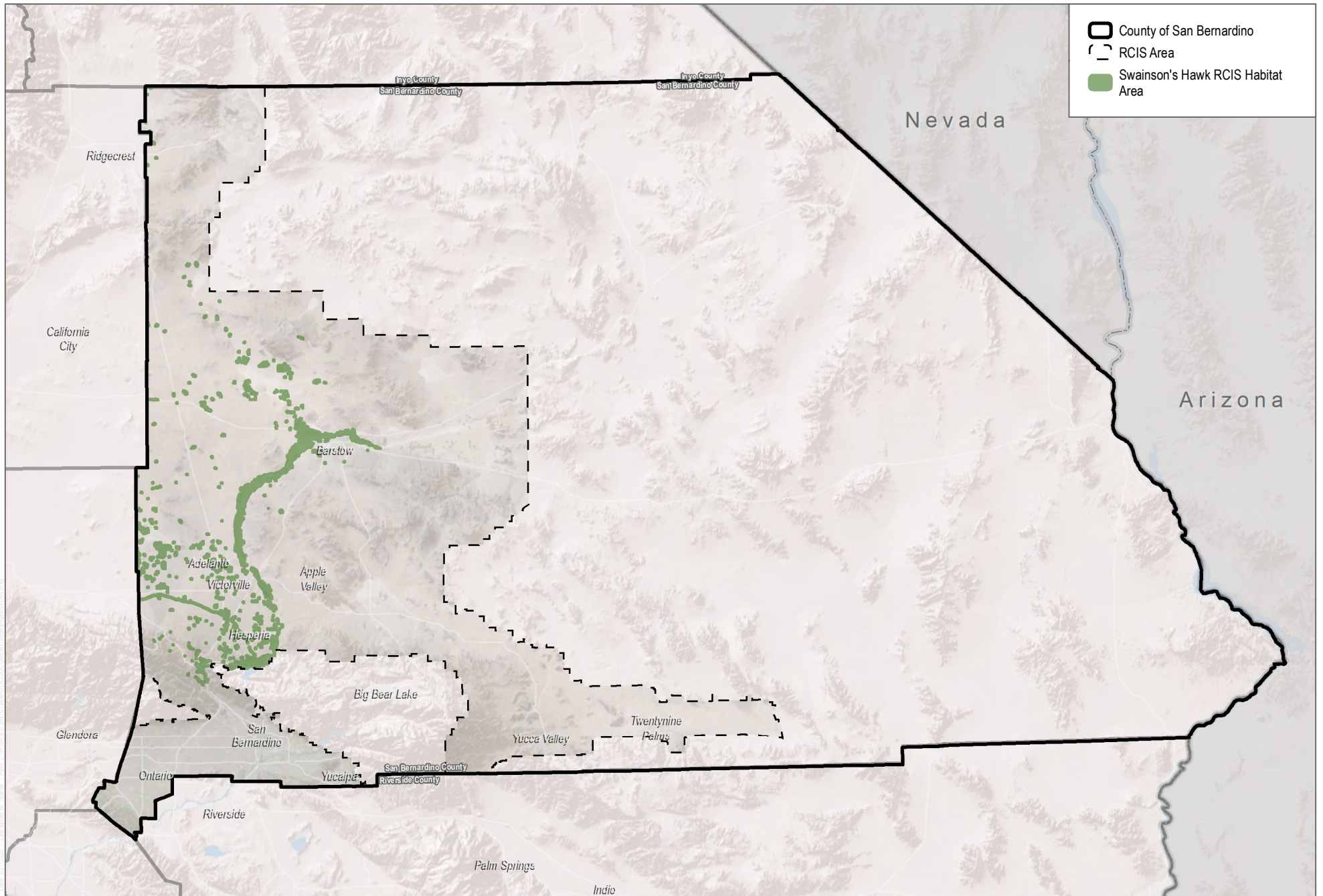
Pressures and Stressors: Primary population pressures and stressors include loss of foraging and nesting habitat to residential development and land conversion to crops not suitable for foraging (e.g., rice, cotton, orchards, vineyards).^[8] These habitat losses include the removal of riparian vegetation and tree removal due to urban development and land conversion.^[9] Impacts from development of renewable energy (e.g., solar and wind) in the Central Valley is also a stressor on this species' population.^[5] Poisoning by insecticides on wintering grounds has also contributed to the death of tens of thousands of Swainson's hawks.^[10,11]

Additionally, pressures and stressors on other conservation elements (i.e., desert scrub and woodland vegetation communities and agricultural land covers) include climate change, land uses and land use changes, recreational activities, and fire and fire suppression. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; CBI Databasin (see Appendix D)

FIGURE 1

Swainson's Hawk RCIS Habitat Area

San Bernardino County RCIS

BIRDS

Tricolored Blackbird (*Agelaius tricolor*)

Habitat Group: Grassland; Riparian and Wetland; Developed and Agriculture

Legal Status

State: Threatened; CDFW Species of Special Concern

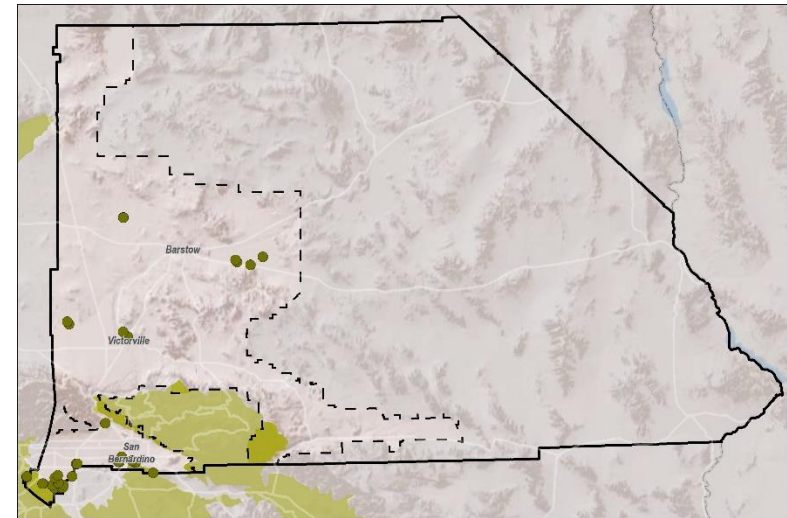
Federal: USFWS Birds of Conservation Concern; BLM Sensitive

Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: The tricolored blackbird occurs in the western United States with more than 99% of the population occurring within California.^[1] Scattered populations also occur within Oregon, central Washington, at one site in western Nevada, and locally in northwestern Baja California. In California, this species is restricted to the central valley and surrounding foothills; coastal and inland locations in southern and central California; and scattered locations in Northern California. Tricolored blackbirds are known to winter throughout the Sacramento Valley where they are mostly associated with livestock. This species current range is similar to its historical range; however, historically the species was significantly more abundant throughout its range.^[1]

RCIS Distribution: A total of 25 occurrence records have been recorded in the Valley region, primarily in the Prado Basin area near Chino, along the Santa Ana River corridor, and the Loma Linda hills.^[2] A total of 9 occurrence records,^[2] including 5 locations consisting of 466 individuals,^[3] have been recorded in the West Desert region, including along the Mojave River corridor, in agricultural fields near El Mirage and the agricultural lands near Newberry Springs (see inset map).



Seasonal Periods for Tricolored Blackbird												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Colony Formation	—	—	✓	✓	✓	—	—	—	—	—	—	—
Breeding	—	—	✓	✓	✓	✓	✓	—	—	—	—	—
Migration	—	—	✓	✓	✓	✓	✓	✓	✓	✓	—	—

Habitat Requirements: This species typically nests in marshes and wetlands; however, it will also use weedy/fallow fields, certain agricultural crops, and uplands shrubs for nesting. In the winter this species is known to occur on pastureland, cultivated cropland, and livestock feedstores.^[1]

Breeding: This species breeds in colonies. Suitable colony breeding sites require accessible freshwater, protected nesting locations (e.g., thorny vegetation), and suitable foraging areas. Typically, this species nests in marshes and wetlands, but it may also utilize other vegetation such as willows (*Salix* sp.), thistles, and nettles.^[1,3]

Foraging: This species is an opportunistic forager that forages in shallow flooded fields, crops, annual grasslands, cattle feedlots, and dairies. Tricolored blackbird consumes any locally abundant insects and are known to exploit storage bins of livestock food.^[1]

Reproduction: This species is a strong colonial nesting bird with historically as many as 20,000–30,000 individual nests recorded in marshes of 9 acres or less.^[4,5] Most initial nesting occurs from late March to April with breeding completed by late July to early August. Females alone build nests and incubate clutches of 3 to 4 eggs.^[1]

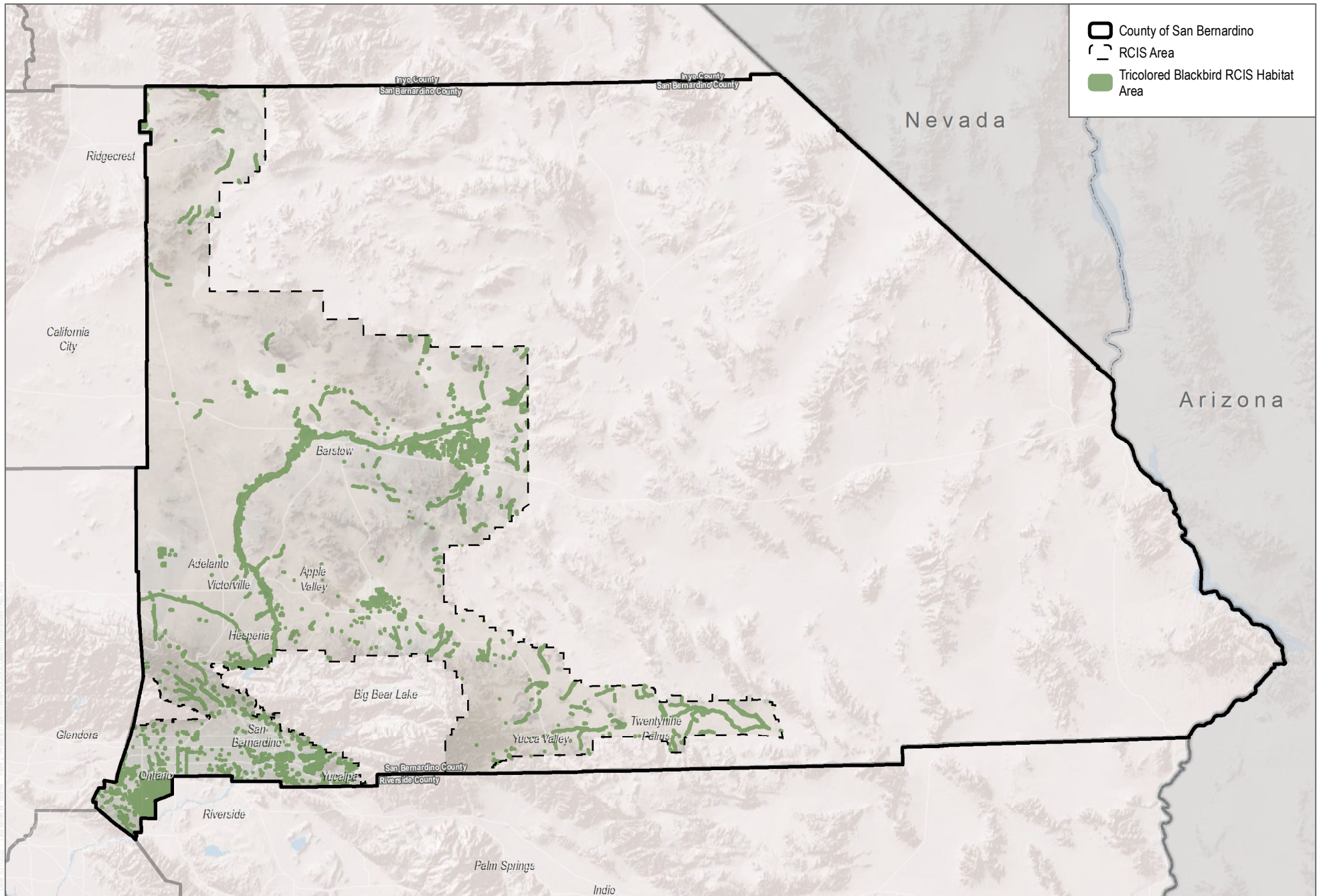
Pressures and Stressors: The greatest population pressures and stressor for this species is the degradation, alteration, and loss of habitat due to human activities.^[1,7] Historically, nearly all suitable grasslands, marshlands, and riparian woodlands in the Central Valley supported this species. However, most of the Central Valley has been converted to agriculture and urban landscapes. In addition, urbanization in Southern California has reduced suitable habitat and current populations to a few thousand birds. Harvesting and plowing of occupied grain fields have contributed to destruction of nesting colonies.^[1,6,7,8] In addition, spring burning and disking of marshes have reduced the number of suitable breeding sites.^[9,10] Additional stressors include shooting, trapping, poisoning, the use of pesticides or other toxins, and nest abandonment due to human entry into colonies.^[1,6]

Additionally, pressures and stressors on other conservation elements (i.e., riparian and wetland vegetation communities, agricultural land covers, and hydrological processes and features) include climate change, land uses land use changes, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities (see Appendix D)

FIGURE 1

Tricolored Blackbird RCIS Habitat Area

San Bernardino County RCIS



0 10 20 Miles

BIRDS

Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)

Habitat Group: Riparian and Wetland

Legal Status

State: Endangered

Federal: Threatened; BLM Sensitive; USFS Sensitive; USFWS Birds of Conservation Concern

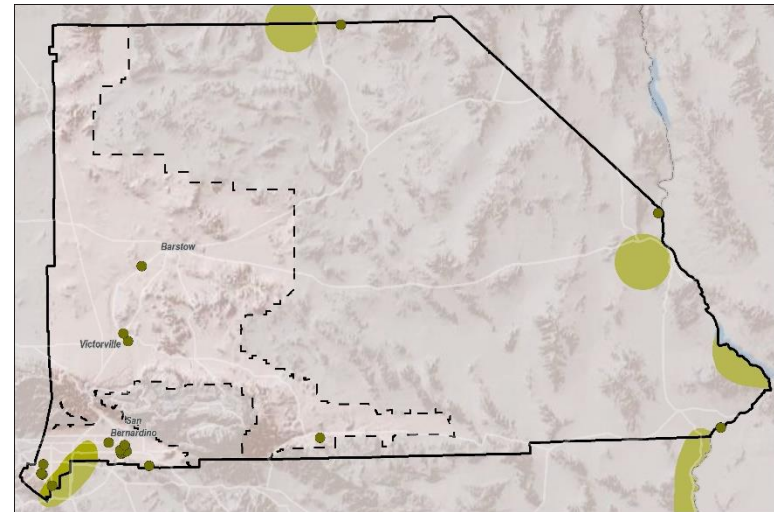
Critical Habitat: Designated August 15, 2014^[1]

Recovery Plan: Not applicable

Distribution: Currently, this subspecies' breeding range is generally located west of the crest of the Rocky Mountains from southwestern British Columbia, Washington, Utah, Colorado, Texas, and into Mexico.^[2,3] This subspecies breeds along river valleys in southern and western New Mexico and central and southern Arizona. The western yellow-billed cuckoo subspecies is a rare summer resident found at locally scattered locations in California.^[4] In California, this species has been found breeding at isolated sites in the Sacramento Valley and along the Kern and Colorado rivers.^[3] This species winters almost exclusively in South America east of the Andes.^[3] Historically, in California, this species breeding range was widespread and locally common.^[5]

RCIS Distribution: A total of 14 occurrences have been recorded in the Valley region along the Santa Ana River corridor, San Timoteo Creek, and in the Prado Basin area around Chino; in the West Desert region, the species is known from only 4 occurrences along the Mojave River corridor and near the town of Joshua Tree (see inset map).^[6]

Habitat Requirements: This subspecies is found in valley foothills and desert riparian habitats.^[4] The western yellow-billed cuckoo prefers open woodlands with low, dense, scrubby vegetation that is often associated with water ways.^[3]



Seasonal Periods for Western Yellow-Billed Cuckoo ^[3,4,8]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	—	—	—	—	✓*	✓	✓	✓	✓	—	—	—
Migration	—	—	—	—	—	—	—	—	✓	✓	—	—

* Breeding in late May is rare.

Breeding: Suitable breeding habitat consists of dense, wide riparian woodlands and forest with well-developed understories, such as cottonwood-willow riparian habitats.^[3,7]

Foraging: The western yellow-billed cuckoo is omnivorous and primarily consumes large insects, such as caterpillars, grasshoppers, and crickets.^[3] However, this subspecies will occasionally eat small amphibians and reptiles, eggs, young birds, and fruit and seeds.^[3]

Reproduction: Pair formation typically occurs in mid-June or later in the western populations of yellow-billed cuckoo with peak breeding occurring mid-July to early August. Both males and females construct nests, incubate between 1 to 5 eggs, and care for the young. In this subspecies, cooperative breeding may occur on occasion. Young fledge the nest between 7 to 9 days after hatching.^[3]

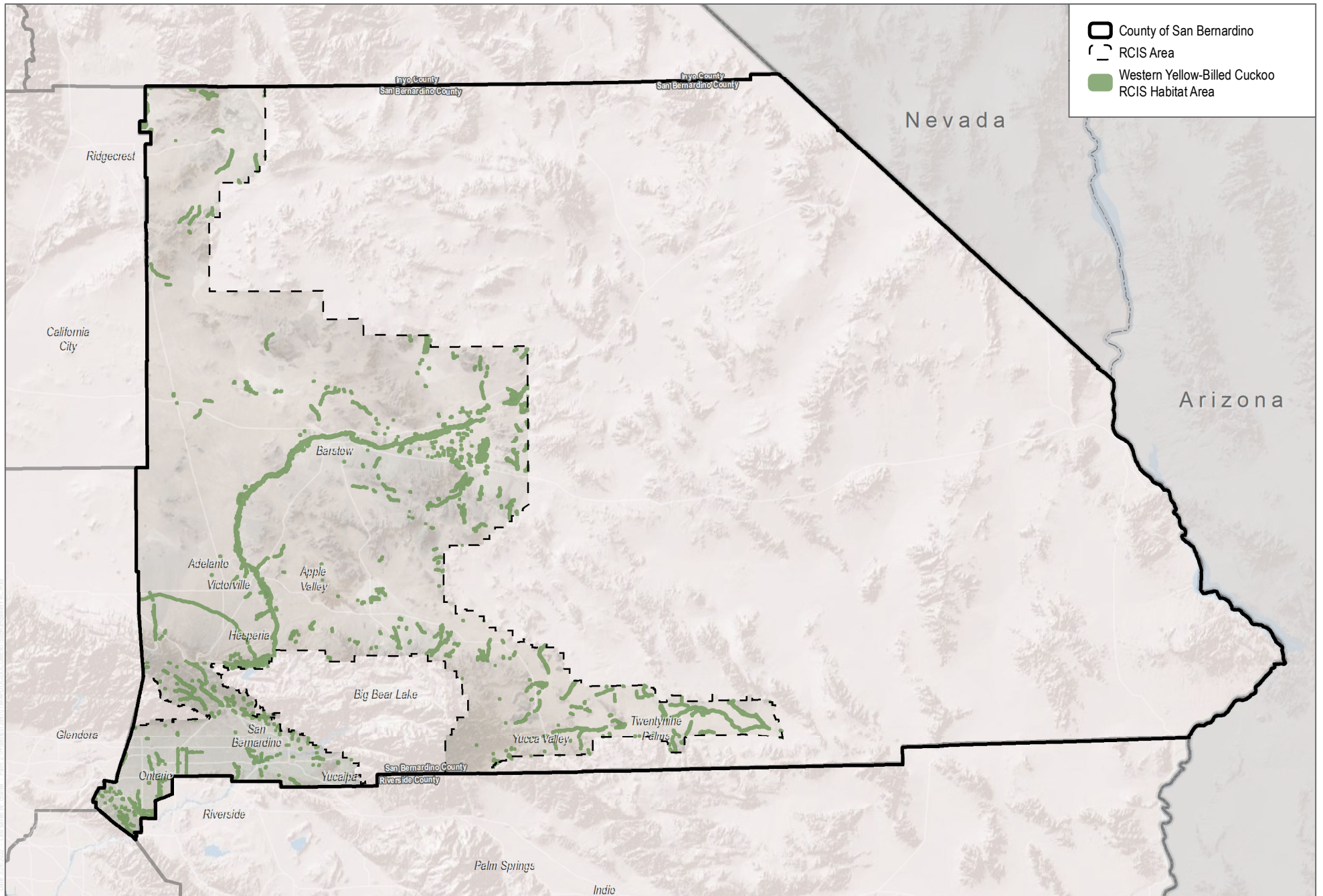
Pressures and Stressors: Primary population pressures and stressors include fragmentation and degradation of riparian woodlands due to agriculture and urban development.^[9] Human modification of natural hydrological processes and waterways (e.g., damming rivers, diversion of surface/groundwater; flood control methods, construction along rivers, agriculture/grazing activities, introduction of invasive species) add pressure to this subspecies population.^[3,10] The introduction of non-native species into riparian habitats may also reduce the suitable nesting substrates in the region.^[10] In addition, pesticide use may directly cause mortality from toxicity, or indirectly lead to mortality through changes in individual's behavior.^[11]

Additionally, pressures and stressors on other conservation elements (i.e., riparian vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities (see Appendix D)

FIGURE 1

Western Yellow-Billed Cuckoo RCIS Habitat Area

San Bernardino County RCIS

BIRDS

White-Tailed Kite (*Elanus leucurus*)

Habitat Group: Riparian and Wetland; Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland; Grassland

Legal Status

State: CDFW Fully Protected

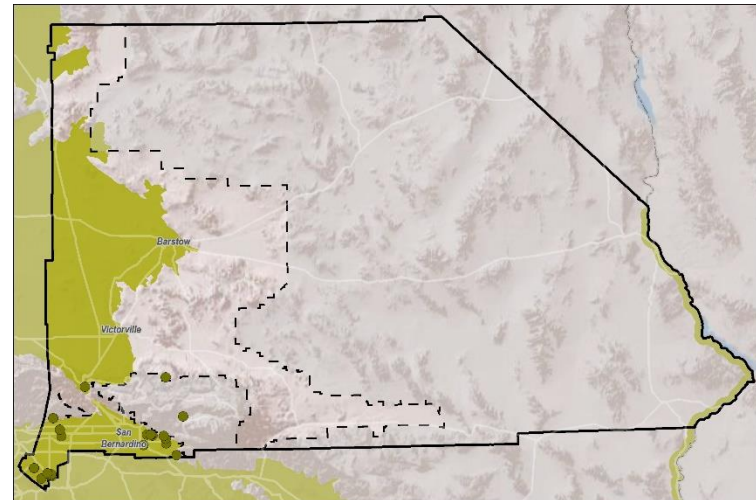
Federal: BLM Sensitive

Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: The white-tailed kite occurs in California, Texas, Florida, Oregon, Washington, and central portions of North America.^[2,3] However, the center of breeding activity in the United States occurs in California in nearly all areas up to the western Sierra Nevada foothills and southwest deserts.^[1] Breeding is common in the Central Valley and along the coast of California.^[1] Although the white-tailed kite is resident throughout its range, this species does disperse during the winter and is observed throughout most of California during the winter.^[1,4]

RCIS Distribution: A total of 18 occurrences have been recorded in the Valley region in the Chino Hills State Park and Prado Basin area, in the Upper Santa Ana River wash area, and in foothill areas around Rancho Cucamonga and Yucaipa.^[5] Additionally, 1 occurrence has been recorded within the Mountain region near Cajon Wash, and 1 occurrence is located within the West Desert region in Lucerne Valley foothills (see inset map).^[5]



Seasonal Periods for White-tailed Kite ^[1,1]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	—	✓	✓	✓	✓	✓	✓	✓	—	—	—	—
Post-breeding dispersal	—	—	—	—	—	—	✓	✓	✓	✓	—	—
Communal night roosting	✓	✓	—	—	—	—	✓	✓	✓	✓	✓	✓

Habitat Requirements: This species occurs in a variety of habitats, including grasslands, agriculture, savannahs, wetlands, and oak woodlands.^[1]

Breeding: Suitable breeding habitat includes open areas adjacent to suitable nesting trees.^[1] Tree species used for nesting is extremely variable and may include small shrubs (less than 3 meters tall) to tall trees (over 50 meters tall).^[1,6] Trees used for nesting range from single isolated to large clusters.^[1]

Foraging: This species consumes small mammals and prefers ungrazed grasslands, wetlands dominated by grasses, and fence rows/irrigation ditches next to grazed lands.^[7]

Reproduction: Although pairs are observed together year round, most observations of pairs occur December through August.^[1] Both males and females construct nests over a few weeks from January to August.^[1] The female alone incubates typically 4 eggs for 30 to 32 days while the male guards the nests and hunts for the pair. Young fledge the nest 4 to 5 weeks after hatching.^[1,8] This species is also known to communally roost in the summer, fall, and winter. Roosting typically occurs in small stands of trees but has also been documented in open fields and orchards.^[9]

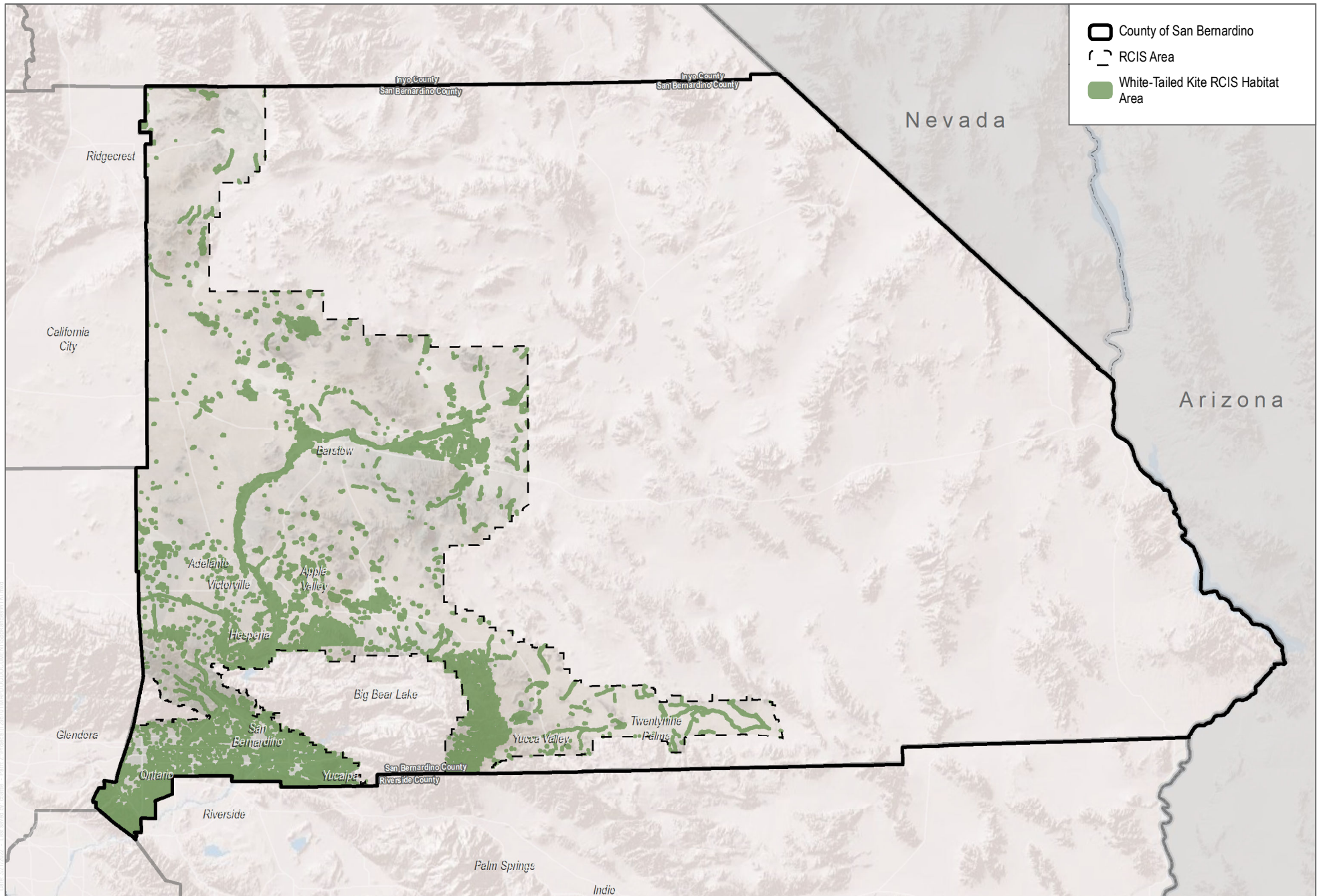
Pressures and Stressors: Pressures and stressors include degradation and loss of nesting trees and foraging habitat and a reduction in prey availability.^[1,10] Factors that may affect population trends include conversion of natural/agricultural lands to urban/commercial uses; farming techniques that leave little vegetative areas for prey; competition for nesting trees; long-term drought; and disturbance at nests.^[1]

Additionally, pressures and stressors on other conservation elements (i.e., grassland, riparian and wetland, scrub, and woodland vegetation communities and hydrological processes and features) include climate change, land uses and land use changes, pollutants, and fire and fire suppression. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities, USDA Ecoregions (see Appendix D)

FIGURE 1

White-Tailed Kite RCIS Habitat Area

San Bernardino County RCIS

FISH

Arroyo Chub (*Gila orcuttii*)

Habitat Group: Riparian and Wetland

Legal Status

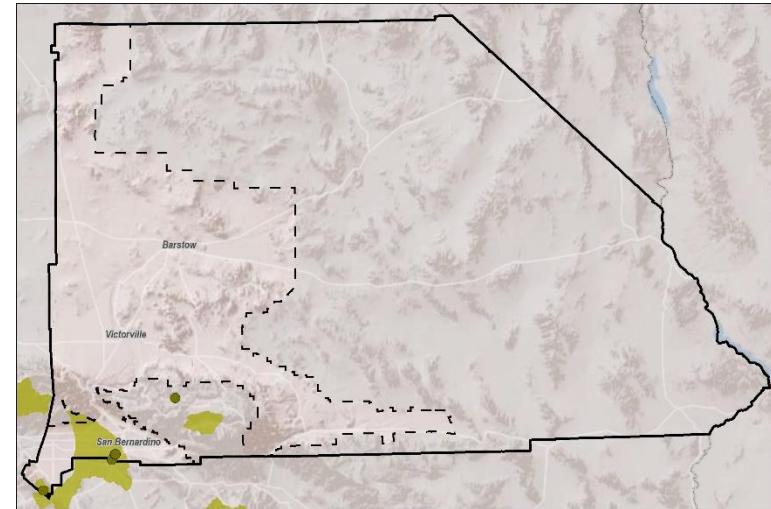
State: CDFW Species of Special Concern

Federal: USFS Sensitive

Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: The arroyo chub is limited to coastal Southern California freshwater rivers and streams. This species' native range included the Los Angeles, San Gabriel, San Luis Rey, Santa Ana, and Santa Margarita rivers, as well as the Malibu and San Juan creeks in Southern California.^[1] Introductions into the Santa Ynez, Ventura, Santa Maria, Cuyama, Santa Clara (some studies include the upper Santa Clara River as native range^[2,3]), and Mojave river systems among other smaller streams (e.g., Arroyo Grande Creek) have expanded their distribution within California.^[2,3,4,5] Largely extirpated from most of its native range, arroyo chub is considered common only within the lower and upper Malibu Creek, Liberty Canyon Creek, Lower Las Virgenes Creek, West Fork San Gabriel River, and Upper Santa Ana River.^[6,7] In the 1930s, arroyo chub was introduced into tributaries of the Mojave River, particularly Deep Creek, and has since hybridized with Mohave tui chub (*Siphateles bicolor mohavensis*).^[8,9]



Seasonal Periods for Arroyo Chub ^[5]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Spawning	—	✓	✓	✓	✓	✓	✓	✓	—	—	—	—

RCIS Distribution: In the Valley region, there are four occurrence records along the Santa Ana River downstream (south) of Interstate 10 in the West Colton area.^[10] The species also occurs further downstream on the Santa Ana River in the Jurupa Valley of Riverside County.^[10] In addition, there is also a record for the species in a tributary to the Santa Ana River in the Chino Hills State Park (see inset map).^[10]

Habitat Requirements: Arroyo chub habitat includes headwaters, creeks, rivers, and intermittent streams.^[3] This species is physiologically adapted to survive in hypoxic conditions, as well as within wide temperature fluctuations, both of which occur in Southern California coastal streams.^[9] They are most often found in riverine systems characterized by slow-moving water, mud or sand substrate, depths greater than 40 centimeters,^[1] and gradients of less than a 2.5% slope.^[11] The arroyo chub feeds primarily on algae, but it also feeds on insects and small crustaceans.^[12]

Spawning: Suitable spawning habitat includes areas with low velocity such as pools or edge waters, and occurs in temperatures approximately from 14°C to 22°C (57°F to 72°F).^[13]

Reproduction: Arroyo chubs fractionally spawn from February through August, although breeding is concentrated in the months of June and July.^[6] Fertilized embryos adhere to various substrates, including rocks, plants, and debris, and will hatch in 4 days at 24°C.^[13]

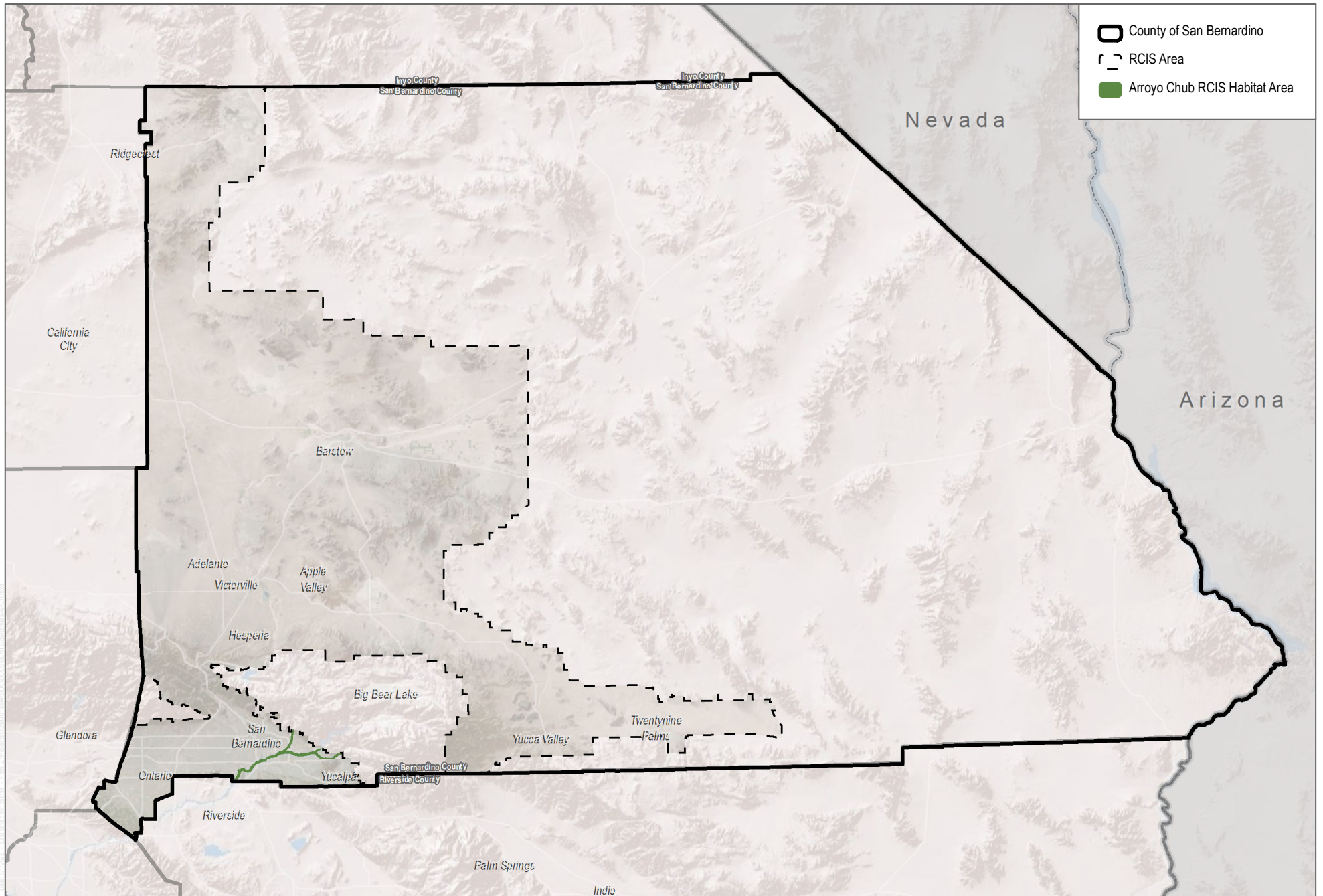
Pressures and Stressors: Primary pressures and stressors include major dams altering flows and fragmenting populations, fire with associated debris and erosion, and competition with or predation from alien species.^[13] Urbanization is also a major pressure, altering habitat through channelization, pollution, water diversion, and transportation infrastructure occurring along large portions of the arroyo chub's native range.^[13]

Additionally, pressures and stressors on other conservation elements (i.e., riparian vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; USFWS Critical Habitat (see Appendix D)

FIGURE 1

Arroyo Chub RCIS Habitat Area

San Bernardino County RCIS

FISH

Mohave Tui Chub (*Siphateles bicolor mohavensis*)

Habitat Group: Riparian and Wetland

Legal Status

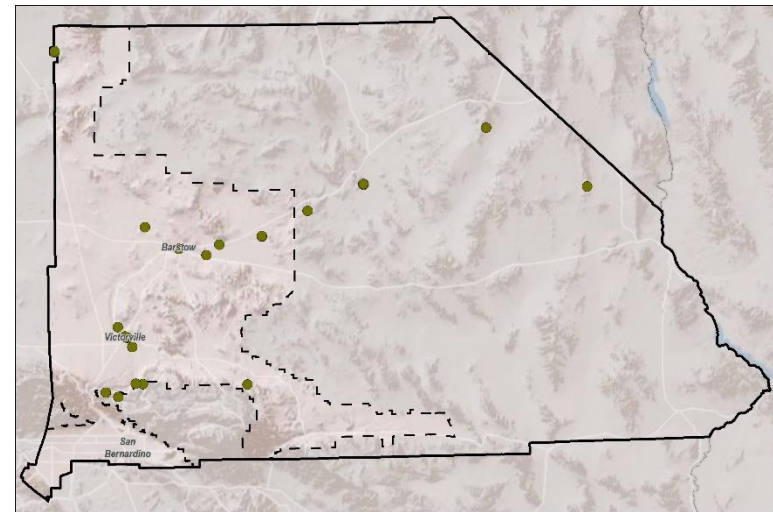
State: Endangered; CDFW Fully Protected

Federal: Endangered^[1]

Critical Habitat: Not applicable

Recovery Plan: Issued by the USFWS on September 12, 1984^[2]

Distribution: Historically, the Mohave tui chub is thought to have occurred throughout the Mojave River basin in San Bernardino County, California, as the river’s only endemic fish species.^[2] At the time of listing in 1970, this species was only found at three locations in San Bernardino County, including Piute Creek, Two Hole Spring, Soda Springs, and at one location in Clark County, Nevada, at Paradise Spa.^[3] This species has been extirpated from almost the entirety of its native range within the Mojave River basin, but it continues to persist at MC Spring, a site within Soda Springs at the headwaters of the Mojave River.^[3] As of 2011, the Mohave tui chub can only be found in highly modified lacustrine pools at five isolated locations including Soda Springs and Morning Star at the Mojave National Preserve, Lark Seep at the China Lake Naval Air Weapons Station, Camp Cady Wildlife Area, and Lewis Center in Apple Valley.^[4]



Seasonal Periods for Mohave Tui Chub ^[2,3]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Spawning	—	—	✓	✓	✓	✓	✓	✓	✓	✓	—	—

RCIS Distribution: This species is known from 18 occurrence records within in the West Desert region at Lark Seep at the China Lake Naval Air Weapons Station, Camp Cady Wildlife Area, Lewis Center in Apple Valley, and other foothill areas (see inset map).^[5]

Habitat Requirements: This species occurs in freshwater lacustrine systems, and it is historically associated with deep pools and slough-like areas within the desert wash and riparian habitats of the Mojave River.^[6] Ideal habitat is characterized by a depth of at least 4 feet, aquatic vegetation, and freshwater flow for a mineralized, alkaline environment.^[3,7] Mohave tui chub have been

found to tolerate temperature ranges from 3°C to 36°C (37°F to 97°F), dissolved oxygen greater than 2 parts per million, salinity from 40 to 323 milliosmols per liter, and a pH of 9 up to 10 for short periods of time.^[3,7,8,9] This species feeds primarily on a variety of aquatic invertebrates, but also small fish and detritus.^[3]

Spawning: This species requires aquatic vegetation to provide substrate for egg attachment,^[3] as well as thermal refuge within the summer, of which aquatic ditchgrass (*Ruppia maritima*) appears to be the preferred species.^[2]

Reproduction: Mohave tui chubs spawn after 1 year of age.^[2] Spawning season occurs from March or April when water is warm enough (64°F),^[2] and continues until as late as October.^[3] Eggs adhere to aquatic vegetation after fertilization, and each female produces 4,000 to 50,000 eggs per season.^[2] Eggs hatch after approximately 6 to 8 days when temperatures are between 18°C and 20°C (64°F and 68°F).^[2]

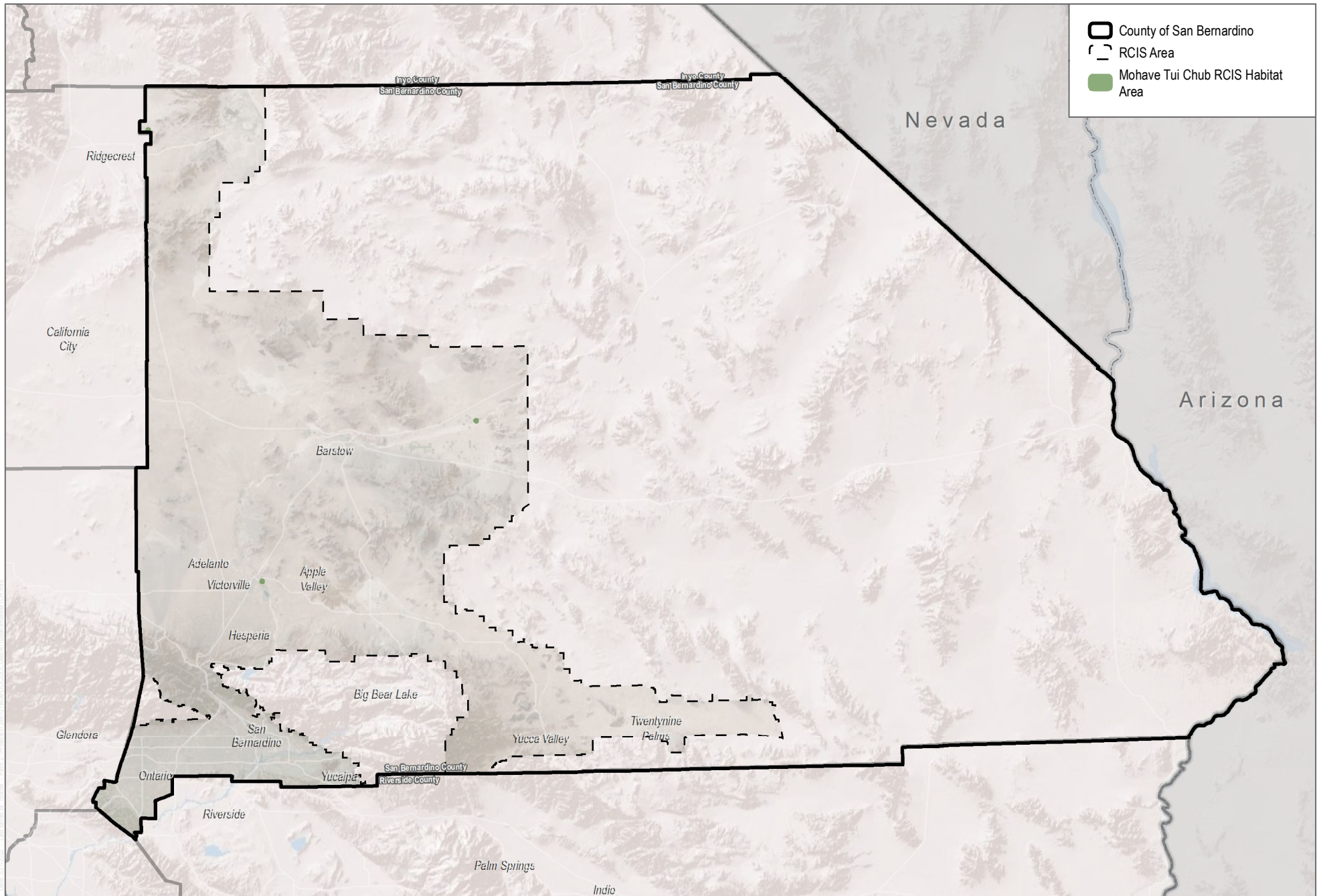
Pressures and Stressors: Habitat degradation at both historical and suitable locations is a major pressure, which includes major dams segmenting populations and altering flow, predation from introduced species, competition with mosquitofish, and general urbanization further altering or displacing suitable habitat.^[3] Excessive cattail (*Typha* spp.) recruitment at otherwise suitable sites can reduce depth, accumulate detritus, elevate water temperature, and worsen anoxic conditions.^[3] Mohave tui chub are not adapted to flooding and may be replaced by species better equipped to survive in high water flow.^[8] Hybridization with the arroyo chub (*Gila orcutti*), which was introduced to the Mojave River in the 1930s, has replaced genetically pure Mohave tui chub populations within almost the entirety of their native range.^[10,11] Finally, disease has become a pressure for the Mohave tui chub, as the parasitic Asian tapeworm was found in Soda Springs and is shown to reduce growth but necessarily not survival rate.^[12]




Additionally, pressures and stressors on other conservation elements (i.e., riparian and wetland vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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-  County of San Bernardino
-  RCIS Area
-  Mohave Tui Chub RCIS Habitat Area

SOURCE: Bing Maps 2018; San Bernardino County 2018; DRECP (see Appendix D)

FIGURE 1

Mohave Tui Chub RCIS Habitat Area

San Bernardino County RCIS

FISH

Santa Ana Speckled Dace (*Rhinichthys osculus* spp. 8)

Habitat Group: Riparian and Wetland

Legal Status

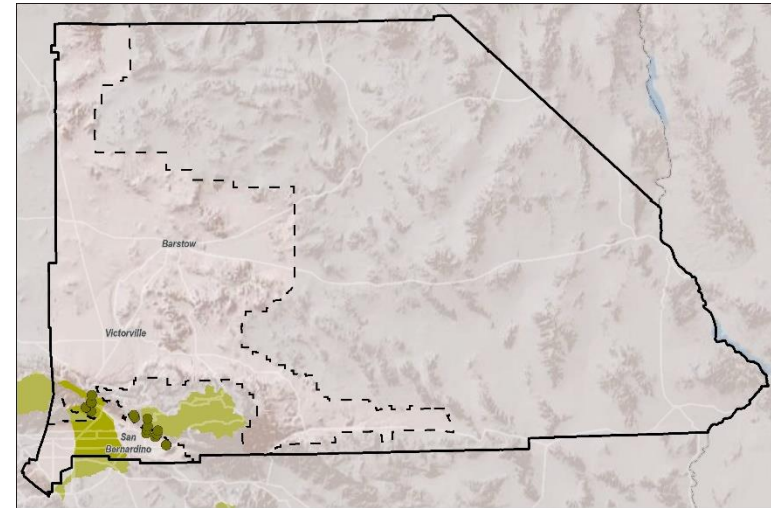
State: CDFW Species of Special Concern

Federal: USFS Sensitive

Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: The Santa Ana speckled dace’s range is limited to Southern California drainages, and historically occupied the upland portions of the Santa Ana, San Gabriel, and Los Angeles river systems within Los Angeles and Orange counties.^[1] Of their native range, Santa Ana speckled dace are no longer present in the middle reaches of the Santa Ana River, Strawberry Creek, Mill Creek, and most of the Los Angeles River basin, as well as the San Jacinto River basin.^[2,3] Currently, distribution is limited to the headwaters of the Santa Ana and San Gabriel rivers, Indian Creek of the San Jacinto River headwaters, and additionally in Big Tujunga Creek of the Los Angeles River drainage.^[2,4] Success of attempts to establish populations in the Santa Clara River, Cuyama River, and in River Springs, Mono County are largely unknown, but are thought to have failed within the Santa Clara River.^[2,5,6]



Seasonal Periods for Santa Ana Speckled Dace ^[2]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Spawning	—	—	✓	✓	✓	—	—	—	—	—	—	—

RCIS Distribution: A total of 14 occurrences have been recorded in the County, including 7 records in the foothills of the Valley region in City Creek, Plunge Creek, and Mill Creek.^[7] In the Mountain region, this species is also known from 7 occurrences in upper reaches of Lytle Creek and Cajon Wash (see inset map).^[7]

Habitat Requirements: This species occurs in permanently flowing streams commonly fed by springs to keep summer temperatures between 17°C and 20°C (63°F and 68°F).^[1] Santa Ana speckled dace typically inhabit shallow streams cobble and gravel riffles,^[8]

but have also been observed within runs and pools.^[4] Average depths of 15–30 centimeters, overhanging riparian vegetation, and presence of other native fish such as the rainbow trout (*Oncorhynchus mykiss*) and Santa Ana sucker (*Catostomus santaanae*) are good indicators of suitable Santa Ana speckled dace habitat.^[1,9]

Spawning: Spawning primarily occurs in shallow gravel areas on the edges of lakes or upstream in the edges of riffles or inlet streams.^[2]

Reproduction: Generally, dace species reach maturity by their second summer, with females producing between 190 and 800 eggs,^[10] with the Santa Ana speckled dace likely falling within the low end of this range given their relatively small size.^[2] Spawning correlates with rising temperatures and high flow events, suggesting that spawning most likely occurs in March to May.^[2] Dace species lay eggs underneath rocks or near gravel surface and adhere to substrate after fertilization.^[11] At temperatures of 18°C–19°C (64°F–66°F), eggs hatch in 6 days but may remain in gravel for 7–8 days.^[11]

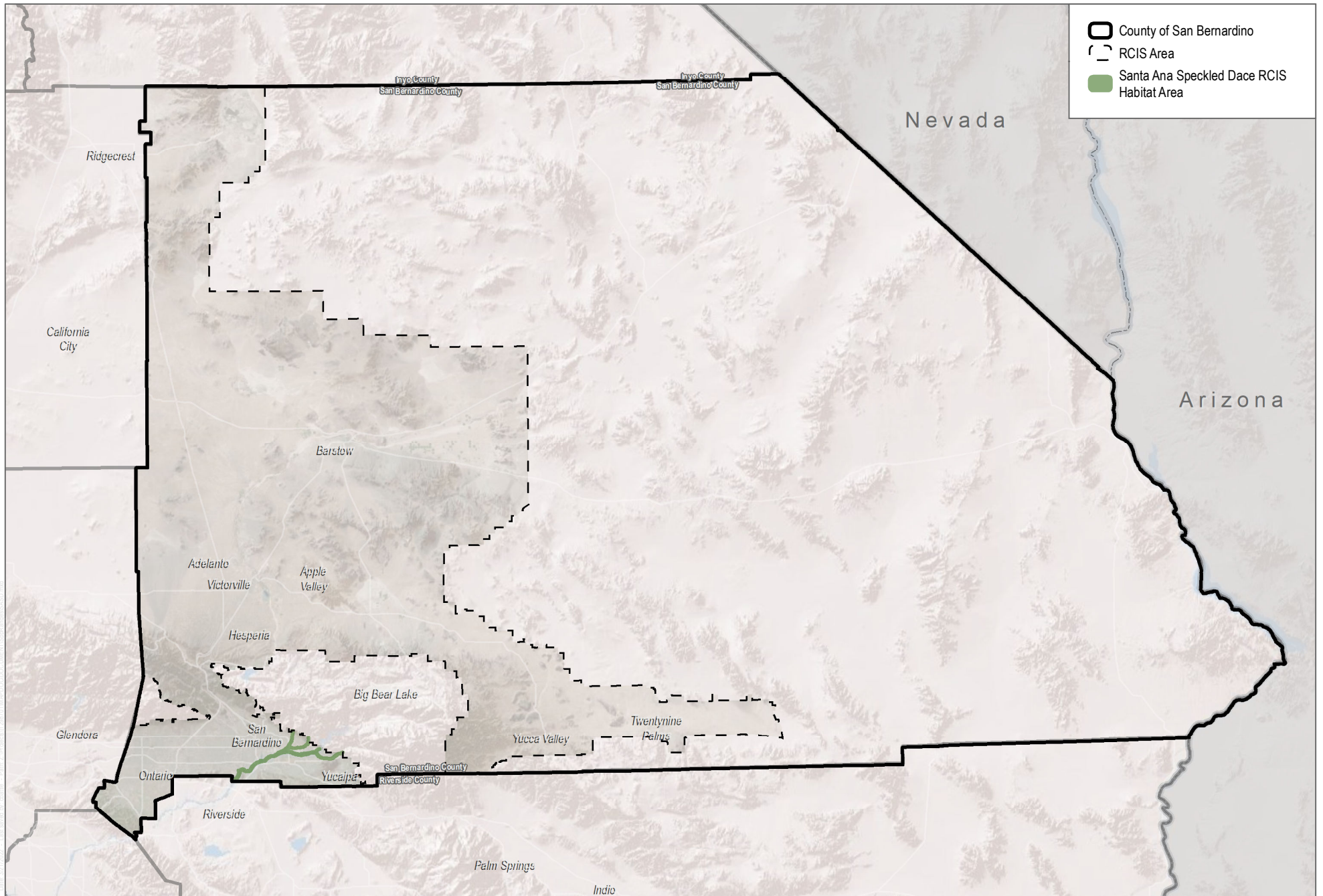
Pressures and Stressors: Santa Ana speckled dace are threatened by dams and diversions that affect nearly all streams in which they occur, blocking movement of fishes, depleting flow, and burying suitable habitat when sediment is released.^[2] Extensive channelization present in the middle and lower reaches of the Los Angeles, Santa Ana, and San Gabriel rivers result in water quality degradation and loss of suitable habitat.^[2] The likelihood of catastrophic fire is relatively high in existing Santa Ana speckled dace habitat, and can increase erosion especially of fine sediments burying suitable substrate, exacerbate flood events and stream scour, and remove riparian vegetation affecting water temperature stability.^[2] Alien plant and animal species such as giant reed (*Arundo donax*), brown trout (*Salmo trutta*), and red shiners (*Cyprinella lutrensis*) alter habitats and introduce additional predation and competition.^[2]

Additionally, pressures and stressors on other conservation elements (i.e., riparian vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; USFWS Critical Habitat, USGS NHD (see Appendix D)

FIGURE 1

Santa Ana Speckled Dace RCIS Habitat Area

San Bernardino County RCIS



FISH

Santa Ana Sucker (*Catostomus santaanae*)

Habitat Group: Riparian and Wetland

Legal Status

State: None

Federal: Threatened^[1]

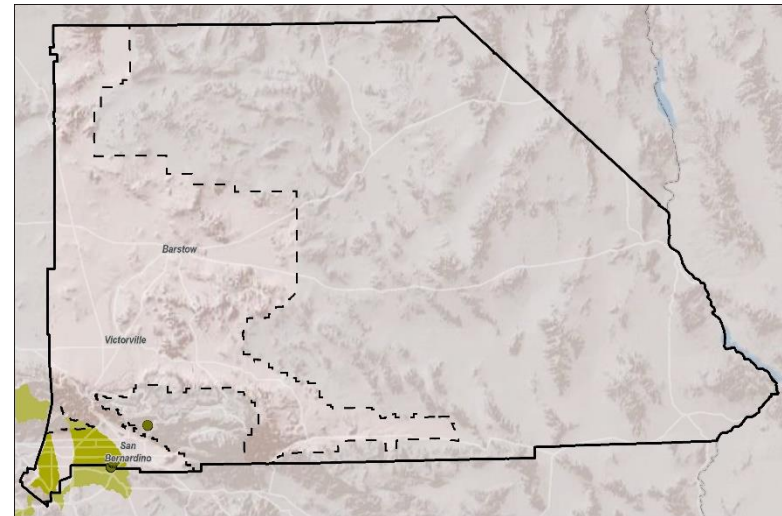
Critical Habitat: Originally designated on February 26, 2004^[2]; USFWS issued revised critical habitat on December 14, 2010^[3]

Recovery Plan: Issued by the USFWS on February 2, 2017^[4]

Distribution: The Santa Ana sucker is limited to rivers and streams in Southern California and is endemic to the mainstems and tributaries of the Santa Ana, San Gabriel, and Los Angeles River watersheds.^[4] The listing rule states that approximately 70% of historical range has been lost in the Santa Ana River, 75% in the San Gabriel River, and 80% in the Los Angeles River.^[1] Current populations are confined to the lowlands of the Santa Ana River watershed spanning the 34 miles from La Cadena Drive bridge to State Route 90, the upper portions of the San Gabriel watershed restricted to the 26 miles above the San Gabriel dam in the West Fork, and approximately 13 miles of Big Tujunga Creek (tributary to Los Angeles River) between Hansen and Big Tujunga Dams, as well as 2.2 miles of Haines Creek.^[4] Populations in the Santa Clara River are presumed to be introduced and are not included as part of the range of the listed species.^[1]

RCIS Distribution: In the Valley region, a total of 13 occurrences have been recorded along the Santa Ana River downstream (south) of Interstate 10 in the West Colton area (see inset map).^[5] The species also occurs further downstream on the Santa Ana River in the Jurupa Valley of Riverside County.^[6]

Habitat Requirements: This species is typically found in small to medium (less than 7 meters wide) permanent streams with flow ranging from slight to swift,^[7] and is most abundant in cool, shallow areas with streamside vegetation to provide refuge during



Seasonal Periods for Santa Ana Sucker ^[9]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Spawning	—	—	✓	✓	✓	✓	✓	—	—	—	—	—

seasonal floods and subsequent repopulation.^[8,9] Santa Ana sucker is associated with clear water and rocky substrates, but can tolerate seasonal turbidity and is occasionally found in areas of sandy or muddy substrate.^[7] Although this species seems to be generalized in their habitat requirements, they are unable to tolerate highly modified or polluted streams.^[7] The Santa Ana sucker feeds primarily on algae, diatoms, and detritus found on coarser substrates, and as they grow in size, they diversify their diets to include aquatic insects.^[10,11]

Spawning: Santa Ana suckers require riffles with gravel or small cobbles where fertilized eggs attach to the bottom substrate,^[11] and are typically near areas of deeper water or aquatic vegetation that serve as a refuge.^[12]

Reproduction: This species reaches reproductive maturity in the summer of their first year and spawn during their first and second years.^[7] Santa Ana suckers are more fecund than other catostomids, with females producing between 4,400 and 16,000 eggs depending on size.^[7] Spawning occurs between mid-March to early-July, usually peaking around April.^[11]

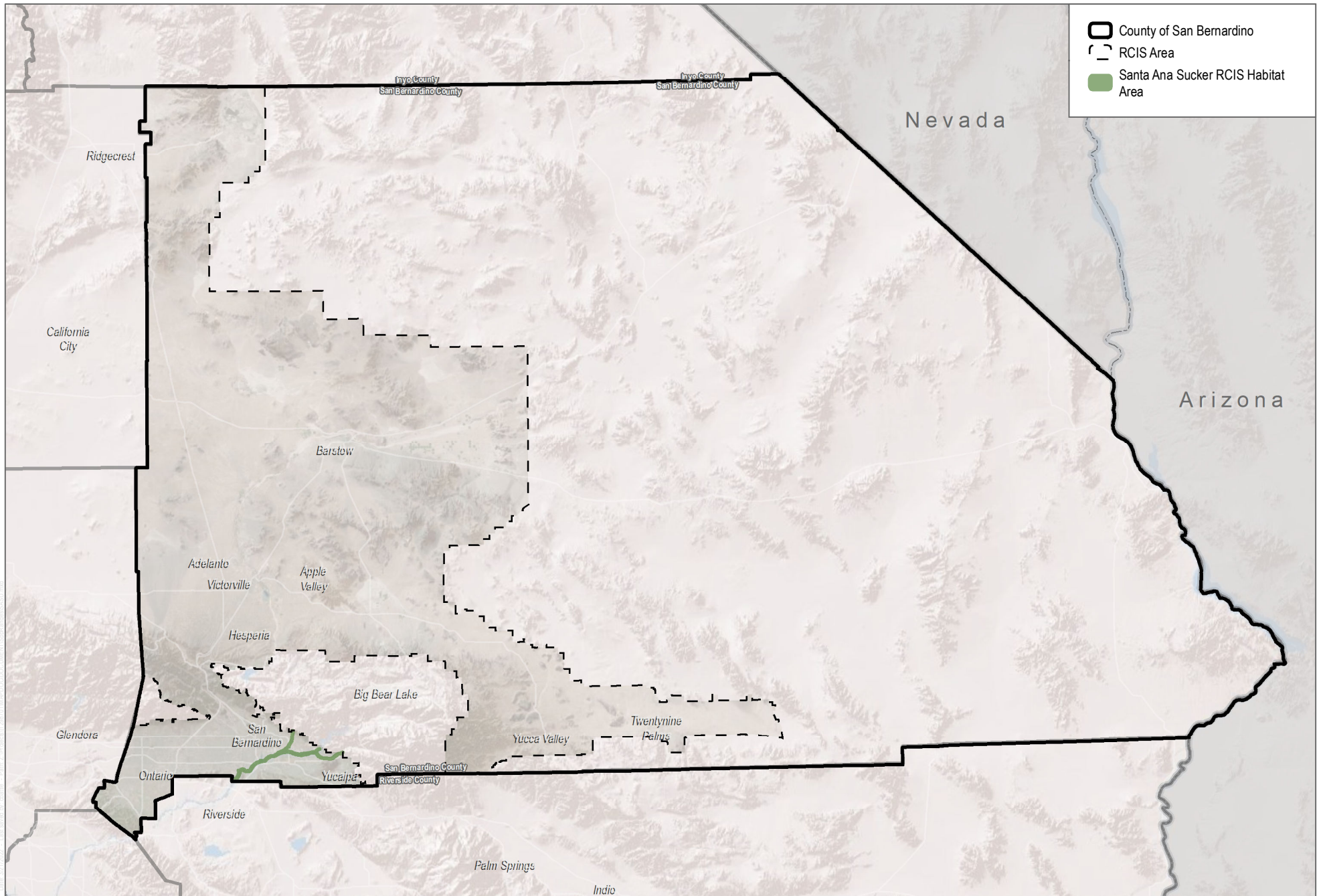
Pressures and Stressors: Primary population pressures and stressors include hydrological modifications, diminished water quality, increased fire frequency, and introduced competition, and predation from exotic species.^[6] Dams are prevalent throughout the Santa Ana sucker's historical and current distribution, and modify flow, transport of sediment, and restrict the dispersal of populations.^[6] Water diversion, channelization, infrastructure construction, and general urbanization throughout the species' range also degrade physical structure and water quality of otherwise suitable habitat, altering temperatures and flow, and limiting coarse substrates, which harbor algae and suitable spawning habitat.^[6] Increased fire frequency throughout Southern California additionally has potential to eliminate riparian vegetation, increase erosion, and decrease habitat value overall.^[6]

Additionally, pressures and stressors on other conservation elements (i.e., riparian vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; USFWS Critical Habitat (see Appendix D)

FIGURE 1

Santa Ana Sucker RCIS Habitat Area

San Bernardino County RCIS



INVERTEBRATES

Delhi Sands Flower-Loving Fly (*Rhaphiomidas terminatus abdominalis*)

Habitat Group: Dune and Playa; Grassland

Legal Status

State: Not applicable

Federal: Endangered

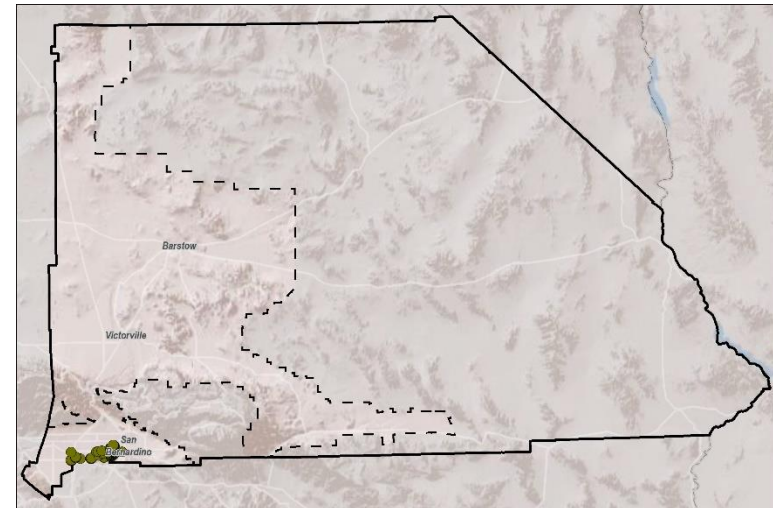
Critical Habitat: Not applicable

Recovery Plan: Originally issued by the USFWS September 14, 1997.^[1] Recovery Plan Amendment issued October 4, 2019.^[2]

Distribution: This species is endemic to the Colton Dunes in Riverside and San Bernardino counties, California. The Colton Dunes are the largest inland sand dune formations (excluding the deserts) in Southern California. At the Colton Dunes, this species occurs at 12 separate locations, originally estimated to cover approximately 450 acres,^[1] which was later estimated in 2005 to cover approximately 900 acres of occupied suitable habitat.^[3]

RCIS Distribution: A total of 167 occurrences have been recorded in the Valley region in the vicinity of West Colton, the Jurupa Hills, and eastern Ontario (see inset map).^[4]

Habitat Requirements: This species is endemic to the Delhi soil series in the Colton Dunes. Suitable soils consist of fine and sandy substrates forming sand dunes stabilized by sparse vegetation.^[1] The Delhi soil series includes very deep and somewhat excessively drained soils that are typically on floodplains, alluvial fans, and terraces.^[5] Suitable habitat minimally consists of areas with open sands in perpetual supply, and sparse, native vegetation (10%–40%), including telegraph weed (*Heterotheca grandiflora*) and California buckwheat (*Eriogonum fasciculatum*).



Seasonal Periods for Delhi Sands Flower-Loving Fly ^[1]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Adult Flight*	—	—	—	—	—	—	—	✓	✓	—	—	—
Egg, Larva, Pupa**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

* Adults are active above ground in late summer.

** Other stages can be found year round

Foraging: Little to no information is available on the diet of this species; however, adults have been observed on occasion consuming nectar from buckwheat (*Eriogonum* spp.), croton (*Croton* spp.), and telegraph weed (*Heterotheca grandiflora*).^[1]

Life Cycle: This species undergoes complete metamorphosis (egg, larva, pupa, and adult). The larval stage may last up to 2 years or longer, depending on environmental conditions, including food availability, temperature, rainfall, and other factors.^[1]

Reproduction: Adults are active aboveground in late summer. All other life cycles occur entirely underground, and early stages of metamorphosis can be found year-round. After mating, the females lay eggs in the shade of shrubs and up to 5 centimeters (2 inches) below the surface of sandy soils. Larvae hatch from eggs around 11 to 12 days after laying. The larva and pupa stages of this species are specialized for burrowing as a result of body shape and specialized pupa head structures.^[1]

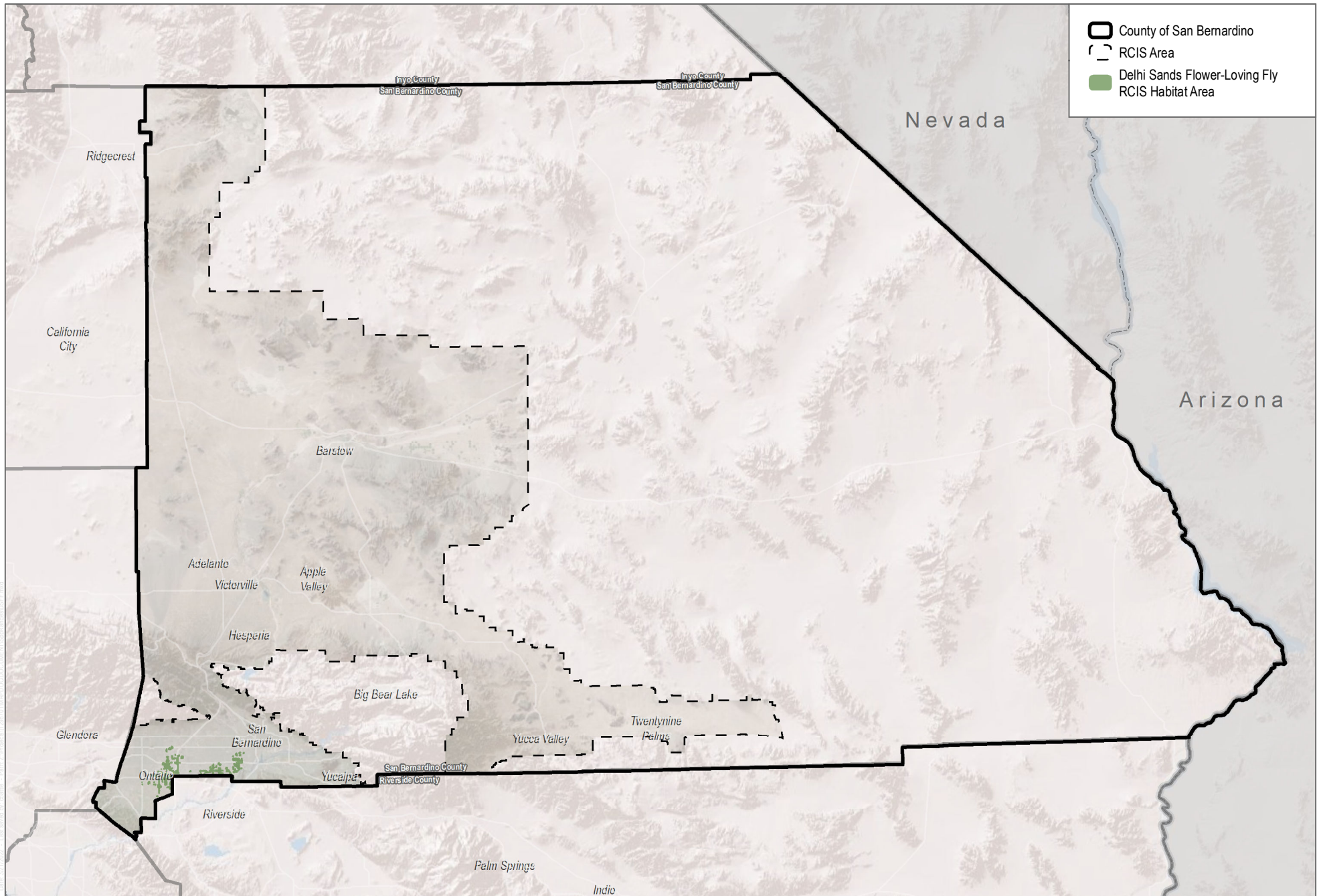
Pressures and Stressors: Primary population pressures and stressors include habitat loss and degradation from urban development, agricultural conversion, sand mining operations, invasion of exotic plant species, off-road vehicles, dumping of manure and trash in suitable habitat, trampling or disruption of substrates, and the unauthorized collection of this species. More than 97% of this species' historic range containing suitable soils (Delhi soil series) has been converted to agriculture and urban/commercial development, or undergone other alterations that adversely affect this species. The invasion of exotic plant species alters soil moisture or otherwise makes soils unsuitable.^[1]




Additionally, pressures and stressors on other conservation elements (i.e., dune and grassland vegetation communities and Aeolian processes and features) include climate change, land uses such as mining and quarrying and land use changes, recreational activities, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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-  County of San Bernardino
-  RCIS Area
-  Delhi Sands Flower-Loving Fly RCIS Habitat Area

SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities, USDA Soils (see Appendix D)

FIGURE 1

Delhi Sands Flower-Loving Fly RCIS Habitat Area

San Bernardino County RCIS



INVERTEBRATES

Victorville Shoulderband (*Helminthoglypta mohaveana*)

Habitat Group: Riparian and Wetland

Legal Status

State: CDFW Special Animals List^[1]

Federal: Not applicable

Critical Habitat: Not applicable

Recovery Plan: Not applicable

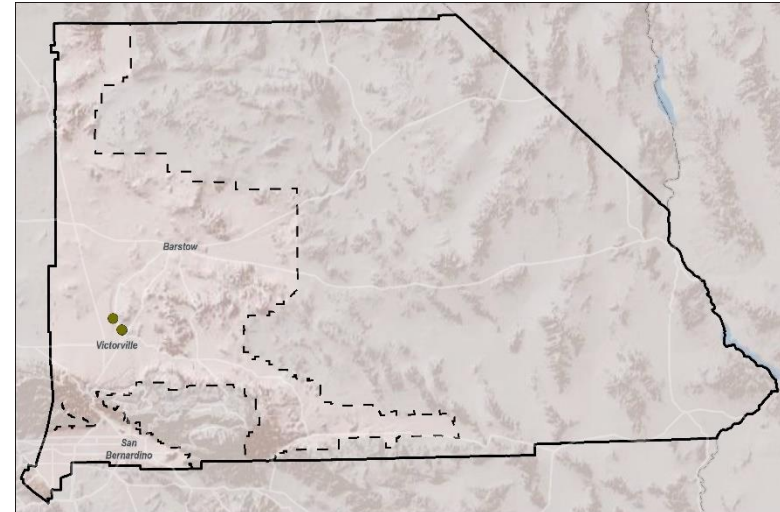
Distribution: This species is non-migratory and known only from along the rocks and boulders besides the Mojave River in San Bernardino County.^[2,3,4]

RCIS Distribution: A total of two occurrences have been recorded in the West Desert region, both along the Mojave River from Mojave Narrows downstream (north) to Oro Grande (see inset map).^[5]

Habitat Requirements: The Victorville shoulderband is a terrestrial snail that found in rocky outcrops among leaves.^[2,4] Terrestrial mollusks are dependent on ground litter and refugia (e.g., logs, snags, fallen branches, debris, thick leaf litter).^[6] This species aestivates among and under loose rocks on dry hills.^[2] Also occurs in rocky slopes of the mountains, generally on the lower slopes among the loose detritus in crevices, rockslides, etc.^[4]

Breeding: Little is known regarding breeding habitat for this species. However, similar to other *Helminthoglypta* species, this species may emerge for reproduction after rainfall or periods of suitable precipitation.^[7,8,9]

Foraging: Little is known regarding foraging preferences for this species. However, *Helminthoglypta* species forage on a variety of green, herbaceous vegetation, subsurface roots, fungi, and organic debris.^[7]



Seasonal Periods for Victorville Shoulderband ^[7]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Reproduction*	—	✓	✓	✓	✓	—	—	—	—	—	—	—
Dormancy*	✓	—	—	—	—	✓	✓	✓	✓	✓	✓	✓

* Reproduction likely occurs after rainfall, and dormancy likely occurs in summer and winter. Seasonal periods estimated. Species likely spends less than half the year growing, reproducing, and dispersing.^[7]

Reproduction: *Helminthoglypta* species are hermaphroditic (have both male and female organs).^[7] Typically, gastropods engage in cross-fertilization but may demonstrate self-fertilization.^[7] Little is known regarding the reproduction biology of this species. However, another coastal *Helminthoglypta* species has been known to emerge from aestivation within 24 hours after the first soaking October rains and begin mating.^[7,8,9] Mating would occur during ambient temperatures of 10°C–15°C (50°F–59°F) at night or on overcast and rainy days.^[7,8,9] Eggs of this coastal species are deposited in shallow holes in the soil below leaf litter and average 75.6 eggs per mass. Eggs hatch in March and April.^[7,8,9] As a terrestrial mollusk, this species likely becomes dormant during summer and winter within suitable moist refugia and spends less than half the year growing, reproducing, and dispersing.^[7]

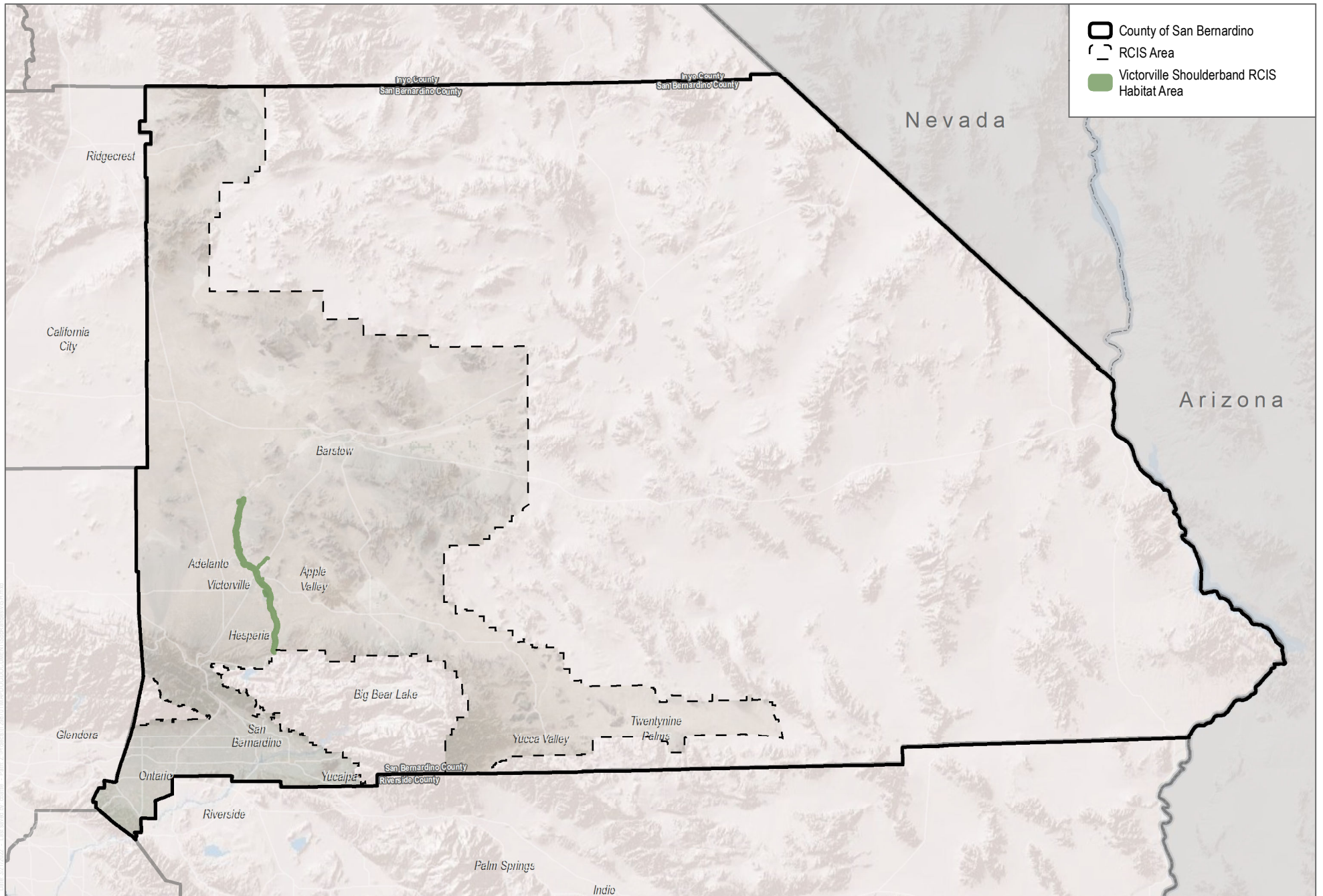
Pressures and Stressors: Little is known regarding population pressures and stressors for this species. However, habitat loss and fragmentation of natural habitats due to clear-cut logging, road building, and altered fire regime have been attributed to the extinction of many mollusk species.^[6,10] Highways also limit suitable dispersal opportunities for the species.^[6] In addition, mollusks are sensitive to temperature and moisture extremes^[6] and may be affected by activities generating environmental extremes (e.g., activities that change water regimes). This species' population may also be negatively affected by high-intensity fire burns with frequent fire-return intervals (<5 years).^[6,7]

Additionally, pressures and stressors on other conservation elements (i.e., riparian vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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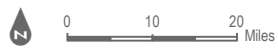


SOURCE: Bing Maps 2018; San Bernardino County 2018; DRECP (see Appendix D)

FIGURE 1

Victorville Shoulderband RCIS Habitat Area

San Bernardino County RCIS



MAMMALS

American Badger (*Taxidea taxus*)

Habitat Group: Desert Scrub; Grassland; Transitional Scrub, Chaparral, and Woodland

Legal Status

State: CDFW Species of Special Concern; CDFW Furbearing Mammal Provisions

Federal: None

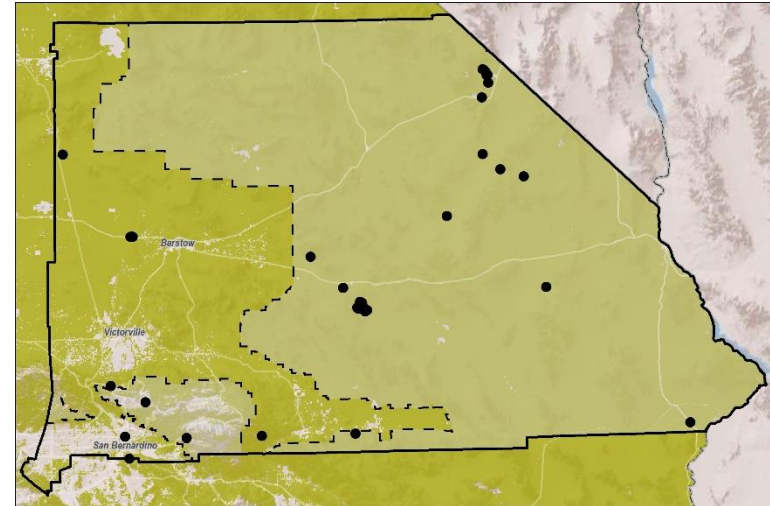
Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: The American badger is distributed from southern Canada, including British Columbia, Alberta, Saskatchewan, Manitoba, and southern Ontario, over most of the northern, western, and central United States, down to Puebla and Baja California, Mexico.^[1,2] Within the United States, they range from the Pacific Coast eastward through Ohio.^[3] Historically, badgers ranged throughout California excluding the humid coastal forests of northwestern California, but have declined significantly over this range within the last 100 years.^[3,4] They have been extirpated in many locations in Southern California, and persist in low numbers of the peripheral parts of the Central Valley and adjacent lowlands.^[3]

RCIS Distribution: A total of seven occurrence records are distributed in the West Desert region, from the Morongo Basin in the southeastern portion of the RCIS Area north of Kramer Junction along Highway 395. An additional two occurrences are located in the Valley region near San Bernardino (see map inset); however, the species is thought to be more widespread at low density throughout the desert and underreported in the database.^[5]

Habitat Requirements: The American badger can be found in a variety of environments, but it prefers dry grasslands, open forests, or mountain meadows.^[3,6] Primary requirements are sufficient food, friable soils suitable for digging burrows, and open, uncultivated ground.^[3]



Seasonal Periods for American Badger ^[8]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	—	—	—	—	—	—	✓	✓	—	—	—	—
Birth	—	—	✓	✓	✓	✓	—	—	—	—	—	—

Foraging: This species feeds primarily on fossorial rodents, usually captured by digging out burrows of prey.^[3] Ground squirrels are an important prey item, as well as pocket gophers, kangaroo rats, prairie dogs, and mice.^[7] When small mammals are scarce, badgers may also prey upon insects, scorpions, snakes, lizards, and birds.^[7]

Reproduction: American badgers mate from mid to late summer and give birth from March to early June depending on location.^[8] Litter sizes range from two to five offspring, averaging three per litter, and the young leave their family groups sometime in the fall.⁸ In an Idaho study, all males were sexually mature as yearlings, while 30% of females bred in their first year.^[7]

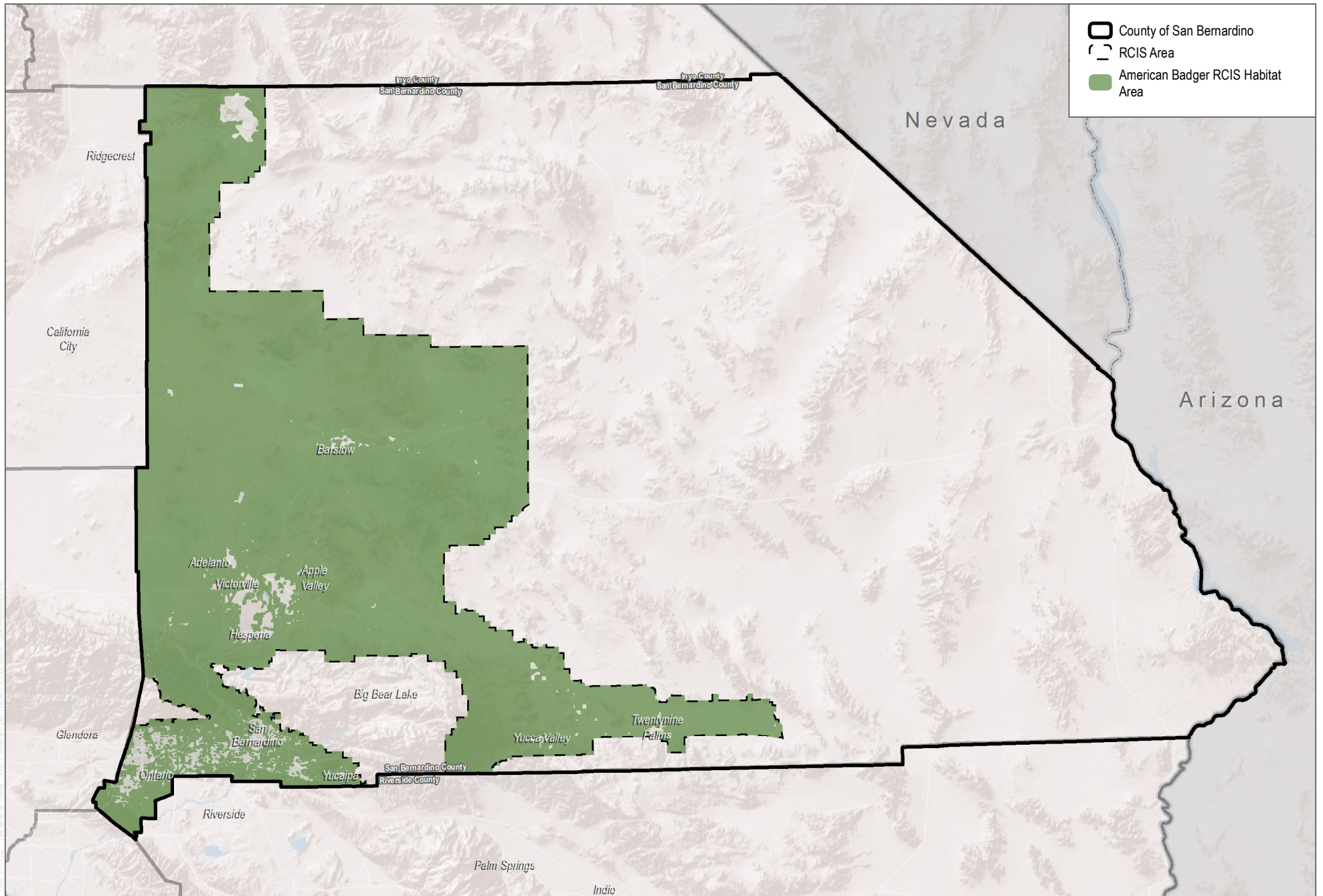
Pressures and Stressors: Habitat loss, vehicle collisions, deliberate killing in agricultural settings, and decline of prey are the primary pressures and stressors to this species.^[3,9,10,11] Cultivation of grasslands and intensification of agriculture limit suitable habitat for badgers and have caused population declines in various locations.^[3,9,10,12] Fire suppression leading to infill of previously open woodlands and encroachment of forests onto grasslands additionally decrease and degrade American badger habitat.^[10] Collisions with vehicles and deliberate killing is a significant source of mortality,^[3,10,12,13] with trapping, shooting, or poisoning of badgers prompted by damage to livestock or cars that encounter burrows.^[9] Finally, decreases in primary prey populations including prairie-dogs and ground squirrels seem to be directly related to badger population decline and pose a threat to long-term species viability.^[11]

Additionally, pressures and stressors on other conservation elements (i.e., desert scrub, grassland, scrub, and woodland vegetation communities and habitat connectivity and wildlife movement) include climate change, land uses and land use changes, and fire and fire suppression. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; CDFW BIOS DS2611 (see Appendix D)

FIGURE 1

American Badger RCIS Habitat Area

San Bernardino County RCIS



MAMMALS

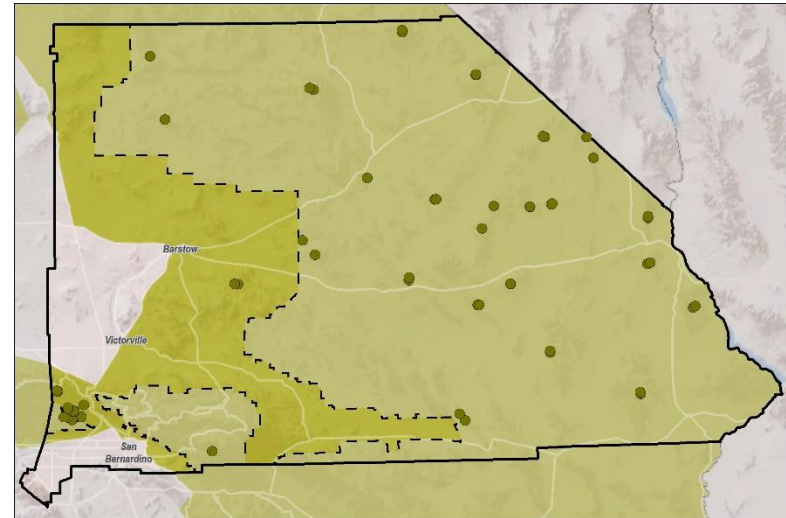
Desert Bighorn Sheep (*Ovis canadensis nelsoni*)

Habitat Group: Desert Scrub; Transitional Scrub, Chaparral, and Woodland

Legal Status

- State:** Fully Protected; Limited Hunting
- Federal:** USFS Sensitive; BLM Sensitive
- Critical Habitat:** Not applicable
- Recovery Plan:** Not applicable

Distribution: Desert bighorn sheep inhabit desert mountain ranges in California, southern Nevada, southern Utah, southwestern Arizona, northwestern Mexico, and Baja California.^[1] In California, this species is found in the White Mountains in Mono and Inyo counties, south to the San Bernardino Mountains, and further southeast to Mexico,^[1,2] with an isolated population in the San Gabriel Mountains.^[3] The Peninsular bighorn sheep, which is a Distinct Population Segment (DPS) of this species occurring from the San Jacinto and Santa Rosa ranges south into Mexico, is not addressed by the SBC RCIS.^[4] Although desert bighorn sheep occur over a broad geographic area, populations within this range are scattered and discrete.^[1]



Seasonal Periods for Desert Bighorn Sheep ^[2,6]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	—	—	—	—	—	—	—	✓	✓	✓	✓	—
Lambing	✓	✓	✓	✓	✓	✓	—	—	—	—	—	✓

RCIS Distribution: A total of 2 occurrences have been recorded in the West Desert region southeast of Barstow and 14 occurrences have been recorded within the Mountain region west of Cajon Pass (see map inset).^[5] The species is more widespread throughout the mountain ranges of the desert and underreported in the database.^[5] Between approximately 1,650 and 2,650 individuals were estimated in 2019 for the Southern and Central Mojave metapopulations of the species.^[6]

Habitat Requirements: This species is nomadic and wide-ranging, and it requires a variety of habitat characteristics related to topography, visibility, and resource availability.^[4] Steep and rocky mountainous terrain that is visually open is preferred habitat for

desert bighorn sheep, with steep, rugged terrain imperative for predator escape and lambing.^[2,3,7] This species may occur in a variety of vegetation communities, including alpine dwarf scrub chaparral, chenopod scrub, Mojavean desert scrub, montane dwarf scrub, pinon and juniper woodland, and riparian woodland.^[8]

Foraging: A wide array of resources is required to cope with drought-related variations in forage quality and availability.^[6] Alluvial fans and washes support seasonal foraging, particularly important in summer to sustain lactating females.^[2] Surface water is key especially in lambing season; however, adults can survive without consuming surface water.^[2]

Reproduction: Outside of the typical breeding season from August to November, males and females commonly occupy different habitats.^[7] Females prefer particularly steep slopes to protect their lambs,^[6,9] while males tend to occupy less rugged terrain.^[2] Diet quality and abundance can be highly variable in the desert region, and lambing season coincides with periods of most reliable forage availability.^[2]

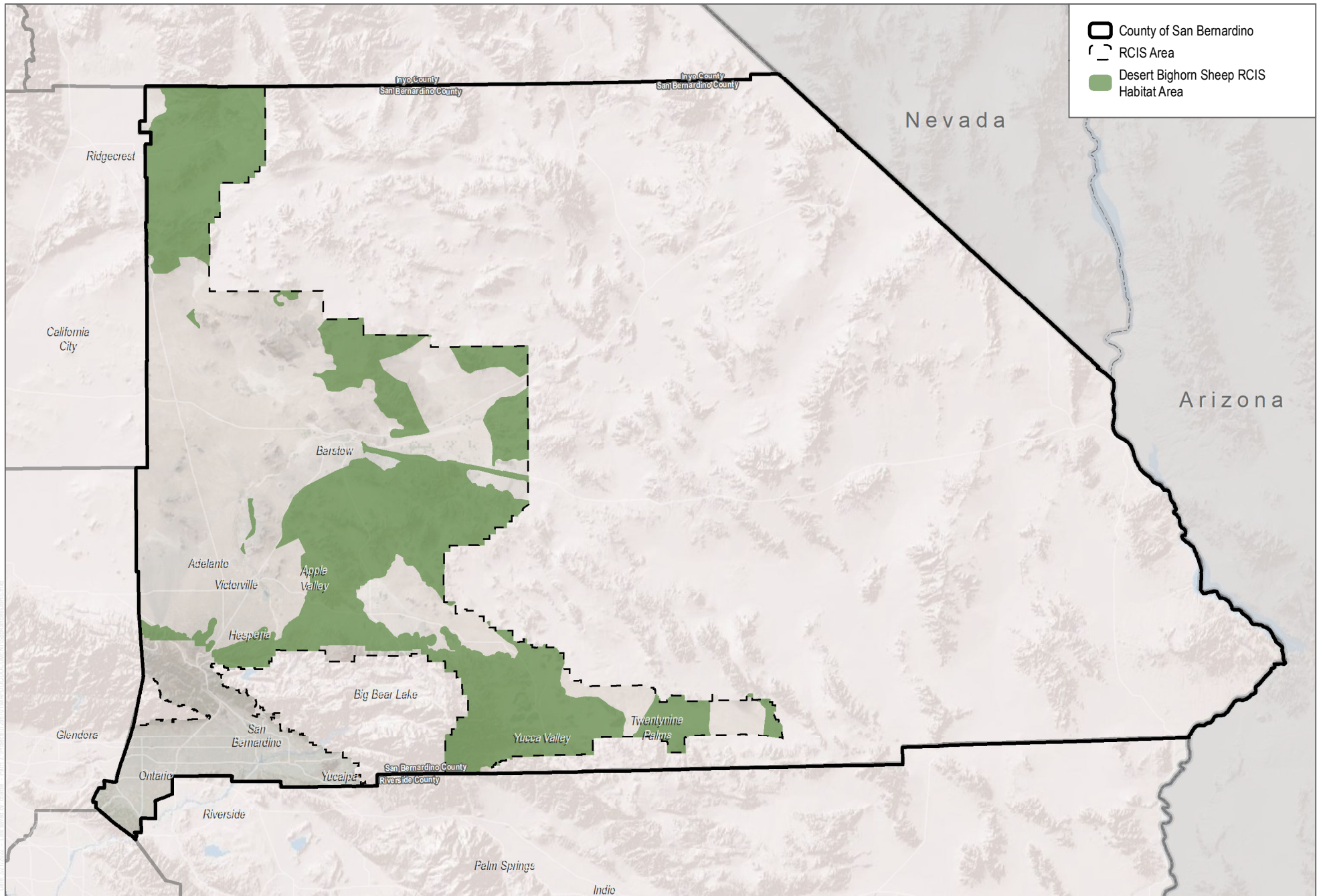
Pressures and Stressors: Desert bighorn sheep populations are pressured and stressed by loss and fragmentation of habitat, disease from livestock, predation, and drought.^[2,6] Highways, fencing, and general urbanization limit and bisect suitable habitat, limiting species movement and genetic exchange essential for metapopulation resilience.^[2] Domestic sheep and associated disease have likely been the largest factor in causing declines.^[2,6] Considerable predation from mountain lions (*Puma concolor*) increases pressure on bighorn sheep populations, especially in areas where deer are absent.^[2] Similarly, drought stresses bighorn sheep populations, which diminishes forage availability and reproductive success. In addition, climate change is expected to further exacerbate drought conditions and limit surface water availability for this species.^[2,10]

Additionally, pressures and stressors on other conservation elements (i.e., desert scrub and woodland vegetation communities and habitat connectivity and wildlife movement) include climate change, land uses and land use changes, and recreational activities. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; DRECP (see Appendix D)

FIGURE 1

Desert Bighorn Sheep RCIS Habitat Area

San Bernardino County RCIS

MAMMALS

Desert Kit Fox (*Vulpes macrotis arsipus*)

Habitat Group: Desert Scrub; Dune and Playa; Grassland; Riparian and Wetland; Transitional Scrub, Chaparral and Woodland

Legal Status

State: CDFW Non-Game Furbearer^[1]

Federal: None

Critical Habitat: Not applicable

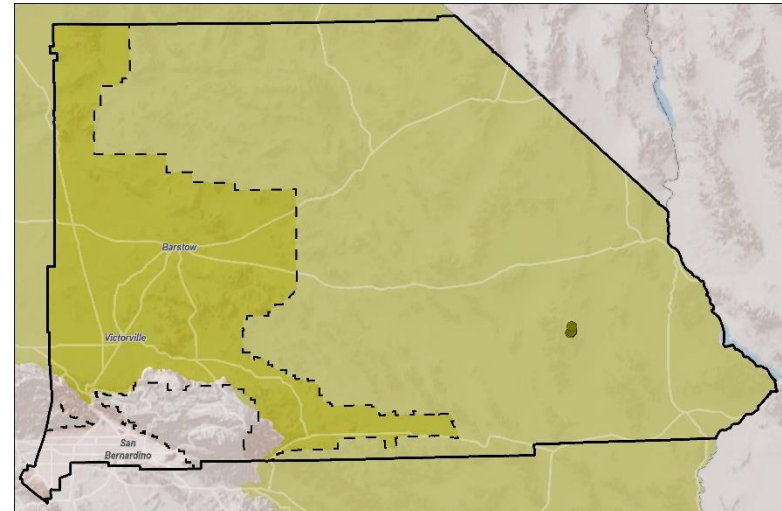
Recovery Plan: Not applicable

Distribution: The desert kit fox inhabits the southwestern deserts of California, southern Nevada, and lower elevation areas in western and southern Arizona, and northern Mexico.^[2] The Tehachapi and Southern Sierra mountain ranges along the western boundary of its range from a physical barrier between desert kit fox and the federally listed San Joaquin kit fox (*Vulpes macrotis mutica*).^[3]

RCIS Distribution: No occurrences of the species have been recorded in West Desert, Valley, or Mountain region likely because the species is not considered rare or special status (see inset map); however, the species is thought to be more widespread at low density throughout the desert and underreported in the database.^[4]

Habitat Requirements: Kit foxes occupy generally arid regions that receive less than around 16 inches of rain annually.^[5] They are associated with desert scrub, alkali scrub, creosote brush scrub, creosote-white bursage desert scrub, and mixed salt desert scrub vegetation communities.^[6,7,8] Ideal terrain is flat and open, but slopes up to 15% constitute fair habitat, and soils with sandy or loamy friable soils for burrowing are required.^[8,9]

Hunting: Kit foxes are primarily carnivorous, feeding predominantly on black-tailed jackrabbits, desert cottontails, kangaroo rats, ground squirrels, but also occasionally other rodents, insects, reptiles, birds, bird eggs, and vegetation.^[2]



Seasonal Periods for Desert Kit Fox ^[7,10]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	✓	✓	✓	✓	✓	—	—	—	—	—	—	✓
Dispersal	—	—	—	—	—	—	✓	✓	✓	—	—	—

Reproduction: Breeding season for desert kit fox is typically from December to late May, with gestation of approximately 49–56 days.^[8,10] Most pups are born February through April, and litter sizes are 2–6 pups.^[3,4,10] Young are weaned at about 4–5 months of age,^[2] and they begin to disperse from their natal dens in late summer or early fall.^[11]

Pressures and Stressors: Desert kit foxes face numerous pressures and stressors, including habitat loss and degradation, canine distemper, off-highway vehicle (OHV) use, vehicle collisions, and rodenticide poisoning.^[8,12,13,14,15] Development in the Colorado and Mojave deserts of California is increasing, and growing urbanization leads to habitat fragmentation and degradation.^[12,16] Canine distemper is a major threat to kit foxes and was found to be the cause of several deaths recorded at a solar energy project west of Blythe in 2011.^[13] Although the origin of the outbreak is currently unknown, it is hypothesized to be introduced by domestic dogs or even native species such as badgers. This disease has the potential to cause dramatic population declines and was observed affecting populations in the late 1970s as well.^[8] OHV use in desert areas have the potential to destroy burrows and dens, in addition to further compacting soils limiting future suitable den sites.^[8] Desert kit foxes in urban areas are subject to vehicle collisions, which was found to be the main cause of mortality for San Joaquin kit foxes in a study near Bakersfield.^[14] Vulnerability to rodenticide poisoning is an additional pressure on populations, with certain compounds lethal to kit foxes when administered directly.^[15]

Additionally, pressures and stressors on other conservation elements (i.e., scrub vegetation communities and habitat connectivity and wildlife movement) include climate change, land uses and land use changes, recreational activities, and fire and fire suppression. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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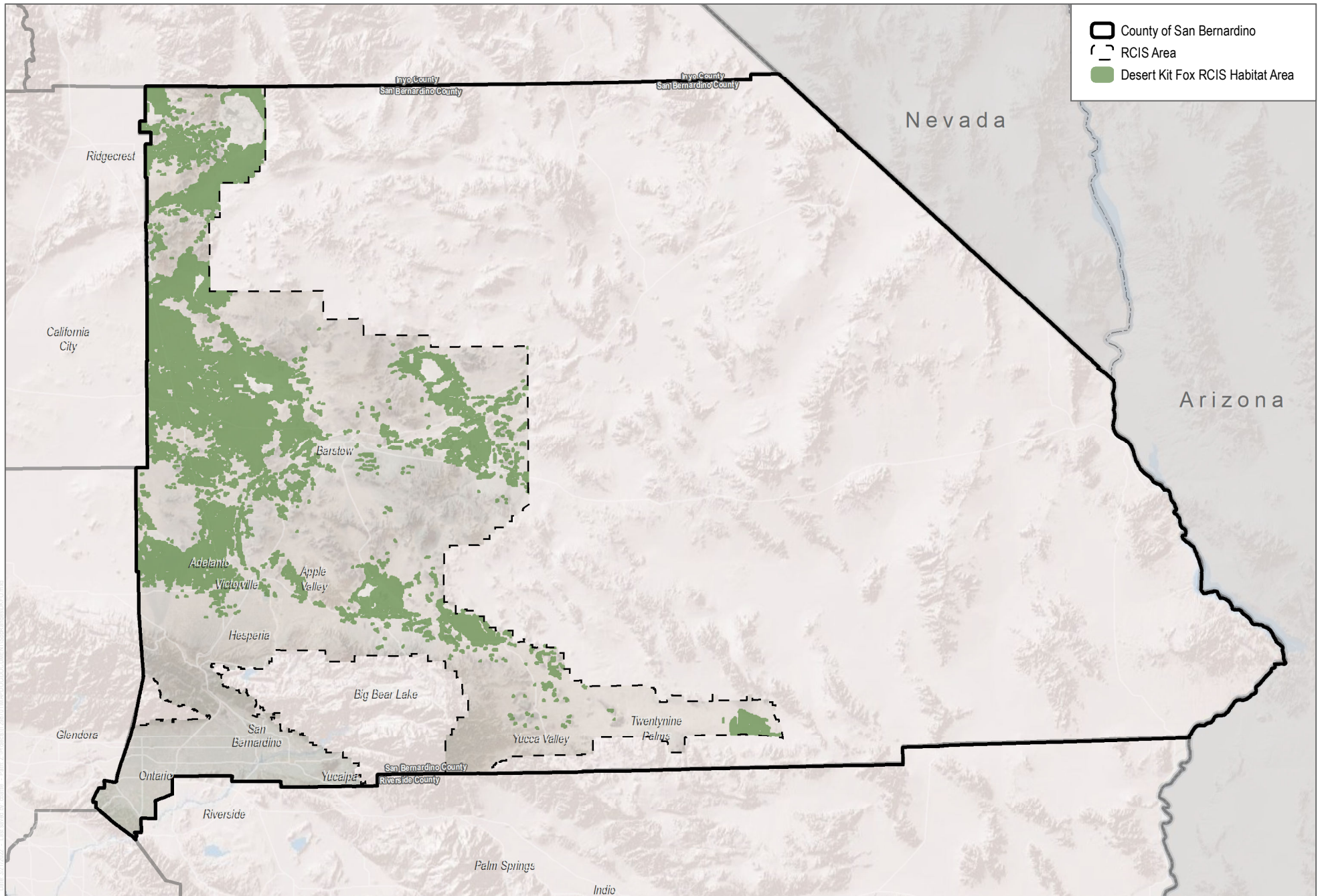
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MAMMALS

Desert Kit Fox (*Vulpes macrotis arsipus*)

Habitat Group: Desert Scrub; Dune and Playa; Grassland; Riparian and Wetland; Transitional Scrub, Chaparral, and Woodland

- ¹⁵ Shitoskey, F. Jr. 1975. "Primary and Secondary Hazards of Three Rodenticides to Kit Fox." *Journal of Wildlife Management* 39:416–418.
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SOURCE: Bing Maps 2018; San Bernardino County 2018; CBI Databasin (see Appendix D)

FIGURE 1

Desert Kit Fox RCIS Habitat Area

San Bernardino County RCIS

MAMMALS

Los Angeles Pocket Mouse (*Perognathus longimembris brevinasus*)

Habitat Group: Riversidean Alluvial Fan Sage Scrub

Legal Status

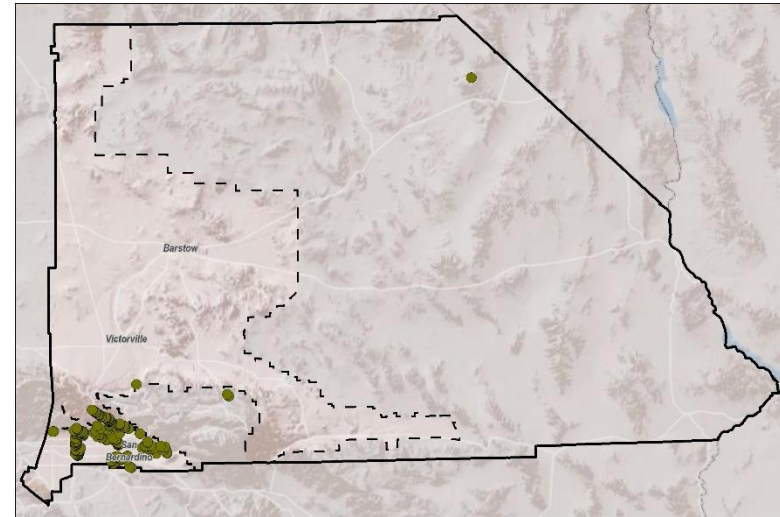
State: CDFW Species of Special Concern

Federal: Not applicable

Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: The Los Angeles pocket mouse occurs in coastal basins of Southern California and was historically distributed from Burbank and San Fernando in Los Angeles County, east to the city of San Bernardino in San Bernardino County, and southeast to the Aguanga area of Riverside County.^[1,2,3] This species' current range does not include San Fernando Valley, but it does include a few scattered locations within San Bernardino, San Jacinto, and Temecula valleys.^[3]



RCIS Distribution: A total of 219 occurrences have been recorded in the Valley region, particularly in the Upper Santa Ana River wash area, the wash areas around Lytle Creek and Cajon Wash, and in foothill areas around Rancho Cucamonga and Fontana.^[4] Additionally, this species is known to occur in the Mountain region with a total of 14 occurrences located primarily within Cajon Wash, as well as within the West Desert region with 1 occurrence located in the foothills south of Hesperia (see inset map).^[4]

Seasonal Periods for Los Angeles Pocket Mouse ^[3,9]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Hibernation	✓	✓	✓	—	—	—	—	—	—	✓	✓	✓
Breeding	—	—	—	✓	✓	✓	—	—	—	—	—	—

Habitat Requirements: This subspecies is associated with lower elevation grassland, alluvial sage scrub, and coastal sage scrub.^[3,5] Anecdotal evidence suggests that soil characteristics are more important for the Los Angeles pocket mouse than vegetation types, of which fine sandy soils are preferred and utilized for burrowing.^[6,7]

Foraging: Pocket mice (*P. longimembris*) are primarily granivorous and likely specialize on grass seeds, but seasonally they eat forbs and occasionally arthropods and larvae.^[3,6]

Reproduction: Timing and duration of activity is dependent on soil temperature, food availability, and ambient air temperature.^[8] *P. longimembris* hibernates in the winter, generally October through March,^[3] and other studies of pocket mice species record breeding (pregnant females) from April through June.^[9] Peak surface activity is May and June. Laboratory studies of *P. longimembris* have recorded typical gestation periods of around 22 to 23 days,^[10] and in the wild may produce one litter a year.^[9] Depending on resource availability, the breeding season has been observed to be extended from February to mid-September, and females can produce two litters.^[9]

Pressures and Stressors: Serious pressures and stressors to the Los Angeles pocket mouse include habitat loss, degradation, and fragmentation from urbanization, agriculture, sand and gravel mining, and flood control operations.^[3,6] Particularly, the loss of sandy loam soils through either development or altered natural flow regimes significantly limits the range of suitable habitat.^[6] Increasing conversion from habitat to agricultural or urban uses is a growing pressure in San Bernardino and Riverside counties, particularly in the San Jacinto and Temecula valley floors.^[3] Remaining populations are small and isolated, with many of the remaining habitat in Riverside County under private ownership,^[3] and they are at increased risk of extirpation because of the inability for genetic exchange to occur between populations.^[6]

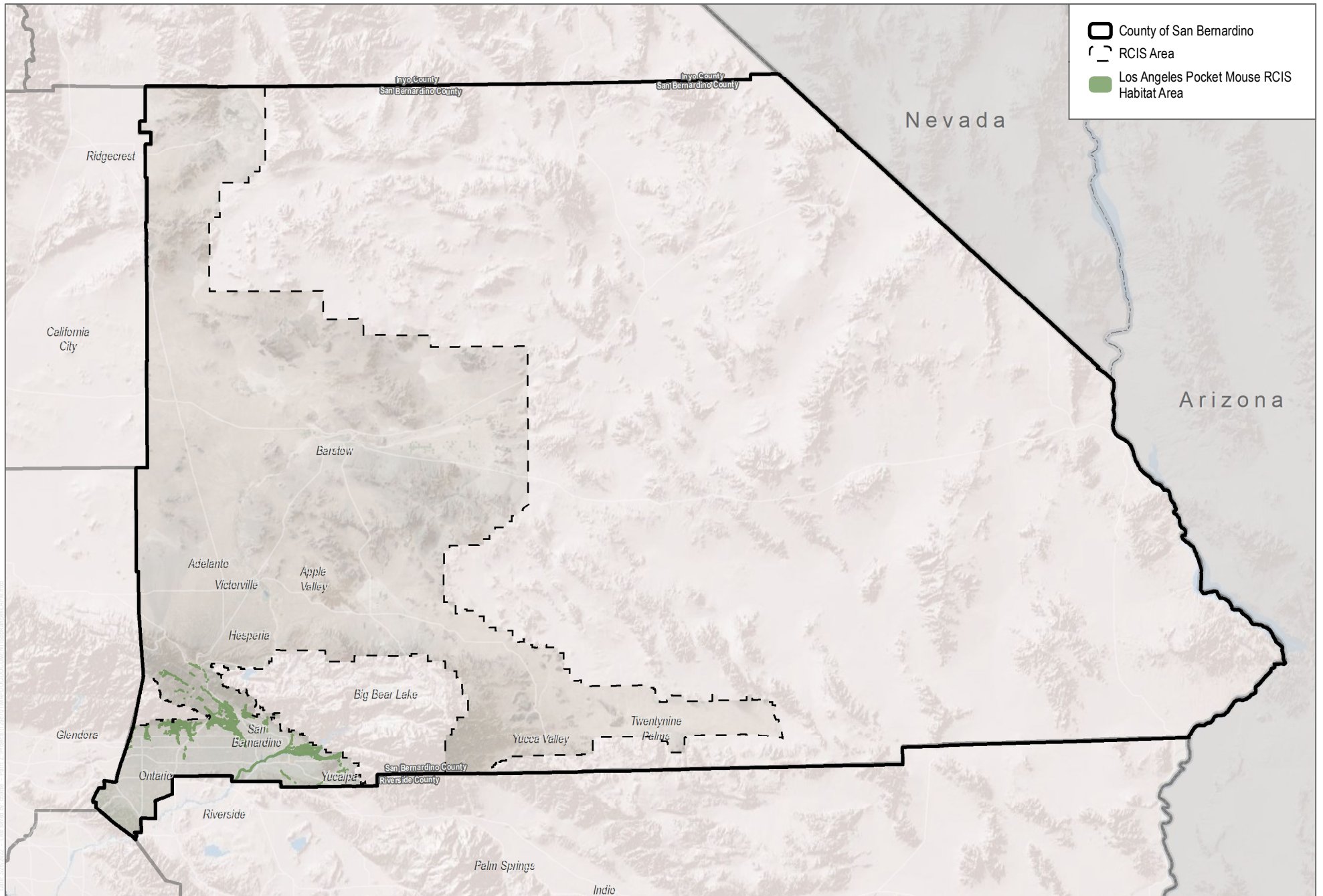
Additionally, pressures and stressors on other conservation elements (i.e., scrub vegetation communities and hydrological processes and features) include climate change, land uses and land use changes, mining and quarrying, pollutants, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities (see Appendix D)

FIGURE 1

Los Angeles Pocket Mouse RCIS Habitat Area

San Bernardino County RCIS

MAMMALS

Mohave Ground Squirrel (*Xerospermophilus mohavensis*)

Habitat Group: Desert Scrub

Legal Status

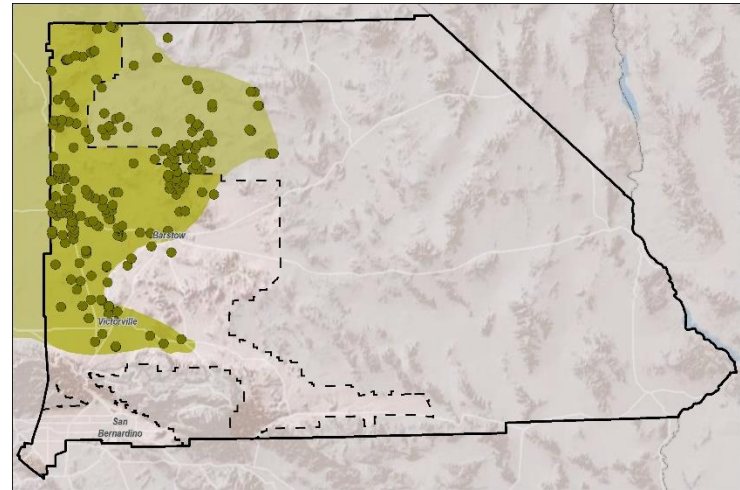
State: Threatened

Federal: BLM Sensitive

Critical Habitat: Not applicable

Recovery Plan: Not applicable; also see State MGS Conservation Strategy^[1]

Distribution: The Mohave ground squirrel is endemic to California and occurs in the northwestern Mojave Desert within San Bernardino, Los Angeles, Kern, and Inyo counties.^[2] Historically, the Mohave ground squirrel was distributed throughout the Mojave Desert bound by the San Gabriel, Southern Sierra Nevada, and Tehachapi mountains to the south and west, Owens Lake to the northwest, the Granite and Avawatz mountains in the northeast, and on the southeast by the Mojave River.^[3] Current populations are scattered and discontinuous,^[4] and local extirpations are likely in the western Antelope Valley and Victorville areas.^[5]



RCIS Distribution: A total of 170 occurrences have been recorded in the West Mojave region, particularly west and north of the Mojave River with key population centers identified on Edwards Air Force Base, around the Harper Dry Lake area, around Kramer Junction, Coolgardie Mesa, and north along Highway 395 to Johannesburg, and around the Searles Lake area (see map inset).^[6]

Seasonal Periods for Mohave Ground Squirrel ^[1,7]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	—	✓	✓	—	—	—	—	—	—	—	—	—
Aestivation	—	—	—	—	—	—	✓	✓	✓	✓	—	—
Hibernation	✓	✓	—	—	—	—	—	—	—	—	✓	✓

Habitat Requirements: This species is associated with desert scrub, including saltbush scrub, desert sink scrub, desert greasewood scrub, shadscale scrub, Joshua tree woodland, and Mojave mixed woody scrub, and found most often within creosote bush scrub.^[2,4] The Mohave ground squirrel prefers open environments with relatively low vegetative cover and flat to moderately

sloping terrain.^[2] Soil characteristics are an important habitat feature since this species is fossorial and requires deep, alluvial sandy to gravelly soils suitable for constructing burrows.^[2,7]

Foraging: Mohave ground squirrel feeds upon foliage, flowers, seeds, and fruits preferably with high water content, and is heavily reliant on seasonal availability of native shrubs particularly in drought years including spiny hopsage (*Grayia spinosa*), winterfat (*Krascheninnikovia lanata*), and saltbush (*Atriplex* spp.).^[2,7,8]

Reproduction: Breeding season occurs from mid-February to mid-March, and gestation lasts around 30 days.^[2] Litter sizes range from 4 to 9, and juveniles emerge from their natal burrows after 4 to 6 weeks.^[2,8] Reproductive success is heavily dependent on the magnitude of fall and winter rains since forage availability determines whether individuals will choose to mate or preserve fat stores to periods of aestivation and hibernation.^[8]

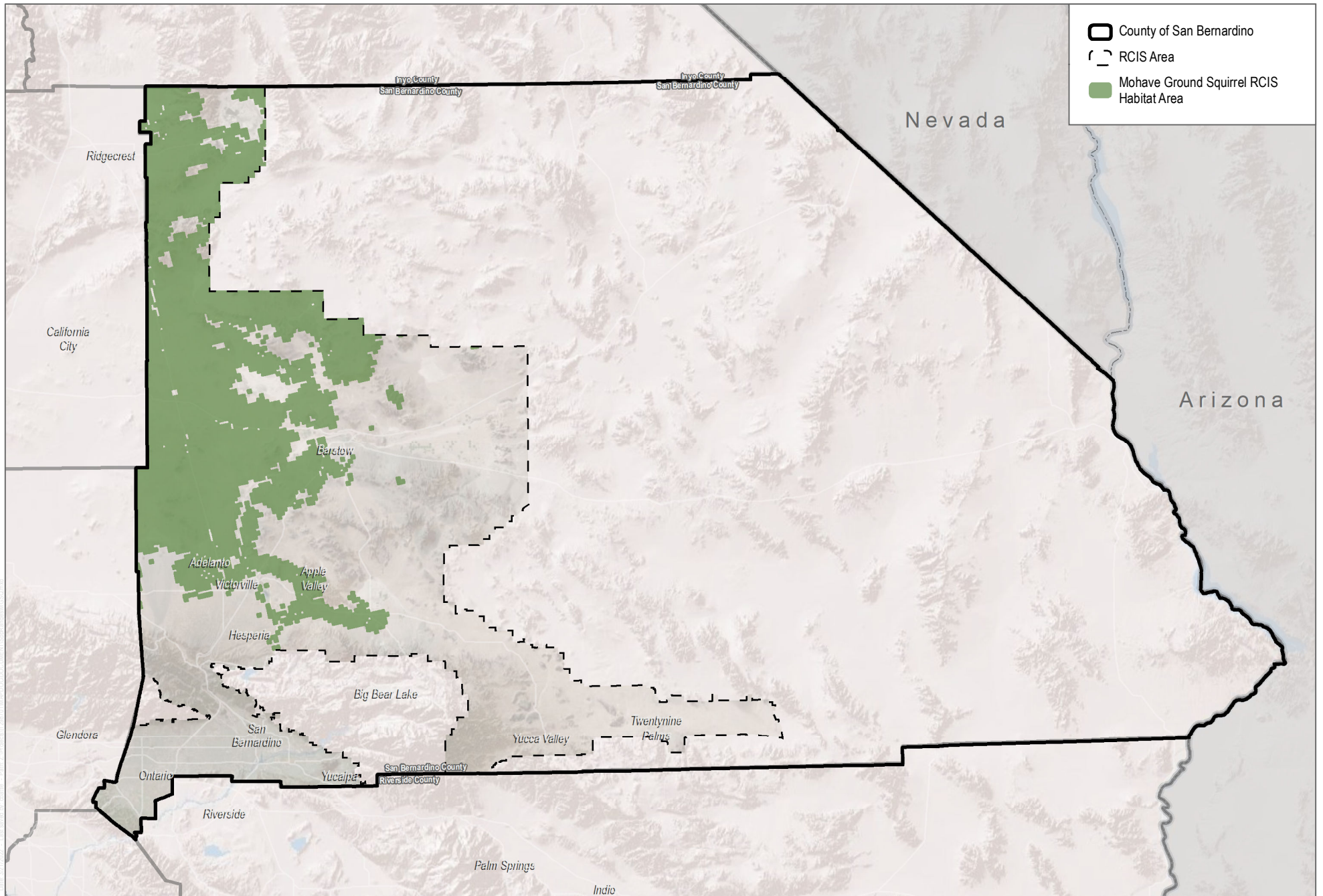
Pressures and Stressors: The primary threat to the Mohave ground squirrel is habitat loss and degradation, with additional pressures including drought and off-highway vehicles (OHV).^[1,3,4,7,8] Urbanization, especially around the cities of Palmdale, Lancaster, and Victorville, has resulted in the loss of native desert scrub habitat and has accelerated in recent years along with other desert cities.^[8] Proposed desert solar projects, agricultural development, and military operations also displace or degrade suitable habitat within the Mohave ground squirrel's range.^[7] Indirect effects of development such as fragmentation, increased vehicle use, and abundance of domestic cats have the potential to lead to local extirpations and therefore reduced species resilience as a whole.^[8] Prevalent drought limits reproductive success and can lead to local extirpations since individuals may choose not to mate for years at a time or may not survive dormancy periods with minimal fat stores.^[2,4,8] OHV use is common within the species range and can collapse burrows, diminish shrub cover, and alter soil structure.^[8,9]

Additionally, pressures and stressors on other conservation elements (i.e., desert scrub vegetation communities and habitat connectivity and wildlife movement) include climate change, land uses and land use changes, recreational activities, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; DRECP/USGS (see Appendix D)

FIGURE 1

Mohave Ground Squirrel RCIS Habitat Area

San Bernardino County RCIS



MAMMALS

Mojave River Vole (*Microtus californicus mohavensis*)

Habitat Group: Riparian and Wetland

Legal Status

State: CDFW Species of Special Concern

Federal: None

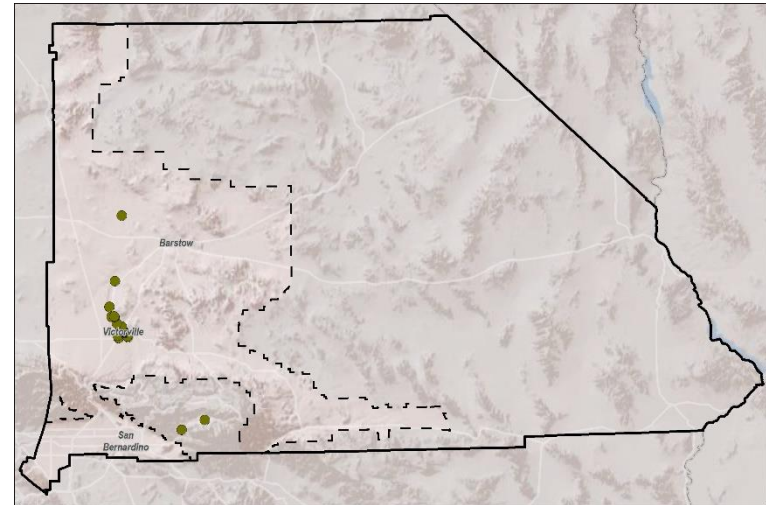
Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: Mojave River vole only occurs in riparian habitats along the Mojave River in San Bernardino County, California.^[1] This subspecies has been documented at elevations ranging from 2,020 feet at Harper Lake to about 2,700 feet at Mojave Narrow Regional Park.^[2] Historically, California voles have been observed at Harper Lake, Edwards Air Force Base near Piute Ponds and Rogers Dry Lake, and China Lake Naval Air Weapons Station, but there were no confirmed records of this particular subspecies.^[2,3] Current distribution is assumed to be restricted to the Mojave River between Victorville and Helendale, with the most current observations clustered in the Victorville and Oro Grande areas.^[2,3]

RCIS Distribution: A total of 27 occurrences have been recorded in the West Desert region in the locations described above, along the Mojave River or within Harper Dry Lake (see inset map).^[4]

Habitat Requirements: Suitable habitat for the Mojave River vole is described as areas of herbaceous growth in wet bottomlands and includes meadows and freshwater marshes, but more often the ponds and irrigation features associated with the Mojave River.^[3] This subspecies uses shallow burrows and requires friable, soft soils.^[2,3] Given the narrow margin of riparian habitat transitioning to desert scrub in this arid region, this subspecies is restricted to the grassy or riparian zones within the Mojave River corridor.^[5] This thin section of suitable habitat may be further constrained by development near the riparian belt.^[5]



Seasonal Periods for Mojave River Vole ^[3]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	✓	✓	✓	✓	✓	✓	—	—	—	✓	✓	✓

Foraging: California voles feed primarily on grasses, sedges, and forbs, while seeds and roots become an important source of food during the dry summers.^[6]

Reproduction: Reproductive activity is dependent on external conditions, and correspond with periods of abundant food and vegetative cover.^[3] As a result, the primary breeding period is concentrated in the wet season from February to March, although voles are capable of breeding year round.^[5] The gestation period is around 21 days, and litter sizes range from 1 to 11 offspring.^[7] Voles can be reproductive at 3 weeks of age for females and 6 weeks of age for males, with females exhibiting postpartum estrus able to have several successive litters as a result.^[6]

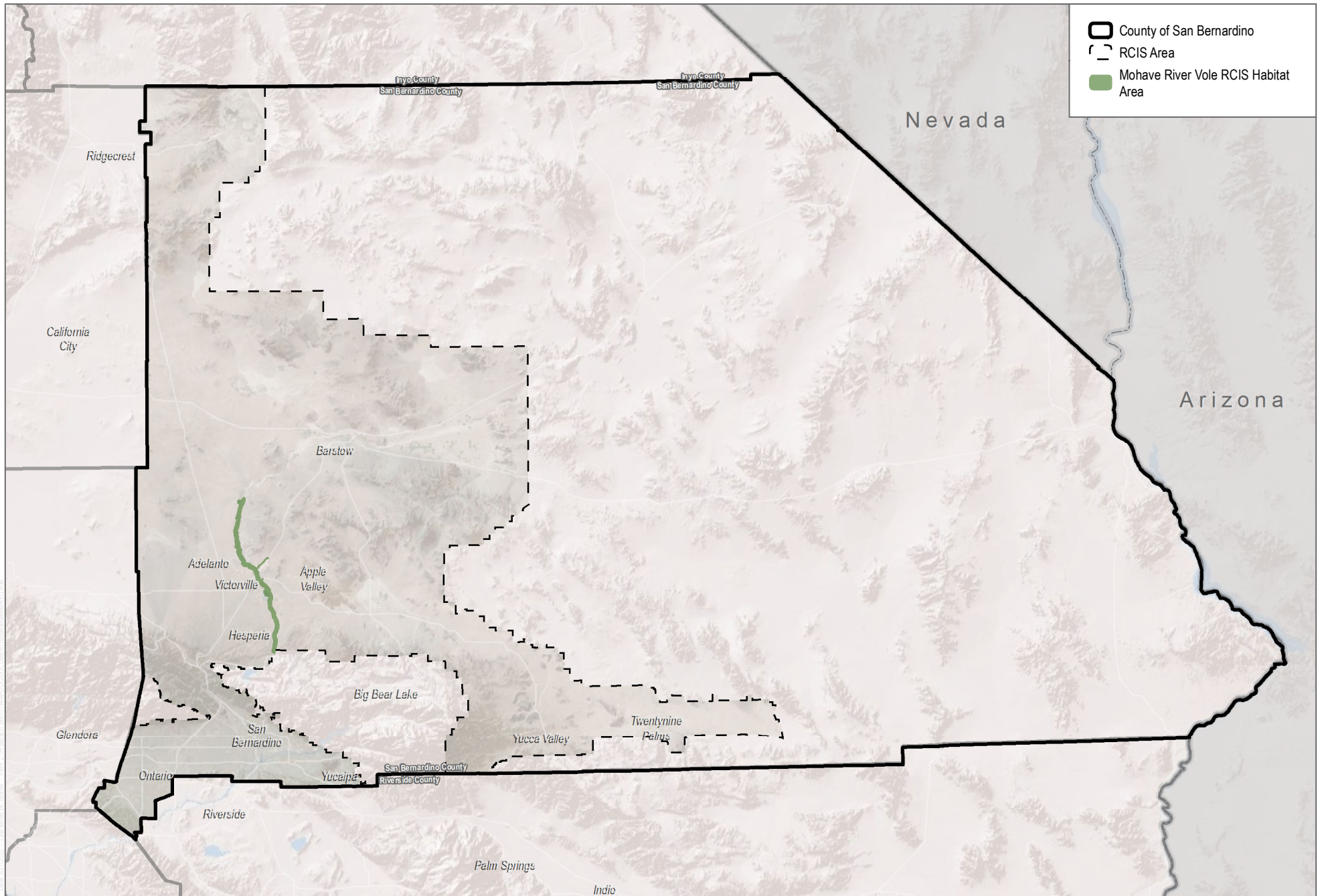
Pressures and Stressors: Primary threats to the Mojave River vole are related to habitat availability and suitability, but they include negative alien species interactions as well.^[3,5,8] Growing agricultural and urban development in the Victorville area alongside implementation of flood control with channelization is a direct threat resulting in habitat loss and restriction.^[3] The historical Harper Lake population is presumed extirpated as a result of the marsh habitat drying up.^[9] Invasive tamarisk (*Tamarix* spp.) outcompetes native vegetation and alters the composition of riparian communities.^[3] Introduction of domestic cats and house mice (*Mus musculus*) introduce novel predation and competition that the Mojave River vole is not adapted to, which places additional pressure on populations.^[3,5,10] Finally, voles naturally experience dramatic population fluctuations through their reproductive dependence on environmental factors, high litter sizes, postpartum estrus, and early sexual maturity, which further puts them at risk of local extirpations in their already disjunct and highly restricted range.^[3,5]

Additionally, pressures and stressors on other conservation elements (i.e., riparian vegetation communities and hydrological processes and features) include climate change, land uses and land use changes, dam and water management, recreational activities, and invasive plants. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; DRECP (see Appendix D)

FIGURE 1

Mohave River Vole RCIS Habitat Area

San Bernardino County RCIS

MAMMALS

Habitat Group: Grassland; Riversidean Alluvial Fan Sage Scrub; Riparian and Wetland; Transitional Scrub, Chaparral, and Woodland; Developed and Agriculture

Mountain Lion (*Puma concolor*)

MAMMALS

Mountain Lion (*Puma concolor*)

Habitat Group: Grassland; Riversidean Alluvial Fan Sage Scrub; Riparian and Wetland; Transitional Scrub, Chaparral, and Woodland; Developed and Agriculture

Legal Status

State: Candidate^[1]; CDFW Non-Game Furbearer; CDFW Specially Protected Mammal^[2]

Federal: Not applicable

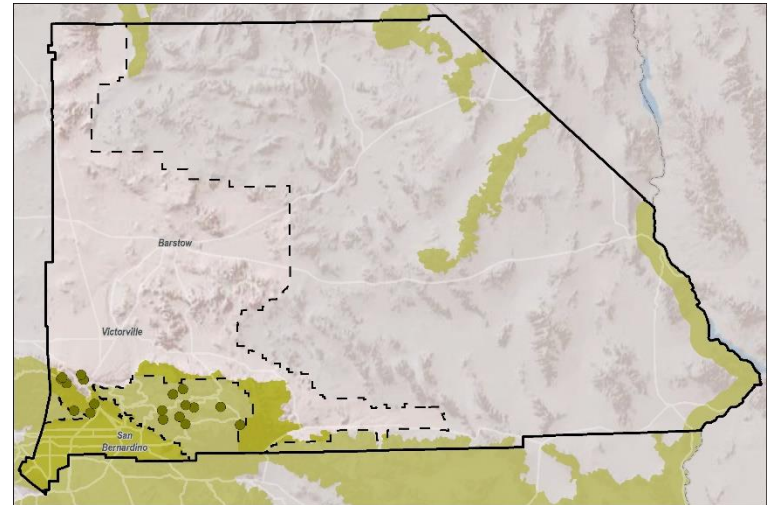
Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: Mountain lions have the largest range of any terrestrial mammal in the Western Hemisphere and can be found from northern British Columbia through the United States, Central and South America, and to the southern tip of Chile.^[3,4] Within the United States, their range is limited predominantly to relatively unpopulated regions in the west.^[3] Mountain lions were eliminated from eastern North America within 200 years following European colonization,^[5] with the last remaining populations restricted to southern Florida and the upper peninsula of Michigan.^[6]

RCIS Distribution: There are eight occurrence records for this species distributed across the Mountain region and no occurrence records within the Valley region (see inset map); however, this species likely occurs throughout the Valley region at low density and is underreported in the database.^[7]

Habitat Requirements: This species generally requires large tracts of land with minimal human disturbance, and occurs in a variety of environments, ranging from deserts to tropical rainforests and cold coniferous forests.^[3] Although several studies show that habitats with dense understory vegetation is preferred,^[8,9] mountain lions can occupy open habitats with very little vegetative



Seasonal Periods for Mountain Lion ^[1]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Litter (Cubs)	—	—	—	✓	✓	✓	✓	✓	✓	—	—	—

cover as well.^[5] In the Santa Ana and Santa Margarita mountains, mountain lions are most commonly located in coastal sage scrub, oak woodland, and riparian habitats.^[10] Foothill and riparian habitats are priority areas for the species.

Hunting: Mountain lions require sufficient horizontal cover for stalking prey.^[11] In North America they feed primarily on deer, but they may also prey upon birds, reptiles, and various other mammals.^[11]

Reproduction: Females may come into estrus at any time of the year, but the majority of births occur in the warmer months from April to September.^[3] Young are typically born in secluded areas among rocks or dense vegetation.^[12] Litters vary in size from 1 to 6 cubs with an average of 2.4, and cubs remain with their mother until around 1.5 to 2 years of age.^[3] Mountain lions reach sexual maturity at about 2 to 3 years of age, although first breeding is likely dependent on when females are able to establish territory.^[13]

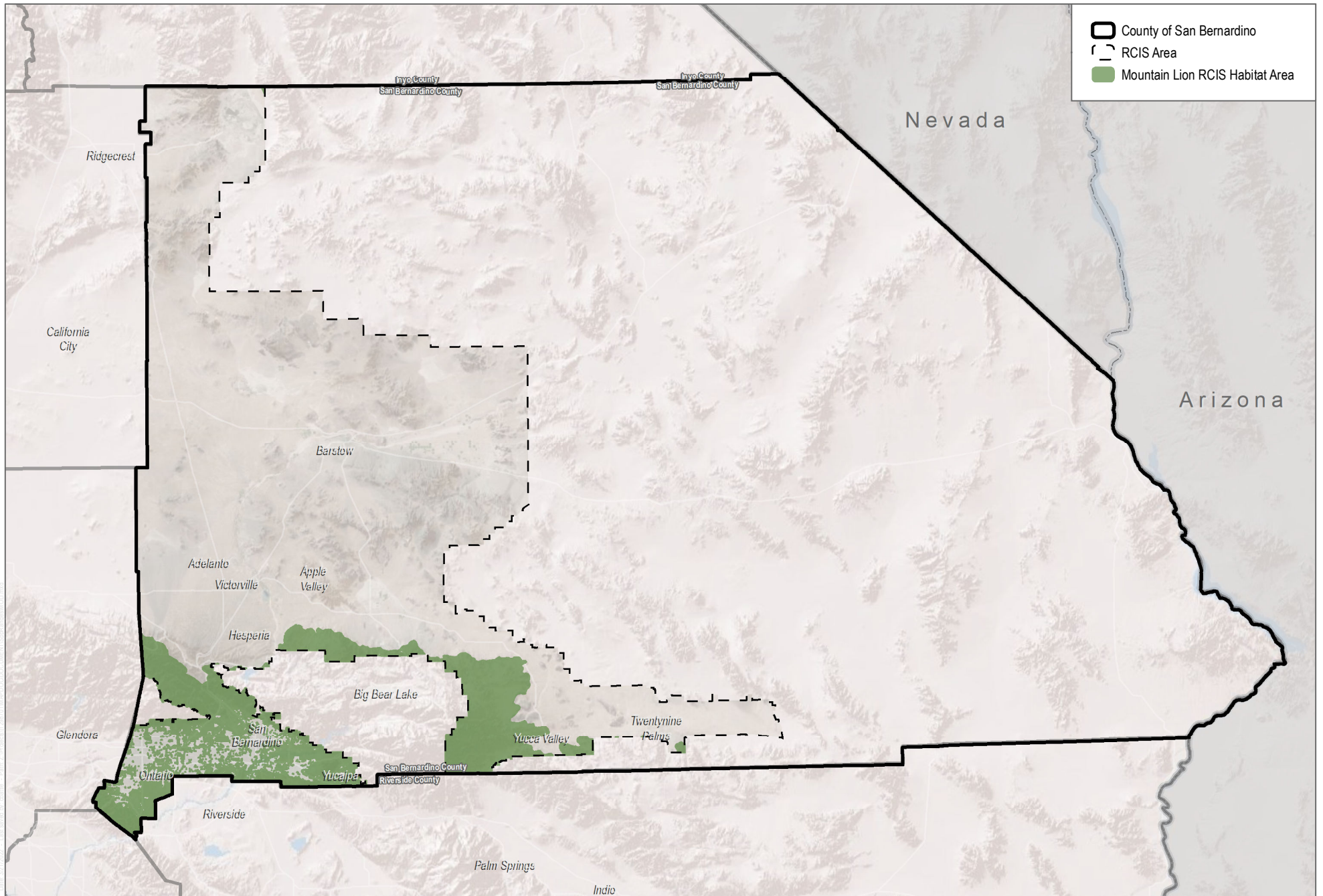
Pressures and Stressors: Mountain lions face threats from habitat loss, fragmentation, vehicle collisions, and decreased wild prey populations through poaching.^[3] Large tracts of undeveloped suitable habitat with movement corridors and linkages are essential to the viability of apex predator populations in urbanizing landscapes, and they are increasingly constrained and bisected by development and transportation infrastructure.^[13] In Southern California, the probability of mountain lion occurrence is zero in habitat blocks below 100 square kilometers.^[14] Wide ranging carnivores are particularly susceptible to vehicle collisions, and roads are a significant source of mortality in the Santa Ana Mountains, with 32% of deaths observed caused by collisions.^[8]

Additionally, pressures and stressors on other conservation elements (i.e., grassland, scrub, riparian, chaparral and woodland vegetation communities, developed and agricultural land covers, and habitat connectivity and wildlife movement) include climate change, land uses and land use changes, and fire and fire suppression. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; CDFW BIOS DS2616 (see Appendix D)

FIGURE 1

Mountain Lion RCIS Habitat Area

San Bernardino County RCIS



MAMMALS

Pallid Bat (*Antrozous pallidus*)

Habitat Group: Desert Scrub; Riparian and Wetland; Dune and Playa; Grassland

Legal Status

State: CDFW Species of Special Concern

Federal: BLM Sensitive; USFS Sensitive

Critical Habitat: Not applicable

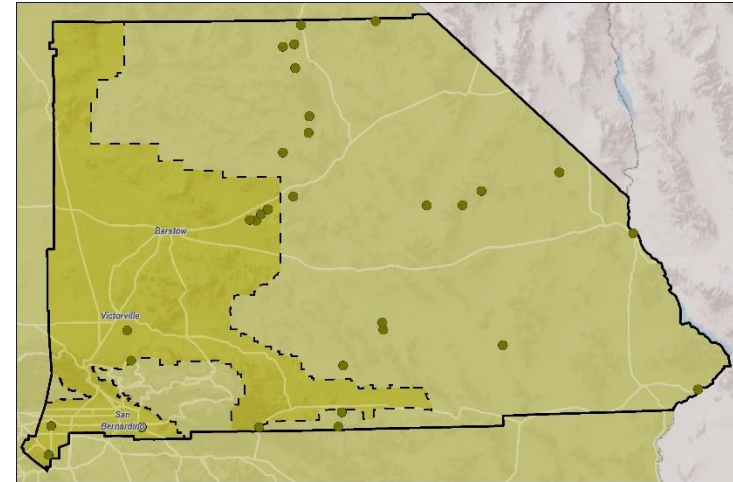
Recovery Plan: Not applicable

Distribution: The pallid bat is widely distributed within the western United States from southern British Columbia, Canada, to Baja California, Mexico.^[1,2] This species occurs as far east as Kansas, Oklahoma, and Texas, and has been observed at elevations up to 8,000 feet.^[1,2] Pallid bats occur throughout California, locally common in arid desert regions, and absent only from the higher elevations of the Sierra Nevada mountain range.^[1,2,3]

RCIS Distribution: The species is known from just eight occurrence records in the West Desert region along the Mojave River and four occurrence records distributed in the Valley region (see inset map); however, it is thought to be more widespread throughout the desert and underreported in the database.^[4]

Habitat Requirements: This species occupies a variety of habitats including grasslands, shrublands, woodlands, and forests, but prefers open, dry habitats with rocky outcrops, cliffs, and crevices for roosting.^[3] Although found throughout California, this species is frequently associated with desert areas and in particular the Sonoran Desert.^[2,5]

Foraging: Pallid bats are primarily insectivores, able to forage in various habitats aside from developed or disturbed land.^[2,6] They forage 0.5 to 2.5 meters (1.6 to 8.2 feet) above the ground and may capture prey aerially, by gleaning from plants, or taking insects crawling along the ground surface.^[3,7]



Seasonal Periods for Pallid Bat ^[2,3]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	✓	✓	—	—	—	—	—	—	—	✓	✓	✓
Maternity Roosts	—	—	—	✓	✓	✓	✓	—	—	—	—	—
Hibernation	✓	✓	✓	✓	—	—	—	—	—	—	—	✓

Roosting: Suitable day roosts are typically warm with a stable temperature range but must protect against temperature extremes.^[3,5,7] Day roosting sites commonly include caves, crevices, bridges, mines, and occasionally hollow trees and buildings.^[2,5,8,9] Night roosts may be in more open areas with easy access since they are used for the consumption of prey and to enter night torpor, and commonly include shallow caves, cliff overhangs, cracks, crevices, and trees and snags.^[3,6]

Reproduction: Pallid bats mate from October to February.^[2,3] Females store sperm and delay fertilization until later in winter, with gestation approximately 9 weeks long and the majority of births occurring May through June.^[2] Litters commonly consist of two young, and pups reach adult flight capability and adult weight from 49 to 56 days of age.^[2] Nursery colonies form in early spring, and males may either roost separately or within the nursery colony.^[3]

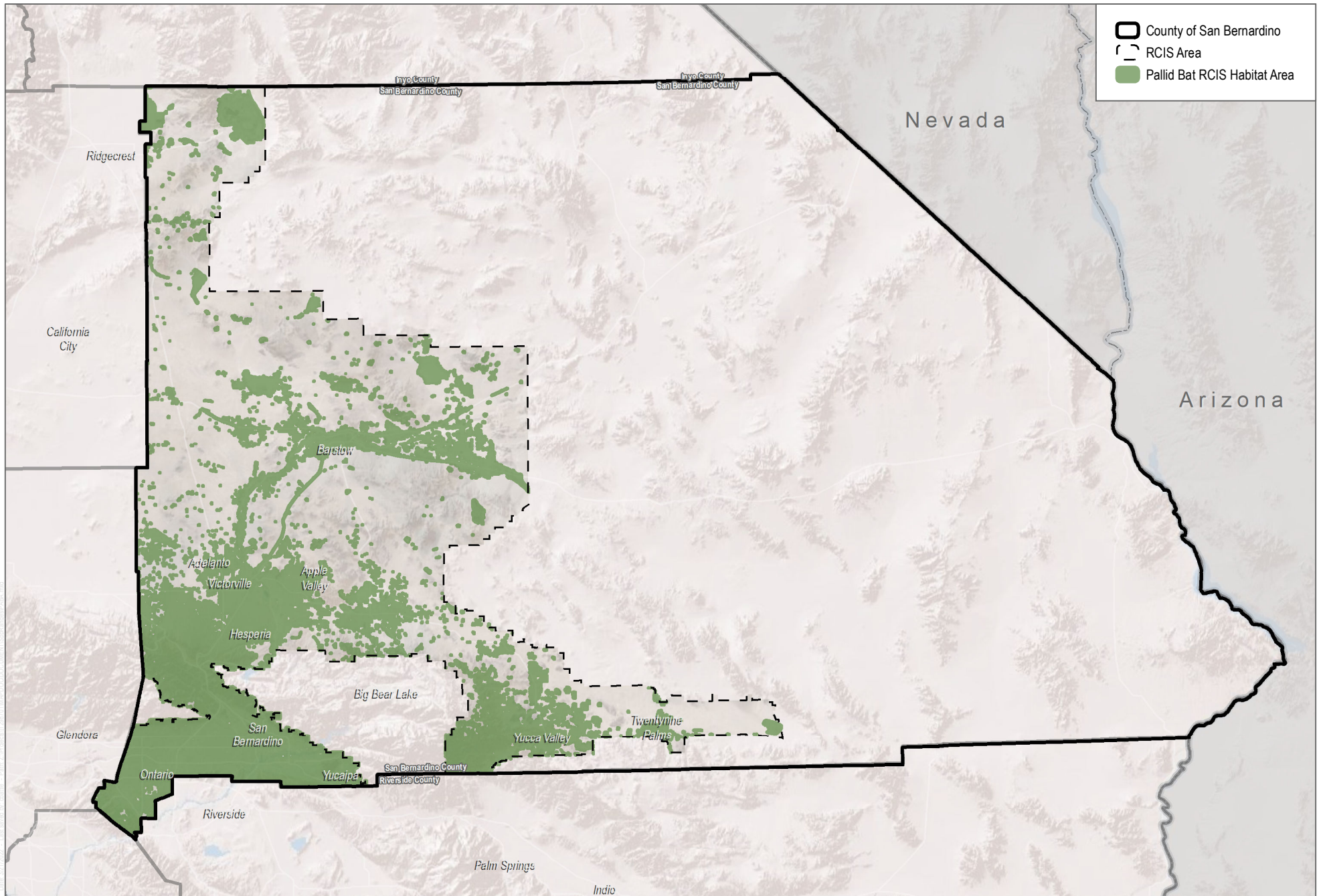
Pressures and Stressors: Growing urbanization, loss of roosting and foraging habitat, and large-scale wind energy pose threats to pallid bat populations.^[2,4,10] Pallid bats are highly vulnerable to disturbance at roost sites as a colonial species with considerable roost loyalty, and are subject to vandalism, extermination, anthropogenic noise, and general human activity at or near the roost.^[2,11] Although this species can coexist with humans in rural environments, dramatic population declines are associated with highly developed areas such as the south coast region of California, and suggest intolerance to urbanization.^[4,12] Conversion to agriculture, timber harvesting, prescribed fires, and pesticides limit forage habitat quality and food availability.^[4] Significant bat mortality has been observed at wind energy facilities, and pallid bats specifically may be sensitive to strikes during emergence from roosts or during juvenile dispersal.^[7,10]

Additionally, pressures and stressors on other conservation elements (i.e., desert scrub, grassland, riparian and wetland, and dune and playa vegetation communities) include climate change, land uses and land use changes, and fire and fire suppression. These pressures and stressors can affect the quality and function of these vegetation communities to support habitat for this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; CDFW BIOS DS2497 (see Appendix D)

FIGURE 1

Pallid Bat RCIS Habitat Area

San Bernardino County RCIS

MAMMALS

San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*)

Habitat Group: Riversidean Alluvial Fan Sage Scrub

Legal Status

State: Candidate,^[1] CDFW Species of Special Concern

Federal: Endangered^[2]

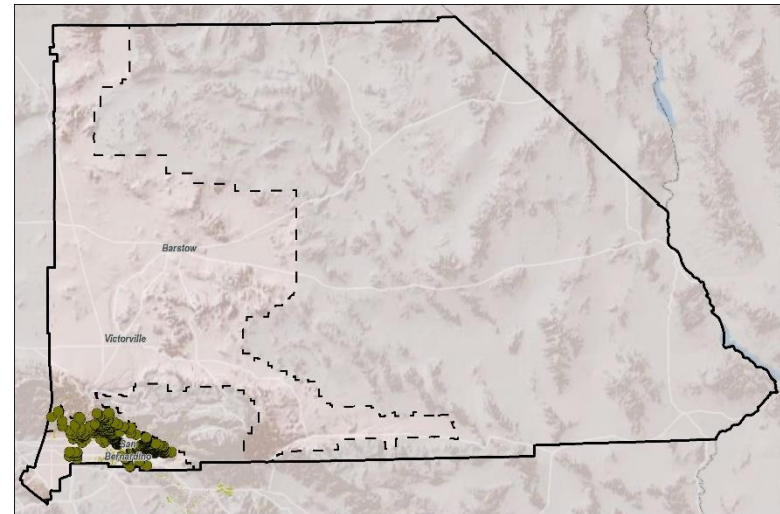
Critical Habitat: Originally designated on April 23, 2002^[3]; USFWS issued revised critical habitat on October 17, 2008^[4]

Recovery Plan: Not applicable

Distribution: The San Bernardino kangaroo rat is found within alluvial floodplain habitat, historically encompassing the alluvial fan terraces at the bases of the San Gabriel, San Bernardino, and San Jacinto mountain ranges in San Bernardino and Riverside counties, California.^[5] The historical range of the San Bernardino kangaroo rat has been reduced by approximately 95% due to agricultural, urban, and industrial development.^[2] Current populations are confined to the upper reaches of the Santa Ana River from the confluence of Mill Creek and the Santa Ana River, discrete locations within Lytle and Cajon Creek washes upstream of Interstate 15, and along the upper reaches of the San Jacinto River and in Bautista Creek.^[5]

RCIS Distribution: A total of 1,361 occurrences have been recorded in the Valley region, particularly in the Upper Santa Ana River wash area, the wash areas around Lytle Creek and Cajon Wash, Reche Canyon, San Timoteo Canyon, and in foothill areas around Rancho Cucamonga and Fontana.^[6] This species also occurs in the Mountain region with seven occurrences near in southern Cajon Pass (see inset map).^[6]

Habitat Requirements: The San Bernardino kangaroo rat inhabits Riversidean alluvial fan sage scrub, which provides the food resources and suitable sandy, loamy, or gravelly soils for building the shallow burrows in which they reside.^[2,4] Alluvial fans are dynamic environments subject to periodic flooding, and as a result of subsequent erosion and scour comprises of pioneer,



Breeding Periods for San Bernardino Kangaroo Rat ^[4]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—

intermediate, and mature successional phases.^[7] Pioneer and intermediate sage scrub is less dense and contains looser soils,^[8] making them the preferred habitat for this species, while mature sage scrub is more rarely occupied.^[4] During flood events, burrows within the flow path are destroyed and survival is dependent on populations within different zones of successional alluvial fan sage scrub, requiring all three successional phases for long-term species viability.^[4,5]

Foraging: Seeds are the primary food source, but green vegetation and various insects are important seasonal food and water sources.^[4]

Reproduction: Reproductive activities peak in June and July, although observed pregnant or lactating females between January and November and observed males in reproductive condition between January and August suggest a prolonged breeding season.^[5] Females are capable of having more than one litter in a year, and average between two and three young per litter.^[4] Reproduction appears to coincide with high food availability, and population growth is limited by small litter size, long intervals between litters, and the tendency to promote self-survival over reproduction.^[5,9]

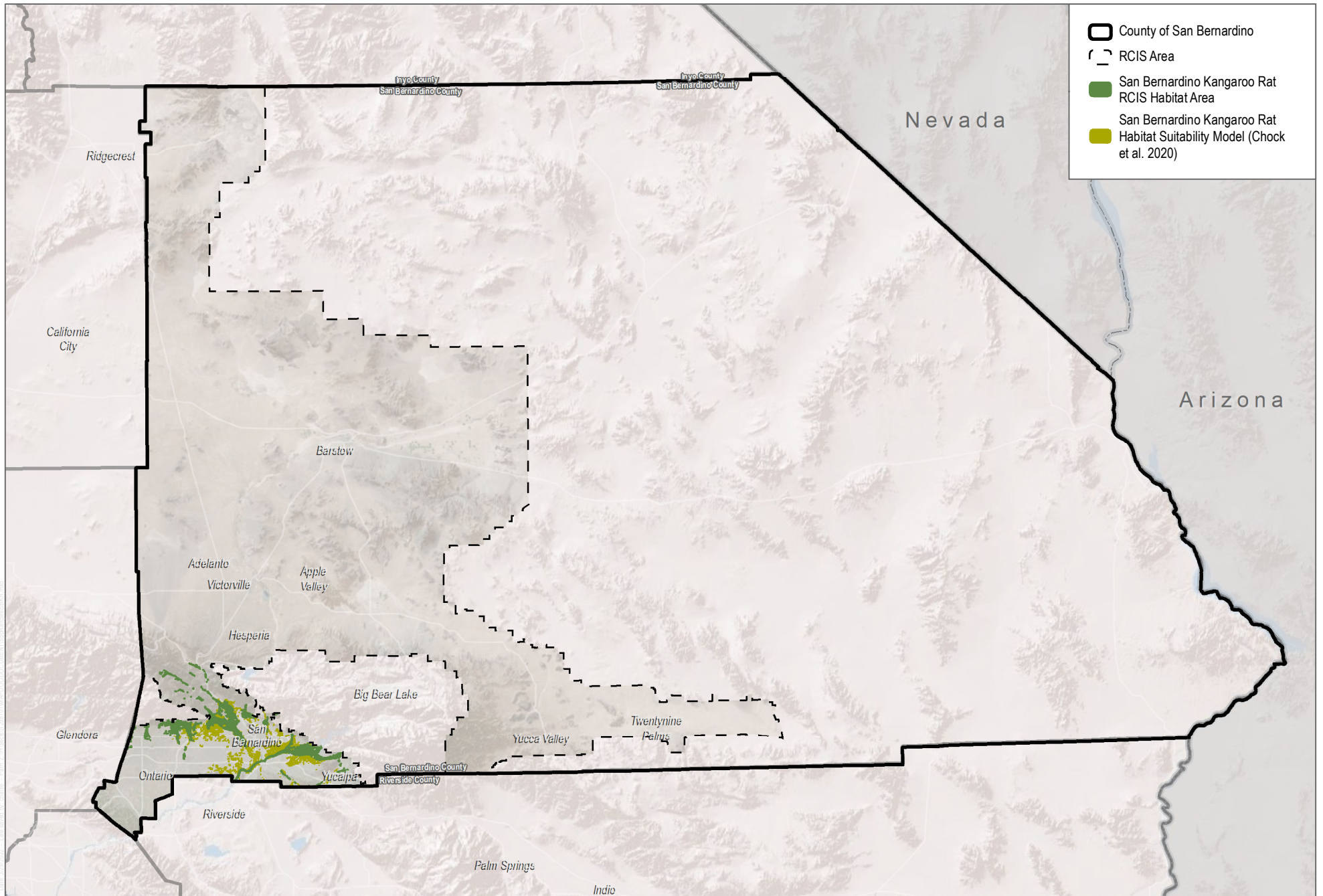
Pressures and Stressors: Major pressures and stressors to remaining San Bernardino kangaroo rat populations include habitat loss and degradation due to aggregate mining, flood control projects, urbanization, and off-highway vehicle (OHV) activity.^[5] These pressures displace and fragment suitable habitat, compact soils, and alter natural flow regime with associated soil structure and plant succession patterns.^[5] Additionally, the small population size and highly fragmented nature of extant populations lend this species to higher risk of extirpation through localized events and exacerbate loss of genetic variation.^[5]

Additionally, pressures and stressors on other conservation elements (i.e., scrub vegetation communities and hydrological processes and features) include climate change, land uses and land use changes, mining and quarrying, recreational activities, pollutants, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities, Chock et al. 2020 (see Appendix D)

FIGURE 1

San Bernardino Kangaroo Rat RCIS Habitat Area

San Bernardino County RCIS

MAMMALS

Townsend’s Big-Eared Bat (*Corynorhinus townsendii*)

Habitat Group: Desert Scrub; Riparian and Wetland

Legal Status

State: CDFW Species of Special Concern

Federal: BLM Sensitive; USFS Sensitive

Critical Habitat: Not applicable

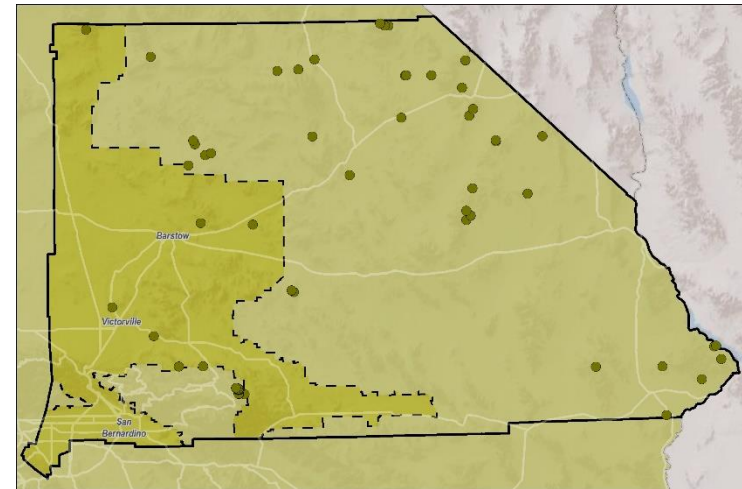
Recovery Plan: Not applicable

Distribution: Townsend’s big-eared bat occupies a continuous range within the western and central United States from southern British Columbia, Canada, to central Mexico, extending east into parts of South Dakota, Nebraska, Kansas, Oklahoma, and Texas.^[1,2] Five distinct subspecies occur and overlap within the confines of this general range, and subspecies *C. t. townsendii* and *C. t. pallescens* both occur in the western United States.^[3] This species can be found throughout California, aside from the alpine and subalpine areas of the Sierra Nevada mountain range.^[4,5]

RCIS Distribution: This species is known from eight occurrence records scattered in the West Desert region (see inset map); however, it is thought to be more widespread throughout the desert and underreported in the database.^[6]

Habitat Requirements: This species occupies a variety of habitats including inland desert, coastal redwood forest, riparian, and oak woodland, as well as coniferous and deciduous forests, although primarily associated with mesic habitats and distribution heavily reliant on suitable roosting habitat.^[1,7]

Foraging: Moths make up a majority of the diet, while beetles and other soft-bodied insects may also be taken.^[3] This species uses the canopy and mid-canopy of forests, woodlands, riparian zones, and sagebrush shrubsteppe for foraging.^[8]



Seasonal Periods for Townsend’s Big-Eared Bat ^[3,5]												
	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Breeding	✓	✓	—	—	—	—	—	—	—	✓	✓	✓
Maternity Roosts	—	—	—	—	✓	✓	✓	—	—	—	—	—
Hibernation	✓	✓	✓	✓	—	—	—	—	—	✓	✓	✓

Roosting: Townsend's big-eared bat prefers to roost in caves, mines, and shafts, but can also be found to a lesser extent roosting in buildings, bridges, rock crevices, and hollow trees.^[5] Unlike other cave-dwelling bats, this species commonly roosts in open areas, often hanging from walls and ceilings.^[3] This species has fairly strict temperature requirements for roosting sites, with maternity colonies using relatively warmer sites from 19°C to 30°C (66°F to 86°F), and hibernation necessitating much colder sites preferably below 10°C (50°F).^[3,9]

Reproduction: Mating is concentrated in November to February, and females delay fertilization until after hibernation.^[3] Females gather in the spring at nursery sites and give birth to one pup between May and July.^[3,5] These nursery colonies persist until young become independent in late summer or early fall.^[5] Many if not all surviving female yearlings will return to the same nursery roost in the following year.^[5] Periods of torpor and hibernation extend from early fall to early spring, with individuals commonly awaking to change position with a hibernaculum or moving to another roost entirely.^[3,10]

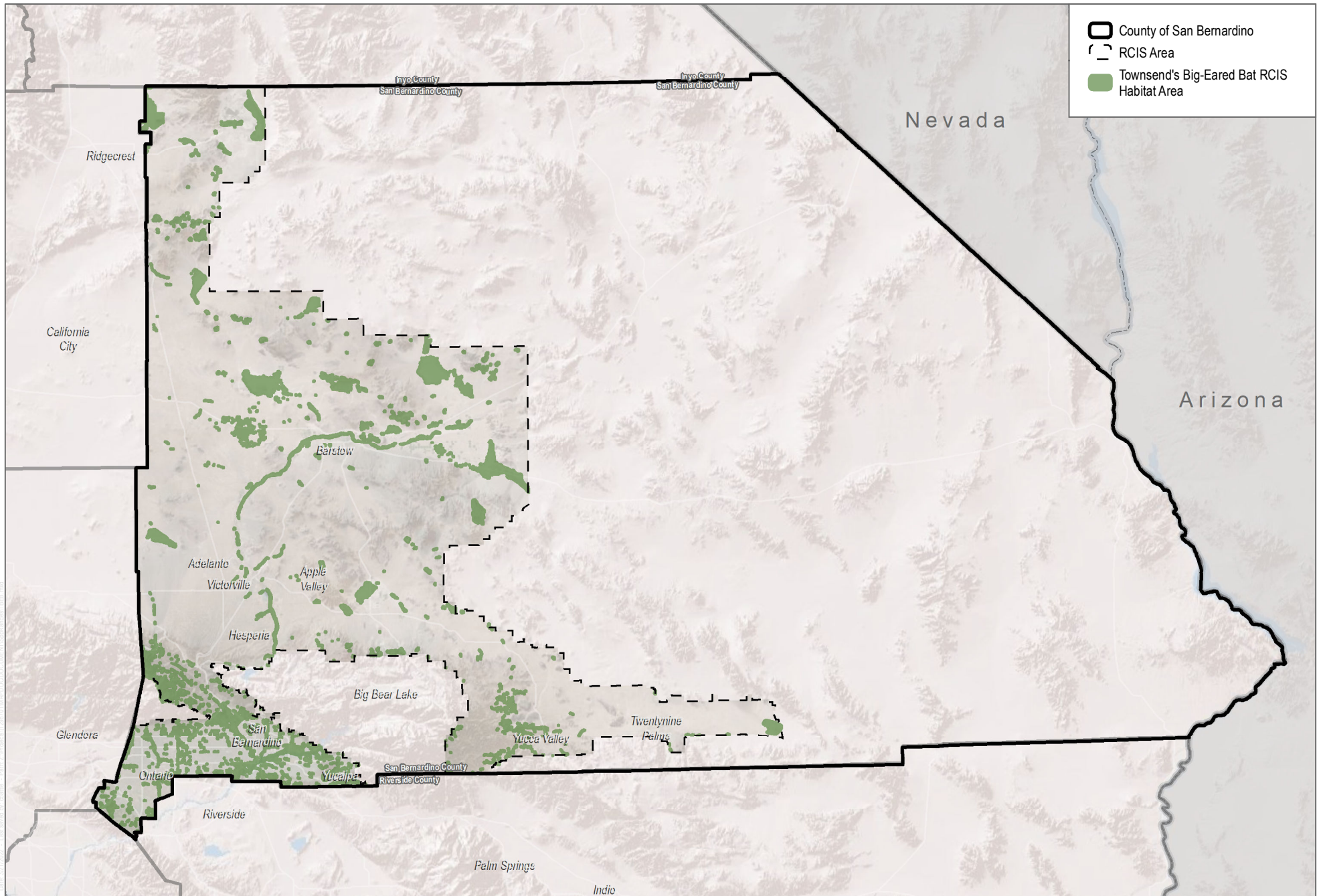
Pressures and Stressors: Townsend's big-eared bats are primarily pressured and stressed by disturbance, but they are also adversely affected by loss of roost and foraging habitat as well as potentially by large wind energy projects.^[3,7] This species is highly sensitive to human disturbance and may abandon maternity or hibernation roost sites after just one disturbance event.^[1,3,4] In California, all known nursery colonies in limestone caves have been abandoned, and numbers have significantly declined across the state with a 52% loss in number of maternity colonies and a 45% decline in number of available roosts.^[3,7] Human activity at roosts, closure of old mines, renewed mining, and development or conversion to agriculture in foraging habitat all limit and degrade possible roost and foraging sites.^[7] Large-scale wind energy operations are known to be the source of significant bat mortality and may further stress populations especially if located in close proximity to roosting sites.^[11]

Additionally, pressures and stressors on other conservation elements (i.e., desert scrub, riparian, and wetland vegetation communities) include climate change, land uses and land use changes, and fire and fire suppression. These pressures and stressors can affect the quality and function of these vegetation communities to support habitat for this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; CDFW BIOS DS2496 (see Appendix D)

FIGURE 1

Townsend's Big-Eared Bat RCIS Habitat Area

San Bernardino County RCIS

PLANTS

Alkali Mariposa-Lily (*Calochortus striatus*)

Habitat Group: Desert Scrub, Riparian and Wetland

Legal Status

State: None; CRPR 1B.2^[1]

Federal: BLM Sensitive; USFS Sensitive

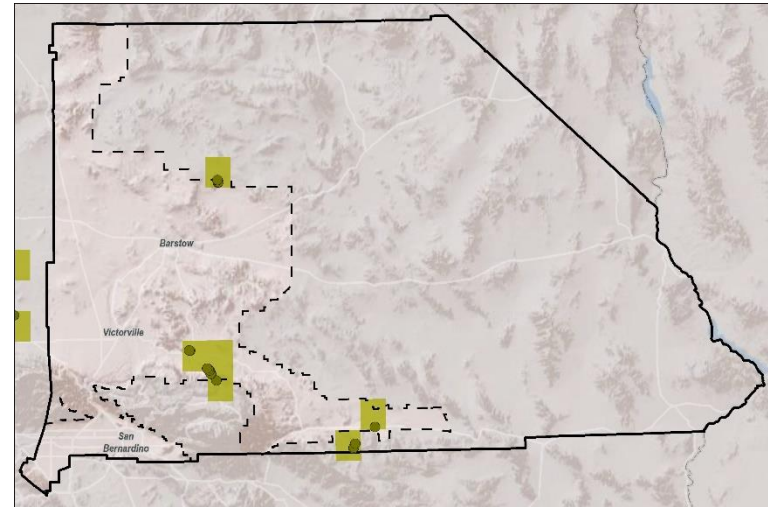
Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: This species is found in moist, alkaline areas of the arid interior within Southern California and western Nevada.^[1,2] In Southern California, alkali mariposa-lily occurs in the southern Sierra Nevada; in the western, central, and southern Mojave Desert; at the north base of the San Bernardino Mountains; and in the southern San Joaquin Valley.^[2,3] Observations are scattered within San Bernardino, Tulare, Kern, and Los Angeles counties and at elevations ranging from 70 to 1,595 meters (230 to 5,233 feet).^[4]

RCIS Distribution: A total of 14 occurrences have been recorded scattered throughout the West Desert region, including at Box Springs in Rabbit Springs the Lucerne Valley, Whiskey Springs and Cushenbury Springs in the San Bernardino Mountain foothills, Paradise Springs northeast of Barstow, and near Twentynine Palms in the Morongo Basin (see inset map).^[5]

Habitat Requirements: Alkali mariposa-lily grows in mesic, alkaline conditions, and is found within seasonally moist habitats including alkaline meadows and seeps, ephemeral washes, and vernal moist depressions.^[2,4,6] This species typically requires sandy, calcareous substrates, and is associated with chaparral, chenopod scrub, and Mojavean desert scrub.^[2,4,6] Observations



Blooming Periods for Alkali Mariposa Lily ^[4]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	—	✓	✓	✓	—	—	—	—	—	—

* California Rare Plant Rank **1B**: Rare, threatened, or endangered in California and elsewhere; **0.2**: Moderately threatened in California.

made on Edwards Air Force base suggest that this species is found in halophytic saltbush scrub, clay hardpans, and sand dunes. In addition, observations suggest periodic natural inundation is important to growth.^[7]

Reproduction: This species is a perennial herb arising from an underground bulb.^[3,4] Alkali mariposa-lily blooms from April to June and has perfect flowers that contain both male and female reproductive parts.^[2,4] Pollinators include flies and bees, and it is unknown whether reproduction primarily occurs through seed establishment or bulb division.^[2]

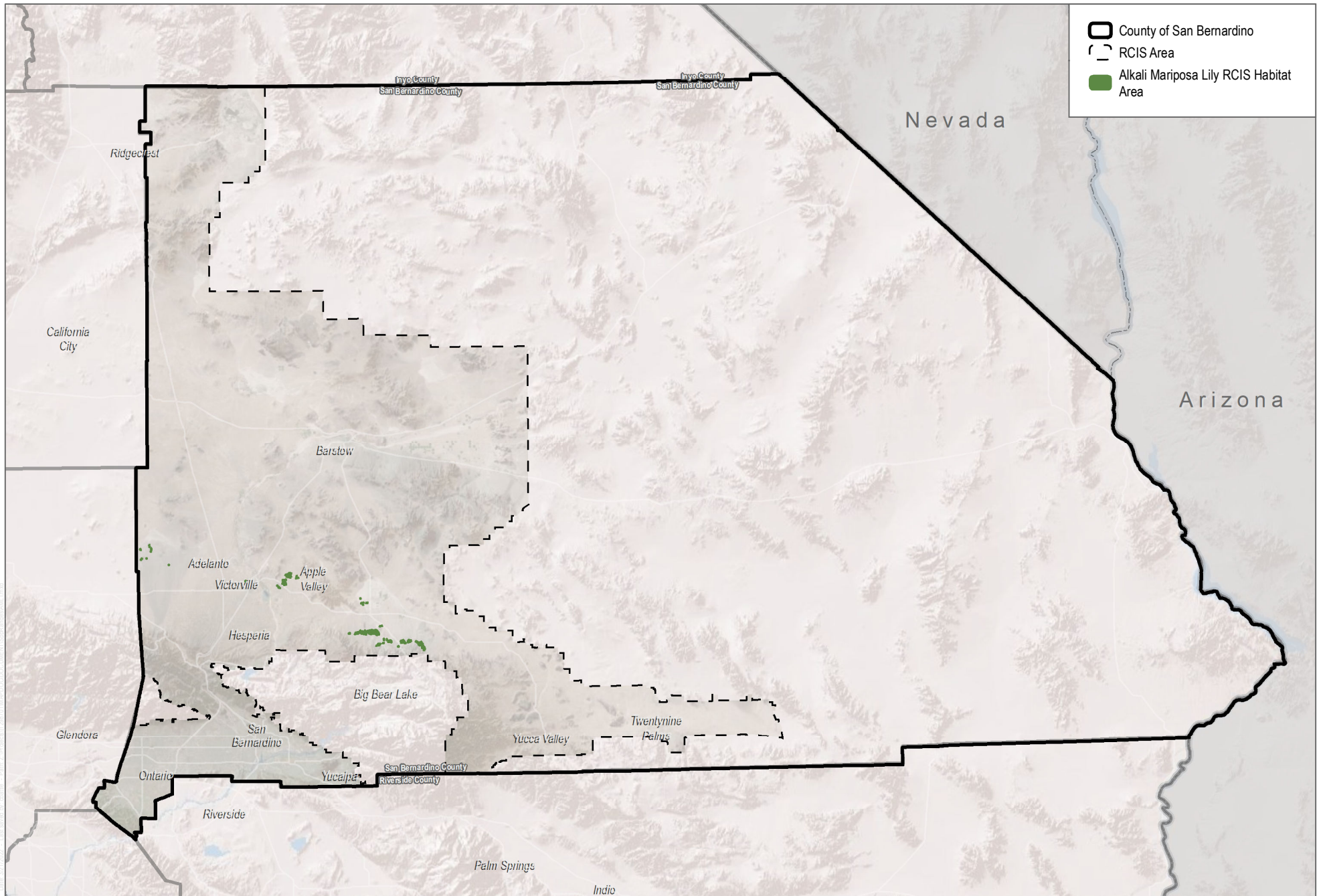
Pressures and Stressors: Pressures and stressors to alkali mariposa-lily include urbanization, road and trail construction, military activities, grazing, trampling, competition from invasive plants, trash dumping, mining, thatch buildup, and hydrologic alterations.^[2,4] The most significant pressure to this species is the lowering of water tables, which alters the seasonally moist alkaline habitat on which this species relies.^[2,3,4] Growing urbanization and development in the City of Lancaster exerts a direct pressure to this species as the largest concentration of populations is centered around this area.^[2,6] Trampling and grazing from livestock may diminish reproductive capacity, alter soils, and reduce plant vigor.^[2] Populations of alkali mariposa-lily have been extirpated at Whiskey Springs, Cushenbury Springs, and Radio Tower Meadow due to road construction, spring flow diversion, and general development, respectively.^[2]

Additionally, pressures and stressors on other conservation elements (i.e., desert scrub and wetland vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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- 6 CDFW (California Department of Fish and Wildlife). 2018. "*Calochortus striatus*." Element Occurrence Query. California Natural Diversity Database (CNDDDB). RareFind, Version 5.2.14 (Commercial Subscription). Sacramento, California: CDFW, Biogeographic Data Branch. Accessed May 14, 2021. <https://apps.wildlife.ca.gov/rarefind/view/RareFind.aspx>.
- 7 Edwards AFB (Air Force Base). 2002. *Integrated Natural Resources Management Plan for Edwards Air Force Base, California*. Mojave Desert Ecosystem Program. Environmental Management Office, Edwards Air Force Base California. October 2002.



SOURCE: Bing Maps 2018; San Bernardino County 2018; DRECP (see Appendix D)

FIGURE 1
Alkali Mariposa Lily RCIS Habitat Area
 San Bernardino County RCIS

PLANTS

Barstow Woolly Sunflower (*Eriophyllum mohavense*)

Habitat Group: Desert Scrub

Legal Status

State: None; CRPR 1B.2[*]

Federal: BLM Sensitive

Critical Habitat: Not applicable

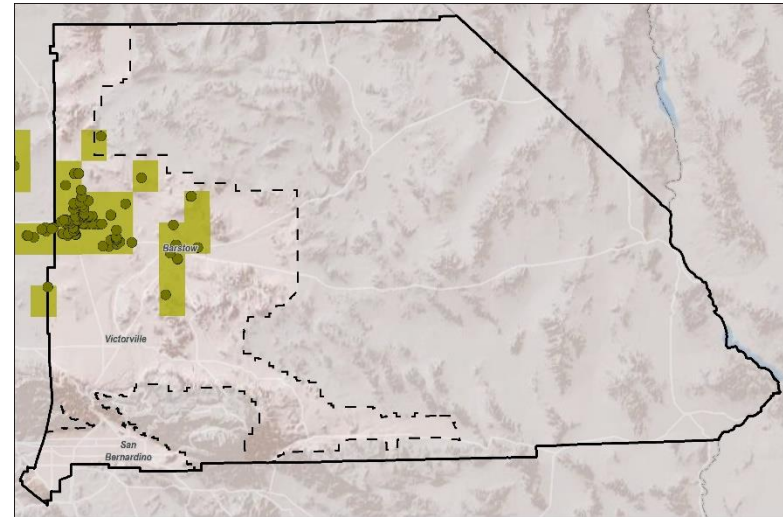
Recovery Plan: Not applicable

Distribution: Barstow woolly sunflower is endemic to the west-central Mojave Desert in California.^[1,2] Historical and recent occurrences span Los Angeles, Kern, San Bernardino, and Fresno counties, but current distribution is generally bound in the east by Camp Irwin Road and Interstate 15, west to Buckhorn Butte on Edwards Air Force Base, and north to Almond Mountain.^[3,4] This species occurs at elevations from 500 to 960 meters (1,640 to 3,150 feet).^[5]

RCIS Distribution: A total of 106 occurrences have been recorded in the West Desert region, particularly around the Kramer Junction area and east toward Barstow (see inset map).^[6]

Habitat Requirements: Barstow woolly sunflower occurs in Mojavean desert scrub, creosote bush scrub, chenopod scrub, and desert playas.^[3] It is commonly associated with Mojave spineflower (*Chorizanthe spinosa*) and yellow peppergrass (*Lepidium flavum*).^[4] Open, flat, and barren sites with loamy, sandy-clay loam, or rocky soils are typically required. Preferred habitat includes the margins of alkali sinks, depressions distributed among saltbush or creosote bush scrub, and alluvial fans and washes.^[4,7]

Reproduction: This species is a very small, 1- to 2.5-centimeter (0.5- to 1.5-inch), annual herb that flowers from March or April until May.^[1,5] Spring emergence and growth is thought to be highly dependent on average winter and spring precipitation, and



Blooming Periods for Barstow Woolly Sunflower ^[1,5]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	✓	✓	✓	—	—	—	—	—	—	—

* California Rare Plant Rank 1B: Rare, threatened, or endangered in California and elsewhere; 0.2: Moderately threatened in California.

suggests wide population fluctuations based on environmental conditions.^[4] High site-specific recurrence from year to year implies limited dispersal distances.^[4] Common pollinators, seed dispersal, and other aspects of population ecology for this species is currently unknown.^[4]

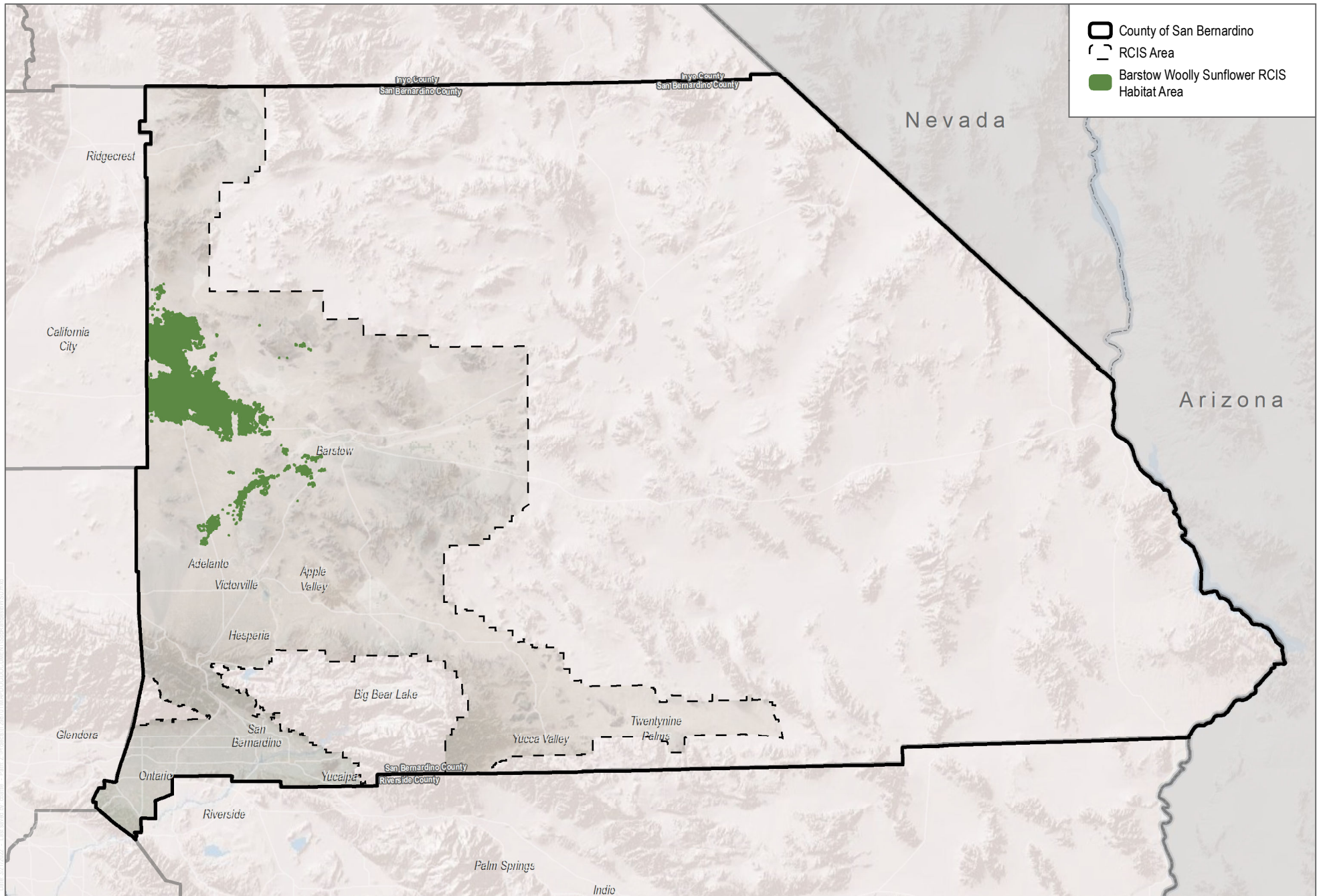
Pressures and Stressors: Primary pressures and stressors to Barstow woolly sunflower include livestock grazing and trampling, road construction, energy development, off-highway vehicles, urban sprawl, and non-native/invasive plants, especially where grazing occurs.^[2,4,5] Most of the areas where this species is found are available for sheep grazing, the majority of which is concentrated in the spring during important periods of flowering and seed production.^[4] Negative impacts from sheep and other livestock are likely more from trampling and altered soil structure than grazing.^[4] Several populations of Barstow woolly sunflower may be extirpated due to the pressures and stressors mentioned, although their status has not recently been updated.^[2,3,4]

Additionally, pressures and stressors on other conservation elements (i.e., desert scrub vegetation communities) include climate change, land uses and land use changes, recreational activities, livestock and ranching, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

REFERENCES

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- 3 CDFW (California Department of Fish and Wildlife). 2021. "*Eriophyllum mohavense*." Element Occurrence Query. California Natural Diversity Database (CNDDDB). RareFind, Version 5.2.14 (Commercial Subscription). Sacramento, California: CDFW, Biogeographic Data Branch. Last accessed May 14, 2021. <https://apps.wildlife.ca.gov/rarefind/view/RareFind.aspx>.
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- ⁶ SBC RCIS (San Bernardino County Regional Conservation Investment Strategy). 2021. Composite Species Occurrence GIS dataset compiled in 2021 from post-1990 records from the following sources: California Natural Diversity Database, U.S. Fish and Wildlife Service, U.S. Forest Service, Bureau of Land Management, San Bernardino County Museum, San Bernardino County Department of Public Works, Upper Santa Ana River Habitat Conservation Plan, VertNET, and California Consortium of Herbaria.
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SOURCE: Bing Maps 2018; San Bernardino County 2018; DRECP (see Appendix D)

FIGURE 1

Barstow Woolly Sunflower RCIS Habitat Area

San Bernardino County RCIS

PLANTS

Desert Cymopterus (*Cymopterus deserticola*)

Habitat Group: Desert Scrub, Transitional Scrub, Chaparral, and Woodland

Legal Status

State: None; CRPR 1B.2^[1]

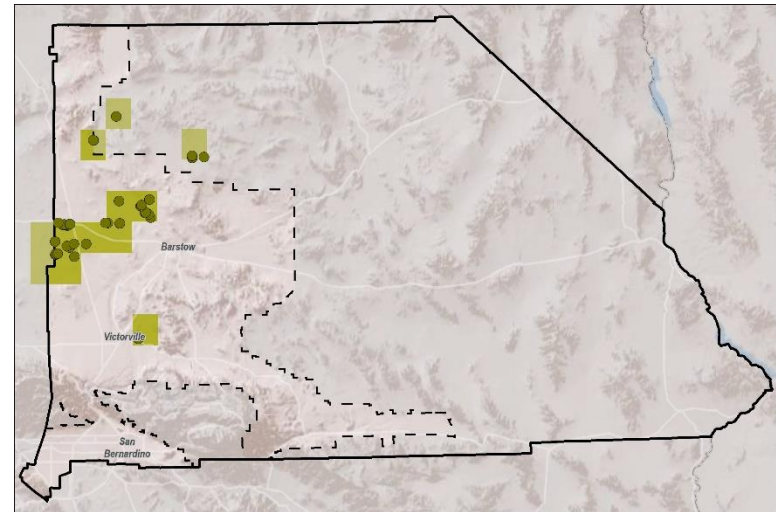
Federal: BLM Sensitive

Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: Desert cymopterus is endemic to the west-central Mojave Desert in California.^[1] This species occurs in portions San Bernardino, southeastern Kern and northeastern Los Angeles counties, California.^[1] Desert cymopterus ranges Apple Valley, San Bernardino County, northward approximately 55 miles to the Cuddeback Lake basin, San Bernardino County, and westward approximately 45 miles to the Rogers and Buckhorn lake basins on Edwards Air Force Base, Kern and Los Angeles counties.^[1] Kern county supports the majority of the extant populations.^[2] This species occurs at elevations from 692 to 933 meters (2,060 to 3,060 feet).^[1]

RCIS Distribution: A total of 38 occurrences have been recorded scattered in the western portion of the West Desert region, including near Kramer Junction, northwest of Barstow, with one occurrence near Victorville (see inset map).^[3]



Blooming Periods for Desert Cymopterus ^[1,2]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	✓	✓	✓	—	—	—	—	—	—	—

Habitat Requirements: Desert cymopterus occurs in Mojave creosote bush scrub, desert saltbush scrub, and Joshua tree woodland with creosote bush scrub or desert saltbush scrub understory.^[1, 2,4] It can occur in deep, loose, well-drained, fine to coarse sandy soils of alluvial fans and basins.^[5] Desert cymopterus is commonly associated with creosote bush (*Larrea tridentata*), Joshua tree (*Yucca brevifolia*), saltbush (*Atriplex polycarpa*, *A. canescens*, *A. spinifera*, *A. confertifolia*), burro bush (*Ambrosia dumosa*), goldenhead (*Acamptopappus sphaerocephalus*), winter fat (*Krascheninnikovia lanata*), peachthorn (*Lycium cooperi*), cheesebush

* California Rare Plant Rank 1B: Rare, threatened, or endangered in California and elsewhere; 0.2: Moderately threatened in California.

(*Ambrosia salsola*), desert croton (*Croton californicus* var. *mohavensis*), and Indian rice-grass (*Oryzopsis hymenoides*).^[1] Desert cymopterus are typically widely scattered and grow in openings between shrubs.^[1]

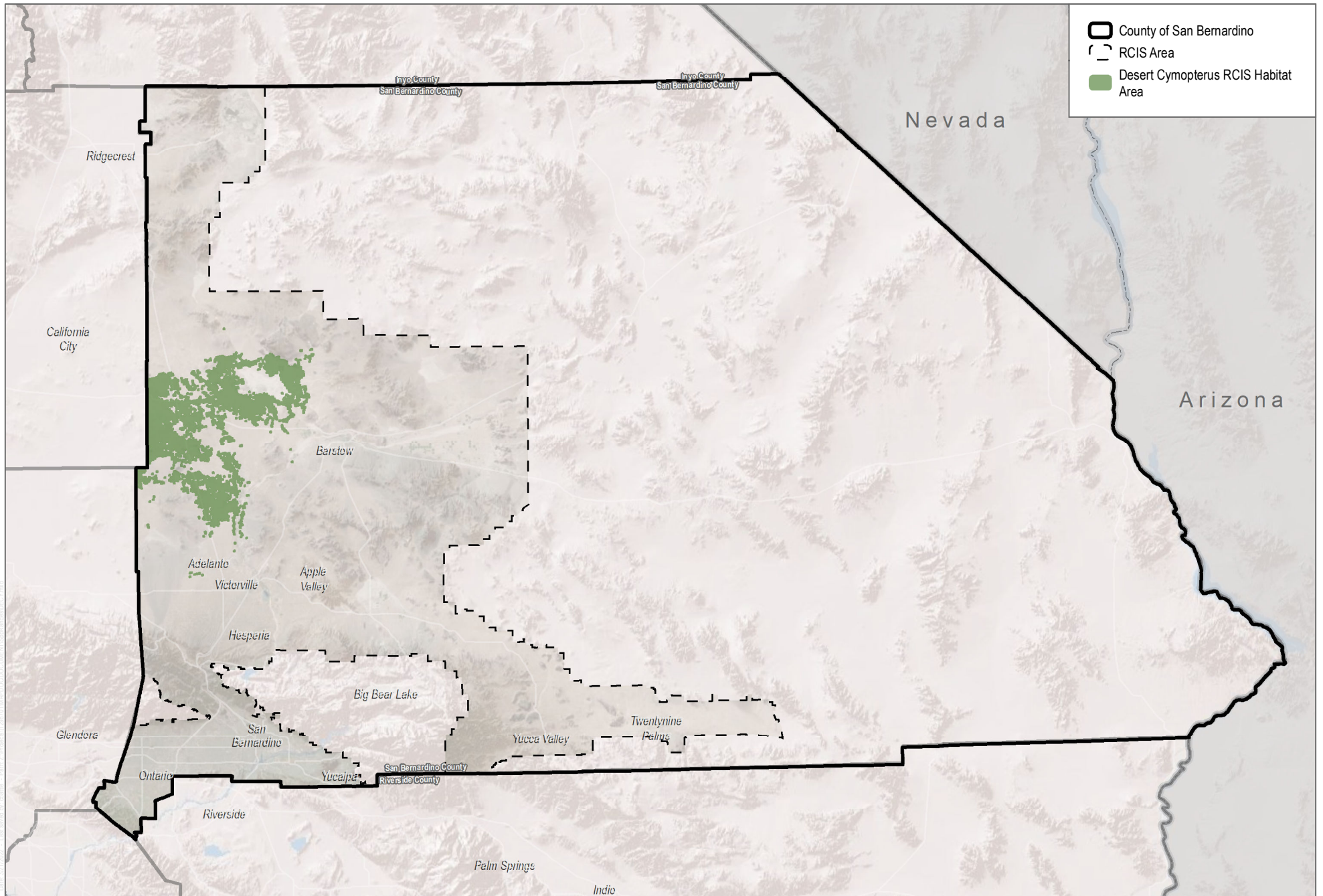
Reproduction: Desert cymopterus is a perennial herb that flowers from March to May.^[1,2] This species is a long-lived perennial geophyte, with perennating buds located underground at the top of the root crown. This species reproduces via seeds, and little is known about the reproductive biology of this plant.^[1]




Pressures and Stressors: Primary pressures and stressors to desert cymopterus include grazing, leaf predation, vehicles, utility construction, and urbanization.^[1,2] Sheep grazing occurs where this species is found and typically results in extensive trampling and disturbance of the top several inches of the soil and removal of aboveground parts of most herbaceous vegetation. Another threat to this species includes high levels of leaf predation in areas that are not grazed by livestock. The leaf predation may limit reproductive potential and vigor of the plant. Leaf predation is presumably by native animals.

Additionally, pressures and stressors on other conservation elements (i.e., desert scrub vegetation communities) include climate change, land uses and land use changes, recreational activities, livestock and ranching, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

REFERENCES

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-  County of San Bernardino
-  RCIS Area
-  Desert Cymopterus RCIS Habitat Area

SOURCE: Bing Maps 2018; San Bernardino County 2018; DRECP (see Appendix D)

FIGURE 1
Desert Cymopterus RCIS Habitat Area
 San Bernardino County RCIS

PLANTS

Gambel's Watercress (*Nasturtium gambelii*)

Habitat Group: Riparian and Wetland

Legal Status

State: Threatened; CRPR 1B.1^[1]

Federal: Endangered^[1]

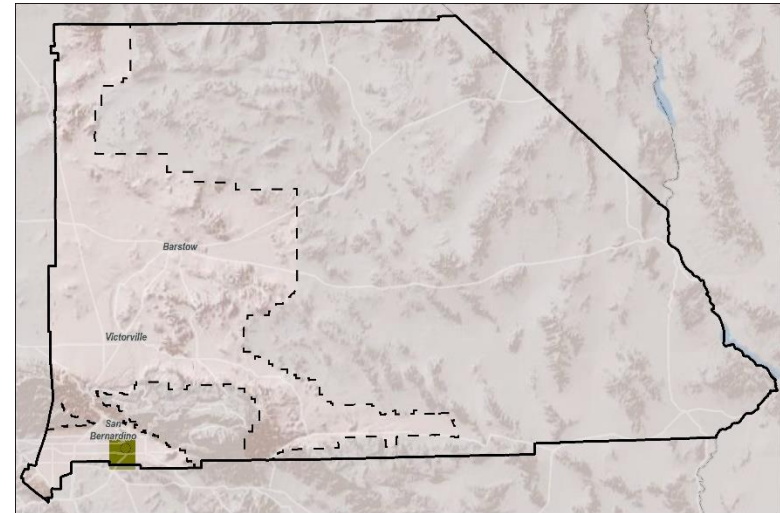
Critical Habitat: Not applicable

Recovery Plan: Issued by USFWS on September 28, 1998^[2]; Recovery Plan Amendment issued September 13, 2019^[3]

Distribution: Gambel's watercress historically occurred in wetlands of Central and Southern California, in Orange, San Bernardino, Los Angeles, Santa Barbara, and San Luis Obispo counties.^[4,5] At the time of listing, there were only three known populations at Black Lake Canyon, Oso Flaco Lake, and Little Oso Flaco Lake within San Luis Obispo County, but these sites no longer contain pure *Nasturtium gambelii* since they have since hybridized with *N. officinale*.^[4] The only remaining wild population, discovered in 1996, occurs on Vandenberg Air Force Base in Santa Barbara County.^[5] A population was introduced at Guadalupe-Nipomo Dunes National Wildlife Refuge in 2008 in San Luis Obispo County.^[5]

RCIS Distribution: One occurrence has been recorded in the Valley region at a location referred to as Urbita Hot Springs; however, this location is considered extirpated (see inset map).^[6]

Habitat Requirements: Gambel's watercress grows in marshes, swamps, and other mesic environments, both freshwater and brackish.^[4,7,8] At the Urbita Hot Springs, little is known about specific habitat requirements; however, the species has been found



Blooming Periods for Gambel's Watercress ^[3,4,7]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	—	✓	✓	✓	✓	✓	✓	✓	—	—

* California Rare Plant Rank (CRPR) 1B: Rare, threatened, or endangered in California and elsewhere; 0.1: Seriously threatened in California.

on the margins on lakes and slow-moving streams, in marshy boggy soils, in saturated and semi-saturated soils, and with or without surface water.^[4] This species requires access to a permanent water source to persist.^[3,4]

Reproduction: This species is a perennial rhizomatous herb that produces white, dense inflorescences blooming generally from April to July, but may not flower until October as observed in a greenhouse setting.^[4,5,8] This species appears to self-pollinate readily.^[4] Very little is known about seed germination and dispersal, seed recruitment, and common pollinators.^[4]

Pressures and Stressors: This species is pressured by a variety of factors including habitat loss and degradation, hydrologic alterations, small population size, and competition.^[4,5,8] Development of wetlands has occurred at a rapid rate since the early part of the twentieth century and has significantly limited suitable habitat for this species. Indirect effects of development also degrades potential suitable habitat through increased sedimentation, erosion, nutrient runoff, and a lowered water table.^[4,5] In particular, increased nutrient loads aid the excessive growth of additional vegetation that place additional pressure on Gambel's watercress, which prefers habitats with minimal competition for resources.^[5] Such small population sizes put this species at a considerably high risk of stochastic extirpation or extinction, and may also lead to inbreeding depression reducing overall genetic resiliency.^[5] The presence of the non-native species, *N. officinale*, puts direct pressure on the genetic integrity of *N. gambelii* due to probable hybridization.

Additionally, pressures and stressors on other conservation elements (i.e., riparian and wetland vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

REFERENCES

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- 5 USFWS. 2011. *Rorripa gambelii* [*Nasturtium gambelii*] (*Gambel's watercress*) 5-Year Review: Summary and Evaluation. Ventura Fish and Wildlife Office Ventura, California. September 2011.
 - 6 SBC RCIS (San Bernardino County Regional Conservation Investment Strategy). 2021. Composite Species Occurrence GIS dataset compiled in 2021 from post-1990 records from the following sources: California Natural Diversity Database, U.S. Fish and Wildlife Service, U.S. Forest Service, Bureau of Land Management, San Bernardino County Museum, San Bernardino County Department of Public Works, Upper Santa Ana River Habitat Conservation Plan, VertNET, and California Consortium of Herbaria.
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PLANTS

Intermediate Mariposa-Lily (*Calochortus weedii* var. *intermedius*)

Habitat Group: Grassland, Transitional Scrub, Chaparral, and Woodland

Legal Status

State: None; CRPR 1B.2^[1]

Federal: USFS Sensitive

Critical Habitat: Not applicable

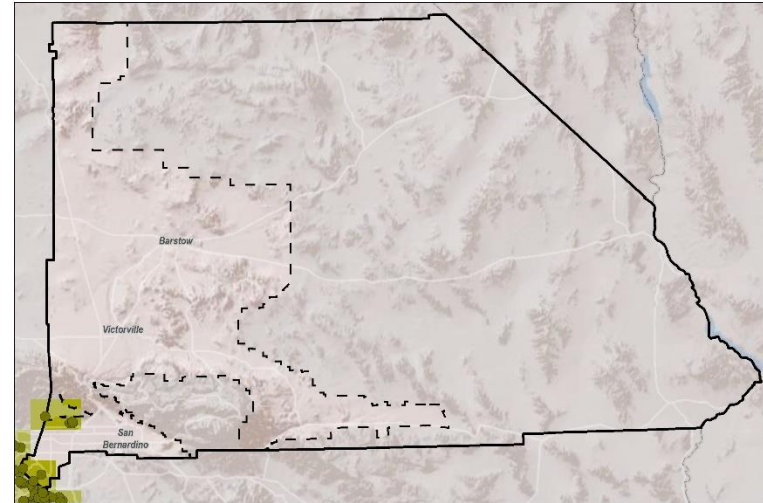
Recovery Plan: Not applicable

Distribution: Intermediate mariposa-lily is endemic to California and occurs in Los Angeles, Orange, San Bernardino, Riverside counties^[1,2,3] and at least one presumed occurrence in Ventura County.^[4] Orange County supports the majority of the extant populations.^[2] This species occurs at elevations from 105 to 855 meters (350 to 2,800 feet).^[1]

RCIS Distribution: A total of four occurrence records of this species are all located in the Valley region, specifically at Chino Hills State Park (see inset map).^[5]

Habitat Requirements: Intermediate mariposa-lily occurs in chaparral, coastal scrub, and valley and foothill grassland.^[1,3] This species is found in dry, rocky, calcareous, or open slope habitats.^[1] Intermediate mariposa-lily occurs in valley foothill grasslands, chamise, coastal sage scrub, nolina scrub, and oak woodlands only after burn or disturbance events.^[6]

Reproduction: Intermediate mariposa-lily is a perennial bulbiferous herb that flowers from May to July.^[1,3] The inflorescence is comprised of two to six bell-shaped flowers^[6] ranging from 2.5 to 3 centimeters long.^[4] The petals are purple and fringed with dark or yellow hairs and bearded on the inner face with long yellow hairs.^[6] Each petal includes a round gland bordered with a ring of yellow hairs.^[6]



Blooming Periods for Intermediate Mariposa-Lily ^[1,3]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	—	—	✓	✓	✓	—	—	—	—	—

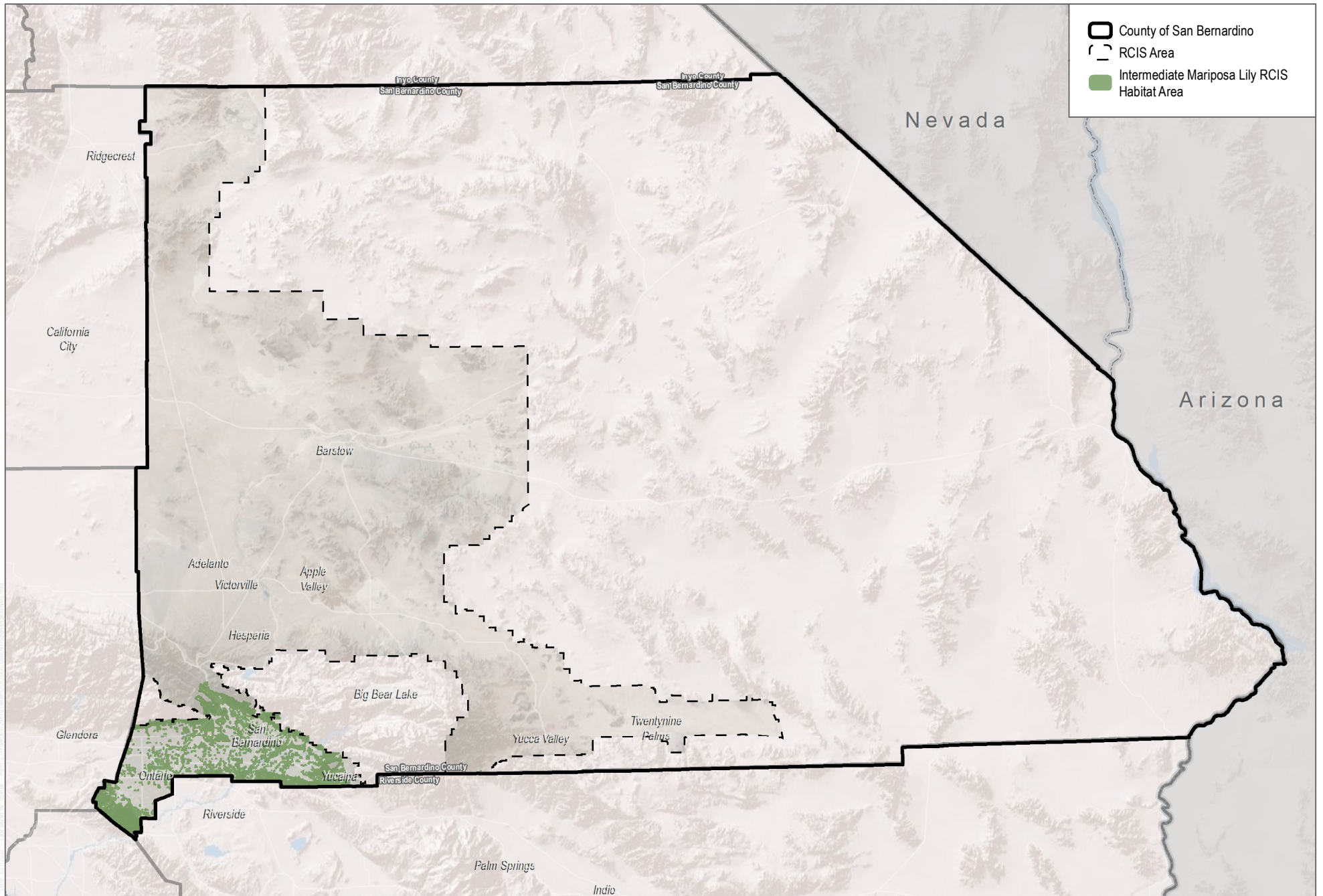
* California Rare Plant Rank 1B: Rare, threatened, or endangered in California and elsewhere; 0.2: Moderately threatened in California.

Pressures and Stressors: Primary pressures and stressors to intermediate mariposa-lily include development, non-native plants, road construction, fuel modification, fire suppression activities, and human disturbance.^[3,4,5] This species is potentially threatened by frequent wildfires.^[3] Almost one-third of occurrences of this species have been found at proposed transportation and residential development sites.^[3]

Additionally, pressures and stressors on other conservation elements (i.e., grassland, scrub, and chaparral vegetation communities), include climate change, land uses and land use changes, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

REFERENCES

- 1 CNPS (California Native Plant Society). 2021. *Inventory of Rare and Endangered Plants of California*. Online ed. Version 8-03 0.39. Accessed May 14, 2021. <http://www.rareplants.cnps.org>.
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- 3 NatureServe. 2021. NatureServe Explorer [web application]. NatureServe, Arlington, Virginia. Accessed May 14, 2021. <https://explorer.natureserve.org/>.
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- 5 SBC RCIS (San Bernardino County Regional Conservation Investment Strategy). 2021. Composite Species Occurrence GIS dataset compiled in 2021 from post-1990 records from the following sources: California Natural Diversity Database, U.S. Fish and Wildlife Service, U.S. Forest Service, Bureau of Land Management, San Bernardino County Museum, San Bernardino County Department of Public Works, Upper Santa Ana River Habitat Conservation Plan, VertNET, and California Consortium of Herbaria.
- 6 County of Riverside. 2003. *Western Riverside County Multiple Species Habitat Conservation Plan*. Volume 2 - The MSHCP Reference Document Accessed May 25, 2021. https://rctlma.org/Portals/0/mshcp/volume2/plants.html#TOC1_20.



SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities, USDA Ecoregions (see Appendix D)

FIGURE 1

Intermediate Mariposa Lily RCIS Habitat Area

San Bernardino County RCIS

PLANTS

Lane Mountain Milk-Vetch (*Astragalus jaegerianus*)

Habitat Group: Desert Scrub, Transitional Scrub, Chaparral, and Woodland

Legal Status

State: None; CRPR 1B.1^[1]

Federal: Endangered^[1]

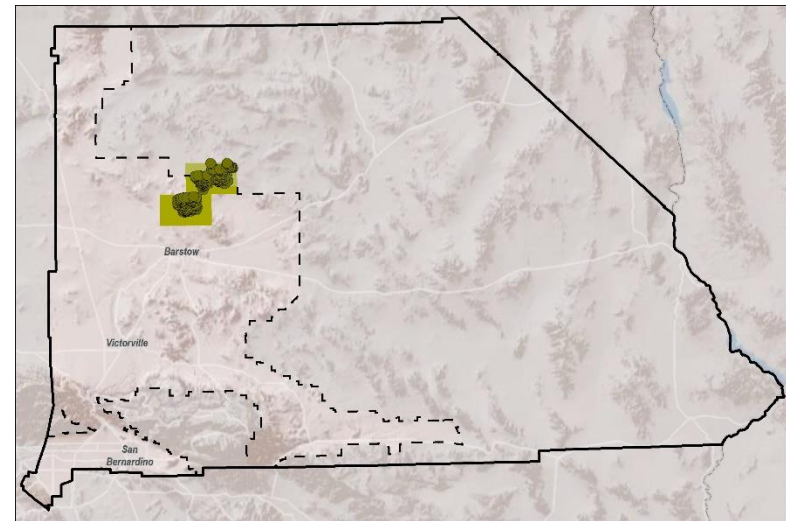
Critical Habitat: Originally designated on April 8, 2005^[2]; USFWS issued revised critical habitat on May 19, 2011^[3]

Recovery Plan: Not applicable

Distribution: Lane Mountain milk-vetch is restricted to a small area within the central Mojave Desert in San Bernardino County, California.^[4,5] This species occurs at elevations of 900 to 1,200 meters (2,953 to 3,937 feet).^[6] The four known populations are grouped linearly along a 20-mile axis north of Barstow and include the Montana-Brinkman, Goldstone, Paradise, and Coolgardie populations.^[7,8] The Montana-Brinkman, Goldstone, and Paradise populations occur within Fort Irwin, while the Coolgardie population is located just south of the army base.^[6,7] The four areas where this species is found comprise approximately 21,400 acres.^[7]

RCIS Distribution: A total of 96 occurrences have been recorded in the West Desert region in the Coolgardie Mesa area north of Barstow (see inset map).^[9]

Habitat Requirements: This species occurs in Mojavean desert scrub and Mojave mixed woody scrub with widely scattered Joshua trees (*Yucca brevifolia*).^[6,7,10] Suitable soils are shallow, rocky, and coarse sandy decomposed granite, and the species is commonly found on rocky low hills and low ridges above alluvial fan drainages.^[11] Lane Mountain milk-vetch typically uses host or nurse shrubs, presumably for structural support, protection from herbivores, and attenuation from weather extremes in exchange for nitrogen fixation in the soil.^[11,12] The most common host plants include turpentine broom (*Thamnosma montana*), white



Blooming Periods for Lane Mountain Milk-Vetch ^[7]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	✓	✓	✓	✓	—	—	—	—	—	—

bursage (*Ambrosia dumosa*), Eastern Mojave buckwheat (*Eriogonum fasciculatum* ssp. *polifolium*), Cooper's goldenbush (*Ericameria cooperi*), and Nevada jointfir (*Ephedra nevadensis*).^[7]

Reproduction: Lane Mountain milk-vetch is an herbaceous perennial with a taproot that persists year-round, even after the aboveground parts die back, and it flowers from March through June.^[7] Primary pollinators include megachilid bees (*Anthidium dammersi*, *A. emarginatum*, and *Osmia latisculata*).^[8,12] In dry years, plants may desiccate before setting seed or abort flowers altogether, suggesting that successful reproduction is reliant on sufficient rainfall, and the frequency and timing of rainfall.^[12] For highest success of recruitment, efforts should include exclusion, and competing and herbaceous vegetation removal. The soil seedbank appears to be persistent and is long-lived; however, seed dispersal beyond the host plant is low, and seed predation can be high. This species has a high genetic diversity between populations within its geographical range, lending importance to maintaining existing populations.

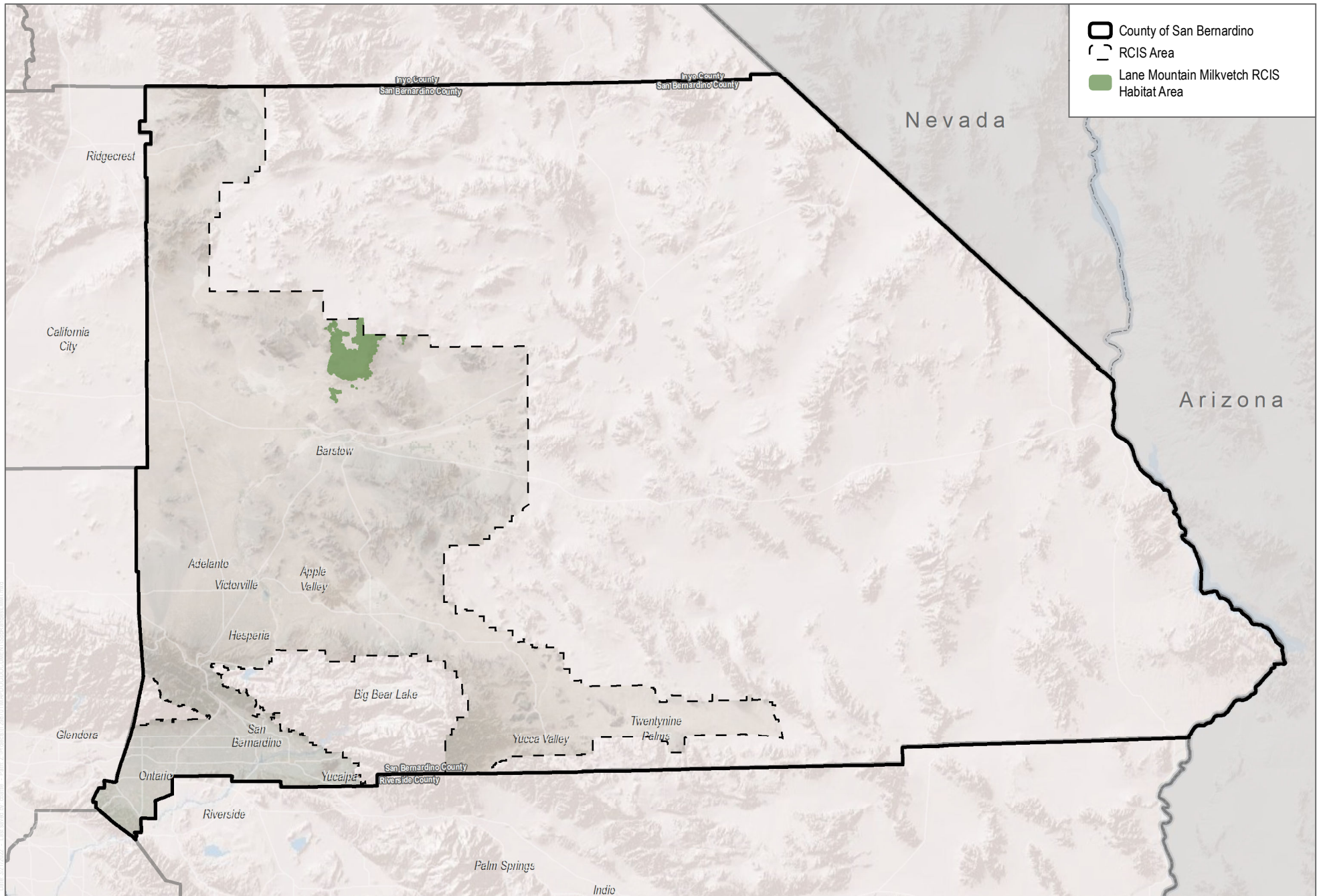
Pressures and Stressors: Pressures and stressors to Lane Mountain milk-vetch include potential energy development, non-native species competition, loss of nurse shrubs from increased fire frequency, reduced gene flow between populations, mining, off-highway vehicle use, and military activities.^[8,11,12] Military operations expanded farther into territory occupied by this species in 2009, and future planned expansion has potential to further degrade and eliminate suitable habitat.^[12] Additionally, military activities can impact the species with higher dust levels, especially during drought and high winds. The small, fragmented populations are at a higher risk of extirpation or extinction through stochastic events and genetic bottlenecks.^[11,12] Additionally, non-native grasses, such as schismus (*Schismus* spp.) and bromes (*Bromus* spp.), have the potential to exclude Lane Mountain milk-vetch from shrub understories, outcompete for recruitment, and alter the natural fire regime.^[8]

Additionally, pressures and stressors on other conservation elements (i.e., desert scrub vegetation communities) include climate change, land uses and land use changes, recreational and military activities, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

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-
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SOURCE: Bing Maps 2018; San Bernardino County 2018; DRECP (see Appendix D)

FIGURE 1

Lane Mountain Milkvetch RCIS Habitat Area

San Bernardino County RCIS

PLANTS

Marsh Sandwort (*Arenaria paludicola*)

Habitat Group: Riparian and Wetland

Legal Status

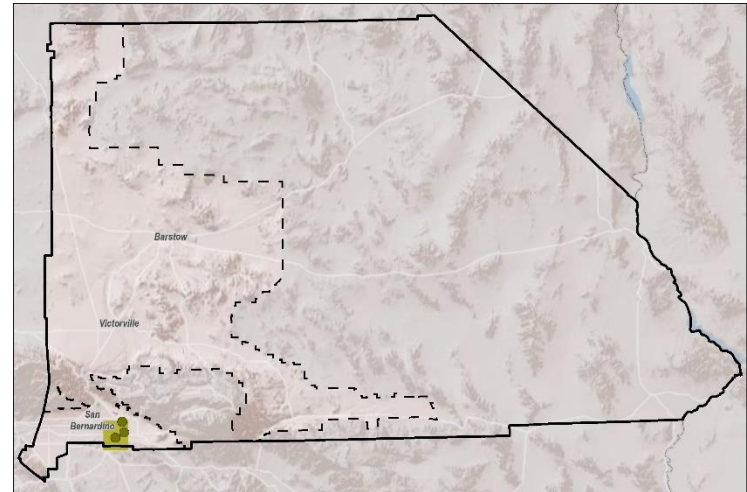
State: Endangered; CRPR 1B.1^[1]

Federal: Endangered^[1]

Critical Habitat: Not applicable

Recovery Plan: Issued by USFWS on September 28, 1998^[2]; Recovery Plan Amendment issued September 13, 2019^[3]

Distribution: Marsh sandwort has been documented in scattered locations near the Pacific coast in Washington and California, as well as a few tentative records from Mexico and Guatemala.^[3,4,5] These historical occurrences consist of one from Pierce County, Washington, and nine from San Francisco, San Luis Obispo, Santa Cruz, and San Bernardino counties, California.^[5] Within California, historical collections were found in five general areas: Santa Cruz, the San Francisco Bay, Guadalupe-Nipomo Dunes, the Los Angeles basin, and along the Santa Ana River.^[5] The only known extant wild population persists at Oso Flaco Lake at the Guadalupe-Nipomo Dunes, with an introduced population that exists at Sweet Springs Marsh in Morro Bay.^[5]



Blooming Periods for Marsh Sandwort ^[4,8]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	—	—	✓	✓	✓	✓	—	—	—	—

RCIS Distribution: A total of three occurrences have been recorded in the Valley region along the Santa Ana River corridor; however, all records are historic, and the species is considered likely extirpated from San Bernardino County (see inset map).^[6]

Habitat Requirements: This species occurs in marshes and swamps among other mesic environments.^[3,5,7] Little is known about its habitat requirements, but marsh sandwort has been found growing with or without standing water; in saturated, acidic soils; and

* California Rare Plant Rank 1B: Rare, threatened, or endangered in California and elsewhere; 0.1: Seriously threatened in California.

within dense mats of reeds (*Juncus* spp.), cattails (*Typha* spp.), bur-reed (*Sparganium* spp.), and bulrush (*Scirpus* spp.).^[4,5,7] This species may prefer moist soils and an open canopy in habitats dominated by water parsley (*Oenanthe sarmentosa*).^[8] Although the species has been found in standing water, excessive moisture can decrease its likelihood of survival.

Reproduction: This species is a perennial herb that produces small, white flowers that typically bloom from May to August.^[5,9,10] Plants may reproduce sexually or asexually, and are able to be propagated by cuttings at root nodes.^[3,4] Little is known about common pollinators, seed germination and dispersal, and seed recruitment for marsh sandwort.^[4]

Pressures and Stressors: Primary pressures and stressors to this species are urbanization, eucalyptus tree recruitment, potential stochastic extirpation, and hydrological alterations.^[3,5,6] Conversion of wetlands for agriculture, ranching, and development has occurred at rapid rates since the early part of the twentieth century, which significantly limits suitable habitat for this wetland species.^[3] Indirect effects from urbanization, including increased sedimentation, altered hydrologic regimes, and nutrient runoff, also degrade habitat and limit opportunity for introductions or reintroductions.^[5] Eucalyptus trees reduce water availability, increase shade, and introduce tannins that inhibit growth of other species, and may exclude marsh sandwort from otherwise suitable habitat.^[3,4] Since there is only one last extant wild population and one introduced population, risk of stochastic extirpation or extinction is very high, and inbreeding depression from lack of genetic diversity also threatens population viability.^[5]

Additionally, pressures and stressors on other conservation elements (i.e., riparian and wetland vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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PLANTS

Mojave Monkeyflower (*Diplacus mohavensis*)

Habitat Group: Desert Scrub, Transitional Scrub, Chaparral, and Woodland

Legal Status

State: None; CRPR 1B.2^[1]

Federal: BLM Sensitive

Critical Habitat: Not applicable

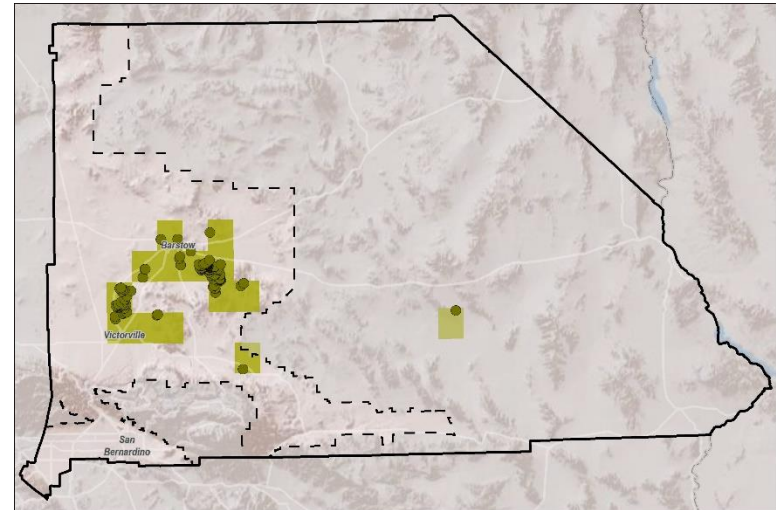
Recovery Plan: Not applicable

Distribution: This species is restricted to the Mojave Desert within west-central San Bernardino County, California.^[1,2] Historical observations indicate this species range was bound by Calico Ghost Town to the north, Kane Springs in the Newberry Mountains to the east, Old Woman Springs to the south, and the Mojave River to the west.^[1,2,3] Current populations are densest in areas just south of Daggett and Barstow with a second population located northeast of Adelanto extending toward Helendale.^[1,2] This species occupies an elevation range from 600 to 1,200 meters (1,969 to 3,937 feet).

RCIS Distribution: A total of 191 occurrences have been recorded in the West Desert region, primarily in the mountain areas south of Barstow and east of the Mojave River (see inset map).^[4]

Habitat Requirements: Mojave monkeyflower occurs in Mojavean desert

scrub, Joshua tree woodland, and desert scrub, but is more specifically associated with creosote bush (*Larrea tridentata*).^[2,5,6] Occurrence reports also indicate associations with desert senna (*Senna armata*), cheesebush (*Ambrosia salsola*), rattany (*Krameria* spp.), cholla (*Opuntia* spp.), burrobush (*Ambrosia dumosa*), indigo bush (*Dalea* spp.), cat-claw acacia (*Acacia greggii*), Bigelow's monkeyflower (*Mimulus bigelovii*), desert bells (*Phacelia campanularia*), and desert trumpet (*Eriogonum inflatum*).^[1,2] This species



Blooming Periods for Mojave Monkeyflower ^[8]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	—	✓	✓	✓	—	—	—	—	—	—

* California Rare Plant Rank 1B: Rare, threatened, or endangered in California and elsewhere; 0.2: Moderately threatened in California.

commonly occurs in granitic gravelly banks of desert washes, sandy openings between creosote bushes, and along the rocky slopes above washes, all of which do not experience regular water flows.^[1,2,5,7]

Reproduction: This species blooms from April to June.^[8] Requirements for and time of germination is unknown, although is presumed to be dependent upon precipitation based on wide variations in population sizes year to year.^[2] Given the showy flowers and that the majority of plants in the lopseed family are insect pollinated, and Mojave monkeyflower is likely pollinated by Hymenoptera (bees, wasps, ants, and sawflies) or Lepidoptera (butterflies and moths).^[2,9] Seed dispersal is likely abiotic due to the small size of the plant and seeds.^[2,6]

Pressures and Stressors: Pressures and stressors impacting the Mojave monkeyflower includes development, mining, non-native plants, solar and wind energy projects, grazing, and off-highway vehicles.^[2,5,6] Urbanization in the Barstow, Daggett, and Newberry Springs areas may displace otherwise suitable habitat, and has likely already had negative impacts on populations within the Barstow city limits.^[2,5] The wide population fluctuations based largely on precipitation typical of this species suggest susceptibility to years of drought and potential decreases in the seed bank.^[2] Furthermore, such small population sizes increase the risk of extirpation from detrimental stochastic events and may cause genetic bottlenecks diminishing genetic variability.^[2]

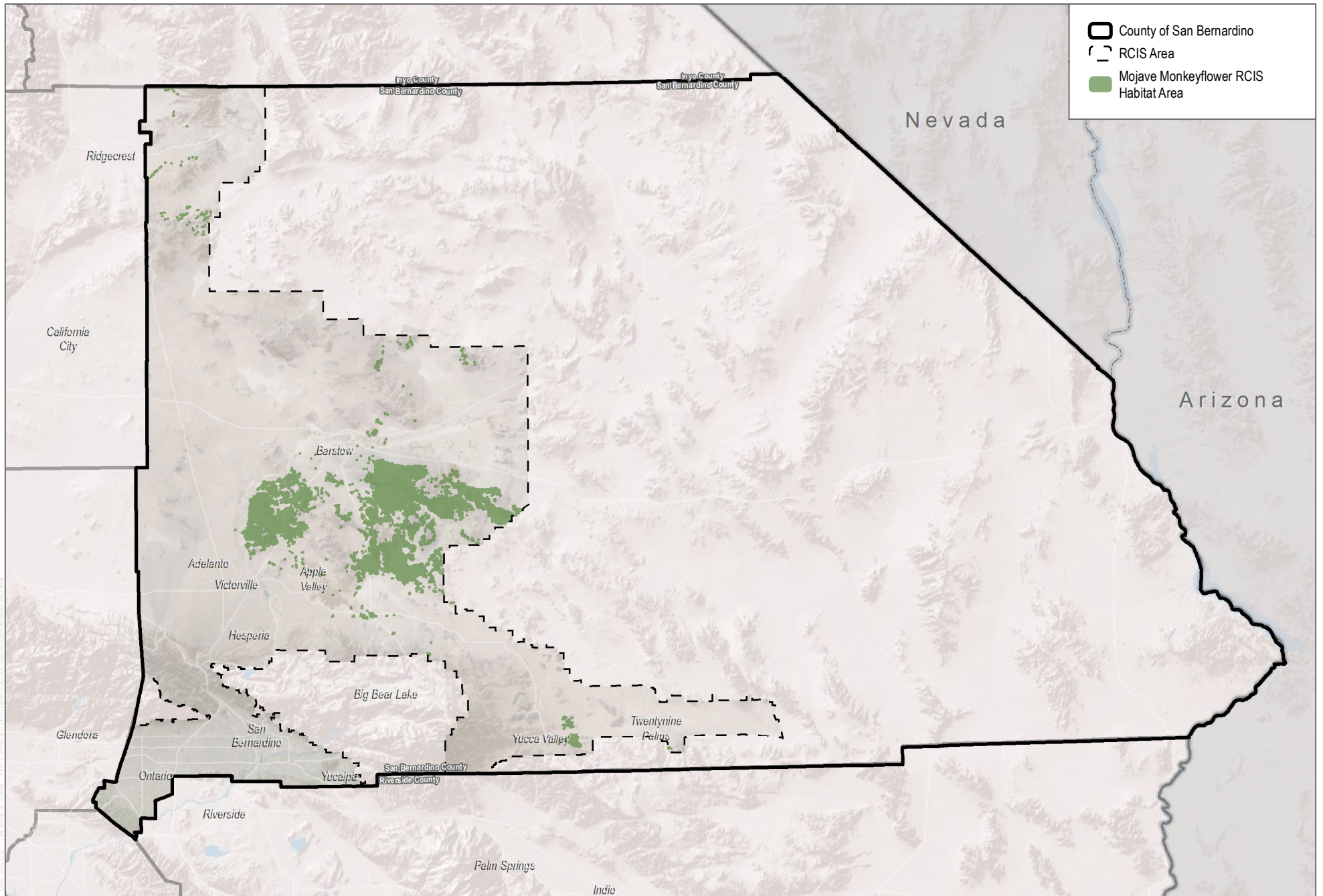
Additionally, pressures and stressors on other conservation elements (i.e., desert scrub and woodland vegetation communities) include climate change, land uses and land use changes, recreational activities, livestock and ranching, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; DRECP (see Appendix D)

FIGURE 1

Mojave Monkeyflower RCIS Habitat Area

San Bernardino County RCIS

PLANTS

Parish's Daisy (*Erigeron parishii*)

Habitat Group: Desert Scrub, Transitional Scrub, Chaparral, and Woodland

Legal Status

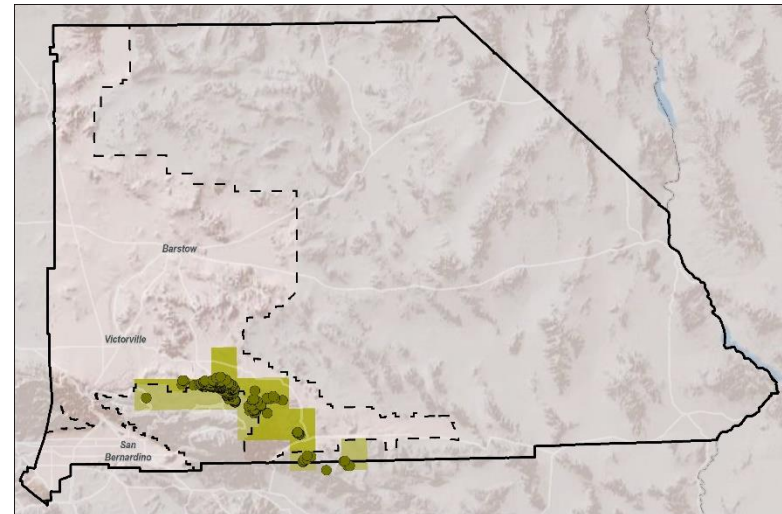
State: None; CRPR 1B.1^[1]

Federal: Threatened^[1]

Critical Habitat: Designated on December 24, 2002^[2]

Recovery Plan: Issued by USFWS on September 30, 1997^[3]

Distribution: Parish's daisy is restricted to dry, calcareous slopes of the San Bernardino Mountains in San Bernardino County, California.^[4,5] A few observations from areas with granitic substrate extend its range to the east end of the San Bernardino Mountains and in the Little San Bernardino Mountains.^[4] This species can be found from elevations of 800 to 2,000 meters (2,625 to 6,562 feet),^[6] although the low end of that range is presumed incorrect as an elevation of 2,625 meters would indicate the species occurs on the flats of the Mojave Desert, where it has never been collected.^[4]



RCIS Distribution: A total of 249 occurrences have been recorded in the West Desert region, particularly in the foothills of the San Bernardino Mountains around Cushenbury Springs with one occurrence in the Morongo Basin area (see inset map).^[7]

Blooming Periods for Parish's Daisy ^[4,9]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	—	—	✓	✓	✓	✓	—	—	—	—

Habitat Requirements: Parish's daisy occurs in Mojavean desert scrub, pinyon and juniper woodlands, blackbush scrub, and creosote bush-bursage scrub.^[1,3,8] This species requires carbonate substrates, and although few collections are from granitic areas it is speculated that in these locations, limestone materials have washed down from higher elevations.^[4,8] Parish's daisy typically grows along rocky slopes, active washes, loose alluvial deposits, and outwash plains.^[3,4,8]

* California Rare Plant Rank (CRPR) 1B: Rare, threatened, or endangered in California and elsewhere; 0.1: Seriously threatened in California.

Reproduction: This species is a long-lived perennial and blooms from May to August, with flowering peaking from mid-May to mid-June.^[4,9,10] Showy, conspicuous flowers suggest insects are the primary pollinators, likely including bees, butterflies, and long-tongued flies.^[4] Plumed achenes are adapted for wind dispersal of seeds.^[10]

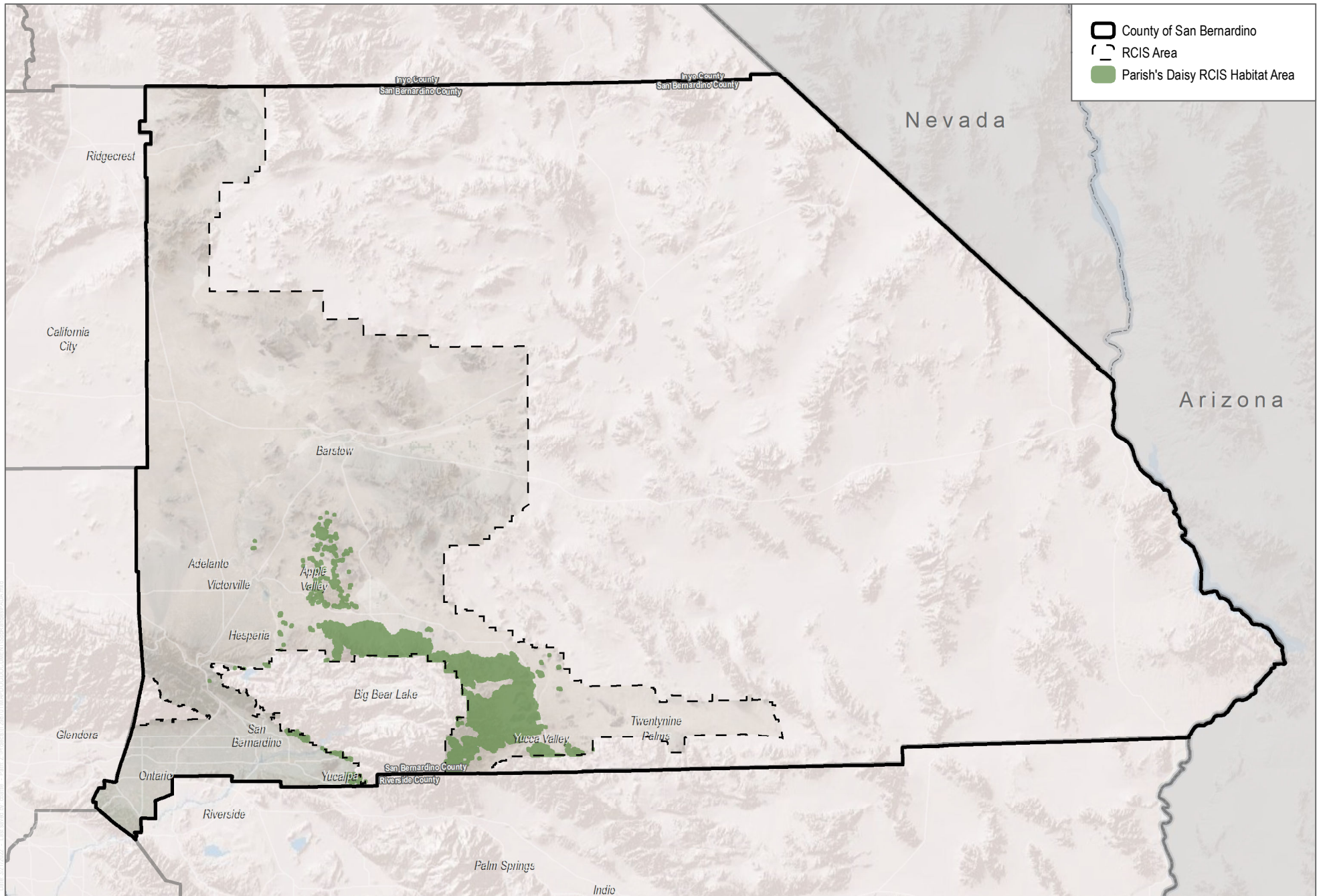
Pressures and Stressors: Primary pressures and stressors to Parish's daisy populations are from limestone mining, but threats also include off-highway vehicles (OHVs) energy development projects, and soil disturbances that can create cemented soil conditions.^[3,8] Approximately 73% of the species' habitat is under claim for mining or vulnerable to other disturbances.^[8] Growing development near Pioneertown is currently encroaching on occupied habitat and has the potential to displace the nearby population.^[4] Mining activities not only remove carbonate substrates required for suitable habitat but also impact habitat through burial of adjacent unmined habitat, creation of dusts that can alter soil chemistry and light availability for seeds, and artificial lighting that may manipulate phenology and growing conditions.^[8] OHVs through U.S. Forest Service land and construction of power lines bisecting occupied areas further degrade soils and displace habitat.^[3] Climate change may cause the Southern California region to become warmer and drier, which may drive this species to higher elevations until concentrated within an even more limited range more vulnerable to extinction.^[8,11]

Additionally, pressures and stressors on other conservation elements (i.e., desert scrub and woodland vegetation communities) include climate change, land uses and land use changes, recreational activities, mining and quarrying, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; DRECP (see Appendix D)

FIGURE 1

Parish's Daisy RCIS Habitat Area

San Bernardino County RCIS



PLANTS

Parry's Spineflower (*Chorizanthe parryi* var. *parryi*)

Habitat Group: Grassland, Transitional Scrub, Chaparral, and Woodland

Legal Status

State: None; CRPR 1B.1^[1]

Federal: BLM Sensitive, USFS Sensitive

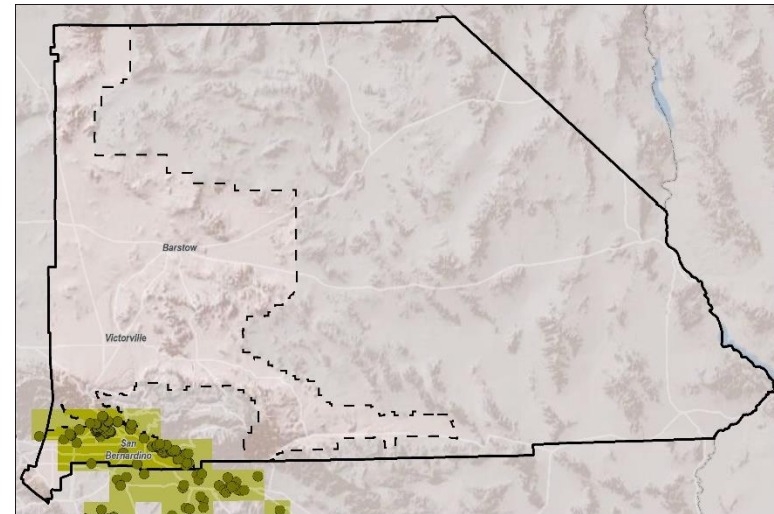
Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: Parry's spineflower is endemic to Southern California.^[1] This species has been documented in Los Angeles, Riverside and San Bernardino counties.^[2,3] Parry's spineflower has been found in the flats and foothills of San Gabriel, San Bernardino and San Jacinto mountains. Riverside County supports the majority of the extant populations.^[1] Parry's spineflower may be extirpated from Los Angeles County.^[3] The range of this species extends 5,00 to 20,000 square kilometers (about 2,000 to 8,000 square miles).^[3] This species occurs at elevations from 275 to 1,220 meters (900 to 4,000 feet).^[1]

RCIS Distribution: One occurrence has been recorded within the Mountain region in the southern portion of Cajon Pass. A total of 127 occurrences have been recorded within the Valley region scattered along the foothills near Rancho Cucamonga and Highland, as well as a few occurrences lower in the Valley (see inset map).^[4]

Habitat Requirements: Parry's spineflower can be found in sandy or rocky habitat.^[1,3] This species occurs in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland.^[1,3] Preferred habitat for Parry's spineflower has been described as alluvial chaparral and scrub of the San Bernardino and San Jacinto mountains.^[5]



Blooming Periods for Parry's Spineflower ^[1,2,4]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	—	<	<	<	—	—	—	—	—	—

* California Rare Plant Rank 1B: Rare, threatened, or endangered in California and elsewhere; 0.1: Seriously threatened in California.

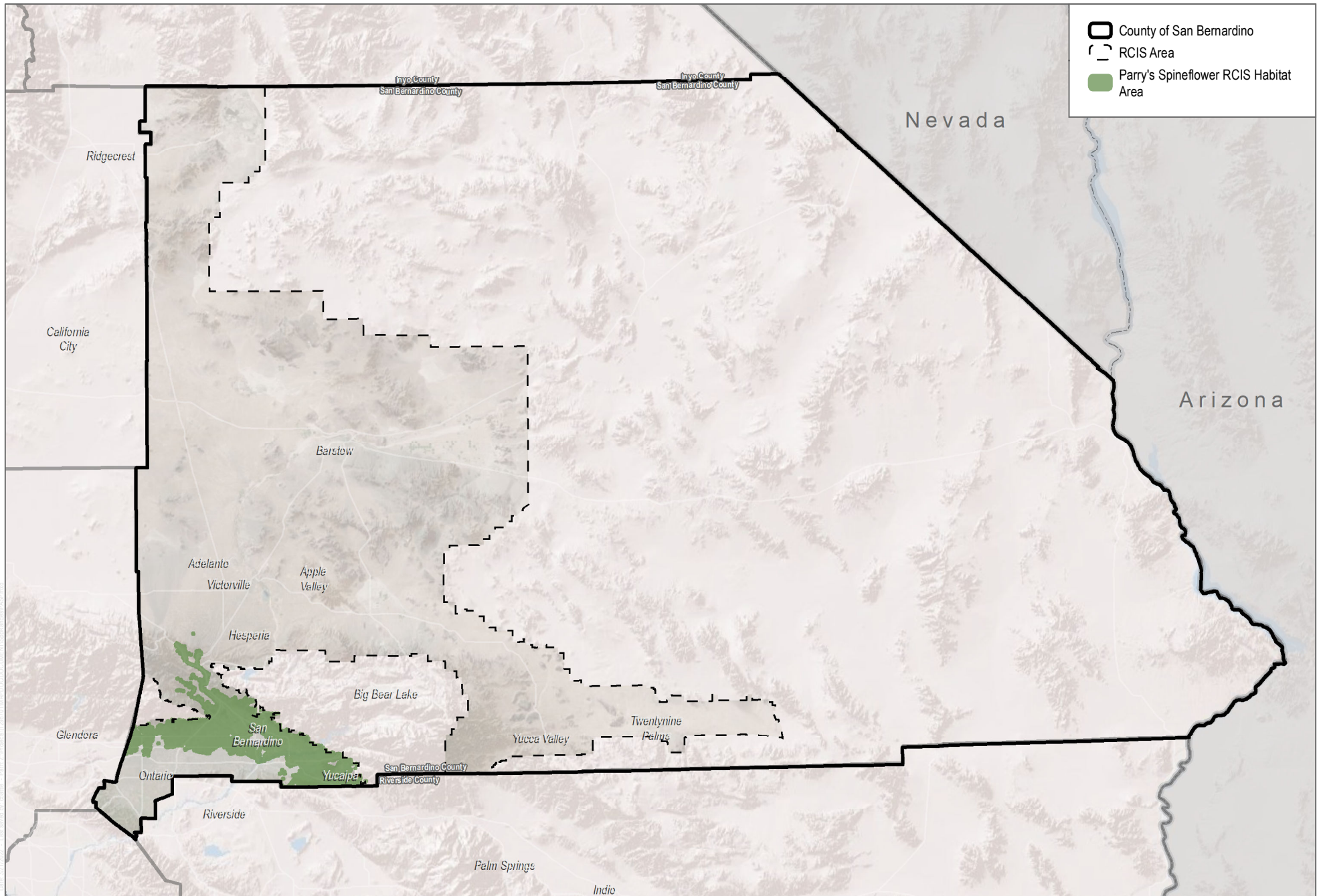
Reproduction: This species is an annual herb that flowers from April to June.^[1,2,5] Parry's spineflower has white flowers with brown achenes that are 2.5 to 3 millimeters long.^[5,6]

Pressures and Stressors: Primary pressures and stressors to Parry's spineflower include altered flood regime, development, altered hydrology, sand and gravel mining, grazing, non-native plants and vehicles.^[1]

Additionally, pressures and stressors on other conservation elements (i.e., grassland, scrub, and chaparral vegetation communities and hydrological processes and features) include climate change, land uses and land use changes, mining and quarrying, livestock and ranching, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; DRECP (see Appendix D)

FIGURE 1

Parry's Spineflower RCIS Habitat Area

San Bernardino County RCIS

PLANTS

Plummer’s Mariposa-Lily (*Calochortus plummerae*)

Habitat Group: Grassland, Transitional Scrub, Chaparral, and Woodland

Legal Status

State: None; CRPR 4.2^[*]

Federal: None

Critical Habitat: Not applicable

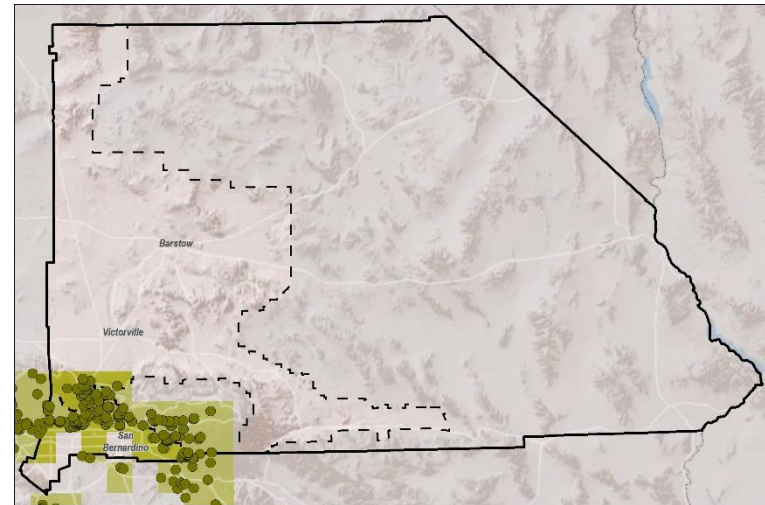
Recovery Plan: Not applicable

Distribution: Plummer’s mariposa-lily is endemic to California and occurs in Los Angeles, Riverside, San Bernardino, Orange, and Ventura Counties.^[1,2] Los Angeles County supports the majority of the extant populations.^[1] This species occurs at elevations from 100 to 1,700 meters (328 to 5,577 feet).^[3]

RCIS Distribution: A total of 117 occurrences are distributed in the Valley region along the alluvial foothills near Rancho Cucamonga and Highland. This species also occurs in the Mountain region, with 42 occurrences throughout Cajon Pass, as well as in the West Desert region, with only one occurrence, just north of Cajon Pass (see inset map).^[4]

Habitat Requirements: Plummer’s mariposa-lily occurs in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley and foothill grassland.^[1] This species occurs on rocky and sandy substrates, typically of alluvial or granitic material.^[5]

Reproduction: This species is perennial bulbiferous herb that flowers from May through July.^[1] The inflorescence is composed of two to six bell-shaped flowers.^[5] Plummer’s mariposa-lily produces pink, lavender, or white flowers with pointed sepals and petals that may be up to 4 centimeters long.^[6] Each petal includes a wide central band of long yellow hairs and are bearded in the inner face with long yellow



Blooming Periods for Plummer’s Mariposa-Lily ^[1]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	—	—	✓	✓	✓	—	—	—	—	—

* California Rare Plant Rank 4: Limited distribution; 0.2: Fairly threatened in California.

hairs.^[5] Each petal also has a round gland that is either glabrous or bordered with a ring of dense orange hairs.^[5] This species produces fruit capsules that are up to 8 centimeters long.^[5,6] Plummer's mariposa-lily is known to flower abundantly after fires and is the most prolific during wet years. Removal of the strap leaf (e.g., grows from an underground corm in the spring, which withers before the plant flowers) causes the species to fail to flower.

Pressures and Stressors: Primary pressures and stressors to Plummer's mariposa-lily include development, grazing, fire suppression, foot traffic, mining, powerline construction, and recreational activities. This species is potentially threatened by vegetation clearing, collecting, road maintenance, and non-native plants.^[1] Uncontrolled grazing by livestock can lead to the consumption and/or trampling of Plummer's mariposa-lily populations. Specially, herbivory of the strap basal leaf will impact the species' ability to flower and recruit. Special considerations to timing and intensity of grazing should be taken, especially post-fire and during wet years following a period of drought.^[7] This species is more common than originally known. It was previously listed as CRPR 1B.2.

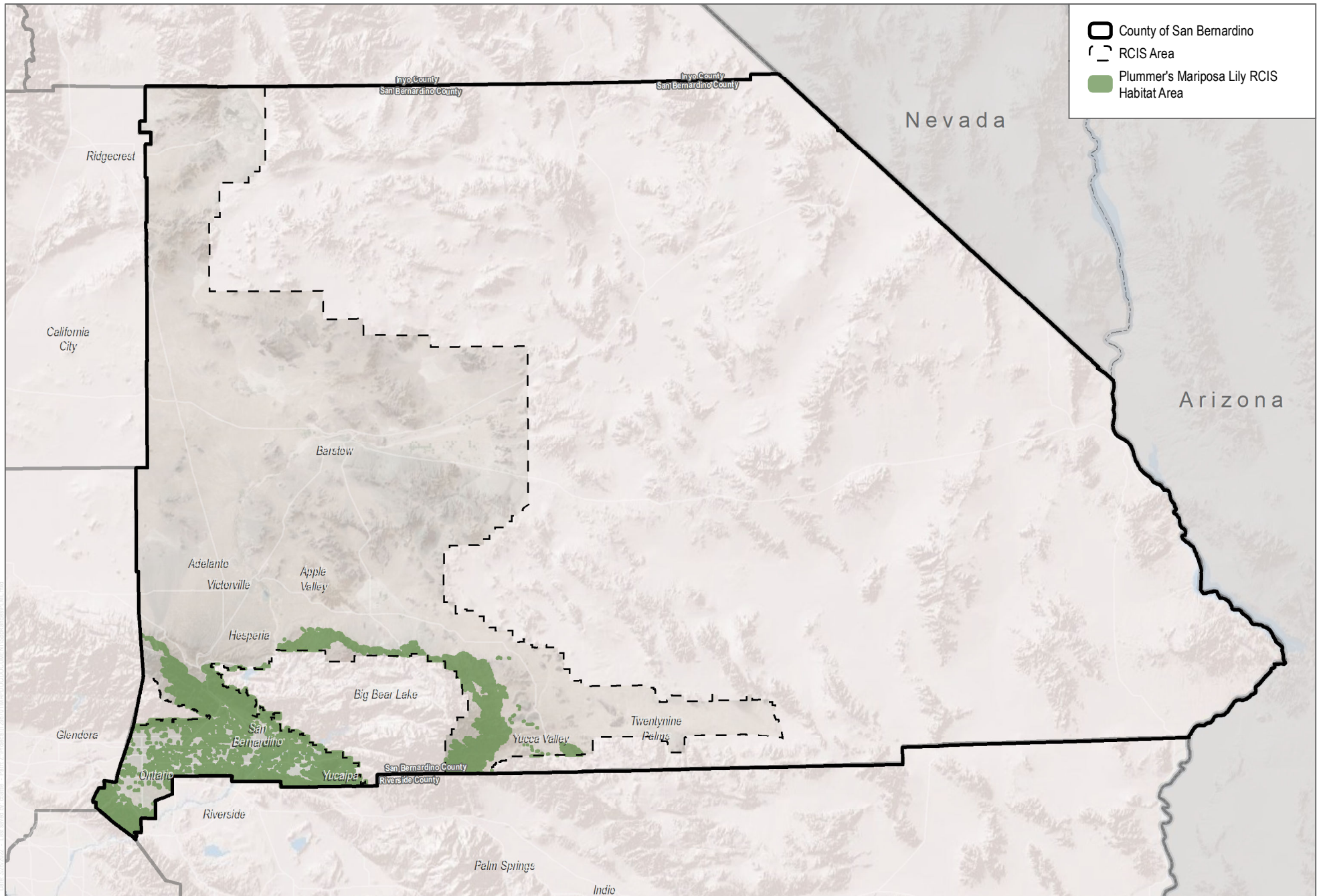
Additionally, pressures and stressors on other conservation elements (i.e., grassland, scrub, and chaparral vegetation communities) include climate change, land uses and land use changes, mining and quarrying, recreational activities, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

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County Department of Public Works, Upper Santa Ana River Habitat Conservation Plan, VertNET, and California Consortium of Herbaria.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities, USDA Ecoregions (see Appendix D)

FIGURE 1

Plummer's Mariposa Lily RCIS Habitat Area

San Bernardino County RCIS



PLANTS

San Bernardino Aster (*Symphotrichum defoliatum*)

Habitat Group: Riparian and Wetland

Legal Status

State: None; CRPR 1B.2^[1]

Federal: USFS Sensitive

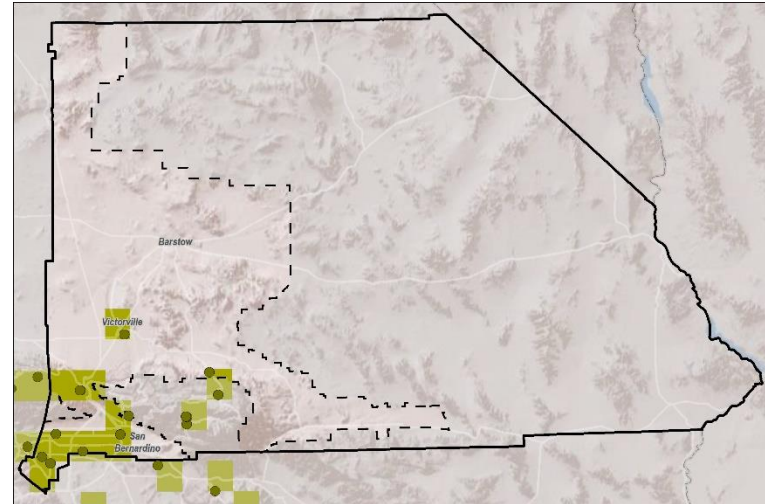
Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: The San Bernardino aster is distributed within Southern California, historically occurring in Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties.^[1] Occurrences are scattered within the Peninsular Ranges, the Los Angeles basin, the San Gabriel, San Bernardino, and San Jacinto mountains, and to a lesser extent the Tehachapi Mountains and Santa Maria area.^[2] Many of the populations in Los Angeles and Orange counties are considered extirpated.^[2,3] Elevations of observed populations range from 2 to 2,040 meters (7 to 6,693 feet).^[1]

RCIS Distribution: A total of six occurrences have been recorded in the Valley region (see inset map).^[4] In the West Desert region, this species has been recorded at three locations near Cushenbury Springs and Mojave Narrows Regional Park. Additionally, in the Mountain region this species occurs above Highland and in Lone Pine Canyon (see inset map).^[4]

Habitat Requirements: This species is found in a variety of habitats, including cismontane woodland, coastal scrub, and lower montane coniferous forest, although primarily associated with wetlands including marshes, meadows, seeps, and vernal mesic



Blooming Periods for San Bernardino Aster ^[1,6]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	—	—	—	—	✓	✓	✓	✓	✓	—

* California Rare Plant Rank 1B: Rare, threatened, or endangered in California and elsewhere; 0.2: Moderately threatened in California.

valley and foothill grasslands.^[1,2,3] San Bernardino aster is considered rare in dry open grasslands and meadows at 4,900 feet in the upper Santa Ana River watershed.^[5]

Reproduction: San Bernardino aster is a perennial rhizomatous herb with white to pale violet flowers the bloom from July to November.^[1,6] Not much is known about the reproductive biology of this species, including seed germination, seed dispersal, and primary pollinators.

Pressures and Stressors: This species faces pressures and stressors from non-native species, hybridization, loss of habitat, and private land management.^[1,3] Although comparatively widespread in its distribution in Southern California, the wetland habitats this species most often occupies have been largely influenced and degraded by urbanization and development. Non-native species have the potential to competitively exclude this species. Possible hybrid specimens have been collected from Ventura, Santa Barbara, and San Luis Obispo counties, and suggest that the degradation of genetic purity may be a growing threat to species viability.^[1] Furthermore, many of the extant occurrences in Riverside, San Diego, and Orange counties are located on private lands and are threatened by inadequate species management.^[3]

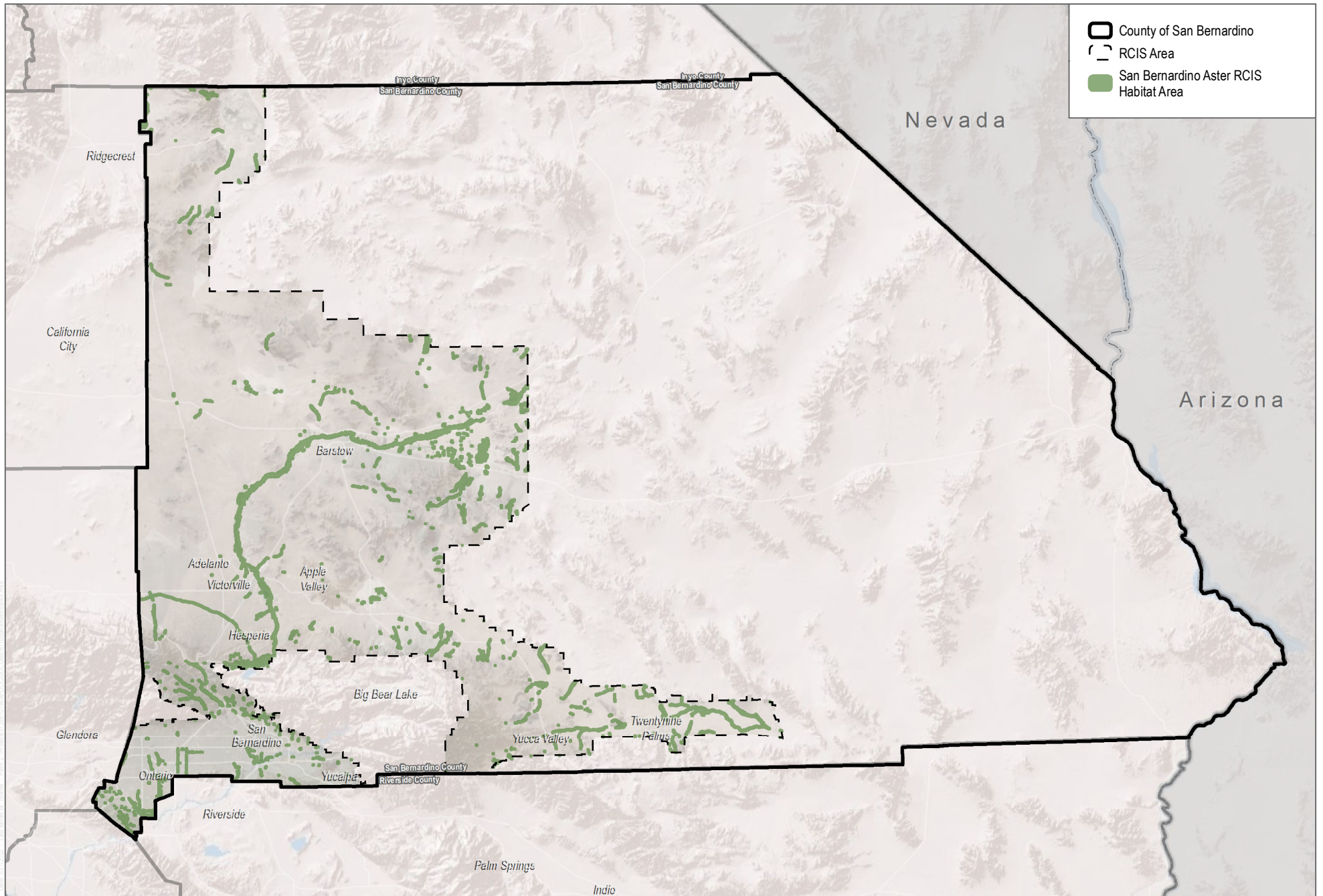
Additionally, pressures and stressors on other conservation elements (i.e., riparian and wetland vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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County Department of Public Works, Upper Santa Ana River Habitat Conservation Plan, VertNET, and California Consortium of Herbaria.

- ⁵ Fraga, N.S., L. Gross, D. Bell, O. Mistretta, J. Wood, and T. Stoughton. 2011. "The Vascular Flora of the Upper Santa Ana River Watershed, San Bernardino Mountains, California." *Crossosoma* 37(1 and 2):9–111.
- ⁶ Allen, G.A. 2012. "*Symphyotrichum defoliatum*." *Jepson eFlora*. Accessed May 14, 2021. http://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=80964.



SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities (see Appendix D)

FIGURE 1

San Bernardino Aster RCIS Habitat Area

San Bernardino County RCIS

PLANTS

Santa Ana River Woollystar (*Eriastrum densifolium* ssp. *sanctorum*)

Habitat Group: Riversidean Alluvial Fan Sage Scrub

Legal Status

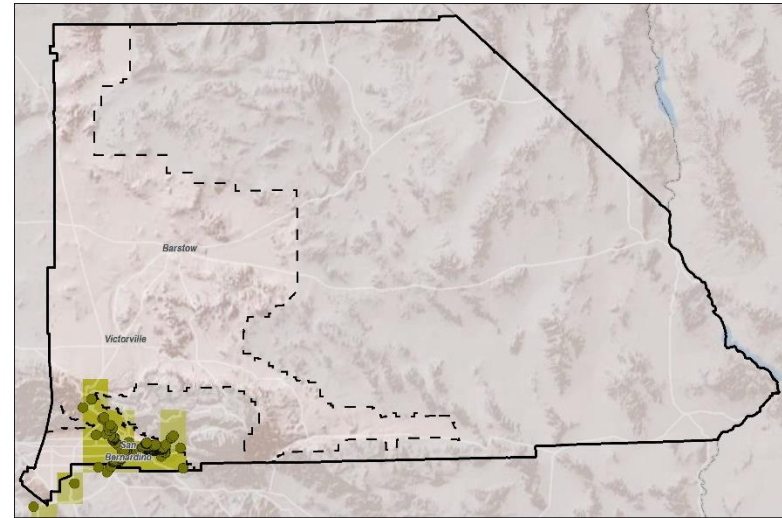
State: Endangered; CRPR 1B.1^[1]

Federal: Endangered^[1]

Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: The Santa Ana River woollystar is endemic to the Santa Ana watershed spanning San Bernardino, Riverside, and Orange counties in Southern California.^[2,3] Historically, this subspecies was distributed from the base of the San Bernardino Mountains south to Santa Ana Canyon and may have occurred as far downstream as Santiago Canyon.^[2,4] Santa Ana River woollystar has been observed at elevations of 91 to 610 meters (299 to 2,001 feet).^[5] This subspecies was considered extirpated from Orange County and Riverside County,^[1,2] but has been recently rediscovered in Riverside County just downstream of the border with San Bernardino County.^[6]



Blooming Periods for Santa Ana River Woollystar ^[4,5]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	—	✓	✓	✓	✓	✓	✓	—	—	—

RCIS Distribution: A total of 824 occurrences have been recorded in the Valley region, primarily in the Upper Santa Ana River wash area and the wash areas around Lytle Creek and Cajon Wash.^[7] Additionally, three occurrences located within the Mountain region are recorded within portions of Cajon Wash (see inset map).^[7]

Habitat Requirements: Santa Ana River woollystar is associated with chaparral and alluvial fan sage scrub, and requires open, well-lit areas of sandy terraces above the ordinary high water mark of ephemeral watercourses.^[3,4,5] This subspecies is a pioneer plant that colonizes washed deposits caused by sporadic stream flow, and prefers areas with below 50% vegetative cover and nutrient-

* California Rare Plant Rank (CRPR) 1B: Rare, threatened, or endangered in California and elsewhere; 0.1: Seriously threatened in California.

poor soils consisting of over 90% sand particles.^[3,4] This subspecies is most commonly associated the pioneer and intermediate successional stages of alluvial scrub, and often co-occurs with California buckwheat (*Eriogonum fasciculatum*), fastigiated golden aster (*Heterotheca sessiliflora* ssp. *fastigiata*), California croton (*Croton californicus*), and scalebroom (*Lepidospartum squamatum*).^[3,4,8]

Reproduction: This subspecies is a short-lived perennial subshrub that lives an average of 5 years and can grow up to 1 meter (3.3 feet) tall.^[4] Germination and flowering are primarily influenced by seasonal rainfall and can occur between April and September, but typically peak around June.^[4,5,9] Santa Ana River woollystar is likely an obligate outcrosser and does not self-pollinate.^[4] Common pollinators include the giant flower-loving fly (*Rhaphiomidas acton* spp. *acton*), hummingbirds, bumble bees, halictid bees, and digger bees.^[10] Hummingbirds and acton giant flower-loving fly are the most consistent pollinators for this species, and are important in assessing habitat health for the species. Seed dispersal occurs primarily by flooding.^[4]

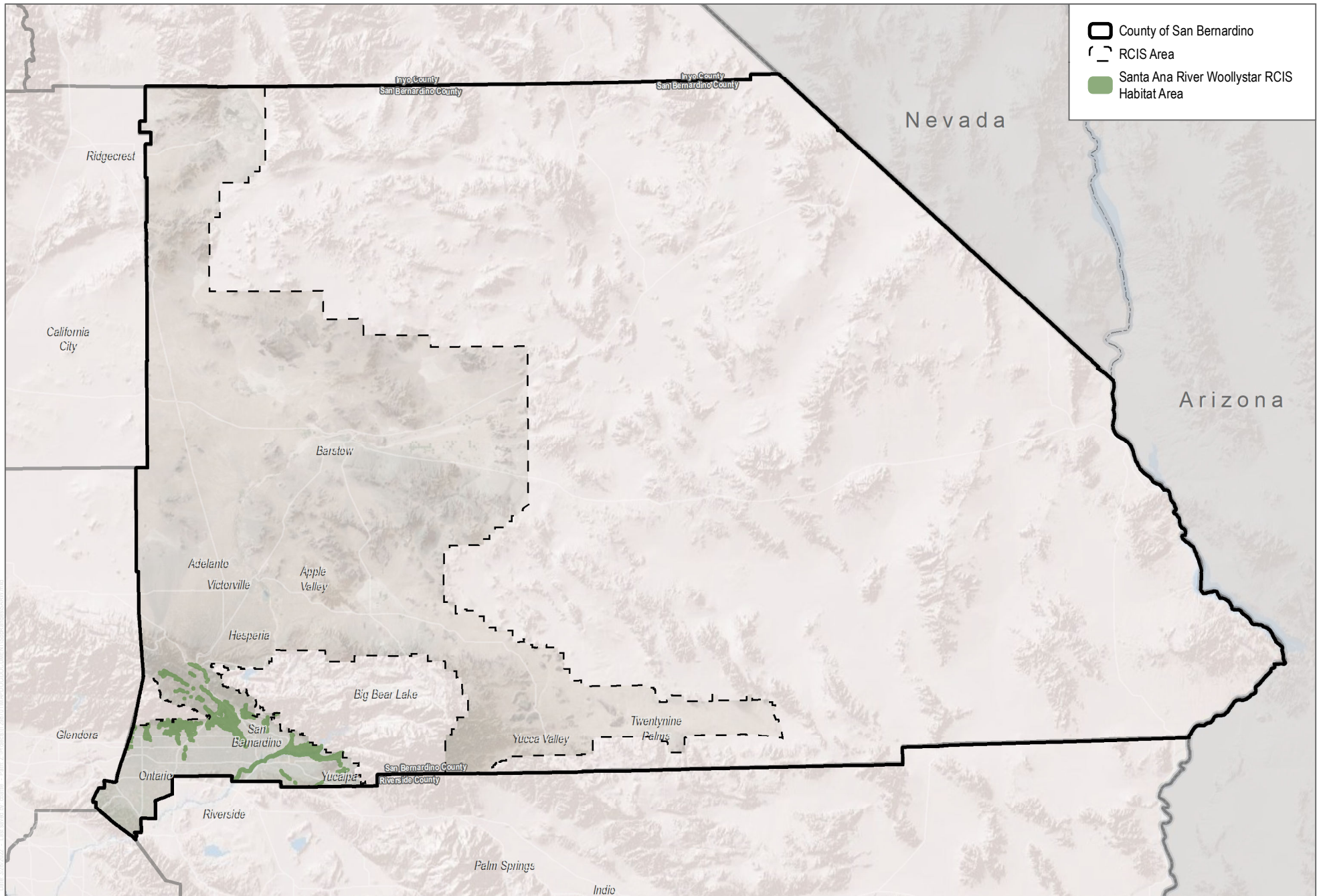
Pressures and Stressors: Santa Ana River woollystar pressure and stressors include hydrological modification, off-highway vehicle (OHV) use, mining, and non-native species.^[1,3,4,5] Construction of dams, channelized streams, and further flood control measures alter the hydrological processes that shape the early successional vegetative stages on which this species relies.^[4] A long-term impact study on the Seven Oaks Dam in San Bernardino County indicates that in the absence of large flood events, suitable habitat for this subspecies will be reduced over time, most immediately for populations in intermediate successional stages.^[11] The use of OHVs is an emerging threat near some occurrences degrading soils and plant communities, and mining activity remains near four occurrences of this subspecies.^[4] Non-native grasses also degrade otherwise suitable habitat by reducing the amount of bare ground that this species prefers.^[4]

Additionally, pressures and stressors on other conservation elements (i.e., scrub vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, mining and quarrying, recreational activities, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities (see Appendix D)

FIGURE 1

Santa Ana River Woollystar RCIS Habitat Area

San Bernardino County RCIS



PLANTS

Short-Joint Beavertail (*Opuntia basilaris* var. *brachyclada*)

Habitat Group: Transitional Scrub, Chaparral, and Woodland

Legal Status

State: None; CRPR 1B.2^[1]

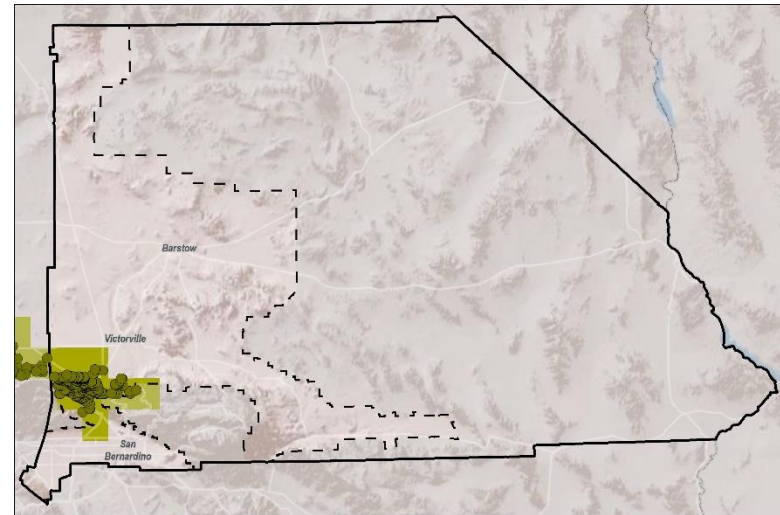
Federal: BLM Sensitive; USFS Sensitive

Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: Short-joint beavertail occurs within Los Angeles and San Bernardino counties in California along the northern slopes of the San Gabriel and San Bernardino mountains.^[1,2] Specifically, it can be found from Quigley Canyon ranging northeast to Anaverde Valley, following the San Andreas rift zone to Cajon Pass as well as at Mill Creek Summit within the Angeles National Forest.^[3,4] This species has been observed at elevations ranging from 425 to 1,800 meters (1,394 to 5,906 feet).^[5]

RCIS Distribution: A total of 39 occurrences have been recorded in the West Desert region, and a total of 316 occurrences have been recorded in the Mountain region, all primarily located in the mountains and foothills south of Phelan and Hesperia, both west and east of Interstate 15 (see inset map).^[6]



Blooming Periods for Short-Joint Beavertail ^[1,5]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	—	<	<	<	—	—	—	—	—	—

Habitat Requirements: This species can be found in chaparral, Joshua tree woodland, Mojavean desert scrub, and pinyon-juniper woodland vegetation communities.^[3,4,5] Suitable soils range from sandy to rocky, in open stream beds and on rocky slopes.^[3] Common associated species include Joshua tree (*Yucca brevifolia*), California juniper (*Juniperus californica*), scrub oak (*Quercus john-tuckeri*), and ceanothus (*Ceanothus greggii*), and common species within Angeles National forest include chamise

* California Rare Plant Rank (CRPR) 1B: Rare, threatened, or endangered in California and elsewhere; 0.1: Seriously threatened in California.

(*Adenostoma fasciculatum*), ceanothus (both *Ceanothus crassifolius* and *Ceanothus greegii* var. *vestitus*), the Lord's candle (*Yucca whipplei* ssp. *caespitosa*), and California sycamore (*Platanus racemosa*).^[3]

Reproduction: Short-joint beavertail is a small cactus, about 1.5 to 5 centimeters wide, that flowers from April through June.^[1,5] Pollinators include medium to large bees, but beetles may also play a role and have been observed in these flowers.^[3] Seeds do not germinate within the fruit itself, due to inhibitory chemicals.^[7] The brightly colored and juicy fruit of this species suggests dispersal by birds, and seeds themselves might be eaten by insects, rodents, and birds.^[7]

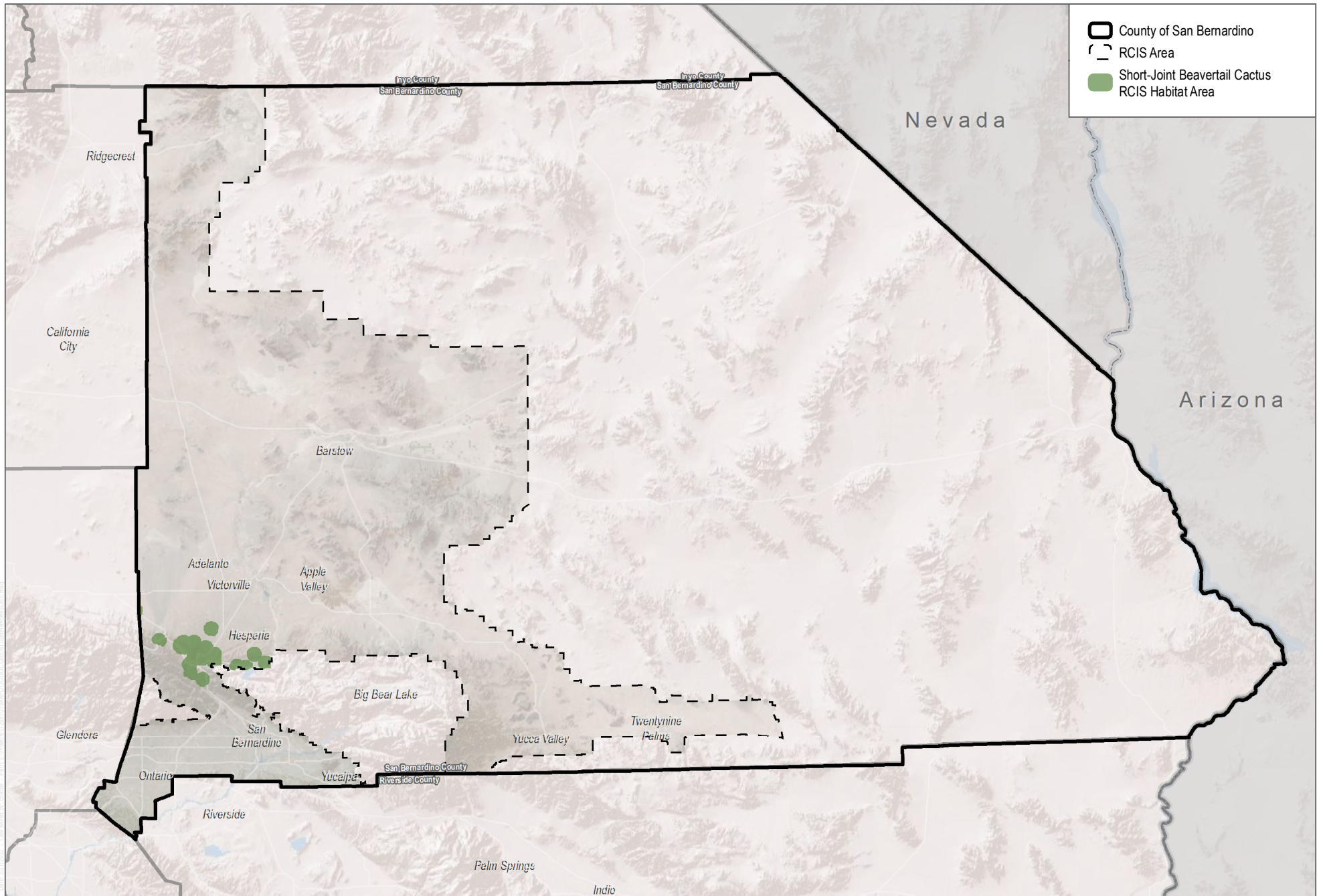
Pressures and Stressors: Current and potential pressures to short-joint beavertail include occurrences on private land, development, off-highway vehicles (OHV), invasive plant species, limestone mining, oil drilling, horticultural collections, and prescribed burns.^[3,5] The majority of this species' range in San Bernardino County is located on private lands, and development is accelerating in the vicinity of Pinon Hills, Phelan, and Oak Hills potentially degrading and displacing habitat.^[3] The Cajon Pass area is subject to extensive OHV use causing erosion and potentially trampling individual plants.^[3] Proposed limestone mining near Wrightwood and oil drilling at Quigley Canyon pose threats to extant populations.^[3] It is uncertain how well adapted short-joint beavertail is to fire, but prescribed burns planned for the desert regions within its range may negatively impact populations.^[7] The showy and beautiful flowers of this species make it desirable for growers, and horticultural collections may have marked impacts on populations as well.^[3,5]




Additionally, pressures and stressors on other conservation elements (i.e., scrub and woodland vegetation communities) include climate change, land uses and land use changes, mining and quarrying, recreational activities, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

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-  County of San Bernardino
-  RCIS Area
-  Short-Joint Beavertail Cactus RCIS Habitat Area

SOURCE: Bing Maps 2018; San Bernardino County 2018; CBI Databasin (see Appendix D)

FIGURE 1

Short-Joint Beavertail Cactus RCIS Habitat Area

San Bernardino County RCIS



PLANTS

Slender-Horned Spineflower (*Dodecahema leptoceras*)

Habitat Group: Riversidean Alluvial Fan Sage Scrub

Legal Status

State: Endangered; CRPR 1B.1^[1]

Federal: Endangered^[1]

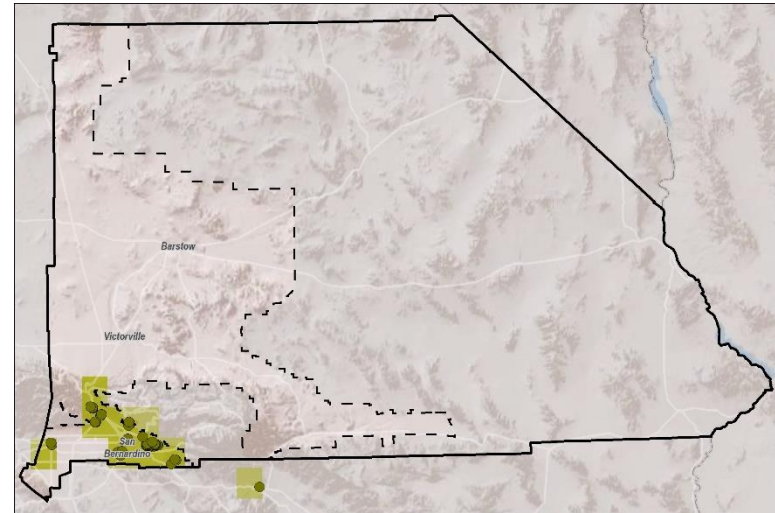
Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: The slender-horned spineflower is endemic to southwestern California and ranges from central Los Angeles County, east to San Bernardino County, and south to southwestern Riverside County.^[2,3] The species occurs in sparse, scattered locations in the foothills of the San Gabriel, San Bernardino, and San Jacinto mountains.^[4,5] Populations are presumed extant within 10 watersheds across the three counties, and include 20 occurrences total.^[2,3] This species can be found at elevations of 200 to 760 meters (656 to 2,493 feet).^[6]

RCIS Distribution: A total of 78 occurrences have been recorded scattered around the Valley region, primarily in the Upper Santa Ana River wash area and the wash areas around Lytle Creek and Cajon Wash.^[7] Records around Upland, Colton, and Yucaipa may no longer occur. This species also occurs in the Mountain region, with six occurrences within and around Cajon Wash (see map inset).^[7]

Habitat Requirements: This species is associated with chaparral, cismontane woodland, and alluvial fan sage scrub, commonly located on terraces and benches where intermittent, scouring flood events occur.^[2,3] Required microhabitat appears to be shallow depressions on relatively flat slopes where soils are high in silt and low in nutrients and organic matter.^[8,9] Associated species



Blooming Periods for Slender-Horned Spineflower ^[4,5]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	—	✓	✓	✓	—	—	—	—	—	—

* California Rare Plant Rank (CRPR) 1B: Rare, threatened, or endangered in California and elsewhere; 0.1: Seriously threatened in California.

include *Adenostoma fasciculatum*, *Adenostoma sparsifolium*, *Eriogonum fasciculatum* ssp. *foliolosum*, *Eriastrum sappharinum*, *Stylocline gnaphalioides*, *Vulpia myuros* var. *hirsuta*, *Chorizanthe coriacea*, *Salvia columbariae*, *Nemacladus longiflorus*, *Lupinus bicolor*, and *Chaenactis glabriuscula*. Preferred habitat appears to be sparsely vegetated or openings in the understory. Vail Lake may contain habitat that potentially supports this species.

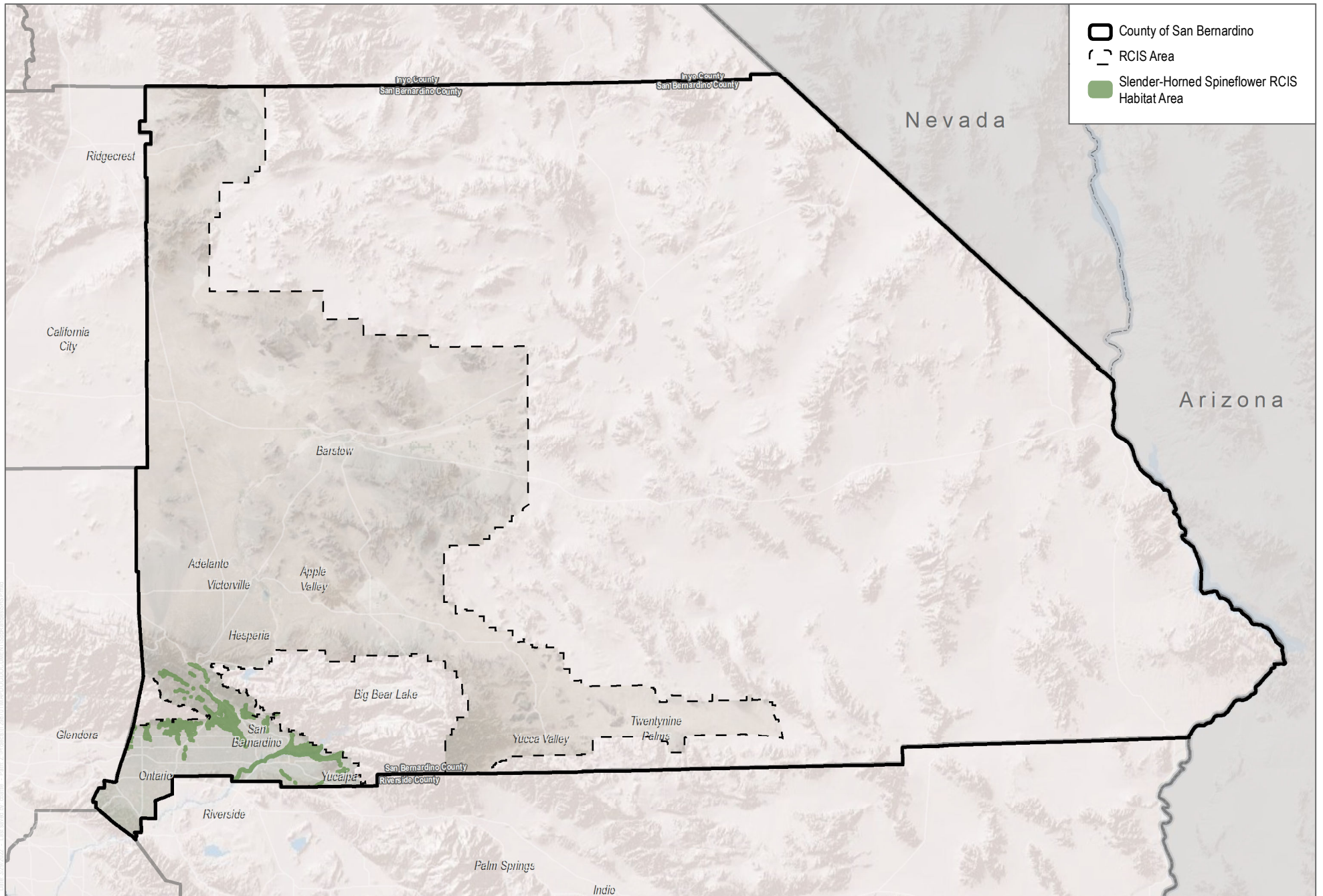
Reproduction: Slender-horned spineflower is a spring annual herb that typically germinates in late February or early March, likely in response to winter rains.^[2] This species flowers from April through June.^[4,5] In drought, plants likely do not survive long enough to reach flowering stages, but in cool, wet conditions are more successful.^[2] The slender-horned spineflower is likely pollinated by a variety of species, which potentially includes a native wasp (*Plenoculus davisii*).^[2] Seed banks appear to be critical in restoring aboveground populations both demographically and genetically.^[10]

Pressures and Stressors: Primary pressures and stressors to slender-horned spineflower populations are urbanization, mining, alteration of natural fluvial systems, off-highway vehicle (OHV) use, small population sizes, and non-native species.^[1,2,6] This species often co-occurs with non-native grasses and can be competitively excluded when density of exotic grasses is high.^[8] Development in these Southern California basins is extensive and eliminates or compromises the quality of adjacent alluvial fan habitat.^[2] Sand and gravel mining is a pressure to three extant populations in San Bernardino County and one population in Riverside County.^[2] Channelization, flood control measures, and reservoir expansion eliminate or significantly alter the natural fluvial processes that define alluvial fan ecological systems, severely degrading habitat for this species.^[2] Permissible as well as unreported OHV usage occurs on many of the areas where slender-horned spineflower populations are located and may trample plants, break down soils structure, alter hydrological processes, and introduce non-native plants.^[2] Finally, such small and fragmented populations reduce genetic exchange and resiliency to stochastic events, and puts this species at higher risk of local extirpation or extinction.^[2]

Additionally, pressures and stressors on other conservation elements (i.e., scrub vegetation communities and hydrological processes and features) include climate change, land uses such as dam and water management and land use changes, mining and quarrying, recreational activities, pollutants, and invasive species. These pressures and stressors can affect the quality and function of these elements important to this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities (see Appendix D)

FIGURE 1

Slender-Horned Spineflower RCIS Habitat Area

San Bernardino County RCIS

PLANTS

Western Joshua Tree (*Yucca brevifolia*)

Habitat Group: Transitional Scrub, Chaparral, and Woodland

Legal Status

State: Candidate^[1]; California Native Desert Plant Act;
 Local Ordinances^[2]

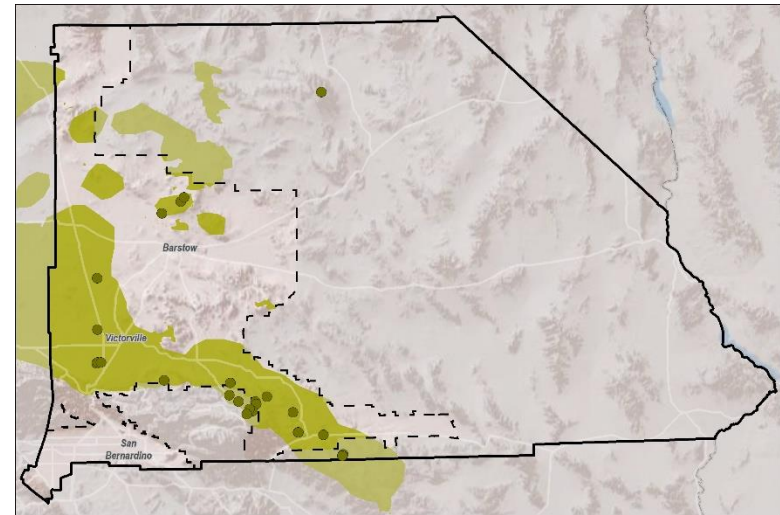
Federal: None

Critical Habitat: Not applicable

Recovery Plan: Not applicable

Distribution: Joshua trees are distributed in desert areas within Southern California, southern Nevada, western Arizona, and in southwestern Utah.^[3] Within California they occur in the Mojave Desert, the eastern slope of the Sierra Nevada range, and in parts of the Tehachapi Mountains.^[3] Throughout its California range, this species can be found from elevations of 1,600 to 6,600 feet.^[3,4]

RCIS Distribution: A total of 16 occurrences have been recorded in the West Desert region of the RCIS Area; however, a reliable estimate of the species is not available, and current information indicates that the species is relatively abundant.^[5] Mapped Joshua tree woodland communities are shown in green (see inset map). Within the RCIS, mapped woodlands generally follow and are more expansive than the occurrence record locations.^[6]



Blooming Periods for Joshua Tree ^[2,4]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	<	<	<	—	—	—	—	—	—	—

Habitat Requirements: Joshua trees occur in hot, dry flats, mesas, bajadas, and gentle slopes in desert transitional zones containing sagebrush, desert shrub, pinyon-juniper, and desert grassland vegetation.^[4,7,8] This species can persist in habitats with cold winters, hot summers, and very little precipitation,^[4] and some research suggests that this species is restricted to areas with cold enough winter temperatures.^[8] Plants are capable of tolerating temperatures from 12°F to 140°F and annual precipitation from 3.9 to 10.6 inches.^[9] Soils are typically fine, loose, well drained, or gravelly.^[4,8] Perennial grasses are often

dominant in Joshua tree stands, and depending on location commonly include desert needlegrass (*Achnatherum speciosum*), Indian ricegrass (*A. hymenoides*), big galleta (*Pleuraphis rigida*), black grama (*Bouteloua eriopoda*), white galleta (*P. jamesii*), and blue grama (*B. gracilis*).^[4]

Reproduction: This species is a slow-growing and long-lived tree-like plant that flowers throughout its range between March and May.^[3,4,7] Reproduction can be sexual through seed production or asexual through rhizomatous growth.^[4] Two species of moths, *Tegeticula synthetica* and *Tegeticula anthithetica*, are considered sole pollinators of Joshua trees.^[10] Seeds are chiefly dispersed by seed caching rodent species, but wind may also play a less significant role in dispersal.^[8,11,12] Seed production is considered rare and is likely correlated with years of higher precipitation.^[4]

Pressures and Stressors: Primary pressures and stressors to Joshua trees include increased fire frequency and intensity, drought, slow recruitment, climate change, invasive species, and habitat loss.^[4,5,13,14,15] The short seed longevity, variable germination conditions, and infrequent establishment of Joshua trees make them more vulnerable to large disturbances as it may require decades or centuries to fully reestablish an area.^[13] Anthropogenic factors are causing wildfire size and frequency to increase in the Mojave Desert where habitats are generally intolerant of fire and threaten long-term successional Joshua tree woodland reestablishment.^[14] Accentuated El Niño Southern Oscillation cycles prolong periods of drought but introduce short periods of heavy rain in which exotic species flourish, become fuels for higher intensity wildfires, and ultimately limit opportunities for Joshua tree recruitment and persistence.^[15] Climate change increasing temperatures and altering precipitation seasonality and magnitude has the potential to dramatically limit future distribution of Joshua trees, particularly in the southern portion of its range.^[16] Invasive species has resulted in larger and more frequent fires resulting in a large number of mortalities to Joshua trees.^[5] Finally, habitat loss from human development has occurred in the past and expected to continue in the coming decades.^[5]

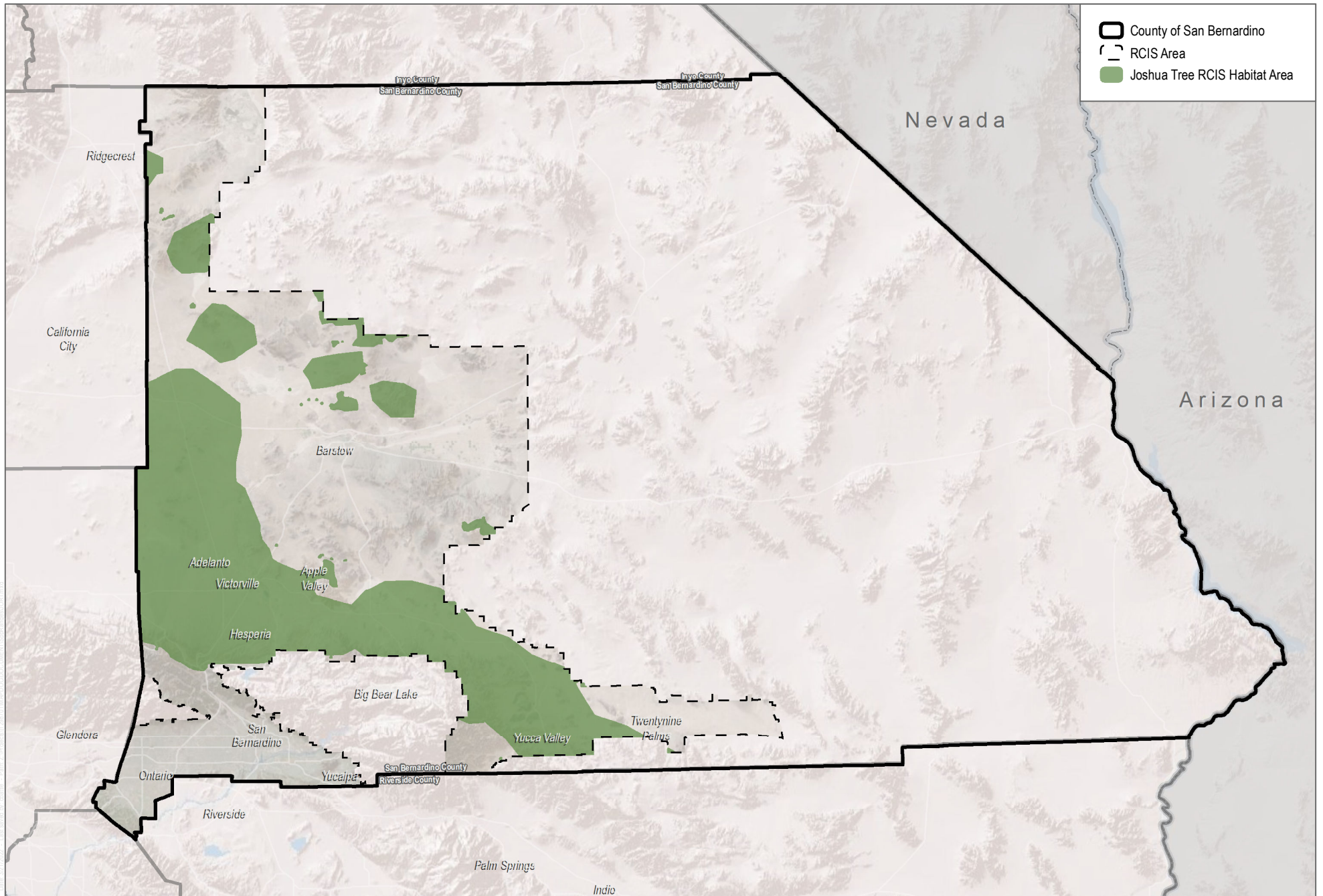
Additionally, pressures and stressors on other conservation elements (i.e., desert scrub and woodland vegetation communities) include climate change, land uses and land use changes, recreational activities, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

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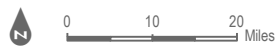


SOURCE: Bing Maps 2018; San Bernardino County 2018; CDFW (see Appendix D)

FIGURE 1

Joshua Tree RCIS Habitat Area

San Bernardino County RCIS



PLANTS

White-Bracted Spineflower (*Chorizanthe xanti* var. *leucotheca*)

Habitat Group: Riversidean Alluvial Fan Sage Scrub; Transitional Scrub, Chaparral, and Woodland

Legal Status

State: None; CRPR 1B.2^[1]

Federal: BLM Sensitive; USFS Sensitive

Critical Habitat: Not applicable

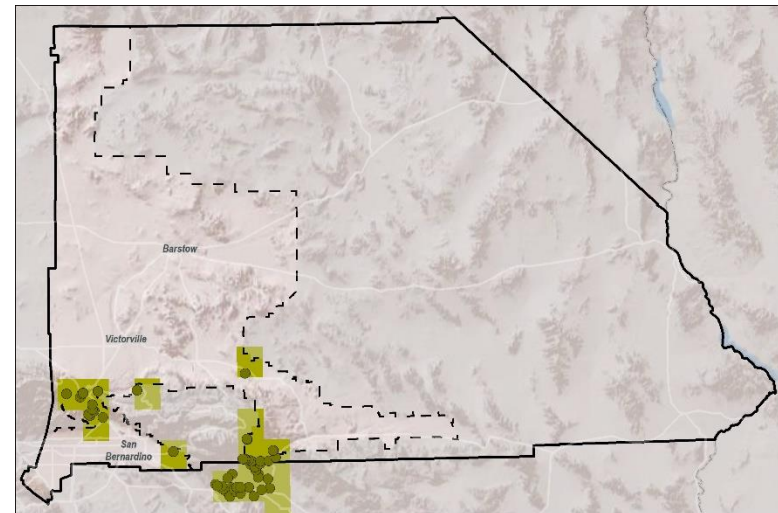
Recovery Plan: Not applicable

Distribution: White-bracted spineflower is endemic to California and occurs in Los Angeles, San Diego, San Bernardino, and Riverside counties.^[1,2] Riverside County supports the majority of the extant populations.^[3] This species occurs at elevations from 300 to 1,200 meters (985 to 3,953 feet).^[3]

RCIS Distribution: A total of 10 occurrences for this species have been recorded in the Mountain region within Cajon Pass.^[4] Additionally, a total of 12 occurrences have been recorded within the West Desert region north of Cajon Pass, as well as near Morongo Valley, and a total of 4 occurrences have been recorded within the Valley region near Highland (see inset map).^[4]

Habitat Requirements: White-bracted spineflower occurs in Mojavean desert scrub, coastal scrub, pinyon, and juniper woodland.^[3,5] This species prefers sandy or gravelly substrates and is commonly associated with alluvial fan or ephemeral wash habitats.^[3,5]

Occurrence reports also indicate associations with scale broom (*Lepidospartum squamatum*), four-wing saltbush (*Atriplex canescens*), desert willow (*Chilopsis linearis*), deerweed (*Acmispon glaber*), California buckwheat (*Eriogonum fasciculatum*), ephedra (*Ephedra californica*), cheesebush (*Ambrosia salsola*), creosote bush (*Larrea tridentata*), and brittlebush (*Encelia farinosa*).^[5]



Blooming Periods for White-Bracted Spineflower ^[3]											
Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
—	—	—	✓	✓	✓	—	—	—	—	—	—

* California Rare Plant Rank 1B: Rare, threatened, or endangered in California and elsewhere; 0.2: Moderately threatened in California.

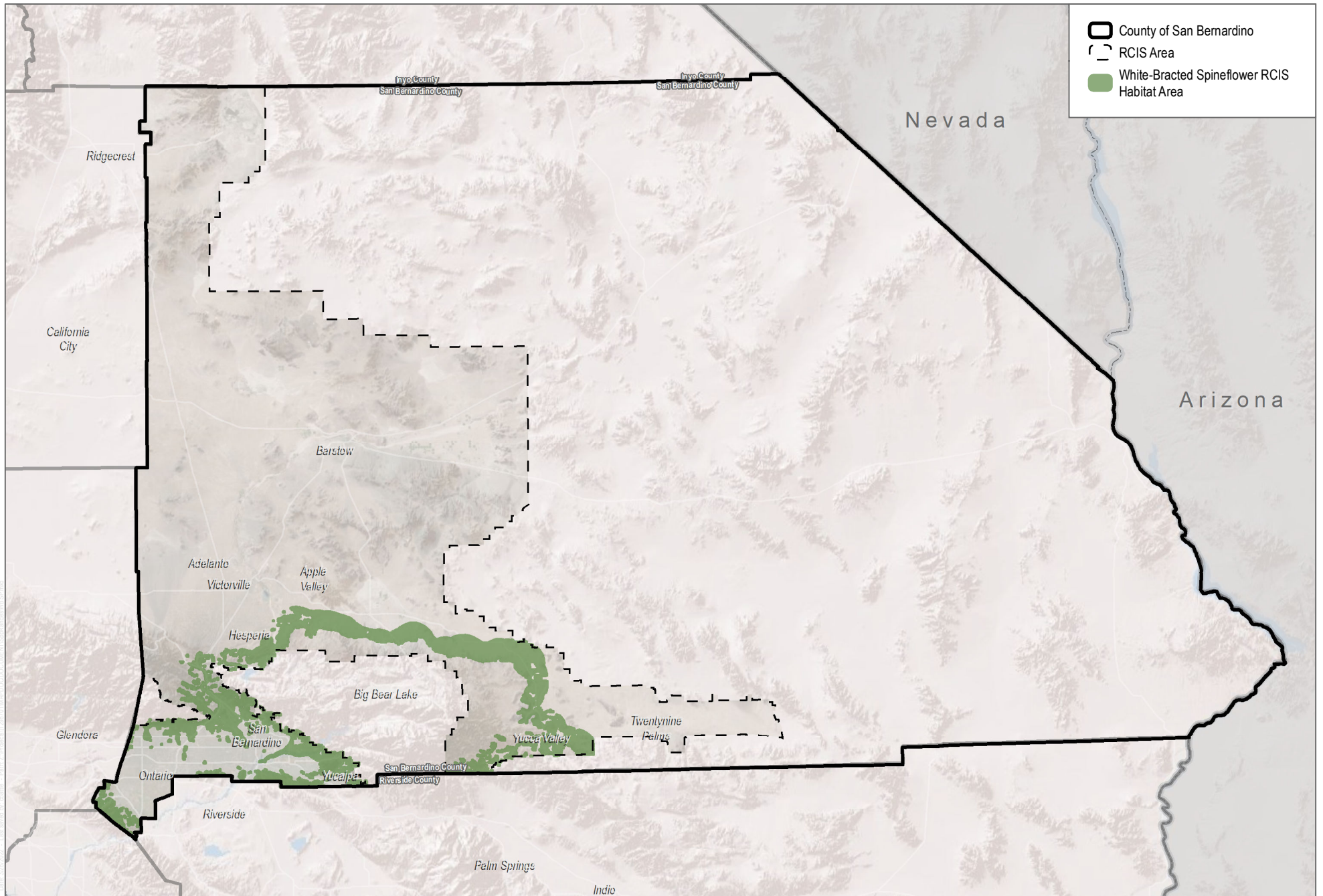
Reproduction: This species is an annual herb that ranges in height from 0.3 to 3 cm and flowers from April to June.^[3,6] The inflorescence includes two bracts and one small flower 4.5 to 6 mm wide for each peduncle with rose to red colored petals.^[6]

Pressures and Stressors: Primary pressures and stressors to white-bracted spineflower include development, flood control infrastructure, mining, vehicles, utility development, and weeds including compact brome (*Bromus madritensis*), red brome (*Bromus rubens*), and redstem filaree (*Erodium cicutarium*).^[2,3,5] Several populations of this species are on USFS lands with a small subset located on private lands.^[2]

Additionally, pressures and stressors on other conservation elements (i.e., scrub and woodland vegetation communities) include climate change, land uses and land use changes, mining and quarrying, recreational activities, fire and fire suppression, and invasive species. These pressures and stressors can affect the quality and function of vegetation communities to support habitat for this Focal Species.

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SOURCE: Bing Maps 2018; San Bernardino County 2018; San Bernardino County Vegetation Communities, USDA Ecoregions (see Appendix D)

FIGURE 1

White-Bracted Spineflower RCIS Habitat Area

San Bernardino County RCIS



APPENDIX D
Key Data Descriptions

SAN BERNARDINO COUNTY REGIONAL CONSERVATION INVESTMENT STRATEGY

Key Data Descriptions

GIS Layer: Plan Base

Prepared by: San Bernardino Council of Governments and the County of San Bernardino

Compiled by: Dudek

Version: September 2021

Data Description: The Plan Base layer was created from multiple existing data sources to characterize and map the various designations, land ownerships, and jurisdictions in San Bernardino County. This layer is intended to be used to support the landscape-scale analysis of land uses and land protection status in the County. It should be noted that data on land ownership, designations, and management differ in their quality, resolution, and accuracy from different sources; every effort was made to use data from authoritative sources. Data used to develop the Plan Base layer came from the following sources: County of San Bernardino, PlaceWorks, San Bernardino Council of Governments (SBCOG), Bureau of Land Management (BLM), California State Parks, US Protected Areas Dataset, and California Protected Areas Dataset. The Local Conserved Land Inventory was developed separate from the Plan Base; they are intended to be used together. Dudek Map Category Update attribute is a single field used to map and characterize the designations in the County based on the Plan Base dataset for the purposes of the landscape-scale analysis and includes the following categories: National Monuments, Parks, and Preserves; BLM Wilderness and National Conservation Lands; California Department of Fish and Wildlife Lands, California State Parks and Recreation Lands, BLM Areas of Critical Environmental Concern, Military Expansion Mitigation Lands, National Forests, Other BLM Lands, Other State Lands, Other Open Space and Parks, Military, Tribal Lands, and Undesignated.

Plan Base Attribute	GIS Source Layer Name	Dudek Source	Original Source
CountyBoundary	CountyBoundary	Placeworks	County
Supervisor_Dist	SupervisorialDistricts	Placeworks	County
Comm_Plan	cp_boundary	Placeworks	County
Region	Region	Placeworks	County
City	CityLimits	Placeworks	County
City_SOI	CitySphereOfInfluence	Placeworks	County
OWN_ADMIN_DEPT	LandStatus, LndSurfaceEstate	Placeworks	BLM; http://www.blm.gov/ca/gis/
OWN_ADMIN_AGENCY	LandStatus, LndSurfaceEstate	Placeworks	BLM; http://www.blm.gov/ca/gis/
OWN_ADMIN_UNIT	LandStatus, LndSurfaceEstate	Placeworks	BLM; http://www.blm.gov/ca/gis/
OWN_ADMIN_UNIT_TYPE	LandStatus, LndSurfaceEstate	Placeworks	BLM; http://www.blm.gov/ca/gis/
OWN_CA_STATE_NAME	LandStatus, LndSurfaceEstate	Placeworks	BLM; http://www.blm.gov/ca/gis/
USPAD_p_des_tp	PADUS_CBIEdition	DataBasin	DataBasin

Plan Base Attribute	GIS Source Layer Name	Dudek Source	Original Source
USPAD_t_des_nm	PADUS_CBIEdition	DataBasin	DataBasin
USPAD_gap_sts	PADUS_CBIEdition	DataBasin	DataBasin
AGENCY_NAME	CPAD_AGENCY NAME	CPAD	http://www.calands.org/
AGENCY LEVEL	CPAD_AGENCY LEVEL	CPAD	http://www.calands.org/
MNG_AGENCY	CPAD_MNG AGENCY	CPAD	http://www.calands.org/
SITE_NAME	CPAD_SITE NAME	CPAD	http://www.calands.org/
SANBAG_OpenSpace	Local Open Space_SANBAG	SANBAG	Composite of data received from local jurisdictions for the SANBAG Habitat Conservation Framework Phase I
ACEC Name	BLM ACECs	BLM	BLM; http://www.blm.gov/ca/gis/
ACEC	BLM ACECs	BLM	BLM; http://www.blm.gov/ca/gis/
DRECP_ACEC	BLM ACECs	BLM	BLM; http://www.blm.gov/ca/gis/
NLCS_NAME	BLM National Conservation Lands	BLM	BLM; http://www.blm.gov/ca/gis/
NLCS	BLM National Conservation Lands	BLM	BLM; http://www.blm.gov/ca/gis/
BLM_WILD_WSA	nicsWilderness, nics_wsa_poly, nics_wild_poly	BLM	BLM; http://www.blm.gov/ca/gis/
DRECP_WILD	BLM Wilderness	BLM	BLM; http://www.blm.gov/ca/gis/
DRECP_NCL	BLM National Conservation Lands	BLM	BLM; http://www.blm.gov/ca/gis/
Nat_Monuments	nicsNatMonuments, nics_nm_nca_poly; national_monument	BLM	BLM; http://www.blm.gov/ca/gis/ County of San Bernardino
CA_Parks_Name	CAParksBoundaries	CA State Parks	CA State Parks
CA_Parks_Mgmt	CAParksBoundaries	CA State Parks	CA State Parks
Type_of_Parcel	San Bernardino County Flood Control District lands	County	County
Dudek_MapCategory_Update	NA	NA	Dudek
County_Jurisdiction	NA	Placeworks	NA
RCIS_Area	NA	Dudek	NA

GIS Layer: Local Conserved Land Inventory

Prepared for: San Bernardino Council of Governments and the County of San Bernardino

Compiled by: Dudek

Version: September 2021

Data Description: The purpose of the Local Conserved Land Inventory is to store and maintain data specifically about local conserved lands in the San Bernardino County. Authoritative data about land ownership, jurisdictional boundaries, land use designations, and parcel information is stored and maintained separately from this inventory and is therefore not included here to avoid duplicative, inaccurate, or outdated information. Source data for the Local Conservation Land Inventory compiled from: The Nature Conservancy, Wildlands Inc., The Wildlands Conservancy, Mojave Desert Land Trust, Wildlife Heritage Foundation, Transition Habitat Conservancy, Inland Empire Resource Conservation District, and Land Veritas and conservation easements

compiled from the San Bernardino Department of Public Works, City of Fontana, City of Rancho Cucamonga, City of Colton, San Bernardino Associated Governments, and as inventoried by the California Conservation Easement Database.

GIS Layer: San Bernardino County Modeled Habitat Linkages

Prepared for: San Bernardino Council of Governments and the County of San Bernardino

Compiled by: Dudek

Version: September 2021

Data Description: A composite habitat linkage layer was developed for San Bernardino County from multiple sources, including California Essential Habitat Connectivity Project (Spencer et al. 2010), South Coast Wildlands Desert Linkage Network (Penrod et al. 2012), South Coast Wildlands Joshua Tree Twenty Nine Palms Wildlife Corridors (Penrod et al. 2008), South Coast Wildlands Missing Linkages Wildlife Corridors (Beier et al. 2006), Desert Tortoise Conservation Areas and Linkages (Averill-Murray et al. 2013), Conservation Biology Institute (CBI) West Mojave ecoregion connectivity modeling for Large and Small species (CBI 2017), and Climate Resilient Connectivity for the South Coast Ecoregion of California (Jennings et al. 2019).

GIS Layer: San Bernardino County Vegetation Communities

Prepared for: San Bernardino Council of Governments and the County of San Bernardino

Compiled by: Dudek

Version: September 2021

Data Description: Hierarchical, seamless, National Vegetation Classification Standard (NVCS)-based vegetation community dataset was developed for San Bernardino County from multiple sources, including the CDFW Alliance-level mapping of the DRECP (AIS 2013; VegCAMP et al. 2013), Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG) (USFS 2014), and SANBAG existing land-use layer (SANBAG 2012).

GIS Layer: San Bernardino County Species Occurrences

Prepared for: San Bernardino Council of Governments and the County of San Bernardino

Compiled by: Dudek

Version: September 2021

Data Description: A composite species occurrence dataset was developed for San Bernardino County from multiple sources, including: CDFW California Natural Diversity Database (CNDDDB, CDFW 2021), US Fish and Wildlife Service, US Forest Service, US Bureau of Land Management, San Bernardino County Museum, San Bernardino County

Department of Public Works, Upper Santa Ana River HCP, VertNET, and California Consortium of Herbaria. The data attributes were standardized across all sources for Taxa, Common Name, Scientific Name, Status, and Source. Additionally, the data was geospatially processed and attributed to identify potential duplicate points in close proximity of each other (i.e., points of the same species from different sources within 100 feet will be coded as potential duplicates).

GIS Layer: Focal Species Habitats

Prepared for: San Bernardino Council of Governments and the County of San Bernardino

Compiled by: Dudek

Version: September 2021

Data Description: A Focal Species habitat dataset was compiled for Regional Conservation Investment Strategy (RCIS) planning. For species with existing, reliable species distribution models, these existing datasets were used, including models and predicted habitat layers developed by U.S. Geological Survey, UC Davis, Conservation Biology Institute, and CDFW (CDFW, Biogeographic Information and Observation System (BIOS), datasets retrieved September 2021, from <http://bios.dfg.ca.gov>). For species without existing, reliable species distribution models covering the RCIS Area or where existing models were not appropriate for use in the RCIS Area, simple coverages were developed using available appropriate species-specific information, including vegetation community associations, range information, occurrence information, designated critical habitat, soils, and elevation. These species habitat coverages are intended to represent a reasonable approximation of the potentially suitable habitat areas for each Focal Species in the RCIS Area based on existing information.

Taxa	Common Name	Scientific Name	Habitat Area Data Source and Description
Amphibian and Reptile	Agassiz's desert tortoise	<i>Gopherus agassizii</i>	Desert Renewable Energy Conservation Plan (DRECP; BLM 2016; CEC et al. 2016) species distribution model; original source USGS Maxent (CBI)
Amphibian and Reptile	arroyo toad	<i>Anaxyrus californicus</i>	California Department of Fish and Wildlife (CDFW) BIOS; Dataset: DS2001; Categories: high, medium, and low
Amphibian and Reptile	Blainville's horned lizard	<i>Phrynosoma blainvillii</i>	CDFW BIOS; Dataset: DS2409; Categories: high, medium, and low
Amphibian and Reptile	California red-legged frog	<i>Rana draytonii</i>	No habitat areas defined
Amphibian and Reptile	Mojave fringe-toed lizard	<i>Uma scoparia</i>	DRECP species distribution model (BLM 2016; CEC et al. 2016)
Amphibian and Reptile	San Bernardino Ringneck snake	<i>Diadophis punctatus similis</i>	San Bernardino County Vegetation Communities Layer; Habitat Group = Riversidean Alluvial Fan Sage Scrub
Amphibian and Reptile	Western pond turtle	<i>Emys marmorata</i>	San Bernardino County Vegetation Communities Layer; Habitat Group = Riparian and Wetland

Taxa	Common Name	Scientific Name	Habitat Area Data Source and Description
Amphibian and Reptile	Western spadefoot	<i>Spea hammondi</i>	CDFW BIOS; Dataset: DS1994; Categories: high, medium, and low
Bird	Bell's sparrow	<i>Artemisospiza belli belli</i>	San Bernardino County Vegetation Communities Layer; Habitat Group = Transition Scrub, Chaparral, and Woodland; Grassland; Riversidean Alluvial Fan Sage Scrub + USDA Ecoregion = SoCal Mountains and Valleys Section
Bird	burrowing owl*	<i>Athene cunicularia</i>	CDFW BIOS; Dataset: DS2184; Categories: high, medium, and low
Bird	coastal California gnatcatcher	<i>Poliptila californica californica</i>	San Bernardino County Vegetation Communities Layer; General Vegetation = Riversidean Alluvial Fan Sage Scrub; Coastal Scrub + Ecoregion Subsections = Fontana Plain-Calimesa Terraces, Perris Valley and Hills, or Santa Ana Mountains
Bird	golden eagle	<i>Aquila chrysaetos</i>	CDFW BIOS; Dataset: DS2096; Categories: high, medium, and low
Bird	Le Conte's thrasher	<i>Toxostoma lecontei</i>	CDFW BIOS; Dataset: DS2286; Categories: high, medium, and low
Bird	least Bell's vireo*	<i>Vireo bellii pusillus</i>	San Bernardino County Vegetation Communities Layer; Habitat Group = Riparian and Wetland
Bird	Swainson's hawk	<i>Buteo swainsoni</i>	Conservation Biology Institute (CBI) species distribution model; Databasin.
Bird	tricolored blackbird*	<i>Agelaius tricolor</i>	San Bernardino County Vegetation Communities Layer; General Vegetation = Riparian and Wetland; Riparian and Desert Wash; Wetlands and Waters; Agriculture
Bird	white-tailed kite	<i>Elanus leucurus</i>	San Bernardino County Vegetation Communities Layer; General Vegetation = Riparian and Desert Wash; Riparian and Wetland; Grassland; Coastal Scrub + USDA Ecoregion = SoCal Mountains and Valleys Section, Mojave Desert Section
Bird	willow flycatcher*	<i>Empidonax traillii</i>	San Bernardino County Vegetation Communities Layer; Habitat Group = Riparian and Wetland
Bird	western yellow-billed cuckoo*	<i>Coccyzus americanus occidentalis</i>	San Bernardino County Vegetation Communities Layer; Habitat Group = Riparian and Wetland
Mammal	American badger	<i>Taxidea taxus</i>	CDFW BIOS; Dataset: DS2611; Categories: high, medium, and low
Mammal	desert bighorn sheep	<i>Ovis canadensis nelsoni</i>	DRECP species distribution model (BLM 2016; CEC et al. 2016)
Mammal	desert kit fox	<i>Vulpes macrotis</i>	CBI species distribution model; Databasin.
Mammal	Los Angeles pocket mouse	<i>Perognathus longimembris brevinasus</i>	San Bernardino County Vegetation Communities Layer; Habitat Group = Riversidean Alluvial Fan Sage Scrub.
Mammal	Mohave ground squirrel	<i>Xerospermophilus mohavensis</i>	DRECP (BLM 2016; CEC et al. 2016) species distribution model; original source USGS Maxent (CBI)
Mammal	Mojave river vole	<i>Microtus californicus mohavensis</i>	DRECP (BLM 2016; CEC et al. 2016) species distribution model
Mammal	Mountain lion	<i>Puma concolor</i>	CDFW BIOS; Dataset: DS2616; Categories: high, medium, and low
Mammal	pallid bat	<i>Antrozous pallidus</i>	CDFW BIOS; Dataset: DS2497; Categories: high, medium
Mammal	San Bernardino	<i>Dipodomys merriami</i>	San Bernardino County Vegetation Communities

Taxa	Common Name	Scientific Name	Habitat Area Data Source and Description
	kangaroo rat	<i>parvus</i>	Layer; Habitat Group = Riversidean Alluvial Fan Sage Scrub.
Mammal	Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	CDFW BIOS; Dataset: DS2496; Categories: high, medium
Fish	Arroyo chub	<i>Gila orcuttii</i>	USFWS Critical Habitat
Fish	Mohave tui chub	<i>Siphateles bicolor mohavensis</i>	DRECP species distribution model (BLM 2016; CEC et al. 2016)
Fish	Santa Ana Speckled dace	<i>Rhinichthys osculus ssp. 3</i>	USFWS Critical Habitat for the Santa Ana Sucker and Plunge buffered by 50 feet on either side
Fish	Santa Ana Sucker	<i>Catostomus santaanae</i>	USFWS Critical Habitat
Invertebrate	Delhi Sands flower-loving fly	<i>Rhaphiomidas terminatus abdominalis</i>	San Bernardino County Vegetation Communities Layer; Habitat Group =All except Developed and Agriculture within Soils = MUName = 'Delhi fine sand' OR MUName = 'Delhi Fine Sand' OR MUName = 'Delhi fine sand, 2 to 15 percent slopes, wind-eroded'
Invertebrate	Victorville shoulderband	<i>Helminthoglypta mohaveana</i>	DRECP (BLM 2016; CEC et al. 2016) species distribution model for the Mojave River vole
Plant	Alkali mariposa lily	<i>Calichortus striatus</i>	DRECP species distribution model (BLM 2016; CEC et al. 2016)
Plant	Barstow woolly sunflower	<i>Eriophyllum mohavense</i>	DRECP species distribution model (BLM 2016; CEC et al. 2016)
Plant	Gambel's water cress	<i>Nasturtium gambelii</i>	No habitat areas defined
Plant	Joshua tree	<i>Yucca brevifolia</i>	CDFW western Joshua tree distribution
Plant	Lane Mountain milkvetch	<i>Astragalus jaegerianus</i>	DRECP species distribution model (BLM 2016; CEC et al. 2016)
Plant	Marsh sandwort	<i>Arenaria paludicola</i>	No habitat areas defined
Plant	Mojave monkeyflower	<i>Mimulus mohavensis</i>	DRECP species distribution model (BLM 2016; CEC et al. 2016)
Plant	Parish's daisy	<i>Erigeron parishii</i>	DRECP species distribution model (BLM 2016; CEC et al. 2016)
Plant	San Bernardino aster*	<i>Symphotrichum defoliatum</i>	San Bernardino County Vegetation Communities Layer; Habitat Group = Riparian and Wetland
Plant	Santa Ana River woollystar	<i>Eriastrum densifolium ssp. sanctorum</i>	San Bernardino County Vegetation Communities Layer; Habitat Group = Riversidean Alluvial Fan Sage Scrub.
Plant	Short-joint beavertail	<i>Opuntia basilaris var. brachyclada</i>	CBI species distribution model; Databasin.
Plant	slender-horned spineflower	<i>Dodecahema leptoceras</i>	San Bernardino County Vegetation Communities Layer; Habitat Group = Riversidean Alluvial Fan Sage Scrub.
Plant	desert cymopterus	<i>Cymopterus desarticola</i>	DRECP species distribution model (BLM 2016; CEC et al. 2016)
Plant	intermediate mariposa-lily	<i>Calochortus weedii var. intermedius</i>	USDA Ecoregion = SoCal Coast Section + SoCal Mountains and Valleys Section and San Bernardino County Vegetation Communities Layer; General Vegetation = Chaparral, Coastal Scrub, Native Grasslands, Non-Native Grasslands and elevation = 344 to 2,805 feet
Plant	Parry's spineflower	<i>Chorizanthe parryi var. parryi</i>	DRECP species distribution model (BLM 2016; CEC et al. 2016)

Taxa	Common Name	Scientific Name	Habitat Area Data Source and Description
Plant	Plummer's mariposa-lily	<i>Calochortus plummerae</i>	USDA Ecoregion = SoCal Coast Section + SoCal Mountains and Valleys Section and San Bernardino County Vegetation Communities Layer; General Vegetation = Chaparral, Coastal Scrub, Native Grasslands, Non-Native Grasslands, Forests and Woodlands, Juniper Woodlands and elevation = 328 to 5,575 feet
Plant	white-bracted spineflower	<i>Chorizanthe xanti</i> var. <i>leucotheca</i>	USDA Ecoregion = SoCal Mountains and Valleys Section (buffered 10 miles) + Mojave Desert Section and San Bernardino County Vegetation Communities Layer; General Vegetation = Coastal Scrub, Riversidean Alluvial Fan Sage Scrub, Sonoran and Mojavean Desert Scrub, Forests and Woodlands, Juniper Woodlands and elevation = 984 to 3,935 feet

APPENDIX E

Climate Change Vulnerability Assessment

Appendix E
San Bernardino County RCIS
Climate Change Vulnerability Assessment

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Acronyms and Abbreviations

Acronym	Definition
ARSSC	California Amphibian and Reptile Species of Special Concern
CDFW	California Department of Fish and Wildlife
RCIS	Regional Conservation Investment Strategy
SBC	San Bernardino County

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1 Introduction

The Regional Conservation Investment Strategy (RCIS) Guidelines (CDFW 2018) require that an RCIS incorporate existing available, science-based analyses and information into a Climate Change Vulnerability Assessment. The California Department of Fish and Wildlife (CDFW) RCIS Guidelines define climate change vulnerability as “refer[ring] to the degree to which an ecological system, natural community, habitat, or individual species is likely to be adversely affected as a result of changes in climate and is often dependent on factors such as exposure, sensitivity, and adaptive capacity” (CDFW 2018). The purpose of this assessment is to (1) describe the exposure of the San Bernardino County (SBC) RCIS Area to climate change (e.g., temperature, precipitation, sea level rise¹), (2) identify areas that may be resilient to the impacts of climate change, and (3) assess the climate change vulnerability of natural communities and SBC RCIS Focal Species.

This climate change vulnerability analysis is based on existing studies and information and does not produce new methods or analyses related to climate change and risk; rather, this assessment compiles and summarizes the existing studies and information available in order to inform management decisions within the SBC RCIS as they relate to climate change. Where available, the assessment considers climate change threats for mid-century (2050) and end-of-century (2100) scenarios for both a hotter/drier and a warmer/wetter future.

¹ Sea level rise is not expected to affect or inundate resources within San Bernardino County and therefore is not further considered in this assessment.

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2 Climate Change

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind patterns, which last for an extended period of time, decades or longer. Although many natural and human factors can cause these changes, the recent climate changes cannot be explained by natural factors alone. Greenhouse gases, such as water vapor, carbon dioxide, and methane, slow or prevent the loss of heat from the earth's atmosphere. Human activities that emit additional greenhouse gases increase the amount of infrared radiation that gets absorbed before escaping into space, thereby enhancing the greenhouse effect and causing the Earth's surface temperature to rise. A warming of about 0.2°C (0.36°F) per decade is projected, and there are signs that global warming is currently taking place. Current and future climate change impacts to various resources areas are discussed in more detail in *Safeguarding California: Reducing Climate Risk* (CNRA 2018).

California's extensive biodiversity stems from its varied climate and assorted landscapes, which have resulted in numerous habitats where species have evolved and adapted over time. This is apparent in the RCIS Area, which contains a variety of landscapes, formations, and climates. However, the recent and projected climate changes are challenging natural resources managers in predicting, addressing, and effectively managing the impacts of climate change on natural resources. Examples of these challenges include changes to species migration; range shift and novel combinations of species; changes in pathogens, parasites, and disease; increased invasive species; extinction risks; changes in the timing of seasonal life-cycle events; food web disruptions; and possible irreversible damage to or loss of biological resources. Habitat restoration, conservation, and resource management can support natural resource communities plan for climate change and increase climate resiliency.

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3 San Bernardino County

3.1 Projections and Exposures to Climate Change

The RCIS Area is located within the western and central portions of San Bernardino County (County). Based on climate change projections (<https://cal-adapt.org/tools/>), 30-year long-term projections suggest the County may experience significant increases in temperature and generally stable or less precipitation under various climate change emission scenarios. As shown in Table E-1, under more favorable emission scenarios (RCP 4.5), the average projected temperature for the County is anticipated to increase between 4.1°F to 4.7°F for mid-century and increase between 5.3°F and 6.1°F for end-of-century time periods, compared to historical baseline values. Average changes in precipitation from baseline across the County were calculated to remain relatively stable or decrease. However, it should be noted that the amount of precipitation occurring on the wettest day of the year could increase by up to 25% towards the end of the century, relative to baseline, in the County, which may trigger more intense flooding events (Pierce et al. 2018).

Table E-1. Annual Average 30-Year Climate Projections for San Bernardino County for Mid- and End-of-Century Time Periods under Different Representative Concentration Pathway Emission Scenarios

Climate Metric	Historical Baseline (1961–1990) Absolute Value	Projected +/- Change from Historical Baseline Values			
		Mid-Century (2035–2064)		End of Century (2070–2099)	
		Medium Emissions (RCP 4.5)	High Emissions (RCP 8.5)	Medium Emissions (RCP 4.5)	High Emissions (RCP 8.5)
Minimum Temperature (°F)	51	+4.1	+5.3	+5.3	+9.2
Maximum Temperature (°F)	78.4	+4.7	+5.9	+6.1	+9.6
Precipitation (inches/day)	0.018	+0.000	-0.001	+0.000	+0.000

Source: Cal-Adapt 2021.

Note: RCP = Representative Concentration Pathway.

The San Bernardino County Vulnerability Assessment (County of San Bernardino n.d.) analyzed projected changes in climate between baseline (1976–2005) and mid-century (2036–2065) and determined potential exposure and impacts of climate hazards on the County. The assessment identified the following as the primary climate-related hazards in the County:

- Extreme heat
- Wildfire
- Drought
- Flooding
- Air quality, human health, and ecological hazards
- Severe weather

- Extreme wind
- Mudslides and landslides

The County is already susceptible to extremely hot and dry summers and temperatures are expected to increase steadily as a result of climate change. Based on the County’s assessment, the County is projected to experience at least 27 additional extreme heat days per year by mid-century especially in the southeastern and southcentral portions of the County.

Due to warmer temperatures, more frequent drought, and an expanding urban-wildlife interface, wildfire risk is expected to continue to increase through the end of the century with the largest increase in risk occurring near San Bernardino and San Gabriel Mountains and the eastern County border, near Needles. Increased wildfires can devastate biological resources that are not adapted to quick recovery after being burned. For example, Joshua trees (*Yucca brevifolia*) have low post-fire survival, slowly repopulate areas previously burned, and any successful recruitment requires sufficient precipitation (CBD 2019).

Droughts are expected to become more frequent and more intense by mid-century and may additionally constrain water resources, impacting water availability for natural resources (e.g., marshes, conifer forests, pinyon-juniper woodlands, and grasslands). Drought can create stress for water-reliant biological resources such as marshes and precipitation-sensitive vegetation communities like conifer forests, pinyon-juniper woodlands, and grasslands. Furthermore, drought weakens trees’ ability to produce resin, leaving them vulnerable to pests such as the bark beetle, which infiltrate and further weaken trees, cut off their moisture supply completely, and leaving them to die. These dead trees subsequently provide large amounts of fuel for future fires, which can increase wildfire risk.

Although it is difficult to attribute an increase in flood risk to climate change, recent scientific literature suggests flood risk could increase in the future (see County of San Bernardino n.d.). Generally, low-lying areas and river systems, with sparsely vegetated hillsides and/or mountain ranges, are susceptible to flooding. In addition, flash floods can occur during periods of heavy rainfall and have occurred in rural desert or mountain communities where they cause significant damage.

The County currently experiences extremely poor air quality (American Lung Association 2021). Climate change and associated increases in air temperature and wildfire frequency may compound the issues related to air quality, human health, and ecological risk already experienced in the County. Warmer temperatures may accelerate the formation of ground level ozone and the County may experience more days with unhealthy ozone levels by mid-century (see County of San Bernardino n.d.; Shen et al. 2016).

Extreme storms are projected to become more intense and frequent by mid-century due to climate change, including drier wind events, which could further increase wildfire risk. Severe weather and extreme winds may be particularly difficult for homeless citizens, senior citizens, individuals with disabilities or medical conditions, seasonal workers, and incarcerated persons.

Increases in the frequency of wildfires and heavy rainfall increase the likelihood of mudslides occurring; studies suggest such events could trigger more frequent and potentially larger mud/landslides in the County by mid-century (see County of San Bernardino n.d.; Moser and Hart 2018). Vulnerable populations and assets exist in areas that are landslide-prone and such an event could result in significant amounts of structural damage and loss of life.

3.2 Resiliency

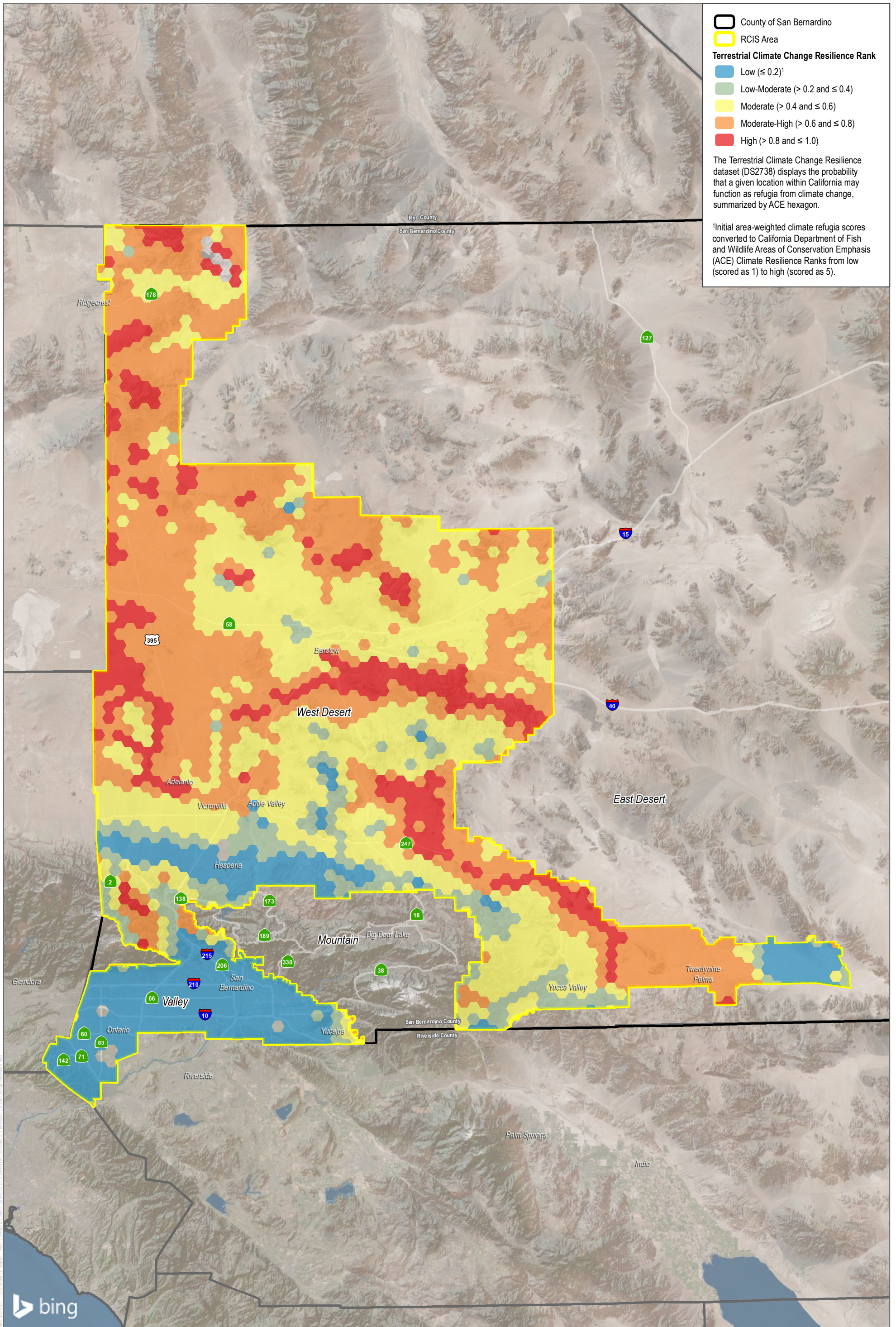
In assessing the projected impacts of climate change it is also important to consider the factors that may contribute to climate resilience in the County and RCIS Area. The San Bernardino County Resilience Strategy (County of San Bernardino 2019) builds upon the San Bernardino County Vulnerability Assessment (County of San Bernardino n.d.) and presents possible implementation actions to ameliorate the impacts of climate change. The report focuses on seven priority sectors to address: disadvantaged communities and social vulnerability, extreme weather-resilient development, transportation infrastructure and operations, electricity resources and reliability, water sources and reliability, natural resources, and plan maintenance. The report discusses the resiliency initiatives that exist and those proposed to address needs in these sectors. Three strategies associated with natural resources include the following:

- Strategy 6.1: Encourage land managers to incorporate climate change projections in future conservation and land use plans, including research and monitoring plans
- Strategy 6.2: Encourage farmers to develop best practices for responding to climate change
- Strategy 6.3: Promote farmers to explore secondary revenue streams that support a strong, sustained agricultural sector

In addition to local strategies discussed above, the diverse land facets, connectivity, and vegetation communities of the County and the RCIS Area may promote resiliency to climate change. Figure E-1 displays the Terrestrial Climate Change Resilience data described by the CDFW's Areas of Conservation Emphasis (ACE-iii). Figure E-1 displays the probability that a given location (i.e., within an ACE hexagon) may function as refugia from climate change; that is, areas that are relatively buffered from the effects of climate change, areas that will likely remain suitable for the existing plants and wildlife, and areas where ecological functions are more likely to remain intact. Hexagons are ranked on a scale of 1 (low probability) to 5 (high probability) refugia scores. As shown in Figure E-1, areas with high probability to function as refugia include the mountain and desert regions.

Figure E-2 displays the Vegetation Climate Exposure Refugia datasets for 2040–2069 and 2070–2099. This shows the composite of areas with low exposure to climate change across all four future climate scenarios modeled and identified by Thorne et al. (2016). Areas of low exposure are those that remain suitable over time. In mid-century, the areas anticipated to remain suitable and have low exposure to climate change are similar to those in Figure E-1 and include the mountain and desert regions. In the end-of-century analysis the majority of these areas are exposed to climate change and areas of low exposure are concentrated in the mountain region, along riparian corridors, and generally higher altitude mountainous regions.

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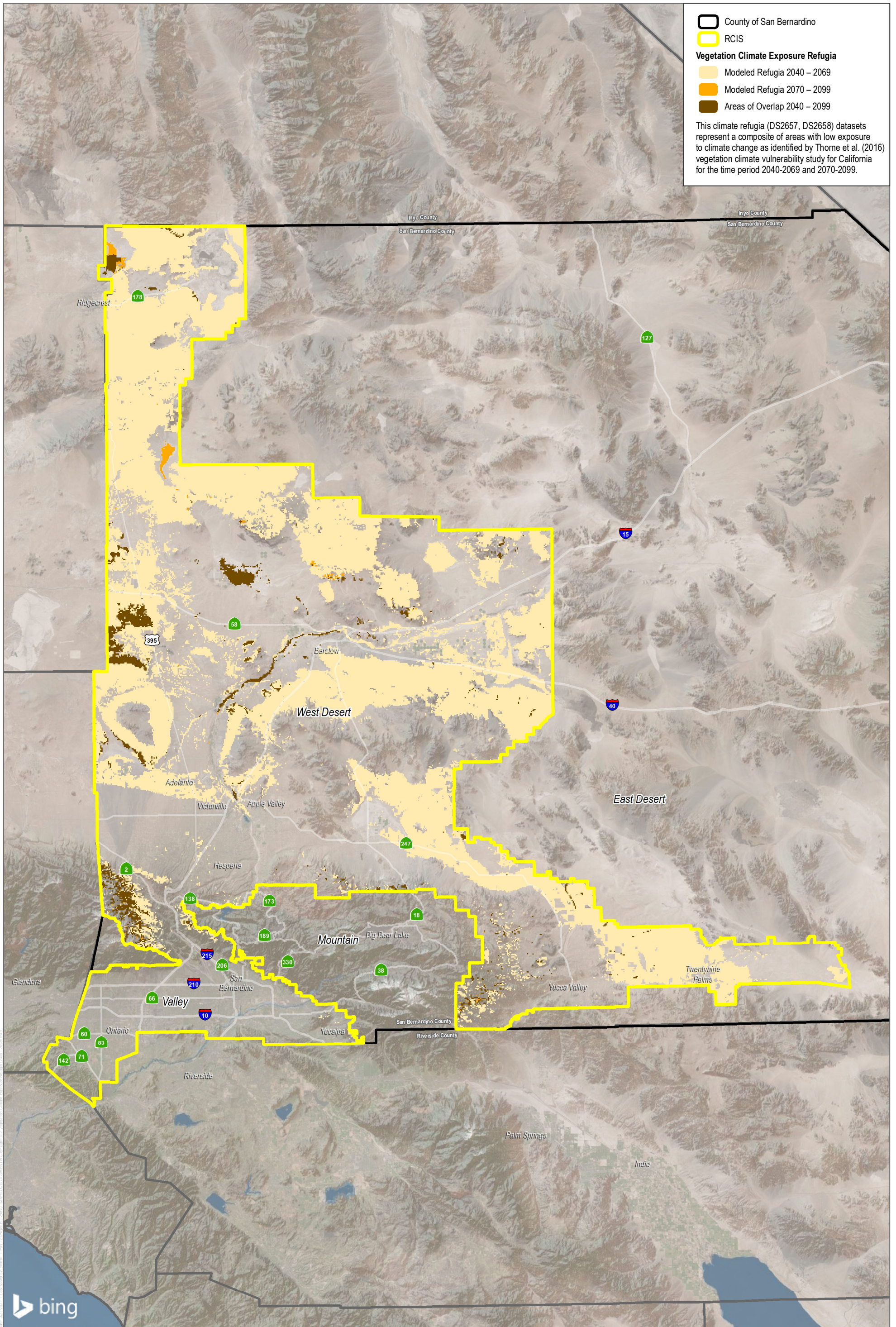


SOURCE: Bing Maps 2018; San Bernardino County 2018; USDA 2018; CDFG 2017



FIGURE E-1
Terrestrial Climate Change Resilience
 San Bernardino County RCIS

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SOURCE: Bing Maps 2018; San Bernardino County 2018; USDA 2018; CDFG 2017



FIGURE E-2
 Vegetation Climate Exposure Refugia (2040 - 2099)
 San Bernardino County RCIS

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4 Natural Communities

Thorne et al. (2016) provides a thorough climate change vulnerability assessment of California’s terrestrial vegetation. Table E-2 provides the combined vulnerability rank with associated macrogroups described in Thorne et al. (2016) for vegetation communities within the RCIS Area. As shown in Table E-2, wetlands and waters are the only mapped community considered to be highly vulnerable to climate change. An additional six communities are ranked as mid-high vulnerability and the remaining are considered to be moderately vulnerable.

Table E-2. Mean Combined Vulnerability Rank Associated with Various RCIS Habitat Groups

Habitat Group/ General Vegetation Community	Associated Macrogroup ¹	Mean Combined Vulnerability Rank ¹
<i>Desert Scrub</i>		
Alkali Scrub	MG093: Great Basin Saltbush Scrub	Moderate
Barren	MG117: North American Warm Semi-Desert Cliff, Scree, and Other Rock Vegetation	Moderate
Sonoran and Mojavean Desert Scrub	MG088: Mojavean-Sonoran Desert Scrub	Moderate
<i>Dune and Playa</i>		
Desert Dunes	MG117	Moderate
Playa	MG117	Moderate
<i>Grassland</i>		
Native Grasslands	MG045: California Annual and Perennial Grassland	Mid-High
Non-Native Grassland	MG045	Mid-High
<i>Riparian and Wetland</i>		
Riparian and Desert Wash	MG036: Warm Southwest Riparian Forest	Mid-High
Wetlands and Waters	MG073: Western North American Freshwater Marsh	<u>High</u>
<i>Riversidean Alluvial Fan Sage Scrub</i>		
Riversidean Alluvial Fan Sage Scrub	MG044: California Coastal Scrub ²	Mid-High
<i>Transitional Scrub, Chaparral, and Woodland</i>		
Chaparral	MG043: California Chaparral	Moderate
Coastal Scrub	MG044	Mid-High
Forest and Woodlands	MG009: California Forest and Woodland	Moderate
Great Basin Scrub	MG093	Moderate
Joshua Tree Woodland	MG088	Moderate
Juniper Woodlands	MG026: Intermountain Basins Piñon-Juniper Woodland	Mid-High
<i>Developed and Agriculture³</i>		
Agriculture	—	—
Barren	—	—

Table E-2. Mean Combined Vulnerability Rank Associated with Various RCIS Habitat Groups

Habitat Group/ General Vegetation Community	Associated Macrogroup ¹	Mean Combined Vulnerability Rank ¹
Developed and Disturbed Areas	—	—
Eucalyptus Naturalized Forest	MG027: Introduced North American Mediterranean Woodland Forest	Moderate

Notes:

- ¹ Table 2 in Thorne et al. (2016). Mean Combined Vulnerability Rank is the average assessment of four climate projection vulnerability scores associated with four climate scenarios: CNRM CM5 – RCP 4.5 and 8.5; and MIROC ESM – RCP 4.5 and 8.5.
- ² As described in Barbour and Wirka (1997), Riversidean alluvial fan sage scrub may be considered a variant of coastal sage scrub. Therefore, MG044 described in Thorne et al. (2016) provides the best fit comparison for this community.
- ³ Agriculture, barren lands, and developed/disturbed areas are not assessed in Thorne et al. (2016).

5 RCIS Focal Species

This section provides an assessment of climate change vulnerabilities for RCIS Focal Species. As described in the SBC RCIS, a total of 52 Focal Species were identified, including 3 amphibians, 5 reptiles, 4 fish, 2 invertebrates, 11 birds, 10 mammals, and 17 plants. Where available, species-specific assessment data is described below; for Focal Species without species-specific climate change vulnerability assessments, taxa-level assessments are discussed. These assessments utilize varying approaches, and a summary of those methods are provided in the discussion below. Please refer to the resources cited for more detailed information.

5.1 Amphibians and Reptiles

Using species distribution modeling, Wright et al. (2013) broadly assessed future climate change impacts for 153 species of amphibians and reptiles in California. These models were projected onto different climate change scenarios for the year 2050 (mid-century) and were used to calculate the percent of habitat predicted to remain suitable in the future and identify the species most and least vulnerable. Overall, this study found that most California reptiles and amphibians are at low to moderate risk of climate shifting away from conditions they are known to currently tolerate. The study found that approximately 60% to 75% of species assessed were predicted to be stable, neutral, or experience slightly reduced occupied localities by 2050.

Those species ranked highest at risk of climate change (i.e., risk of climate shifting away from the range of tolerable conditions) include many species already of conservation concern and generally endemic species with small ranges. Reductions in climatic habitat suitability were predicted to be largest for reptiles in the southern mountains and deserts, with reductions for amphibians occurring statewide. A comparison of the climate vulnerability metrics for RCIS Focal Species described in Wright et al. (2013) and the California Amphibian and Reptile Species of Special Concern (ARSSC) (Thomson et al. 2016) is provided in Table E-3. Wright et al. (2013) found that expert opinion tended to estimate higher risk levels than the niche models, with expert opinion considering changes in climate as well as indirect effects (e.g., groundwater depletion affecting aquatic habitats).

The table layout for Table E-3 follows Appendix II of Wright et al. (2013), with updated scoring provided in ARSSC (Thomson et al. 2016). The metrics include a general description of risk, ARSSC vulnerability to climate change score, ARSSC total ranking score, modeled climate score (Wright et al. 2013 expected score based on model outputs), and adjusted ARSSC total ranking score for cases where the modeled score is different from the expert score. Higher ARSSC rankings indicate greater conservation risk.

As shown in Table E-3, the adjusted ARSSC rankings suggest greater climate change vulnerability and conservation risks for those species associated with moist or aquatic environments. Note that no comparable data was available for desert tortoise (*Gopherus agassizii*) and San Bernardino ringneck snake (*Diadophis punctatus modestus*); caution should be taken in determining the risks to these species.

Table E-3. Comparison of Climate Vulnerability Scores for RCIS Focal Amphibians and Reptile Species

RCIS Focal Species	ARSSC Vulnerability to Climate Change Score ¹	ARSSC Total Ranking Score ²	Modeled Climate Score ³	Adjusted ARSSC Total Ranking Score ⁴	Climate Vulnerable in SWAP SGCN ⁵
Arroyo toad (<i>Bufo californicus</i>)	10	0.93	7	0.90	Yes
Southwestern pond turtle (<i>Emys marmorata pallida</i>)	7	0.81	3	0.77	No
California red-legged frog (<i>Rana draytonii</i>)	7	0.76	3	0.73	No
Western spadefoot (<i>Spea hammondi</i>)	7	0.69	3	0.65	No
Mojave fringe-toed lizard (<i>Uma scoparia</i>)	7	0.55	3	0.52	Yes
Blainville’s (coast) horned lizard (<i>Phrynosoma blainvillii</i>)	3	0.49	0	0.46	Yes
Desert tortoise (<i>Gopherus agassizii</i>)	—	—	—	—	No
San Bernardino ringneck snake (<i>Diadophis punctatus modestus</i>)	—	—	—	—	—

Notes: ARSSC = California Amphibian and Reptile Species of Special Concern; SWAP = State Wildlife Action Plan; SGCN = Species of Greatest Conservation Need; — = not assessed.

- ¹ Data from Thomson et al. (2016). This score used the projected impacts on California landscapes based on the California Climate Action Team assessments (Cayan et al. 2008) followed by expert interpretations of how those impacts are likely to affect each taxon based on life history and habitat requirements. 0 = unlikely to be sensitive; 3 = slightly sensitive; 7 = moderately sensitive; 10 = highly sensitive; — = not assessed in Thomson et al. (2016).
- ² Data from Thomson et al. (2016). This is the sum of eight total ranking criteria scores divided by total possible score described for each species this reference. The eight ranking criteria includes (1) range size, (2) distribution trend, (3) population concentration/migration, (4) endemism, (5) ecological tolerance, (6) population trends, (7) vulnerability to climate change, and (8) projected impacts.
- ³ Scoring provided in Wright et al. (2013) Appendix II.
- ⁴ Adjusted Thomson et al. 2016 total ranking criteria score (adjusted for Wright et al. 2013 assessed climate score) divided by total possible score in Thomson et al. 2016. Therefore, this is an adjusted ARSSC score based on Wright et al. 2013 modeled climate scores.
- ⁵ CDFW 2015, Appendix C.

5.2 Birds

To support statewide climate change adaptation, Gardali et al. (2012) developed a framework for assessing climate change vulnerability of California’s at-risk birds. The study quantified climate vulnerability by scoring sensitivity (intrinsic characteristics of an organism that make it vulnerable) and exposure (magnitude of climate change expected) for each taxon, then multiplying these scores to generate a climate change vulnerability index for each species. The study quantified vulnerability for 358 avian taxa and determined 128 were vulnerable to climate change, with approximately 63% (80 taxa) designated as low priority, 27% (35 taxa) as moderate priority, and 10% (13 taxa) as high priority. Within these priority lists, 34% were associated with wetland. Other habitat affinities associated with this priority list included desert woodlands, marine areas, and riparian forests. It is anticipated that wetlands and other freshwater environments will be heavily impacted by climate change throughout the state due

to water availability and extreme climatic events. Table E-4 provides a summary of the results from this study for the RCIS Focal Species.

Table E-4. Climate Vulnerability and Priority Scores for RCIS Focal Bird Species

RCIS Focal Species	Climate Vulnerability Priority	Climate Vulnerability Score	Climate Priority Score	Climate Vulnerable in SWAP SGCN ²
Swainson's hawk (<i>Buteo swainsoni</i>)	Moderate	42	2	Yes
Le Conte's thrasher ¹ (<i>Toxostoma lecontei</i>)	Moderate	40	2	No
least Bell's vireo (<i>Vireo bellii pusillus</i>)	Moderate	40	2	Yes
western yellow-billed cuckoo (<i>Coccyzus americanus occidentalis</i>)	Moderate	40	2	Yes
coastal California gnatcatcher (<i>Polioptila californica californica</i>)	Low	32	3	No
southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	Low	32	3	No
burrowing owl (<i>Athene cunicularia</i>)	—	—	—	No
tricolored blackbird (<i>Agelaius tricolor</i>)	—	—	—	No
Bell's sage sparrow (<i>Artemisiospiza belli belli</i>)	—	—	—	—
golden eagle (<i>Aquila chrysaetos</i>)	—	—	—	—
white-tailed kite (<i>Elanus leucurus</i>)	—	—	—	—

Source: Gardali et al. 2012.

Notes: SWAP = State Wildlife Action Plan; SGCN = Species of Greatest Conservation Need; — = not assessed.

¹ Due to limited scoring available for this full species, scoring provided is associated with San Joaquin Le Conte's Thrasher (*Toxostoma lecontei macmillanorum*), resident of the southern San Joaquin Valley, California.

² CDFW 2015, Appendix C.

5.3 Fish

Moyle et al. (2012) conducted a climate vulnerability assessment for freshwater fishes in California (121 native species and 43 aliens). Each species was scored based on existing status (“baseline vulnerability”) and likely impact of climate change (“climate change vulnerability”). Species with high baseline vulnerability were also likely to have the highest vulnerability to climate change. The authors concluded that predicted climate change effects on freshwater environments will drastically change California’s fish fauna at all scales and at all elevations. Most native species will become more restricted in their distributions and some will likely be driven to extinction, should the present trend continue. Fishes requiring cold water (< 22°C [72°F]) are particularly likely to go extinct. Table E-5 provides a summary of the results from this study for the RCIS Focal Species.

Table E-5. Baseline and Climate Vulnerability Scores for RCIS Focal Fish Species

RCIS Focal Species	Vulnerability Scores ¹				Combined Vulnerability ²		Climate Vulnerable in SWAP SGCN ³
	Baseline		Climate Change				
	Best Score (Range)	Interpretation	Best Score (Range)	Interpretation	Score	Interpretation	
Mohave tui chub (<i>Siphateles bicolor mohavensis</i>)	17 (16–19)	Critically Vulnerable	17 (15–20)	Highly Vulnerable	34	Critically Vulnerable	Yes
Santa Ana speckled dace (<i>Rhinichthys osculus</i> subsp.)	20 (17–25)	Highly Vulnerable	17 (17–21)	Highly Vulnerable	37	Highly Vulnerable	Yes
Santa Ana sucker (<i>Catostomus santaanae</i>)	20 (18–22)	Highly Vulnerable	17 (17–18)	Highly Vulnerable	37	Highly Vulnerable	Yes
Arroyo chub (<i>Gila orcuttii</i>)	31 (31–34)	Less Vulnerable	26 (23–27)	Less Vulnerable	57	Less Vulnerable	No

Source: Moyle et al. 2012.

Notes: SWAP = State Wildlife Action Plan; SGCN = Species of Greatest Conservation Need.

- ¹ Baseline vulnerability scores potentially ranged from 10 to 42; climate change vulnerability scores potentially ranged from 10 to 35. Best scores are derived from empirical evidence or professional judgment. Range refers to the range of status scores likely for the species.
- ² Combined (added) scores for Baseline and Climate Change Vulnerability. Combined score categories follow Galbraith and Price (2009):
 - Critically vulnerable (score <35): extremely likely to become extinct in the wild before 2100 without conservation measures
 - Highly vulnerable (score = 35-47): on the path toward extinction in the wild
 - Less vulnerable (score 48-60): likely to decline or become limited in distribution, but extinction unlikely by 2100
 - Least vulnerable (score = 61-74): population and range likely to become stable
 - Likely to benefit from change (score >74): likely to increase in range and abundance
- ³ CDFW 2015, Appendix C.

5.4 Invertebrates

There are two invertebrate Focal Species: Delhi Sands flower-loving fly (*Rhaphiomidas terminates abdominalis*) and Victorville shoulderband (*Helminthoglypta mohaveana*). These species were not considered climate vulnerable in the CDFW State Wildlife Action Plan Species of Greatest Conservation Need (CDFW 2015, Appendix C). Generally, there is a lack of understanding of how climate change will affect invertebrate populations. However, invertebrates are known to be directly affected by environmental temperature and are considered to be highly sensitive to climate change (Prather et al. 2013). Therefore, changes in temperature and rainfall are anticipated to have direct effects on invertebrate populations and distributions.

5.5 Mammals

Stewart et al. (2016) performed a climate change vulnerability assessment for 20 California mammal taxa, of which one (desert bighorn sheep [*Ovis canadensis nelsoni*]) is a Focal Species. Stewart et al. (2016) calculated an overall

climate change vulnerability score that can be represented as a continuous vulnerability value or as one of five vulnerability categories ranging from “may benefit” to “extremely vulnerable.” The assessment involved calculating the ratio of climatic exposure to climatic niche breadth and considering expert-assessed qualitative vulnerability categories from 19 species traits. Stewart et al. (2016) projected geographic response scores and exposure/niche breadth scores for all 587 mammal taxa (not presented in report). For the 20 species, they evaluated the vulnerability of each to four climate change scenarios for the periods 2070–2099 (end of century), comprised of low and high greenhouse gas emission trajectories and ranging from relatively hot and dry to relatively warm and wet climate scenarios. The study found that across the taxa assessed, an average of 68% of occurrence locations were projected to no longer be suitable habitat. On average 51%, 69%, 67%, and 84% of occurrence locations were lost for low emission (warm and wet), high emission (warm and wet), low emission (hot and dry), and high emission (hot and dry) scenarios, respectively.

Desert bighorn sheep, Mojave ground squirrel, San Bernardino kangaroo rat, and mountain lion are discussed below. Little information is available related to climate change vulnerability assessments for the remaining focal species. However, the CDFW State Wildlife Action Plan does provide some general assessments related to climate change. As shown in Table E-6, the Focal Species assessed are not considered to be climate vulnerable.

Table E-6. Baseline and Climate Vulnerability Scores for RCIS Focal Mammal Species

RCIS Focal Species	Climate Vulnerable in SWAP SGCN ¹
American badger (<i>Taxidea taxus</i>)	No
desert bighorn sheep (<i>Ovis canadensis nelsoni</i>)	No
Los Angeles pocket mouse (<i>Perognathus longimembris brevinasus</i>)	No
Mohave ground squirrel (<i>Xerospermophilus mohavensis</i>)	No
Mojave River vole (<i>Microtus californicus mohavensis</i>)	No
pallid bat (<i>Antrozous pallidus</i>)	No
San Bernardino kangaroo rat (<i>Dipodomys merriami parvus</i>)	No
Townsend’s big-eared bat (<i>Corynorhinus townsendii</i>)	No
desert kit fox (<i>Vulpes macrotis arsipus</i>)	—
mountain lion (Southern California/Central Coast ESU) (<i>Puma concolor</i>)	—

Notes: SWAP = State Wildlife Action Plan; SGCN = Species of Greatest Conservation Need; — = not assessed.

¹ CDFW 2015, Appendix C.

5.5.1 Desert Bighorn Sheep

Stewart et al. (2016) assessed desert bighorn sheep as moderately to highly vulnerable to climate change. As shown in Table E-7, based on this study, desert bighorn sheep is considered moderately to highly vulnerable to

climate change with fewer occurrence locations and fewer areas remaining suitable under the high emission, warm and wet scenario.

Table E-7. Overall Climate Change Assessment for Desert Bighorn Sheep

Metric for Desert Bighorn Sheep	Climate Change Scenario			
	<i>Low Emission Warm and Wet</i>	<i>High Emission Warm and Wet</i>	<i>Low Emission Hot and Dry</i>	<i>High Emission Hot and Dry</i>
Overall Climate Change Vulnerability Index Score ¹	Moderately Vulnerable	Highly Vulnerable	Moderately Vulnerable	Highly Vulnerable
Percent of Occurrence Locations Remaining Suitable	73.7%	47.4%	94.7%	89.5%
Percent Areas Remaining Suitable	54.2%	38.0%	86.9%	87.7%

Source: Stewart et al. 2016.

Note:

¹ Table 2 in Stewart et al. 2016.

5.5.2 Mojave Ground Squirrel

Climate change is expected to affect the Mojave ground squirrel through a change in availability and distribution of suitable Mojave ground squirrel habitat, loss of suitable habitat, constraints on activity (due to physiological responses to temperature and water availability), decreased reproduction during severe and extended drought periods, displacement of native plants by invasive species, drought, and other natural catastrophic events resulting from climate change (76 FR 62214 – 62258, CDFW 2019). Generally, the Mojave ground squirrel is anticipated to respond to ambient temperature changes in three different ways, including range constriction, range shifts farther north, or shifting to higher elevations (76 FR 62214 – 62258). The mostly likely response by the species is anticipated to be a range shift farther north where suitable habitat was modeled farther north in the Owen’s Valley than previously considered (Inman et al. 2013, 76 FR 62214 – 62258). In addition, habitat modeling using climate change scenarios projected a considerable loss of suitable habitat for this species on Fort Irwin and west of Hinkley (Esque et al. 2013, as cited in Leitner 2015).

5.5.3 San Bernardino Kangaroo Rat

The San Bernardino kangaroo rat has undergone permanent habitat loss in many areas, with the remaining high-quality habitat located between levees within flood control channels that are isolated from higher elevation refugia (White et al. 2019). Climate change is anticipated to reduce shrub cover and result in vegetation community shifts; however, this species lacks the connectivity to higher elevation refugia to take advantage of any shifts in vegetation. Climate change is also expected to cause increased frequency of high-intensity storm events, along with storm runoff from impervious surfaces (e.g., roads, pavements). These combined effects threaten the remaining high-quality habitat for San Bernardino kangaroo rat and may result in its extirpation from these areas (White et al. 2019). Therefore, connectivity from high-quality habitat to higher elevation refugia is an important management consideration for this species.

5.5.4 Mountain Lion

Currently, southern California mountain lion populations are afflicted by habitat loss and fragmentation, low effective population size, low genetic diversity, and a high risk of inbreeding depression. It is anticipated that these populations will not persist without functional connectivity between large areas of heterogeneous habitats (CBD and MLF 2019). Increasing connectivity (e.g., establishing corridors, preserving habitat) is considered important for this wide-ranging species' resiliency' to stochastic events and climate change as it improves the likelihood of survival and reproduction by increasing the opportunities for movement across the landscape (CBD and MLF 2019). Increased frequency of wildfires associated with climate change would further threaten this species' ability to move across an already fragmented landscape and adapt to climate change or extreme weather events (CBD and MLF 2019). Conserving habitat for mule deer is also important, as this is their primary prey species and a driver of carrying capacity for mountain lion populations. In summary, without connectivity, mountain lions and their prey may not be able to adapt to shifts in vegetation and habitat conditions caused by climate change.

5.6 Rare Plants

5.6.1 Focal Species

Anacker et al. (2012) investigated a new climate change vulnerability assessment method for determining which rare plant species were most at risk from the effects of climate change and whether the level of climate change vulnerability could be inferred for certain groups of rare plants based on characteristics (rarity, habitat, life history traits). The study used the Climate Change Vulnerability Index developed by NatureServe and assessed approximately 10% of California's rare plant species (156 of 1,625 total rare plant species). Overall, the study found that 63% (99 of the 156 species) were vulnerable to climate change. Two of the species assessed were Focal Species, including intermediate mariposa-lily (*Calochortus weedii* var. *intermedius*) and Plummer's mariposa-lily (*Calochortus plummerae*). Intermediate mariposa-lily was considered to be moderately vulnerable and Plummer's mariposa-lily was presumed stable and not vulnerable to climate change. Overall, the study was unable to demonstrate strong relationships between species characteristics and vulnerability, suggesting that direct exposure to climate change in temperature and precipitation is likely the strongest driver of vulnerability.

Indeed, California is home to over 5,500 native plants taxa of which over 2,300 are endemic (Loarie et al. 2008). Under climate change scenarios it is projected that up to 66% of these taxa will experience over 80% reductions in range size within a century, depending on future emission predictions and the ability of a species dispersal abilities (Loarie et al. 2008). Loarie et al. (2008) found that, in general, species were predicted to move to higher elevations (southward) and areas northward, potentially breaking up local floras and resulting in new species and patterns of competition and other biotic interactions.

5.6.2 Joshua Tree

Climate change is a significant concern in the future distribution and survival of Joshua trees, a Focal Species, with several published models of Joshua trees suggesting a substantial decline in suitable habitat areas due to climate change. Combined, the models predict that even with mitigated efforts to reduce greenhouse gases, a considerable amount of the current species range would likely be unfavorable, while other areas previously not suitable or utilized by the species may be colonized (Dole et al. 2003; Cole et al. 2011; Barrows and Murphy-Mariscal 2012; Sweet et al. 2019). In particular, Sweet et al. (2019) aimed to identify the existence and extent of potential western Joshua tree climate refugia using Maxent to develop relationships between western Joshua tree and nine environmental

variables, including climate, topography, and soil characteristics. The study defined climate refugia as those climate-buffering features, such as higher elevations, north-facing slopes, canyons or ravines that capture and hold water, cool air drainages, or regions of higher species and genetic diversity. Sweet et al. (2019) found that areas of high recruitment were within or close to modeled refugia and in areas with higher precipitation, lower climatic water deficit (quantification of evaporative demand exceeding available soil moisture and an index of potential effects of drought stress), and lower maximum temperature than areas observed with low recruitment. Generally, western sample areas showed higher densities of Joshua trees and upper elevation sample areas showed a higher survival of young trees. The areas mapped as refugia in this study generally occurred at higher elevation with more precipitation and were also areas that tend to have high cover of invasive grasses and may be at risk for fire.

Previous research indicates that the species was more broadly distributed in the southwestern United States and since the Pleistocene has experienced a shift in distribution (Smith et al. 2011). Current observations suggest the populations are migrating north to higher, cooler temperatures, with individuals in the southern part of the range and lower elevation not reproducing or surviving (Barrows and Murphy-Mariscal 2012). Barrows and Murphy-Mariscal's (2012) data collection and modeling results suggest that juveniles and seedlings were occurring in the western portion of the Joshua Tree National Park. The juvenile niche model was extremely similar to the modeled adult niche model with a projected +1 °C (Celsius) shift in climate, which was also focused on the western portion of the park. The results suggest that climate change may have already had an impact on recruitment. The range shift may also indicate that the species may continue to persist under some climate change models (see JTGP 2020).

Two efforts currently in progress are anticipated to be valuable in understanding Joshua trees' response to climate change. The first is the Joshua Tree Genome Project (<https://joshuatreegenome.org/>) led by Dr. Christopher Smith (Professor of Biology at Willamette University) and Dr. Jeremy Yoder (California State University, Northridge). The project aims to assemble a Joshua tree reference genome and identify genes that help trees cope with different climatic conditions. With an entire referenced genome, researchers will be able to identify individuals or populations with various traits that are important for survival (e.g., traits that fare well in warm and dry climates, traits that help seedlings survive). Conservation actions and protection can then be focused on these populations to promote the survival and genetic diversity of the species. Preliminary results of these efforts anticipated to be available in the next year (i.e., 2021–2022). In addition to this project, Todd Esque (U.S. Geological Survey) is currently in the process of developing a fine-grained model of Joshua tree distribution using aerial and satellite photography. It is anticipated that his current efforts and associated species distribution model will be available in the near future.

6 Conclusion

Overall, climate change is anticipated to significantly affect habitat suitability for Focal Species. Although detailed climate change assessments are lacking for many Focal Species, the available literature suggest that many of the species are vulnerable to climate change. The results from available studies and data (including Figures E-1 through E-2) can be used to prioritize areas for new surveys where habitat is predicted to be highly suitable. Comparing consensus prediction maps across species can also help identify areas for monitoring. In addition, resource managers should consider the impacts of climate change in allocating funds for the acquisition and management of lands for conservation.

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APPENDIX F

Countywide Habitat Preservation/ Conservation Framework Study

Countywide Habitat Preservation/Conservation Framework Development

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FEBRUARY 2015

San Bernardino Associated Governments
Countywide Habitat Preservation/Conservation Framework Development

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1 INTRODUCTION

The Countywide Habitat Preservation/Conservation Framework study (Conservation Framework) is a structured, comprehensive approach to the preservation and conservation of habitat for threatened and endangered species which is beneficial for the health of the environment, the economy, and the citizens of San Bernardino County (County). Much has already been accomplished for habitat preservation and conservation in the form of existing open space and conservation lands in the County. However, conservation planning in the County traditionally has taken place on a more isolated, project-by-project basis, without a comprehensive view of habitat preservation opportunities and priorities countywide. The Conservation Framework study is the first step of many to providing a comprehensive plan for countywide habitat and species conservation. This Conservation Framework is a guidance document outlining the conservation issues and concerns, existing conservation, conservation opportunities, and data gaps associated with current approaches to habitat conservation. The Conservation Framework is intended to help guide the County toward an achievable set of conservation principles and next steps within a suite of possible comprehensive, long term conservation approaches.

This section provides the background which was the impetus for developing the comprehensive Conservation Framework study, the purpose and objectives, the development process, and the organization of this document.

1.1 Background

The Conservation Framework is a product of the San Bernardino Countywide Vision, an effort initiated in 2010 to identify the Vision the community has for its future (San Bernardino County 2011). The Countywide Vision is driven by community input and experts in education, the economy, the environment, public safety, tourism, and community service, and endorsed by the County and the 24 incorporated cities in the County. The Countywide Vision was adopted by the San Bernardino Associated Governments (SANBAG) Board of Directors in June 2011.

The Countywide Vision identified nine elements of a complete, sustainable community: jobs/economy, education, housing, public safety, infrastructure, quality of life, environment, wellness, and image. The Environment Element was summarized as two primary tenets (San Bernardino County 2011):

- “Our location and natural environment are two of our great strengths. We must protect and preserve the terrain and natural amenities with which we are blessed. We shall strive to intelligently manage our resources for habitat preservation, recreation opportunities, resource extraction, alternative energy, future growth, water quality, air quality all within a regulatory framework that does not impede the creation of a sustainable economy.”

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- “We have the opportunity to improve our region’s self-reliance in meeting the needs of our own population, utilizing alternative and renewable energy sources; enhancing water management; encouraging green manufacturing; rewarding sustainable building, and conserving natural resources – all leading to a healthy population with a high quality of life.”

Following adoption of the Countywide Vision, community stakeholders identified priorities and action items for each of the nine elements of complete and sustainable communities and formed Countywide Vision Element Groups. The Environment Element Group identified two initiatives:

1. Compile an inventory of “best practices” that can be used by local governments, special districts, and resource agencies to better facilitate the development review process of proposed projects.
2. Develop a more comprehensive approach to the preservation/conservation of habitat and open space throughout the county.

The first initiative is currently underway by SANBAG and the County. A Business Friendly Best Practices survey of local jurisdictions was completed and published in the Jobs/Economy element of the Countywide Vision (San Bernardino County 2011, San Bernardino County 2014). The best practices focus on development processing, business attraction/retention, and direct business assistance (economic incentives) from the local perspective. They do not yet incorporate initiatives that focus on regional, state, and federal environmental resource agencies. Additional activity on best practices related to these agencies is anticipated as part of the Environment Element group’s future work. This Conservation Framework study will be integrated with the Environment Element Group’s second initiative by providing a structured, more comprehensive approach to habitat preservation/conservation which builds upon the already existing open space and conservation lands within the County. This effort will guide a structured method which differs from the traditional planning approach that focused on isolated, project-by-project habitat and species conservation. No pre-conceived approach or method has been identified by the County prior to this study. A comprehensive conservation approach may utilize one or more possible methods such as larger multi-species habitat conservation planning, a series of smaller, more focused approaches, and/or mitigation banks. SANBAG is the lead agency for the Conservation Framework study.

1.2 Preservation/Conservation Framework Purpose and Objectives

The purpose of this Conservation Framework effort is to provide an outline or structure for the open space and conservation component of comprehensive regional planning in San Bernardino County. The framework provides an approach to guide future conservation efforts that allows for informed and strategic species and habitat conservation that is compatible with economic growth

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and development within the County. The Conservation Framework outlines existing conservation efforts and biological information, identification of data gaps, evaluation of potential areas for conservation efforts, evaluation of potential subareas for conservation, creation of conservation principles, and recommendations for next steps. This efforts relies on the best available data from federal, state, county, and city databases to assess species and habitats for conservation action, and provide information for future conservation opportunities. This study does not include creation of a Habitat Conservation Plan (HCP) or a California Natural Community Conservation Plan (NCCP), an analysis of Covered Activities, identification of specific lands to be set aside for conservation, or an evaluation of each city, town, or agency for lands to be set aside.

Conservation involves multiple entities including federal, state, and regional agencies, the County, cities, regional districts, land trusts, and other local organizations. The Conservation Framework helps to coordinate conservation efforts among these agencies and non-government sectors, and more effectively allocate resources for the most productive conservation outcomes. There is a wealth of existing information on biological resources in the County. Therefore, this document also aims to gather and synthesize this information to set the foundation from which a future conservation strategy can be developed as part of the County's Comprehensive Regional Plan.

The four objectives of this Conservation Framework study are to:

1. Work with the stakeholder group established for the Environment Element of the Vision to develop a countywide habitat preservation/conservation framework. The framework will include principles that guide habitat conservation/preservation within logical subareas of the county.
2. Build on conservation/preservation initiatives already established or in progress, beginning with an inventory of those initiatives.
3. Develop the framework in a way that identifies and meets regulatory and legal requirements and provides balance among the various environmental, lifestyle, and economic needs and interests represented in the county.
4. Identify subsequent steps and commitments that would be necessary to proceed with further development of the framework, including identification of gaps and processes for establishment, restoration, and maintenance of preserves and habitat conservation areas.

The terms “preservation” and “conservation” are often used interchangeably, however these terms represent different land management methods that vary by the level of species or habitat protections and the types of actions allowed within an area. *Preservation* refers to setting aside natural resources to restrict use, activities, or contact by people to prevent damage to habitat

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and/or wildlife. *Conservation* refers to sustainable development such that environmental resources are used and managed in a responsible manner to ensure its continued existence for future generations. Unless otherwise stated, for ease of use the remainder of this document will use the term “conservation”, defined broadly to refer to either preservation or conservation with varying levels of species and habitat protections, allowable and sustainable human use and contact, and land designations.

1.3 Conservation Framework Development Process

The Conservation Framework was developed through a step-wise process in conjunction with the Environment Element Group (EE Group) and the SANBAG Planning and Development Technical Forum (PDTF). In addition to ensuring compliance with regulatory and legal requirements, a primary component in the development of the Conservation Framework was community and stakeholder outreach to solicit input on existing information and desired outcomes or potential conservation mechanisms. Development of the Conservation Framework included the following steps:

1. Compile and map existing biological resources, habitat communities, open space/conservation lands, and mitigation lands data from federal, state, regional and local entities.
2. Document data gaps.
3. Prepare a Habitat Conservation Constraints analysis.
4. Establish and map proposed subareas.
5. Establish open space/conservation principles at both the countywide and subarea levels.
6. Identify next steps and commitments necessary to implement the Conservation Framework.

Step 1 – Compile Existing Data

A substantial amount of land has already been dedicated to open space and conservation in San Bernardino County. This important first step documents existing open space/conservation areas, conservation/mitigation activities currently underway, and opportunities identified by County agencies for additional open space/conservation efforts. Currently available Geographic Information Systems (GIS) data was compiled which include vegetation communities, species occurrences, designated Critical Habitat, National Forest Service lands, National Park Service lands, National Preserves, Bureau of Land Management (BLM) lands, habitat preserves and refuges, wildlife corridors, soils, existing and planned land use, and land ownership. In addition, there are existing Protected Areas Databases (PAD) with GAP codes that provide an indication of the protections afforded areas and resources. Data was either publicly available or was

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solicited from SANBAG, the current Southern California Association of Governments (SCAG) contractor, the County, Cities, the California Department of Fish and Wildlife (CDFW), the U.S. Fish and Wildlife Service (USFWS), the U.S. Forest Service (USFS), the National Park Service (NPS), the BLM, and other local and regional entities.

In addition, information from local jurisdictions was gathered through meetings and correspondence. Local jurisdictions included the County, cities, water districts, the County Flood Control District, the Inland Empire Resource Conservation District (IERCD), key members of the development community that either have large landholdings or projects that have significant amounts of open space set-asides, and conservation/non-governmental organizations. The meetings and correspondence served to gather information about existing conservation/mitigation activities, conservation easements, mitigation banks, existing and planned HCPs/NCCPs, preserve management/monitoring plans, and General Plan open space elements and ordinances. These meetings helped refine mapping of existing open space and conservation lands and provided information on other conserved lands not included in previous mapping efforts. This existing information is contained within a GIS data catalog, an inventory database, and maps, and is described in Sections 2 and 4 of this document. The data was used as the foundation to inform the remaining steps of the Conservation Framework development process.

Step 2 – Document Data Gaps

Using the data assembled during Step 1 of the Conservation Framework process, data gaps were identified. Data gaps are associated with incomplete information pertaining to the following:

- Biological Resources: incomplete survey data.
- Open Space and Conservation Areas: incomplete information regarding the location/boundaries, acreages, and/or management plans of open space and park areas, conservation/preserve areas, conservation easements for mitigation, and HCP/NCCPs which were established for public use, protection of habitats and species, or as mitigation for impacts to species, habitat, and/or water resources associated with development projects.
- Outreach to Jurisdictions and Agencies: incomplete response from all cities in the County and agencies and/or incomplete or unavailable data for conservation lands, activities, or planned mitigation needs.

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Data gaps were considered when identifying issues, opportunities, and concerns associated with current approaches to habitat conservation and were used to help form recommendations for the next steps needed to implement the Conservation Framework.

Step 3 - Prepare a Habitat Conservation Constraints Analysis

A Habitat Conservation Constraints analysis was prepared which includes a discussion of the regulatory and planning context related to biological and open space conservation, a landscape-scale summary of the biological resources in the County, and considerations relevant to development of the Conservation Framework. This analysis is intended to facilitate the development of the conservation principles and recommendations for future phases of implementing a comprehensive Conservation Plan. This information was used to identify the issues, opportunities, data gaps, and concerns associated with current approaches to habitat conservation.

Conservation opportunities and gaps in resource protection occur where there is known biological conservation value (e.g., habitat for endangered species, mapped rare natural communities, or important ecological processes) and lack of legislative or legal protection. A large portion of the SANBAG planning area is composed of federal lands administered by the NPS, BLM, or the Department of Defense (DoD). Outside of these federal lands and other state-owned lands, opportunities for conservation occur where biological conservation value is high. Biological resources information was overlaid with protected lands and ownership data to identify the conservation opportunities. Each conservation opportunity area was mapped and the resources described within each conservation opportunity area.

An overview of the regulatory environment within which protection for land use activities and endangered species can occur was also prepared. This includes a summary of Sections 7 and 10 of the federal Endangered Species Act (ESA), the California Endangered Species Act (CESA), California Fish and Game Code and the Natural Communities Conservation Plan Act. In addition, the advantages/disadvantages and development timelines of preparing a regional HCP and/or HCP/NCCP in place of utilizing project-specific permitting tools as allowed through Section 7 of the ESA and Section 2081 of the CESA was summarized.

Step 4 – Establish and Map Subareas

The scope of this study encompasses the entirety of the County which includes three diverse Planning Regions: Valley, Mountain, and Desert (Table 1-1; County of San Bernardino 2007). These distinct regions represent broad biogeographic differences, varying by topography, climate, and biological resource assemblages as well as their unique economic and social issues and opportunities. Large-scale conservation planning often uses subareas to address diverse

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resources and issues to effectively focus elements of a conservation strategy. Subareas were identified based on reasonable and appropriately sized areas which considered geography, jurisdictional boundaries, and natural conditions. The subarea analysis identifies a set of potential approaches to subdividing the San Bernardino County planning area, establishes the criteria used to evaluate the utility of the identified subarea options, and evaluates the potential subarea approaches to use for the Conservation Framework.

**Table 1-1
County Planning Regions**

Planning Region	Total Area (sq. mi.)	Jurisdiction
Desert	18,735	Adelanto
		Apple Valley
		Barstow
		Hesperia
		Needles
		Twentynine Palms
		Victorville
		Yucca Valley
Mountain	872	Big Bear Lake
Valley	500	Chino
		Chino Hills
		Colton
		Fontana
		Grand Terrace
		Highland
		Loma Linda
		Montclair
		Ontario
		Rancho Cucamonga
		Redlands
		Rialto
		San Bernardino
		Upland
Yucaipa		

Source: County of San Bernardino 2007

Five potential subarea approaches were identified and evaluated: regional boundaries (biogeographic), ecoregional boundaries (biogeographic), watershed boundaries (hydrologic), jurisdictional boundaries (cities), and combined biogeographic and jurisdictional boundaries (regions and cities combined). Primary criteria used to evaluate the effectiveness of each

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potential subarea approach include usefulness and practicality. Based on the analysis, a recommended subarea approach is discussed.

Step 5 – Conservation Principles and Recommendations

In coordination with the PDTF and the EE Group, a set of Conservation Principles were developed to provide guidance on the larger-scale considerations related to future conservation planning on both the countywide and subarea level. The Principles were allocated to two focal topics - policy and biology- and were based on established conservation biology tenets while taking into consideration existing and ongoing initiatives in the County, economic development concerns, and information gathered from the various entities/stakeholders. These guiding principles outline the basic goals or parameters for conservation in each subarea, providing a basic framework for what is important and what is not. The principles also include a recommendation for the potential tool or sets of tools that could be used to acquire conservation lands in the future. These Principles will be used to guide development of more comprehensive subsequent phases of a Conservation Plan.

Step 6 – Next Steps and Commitments

The final step in the Conservation Framework development process includes a discussion of the next steps and commitments necessary to continue the momentum proceeding to the next level or phases of a more comprehensive, countywide conservation strategy. A list of next steps on a countywide and subarea level is provided. The entity responsible for the next step, the proposed schedule for the next steps to be implemented, and personnel and financial resources needed for each of the next steps are identified. These next steps were developed in coordination with SANBAG, the PDTF, the EE Group, elected officials, local agency staff, resource agencies, environmental stakeholders, and the development community to ensure that the next steps can be advanced.

1.4 Document Organization

Organization of this document includes the following sections:

- Section 1 provides an introduction to the study background, purpose and objectives, and development process.
- Section 2 describes the outreach conducted to gather data, the available existing data, and development of the database.
- Section 3 presents and summarizes the data gaps identified during the data gathering process.

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- Section 4 presents the habitat conservation constraints analysis, including discussion of the regulatory and planning context, the biological resources in the County, and other considerations relevant to development of the Conservation Framework.
- Section 5 provides an analysis of potential approaches for establishing subareas according to the County's diverse biogeographic and biological resource features.
- Section 6 describes the policy-related and biological resource-related Conservation Principles that provide guidance for future conservation planning on both the countywide and subarea level.
- Section 7 describes the next steps necessary for implementing a comprehensive, countywide conservation strategy.
- Section 8 contains a list of references cited in this document.

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2 OUTREACH AND DATA GATHERING

This section provides a discussion of outreach efforts to jurisdictions including the County, cities/towns, water districts, the County Flood Control District, the IERCD, and non-governmental organizations or other stakeholders. It also presents the existing data that was available to compile a database of biological resources and conservation areas.

2.1 Outreach

An important part of this study was to gather available information related to existing conservation practices and efforts by the local jurisdictions and various conservation agencies in San Bernardino County. Understanding the attitudes of these entities was also an important part of the outreach process. The outreach portion of this study included issuing and collecting written questionnaires/surveys, meetings and correspondence with representatives from County jurisdictions and conducting presentations at the PDTF, the EE Group, and the Local Agency Formation Commission for San Bernardino County (LAFCO).

The purpose of the outreach effort was to provide transparency in the development process by involving all stakeholders. This effort was intended to gather information not otherwise available and to elicit input to understand the various jurisdictions' current conservation approach, conservation needs, and vision for what a future, unified conservation strategy may include. The goal was to encourage participation and cooperation of stakeholders to aid in moving the strategy from a framework planning phase toward future implementation phases.

Written questionnaires/surveys were disseminated to the PDTF and EE Groups on April 23 and April 30, 2014, respectively, by Dudek. The questionnaires were handed out to attendees at each of these two meetings. At each meeting, the attendees were asked to write their ideas related to the following questions: 1) Things that will get better with Conservation Planning; 2) Things that will be challenging with Conservation Planning; 3) Things you want from this Study; and 4) Tell us what initiatives you are involved with that are related to Conservation Planning. The first two questions were intended to solicit attitudes towards conservation planning. The third question was intended to provide insight into what constituents were looking for from the framework study. The last question was intended to collect information and/or direct efforts of where to go for information on existing conservation efforts.

The returned questionnaires helped inform and guide this study. Most people think there are good as well as challenging aspects to conservation planning and balancing conservation with development was a common discussion topic for most of the returned questionnaires. The

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questionnaires were helpful in directing data-gathering efforts and highlighting specific efforts by various agencies related to conservation planning.

Individual or group outreach meetings and phone calls were held from May to August 2014. Group outreach meetings to towns and cities, the resource agencies, water conservation districts, and other groups were organized according to the planning region jurisdictions or individually and held in a central location. A meeting request was sent to all jurisdictions via email and a date and location agreed upon by all respondents interested in attending. Phone call discussions with DUDEK were arranged individually with interested entities. A general meeting agenda was distributed to help guide the topic discussions during meetings. Available data on existing or planned conservation efforts was requested from each agency and jurisdiction via email and during meetings and phone calls. Table 2-1 lists the outreach meetings and phone call information including date, location, attendees, and representatives.

**Table 2-1
Summary of Outreach Meetings and Phone Calls**

Meetings				
<i>Planning Region</i>	<i>Date / Location</i>	<i>Invited Jurisdiction</i>	<i>Attended</i>	<i>Representative</i>
<i>LAFCO</i>				
All	May 7, 2014; SANBAG office	LAFCO	Yes	Kathleen Rollings-McDonald, Samuel Martinez
<i>Towns/Cities</i>				
Desert and Mountain	May 21, 2014; Town of Apple Valley Town Hall	Adelanto	Yes	Mark de Manincor
		Apple Valley	Yes	Lori Lamson
		Barstow	Yes	Jennifer Riley
		Hesperia	No	–
		Needles	No	–
		Twentynine Palms	No	–
		Victorville	Yes	Michael Szarzynski
		Yucca Valley	Yes	Shane Stueckle
		Big Bear Lake	Yes	James Miller
Valley (East)	May 28, 2014; City of Highland Town Hall	Colton	Yes	Mark Tomich
		Grand Terrace	No	–
		Highland	Yes	Lawrence Maine, Sergio Madera
		Loma Linda	No	–
		Redlands	Yes	Kalani Paitoa
		Rialto	No	–
		San Bernardino	No	–
Yucaipa	Yes	Joe Lambert		

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**Table 2-1
Summary of Outreach Meetings and Phone Calls**

Meetings				
<i>Planning Region</i>	<i>Date / Location</i>	<i>Invited Jurisdiction</i>	<i>Attended</i>	<i>Representative</i>
Valley (West)	May 29, 2014; Rancho Cucamonga City Hall	Chino	No	–
		Chino Hills	No	–
		Fontana	Yes	Shannon Casey
		Montclair	No	–
		Ontario	Yes	Richard Ayala
		Rancho Cucamonga	Yes	Tom Grahn
		Upland	No	–
<i>County</i>				
All	May 29, 2014; County of San Bernardino offices	County Department of Public Works	Yes	Kevin Blakeslee, Gerry Newcombe
		Land Use Services	Yes	Gia Kim, Terri Rahhal, George Kenline, Tom Hudson
		Special Districts	Yes	Jeff Rigney
<i>Wildlife Agencies and SCAG</i>				
All	June 11, 2014; SCAG Riverside office	U.S. Fish and Wildlife Service	Yes	Karin Cleary-Rose
		California Dept. of Fish and Wildlife	Yes	Leslie MacNair
		SCAG	Yes	Kristen (Torres) Pawling
<i>Water Conservation Districts</i>				
All	July 24, 2014; SANBAG office	San Bernardino Valley Water Conservation District	Yes	Daniel Cozad
		San Bernardino Valley Municipal Water District	Yes	Douglas Headrick
<i>Conservation Districts</i>				
All	August 19, 2014; DUDEK Riverside office	Inland Empire Resource Conservation District (IERCD)	Yes	Mandy Parkes
Phone Calls				
<i>Planning Region</i>	<i>Date</i>	<i>Jurisdiction</i>	<i>Attended</i>	<i>Representative</i>
<i>Towns/Cities</i>				
Desert	June 2, 2014	Hesperia	n/a	Dave Reno, Scott Priester
Valley	June 3, 2014	Chino Hills	n/a	Joann Lombardo
<i>County (Transportation Projects)</i>				
All	June 4, 2014	SANBAG	n/a	Paula Beauchamp, Julie Vandermost (consultant to SANBAG), Steve Smith, Josh Lee
<i>Development Company</i>				
All	July, 16, 2014	Southern California Gas Company	n/a	Justin Meyer

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**Table 2-1
Summary of Outreach Meetings and Phone Calls**

Phone Calls				
<i>Planning Region</i>	<i>Date</i>	<i>Jurisdiction</i>	<i>Attended</i>	<i>Representative</i>
<i>Resource Agency</i>				
Desert/Mountain	August 6, 2014	Bureau of Land Management	n/a	Terri Raml, Russell Schofield
<i>Conservation Districts</i>				
Desert	August 20, 2014	Mojave Desert Resource Conservation District (MDRCD)	n/a	Janet Lindgren

A brief summary of the information gathered and input received from each jurisdiction or entity is discussed below, with a more detailed description of the meetings and phone call outcomes provided in Appendix 2-A. In addition, presentations on the Conservation Framework effort were given to the PDTF on April 23 and August 27, 2014; the EE Group on April 30 and September 24, 2014; the SANBAG Board on September 3, 2014; and LAFCO on September 17, 2014.

Local Agency Formation Commission (LAFCO) Meeting – May 7, 2014

- Discussed conservation framework study objectives
- Discussed LAFCO efforts related to conservation planning
- Discussed CSA 120 and its status and background

Desert and Mountain Cities Meeting – May 21, 2014

- Development and conservation potential was discussed with each city.
- Wildlife movement corridors in desert habitat was discussed, particularly in regards to proposed open space/conservation areas.
- Adelanto, Victorville, Barstow, Yucca Valley have large open space and/or conservation areas or wildlife linkages as part of General Plan updates or specific plans.
- City of Big Bear has open space or conservation lands on Flood Control properties and mitigation lands associated with individual projects which are managed by the IERCD. Big Bear has nearly reached its maximum build-out or growth capacity.
- Town of Apple Valley is in the process of preparing an HCP.

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East Valley Cities Meeting – May 28, 2014

- Conservation associated with previous, current, and future development projects was discussed.
- Cities are interested in identifying consolidated open space areas that multiple jurisdictions could use for future mitigation needs.
- Hillside ordinances that result in open space.
- Santa Ana River current and future development pressures.
- Conservation lands associated with the Delhi Sands Flower-loving Fly (federally listed species).
- Potential for additional open space adjacent to Forest Service or State Park lands in Highland and Yucaipa.

County Meeting – May 29, 2014

- Department of Public Works has mitigation areas related to past projects.
- Flood Control owns land in the County that is considered open space. Some open space lands will be used for mitigation for their USACE and CDFW programmatic permits.
- Large developments currently being planned will require conservation set asides near Lytle Creek and Cajon Creek.
- County Transportation has no plans for any new major roads that would need significant conservation requirements. Route 66 will require future bridge repairs. This will require considerable conservation mitigation needs.
- No significant conservation needs are expected in association with landfill expansions.
- Vulcan mitigation bank was discussed.
- County Special Districts provided an overview of their role related to the Etiwanda Preserve and LAFCO's CSA 120 conservation area. An additional area near Joshua Tree may be considered by Special Districts for conservation using the same conservation model as CSA 120.
- IERCD and County Special Districts have an overlap of potential conservation services in the County. One current method for applicants to mitigate project impacts is to set up a CSA or go to IERCD.
- The potential for BLM lands to be used for potential mitigation, or retirement of grazing allotments and mining rights was discussed.

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- A vacant lands inventory was completed by the County which would provide valuable information towards this Conservation Framework study.

West Valley Cities Meeting – May 29, 2014

- Each jurisdiction discussed Development projects and conservation efforts.
- City of Fontana discussed their Delhi Sands Flower-loving Fly HCP and other mitigation areas.
- City of Ontario does not have significant open spaces areas. The New Model Colony annexation did require some mitigation which was to take place near Prado Basin but has not yet occurred.
- City of Rancho Cucamonga does not have conservation in its City limits, aside from County Flood Control lands. There is potential for conservation within its Sphere along the northern boundary. IERCD currently manages mitigation for projects, which works well. The City has concerns over the long term viability of CSA 120.
- Cities of Fontana and Rancho Cucamonga have Hillside Ordinances.
- Other entities to follow up with related to conservation efforts near and in Rancho Cucamonga include Cucamonga Water District, San Antonio Water Company and City of Los Angeles.

City of Hesperia – June 2, 2014

- City of Hesperia had negative experiences with previous conservation planning efforts, specifically the West Mojave Plan and the Summit Valley HCP.
- The City is opposed to and would not support any regional HCP planning efforts.
- The City prefers to proceed with conservation and mitigation planning on a project-by-project basis.
- The City requests avoidance as the first measure if conservation is required for projects. Any conserved lands or set asides are given to non-profit or land conservation entities.
- Currently there are no conservation easements in the City. There is only one 11-acre site that has been set aside for 404 waters permitting mitigation.

City of Chino Hills – June 3, 2014

- The City of Chino Hills is almost at build out.

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- There are currently about 3,000 acres of city-owned open space and 2,000 acres of HOA-owned open space lands mainly focused in the hillside areas.
- A City development code requires open space set-asides based on slope. Proposed future developments in hillside areas would be required to set aside a portion of the project for open space.
- There are long term funding issues for open space areas.
- County-wide conservation efforts related to funding for maintenance and management of open space lands is of interest to the City.

SANBAG Internal Meeting – Transportation Projects – June 4, 2014

- Mitigation banks have been used previously as preferred species mitigation methods. Mitigation banks that have been used include Vulcan in Cajon Creek, and Wildlands Mitigation Bank near Cajon Creek and Lytle Creek.
- Use of Flood Control property for SANBAG mitigation has not worked well.
- Land Veritas Corp. is proposing a mitigation bank in Chino Hills.
- SANBAG projects typically result in impacts to San Bernardino kangaroo rat (listed species) and Waters of the US.
- Riverside-Corona Resource Conservation District (RCRCD) and Santa Ana Watershed Agency (SAWA) have been used for mitigation. SANBAG can provide data on previous and future project impacts and mitigation.
- SANBAG plans to use mitigation banks in the future. They have considered setting up their own mitigation bank for future project needs.
- Caltrans has a list of their project-related mitigation areas.

Wildlife Agencies – June 11, 2014

- The USFWS and CDFW (Wildlife Agencies) understand the intent of the SANBAG Conservation Framework project.
- USFWS observations that San Bernardino County's main impacts to species would likely be from water infrastructure projects.
- There are no large proposed or foreseeable future transportation projects that would be an impetus for large amounts of conservation mitigation. Improvements to bridge culverts and underpasses should be incorporated into any future transportation projects.

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- Flood control activities may require attention related to species mitigation.
- The two main HCPs in the Valley area were discussed – the Santa Ana River HCP being prepared by the water districts to cover Santa Ana Sucker and other species, and the “Wash Plan” prepared for the gravel mines in the Santa Ana River near Highland.
- Prado Basin was discussed in relation to connectivity to Chino Creek and how a regional conservation scenario that includes Riverside County is appropriate to understand.
- Species and habitat that commonly need mitigation through the CEQA process in San Bernardino County are burrowing owl, golden eagle and alluvial fan sage scrub. The jurisdictions may want to consider proactive ways to mitigate for these species/habitat ahead of time. A unified CEQA approach may be considered.
- Funding of conservation areas is also an area identified by the Wildlife Agencies that needs improvement or thought in future conservation planning.
- Mitigation Banks that the Wildlife Agencies were aware of were discussed (Vulcan’s Cajon Creek Mitigation Bank and Wildlands Mitigation Bank near the confluence of Cajon Creek and Lytle Creek, a proposed mitigation bank in Chino Hills area).
- Cross-jurisdictional mitigation and its appropriateness in certain circumstances was discussed. It would be appropriate where biology, ecology, and politics will support it.
- There was discussion about the definitions of “open space” and “conservation”. Public access and its importance and appropriateness was discussed. The desire for community involvement was also discussed.
- A brief list of “best practices” was provided by the Wildlife Agencies: brief the regulatory agencies early; do not piecemeal the regulatory agency engagement; do not minimize the appearance of project impacts or try to do things that are not practical to avoid impacts; be straightforward with what the impacts are, and what the mitigation is; prepare adequate CEQA documents for projects that will need regulatory permits or approvals.
- SCAG has a nearly-completed conservation planning study which will have its own “best practices” list. The value of local jurisdictions or project proponents funding “reimbursable employees” at a regulatory agency was discussed.
- The potential of implementing “Pre-Application Meetings” similar to what is done in western Riverside County to involve regulatory agencies was discussed.
- USFWS noted that there are areas of known Bald Eagle nesting (Highland area) outside of Forest Service ownership as well as for the unarmored threespine stickleback

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(fish)(Big Bear Lake area). USFWS also discussed the Shay Pond project which supports stickleback. These areas should be considered in future conservation scenarios.

Southern California Gas Company – July 16, 2014

- So Cal Gas does not own excess lands intended for conservation purposes.
- Most projects that require mitigation are in the high desert.
- They use IERCD and Mojave RCD for Waters mitigation.
- Most projects require mitigation for desert tortoise. They use existing programmatic permits with BLM/USFWS and an MOU with CDFW. So Cal Gas provides funds directly to BLM and CDFW for mitigation for ESA issues.
- So Cal Gas would be interested in a county-wide regional conservation plan because it would provide an additional mitigation option.

San Bernardino Valley Water Conservation District (WCD) and San Bernardino Valley Municipal Water District (MWD) – July 24, 2014

- Both Districts are preparing HCPs: the “Wash Plan” is being proposed by WCD and the “Upper Santa Ana River” HCP is being proposed by MWD.
- The details of each HCP was discussed. The Wash Plan is comprised of public agencies and will include land swaps to facilitate more conservation and allow projects to move forward. A Task Force has been established to oversee Plan implementation. The Upper Santa Ana River (SAR) HCP is not a land consumptive HCP, but rather a waters-specific plan.
- MWD shared insights about their working relationship with the US Fish and Wildlife Service. Other funding-related insights and implementation recommendations were discussed.

BLM – August 6, 2014

- Background on the Conservation Framework study was provided to BLM.
- BLM was interested in how a county-wide conservation strategy would interface with the Desert Renewable Energy Conservation Plan (DRECP). Portions of the draft DRECP would likely be helpful to the SANBAG study (e.g., the No Action Alternative would provide explanations about BLM land uses and designations, the General Conservation Plan within the DRECP is intended to provide a programmatic framework of Habitat Conservation Plans).

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- BLM provided clarification about existing Areas of Critical Environmental Concern (ACEC) designations. The ACEC designation does indicate a level of biological conservation amongst BLM lands.

Inland Empire Resource Conservation District (IERCD) – August 19, 2014

- Information was provided on IERCD’s involvement with conservation efforts in the County.
- IERCD provided information on their current activities which include collecting and managing fees for conservation endowments, and holding conservation easements.
- IERCD is in the process of preparing their own In Lieu Fee Program.
- IERCD is interested in a multi-jurisdictional cooperative for conservation planning.

Mojave Desert Resource Conservation District (MDRCD) – August 20, 2014

- MDRCD does not own or hold easements for land conservation.
- MDRCD conducts removal of invasive species along the Mojave River for projects and entities needing waters permitting.

2.2 Data Gathering and Database Development

This section summarizes the existing information gathered to support development of a comprehensive countywide conservation plan. The purpose of the data gathering effort was to compile an inventory of readily available information relevant to conservation planning which includes a GIS database and additional information on open space and conservation efforts from jurisdiction General Plans and Hillside Ordinances. and other information from jurisdictions not otherwise in GIS format. This inventory serves as a repository for currently available data that can be used as the baseline for conducting future GAP analyses and developing a conservation reserve design (see Section 7 Next Steps). A description of the data gathering methods, results of what data is readily available, and a summary of the primary data sources is presented below.

Methods

Dudek identified and compiled available data from a variety of public and private sources that document existing conservation lands, conservation easements, critical habitat, mitigation banks, and other designations intended to preserve open space, habitat, and sensitive species. A substantial amount of information is available through prior efforts and existing GIS data maintained by SCAG, the County, SANBAG, and State and Federal resource agencies. Dudek initially leveraged their already robust GIS database containing biological and resource

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information relevant to the conservation framework study that had been developed from other projects. Dudek then augmented the initial GIS database with publically available information and information provided by the various County agencies, State and Federal agencies, jurisdictions, and other entities.

An important component of the data gathering effort included coordinating with SCAG and its environmental consultant working on data gathering and mapping for the region under the contract *Regional Habitat Conservation – Assessment Methodology & Database for 2016 RTP Development*. SCAG’s data inventory and mapping effort is intended to expand their GIS database for resources relevant to natural resources planning for open space in the SCAG region (Leidos 2014) and therefore parallels the data gathering effort required for this conservation framework study. To avoid duplication of effort, Dudek partnered with SCAG to obtain their completed GIS inventory database (received by Dudek August 2014).

In addition, GIS data coverages and hard copy maps and tables received as a result of outreach efforts and information requests to the various county jurisdictions and state and federal agencies as discussed in Section 2.1 were incorporated into the Dudek data inventory. In some instances, hard copy maps of open space and/or conservation areas provided by jurisdictions were digitized for inclusion in the GIS database. The data inventory includes existing publically available data from online sources and data coverages received after submittal of specific data requests. Some databases are easily searchable through online interfaces and therefore were not downloaded but are listed in the SCAG inventory (Leidos 2014). No new field data collection or data analysis was included as part of this conservation framework study.

Conservation and open space preservation opportunities exist in jurisdiction General Plans and Hillside Ordinances. General Plan Conservation/Open Space Elements identify policies and implementing measures for protection of environmental resources and some jurisdictions maintain Hillside Ordinances which include development standards for hill slopes to preserve open space. While General Plans and Hillside Ordinances provide a potential avenue for obtaining conservation and open space areas, these policies do not include a mechanism to guarantee long-term protection in perpetuity. Though these measures are not currently in digital GIS coverage format, Dudek summarized these important components of a countywide conservation approach.

Dudek created a GIS database inventory table which includes the following information for each data source:

- Source category (e.g., Federal, State, County, City/Town, Resource Conservation District, Environmental Group/Non-profit organization, and Private);

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- Source name;
- Name of database;
- Year;
- Relevancy; and
- Description of the data layer.

For consistency, Dudek incorporated the same data relevancy ranking used in the SCAG inventory effort which are: (Leidos 2014):

- Rank 1: Directly Useful. Can be used to assess habitat or ecosystem conditions or functions in a spatial context. Examples include vegetation maps, wildlife habitat maps, soil surveys, and fire risk maps;
- Rank 2: Indirectly Useful. Can be used for land use planning or impact predictions related to habitats and ecosystems. Examples include planning boundaries related to natural resources, land use designations, and management designations; and
- Rank 3: Little or No Use. Not related to or only tangentially related to identification or assessment of impacts on natural resources. Examples include political boundaries, U.S. Census data, employment data, and earthquake faults.

In addition to the GIS database inventory spreadsheet, a GIS data catalog and a documentation library has been provided to SANBAG in electronic format under separate cover as a component of this conservation framework study.

Results and Summary

The GIS database inventory of existing, readily available environmental resources data compiled by Dudek is listed in Table 2-2, Appendix 2-B. This inventory presents the baseline GIS information that can be used to support a countywide conservation plan, including a future Gap Analysis and development of a Reserve Design. Existing available GIS data compiled by Dudek includes seven federal agencies; two state agencies; six county agencies, districts, or organizations; six cities/towns; one Resource Conservation District; five environmental groups/non-profit organizations; and two private companies. The data includes natural resources such as vegetation communities (Figure 4-4 and 4-4a), species occurrence coverages (Figure 4-7 series), USFWS listed species designated Critical Habitat (Figure 4-3 and 4-3a), conservation and open space areas (e.g., federal and state lands, habitat management areas, preserves, wilderness areas; Figure 4-6 series), wildlife corridors/habitat linkages (Figure 4-5), existing and planned land use (Figure 4-1), and land ownership (Figure 4-2). In addition, there are existing

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Protected Areas Databases (PAD) with GAP status codes that provide an indication of the protections afforded areas and resources. The following provides a summary of the primary data sources and GIS coverages which are presented in Table 2-2, Appendix 2-B:

- Federal - Bureau of Land Management
 - Wilderness Areas
 - Wildlife Habitat Management Areas
 - Areas of Critical Environmental Concern
 - Species Conservation Areas
 - Off-Highway Vehicle Areas
 - Plant, Bird, and Mammal Occurrence data
- Federal - Federal Emergency Management Agency
 - National Flood Hazard Layer
- Federal - Natural Resources Conservation Service
 - Soils (SSURGO database)
- Federal - U.S. Department of Agriculture
 - Ecoregions
- Federal - U.S. Fish and Wildlife Service
 - Designated Critical Habitat
 - National Wildlife Refuges
 - National Wetlands Inventory
 - HCP Boundaries
 - Listed and Sensitive Species Occurrence Data
- Federal - U.S. Forest Service
 - Plant and Wildlife Species Occurrence Data on National Forests
- Federal - U.S. Geological Survey
 - CA GAP Vegetation
 - National Hydrography Dataset
- State - California Department of Fish and Wildlife

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- California Natural Diversity Database (CNDDDB)- Plants and Animals
- Vegetation
- California Essential Habitat Connectivity
- California Wildlife Habitat Relationships (CWHR)
- Owned and Operated Lands
- State - California Department of Water Resources Vegetation
 - Groundwater Basins
- County - Flood Control District
 - Flood Control District parcels
- County - Land Use Services
 - Vacant Land Survey Data
- County – LAFCO
 - CSA 120 and CSA 70 Conservation Areas
- County - SCAG
 - Land Use Data
- County - San Bernardino County Museum
 - Species and Habitat Occurrence Datasets
- San Bernardino Valley Water Conservation District
 - Upper Santa Ana River Habitat Conservation Plan
- Cities and Towns
 - Various open space, conservation areas, wildlife connectivity areas, proposed development areas
- Resource Conservation District – IERCD
 - Mitigation Areas
- Environmental Group/Non-profit - Audubon
 - Important Bird Areas
 - eBird Occurrence Data
 - Christmas Bird Count Data

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- Environmental Group/Non-profit - GreenInfo Network
 - California Protected Areas Database (CPAD)
 - California Conservation Easement Database (CCED)
- Environmental Group/Non-profit - HerpNet
 - Herpetological Occurrences from Museum Records
- Environmental Group/Non-profit – Hills for Everyone
 - California State Parks lands
- Environmental Group/Non-profit - South Coast Wildlands
 - South Coast Missing Linkages Project - Wildlife Corridors
 - California Desert Connectivity Project - Desert Linkage Network
 - Joshua Tree-Twenty-nine Palms Connection - Wildlife Corridors
- Environmental Group/Non-profit - U.S. Endowment for Forestry and Communities, Inc.
 - National Conservation Easement Database (NCED)
- Private – Vulcan Materials Company
 - Conservation Lands and Mitigation Bank

The combined efforts of SCAG and Dudek have resulted in a more complete dataset. A comparison of the data compiled for the SCAG inventory of natural resources data (Leidos 2014) and the data compiled by Dudek for this conservation framework study is summarized in Appendix 2-C (Table 2-3).

A summary of the General Plan policies and Hillside Ordinances of local jurisdictions are presented in Table 2-4 and Table 2-5, respectively. Additional discussion of the relevancy of these jurisdiction plans and policies to a conservation strategy is provided in Section 4.1.3.

Data Limitations

When applying available data to conservation planning and analyses, it's important to understand the limitations and appropriate uses associated with each data source. All data have limitations; therefore understanding the limitations allows one to minimize error and assess the validity of analyses (Ardron et al. 2010). As is common for natural resource data, the existing available information gathered for this conservation framework study come from multiple sources and are of varying quality and/or quantity. The following provides a summary of the primary data limitations associated with the existing data:

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- Incomplete or missing metadata: Ideally, data sources are received with metadata or “data about the data” which describes the contents, year, collection methods, or other descriptive details about the original data/files thereby increasing the usefulness of the data. Not all data sources have complete metadata.
- Data quality/accuracy: Data quality varies such that not all data is of the highest possible quality (e.g., point data derived from a verified source and/or based on sub-meter accuracy GPS location data) or the data is of unknown quality/accuracy.
- Incomplete and/or inconsistent datasets: Datasets may be reported inconsistently across regions, data may be lacking from some regions but not others, data may be available for certain features (e.g., species, habitats) but not others, and data may be collected at varying temporal and/or spatial scales. Existing data is often available based on where there was a survey opportunity due to a specific question or development purpose, and legal access to lands. The lack of data in an area does not indicate an absence of biological resources and potential conservation value (Braden et al. 2009).
- Scale varies among data sources: Some datasets represent information collected or applicable only for landscape-scales or course-grained scales. This is relevant when seeking appropriate datasets for site-specific or local information to perform a fine-scale analysis.

Future conservation planning, analyses, and reserve design (see Section 7 Next Steps) will need to understand what each data source supplies to an analysis to achieve quality results. Section 4.2.1 provides an additional discussion of data limitations associated with available plant and wildlife species and habitat occurrence data.

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**Table 2-4
City, Town, and County General Plan Goals, Policies, and Implementation Measures
for Open Space and Conservation, San Bernardino County.**

Jurisdiction	Year	General Plan Chapter/Element	General Plan Goals and Policies	Implementation Plans/Measures
Adelanto	1994	Chapter 7	Policies 1.1–1.5	Development of comprehensive parks, recreation, and open space plan
Apple Valley	2009	Chapter III	Policies 1.B–1.D, 2.A–2.D, 3.A–3.B, 4.A–4.C, 5.A–5.B	Various efforts to preserve habitat and open lands (MSHCP), and reduce development footprints
Barstow	1997	Chapter V	Policies V.1.2–V.1.8	Participation in the West Mojave Plan; No specific city conservation plans/areas
Big Bear Lake	1999	Open Space, Parks, and Recreation Element	Goal OPR 3, Policy OPR 3.1–3.4	Possibility of property acquisition for open space conservation (GP policy OPR 3.4)
Chino	2010	Chapter 9	Objectives OSC 1.1–1.2, 2.1–2.3	Emphasis on preservation of remaining agricultural resources in the city, along with natural areas in Prado Regional Park; Designated natural open space areas included in GP land use map
Chino Hills	2014	Chapter 4 Conservation Element; Chapter 6 Parks, Recreation, and Open Space	Chapter 4 Goal CN-1, Goal CN-3; Chapter 6 not updated in 2014 (2008 version not available online)	Clustered development of hills to protect scenic resources and many open space designations; Chino Hills State Park; Many designated open space areas included in GP land use map
Colton	1987 (Open Space and Conservation), 2013 (Land Use)	Chapter 4 Land Use; Chapter 6 Open Space and Conservation	Chapter 4 LU 12.1–12.4, 13.1–13.4; Chapter 6 Principles and Standards	Proposals 1 – 4
Fontana	2003	Chapter 9	Goals and Policies 1.1, 1.2, 2.1, 2.2	Local MSHCP; expand Mary Vagel Park
Grand Terrace	2010	Chapter 4	Goals and Policies 4.1, 4.2, 4.4, 4.5	Proposed Grand Terrace Wilderness Park; Protection of Blue Mountain
Hesperia	2010	Chapter 4 Open Space; Chapter 6 Conservation	Chapter 4 Goals OS-1–OS-6; Chapter 6 Goals CN-1–CN-8	Various efforts to preserve habitat and open lands
Highland	2006	Chapter 5	Policies 5.1, 5.7, 5.11, 5.12	Multi-Use Trail Master Plan

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**Table 2-4
City, Town, and County General Plan Goals, Policies, and Implementation Measures
for Open Space and Conservation, San Bernardino County.**

Jurisdiction	Year	General Plan Chapter/Element	General Plan Goals and Policies	Implementation Plans/Measures
Loma Linda	2009	Chapter 9	Policies 9.2, 9.4	Hillside Preservation areas; Appropriate setbacks
Montclair	1999	Chapter 4	Policies OS-1.1.1–1.1.12	Focus on implementing construction/improvement of park facilities because of city build-out; Long-term efforts for improvement of park system
Needles	Not Available	Not Available Online	Not Available Online	Not Available Online
Ontario	undated	Policy Plan - Environmental Resources Element	Goal ER5, Policies ER5-1 - ER5-5	New Model Colony (NMC) and right to farm ordinance for agricultural and dairy uses; NMC policies for agricultural and/or open space; potential future opportunities to integrate rare and/or endangered species suitable habitat into new developments and/or participate in regional efforts in conservation of high quality habitat; other conservation through the Prado Basin Habitat Plan (2008) associated with the NMC conservation efforts.
Rancho Cucamonga	2010	Chapter 6	Policies RC-1.1–1.4, RC-8.1–8.7	Open Space Plan; Management of preserves as stated in RC-8.3; Data gathering for possible open space acquisitions; Long-term efforts for protection of open spaces
Redlands	2010	Chapter 7	Policies 7.2a–7.21x	Completion of GP Update Planned for 2017; Open Space Conservation Land Use 'zone'; Long-term efforts for protection of open spaces
Rialto	2010	Chapter 2	Policies 2-24.1, 2-25.1, 2-25.2, 2-28.7, 2-39.1, 2-39.2, 2-39.3	Cooperation with other agencies and preservation of current open space resources
City of San Bernardino	2005	Chapter 12	Policies 12.1.1–12.1.4, 12.2.1–12.2.5, 12.3.1–12.3.5	Cooperation with other agencies and preservation of current open space resources
County of San Bernardino	2007 (amended 2014)	Chapter V. Conservation Element;	Chapter V. - Policies CO 1.1, CO 1.2, CO 2.1 - 2.3, M/CO 1.1 - 1.7,	Preparation of HCPs (West Mojave Plan); Cooperation with other agencies and preservation of extensive open

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**Table 2-4
City, Town, and County General Plan Goals, Policies, and Implementation Measures
for Open Space and Conservation, San Bernardino County.**

Jurisdiction	Year	General Plan Chapter/Element	General Plan Goals and Policies	Implementation Plans/Measures
		Chapter VI. Open Space	M/CO 2.1 - 2.9, M/CO 3.1, D/CO 1.1 - 1.13, D/CO 4.1 - 4.3, D/CO 5.1, D/CO 5.2; Chapter VI. - All Policies	space resources; Promote energy development in desert in conjunction with DRECP implementation
Twentynine Palms	2012	Conservation and Open Space Element	Policies CO-1.1–1.11	Various efforts to protect open spaces and sensitive resources
Upland	1982	Chapter 9	Goals and Policies pages 9.12–9.14	Pursuit of funding opportunities for parks system; fiscally constrained policies
Victorville	2008	Resource Element	Policies 4.1.1, 4.1.2, 4.2.1	Participation in the West Mojave Plan; Long-term efforts in conservation planning
Yucaipa	2004	Chapter 12	Policies OS-1C, OS-2G, OS-4B, OS-4C, OS-5A - C, OS-6B, OS-6E, OS-9A, OS-9D, OS-9H	Various efforts to protect open spaces and sensitive resources; GP Update in process
Yucca Valley	2014	Chapter 5	Policies OSC 1-1–1-6, 4-1–4-13, 8-1–8-8	Various efforts to protect open spaces and sensitive resources

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Table 2-5

City and Town Hillside Ordinance Development Codes that Provide for Hillside Protections, San Bernardino County.

Jurisdiction	Hillside Ordinance	Year	Ordinance Code Title and Number	Trigger for Ordinance	Map Available	Map Location	General Description
Adelanto	No	–	–	–	–	–	–
Apple Valley	Yes	2010	Development Code 9.71.060 - Hillside Subdivisions	15% slope or greater; building standards differ by slope zones	Yes	General Plan, Conservation and Open Space, Exhibit III-3, pg. III-29	Open Space/Mtn. classification in General Plan; Allowed density of residential building dependent on slope zone and % slope
Barstow	No	–	–	–	–	–	–
Big Bear Lake	Yes	2003	Development Code 17.09 - Slope Density	40% slope or greater (with provision for exceptions); parcel coverage ratio to % of slope calculation	No	–	No building on slopes 40% or greater, unless approved by Planning Commission
Chino	No	–	–	–	–	–	–
Chino Hills	Yes	1999	Development Code Chapter 16.08 - General Design Regulations	15% slope or greater	Yes	Within Development Code 16.08	Exceptionally prominent ridgelines (Code 16.08.040); Required open space set aside acreages based on % slope (Code 16.08.070); Hillside Adaptive Development Standards (16.08.050); Architectural Guidelines for Hillside Development (Code 16.08.060); Open Space Requirements

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**Table 2-5
City and Town Hillside Ordinance Development Codes that Provide for Hillside Protections, San Bernardino County.**

Jurisdiction	Hillside Ordinance	Year	Ordinance Code Title and Number	Trigger for Ordinance	Map Available	Map Location	General Description
							(16.08.070)
Colton	Yes	1992	Code of Ordinances, Zoning, Residential Estate Zoning, Chapter 18.10.150 - Hillside Setbacks	Hillside setback; 5 foot setback of a slope of 4:1 with a height of 5 or more feet	No	–	Ord. 0-21-06 and 0-22-06: Moratorium for land use approvals and entitlements in La Loma Hills area
Fontana	Yes	2014	Chapter 30 Zoning and Development Code, Article IX. Overlay Districts, Section 30-301.5 through 30-301.8 - Division 7 Hillside Overlay District	10% slope or greater	No	–	For 25% slope or greater - no buildings or structures shall be allowed except for fencing, low-water-use landscaping and irrigation systems.
Grand Terrace	Yes	2013	Code of Ordinances, Title 18 Zoning, Chapter 18.10 - Residential Districts	Hillside Residential District (RH)	Yes	Planning Department Zoning Map 2007 (RH Zone)	Limits building to one unit per acre; Requires specific site plan on project-by-project basis to establish development standards

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Table 2-5

City and Town Hillside Ordinance Development Codes that Provide for Hillside Protections, San Bernardino County.

Jurisdiction	Hillside Ordinance	Year	Ordinance Code Title and Number	Trigger for Ordinance	Map Available	Map Location	General Description
Hesperia	Yes	2014	Code of Ordinances, Title 16 Development Code, Chapter 16.40 - Hillside Development Regulations	20% slope or greater	No	–	Buildable land based on % slope (no building on slopes greater than 40%) (16.40.040)
Highland	Yes	2014	Municipal Code, Title 16 Land Use and Development, Chapter 16.40 General Development Standards, Section 16.40.420 - Hillside Development	Average slope of 10% or greater	No	–	25% slopes or greater are discouraged for grading/building; Percentage of lot to remain in natural state dependent on % slope (section C)
Loma Linda	Yes	2014	Municipal Code, Title 20 Environmental Protection, Chapter 20.12 - Hillside Areas Preservation	Various Hillside zones with different allowable densities	Yes	General Plan Land Use Figure 2.1	Some areas designated strictly conservation; other areas designated low-density development (1 du per 5 or 10 acres)
Montclair	No	–	–	–	–	–	–
Needles	No	–	–	–	–	–	–
Ontario	No	–	–	–	–	–	–

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**Table 2-5
City and Town Hillside Ordinance Development Codes that Provide for Hillside Protections, San Bernardino County.**

Jurisdiction	Hillside Ordinance	Year	Ordinance Code Title and Number	Trigger for Ordinance	Map Available	Map Location	General Description
Rancho Cucamonga	Yes	Not Reported	Development Code, Article IV., Chapter 17.52 - Hillside Development	Slope Zoning Limitations - Slope Zones 1–5 based on % slope; Density Limitations based on % slope calculations; general overlay zone divided into slope zones	Yes	Hillside Overlay Map 2007	Transfer of development credits; Buildable land based on % slope (no building on slopes greater than 30%)
Redlands	Yes	2014	City Code, Title 18 Zoning Regulations, Chapter 18.138 - HD Hillside Development District	Any parcel with an average cross slope of 15% slope or greater	No	–	Buildable land based on % slope (18.138.050 - Slope Density Requirements)
Rialto	No	–	–	–	–	–	–
San Bernardino	Yes	2013	Development Code, Title 19 Land Use/Subdivision Regulations, Article II. Land Use Zoning Districts, Chapter 19.17 - Hillside Management Overlay District	Generally, 15% slope or greater; Overlay District (Zone)	Available for purchase	Contact City or submit online request	Density development standards (units per acre) based on % slope; Density Transfer from one slope category to a lower slope category
Twentynine Palms	Yes	2004	Development Code, Regulations and Standards, Chapter 19.64 - Hillside Grading, Clearing, and Plant Removal	30% slope or greater	Yes	Preservation Overlays Map 2012	Hillside grading and clearing requirements rather than actual preservation regulations
Upland	No	–	–	–	–	–	–

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**Table 2-5
City and Town Hillside Ordinance Development Codes that Provide for Hillside Protections, San Bernardino County.**

Jurisdiction	Hillside Ordinance	Year	Ordinance Code Title and Number	Trigger for Ordinance	Map Available	Map Location	General Description
Victorville	Yes	2014	Code of Ordinances, Title 16 Development Code, Chapter 3 Zoning and Land Use Regulations, Article 18, Section 16-3.18 - Slope Protection District	Slope of 10 over 1 or greater	No	–	Grading, plant materials, and sprinkler system guidelines for slopes but no conservation areas.
Yucaipa	Yes	2014	Development Code, Division 7 General Design Standards, Chapter 11 - Regulation of Hillside and/or Ridgeline Developments	15.1% slope or greater	No	–	Buildable land based on % slope (Section 87.1135)
Yucca Valley	Yes	2014	Town of Yucca Valley General Plan, Chapter 2. Land Use and Chapter 5. Open Space and Conservation	30% slope or greater; Hillside Residential Zone	Yes	General Plan Land Use Map (Hillside Residential)	Hillside Development Ordinance described in General Plan but not currently described in Town Municipal Code; Measures in General Plan: Chapter 2, low density development (1 du/20 acres); Chapter 5, Policy OSC 8-6

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3 DATA GAPS

This section identifies and documents gaps in existing data useful in preparing a habitat conservation framework strategy. Data gaps refer to environmental resource information that is lacking. Data gaps may include information that exists but is not readily available and new information that needs to be collected or generated to fill data gaps. An evaluation of *data gaps* differs from a *gap analysis*; a gap analysis evaluates the distribution of biological resources relative to the distribution of protected lands to identify gaps in environmental resource protection (see Section 4.3.2 for a preliminary gap analysis).

Data useful in developing a conservation strategy include natural resources, ownership, and land management information that identifies important ecological/biological communities and functions in the context of existing or future social and economic conditions or limitations. Relevant conservation planning GIS data includes, but is not limited to: vegetation and habitat communities, species occurrences, species habitat models, modeled wildlife corridors and linkage areas, topographic data, hydrological data, soils classifications, conserved lands and open space areas (federal, state, county, and local areas), significant areas for habitat and/or species, ownership boundaries, land uses, development areas, management activities, and management plan boundaries.

Data gaps are existing via several ways. The data may not exist, it may not be accessible, it may not be completed, or its accuracy may not be sufficiently evaluated. Data gaps for this conservation framework study are expected as the scope of the study was not intended to obtain all information, but instead was intended to provide a documentation of data gaps to inform future efforts. The data gaps identified thus far are associated with incomplete information pertaining to the following:

- Biological Resources: incomplete survey data.
- Open Space and Conservation Areas: incomplete information regarding the location/boundaries, acreages, and/or management plans of open space and park areas, conservation/preserve areas, conservation easements for mitigation, and HCP/NCCPs which were established for public use, protection of habitats and species, or as mitigation for impacts to species, habitat, and/or water resources associated with development projects.
- Outreach to Jurisdictions and Agencies: incomplete response from all cities/towns in the County and agencies and/or incomplete or unavailable data for conservation lands, activities, or planned mitigation needs.

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Data gaps were considered when identifying issues, opportunities, and concerns associated with current approaches to habitat conservation and were used to help form recommendations for the next steps needed to implement the Conservation Framework (see Section 7 Next Steps). A brief summary discussion of the primary data gap types are presented below and the existing data gaps are listed in Table 3-1.

Biological Resources

Biological resources databases in the existing data inventory (Table 2-2) contain data gaps which include incomplete habitat and/or species survey information. Additional site-specific and/or sub-regional surveys will be needed to fill in data gaps for development projects, potential new mitigation areas, or conservation planning needs. The survey and/or biological and habitat information collected through this study does not represent complete coverage for all of San Bernardino County therefore new surveys may be needed in the future to collect site-specific information for detailed conservation planning analyses. Alternately, species habitat modeling (e.g., California Wildlife Habitat Relationships models) may be a potential option for some larger-scale conservation planning analyses of species' ranges countywide (see Section 4.2.1 for a discussion of species distribution models). Most biological point location datasets from species occurrence surveys (e.g., CNDDDB, USFWS species occurrences) only report positive detections therefore, the lack of records does not mean the species is absent. Many site-specific evaluations for listed or sensitive species will likely require additional surveys. Similarly, most species occurrence databases do not include current survey information. Although historic species distribution data is valuable for conservation planning, current location information of species would be necessary for most site-specific projects or area evaluations (e.g., evaluation of a potential mitigation site). The quality of metadata associated with databases varies widely from well-populated to a complete lack of information regarding survey methods, timing, location, or other important survey variables. Therefore, unknown or insufficient metadata results in questionable data validity or accuracy. Additionally, many of the biological resources datasets are too course-grained for site-specific project planning analyses.

Open Space and Conservation Areas

GIS databases are incomplete or lacking for some known open space and conservation areas including the location or boundaries and acreages for open space and park areas, conservation/preserve areas, conservation easements for mitigation, and HCP/NCCPs which were established for public use, protection of habitats and species, or as mitigation for impacts to species, habitat, and/or water resources associated with development projects. The data is either not available or is in hard copy format only. Hard copy format data is considered a data gap because this information must be digitized into a GIS format and verified for accuracy prior to

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use for conservation planning. For example, through this study, it was determined that at least ten cities/towns and four environmental groups are known to be responsible for proposed or existing conservation areas with easements however the locations and boundaries were not available in hard copy and/or GIS format. In addition, management, monitoring, and funding plans associated with most of these conservation areas are not readily available. Though information is available in table format, most of the currently planned and approved HCPs/NCCPs in San Bernardino County are not available in GIS format.

Outreach to Jurisdictions and Agencies

Information requested through outreach efforts to jurisdictions and agencies (see Section 2) resulted in acquiring valuable additional information however response from these entities was not complete or hard copy or GIS format data was not readily available to allow for file sharing. For example, conservation-related information was requested but no response received from a total of 7 of the 24 incorporated cities/towns in the County. Dudek did not receive GIS format land use zoning data reported in General Plans for all of the cities/towns. Also, conservation areas that were set aside as mitigation for development project impacts to species and state (1600 Streambed Alteration Agreement, Section 401 Water Quality Certification) or federal (Section 404 Clean Water Act) waters through permits is not available or in GIS database format.

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Table 3-1

Existing Data Gaps for the SANBAG Countywide Habitat Preservation/Conservation Framework Study, San Bernardino County

Source Category	Source	Data or Information Type	Description of Data Gap
Federal	Bureau of Land Management	DRECP Grazing Allotment Retirements as Mitigation	Data not available
Federal	US Fish and Wildlife Service (USFWS)	San Bernardino County HCP Boundaries	Complete data of all approved HCP boundaries are available in table format (USFWS 2014) but GIS format is lacking for most HCPs/NCCPs. A total of 20 HCPs/NCCPs have been approved by the USFWS in San Bernardino County. GIS data is currently available for 1 planned HCP (DRECP) and 1 approved HCP (West Mojave Plan). One HCP (Upper Santa Ana River HCP) was digitized into GIS format from a hard copy map by Dudek.
Federal	US Forest Service (USFS)	Mining Projects - Land Acquisition	Quarry Mining Projects: Butterfield and Sentinel Quarries; Mitsubishi Cement Corporation South Quarry Plan of Operation; data not currently available (pending release of Final EISs)
Federal/ City or Town	USFWS/ Colton	West Valley HCP (Delhi Sands Flower-loving Fly)	Hard copy only
Federal/ City or Town	USFWS/ Highland	Santa Ana River HCP ("River Plan")	Hard copy only
Federal/ City or Town	USFS/ Big Bear Lake	Big Bear Lake Landfill Land Swap	Data not available
State	California Department of Parks and Recreation	San Bernardino County State Parks/State Recreation Areas	Hard copy maps available online; follow up contact and information gathering needed to obtain GIS shapefiles for the following areas: Providence Mountains SRA, Silverwood Lake SRA, Wildwood Canyon Park Property
County	Flood Control District	County Flood Control Mitigation Lands	Data not available; mitigation lands are proposed only (not finalized)
County	Local Agency Formation Commission	Mitigation Lands	Excel spreadsheet with information on mitigation lands associated with jurisdiction Specific Plans. Received on May 13, 2014 by Dudek via email from Samuel Martinez, LAFCO.
County	Land Use Services (LUS)	Retired Mineral and Grazing Lands	Data not available
County	LUS	Vacant Land Survey - Heat Map	Some GIS data available; follow up information is needed to clarify 2013 survey data/reporting
County	Public Works	Mitigation Lands	Data not available/provided
County	SANBAG	Future Project Impacts and Mitigation Needs	Data not available/provided

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Table 3-1

Existing Data Gaps for the SANBAG Countywide Habitat Preservation/Conservation Framework Study, San Bernardino County

Source Category	Source	Data or Information Type	Description of Data Gap
County	SANBAG	Mitigation Lands for SANBAG Projects - current mitigation areas and future mitigation needs	Hard copy table only; No boundaries or locations provided; Hard copy table lists the known mitigation areas in San Bernardino County. The table is organized by SANBAG project and the corresponding type, acreage, and location of mitigation. Included are also future potential mitigation needs. Received from VCS Environmental on July 7, 2014.
County	SCAG	Natural Resources Inventory - GIS Database (version 8/2014)	Electronic spreadsheet only; need to obtain relevant GIS shapefiles
County	Special Districts	Proposed Joshua Tree Preserve	Data not available/provided
County	Transportation	Caltrans Projects - Mitigation Areas	Data not available/provided
City/Town	All Cities/Towns	Land Use Zoning - Open Space	Hard copies available only
City/Town	Apple Valley	Town of Apple Valley HCP/NCCP Boundary	Draft HCP/NCCP therefore data not available until HCP/NCCP is final
City/Town	Apple Valley	Conservation Easements and Mitigation Lands	Mitigation lands planned on BLM lands in association with draft HCP/NCCP but data not available until HCP/NCCP is final
City/Town	Apple Valley	Open Space Areas	Planned in association with draft HCP/NCCP but data not available until HCP/NCCP is final
City/Town	Big Bear Lake	Habitat Conservation - Possible Sites	Digitized from hard copy; QA/QC verification needed
City/Town	Big Bear Lake	Shay Pond - Unarmored Threespine stickleback (<i>Gasterosteus aculeatus williamsoni</i>) habitat	Occupied habitat for federally endangered fish species presents a conservation opportunity (currently not protected)
City/Town	Chino	Conservation Easements and Mitigation Lands - New Model Colony project	Data not available/provided
City/Town	Chino	Open Space Areas	Data not available/provided
City/Town	Chino Hills	Conservation Easements and Mitigation Lands	Data not available/provided for City-owned and HOA-owned mitigation lands; Chino Hills State Park
City/Town	Chino Hills	Open Space/Parks	Data not provided; Chino Hills State Park; 3,000 acres of City-owned open space; 2,000 acres HOA-owned open space

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Table 3-1

Existing Data Gaps for the SANBAG Countywide Habitat Preservation/Conservation Framework Study, San Bernardino County

Source Category	Source	Data or Information Type	Description of Data Gap
City/Town	Chino Hills	Mitigation Bank - Proposed Land Veritas Mitigation Bank	Data not provided
City/Town	Colton	Conservation Easements and Mitigation Lands	Data not available/provided
City/Town	Colton	Open Space Areas	Data not available/provided
City/Town	Colton	Planned Large Developments	Data not available
City/Town	Fontana	Conservation Areas	Digitized from hard copy; QA/QC verification needed
City/Town	Fontana	Delhi Sands Flower-loving Fly Preserve/Jurupa Hills and Mary Vagel Conservation Area	Hard copy only
City/Town	Grand Terrace	All conservation information	No Response or Input from City/Town
City/Town	Hesperia	Conservation Easements and Mitigation Lands	Data not available/provided; 11 acres of 404 permit mitigation lands associated with development
City/Town	Hesperia	Open Space/Parks, Mitigation Banks, Planned Large Developments	Data not provided
City/Town	Highland	Conservation Easements and Mitigation Lands	Data not available/provided
City/Town	Highland	Open Space Areas	Data not available/provided
City/Town	Loma Linda	All conservation information	No Response or Input from City/Town
City/Town	Montclair	All conservation information	No Response or Input from City/Town
City/Town	Needles	All conservation information	No Response or Input from City/Town
City/Town	Ontario	Conservation Easements and Mitigation Lands - New Model Colony project	Hard copy only
City/Town	Rancho Cucamonga	Conservation Easements and Mitigation Lands	Data not provided; north part of City will have mitigation lands set-asides due to fault zone and steep terrain area
City/Town	Rancho Cucamonga	Open Space/Parks - Cucamonga Canyon	Data not provided for Cucamonga Canyon
City/Town	Rancho Cucamonga	Planned Large Developments - Corey Ranch project	Data not provided
City/Town	Redlands	Santa Ana River HCP ("River Plan")	Data not available/provided

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Table 3-1

Existing Data Gaps for the SANBAG Countywide Habitat Preservation/Conservation Framework Study, San Bernardino County

Source Category	Source	Data or Information Type	Description of Data Gap
City/Town	Redlands	San Timoteo Canyon and Hillside Conservation Areas	Data not available/provided
City/Town	Redlands	Open Space Areas - San Timoteo Canyon and Greenbelt Areas Managed by Redlands Conservancy	Data not available/provided
City/Town	Rialto	All conservation information	No Response or Input from City/Town
City/Town	San Bernardino	All conservation information	No Response or Input from City/Town
City/Town	Twentynine Palms	All conservation information	No Response or Input from City/Town
City/Town	Upland	All conservation information	No Response or Input from City/Town
City/Town	Victorville	Land Use Gateway Specific Plan - Open Space	Hard copy only
City/Town	Victorville	Conservation Easements and Mitigation Lands	Data not available/provided; individual projects have mitigation lands but data is not available
City/Town	Yucaipa	Conservation Easements and Mitigation Lands	Data not available/provided; 80 acres associated with home site (zoned as Rural Living area)
City/Town	Yucaipa	Open Space/Parks	Data not available/provided for Open Space/Parks: Wildwood State Park; Wildwood Canyon City Park; Crafton Hills; data in GIS format is held by University of Redlands
City/Town	Yucaipa	Planned Large Developments	Data not available/provided; 60% open space associated with McDougal Brothers project
City/Town	Yucca Valley	Wildlife Corridors	Hard copy only; need to confirm if other GIS shapefiles depicting wildlife corridors are consistent with Yucca Valley adopted corridors
Resource Conservation District	Mojave Desert Resource Conservation District	Mojave River Habitat Restoration Areas - Invasive Species Removal Projects	Data not readily available/provided
Environmental Group	Center for Biological Diversity	Conservation Easements and Mitigation Lands	Data not readily available/provided
Environmental Group	Mojave Desert Land Trust	Mojave Desert - Inholdings Acquisitions for National Parks, National Preserve; Wildlife Linkage Areas	Hard copy maps available online

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Table 3-1

Existing Data Gaps for the SANBAG Countywide Habitat Preservation/Conservation Framework Study, San Bernardino County

Source Category	Source	Data or Information Type	Description of Data Gap
Environmental Group	National Parks Conservation Association	Conservation Easements and Mitigation Lands	Data not readily available/provided
Environmental Group	San Bernardino Mountains Land Trust	San Bernardino National Forest - Inholdings Acquisitions for Forest Open Space and Wildlife Habitat	Hard copy maps available online
Environmental Group	Transition Habitat Conservancy	West Mojave Desert - Transition Zone Habitats, Wildlife Corridor Habitats	Hard copy maps available online; information gathering needed for areas such as: Puma Canyon Ecological Reserve - Pinon Hills, Portal Ridge Wildlife Area- South-West Antelope Valley, Desert Wildlife Management Area - Kramer Junction
Environmental Group	The Nature Conservancy	Nature Preserves	Data not readily available; data layers needed for Preserves in San Bernardino County including: Big Morongo Canyon Preserve, Amargosa River Project (Conservation Lands)
Environmental Group	The Wildlands Conservancy	Conservation Projects, Land Acquisitions, Preserves and Reserves, Proposed National Monuments	Hard copy maps available online; follow up contact and information gathering needed to obtain GIS shapefiles for the following areas: Proposed Mojave Trails National Monument, Proposed Sand to Snow National Monument, California Desert Land Acquisition projects, Pioneertown Mountains Preserve, Whitewater Canyon Preserve, Mission Creek Preserve, Bluff Lake Reserve, Bearpaw Reserve, Oak Glen Preserve
Environmental Group	Various Mojave Desert Community Organizations	Conservation Efforts	Follow up contact and information gathering needed; Groups such as Mojave Conservation Community Collaborative (MC3), The Alliance for Desert Preservation, The Lucerne Valley Economic Development Association
Private	Vulcan Materials Company	Mining and Mineral Rights	Rights to mining for lands owned by Vulcan Materials Company. Information gap conveyed to Dudek on December 11, 2014 during Environment Element Group meeting by representatives from Vulcan Materials Company.

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4 CONSERVATION ANALYSIS

This section provides the conservation analysis for Countywide Habitat Preservation/Conservation Framework. This conservation analysis is intended to:

1. Frame the regulatory and planning context related to biological and open space conservation in order to facilitate the development of the principles and recommendations provided in Section 6 (Section 4.1)
2. Provide a landscape-scale summary of the biological resources in the County in order to provide context and focus the development of the principles and recommendations provided in Section 6 (Section 4.2).
3. Discuss considerations relevant to development of the Conservation Framework (Section 4.3).

4.1 Regulatory and Planning Context

The following is a description of the laws, regulations, policies, and planning pertinent to the preparation of the Conservation Framework.

4.1.1 Federal Regulatory and Planning Context

Federal Endangered Species Act

The Federal Endangered Species Act of 1973 (ESA), as amended, is administered by the US Fish and Wildlife Service (USFWS), for terrestrial plant and animal species, and the National Oceanic and Atmospheric Administration (NOAA) and National Marine Fisheries Service (NMFS) for marine and anadromous species. The ESA is intended to be a means to conserve endangered and threatened species, while also preserving the ecosystems that they rely on. The act defines an endangered species as “any species that is in danger of extinction throughout all or a significant portion of its range.” Under the ESA, it is considered unlawful to take any listed species, and “take” is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.”

The ESA allows for incidental take of listed species under Section 7 and Section 10 exemptions. Under Section 7, federal agencies that authorize, fund, or carry out actions that may result in take of listed species or destruction or adverse modifications of designated or proposed critical habitat must consult with the USFWS and/or NMFS. Section 10 exemptions apply to actions that do not require federal agency action other than the issuance of the incidental take permit, and these incidental take permits can be issued for listed species subsequent to the approval of a Habitat

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Conservation Plan (HCP). An HCP must specify the level of impact that will result from the taking, the steps that will be taken to minimize and mitigate the impacts, the funding necessary to implement the HCP, a discussion of alternatives, and any other necessary measures required by the Secretary of the Interior.

There have been 20 HCPs approved by the USFWS in San Bernardino County as of August 2014 (USFWS 2014; http://ecos.fws.gov/conserv_plans/). These approved HCPs were generally single project HCPs addressing single species issues. HCPs have been developed in the county to obtain take for Delhi Sands flower-loving fly (10 approved HCPs), San Bernardino kangaroo rat (6 approved HCPs), and desert tortoise (4 approved HCPs).

Several HCPs have been or are being planned in San Bernardino County.

- San Bernardino Valley-wide Multiple Species Habitat Conservation Plan (MSHCP): Planning was initiated for this multiple species plan in the valley portion of the County, but this effort is not currently being pursued in this form.
- West Mojave Plan: The West Mojave Plan, which covers the western portion of San Bernardino County in the desert region, was originally envisioned as a multiple species HCP and a Land Use Plan Amendment for BLM-administered lands. The HCP component of the plan was not approved as part of this planning effort, but the West Mojave Plan does serve as a land use plan amendment under the California Desert Conservation Area Plan (see below under Federal Land Policy and Management Act).
- North Fontana MSHCP: A planning effort initiated in 2004 concentrating on the northern portion of the City of Fontana, adjacent to the foothills of the San Gabriel Mountains. The plan anticipates build out of development into the remaining natural areas in north Fontana, and addresses the listed and sensitive species found in these areas.
- Town of Apple Valley MSHCP: An ongoing planning effort to develop a multiple species HCP being developed for the Town of Apple Valley and the Town's sphere of influence (SOI) area. The County has expressed support of this planning effort.
- Desert Renewable Energy Conservation Plan (DRECP): In October 2014, the public draft DRECP was released, which is a multiple species General Conservation Plan (i.e., a programmatic HCP), a Natural Community Conservation Plan (NCCP), and a BLM Land Use Plan Amendment. This multi-agency plan spans all or portions of seven counties in the desert regions of California, including the all of the desert portion of San Bernardino County. The DRECP would provide take authorization only for renewable energy and transmission related development, but the plan could serve as a framework for permit streamlining and a conservation strategy for the desert region of the County.

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The Natural Community Conservation Planning Act in Section 4.1.2 includes a discussion of NCCPs in the planning area.

Federal Land Policy and Management Act

The Federal Land Policy and Management Act of 1976, as amended, establishes public lands policy and management guidelines on public lands managed by the BLM. The Act includes land use planning, range management, rights-of-way, and designated management areas.

The California Desert Conservation Area Plan was approved in 1980 in accordance with the Federal Land Policy and Management Act. The CDCA Plan provides for multiple use management of approximately 25 million acres, of which 10 million acres are managed by the BLM, falling within San Bernardino County along with six other counties. The CDCA Plan has been amended numerous times, and is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The CDCA Plan aims to protect biological, geological, paleontological, scenic, and cultural resources while allowing for a variety of land uses and activities.

Several major amendments to the CDCA Plan have been made in San Bernardino County, including the BLM Northern and Eastern Colorado Desert Coordinated Management Plan (NECO), BLM Northern and Eastern Mojave Desert Management Plan (NEMO), and the BLM West Mojave Plan (WEMO). The proposed DRECP (see description above under ESA) would also serve as a major Land Use Plan Amendment in the CDCA area.

Omnibus Public Land Management Act of 2009

The Department of the Interior and BLM established the National Landscape Conservation System (NLCS) in 2000, to provide coordinated protection for the BLM's conservation lands. The Omnibus Public Land Management Act of 2009 then congressionally established the NLCS, to "conserve, protect and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of future generations." Inclusion in the NLCS does not provide any new legal protections for the lands already designated as national monuments, conservation areas, wilderness study areas, scenic trails, or historic trails designated as a component of the National Trails System, components of the National Wild and Scenic Rivers System or components of the National Wilderness Preservation System; however, it provides a single system to manage and organize conservation lands on a national scale.

US Forest Service

The San Bernardino National Forest lies in southwest San Bernardino County, dividing the deserts from the valley communities. The US Forest Service has jurisdiction over these lands and

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manages them conservatively to ensure their long-term sustainability. The land management strategy employed by the Forest Service follows their “multiple use” doctrine, and includes suitable commodity and commercial uses (USDA 2005a). Uses and actions proposed on National Forest lands ultimately occur at the discretion of the US Forest Service. The Land and Resource Management Plan for the San Bernardino National Forest emphasizes sustainable use through the delineation of “land use zones” that identify allowable activities by zone, demonstrating the intent of multiple use management (USDA 2005b). The US Forest Service manages Angeles National Forest, which edges into San Bernardino County, in a similar fashion.

Other Federal Laws, Regulations, and Policies Relevant to Resource Protection and Conservation Planning

Numerous other federal laws, regulations, and policies are relevant to resource protection and conservation planning in the planning area, including but not limited to the following:

- Migratory Bird Treaty Act (USFWS)
- Bald and Golden Eagle Act (USFWS)
- National Environmental Policy Act (Environmental Protection Agency [EPA])
- Wilderness Act
- Clean Water Act (EPA)
- Wild and Scenic Rivers Act
- BLM special-status species policy
- Executive Order 13112 on invasive species

4.1.2 State Regulatory and Planning Context

California Endangered Species Act

The California Endangered Species Act, administered by the California Department of Fish and Wildlife (CDFW), prohibits the take of plant and animal species designated by the California Fish and Game Commission as endangered, threatened, or candidates for listing as endangered or threatened in the State of California. State statutes enforced by the CDFW for the implementation of the California ESA are set forth in the California Fish and Game Code and Title 14 of the California Code of Regulations. The California Fish and Game Code (CFGC) defines “take” as, to “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill” (California Fish and Game Code, Section 86). The CFGC prohibits the take of any state listed species without an incidental take permit from the CDFW or the authorization

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from the director providing that the incidental take permit provided by the USFWS under the Federal ESA is consistent with the California ESA. CFGC Section 2053 provides that it is impermissible for state agencies to approve projects that will “jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy.”

The California ESA authorizes incidental take of endangered, threatened, or candidate species given that take is incidental to otherwise lawful activity and other specific criteria are met. Take of fully protected species can be authorized if the species is conserved as a covered species under and approved NCCP.

Natural Community Conservation Planning Act

The Natural Community Conservation Planning Act (1991) provided the statutory framework for the creation of NCCPs, which provide long-term, landscape scale protection for natural vegetation communities and wildlife diversity, while allowing for continued permissible use and expansion of compatible land uses. The NCCP program supports collaborative planning and approval by involving local governments, state and federal agencies, environmental organizations, landowners, and members of the public. The NCCP framework is meant to support the provision of regional and subregional protection for species that inhabit designated natural communities. The program attempts to avoid the gridlock sometimes caused by the listing of species by planning regional conservation measures that focus on the long-term stability of wildlife and plant communities, while including key stakeholders in the process. Through an approved NCCP, incidental take authorization would be allowed for covered species whose conservation and management is provided for under the plan. The Town of Apple Valley MSHCP and the DRECP, as described above under the federal Endangered Species Act, are the only NCCPs currently being planned in San Bernardino County.

Other State Laws, Regulations, and Policies Relevant to Resource Protection and Conservation Planning

Numerous other state laws, regulations, and policies are relevant to resource protection and conservation planning in the planning area, including but not limited to the following:

- California Environmental Quality Act
- California Fish and Game Code: Lake and Streambed Alteration Agreement
- California Fish and Game Code: 3511, 3503, 3513

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4.1.3 Regional and Local Regulatory and Planning Context

San Bernardino County General Plan

The County of San Bernardino General Plan Conservation Element (County of San Bernardino 2007) identifies the desert, mountain, and valley as regions of biological habitat throughout the County. Vegetation communities within the valley region predominantly consists of chaparral, coastal sage scrub, deciduous woodlands, grasslands, and wetlands vegetation types in undeveloped areas. In addition, there are other vegetation communities in the valley region of the County that are also of biological importance including alkali wet meadows, pebble plains, limestone substrate, walnut woodland, Joshua tree woodland, perennial springs, and riparian woodlands. The Santa Ana River watershed is a key wetland and riparian habitat area with important biological resources within the Day Creek, Etiwanda Creek, Sevaine Creek, Lytle Creek, Cajon Wash, San Timoteo Wash, and Mill Creek. In the mountain region of the County, 14 Areas of Special Biological Importance (ASBIs) have been identified with some of the best habitat located within the San Gorgonio Mountain area. The desert region also has 11 designated Areas of Critical Environmental Concern (ACECs), designated Critical Habitat, Desert Wildlife Management Areas (DWMS), the Joshua Tree National Park, and the Mojave National Preserve. The Nature Conservancy also recognizes areas for protection and has designated the Morongo Valley area as the Big Morongo Canyon Preserve.

The County's Conservation Element contains numerous policies for the preservation and conservation of important biological resources. These involve coordinating with local, state, and federal agencies to create and maintain GIS systems for important biological resources including biological and open space overlays, identifying appropriate biological resource buffering techniques and the creation of mitigation banks and conservation easements, and requiring development to survey and mitigate for biological resources. Specifically, in the mountain region the County encourages creating and utilizing biological zoning overlays to protect natural features and biological resources, developing guidelines for protecting eagle perch trees and spotted owl nest trees, and encouraging development clustering to avoid impacts to biological resources. The County's Conservation Element also contains policies intended to maintain the long-term health of forest environments as well as the preservation and translocation of existing vegetation especially Joshua trees and Mojave yuccas. The County also encourages the preparation of and participation in regional HCPs including those for desert tortoise and Mojave ground squirrel that could involve the use of developer fees, land ownership transfers, and conservation easements. The Conservation Element also promotes energy development in the desert in concert with implementation of the DRECP. San Bernardino County General Plan Land Use Designations are shown in Table 4-1 and on Figure 4-1.

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**Table 4-1
San Bernardino County General Plan Land Use Designations**

Land Use Designation	Desert Region	Mountain Region	Valley Region	Total
Agriculture	51,883	5,684	14,695	72,262
Commercial and Services	39,230	835	21,398	61,463
General Office	1,155	67	528	1,750
Heavy Industrial	5,708	88	11,672	17,468
Light Industrial	22,145	15	11,069	33,230
Military	3,111	236	6,548	9,895
Mixed Commercial and Industrial	9,207	88	6,166	15,461
Mixed Urban	30,566	5,687	17,932	54,184
Open Space and Recreation	10,862,640	499,501	38,846	11,400,987
Other Residential	740,479	19,763	17,265	777,508
Single Family Residential	139,661	20,483	102,245	262,389
Special Use Facilities	10,259	697	6,308	17,263
Transportation, Communication, and Utilities	7,324	672	14,292	22,289
Unknown	10,705	22	3,076	13,803
Vacant	-	-	1,991	1,991
Water	-	-	210	210
Total	11,934,073	553,838	274,241	12,762,152

Source: Southern California Association of Governments (SCAG 2008) summary data for San Bernardino County General Plan land use designations

Notes: The general plan land use dataset covers the entire county; however, in many road right-of-way areas, there is no land use designation. Therefore, the total acreage of the County planning area reported here is less than the actual acreage of the planning area reported in other tables in this section. Military bases in the planning area are largely categorized as Open Space and Recreation in this dataset. See Table 4-2 for a summary of land ownership within the planning area to get a more accurate representation of military facilities in the planning area.

SCAG/SANBAG Regional Comprehensive Plan

The SCAG (Southern California Association of Governments) Regional Comprehensive Plan provides regional problem solving advisory for issues associated with traffic, air quality, open space and habitat, housing, and water, among other things. SCAG incorporates 188 local governments from Imperial, Orange, Los Angeles, Riverside, San Bernardino, and Ventura counties into a regional planning dialogue. This collaborative effort also incorporates key stakeholders into the integrated planning process. The Plan advises large scale sustainability and encourages balancing resource conservation with economic stability and social welfare. By laying out a decision making framework, the tenets of the Plan are intended to be considered when local governments update their General Plans or make adjustments to municipal codes and incentive programs, giving them a broader perspective of the effects of their actions.

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Local Jurisdictions Policies and Ordinances

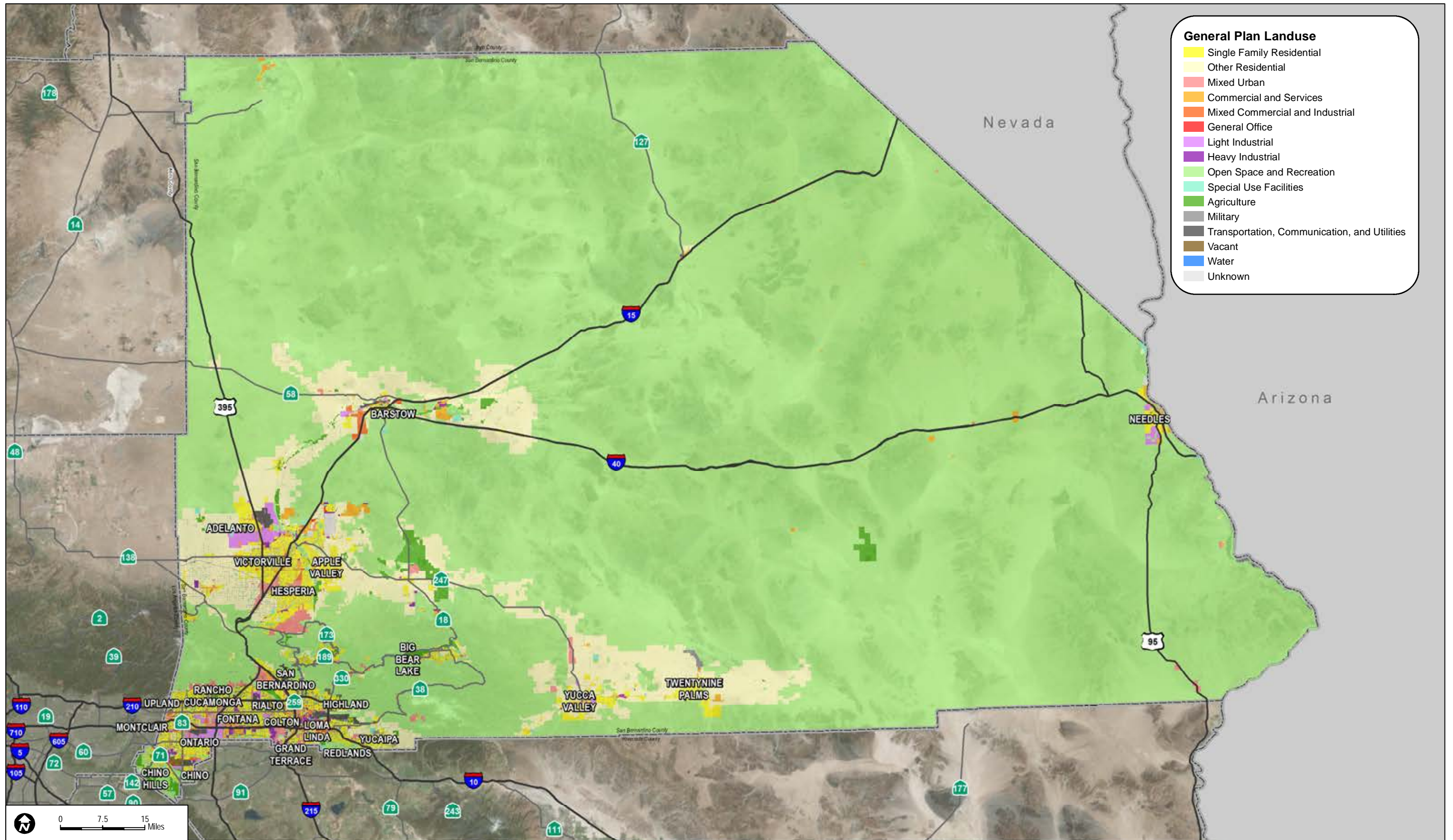
The following provides a summary of the policies and ordinances of local jurisdictions that are relevant to developing a habitat preservation/conservation framework. See also Section 2 of this report for the specific policies and ordinances related to open space for each jurisdiction.

City of Adelanto

The City of Adelanto's General Plan Conservation/Open Space Element (City of Adelanto 2000) identifies a Conservation/Open Space Plan to integrate both natural and man-made systems within the General Plan. Open space policies focus on maintaining natural and existing drainage channels as a means of linking parks and recreational facilities through a network of trails. These drainage channels will be required to be natural (non-concrete) to the extent feasible. Long-term goals and strategies include developing a comprehensive plan for parks, recreation, and open spaces. Resources identified within the Conservation/Open Space Element include the Mojave River Corridor and Fremont Wash. Areas identified for conservation are designated as Open Space on the Land Use Map.

Town of Apple Valley

Apple Valley has four categories of open space land use designations: (1) preservation of natural resources, (2) resource management, (3) recreation, (4) public health and safety (Town of Apple Valley 2009). The first category is of importance for conservation analysis as it is utilized for protection of scenic resources, plant and wildlife resources (including critical habitat), ecological reserves for scientific study, hillside lands (and slopes greater than 15%, see Section 9.71.060 of Development Code), riparian areas, and trails. The General Plan Exhibit III-3 includes hillside ordinance areas. Conservation of these resources will be implemented through the Town of Apple Valley Multiple Species Habitat Conservation Plan (Apple Valley MSHCP). Significant lands and resources are to be identified in the Apple Valley MSHCP and monitored and maintained on an ongoing basis. In order to provide for protection, conservation easements would be obtained through the necessary agencies.



General Plan Landuse

- Single Family Residential
- Other Residential
- Mixed Urban
- Commercial and Services
- Mixed Commercial and Industrial
- General Office
- Light Industrial
- Heavy Industrial
- Open Space and Recreation
- Special Use Facilities
- Agriculture
- Military
- Transportation, Communication, and Utilities
- Vacant
- Water
- Unknown



SOURCE: BING Maps 2014; SCAG 2008

SANBAG Countywide Conservation Framework

FIGURE 4-1
General Plan Land Use

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City of Barstow

Many of the recreational and open space resources are not under direct control of the City of Barstow (City of Barstow 1997). Parks and recreational facilities are controlled by the Barstow Park and Recreation District and open lands used for recreation are under the control of the Bureau of Land Management. The Barstow Park and Recreation District maintains a 510 square mile region which includes the City of Barstow and surrounding unincorporated areas. Methods of implementing conservation goals are identified in the Recreation and Open Space Element policies. Barstow aims to ensure that large utility easements remain as large areas of open space. Like other jurisdictions, Barstow identifies the importance of a Mojave River Corridor Special Treatment Area for preservation. Plan implementation would involve a multi-jurisdictional effort to develop a multiple use recreation plan for existing and future parks and recreation lands.

City of Big Bear Lake

Big Bear Lake does not designate areas as open space on land use or zoning maps (City of Big Bear Lake 1999). However, some areas have been set aside for conservation and preservation. Over 1,300 acres near Baldwin Lake have been set aside with portions owned by the State and Natural Heritage Foundation (NHF). NHF also owns other conservation sites including Stanfield Marsh, Moonridge pebble plains, and Rathbun Creek. Much of NHF-owned land is for the protection of sensitive species and habitat while still providing for recreational opportunities. Long-term plans include working with the Municipal Water District in developing the Stanfield Marsh Waterfowl/Wildlife Improvement Project, supporting NHF in conservation and preservation efforts within and around Big Bear Lake, and potentially seeking to acquire land for the means of maintaining open space. Such land acquisition should occur if the property is located within a scenic viewshed, contains sensitive or protected habitat or species, and provides access or linkages to significant open space or habitat. The City also has development standards for “slope density” in Section 17.09 of its Development Code which is based upon a ratio between slope and lot coverage. No development may occur on slopes 40% or greater.

City of Chino

The City of Chino aims to maintain long-term preservation of open space and conservation of agricultural lands (City of Chino 2010). The City has six categories of open space: (1) preservation of natural resources, (2) managed production of resources, (3) outdoor recreation, (4) public health and safety, (5) support of the mission of military installations, and (6) protection of Native American place, features, and objects. The City identifies that the southern portion of the City supports greater biodiversity due to larger areas of unimproved lands including the San Ana River drainage basin, Prado Regional Park, Prado Lake, Subarea 1, and

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The Preserve. There are a total of 40 special-status plant species and 57 special-status animal species observed in the City. Conservation planning could be achieved through restoration efforts on undeveloped areas of the southern portions of the City and the creation of conservation and preservation easements throughout the City. Easements would be chosen based upon their relation to important biological resources, corridors, and general habitat value. Programs would be intended to be a simple process and provide some form of benefit to land owners.

City of Chino Hills

The City of Chino Hills is currently in the process of updating its General Plan (City of Chino Hills 2014). The update will address various land use delineations. The City has an estimated 3,420 acres of public open space, 1,152 acres of private open space, 283 acres of public park, 7,170 acres of agricultural land, and 7,366 acres that comprise the Chino Hills State Park. Land use policy changes include clustering of development, specifically in the agricultural and rural context, to protect environmental resources. Section 16.08 of the City's Municipal Code sets forth requirements for development standards regarding ridgeline and hillside (slopes 15% or greater) development. In summary, these ordinances provide that prominent and identified ridgelines and knolls shall not be developed, strict development standards, and architectural standards. Within the municipal code are numerous figures depicting hillside areas, development standards, and architectural examples. Conservation planning efforts could be focused on land within and surrounding Chino Hills State Park and public open space. There may be potential for land acquisition of private open space or development of a program to incentivize land owners to conserve private open space.

City of Colton

The City of Colton has four factors that affect their use of an open space land use designation: (1) urban areas, (2) environmental factors, (3) conservation factors, and (4) public ownership and permanent open space (City of Colton 1987). The City falls short by approximately 87 acres when compared to providing a minimum 5 acres per 1,000 persons. Long-term forecasts indicate that there will be a need for an additional 237 to 262 acres of improved parks. The City identifies that permanent open space can be sought through public ownership; for instance, the Riverwash area is mostly owned by the San Bernardino County Flood Control District and will remain a permanent open space area. Conservation policies call for strict hillside development standards, a wide range of active and passive recreational land uses, and conservation of open space to protect natural resources including water supply. Planning efforts can be focused on establishment of conservation easements on lands that contain significant natural resources such as scenic vistas, cultural resources, hillsides, and sensitive biological resources. Such efforts, if jointly used for passive or active recreation may also help the City's parkland provision deficit.

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Section 18.10.150 of the City's Municipal Code identifies a five foot hillside setback requirement for all 4:1 slopes greater than five feet in height.

City of Fontana

The City of Fontana is evolving from an agricultural and industrial base to a bedroom community and seeks to maintain natural and open space as the City becomes increasingly urbanized through implementation of its conservation policies (City of Fontana 2003). Open space is divided into three categories: (1) open space, including publicly owned land on steep slopes of the foothills; (2) recreation facilities, including local and regional parks; and (3) public utility corridors. The City initiated the planning of an MSHCP for the northern portions of its jurisdiction (see above under federal Endangered Species Act). Conservation planning opportunities exist within Jurupa Hills and the foothills north of Interstate 15 (which function as a wildlife corridor). Eight plant communities exist within the City: (1) northern mixed chaparral, (2) Riversidean Sage Scrub, (3) Riversidean alluvial fan sage scrub, (4) California Walnut Woodland, (5) Southern Cottonwood-Willow Riparian Forest, (6) Southern Sycamore-Alder Riparian Woodland, (7) non-native annual grasslands, and (8) ornamental woodlands. The Open Space and Conservation Element also provides an extensive list of occurring and potentially occurring species, which are found in the highest concentrations in and around alluvial fans and streamside woodlands. Conservation efforts should focus on open space within the San Gabriel Mountains and Jurupa Hills by applying the Open Space designation and obtaining full or partial City ownership to maintain the land. The City zoning code has a Hillside Overlay District that is initially triggered on slopes 10% or greater; the City has separate requirements and development standards at every 5% slope interval up to a 25% slope.

City of Grand Terrace

The City of Grand Terrace has a total of 100.2 acres of existing improved parks and joint-use recreational school sites (City of Grand Terrace 2010). Open space also includes undeveloped hillsides of Blue Mountain, public utility corridors, and the Santa Ana River Floodplain. The City identifies the importance of the western steep slopes of Blue Mountain as a biological resource which accounts for the majority of the 600 acres of undeveloped land within its jurisdiction. The City owns only 25 acres of the Blue Mountain hillside as an undeveloped park. Conservation opportunities exist across the hillside of Blue Mountain as identified in the Open Space and Conservation Element; the City has policies regarding the potential of developing the Grand Terrace Wilderness Park on the hillside of Blue Mountain as an active recreation area for biking, hiking, and picnicking. Beyond Blue Mountain, conservation planning opportunities exist within utility easements and the Gage Canal. The Residential Hillside District zone within the City is intended to limit development along hillsides to one dwelling unit per acre.

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City of Hesperia

The City of Hesperia currently has 2,126 acres of designated open space that include washes, bluffs, the Mojave River, parks, equestrian facilities, and trails (City of Hesperia 2014). The City has identified that the range and habitat for the Desert Tortoise, Mohave Ground Squirrel, and Arroyo Toad exist within its jurisdiction. Acknowledging this, the City has implemented goals and policies aimed at preserving and conserving open space permanently for the benefit of sensitive species. Conservation planning could focus on the various washes that exist throughout the City which encompass approximately 1,512 acres. City policies call for the implementation of the Transfer of Development Rights Program to aid in annexation of open space land to City ownership in order to permanently preserve the land. Section 16.40 of the City's Municipal Code sets forth provisions for Hillside Development Regulations; as defined by the City, hillsides are areas which have a 20% slope or greater. Development density is determined by slope, with no development allowable on 40% slopes or greater.

City of Highland

The City of Highland is bordered by the San Bernardino Mountains and San Bernardino National Forest and places emphasis on preserving scenic views by enforcing hillside development standards (City of Highland 2006). The City limits are part of two existing conservation planning areas and proposed planning areas including the Upper Santa Ana River Wash Land Management and Habitat Conservation Plan and the San Bernardino Valley-wide Multi-Species HCP. Additional conservation planning efforts should work with the existing HCPs within the City. In order to coordinate with these plans, the City has various policies aimed at maintaining and protecting significant biological resources which includes tree preservation ordinances, protecting wildlife corridors, and preserving native and sensitive vegetation. Further conservation efforts could include greater implementation of the Multi-Use Trail Master Plan as a means to provide regional linkages between open spaces and a method for dedication of land from private development. Section 16.40.420 of the City's municipal code provides hillside development regulations for all areas with a 10% slope or greater. Development on slopes 25% or greater is generally discouraged.

City of Loma Linda

The southern one-third of the City of Loma Linda, known as the South Hills, comprises the majority of the natural open space within the City (City of Loma Linda 2009). Agricultural lands and parks also fall under the City's category of open space. The City has a strict Hillside Conservation Ordinance in which development is subject to specific performance standards to ensure the hillside is preserved. Conservation planning could occur through the implementation

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of the Riding and Hiking Trails Plan that can link open space with a network of trails and paths. Within the City's sphere of influence, approximately 1,910 acres of land has been designated as critical habitat for the California gnatcatcher. The San Timoteo Wash provides critical habitat for the San Bernardino Kangaroo Rat. Conservation efforts could work through the General Plan policies that focus on preserving critical habitats, wildlife movement corridors, and hillside conservation. Section 20.12 of the City's municipal code defines Hillside Areas Preservation within the City. General Plan Land Use Figure 2.1 shows the various hillside zones that allow different densities and have different development standards.

City of Montclair

The City of Montclair currently has 48.7 acres of park, 105 acres of flood control facilities, and 177 acres of agricultural lands (City of Montclair 1999). Conservation efforts within the City could work through improving existing and constructing future park facilities. Expansion of open space areas could be achieved through implementation of park fees to acquire lands and utilization of water retention basins, vacant parcels, and utility right-of-ways for open space. Coordination with the Chino Basin Water Conservation District, the San Bernardino County Flood Control District, and other agencies is a key for open space conservation efforts. For example, one of the flood control areas previously served as a "Wilderness Park."

City of Needles

No general plan information related to open space or conservation planning is available for the City of Needles.

City of Ontario

The City of Ontario General Plan Environmental Resources Element (City of Ontario 2010) describes the built-out nature of the City and its prevalent agricultural uses. The Delhi Sands flower-loving fly and the San Bernardino kangaroo rat are special status species that are known to occur within the City. The burrowing owl also exists in the natural and agricultural habitat of the City. Policy ER5-1 in the General Plan specifically states that the City supports the protection of biological resources through the establishment, restoration, and conservation of high quality habitat areas. As part of the New Model Colony development which was annexed into the City in 1999, the City established a mitigation fee that will collect funds to use in the Greater Prado Basin Habitat Conservation Program area (Riverside Land Conservancy 2008). The Greater Prado Basin area also includes the Cities of Chino, Chino Hills and Norco. The fees collected will go towards conservation efforts (land acquisition, restoration/enhancement, maintenance and

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management) in the Greater Prado Basin area and primarily support habitat for burrowing owls, raptors, waterfowl and Delhi Sands flower-loving fly.

City of Rancho Cucamonga

The City of Rancho Cucamonga has approximately 8,224 acres of open space that includes parks, undeveloped lands, conservation areas, and utility easements. Figure RC-1 of the General Plan identifies all open space, including hillside residential (City of Rancho Cucamonga 2014). A Hillside Management Overlay District applies to areas where land has a 15% of greater slope and a Conditional Use Permit is required for all uses in the overlay district. The Open Space Plan contains various policies directed towards preservation and conservation of the City's open space resources. There are several sensitive habitat areas including: alluvial fans (such as the Etiwanda Fan), alluvial fan sage scrub, and riparian and wetland areas. Conservation areas include the North Etiwanda Preserve (760 acres), Day Creek Preserve (200 acres), San Sevaine Preserve (137 acres), U.S. Forest Service Conservation Area (880 acres), and a 35 acre conservation area. Conservation efforts could work through coordination with other agencies that own areas of open space (such as County of San Bernardino, County Flood Control District, State Department of Fish and Wildlife, and U.S. Fish and Wildlife Service) to effectively manage and expand existing preservation and conservation areas.

City of Redlands

The City of Redlands has an approximate total of 738.1 existing and proposed park and open space land (City of Redlands 1995). The City has an Open Space Committee of the Redlands Parks Commission which was designated to recommend land for the acquisition of open space. Section 18.138 of the municipal code outlines regulations for hillside development; these regulations are triggered on land with a slope of 15% or greater, with the buildable land based on the percent of slope. Eight special status vegetation communities exist within the City. Conservation planning could focus on identified wildlife corridors within the General Plan (see Figure 7-2) which include the San Bernardino National Forest, Santa Ana River Wash, Crafton Hills, San Timoteo/Live Oak Canyons, and the Badlands. Preparation of a Master Biotic Management Plan is a potential tool that could be used for conservation efforts in the City.

The City of Rialto

The City of Rialto has potential for open space conservation within Lytle Creek Wash (City of Rialto 2010). Conservation planning efforts could focus on acquisition of land or coordination with land owners of floodplain areas, utility easements, and other areas of undeveloped or very low density lands. Opportunities exist in reclamation of the Mid-County Landfill for use of

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appropriate open space and recreational uses. Policy 2-39.1 calls for coordination with wildlife agencies to establish a Habitat Conservation Plan within the City. Generally, conservation efforts within the City of Rialto would require multi-agency coordination to ensure protection of sensitive species and habitats. The City's primary sources of water are local groundwater and surface water, therefore protection and conservation of Lytle Creek is important for long-term planning efforts.

City of San Bernardino

The City of San Bernardino General Plan Natural Resources and Conservation chapter (City of San Bernardino 2005) identifies some of the important habitat within the City as the aquatic and woodland communities of the San Bernardino Mountains and the Santa Ana River and its tributaries. Additionally, the alluvial fans and floodplains of the valley floor support distinctive scrub vegetation containing an assortment of shrubs characteristic of both coastal sagebrush and chaparral communities. However, much of the valley and upland areas have undergone extensive disturbance by agricultural and urban land uses. The City has also established goals and policies in the Natural Resources and Conservation chapter of the General Plan for the protection of sensitive biological resources such as requiring environmental review of land use decisions and siting development to minimize biological impacts; protection of riparian areas by prohibiting grading within 50 feet of riparian corridors and restricting land use types within riparian areas; and acquisition of high-priority habitat with the intention of establishing a permanent corridor contiguous to the National Forest via Cable Creek and/or Devil Canyon. The City has also established a hillside management overlay district for slopes of 15% or greater where development density is restricted, but that development density can be transferred to encourage larger areas of undeveloped steep slopes.

City of Twentynine Palms

The City of Twentynine Palms General Plan Conservation and Open Space Element (City of Twentynine Palms 2012) identifies the type and location of the important biological resources within the City including 16 special status plant species and 36 special status wildlife species. The City also contains 21 different vegetation communities, some of which are important wetland and riparian areas such as dry lake beds and drainages including the Mesquite Dunes Bosque and Playa Lakebed that is a habitat area containing fairy shrimp, clam shrimp, tadpole shrimp, and water fleas. In addition to identifying important biological resources within the City, the Conservation and Open Space Element discusses regional conservation planning initiatives such as the West Mojave Plan and the Joshua Tree-Twentynine Palms Connection which is a wildlife corridor that spans the ecological transition zone between the Mojave and Sonoran desert eco-regions within the City. The City's policies in the Conservation and Open Space

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Element encourage the City to participate in the development of the West Mojave Plan and would require development to conduct biological assessments on undeveloped land until the West Mojave Plan is adopted. The City would also enforce a “no net loss” policy of wetland and riparian habitat in the Mesquite Dunes and Bosque Overlay area. Furthermore, the City’s hillside grading, clearing, and plant removal ordinance would place grading requirements on areas of 30% slope or greater.

City of Upland

The city of Upland General Plan Open Space/Conservation Element (1970) indicates that there is little important habitat and few-to-no special status species in the City due to the urbanized nature of the City and the disturbance of land from agriculture. Much of the open space in the City is in the park system, which the City’s General Plan has indicated it is seeking funds to expand. Based on the General Plan goals and policies in the City’s Open Space/Conservation Element there does not seem to be many opportunities for regional conservation planning.

City of Victorville

The City of Victorville’s General Plan 2030 Open Space and Conservation Element (City of Victorville 2008) identifies important biological resources including 34 special status plant and wildlife species and the riparian natural communities associated with the Mojave River, which serves as valuable habitat for a variety of species and as a flyway stopover for some migratory birds. The City’s policies in the Open Space and Conservation Element would encourage restoration and conservation of important habitat for special status species and would generally prohibit development in the Mojave River corridor to protect the important riparian habitat in that area. The City’s policies also specifically support and call for participation in the West Mojave Plan, which would be a mechanism for regional scale conservation planning within the City. Additionally, the City has a slope protection district to ensure the perpetual maintenance and protection of sloped areas through appropriate landscaping and irrigation to reduce erosion in sloped areas.

City of Yucaipa

The City of Yucaipa General Plan Open Space Element (City of Yucaipa 2004) establishes a context for the biological resources in and around the City including the identification of 8 different special status plant and wildlife species. The Open Space Element also contains various goals and policies to protect open spaces and sensitive biological resources as well as promoting long-term conservation planning efforts. Some of the City’s policies would identify important open space and sensitive biological resources to inform land use decisions through the creation

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of biological resource overlays and identification of wildlife corridors. The Open Space Element also requires mitigation and preservation of biological resources affected by development and land use decisions through the transfer of development rights in resource overlays, mitigation for impacts to sensitive biological resources, and establishment of at least 40% of open space in hillside developments. In addition to these measures, the City also calls for the development of long-term comprehensive conservation plans for native species within the City in Policy OS-4B. Conservation planning could be achieved by using the City's General Plan and in particular through the policies promoting long-term conservation plans and the establishment of open space areas in hillside developments. The City also has a hillside and ridgeline development regulation that limits the amount of buildable land based on the slope of the land, beginning at an average slope of 15%.

Town of Yucca Valley

The Town of Yucca Valley General Plan Open Space and Conservation Element (Town of Yucca Valley 2014) identifies existing important biological resources including 21 special status wildlife species and 11 special status plant species as well as important open space areas and conservation areas including the 306 acre Burns Piñon Ridge Reserve in the northwest portion of the Town. The Open Space and Conservation Element also includes various efforts to protect open spaces and sensitive biological resources including long-term land use and conservation goals and policies. Policy OSC 1-6 and Policy OSC 4-1 call for the preservation and conservation of sensitive biological resources including wildlife corridors and especially sensitive, rare, threatened, or endangered species of plants and wildlife and their habitats. Policy OSC 4-11 and Policy OSC 4-13 encourage new development to coordinate with CDFW and USFWS as well as require biological resources surveys and assessments near Wildlife Corridor Evaluation and Open Space Resource Areas biological resource overlays and Open Space Resource Areas. Conservation planning efforts could work through the Town's General Plan by incorporating the identified sensitive habitat and species areas including Wildlife Corridor Evaluation and Open Space Resource Areas biological resource overlays and Open Space Resource Areas identified in the Town's General Plan Open Space and Conservation Element.

4.1.4 Other Planning Considerations

Land Ownership

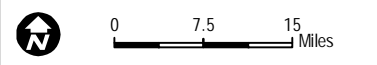
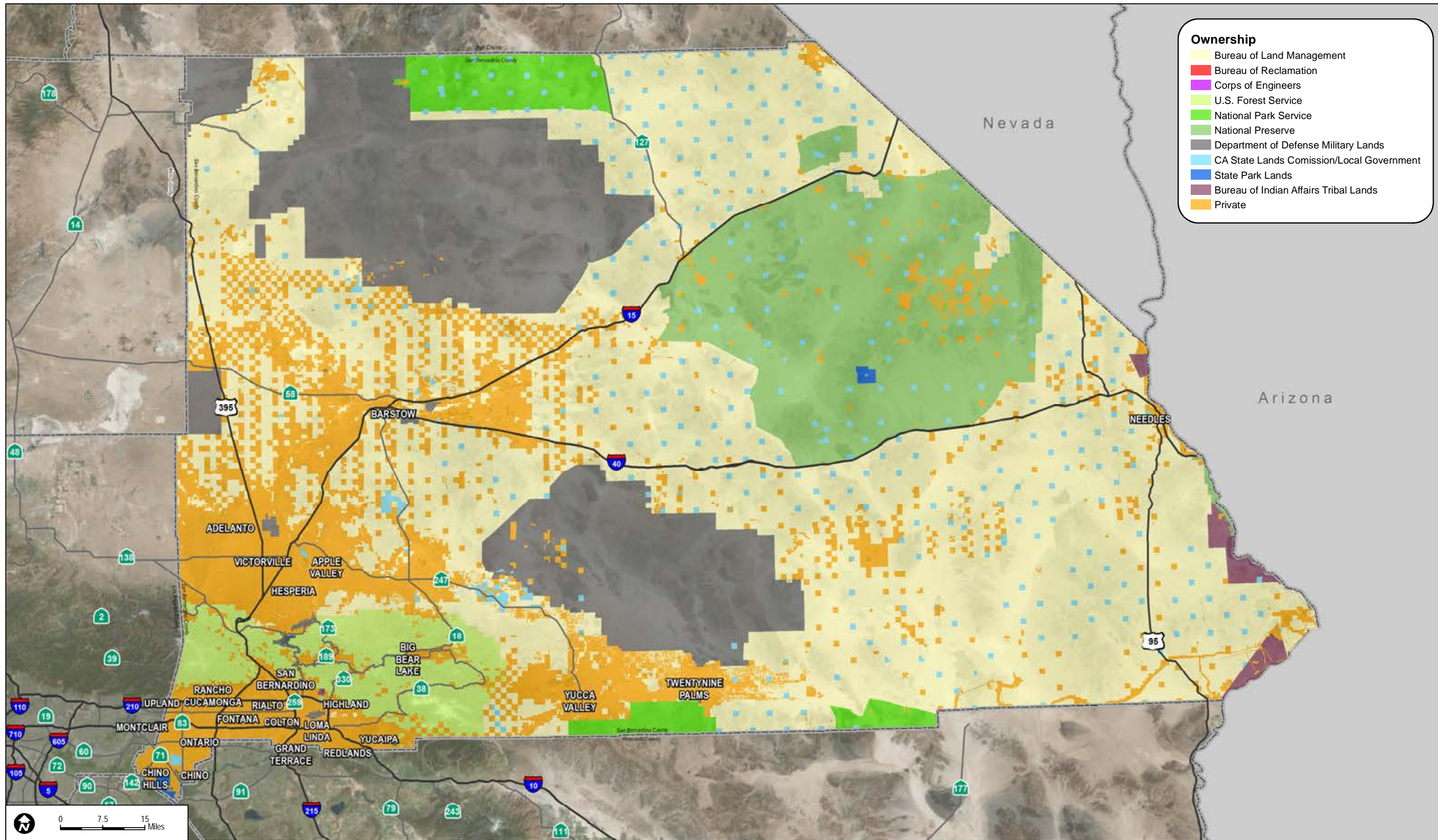
Land ownership can influence land conservation status and management and the scope of the Conservation Framework. Table 4-2 summarizes the land ownership patterns in San Bernardino County in the desert, mountain, and valley regions. Figure 4-2 depicts the land ownership patterns.

San Bernardino Associated Governments Countywide Habitat Preservation/Conservation Framework Development

**Table 4-2
Land Ownership**

Land Owner Land unit (if applicable)	Desert Region	Mountain Region	Valley Region	Total
California State Lands Commission	248,128	3,572	10,167	261,867
Corps of Engineers	11	--	--	11
Local Government	654	4	--	659
Private	1,845,088	88,343	298,033	2,231,464
Tribal Lands/BIA	66,148	4	803	66,955
Chemehuevi Reservation	35,567	--	--	35,567
Colorado River Reservation	24,324	--	--	24,324
Fort Mojave Reservation	6,095	--	--	6,095
San Manuel Reservation		4	803	807
Twentynine Palms Reservation	162	--	--	162
U.S. Department of Defense	2,145,127	26	4,451	2,149,604
China Lake Naval Weapons Center	575,746	--	--	575,746
Department of Defense	11,824	26	2,355	14,205
Edwards Air Force Base	43,671	--	--	43,671
Fort Irwin National Training Center	752,318	--	--	752,318
George Air Force Base	5,130	--	--	5,130
Marine Corps Installations	6,409	--	--	6,409
Norton Air Force Base	--	--	2,097	2,097
Twentynine Palms Marine Corps Base	750,029	--	--	750,029
United States Bureau of Land Management	5,853,284	153	1,033	5,854,470
United States Bureau of Reclamation	60	--	--	60
United States Fish and Wildlife Service	6,346	--	--	6,346
Fish and Wildlife Service	10	--	--	10
Havasu National Wildlife Refuge	6,336	--	--	6,336
United States National Park Service	1,821,348	469,651	428	2,291,426
Angeles National Forest	4	17,177	13	17,194
Death Valley National Park	214,112	--	--	214,112
Joshua Tree National Park	121,146	--	--	121,146
Mojave National Preserve	1,484,410	--	--	1,484,410
National Park Service	1,385	--	--	1,385
San Bernardino National Forest	292	452,474	415	453,181
Total	11,986,196	561,753	314,915	12,862,864

Source: BLM Land Status dataset (2014)



DUDEK

SOURCE: BING Maps 2014; BLM 2014

SANBAG Countywide Conservation Framework

FIGURE 4-2
Ownership

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4.2 Landscape-scale Biological Resources Summary

The following landscape-scale summary of the biological resources in San Bernardino County is provided to establish the biological resources context for the Conservation Framework. The County spans several distinct ecoregions supporting an incredibly diverse assemblage of plant and wildlife species and natural communities. The summary below is intended to frame, at a broad level using available information and data, the biological resources in the planning area so that principles and recommendations can be developed for the Conservation Framework. It is beyond the scope of the Conservation Framework to provide detailed inventories, descriptions, or analyses of the biological resources found in the County. More detailed biological resources information would be developed, as needed, to support the future planning that builds upon this Conservation Framework.

4.2.1 Plant and Wildlife Species

San Bernardino County supports a wide variety of plant and wildlife species and species habitats. Species diversity in the County is due, in part, to the biogeographic differences and gradients among the valley, mountain, and desert regions of the planning area. The following provides an overview of the species occurrence and designated critical habitat in the County. Additionally, Appendix 4-A and 4-B provide a summary of the wildlife and plant species known to occur in the County, including status and habitat associations. A discussion of data limitations related to plant and wildlife species distributions is also provided below.

Special-status Species Occurrence Summary

Numerous special-status species occur in San Bernardino County. The following provides a summary of species occurrence records, which are one source of information relevant to developing a preservation/conservation framework. The data limitations subsection below discusses limitations of this data and other data, tools, and information that could be employed to characterize species distributions and the distribution of species habitats.

The broad biogeographic differences in the desert, mountain, and valley regions yields distinct differences in the distribution of special-status species and their habitats. Based on an evaluation of species locality data compiled and aggregated from the California Natural Diversity Database, the eBird database, the Bureau of Land Management, the Audubon Society, and other local conservancy data, special-status species with the highest number of reported locality points by region include:

- **Desert Region:** golden eagle, desert tortoise, Mohave ground squirrel, Le Conte's thrasher, burrowing owl, prairie falcon, arroyo toad, Barstow woolly sunflower, Mojave fringe-toed lizard, and Mojave monkeyflower.

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- **Mountain Region:** California spotted owl, ash-gray Indian paintbrush, Big Bear Valley woollypod, California dandelion, southwestern willow flycatcher, Big Bear Valley milk-vetch, lemon lily, Parish’s alumroot, arroyo toad, and Big Bear Valley phlox.
- **Valley Region:** San Bernardino kangaroo rat, least Bell’s vireo, coastal California gnatcatcher, Delhi Sands flower-loving fly, burrowing owl, Santa Ana River woollystar, Parry’s spineflower, southwestern willow flycatcher, coast horned lizard, and slender-horned spineflower.

USFWS-designated Critical Habitat

The US Fish and Wildlife Service has designated critical habitat within San Bernardino County for nineteen listed species under the ESA (see Figure 4-3 and Figure 4-3a). Critical habitat is designated when a geographical area is considered crucial to the survival of a threatened or endangered species. Once critical habitat is designated, federal agencies must consult USFWS on activities they plan to undertake, fund, or authorize, to ensure that their actions will not destroy or adversely modify the constituent elements of critical habitat for those species. Special limitations on projects in critical habitat are limited to federal actions, however the general protections of the Endangered Species Act protect listed species from “take” regardless of where they are located. Table 4-3 lists the critical habitat designations found within each region.

**Table 4-3
US Fish and Wildlife Service Designated Critical Habitat**

Species Common Name	Desert Region	Mountain Region	Valley Region	Total
Arroyo Toad	4,288	2,886	209	7,383
Ash-Gray Indian Paintbrush	--	1,768	--	1,768
Bear Valley Sandwort	--	1,412	--	1,412
California Taraxacum	--	1,956	--	1,956
Coastal California Gnatcatcher	--	--	7,482	7,482
Cushenbury Buckwheat	594	6,365	--	6,958
Cushenbury Milk-Vetch	1,098	3,272	--	4,369
Cushenbury Oxytheca	118	3,034	--	3,153
Desert Tortoise	3,561,619	--	--	3,561,619
Least Bell's Vireo	--	--	2,061	2,061
Mountain Yellow-Legged Frog	--	2,290	--	2,290
Parish's Daisy	1,654	2,770	--	4,424
San Bernardino Bluegrass	--	1,415	--	1,415
San Bernardino Kangaroo Rat	--	1,533	26,213	27,745
San Bernardino Mountains Bladderpod	--	1,026	--	1,026
Santa Ana Sucker	--	232	2,107	2,339
Southern Mountain Wild Buckwheat	--	903	--	903

San Bernardino Associated Governments Countywide Habitat Preservation/Conservation Framework Development

**Table 4-3
US Fish and Wildlife Service Designated Critical Habitat**

Species Common Name	Desert Region	Mountain Region	Valley Region	Total
Southwestern Willow Flycatcher	5,195	2,403	1,418	9,017
Thread-Leaved Brodiaea	--	61	--	61

Source: USFWS 2014

Data Limitations

The species occurrence data and USFWS-designated critical habitat described above have inherent limitations, and these data represent just two of many data, tools, and information that could be used to characterize species distributions and the distribution of species habitats in San Bernardino County.

Species occurrence data are useful for conservation planning purposes but the use and limitations of this data should be acknowledged. The occurrence data assembled for this conservation framework are from sources collected at different times, spatial scales, and for different purposes, which can result in an unsystematic and spatially biased occurrence data set. Sampling effort is, for example, far greater in the western portion of the County and near population centers or along roadways as opposed to the eastern and more remote locations of the County. Additionally, species occurrence records only report positive detections and the lack of records does not mean the species is absent.

With regard to USFWS-designated critical habitat, this data is only available for federally listed species for which critical habitat has been designated; therefore, this dataset would not address state-listed species or other special-status species. Designated critical habitat represents areas critical to the conservation of the species, and should not be used to represent the distribution or range known to support the species.

Species range maps and species distribution models represent another class of information/data often used in developing conservation plans.

- Species Range data: Existing information is available for California wildlife species through the CDFW California Wildlife Habitat Relationships (CWHR) data, which provides a range map for many of the wildlife species in the state (Zeiner et al 1990; CDFW 2014). For plant species, the California Native Plant Society maintains the rare and endangered plant inventory that includes a database of USGS 7.5-minute quadrangles where the species has been reported from, which can be used as a surrogate for the species range (CNPS 2014). Use of species range data has advantages over

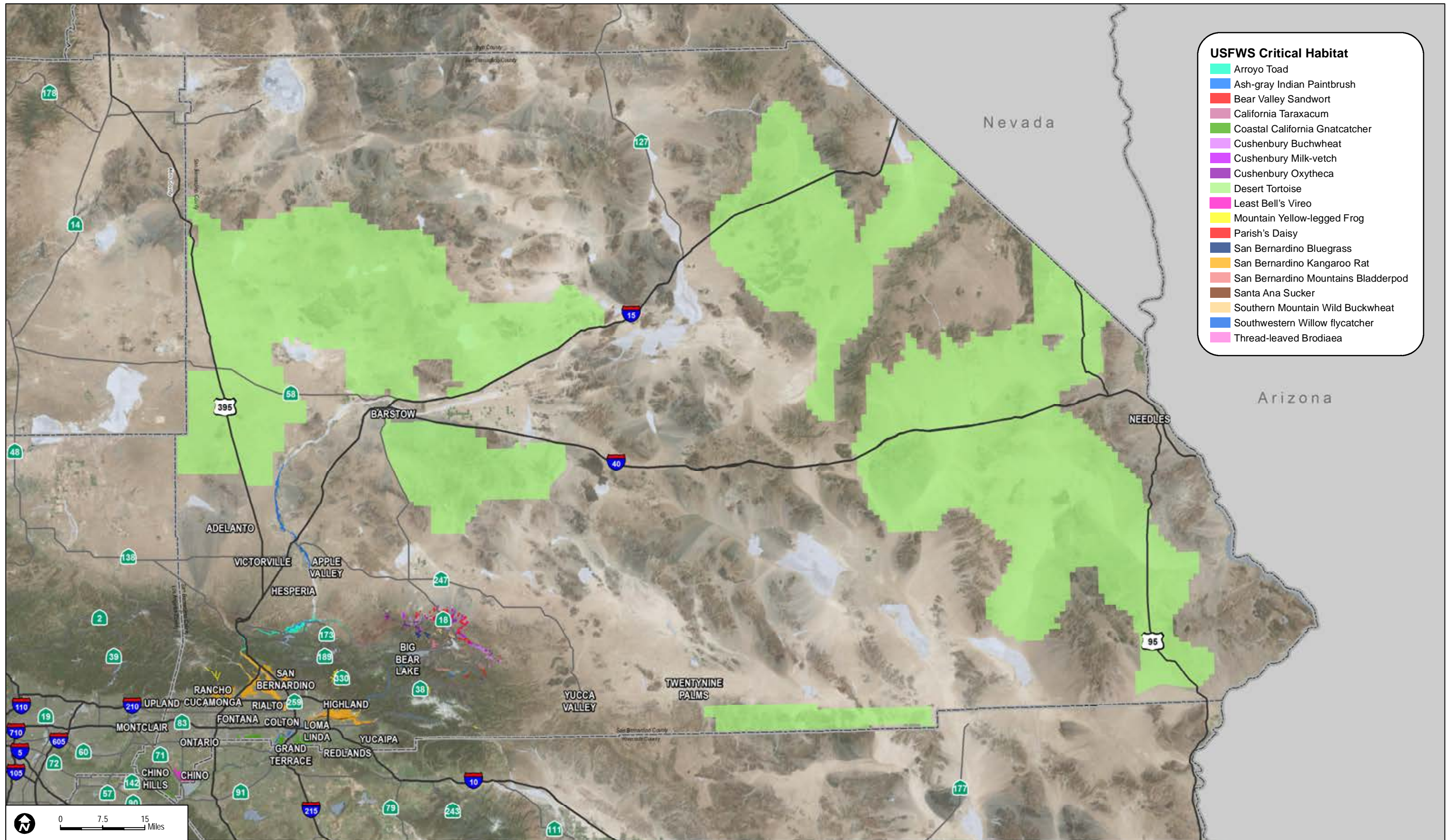
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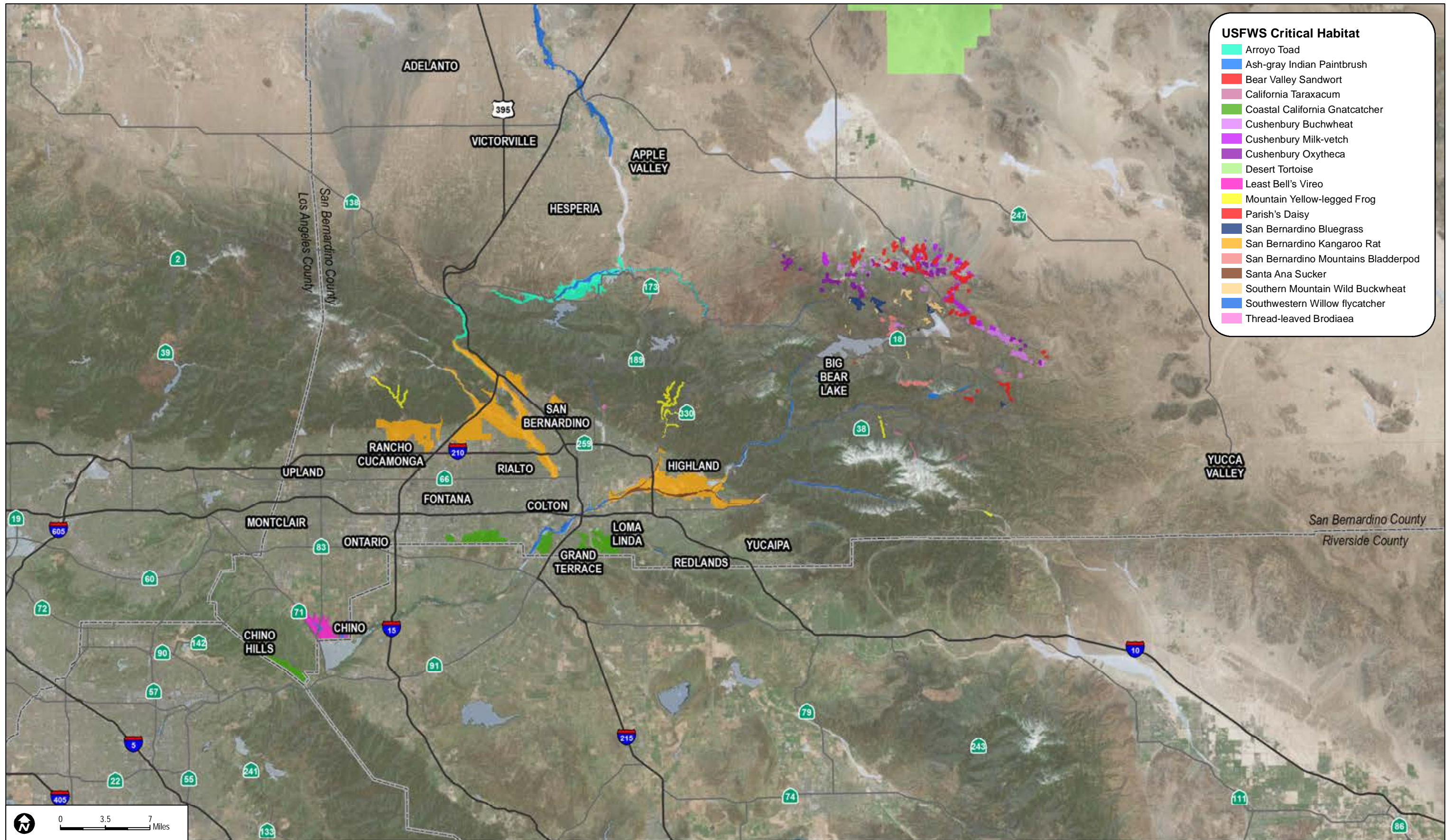
species occurrence information; however, these data can be too “coarse” for some scales of planning (i.e., range data tends to be overly inclusive, often covering areas of unsuitable habitat).

- Species distribution models are often employed in conservation planning to overcome data limitations inherent to species occurrence data and species range data. There are many modeling approaches which can generally be grouped into the following types of models: expert-based (e.g., GIS overlay-type) models, statistically based models, and proxy “models”. Expert-based models identify species distribution by modeling suitable habitat based on scientific literature and expert opinion related to the physical and biological habitat variables known to be affiliated with species occurrence. Statistically based models identify species distribution based on correlations between occurrence data and physical and biological habitat variables. Proxy “models” are geospatial representations of species distributions based on existing data (e.g., polygons created from occurrence data) and are used when expert-based or statistical models are not appropriate for use for the particular species. Numerous existing models are available from various sources at various scales for specific species, and new species distribution models could be developed for specific planning efforts.

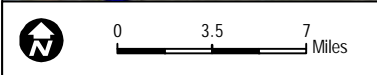
Species range data could be useful in selecting focal wildlife species and for the conservation gap analysis; however, species range maps would likely be too coarse for the purposes of developing an HCP or NCCP. Species distribution models would be the appropriate type of data for use in developing an HCP or NCCP; however, the focal list of species would need to be identified prior to determining the type of existing or new model appropriate for the species.



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- USFWS Critical Habitat**
- Arroyo Toad
 - Ash-gray Indian Paintbrush
 - Bear Valley Sandwort
 - California Taraxacum
 - Coastal California Gnatcatcher
 - Cushenbury Buchwheat
 - Cushenbury Milk-vetch
 - Cushenbury Oxytheca
 - Desert Tortoise
 - Least Bell's Vireo
 - Mountain Yellow-legged Frog
 - Parish's Daisy
 - San Bernardino Bluegrass
 - San Bernardino Kangaroo Rat
 - San Bernardino Mountains Bladderpod
 - Santa Ana Sucker
 - Southern Mountain Wild Buckwheat
 - Southwestern Willow flycatcher
 - Thread-leaved Brodiaea



DUDEK SOURCE: BING Maps 2014; USFWS 2014

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FIGURE 4-3a
USFWS Critical Habitat - Mountain and Valley Regions

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4.2.2 Natural Communities

As previously noted, San Bernardino County’s biogeographic heterogeneity generates high biological diversity, meaning that there are a variety of natural communities. Natural communities are often defined by conspicuous trends in vegetation and are forced by geography and climate, among other things. These aggregations support specific biological resources that may not be found in other communities. It is therefore important to preserve the mosaic of natural communities that exist, in order to ensure biodiversity can be maintained. Table 4-4 lists the major natural community types within the County by region and Figure 4-4 and Figure 4-4a depicts these areas.

Table 4-4
Natural Communities by Region

Natural Community / Land Cover	Desert Region	Mountain Region	Valley Region	Total
California forest and woodland	37,662	239,521	883	278,067
Chaparral and coastal scrub	58,872	211,583	49,232	319,686
Desert conifer woodlands	181,991	67,501	31	249,524
Desert outcrop and badlands	808,702	7,914	9,454	826,071
Desert Scrub	9,540,161	18,152	1,931	9,560,244
Dunes	164,680	--	--	164,680
Grassland	75,846	3,723	58,072	137,641
Other Land Cover	277,932	5,089	189,665	472,685
Riparian	438,703	2,707	1,582	442,992
Wetland	404,924	4,788	386	410,099
Total	11,989,473	560,978	311,238	12,861,688

Source: VegCAMP CDFW and AIS 2013, AIS 2013, CDFG 2012, and San Bernardino County Museum 2013

Notes: Natural communities mapping is based on multiple sources that have been summarized here at a common, aggregated “General” community level. Finer resolution mapping information is available; however, the vegetation classification systems used differs between sources. Other land cover includes urban, disturbed, and agricultural land covers.

The vegetation layer has been assembled from multiple sources using different mapping methodologies and classification systems. For use in this document, the vegetation classification system has been crosswalked (i.e., a table that shows equivalent elements or fields from more than one database) into a common system; however, this common system necessitates aggregating areas of fine-grained alliance-level data into coarser vegetation classes.

4.2.3 Habitat Linkages and Wildlife Movement

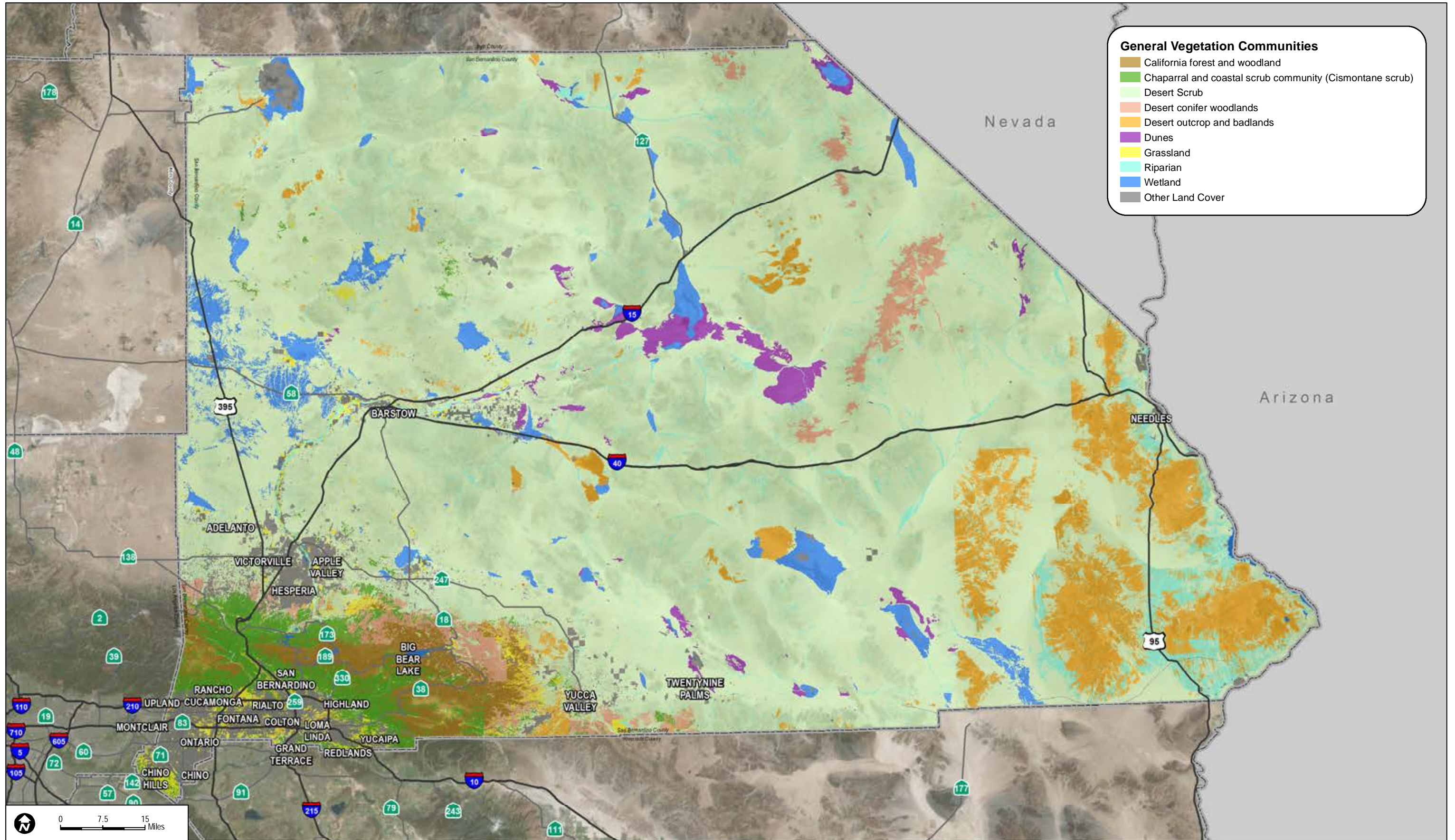
Habitat linkages are landscape-scale open space areas that provide a natural habitat connection between at least two larger adjacent open spaces or habitat areas. Habitat linkages provide a large enough area to support, at a minimum, a natural habitat mosaic and viable populations of smaller

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terrestrial species and allow for gene flow through diffusion of populations over a period of generations. Habitat linkages also allow for jump dispersal for some species between neighboring habitats. Habitat linkages may be large tracts of natural open space that serve as resident species habitat or habitat linkages may serve primarily as landscape connections (i.e., for dispersal movements or travel).

Species-specific analyses, studies, and modeling are often conducted to determine the specific habitat linkages used by species in specific study areas. In addition to species-specific information, landscape-level habitat linkage information is available that models and maps habitat linkages using the concepts of “least cost” and “land facets”. This approach characterizes areas with uniform physical characteristics (land facets) to model the least cost for movement between habitat blocks for focal species. The California Desert Connectivity Project (Penrod et al. 2012) used this approach for the California deserts, including the desert region of San Bernardino County. A Linkage Design for the Joshua Tree–Twentynine Palms Connection (Penrod et al. 2008) used this approach for the Morongo basin area of San Bernardino County. In *South Coast Missing Linkages: Restoring Connectivity to Wildlands in the Largest Metropolitan Area in the USA*, Beier et al. (2006) used a similar approach to delineate habitat linkages. Table 4-5 and Figure 4-5 summarizes these mapped habitat linkages by region in the planning area.



General Vegetation Communities

- California forest and woodland
- Chaparral and coastal scrub community (Cismontane scrub)
- Desert Scrub
- Desert conifer woodlands
- Desert outcrop and badlands
- Dunes
- Grassland
- Riparian
- Wetland
- Other Land Cover

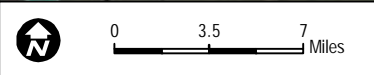
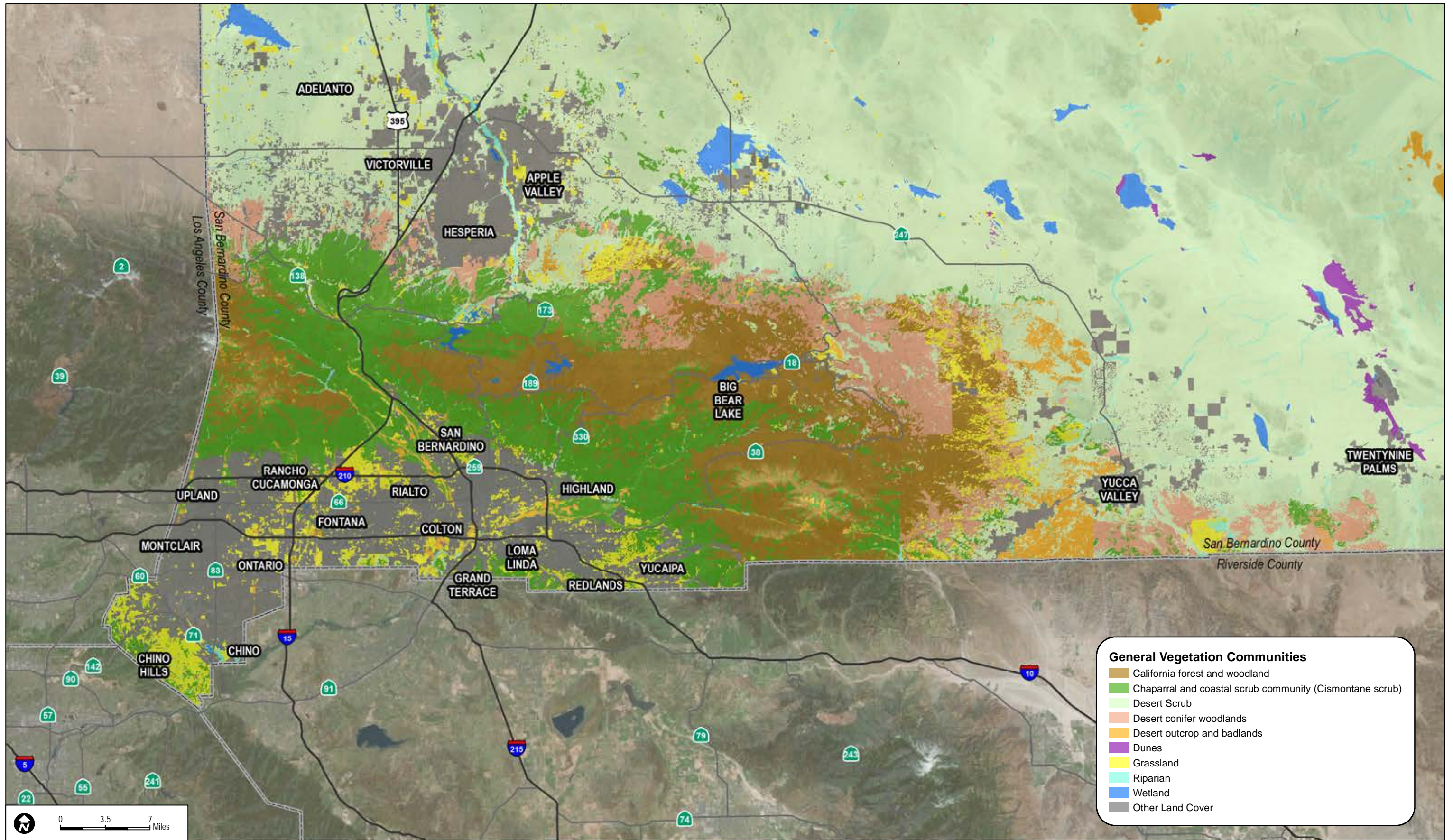


SOURCE: BING Maps 2014; CDFW 2013; San Bernardino County Museum 2013

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FIGURE 4-4
Natural Communities

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SOURCE: BING Maps 2014; CDFW 2013; San Bernardino County Museum 2013

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FIGURE 4-4a
Natural Communities - Mountain and Valley Regions

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Additionally, Riparian corridors are also known to provide habitat linkages and support the movement of wildlife, especially in urbanized areas. See Table 4-5 and Figure 4-5 for a summary of the mapped riparian natural communities in the planning area.

**Table 4-5
Habitat Linkages by Region**

Mapped Habitat Linkage	Desert Region	Mountain Region	Valley Region	Total
Desert Linkage Network	2,681,061	7,943	--	2,689,004
South Coast Missing Linkages	56,956	104,373	21,561	182,890
Joshua Tree – Twentynine Palms Linkages	281,390	--	--	281,390

Source: Penrod et al. 2012, Beier et al. 2006, Penrod et al. 2008

Notes: Mapped habitat linkages summarized here are based on aggregated least cost corridor modeling analyses conducted for multiple species connecting existing core habitats at the landscape scale. The identification of habitat linkage and movement corridors for individual species or the identification of habitat linkages at smaller scales would require separate analyses. Linkages from each data source may overlap.

4.2.4 Physical Conditions

Physical conditions across the landscape play important roles in the distribution of biological resources. The following provides an overview of some key physical characteristics in the planning area.

Geomorphology and Hydrology

Geomorphological characteristics include surficial relief patterns and landforms. The three regions of the planning area capture the coarse geomorphological characteristics of the planning area: the valley region, the mountain region, and the desert region. The valley region is characterized by a coastal slope – fan landform. The mountain region is characterized by the San Bernardino Mountain Range. The desert region is characterized by the high desert of the western Mojave Desert.

San Bernardino County includes all or portions of 15 watersheds (DWR 2004). See Section 5.3.3 (Table 5-3) under the discussion of watershed-based subareas for a description of the watersheds in the planning area. Major water bodies in the planning area include: Mojave River, Colorado River, Amargosa River, Santa Ana River, Cajon Wash, Lytle Creek, Silverwood Lake, Lake Arrowhead, Big Bear Lake, and numerous dry lakes in the desert region. Smaller creeks, washes, ephemeral drainages, and seeps/springs occur throughout the planning area.

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Aeolian Processes

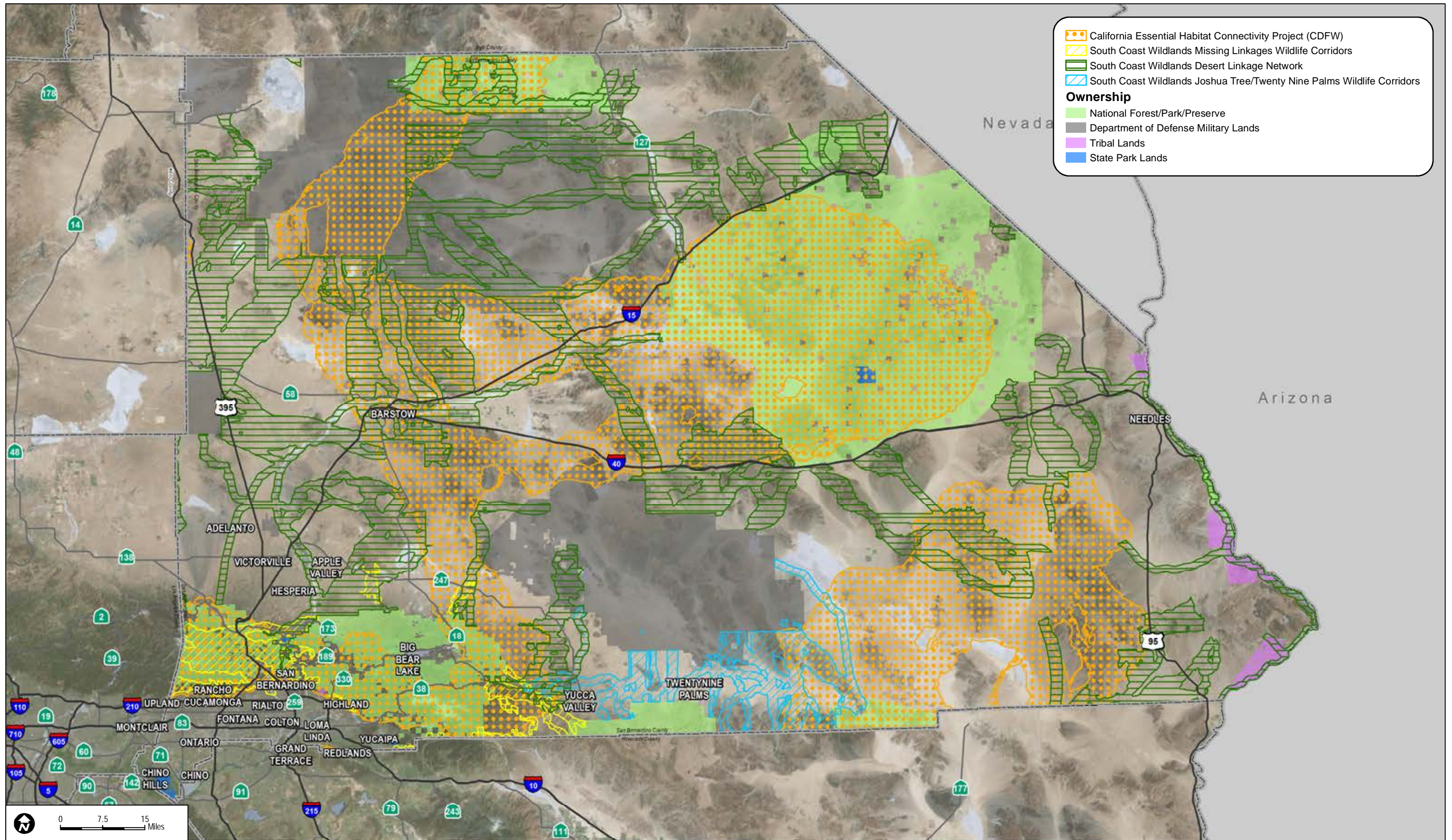
The transport and deposition of aeolian sediments, particularly in the desert, is one of the major processes that shape the landscape, including desert pavement and dune systems. Dry washes and alluvial fans provide important source areas for Aeolian systems from which sediments are transported to deposition areas (e.g., dunes). Substantial sand source and dune systems occur in the County, including the Ibex Dunes, Dumont Dunes, Kelso Dunes, Harper Dry Lake, and miscellaneous unnamed dune and sand resource areas.

4.3 Conservation Framework Considerations

Based on the regulatory and planning context and landscape-scale summary of biological resources provided above, the following describes considerations for the development of the Conservation Framework for San Bernardino County.

Establishing a framework for conservation in San Bernardino County should consider and incorporate into the planning process:

- Areas with Existing Protections
- Other Land Designations
- Identified Conservation Gaps
- Distribution of special-status and sensitive species and habitats



- California Essential Habitat Connectivity Project (CDFW)
- South Coast Wildlands Missing Linkages Wildlife Corridors
- South Coast Wildlands Desert Linkage Network
- South Coast Wildlands Joshua Tree/Twenty Nine Palms Wildlife Corridors

Ownership

- National Forest/Park/Preserve
- Department of Defense Military Lands
- Tribal Lands
- State Park Lands

0 7.5 15 Miles

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SOURCE: BING Maps 2014; USFWS 2012; BLM 2014; South Coast Wildlands 2012; CDFW 2010

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FIGURE 4-5
Habitat Linkages

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Areas with existing protection include lands that have been legislatively designated as protected lands and are administered by federal or state mandates, including National Parks (e.g., Joshua Tree National Park and Death Valley National Park), National Preserves (e.g., Mojave National Preserve), National Forests (e.g., San Bernardino National Forest), BLM Wilderness, and CDFW Ecological Reserves. Additionally, areas with existing protection include lands held by local entities, land trusts, and lands with conservation easements or other legal mechanism providing resource protection. An element of developing this Conservation Framework was to gather local information from jurisdictions in the county and parallel planning efforts being conducted by Southern California Association of Governments (SCAG) to identify local conservation and mitigation efforts. See Section 2 for a summary of the compiled information for this study.

Other land designations include lands administered or designated for specific uses. For the Conservation Framework, these would include:

- Department of Defense (DOD) administered lands (e.g., Marine Corps Air Ground Combat Center Twentynine Palms)
- Tribal Lands
- BLM Land Use Plan Designations on BLM administered lands (e.g., Areas of Critical Environmental Concern, new designations being proposed under the Draft DRECP (National Landscape Conservation System lands), and Special Recreation Management Areas)
- General Plan land use designations; Hillside ordinances; Specific Plans

Although military lands and tribal lands are geographically located within San Bernardino County, these areas would generally not be considered within the planning envelope for the Conservation Framework because they are managed under separate, existing management regimes. As such, the Conservation Framework would essentially be developed outside the boundary of these lands.

BLM Land Use Plan designations and General Plan land use designations may be useful in characterizing and classifying lands as part of the Conservation Framework. For example, Areas of Critical Environmental Concern (ACECs) on BLM-administered lands are managed for resource protection by the BLM; therefore, these lands would be categorized as having a protection/management class within the Conservation Framework. Lands with General Plan land use designations related to open space would be considered in the conservation planning, but such designations themselves do not provide protection or management. Conversely, lands with General Plan land use designations related to residential, commercial, or industrial uses would not typically be compatible with conservation. Through this process, lands can be classified by

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their protected land status. Additional information from existing protected lands databases (i.e., CPAD [GreenInfo Network 2014] and PAD-US [USGS 2012]) can inform this process. The California Protected Areas Database (CPAD) is a GIS inventory of open space lands that are owned by agencies or nongovernmental groups. CPAD includes federal, state, and county parks, wildlife refuges, regional and county preserves, some land trust holdings, trust lands, and forests. CPAD data is useful for multi-jurisdictional planning, including land use plans and habitat conservation programs. CPAD is part of the Protected Areas Database of the United States (PAD-US), which is a national program to improve protected land inventories.

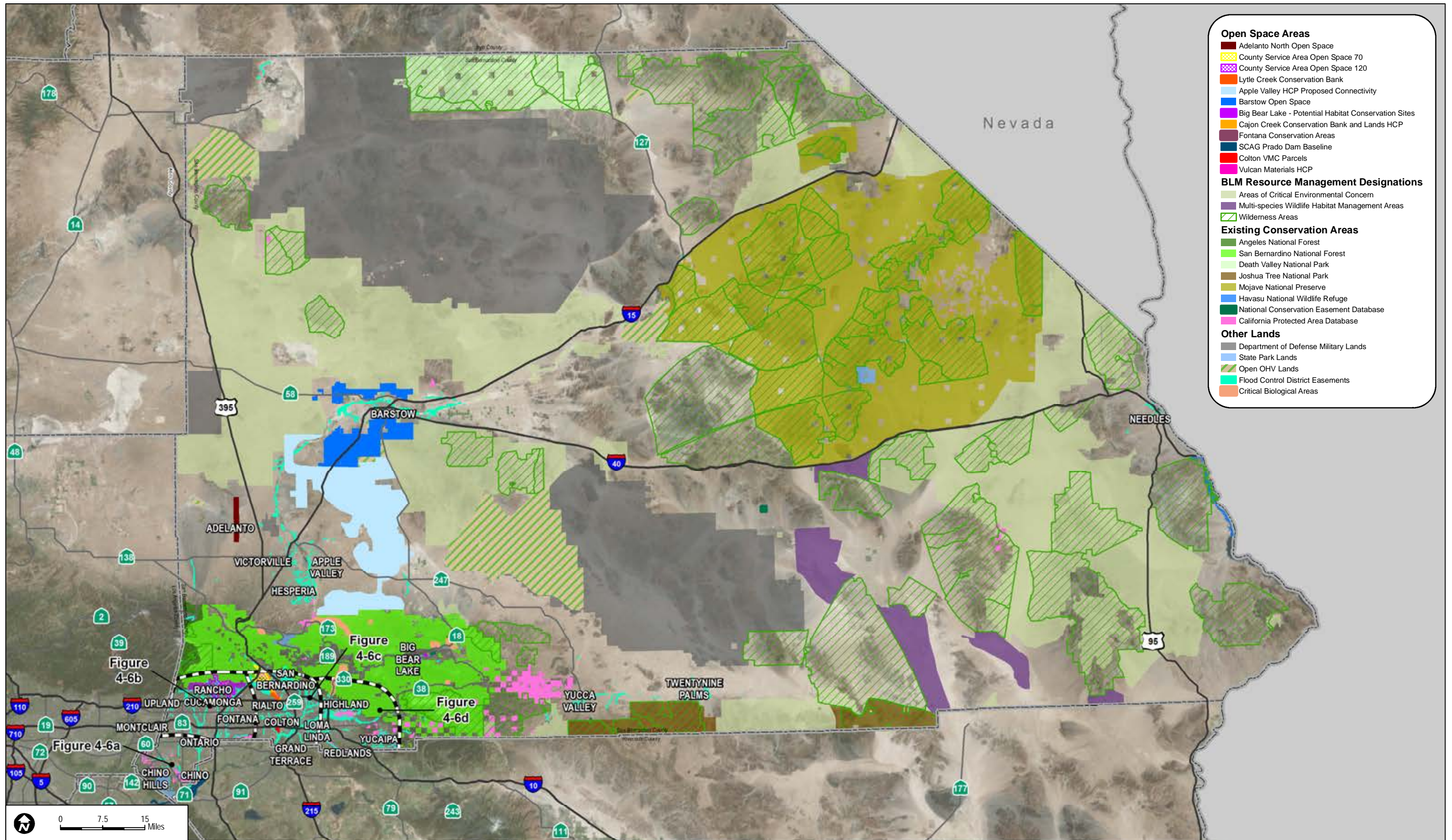
By classifying lands in this manner, conservation gaps can be identified where biological resources prioritized for conservation are located in areas with low or no protected status. An analysis of conservation gaps would identify and map these locations and should be considered as part of next steps for the Conservation Framework (see Section 7). A preliminary mapping of existing conservation areas and conservation gaps in San Bernardino County is provided in Figures 4-6–4-6d (Conservation and Open Space Areas) and Figures 4-7–4-7d (Listed and Sensitive Species Occurrence) and are discussed in section 4.3.2 below.

4.3.1 Regional Considerations

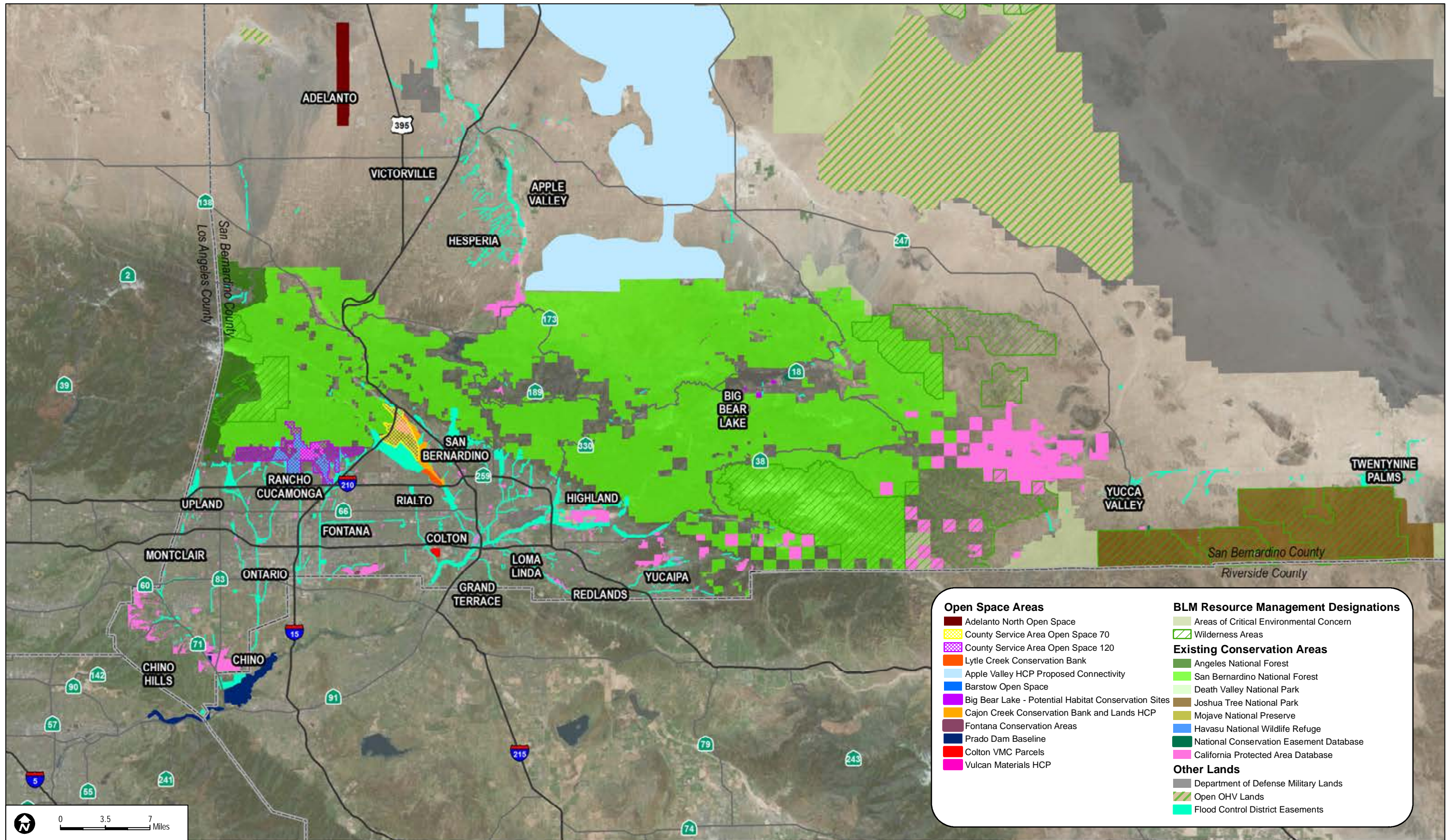
Establishing a framework for conservation in San Bernardino County should consider regional similarities and differences across San Bernardino County, including regional considerations related to:

- Existing and planned land uses
- Ownership patterns
- Locations of special-status species, natural communities and ecological processes.

For example, lands in the valley region are composed largely of developed residential and commercial infrastructure. Alternatively, the desert and mountain regions contain high proportions of open space lands, conserved on the state and federal level. In terms of ownership patterns, lands in the desert and forest regions are administered primarily by federal agencies, 82% and 84% respectively. In the Valley region, 95% of the land is privately owned. An effective conservation strategy would be tailored to fit these geographic differences by employing suitable conservation approaches/tools for each region. Section 5 describes potential approaches to allocating San Bernardino County into subareas, which would facilitate crafting conservation strategies to match specific regions.



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Open Space Areas	BLM Resource Management Designations
Adelanto North Open Space	Areas of Critical Environmental Concern
County Service Area Open Space 70	Wilderness Areas
County Service Area Open Space 120	Existing Conservation Areas
Lytle Creek Conservation Bank	Angeles National Forest
Apple Valley HCP Proposed Connectivity	San Bernardino National Forest
Barstow Open Space	Death Valley National Park
Big Bear Lake - Potential Habitat Conservation Sites	Joshua Tree National Park
Cajon Creek Conservation Bank and Lands HCP	Mojave National Preserve
Fontana Conservation Areas	Havasu National Wildlife Refuge
Prado Dam Baseline	National Conservation Easement Database
Colton VMC Parcels	California Protected Area Database
Vulcan Materials HCP	Other Lands
	Department of Defense Military Lands
	Open OHV Lands
	Flood Control District Easements

0 3.5 7 Miles

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SOURCE: BING Maps 2014; BLM 2014; NCD 2014; CPAD 2014

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FIGURE 4-6a
Conservation and Open Space Areas - Mountain and Valley Regions

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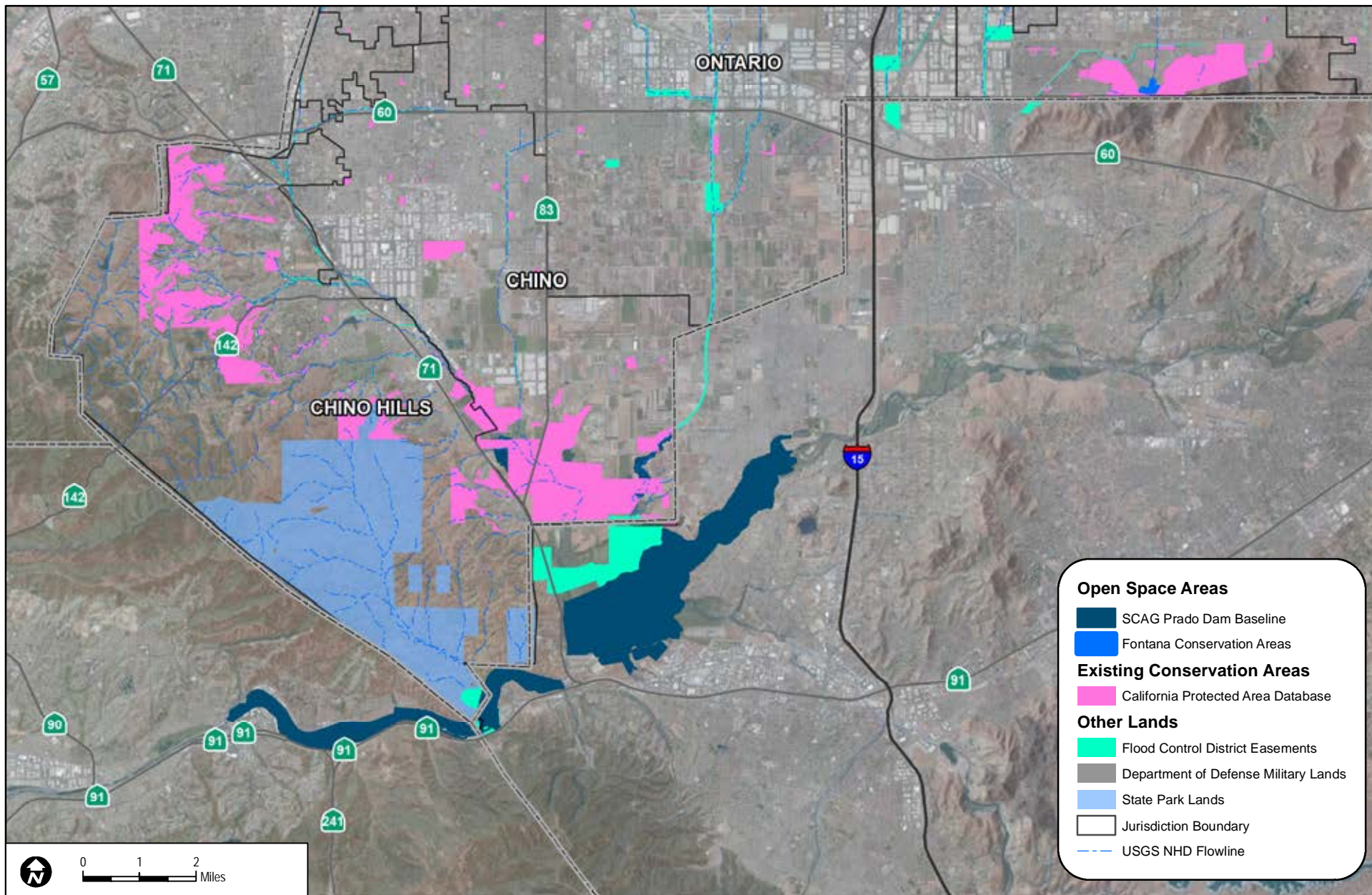
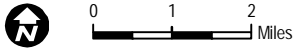
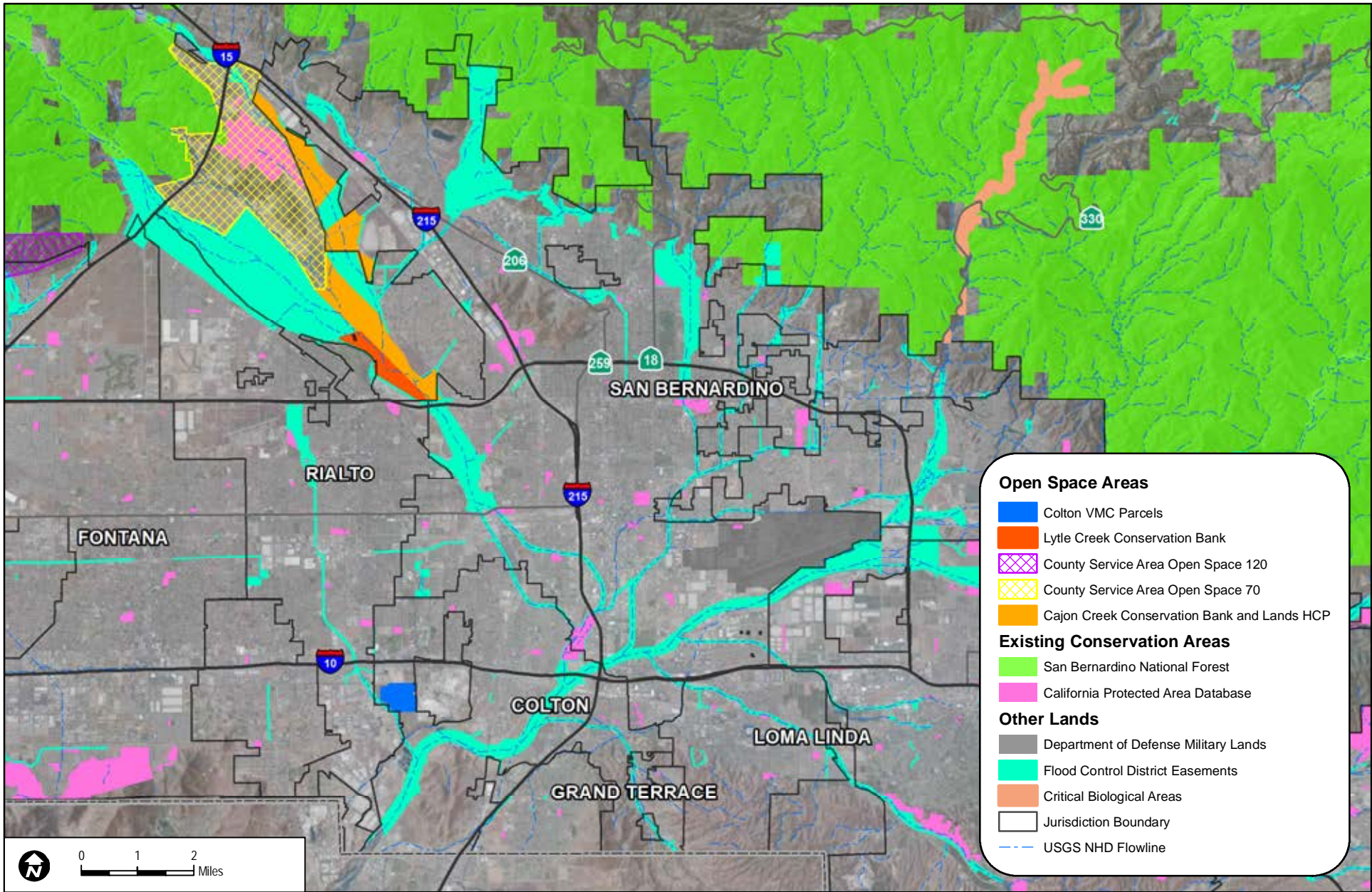


FIGURE 4-6b
Conservation and Open Space Areas - Valley Region

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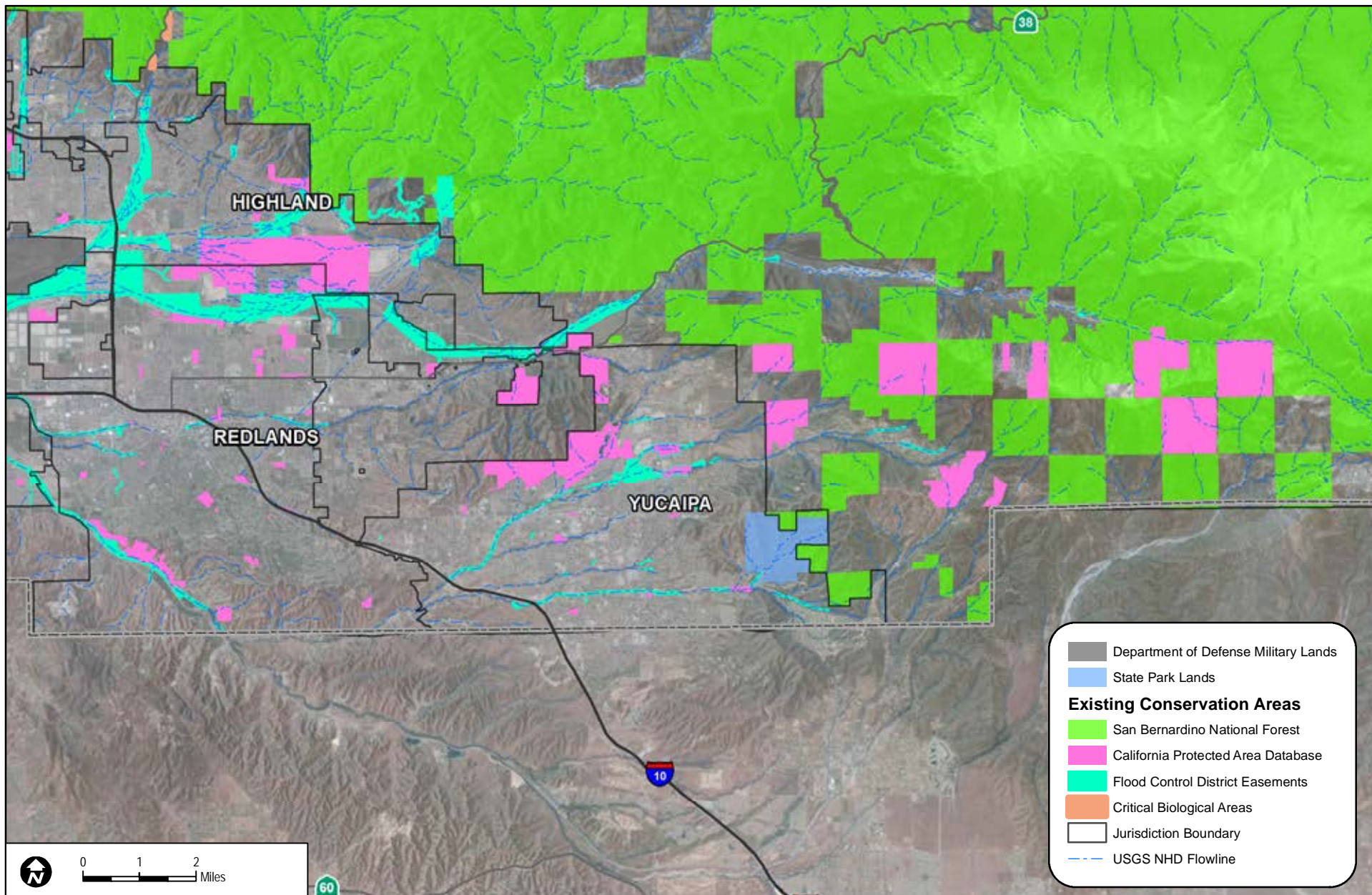
SOURCE: BING Maps 2014; BLM 2014; CPAD 2014; USGS 2012

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FIGURE 4-6c
Conservation and Open Space Areas - Valley Region

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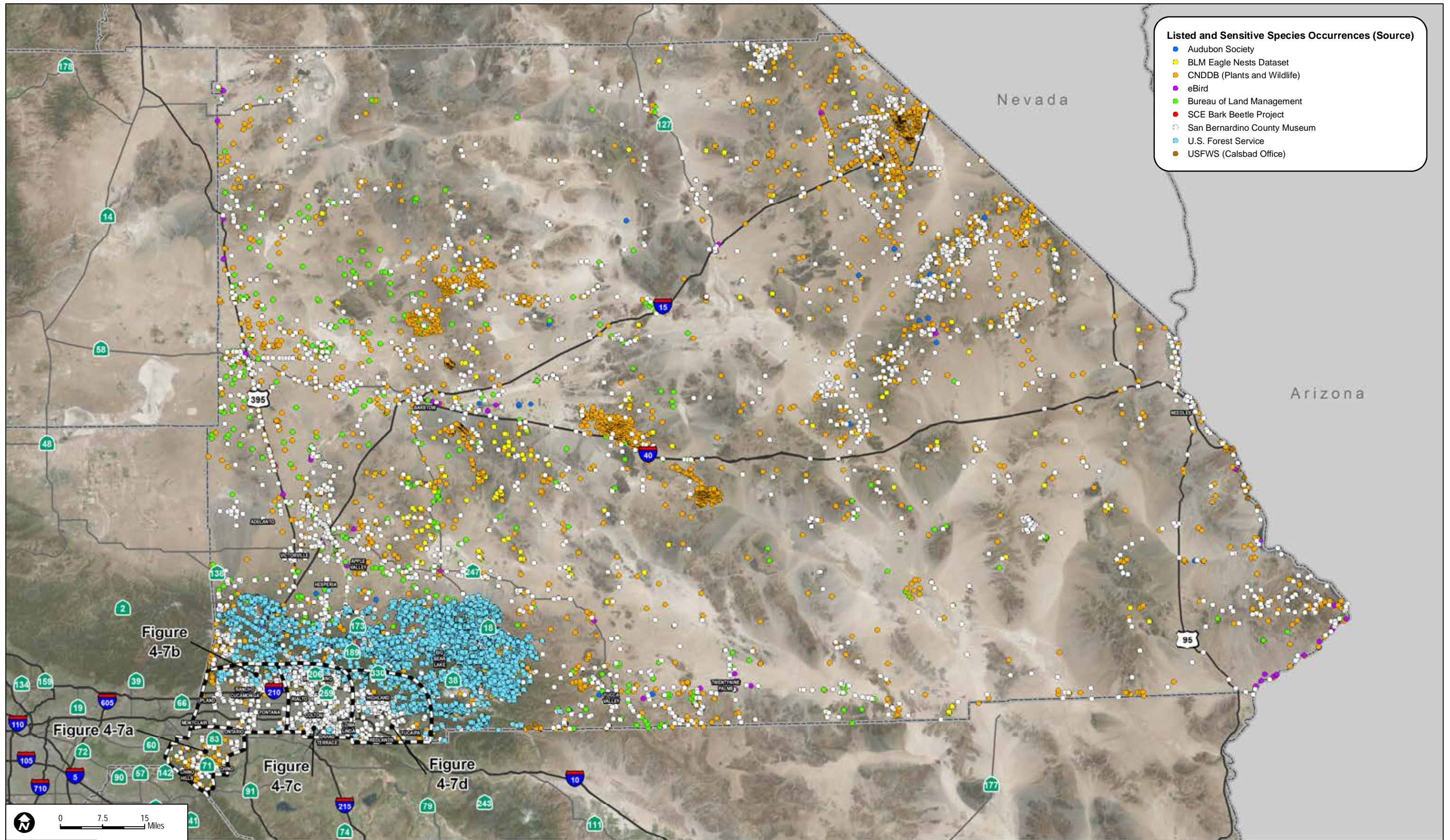
SOURCE: BING Maps 2014; BLM 2014; CPAD 2014; USGS 2012

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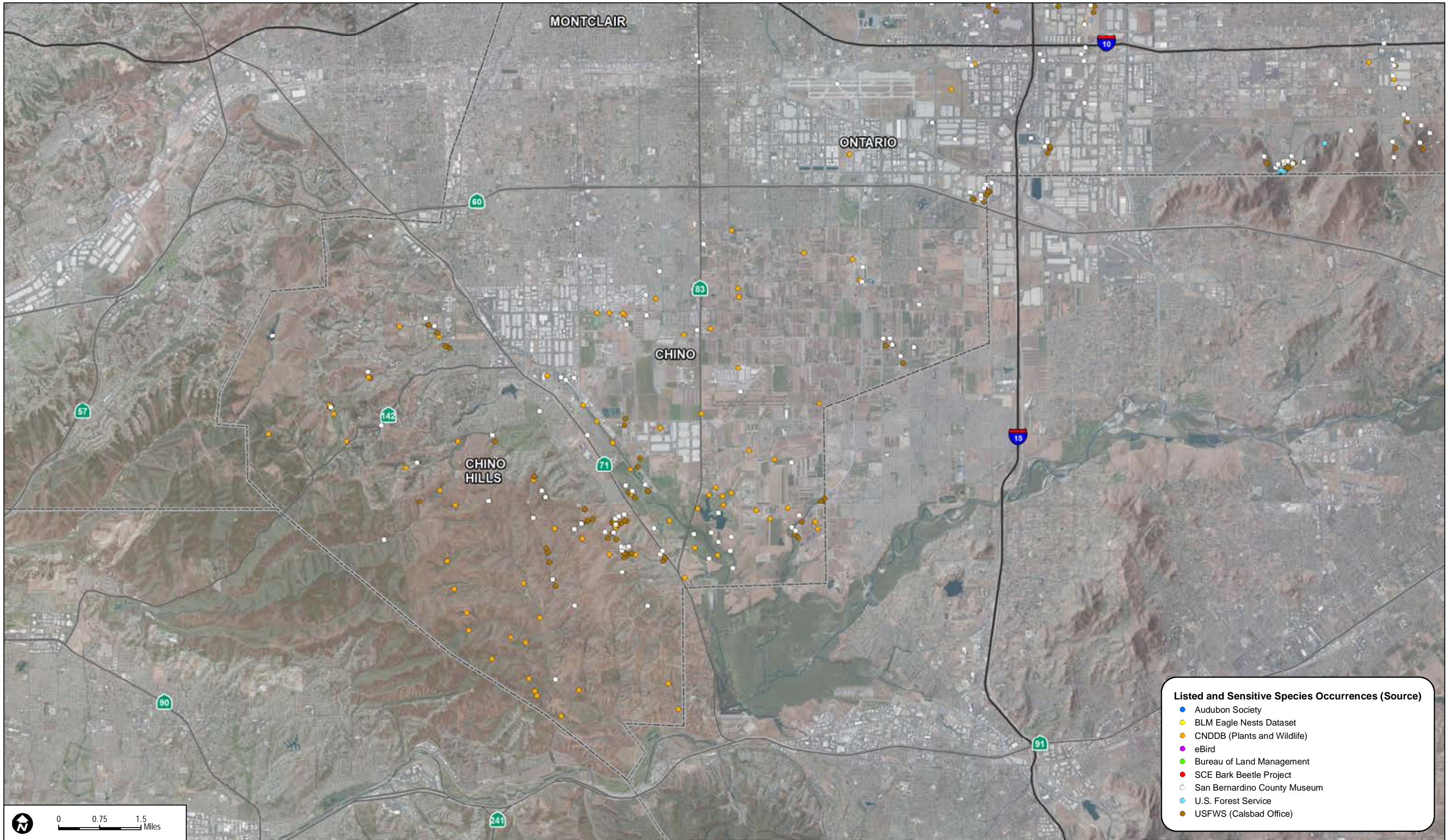
FIGURE 4-6d
Conservation and Open Space Areas - Valley Region

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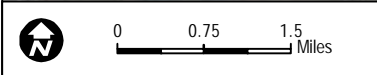
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- Listed and Sensitive Species Occurrences (Source)**
- Audubon Society
 - BLM Eagle Nests Dataset
 - CNDDB (Plants and Wildlife)
 - eBird
 - Bureau of Land Management
 - SCE Bark Beetle Project
 - San Bernardino County Museum
 - U.S. Forest Service
 - USFWS (Calsbad Office)



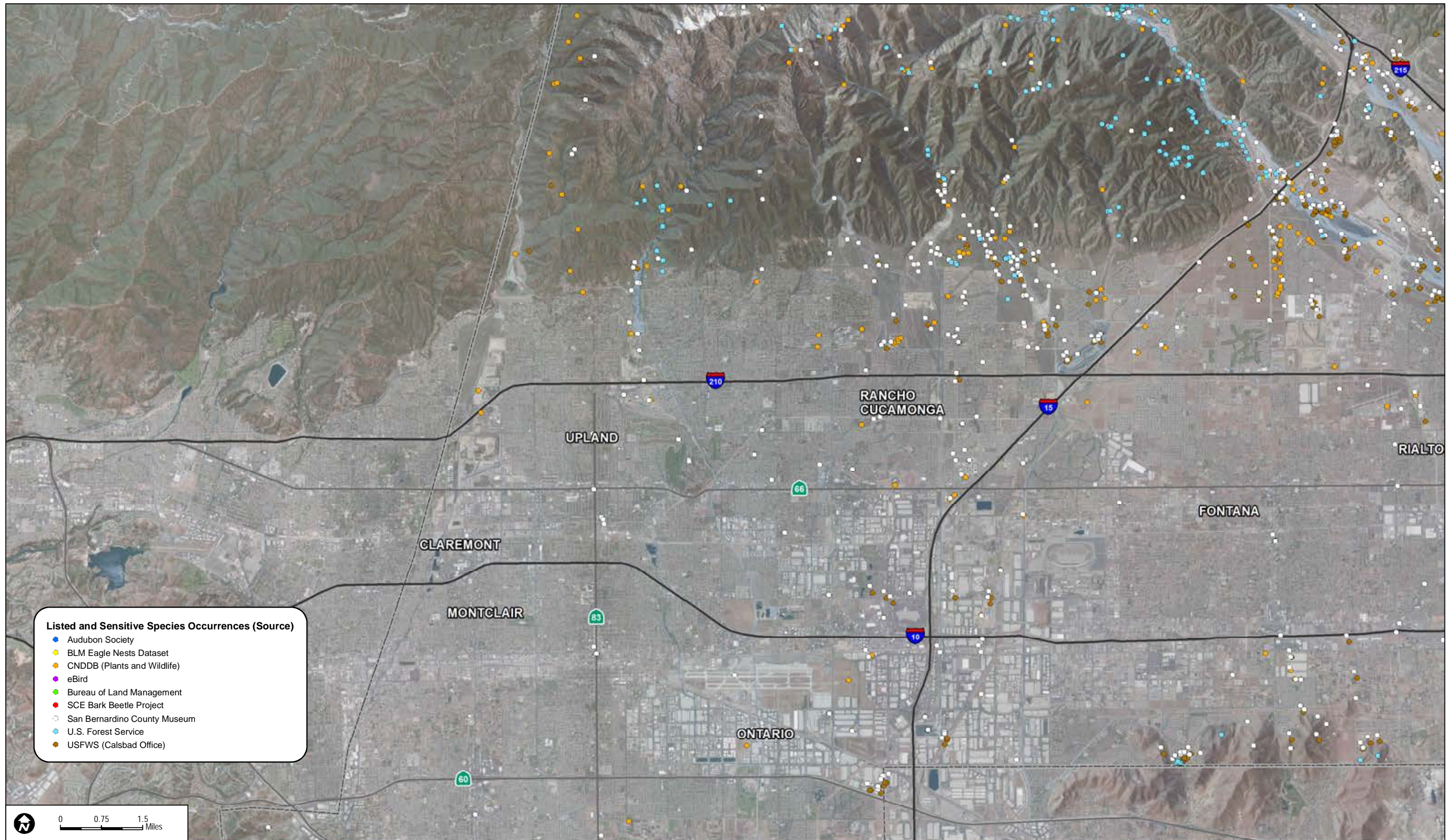
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SOURCE: BING Maps 2014

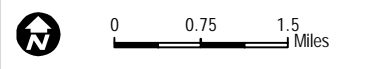
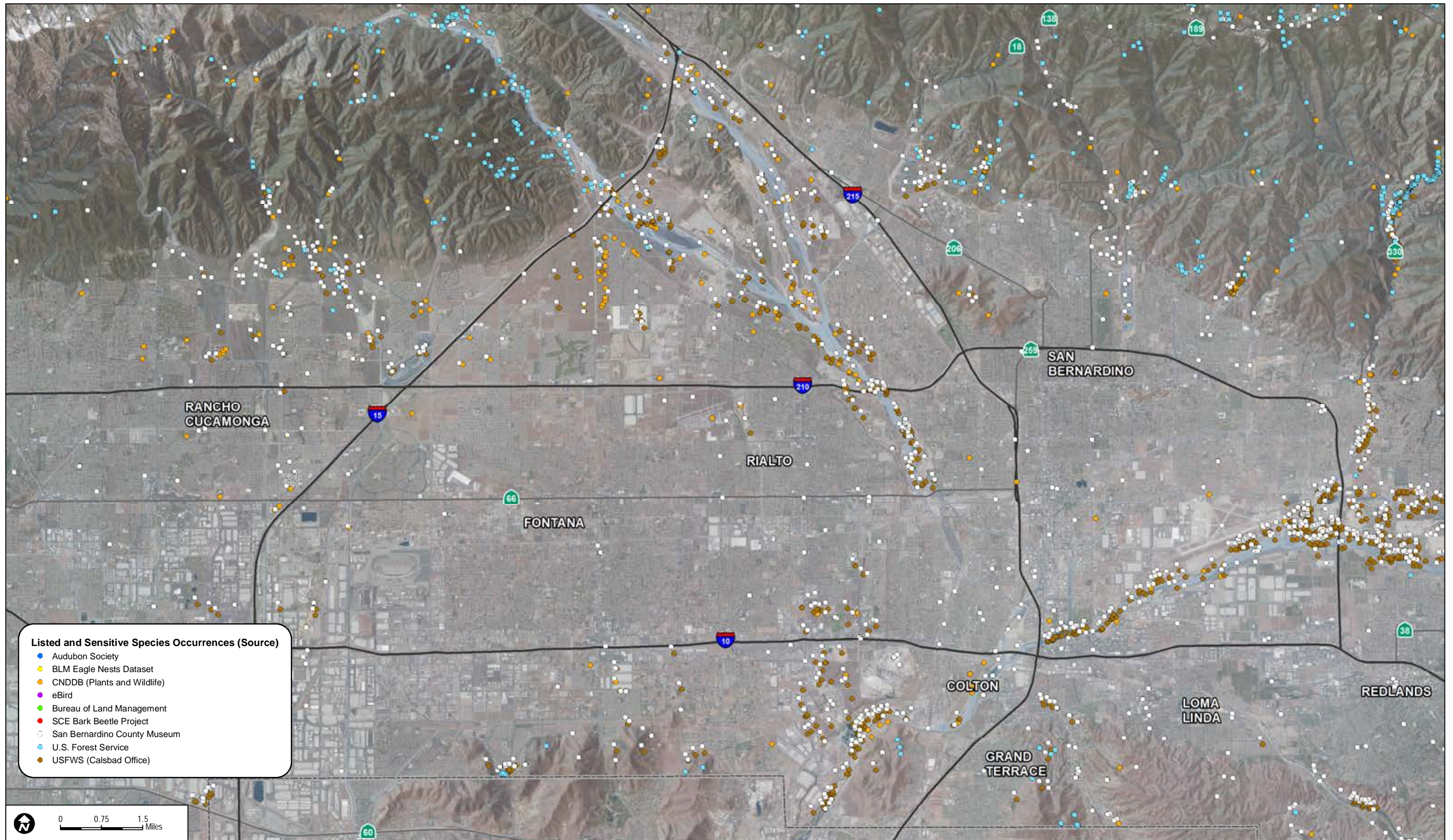
SANBAG Countywide Conservation Framework

FIGURE 4-7a
Species Occurrence - Valley Region

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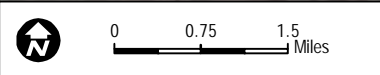
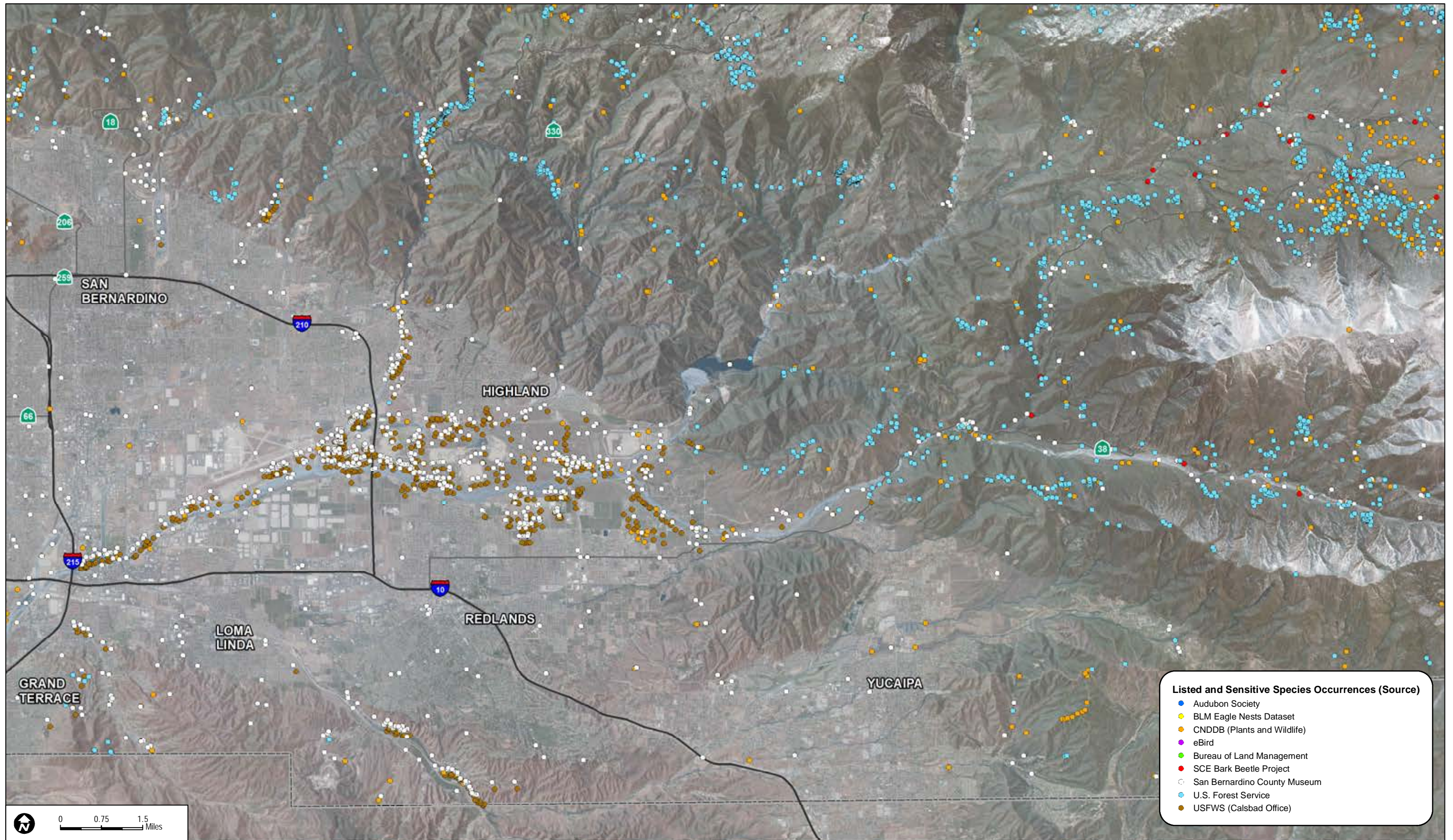
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SOURCE: BING Maps 2014

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FIGURE 4-7c
Species Occurrence - Valley Region

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SOURCE: BING Maps 2014

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FIGURE 4-7d
Species Occurrence - Valley Region

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4.3.2 Preliminary Gap Analysis

An important tool in developing a conservation strategy is to conduct a “gap analysis.” A gap analysis evaluates the distribution of high value biological resources (e.g., natural communities, species distributions, and known occurrence data) relative to the distribution of protected lands (areas protected and managed to maintain biological resource value) to identify any “gaps” in protection (e.g., high value biological resources that are on private lands and not well protected). In this way, a gap analysis is used to identify gaps in representation, gaps in ecological processes or functions, and gaps in management of existing protected areas.

The results of a gap analysis are useful in prioritizing species for conservation and setting species and natural community conservation goals. Conservation gaps may also occur where important habitat connectivity between large areas of protected lands are not currently protected, leaving areas for wildlife movement and gene flow between populations (i.e., wildlife corridors and landscape linkages) at risk. As outlined in Section 7 of this report, a detailed Gap Analysis will need to be completed in the future, along with other steps necessary to reach a Gap Analysis.

For the purposes of this report, a preliminary gap analysis can be reached for the three planning regions within the County by evaluating existing conservation and open space areas (Figures 4-6–4-6d) in relation to listed and sensitive species occurrence data (Figures 4-7–4-7d). Opportunities exist for conservation that tiers off of current conservation and open space areas. Furthermore, species distributions can inform future development planning. The following presents an overview of the varying conservation potentials for each region.

Desert Region

The desert region is predominantly in government land ownership (Figure 4-2 and Table 4-2), therefore a conservation strategy should build off of federal and state land management and conservation actions and responsibilities (e.g., BLM designated use areas, BLM Land Management Plans, HCPs). Areas where there are gaps in existing conservation/protections are fewer for the desert region. Gaps in conserved or protected lands occur in and around the cities/towns and some scattered portions throughout the desert. Therefore, future conservation and land acquisitions may focus on securing protected lands that connect these areas to the surrounding government lands. Some of these areas correspond to planned or mapped wildlife habitat linkages (Figure 4-5).

One major consideration for the Desert Region is the proposed Desert Renewable Energy Conservation Plan (DRECP). The DRECP provides a plan to identify development focus areas that may accommodate renewable energy projects and associated transmission in the California

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desert over the next 25 years. The plan also identifies conservation areas, sensitive plant and wildlife species, and a management strategy. The DRECP will help provide conservation of desert ecosystems while facilitating the timely permitting of appropriate development of renewable energy projects. The DRECP provides a species permitting strategy through the USFWS, or a General Conservation Plan (GCP). This GCP could be used by the Desert Region jurisdictions as a template or means to facilitate species or waters permitting for future renewable energy projects. The proposed Town of Apple Valley MSHCP also provides an opportunity for surrounding jurisdictions to build off of a comprehensive conservation strategy.

Mountain Region

The majority of the mountain region is owned by the federal government as National Forest lands (Figure 4-2 and Table 4-2). Future development actions and land uses would be limited by the management priorities described for federal lands, therefore, a separate conservation plan or strategy for local jurisdictions is likely not warranted. Similar to the desert region, gaps in existing conservation are few; areas in and around jurisdictions represent the remaining conservation gaps. Project-by-project conservation planning that is coordinated with the Federal government and tiers off of existing federal and state open space and conservation areas is an advisable option.

Valley Region

With 95% of lands in private ownership (Figure 4-2 and Table 4-2), the Valley Region provides the most development potential in the County. As supported by the Vacant Land Study prepared for the San Bernardino County Vision project (San Bernardino County 2011), the Valley region has the least amount of potential development constraints in the form of mining, water infrastructure/developed lands, highways and major roads, residential density, lands in planning boundaries, sensitive agricultural lands, and sensitive habitats.

A preliminary gap analysis for the Valley Region identified potential future conservation focus areas by considering planned development (Figure 4-1), designated Critical Habitat (Figure 4-3a), existing conserved or open space areas (Figure 4-6a–4-6d), and known special-status and sensitive species occurrences (Figure 4-7–4-7d). The two primary conservation focus areas are:

- Valley foothills, and
- Drainages associated with the Santa Ana River watershed.

The foothills of Rancho Cucamonga, Rialto, San Bernardino, Highland, and Yucaipa have existing conservation areas (e.g., CSAs, mitigation or conservation banks, protected areas or

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open space), support designated Critical Habitat for San Bernardino kangaroo rat, and/or provide habitat for many special-status and sensitive species. Because these areas abut existing protected and managed National Forest Service lands, a comprehensive conservation strategy should consider maximizing these existing conservation areas by linking currently unprotected properties that support important biological resources (conservation gaps) to the adjacent protected federal agency lands. Additionally, County Flood Control easements which occur throughout the Valley region may facilitate habitat connectivity for this area's relatively abundant and diverse species composition. The Valley region supports important hydrological processes associated with the Santa Ana River watershed. County Flood Control easements occur on a large portion of the major drainages within this region (Figure 4-6a–4-6d). Although County Flood Control has responsibilities to provide flood protection and water conveyance to all citizens of the County, the drainage areas also support habitat for many riparian or drainage-associated species in the Valley. For example, the San Bernardino kangaroo rat (SBKR), a species that is federally listed as endangered, is well documented to occur within the Valley region, and is associated with drainages (alluvial floodplains and adjacent upland habitats). A comprehensive conservation strategy to conserve potential and occupied SBKR habitat would facilitate permitting for development projects that occur within or adjacent to occupied drainages and/or designated Critical Habitat. Additionally, future impacts associated with new construction, and operation and maintenance activities will be subject to Waters of the U.S. and Waters of the State permit requirements which typically also incorporate considerations for listed and sensitive species impacts.

One key component to a future conservation strategy for the Santa Ana River watershed is the Upper Santa Ana Wash Land Management and Habitat Conservation Plan (Wash Plan) located mostly in the City of Highland. This draft HCP is being led by the San Bernardino Valley Water Conservation District and is expected to provide a conservation strategy to facilitate development in and along the Santa Ana River, while providing for conservation of key species and habitats. The Wash Plan may be the foundation for which additional conservation could build on. Future conservation should consider securing conserved habitat and open space that provides an ecological and biological connection to the Santa Ana River which is currently lacking for some upstream and downstream areas. Therefore, the Valley drainages and associated upland habitats represent a gap in conservation which also provides an opportunity for a future conservation focus.

4.3.3 Economic Development and Streamlining Considerations

The presence of biological resources on proposed project sites has the potential to lengthen project development timelines and increase project development and mitigation costs. Conventional project-by-project permitting involving federal or state listed species would require

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consultation with the USFWS under ESA Section 7 or development of a project-specific HCP under ESA Section 10 and/or CESA Section 2080.1 or Section 2081 permitting processes for state listed species. Project permitting under a regional multi-species HCP/NCCP (ESA Section 10 and CESA Section 2835) provides a means to streamline these permitting processes by allowing local jurisdictions to extend their incidental take authority to individual development projects and research has shown that comprehensive approaches to habitat conservation planning through HCPs has provided economic benefits to projects through reduced uncertainty, time delays and compliance costs (Economic and Planning Systems, Inc. 2014). Exhibit 4-1 illustrates these typical processes.

The conventional project-by-project permitting process is typically characterized by:

- Numerous review cycles with multiple agencies
- Potentially lengthy and uncertain approval process
- Higher costs for project proponents
- Project proponent required to identify and provide necessary mitigation; Results in piecemeal, often ineffective mitigation
- For projects involving impacts to federally listed species, Section 7 would require federal nexus; without a federal nexus, a project-specific Section 10 HCP would need to be developed
- Project proponent responsible for maintenance and monitoring of mitigation lands

Project permitting under an approved regional multi-species HCP/NCCP is typically characterized by:

- Streamlined, local project permitting process
- Certainty in project approval process (e.g., schedule and costs)
- Coordinated conservation and mitigation strategy
- Greater mitigation flexibility
- Upfront Plan development and ongoing Plan implementation costs for local agencies
- Provides for a comprehensive approach and funding mechanism for maintenance and monitoring of mitigation lands

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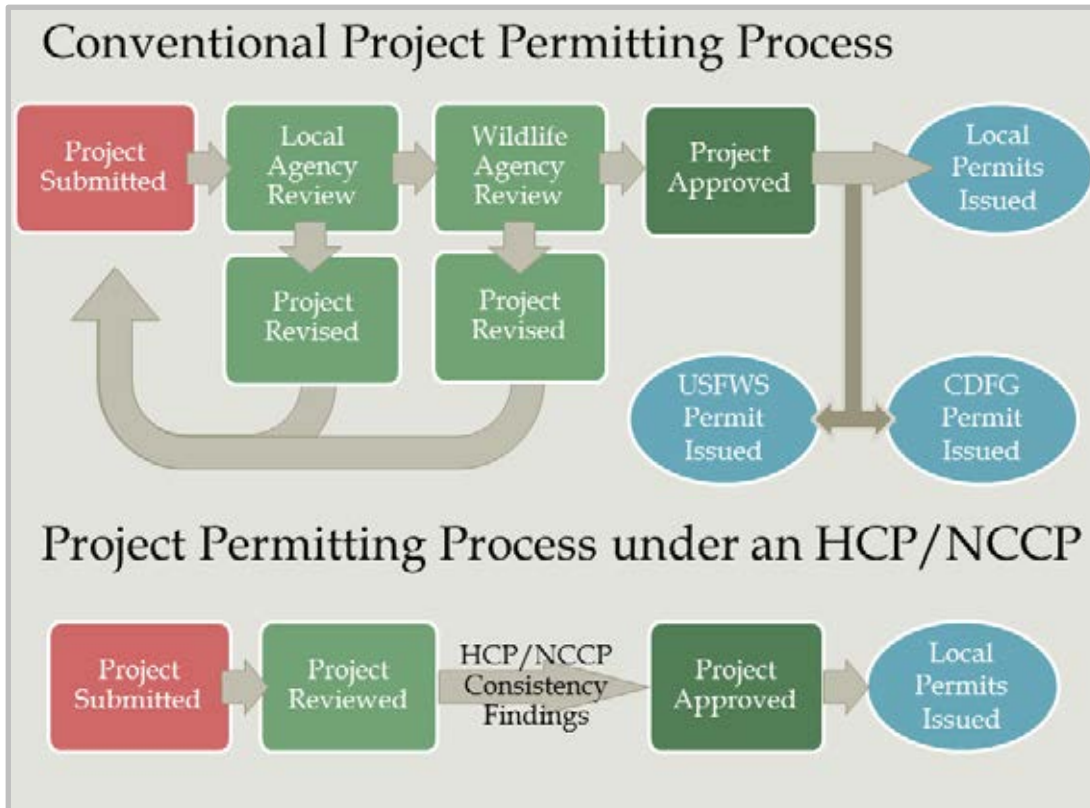


Exhibit 4-1

Schematic Contrasting the Conventional Project Permitting Process and the Project Permitting Process Under an Approved HCP/NCCP

4.3.4 Regulatory and Implementation Structure Considerations

Development of a conservation framework should consider various regulatory and implementation structures that would accompany potential conservation strategies. Under the status quo, proposed development projects are reviewed and approved as outlined above in Section 4.3.3 on a project-by-project basis. Mitigation for development projects under the project-by-project approach is provided, if necessary, on a piecemeal basis without a comprehensive conservation strategy or land management strategy. The existing regulatory and implementation structures would remain in place under the status quo approach.

A regional multi-species HCP/NCCP approach can differ in regulatory and implementation structures. Two potential regulatory and implementation structures are outlined below.

- **Comprehensive Plan:** This type plan would have the broadest coverage of activities (i.e., future projects) and Permittees (i.e., participants). Because such a plan is intended to be

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comprehensive, it has advantages during implementation across the entire planning area; however, there are often challenges to get the plan to approval. A comprehensive plan would require involvement of Permittees, some of which may not have equal realized benefits through the comprehensive plan. Also, a comprehensive plan typically includes compromise between all stakeholders to reach an approval status with the Permitting Agencies (i.e., US Fish and Wildlife Service and California Department Fish and Wildlife).

- Umbrella/Programmatic Plan: This type of plan would be designed to be flexible and/or scalable. It would be more limited in scope in terms of covered activities and/or Permittees; however, there would be greater potential for plan approval given the more focused scope.

A regional multi-species HCP/NCCP approach can also differ in their conservation strategies. Conservation strategy elements can differ as outlined below.

- Focused vs. Comprehensive Coverage: Regional HCP/NCCPs can vary widely in terms of the range of Covered Species and Covered Activities addressed. A focused strategy is generally easier to develop but would not address all potential biological resources conflicts. A comprehensive strategy would take longer to develop but would prove greater overall coverage.
- Conservation Strategy Approaches: Generally, conservation strategies can be characterized as map-based, process/criteria-based, or hybrids. Map-based strategies often rely on “hard-lining” areas of development and areas of conservation. Process/criteria-based strategies are often referred to as “soft-line” plans and rely on criteria to describe how and what would be conserved through plan implementation. Hybrid strategies employ a mix of hard-line areas and soft-line areas.

As an alternative to the status quo or the regional multi-species HCP/NCCP approaches, several other conservation approaches could be employed, including

- Development of a permit-less conservation strategy
- Formalized use of mitigation banks
- Establishment of advanced mitigation programs
- Development of a Subarea Plan to the DRECP for the Desert Region
- Establishment of land owner partnerships; agreements

Each of these approaches should be evaluated as potential approaches when developing the conservation framework for San Bernardino County.

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5 CONSERVATION PLANNING SUBAREAS

The San Bernardino County planning area spans a large geographic area covering approximately 12,862,900 acres. Conservation planning efforts at this scale often subdivide the planning area into smaller units referred to as “subareas” that can serve the following purposes:

- To focus elements of a conservation strategy (e.g., conservation objectives, conservation actions, etc.) on conservation targets (e.g., plant and wildlife species, natural communities) with greater geographic specificity within a planning area
- To align the planning effort with jurisdictional and/or administrative boundaries
- To structure and organize the analyses, mapping, and reporting

This section will (1) identify a set of potential approaches to subdividing the San Bernardino County planning area into subareas, (2) establish the criteria used to evaluate the utility of the identified subarea options, and (3) evaluate the potential subarea approaches to use for the Preservation/Conservation Framework.

5.1 Potential Subarea Approaches

The following potential approaches were used to subdivide San Bernardino County into smaller geographic units referred to as subareas.

- Biogeographic boundaries
 - Regions (*San Bernardino County General Plan*). Figure 5-1 depicts the planning area subdivided using Region Subareas.
 - Ecoregions (*US Forest Service ecoregion subsections*). Figure 5-2 depicts the planning area subdivided using Ecoregion Subareas.
- Hydrologic boundaries
 - Watershed boundaries (*California Department of Water Resources*). Figure 5-3 depicts the planning area subdivided using Watershed Subareas.
- Jurisdictional boundaries
 - Incorporated cities and unincorporated areas. Figure 5-4 depicts the planning area subdivided using Jurisdictional Subareas

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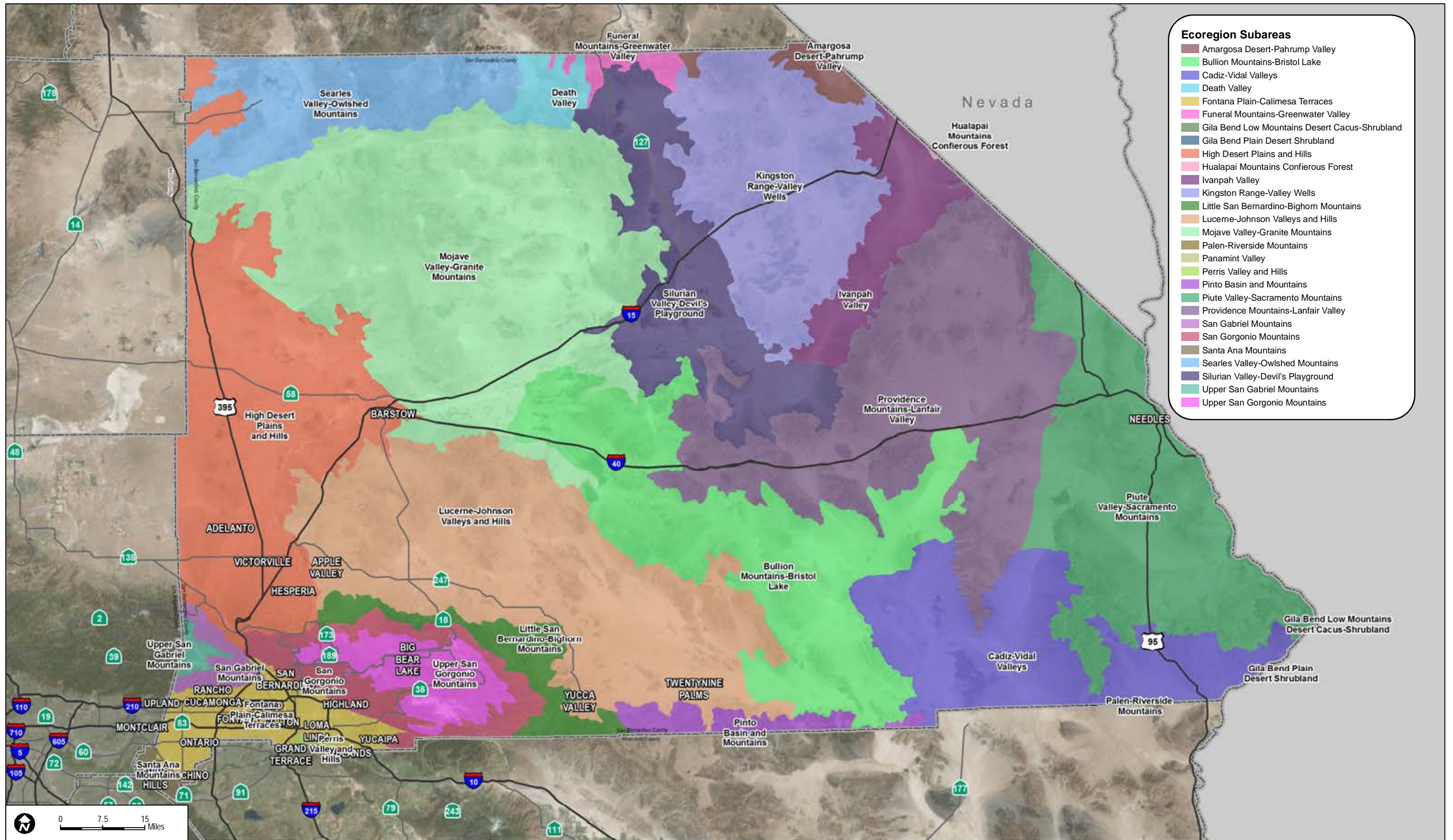
Combinations of these boundaries were also considered to subdivide the planning area into subareas. The following boundary combination approach was also used:

- Combined Biogeographic and Jurisdictional boundaries
 - Regions and Incorporated cities and unincorporated areas. Figure 5-5 depicts the planning area subdivided using Region-Jurisdictional Subareas.

Potential approaches to subdivide the planning area that were considered but were not carried forward for evaluation included the following:

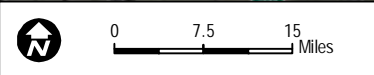
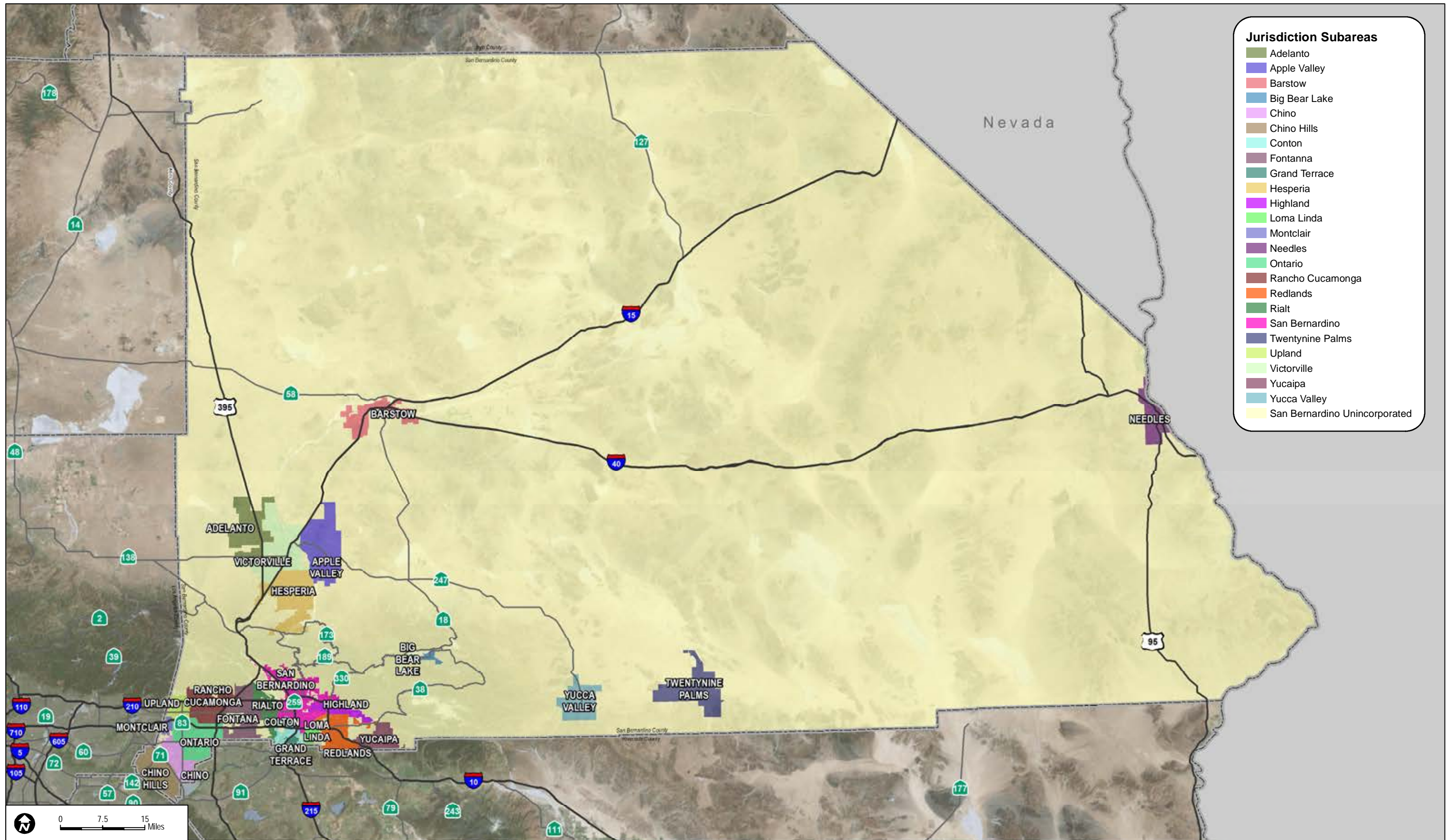
- Other Jurisdictional/Administrative boundaries: Other jurisdictional/administrative boundaries, such as BLM Land Use Plan areas, US Forest Service planning areas, USFWS field offices regions, and CDFG regions were all considered but were not carried forward for evaluation for this planning effort. The BLM Land Use Plan areas cover the eastern (desert) portion of the county and the US Forest Service planning areas cover the mountain portion of the county. These geographic areas do not cover the entire county planning area; therefore, these approaches were not carried forward. Administrative boundaries, such as the USFWS field office boundaries or the CDFW region boundaries, were also considered but not evaluated further. The USFWS field office (the Palm Springs sub-office area) and the CDFW region (the Inland Deserts region) that cover the county are both single geographic units and would not subdivide the planning area.
- Land Ownership: Although land ownership is useful information in the conservation planning process, ownership patterns are geographically “scattered” across the planning area and would not serve as functional subareas for planning.
- General Plan Land Use Designations: Although General Plan land use designations are also useful in the conservation planning process (e.g., for determining land status and uses), the geographic distribution of the land use designations clustered and dispersed across the planning area, which would not serve as functional subareas for planning.
- DRECP Subareas: The DRECP, as summarized in Section 4, uses ecoregion subareas (aggregations of the USFS ecoregion subsections) to subdivide the planning area, which includes the desert region of San Bernardino County. Because the DRECP does not cover the entire San Bernardino County, the DRECP subareas were not considered further. In considering the use of ecoregions as an approach to subareas for the Conservation Framework, the same aggregations of the USFS ecoregion subsections could be used to make the Conservation Framework subareas align with the DRECP ecoregion subareas, then aggregations in the mountain and valley regions would also need to be made for consistency.

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SOURCE: BING Maps 2014

SANBAG Countywide Conservation Framework

FIGURE 5-4
Jurisdiction Subareas

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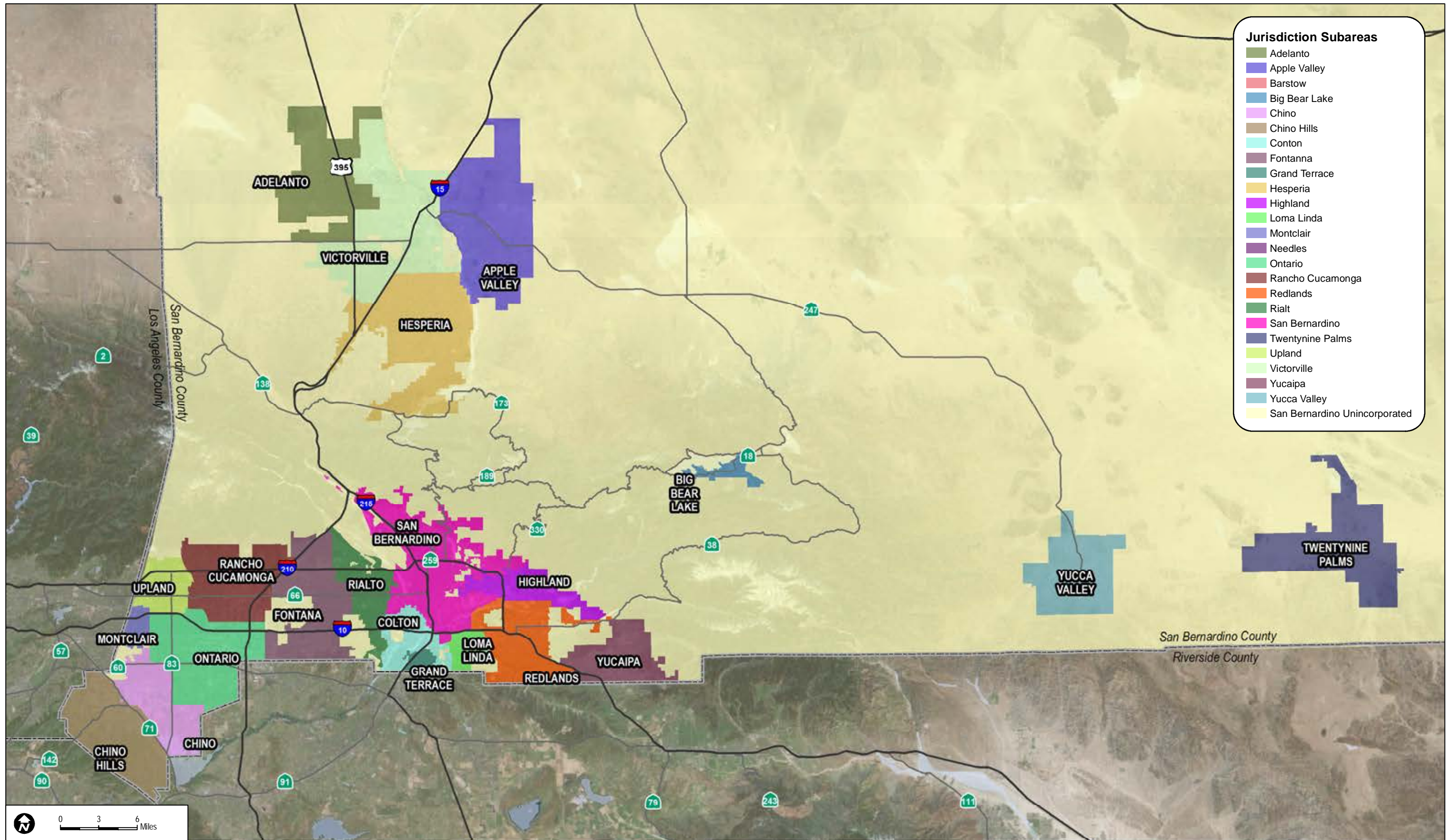
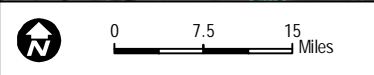
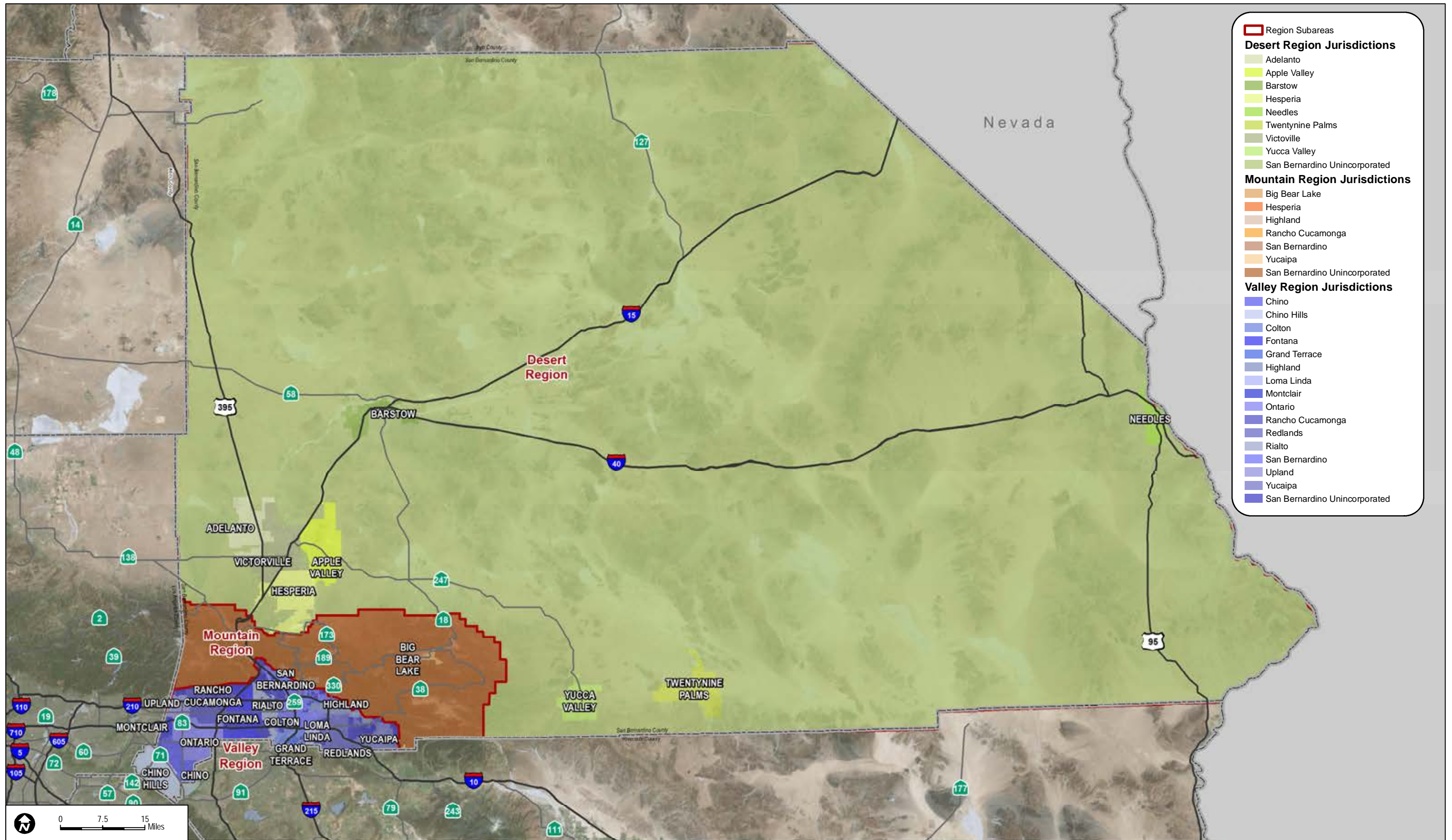


FIGURE 5-4a
Jurisdiction Subareas - Mountain and Valley Regions

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SOURCE: BING Maps 2014

SANBAG Countywide Conservation Framework

FIGURE 5-5
Region-Jurisdiction Subareas

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- **Jepson Ecoregions:** The ecoregions used in the Jepson Manual of Higher Plants of California provide geographic subdivisions of California and classify the California Floristic Province into regions and subregions. These ecoregions are very similar geographically as the USFS ecoregion subsections; therefore, Jepson ecoregions were not considered further.
- **Other Combinations:** Four sources of subarea boundaries (i.e., Regions, Ecoregions, Watersheds, and Jurisdictions) were used to create five potential subarea approaches (i.e., one for each source boundary and one combination approach using Region with Jurisdiction). Other combinations of these boundaries were considered but were not carried forward for evaluation. Regions, Ecoregions, and Watersheds are biogeographic/hydrologic based boundaries which would not function as combinations of with each other. Combining jurisdiction with ecoregions or watershed would yield a high number of subareas and would be overly complex.

5.2 Criteria for Evaluating the Subarea Approaches

The potential subarea approaches for the Conservation Framework were evaluated using the following primary criteria:

1. **Usefulness:** Subarea boundaries should be useful in serving the purposes noted above such as helping to define conservation targets and to focus conservation strategies within geographic areas. Subarea boundaries that delineate real distinctions in ecoregions, natural communities, and Covered Species ranges are often useful to help serve the purposes noted above since, for example, it is sometimes useful to establish conservation targets for ecoregion or natural community groupings with similar characteristics or that support life history requirements for certain groups of species.
2. **Practicality:** Subarea boundaries should be practical for implementation and for providing structure/organization. Subareas based on administrative and jurisdictional boundaries make it clear how a conservation strategy would be implemented in each geographic unit. Physical features such as ridgelines or watershed boundaries sometimes define certain administrative or biological boundaries, which can often be located on the ground and can assist in conservation strategy implementation. The number of subareas in relationship to the size of the overall plan area may also relate to practicality for implementation for a variety of reasons; too many subareas can defeat the structural/organizational purpose of subareas.

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5.3 Evaluation of the Potential Subarea Approaches

Figures 5-1 through 5-5 illustrate the five potential subarea approaches evaluated for the Conservation Framework. The following evaluation summarizes these potential approaches and briefly describes the advantages and disadvantages of each option.

5.3.1 Region Subareas

Figure 5-1 shows the Region subareas for the planning area. There are three regions in the planning area: desert, mountain, and valley. Region subareas are based on the structural/organizational units used in the San Bernardino General Plan (County of San Bernardino 2007). These broad units are based on biogeographic landscape features that are analogous to coarse-scale ecoregions. Table 5-1 summarizes the regions subareas for the planning area.

**Table 5-1
Region Subareas Approach Summary**

Region	Total (acres)
Desert Region	11,986,196
Mountain Region	561,753
Valley Region	314,915
Total	12,862,864

From a planning perspective, Region subareas are logical units, manageable in terms of number of units, and consistent with other regional planning documents. Region subareas also have biogeographic relevance and are characterized by similar climates, physical features, natural communities, and special-status species. A disadvantage of the Regions subareas is the large (nearly 12 million acres) and unsubdivided desert region. Hybrid approaches that employ ecoregions in the desert region could overcome this shortcoming.

5.3.2 Ecoregion Subareas

Figure 5-2 shows the Ecoregion subareas for the planning area. There are 28 ecoregions or portions of ecoregions in the planning area, as shown in Table 5-2. Ecoregion subareas are based on the US Forest Service ecoregion subsection data (USFS 1997).

From a planning perspective, Ecoregion subareas are biogeographically relevant and reflect climatic, physical, and biological differences across the landscape. Disadvantages to this subarea approach are that the number of geographic units are high and there are several ecoregions with

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very little acreage in the planning area. Consolidation of the USFS ecoregion subsections (i.e., aggregating subsections and slivers of subsections into single geographic units) into subareas specifically developed for the Conservation Framework would overcome the disadvantages of ecoregions as a subarea approach.

**Table 5-2
Ecoregion Subareas Approach Summary**

Ecoregion	Total (acres)
Amargosa Desert-Pahrump Valley	64,549
Bullion Mountains-Bristol Lake	1,185,886
Cadiz-Vidal Valleys	794,478
Death Valley	95,778
Fontana Plain-Calimesa Terraces	267,001
Funeral Mountains-Greenwater Valley	52,516
Gila Bend Low Mountains Desert Cactus-Shrubland	63
Gila Bend Plain Desert Shrubland	342
High Desert Plains and Hills	1,217,299
Hualapai Mountains Coniferous Forest	1,122
Ivanpah Valley	296,597
Kingston Range-Valley Wells	853,420
Little San Bernardino-Bighorn Mountains	192,374
Lucerne-Johnson Valleys and Hills	1,467,840
Mojave Valley-Granite Mountains	1,962,329
Palen-Riverside Mountains	579
Panamint Valley	454
Perris Valley and Hills	6,659
Pinto Basin and Mountains	114,512
Piute Valley-Sacramento Mountains	1,090,793
Providence Mountains-Lanfair Valley	1,429,830
San Gabriel Mountains	63,480
San Gorgonio Mountains	251,140
Santa Ana Mountains	26,446
Searles Valley-Owlshead Mountains	508,758
Silurian Valley-Devil's Playground	661,122
Upper San Gabriel Mountains	26,755
Upper San Gorgonio Mountains	230,741
Total	12,862,864

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5.3.3 Watershed Subareas

Figure 5-3 shows the Watershed subareas for the planning area. There are 15 watersheds or portions of watersheds in the planning area, as shown in Table 5-2. Watershed subareas are based on the California Department of Water Resources hydrologic unit data (DWR 2004).

From a planning perspective, Watershed subareas capture elements of hydrologic processes and connectivity; however, these geographic units are vast and fail to capture major physical and biological features (e.g., half of the Mountain region drains west towards the coast and the other half drains to the central Mojave Desert).

**Table 5-3
Watershed Subareas Approach Summary**

Watershed	Total (acres)
Antelope-Fremont Valleys	87,856
Coyote-Cuddeback Lakes	1,177,161
Death Valley-Lower Amargosa	1,351,164
Havasu-Mohave Lakes	645,244
Imperial Reservoir	301,852
Indian Wells-Searles Valleys	420,218
Ivanpah-Pahrump Valleys	387,185
Mojave	2,944,792
Panamint Valley	253,924
Piute Wash	441,732
San Gabriel	7,457
Santa Ana	643,370
Southern Mojave	4,053,836
Upper Amargosa	36,023
Whitewater River	111,051
Total	12,862,864

Source: California Department of Water Resources (DWR) California watersheds dataset

5.3.4 Jurisdictional Subareas

Figure 5-4 shows the Jurisdictions subareas for the planning area. There are 25 jurisdictional units in the planning area, including 24 incorporated cities plus the unincorporated county. Jurisdiction subareas are based on the city boundaries for all incorporated cities and the remainder of the unincorporated land in the County planning area (County jurisdiction). Table 5-4 summarizes the Jurisdictions subareas for the planning area. Use of city boundaries would provide relatively small coverage of the planning area with the large “remainder” area (over 12 million acres) comprised of unincorporated County lands.

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Jurisdictional boundaries provide advantages in terms of conservation strategy implementation, but jurisdictions lack any foundation in biogeography and therefore are not useful units framing the conservation strategy. Calculations, analysis, and reporting by jurisdiction would be used regardless of the subarea boundary approach ultimately selected.

**Table 5-4
Jurisdiction Subarea Approach Summary**

Jurisdiction	Total (acres)
Adelanto	33,793
Apple Valley	47,146
Barstow	26,292
Big Bear Lake	4,112
Chino	18,949
Chino Hills	28,700
Colton	10,327
Fontana	27,114
Grand Terrace	2,259
Hesperia	46,499
Highland	11,957
Loma Linda	4,821
Montclair	3,545
Needles	19,856
Ontario	31,938
Rancho Cucamonga	25,673
Redlands	23,192
Rialto	14,299
San Bernardino	39,971
San Bernardino County Unincorporated	12,304,201
Twentynine Palms	37,634
Upland	10,025
Victorville	47,318
Yucaipa	17,758
Yucca Valley	25,486
Grand Total	12,862,864

5.3.5 Region-Jurisdiction Subareas

Figure 5-5 shows the Region-Jurisdiction subareas for the planning area. This combination approach uses the Regions described in Section 5.3.1 and the Jurisdictions described in 5.3.4 to create subareas that combine the advantages of each approach (e.g., biogeographic basis of the

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Regions combined with the implementation advantages of the Jurisdictions). Table 5-5 summarizes the Region-Jurisdiction subareas for the planning area. This approach does not overcome the vast acreage of unincorporated County land in the desert. Additionally, some jurisdictions span multiple regions. Modifying boundaries so that jurisdictions are not split up by regions would overcome a shortcoming of this approach.

**Table 5-5
Region-Jurisdiction Subarea Approach Summary**

Jurisdiction	Desert Region	Mountain Region	Valley Region	Total (acres)
	Region			
Adelanto	33,793	--	--	33,793
Apple Valley	47,146	--	--	47,146
Barstow	26,292	--	--	26,292
Big Bear Lake	--	4,112	--	4,112
Chino	--	--	18,949	18,949
Chino Hills	--	--	28,700	28,700
Colton	--	--	10,327	10,327
Fontana	--	--	27,114	27,114
Grand Terrace	--	--	2,259	2,259
Hesperia	46,421	78	--	46,499
Highland	--	213	11,744	11,957
Loma Linda	--	--	4,821	4,821
Montclair	--	--	3,545	3,545
Needles	19,856	--	--	19,856
Ontario	--	--	31,938	31,938
Rancho Cucamonga	--	14	25,660	25,673
Redlands	--	--	23,192	23,192
Rialto	--	--	14,299	14,299
San Bernardino	--	3,900	36,071	39,971
San Bernardino County Unincorporated	11,702,252	552,853	49,097	12,304,201
Twentynine Palms	37,634	--	--	37,634
Upland	--	--	10,025	10,025
Victorville	47,318	--	--	47,318
Yucaipa	--	583	17,175	17,758
Yucca Valley	25,486	--	--	25,486
Total	11,986,196	561,753	314,915	12,862,864

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5.4 Subarea Approach for the Conservation Framework

Based on the evaluation of the five potential Subarea approaches summarized in Section 5.3, the preliminary recommendation for subareas to use in the Conservation Framework are the Region Subareas (Figure 5-1). The rationale behind the preliminary recommendation provided here includes:

- Regions are logical geographic units that demarcate landscape-level biogeographic and physical zones.
- Regions were used as structural/organizational units in the San Bernardino General Plan
- Regions generally align with coarse-level land ownership and use patterns.
- Regions have a manageable number of geographic units

Hybrid versions of the Region Subareas may also be developed that may be preferred over using the Regions boundaries only (e.g., the Regions-Jurisdictions version analyzed here or subdividing the desert region into smaller units).

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6 PRINCIPLES AND RECOMMENDATIONS

The following draft principles and recommendations have been developed for the San Bernardino Associated Governments Countywide Habitat Preservation/Conservation Framework. These principles and recommendations have been developed in collaboration with and have been reviewed by the Planning Directors Technical Forum (PDTF) as well as the County's Environment Element Group (EE Group). The Principles are intended to provide broad guidance or recommendations related to future conservation planning in the County. These Principles would be used to guide development of subsequent phases of the Conservation Framework. The Principles are grouped into Policy Principles and Biological Principles. The Principles are presented in a summary list, followed by further discussion of each below.

Policy Principles

- Principle 1: Increase certainty while maintaining flexibility in compliance approach for both the preservation/conservation of habitat as well as for land development and infrastructure permitting.
- Principle 2: Recognize that San Bernardino County needs to have a growing economy to be able to afford the acquisition and ongoing management of habitat. Conservation efforts should complement other objectives such as managed growth, economic development and housing affordability while also respecting private property rights.
- Principle 3: Design institutional structures to promote habitat protection and management to leverage private funding, easements, public funding, and other mechanisms to maximize the protection of habitat and associated species, while respecting private property rights.
- Principle 4: Conservation planning efforts should be led by a funded institutional structure with authority and accountability that can provide champions to keep the process moving in a transparent, productive and timely manner.
- Principle 5: Recognize that jurisdictional and other stakeholder participation in a more comprehensive approach to conservation planning will be voluntary, but that participating in the more comprehensive approach will provide benefits for most of those participating.
- Principle 6: Leverage existing conservation efforts.
- Principle 7: Match potential tools for conservation with unique conservation and development needs within specific subareas.
- Principle 8: Consider conservation planning strategies that go outside the Jurisdiction and County boundaries, if needed, while respecting the primacy of local control.

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- Principle 9: Achieve conservation objectives in San Bernardino County through a variety of conservation strategies.

Biological Principles

- Principle 10: Recognize San Bernardino County is biologically diverse.
- Principle 11: Invest in the science of conservation planning.
- Principle 12: The identification of conservation areas should incorporate scientifically-accepted tenets of conservation biology.
- Principle 13: Consider current and future endangered, threatened, and sensitive species. Also, consider common species as indicators to track population trends.
- Principle 14: Identify mechanisms for long term, sustainable, adaptive management and monitoring.
- Principle 15: Manage public access to be compatible with conservation needs.

6.1 Policy Principles

Principle 1 Increase certainty while maintaining flexibility for both the preservation/conservation of habitat as well as for land development and infrastructure permitting.

One of the biggest risks with development of private or public projects is uncertainty. Management of certainty is important to keep projects moving forward. However, conservation concerns have sometimes stymied development efforts in San Bernardino County or have required project modifications that have been greater than project proponents may have expected. Understanding and planning for habitat conservation in a comprehensive and proactive manner will help create certainty in the development process for proposed land development and infrastructure projects. A Countywide Habitat Preservation/Conservation Framework that increases certainty would allow both the conservation community and development community to manage their respective expectations regarding habitat conservation objectives and mitigation obligations. It should also be understood that region wide planning efforts may not always apply effectively across all jurisdictional boundaries. To this end, the primacy of local land use control should be paramount.

To meet both conservation and development interests, there should be a clearer process and better understanding of regulatory permitting processes (i.e., Waters of the U.S. and State, Porter Cologne Act and Endangered Species). Communication and coordination among the local, state and federal

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jurisdictions and agencies will be important at the outset of conservation planning efforts so that expectations can be realized and managed for future processes. Creative ways to achieve the regulatory requirements while allowing for flexibility and pragmatic solutions should be sought out. Additionally, flexibility and incentive-based opportunities should be included to assist in making needed development and planning efforts as efficient and cost-effective as possible.

Principle 2 Recognize that San Bernardino County needs to have a growing economy to be able to afford the acquisition and ongoing management of habitat. Conservation efforts should complement other objectives such as managed growth, economic development and housing affordability.

Economic growth is a necessity for the sustainability of communities. Policies at the local jurisdiction, regional, and State levels will influence how robust that economic growth can be. Initiatives to improve the overall economic performance of the region and achieve a growing economy are addressed by the Countywide Vision Jobs/Economy element. However, conservation objectives and regulatory realities related to species occurrence, sensitive habitats, and protected areas need to be recognized and accommodated for that growth to be achieved. Growth and conservation are linked, and conservation planning tools can provide the mechanisms to balance the linked interests of both growth and conservation. In turn, successful conservation efforts depend on a vibrant economy to provide the funding capacity for establishment and management of the conserved lands. To facilitate needed economic fuel for the county, a broad toolkit of compliance and mitigation approaches should be considered including consideration of new ideas and mitigation approaches proposed by all stakeholders.

Principle 3 Design institutional structures to promote habitat protection and management to leverage private funding, easements, public funding, and other mechanisms to maximize the protection of habitat and associated species, while respecting private property rights.

Habitat protection and management can be achieved through a variety of mechanisms. Existing habitat protection and management occurs in many jurisdictions and entities throughout the County, and these existing conservation areas can serve as building blocks around which future conservation areas are established. Additionally, certain jurisdictions have large land developers that may set aside lands for conservation, which should be incorporated into the network of habitat conservation within the County. Incentives to encourage land dedications should be considered to help facilitate these potential opportunities. If private property is used for conservation, it would occur as a voluntary agreement with the property owner and the property owner would be fairly compensated. Public funding sources such as grants from the US Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) should also

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be sought to help with land acquisitions for conservation. Cooperating entities such as Crafton Hills Conservancy, Riverside Land Conservancy (RLC), Redlands Conservancy and the Inland Empire Resource Conservation District (IERCD) and others should be coordinated with and approached to cooperatively contribute to land acquisition and potentially, management. County Special Districts and Local Agency Formation Commission (LAFCO) should also be sought out for land management, land acquisition and funding strategies for conservation areas. Coordinating the available resources can lead to better management and more cost-effective use of the available funding.

Principle 4 Conservation planning efforts should be led by a funded institutional structure with authority and accountability that can provide champions to keep the process moving in a transparent, productive and timely manner.

Successful planning comes from cooperation and compromise of the people involved. Successful conservation planning programs have had “champions”. The people at the conservation planning table matter, and should have a universal understanding of the conservation and development goals and be able to work toward compromise. Working with the Wildlife Agencies is required for species and habitat permitting, and creative and flexible methods of getting the work done needs to be considered and implemented, such as:

- Identify entities that have funding available or can obtain and manage funding for conservation planning. These entities should employ personnel that are knowledgeable in conservation biology and/or land management.
- Create a steering committee or other mechanism for community stakeholders to have input in decisions and direction of efforts.
- Provide funding to pay for additional Wildlife Agency staff dedicated to the conservation planning efforts.
- Look for public/private partnership opportunities. Bringing together public resources with private flexibility could benefit conservation.

Principle 5 Recognize that jurisdictional and other stakeholder participation in a more comprehensive approach to conservation planning will be voluntary, but that participating in the more comprehensive approach will provide benefits for most of those participating.

If future comprehensive efforts for conservation planning are to take place, then cooperation amongst those with interest in conservation planning is required. All the stakeholders/entities involved must understand that comprehensive conservation planning is typically an exercise in

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compromise. Future conservation efforts must seek a balance between development and conservation interests. Voluntary participation by local jurisdictions and special districts is key and would be expected because land use authorities and other entities have their own discrete responsibilities/oversights. Economic incentives can be explored that would facilitate voluntary landowner participation. It would be accepted that private property owners would be fairly compensated for lands used as conservation. Through comprehensive planning, participants can obtain streamlined compliance and time and cost savings for both public infrastructure and private development. Participation in a comprehensive conservation planning effort will not always result in all parties being completely satisfied with the outcome, but rather in overall long-term benefits over the status quo.

Principle 6 Leverage existing conservation efforts.

Future conservation efforts should not “recreate the wheel”. Using existing conservation areas, or open space areas as the foundation for which future conservation lands are sought should be the priority. Conservation efforts should incorporate and coordinate existing federal land management areas, plans, and strategies (e.g., U.S. Forest Service [USFS] and Bureau of Land Management [BLM] management plans) into new conservation areas to maintain connected and consistent management actions among adjacent lands. Essentially, looking for ways to “fill in” the gaps of existing conservation with proposed conservation should be a focus of the Countywide Habitat Preservation/Conservation Framework. Habitat conservation planning is typically focused on Endangered Species Act (ESA) and California Endangered Species Act (CESA) compliance; however, many projects and jurisdictions also need to comply with “waters” regulations such as the Clean Water Act (regulated by the Army Corps of Engineers) and Streambed Alteration Agreement (regulated by the California Department of Fish and Wildlife). Conservation planning efforts should take into consideration the need for projects to provide mitigation for compliance with “waters” regulations in addition to ESA permitting needs. By considering the “waters” mitigation needs with the ESA conservation planning, local jurisdictions are able to consolidate the amount of lands required for mitigation, thereby minimizing duplication of mitigation requirements for waters and ESA permitting.

Principle 7 Match potential tools for conservation with unique conservation and development needs within specific subareas.

In a planning area the size of San Bernardino County, conservation and development needs can be geographically diverse. Subdividing the County into useful and practical subareas can help focus the conservation strategies and tools to specific geographic regions. For instance, a majority of the land base in the desert and mountain regions of San Bernardino County is administered by federal entities (e.g., Department of Defense [DoD], National Park Service

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[NPS], BLM, and USFS). In these regions, a comprehensive habitat conservation strategy would complement and build upon the conservation initiatives and programs of these federal entities. In the Valley and mountain foothills, land is predominantly privately held and the development potential is generally higher; therefore, the conservation strategy and tools employed should be tailored to this subarea of the County.

Principle 8 Consider conservation planning strategies that go outside jurisdiction and the County boundaries, if needed.

Areas supporting key biological resources and ecological processes occur throughout the County and also extend outside of the County into adjacent counties, or into cities or towns. Building upon existing protected lands in adjacent jurisdictions and counties (e.g., Western Riverside County Multiple Species Habitat Conservation Plan conserved lands) can benefit the biological resources in both jurisdictions and counties. Conservation strategies that have worked in surrounding jurisdictions and counties should be considered as a conservation tool. Local control should be an important consideration while planning across jurisdictional boundaries. Planning for habitat conservation that considers adjacent and surrounding resources and planning efforts will ensure development of comprehensive and robust conservation strategies for San Bernardino County.

Principle 9 Achieve conservation objectives in San Bernardino County through a variety of conservation strategies.

Open space and biological resource conservation currently occurs through a variety of mechanisms on both private and public lands in the County. The Countywide Habitat Preservation/Conservation Framework should aim to organize and coordinate these existing conservation efforts. Additionally, the framework should develop a conservation strategy structure that employs a variety of conservation tools or options for achieving the conservation needs. Proposed conservation strategies could incorporate economic impact analysis. The conservation strategy structure should incorporate a combination of the following potential conservation tools:

- Leveraging existing, ongoing conservation efforts
 - Conservation activities conducted by Resource Conservation Districts, County Special Districts, and other conservation land management organizations
 - Existing and proposed HCPs
 - Creative coordination with state and federal agencies (e.g., CDFW, BLM, USFS, NPS, DoD)

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- Potential tools for conservation
 - Mitigation banking
 - Density and development transfers
 - Land and easement acquisition
 - Avoidance and set asides from development
 - Regional HCP/NCCPs
 - In Lieu Fee Programs
 - Voluntary conservation and conservation credits
 - Public financing for purchases of private property
 - General Plan Policy implementation
 - Hillside Ordinance implementation
 - Permit-less conservation strategy
 - Advanced mitigation programs
 - Subarea Plan to the DRECP in the Desert Region
 - Land Owner partnerships; agreements

6.2 Biological Principles

Principle 10 Recognize San Bernardino County is biologically diverse.

San Bernardino County covers over 12 million acres and several distinct ecoregions supporting an incredibly diverse assemblage of plant and wildlife species and natural communities. A Countywide Habitat Preservation/Conservation Framework developed to address such a biologically diverse area should include multi-faceted conservation strategy elements to address biological resources across the county. Establishing planning subareas (as discussed in Section 5) can facilitate conservation planning across such a biologically diverse County by focusing conservation strategies geographically.

Principle 11 Invest in the science of conservation planning.

For conservation planning to be successful, the planning process should be informed by the best available, peer-reviewed scientific information. Conservation planning should follow a systematic process that incorporates the best available information into an approach that is scientifically defensible, repeatable, and transparent (Margules and Pressey 2000). This process

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should incorporate a commitment to acquiring up-to-date science in an ongoing manner. Through a systematic process, conservation planning decisions can be data-driven and biologically justified. Recommended components of a systematic conservation planning approach for the Countywide Habitat Preservation/Conservation Framework include, but are not limited to, the following:

- Identifying the conservation targets (e.g., focal species and natural communities)
- Describing the biological baseline conditions for the conservation targets
- Developing biological goals and objectives for the conservation targets
- Identifying conservation actions and measures
- Identifying mechanisms and tools to achieve conservation target objectives
- Developing management goals, strategies, and mechanisms
- Ranking and prioritizing resources and actions

Principle 12 The identification of conservation areas should incorporate scientifically-accepted tenets of conservation biology.

Identifying areas for preservation/conservation should incorporate scientifically-accepted tenets of conservation biology together with the best available biological data for the planning area. Creative approaches to conservation planning should be considered. The following tenets should be used to guide the identification of conservation areas:

- **Larger conservation areas are better:** Conservation areas that are larger have a greater potential to support self-sustaining populations of focal species. Larger conservation areas are more resilient to disturbance and have a greater “interior” area relative to “edge” area; therefore, are less susceptible to adverse edge effects. As a guiding tenet for identifying conservation areas, establishing new conservation adjacent to existing conservation areas is generally preferred over establishing isolated new conservation areas.
- **Focus on ecological integrity and biological diversity:** Conservation areas that reflect the full ecological diversity and heterogeneity of natural communities maintain habitat diversity for a full range of species, including common species as well as listed and sensitive species. Conservation areas that capture ecological and physical processes across the landscape will maintain the ecological integrity that supports the diversity of species and natural communities.
- **Maintain connectivity:** Conservation areas that are connected reduce the adverse effects of habitat fragmentation on ecosystem function and species demography. As much as

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possible, conservation areas should protect habitat linkages, landscape features (e.g., canyons, ridgelines, hillslopes), riparian corridors, climate change refugia, and environmental gradients to maintain and support the ability of species to move, exchange genetic material, migrate, disperse, and colonize. Conservation efforts should be coordinated with state and federal agencies to maintain habitat linkages from state and federal lands to other lands.

- **Minimize edge effects and urban interface:** Conservation areas that are buffered from adjacent urban development have fewer adverse direct and indirect effects associated with urban areas.
- **Target high quality habitats:** Identifying and prioritizing high quality habitats for inclusion in conservation areas will ensure the best areas for supporting biological resources are captured. These areas would likely be characterized by the highest intactness and least habitat fragmentation and edge effects; therefore, these areas would have the highest potential to maintain their ecological function and fewest habitat management issues over the long term.
- **Protect irreplaceable or threatened biological resources:** Certain resources on the landscape are truly unique and cannot be replaced in other locations. These irreplaceable or threatened resources should be considered for prioritization for inclusion in conservation areas.
- **Capture environmental gradients:** Conservation areas that include the full range of contiguous environmental gradients (i.e., topography, elevation, substrates) are more likely to allow for shifting, expanding, or contracting species distributions in response to environmental change or disturbance (e.g., climate change, fire, flood).

Principle 13 Consider current and future endangered, threatened, and sensitive species. Also, consider common species as indicators to track population trends.

State and/or federal regulations apply to species listed as threatened or endangered as well as species considered rare, sensitive, or of special concern by state and federal agencies. Conservation planning efforts should focus on both current and future environmental and economic conditions to find a balance between conservation and development needs. Species that have current listing status under the ESA and CESA should be considered, as well as any rare, sensitive, or special status species. Analysis of species that have the potential to be listed or designated as sensitive or of concern in the future should also be considered in conservation planning. Also, monitoring populations of common species are useful indicators of ecological health. Future planning should incorporate species and habitat analyses that consider risks such as climate change, urban edge effects, and future development patterns.

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Principle 14 Identify mechanisms for long term, sustainable, adaptive management and monitoring.

Existing conservation lands are being managed and held by various entities. As future conservation efforts are made, a systematic and sustainable plan should be established to ensure that the conservation areas are protected and managed to maintain and enhance ecological function and value over the long term. Recognize that conservation lands may require restoration and/or ongoing management activities to continue to support conservation targets in the long-term. Incorporate an adaptive management approach that uses effectiveness monitoring to inform the identification of the management actions that are adapted over time to maintain and enhance ecological function. Funding analysis should occur early and often to ensure costs are being captured and the financial sustainability of the lands are ensured. Collaborate with current or future authorized public and private entities managing lands in the County, such as the Inland Empire Resource Conservation District (IERCD), Redlands Conservancy, Crafton Hills Conservancy, and Riverside Land Conservancy (RLC).

Principle 15 Manage public access to be compatible with conservation needs.

Open space areas are “green” amenities within the communities of San Bernardino County and are used for a variety of public uses. In order for the existing and future conservation areas to continue to function to support species and natural communities, public access in conservation areas should be managed so it is compatible with conservation needs. Sufficient funding must be available to ensure that conservation areas are effectively managed for compatible public access.

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7 NEXT STEPS

To develop a countywide conservation plan as outlined in this conservation framework study, there needs to be a collaboration amongst the stakeholders and a willingness of all parties to seek the most benefit for those involved. The vision of the conservation framework is embodied in Principle 1, which is to provide certainty to the development and conservation processes in the county. The intent would be to approach habitat preservation/conservation in a more comprehensive manner such that the environment benefits from more cohesive, functional habitats that will protect species, while providing economic development benefits through greater clarity and speed in the development process. This is consistent with the lead paragraph in the Environment Element of the Countywide Vision, which states, in part:

“We shall strive to intelligently manage our resources for habitat preservation, recreation opportunities, resource extraction, alternative energy, future growth, water quality, and air quality all within a regulatory framework that does not impede the creation of a sustainable economy.”

The intent of this section is to provide a pathway of the next steps that need to be taken, based on what has been completed to date by the efforts outlined in this report. This effort has not been exhaustive, nor was it intended to be; rather it is the first of multiple steps needed to implement a conservation plan for the county.

The following includes a discussion of the next steps and commitments necessary to continue the momentum proceeding to the next level or phases of a more comprehensive, countywide conservation strategy. A discussion of the next steps on a countywide and subarea level is provided where applicable. The entity responsible, the proposed implementation schedule, personnel, and financial resources needed for each of the next steps are also identified, where applicable.

Primary Priorities: Timeframe: 6 months

1. Identify an Interim Lead for Conservation Planning.

Moving forward from a framework study to a comprehensive planning phase, one entity should be identified to keep the initiative moving and be accountable for achieving progress. As stated in Principle 4, a “champion” or Lead for conservation planning in the county should be established. Since this next step is the first of many, and the course of action and players may change once more information is compiled, the Lead that is identified initially may not be the same Lead throughout the whole process. For this reason, an Interim Lead should be chosen until a long-term Lead entity is identified.

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The process for choosing an Interim Lead could be undertaken by a small committee of individuals that can provide the collaboration and leadership needed to sustain the momentum for this conservation framework. Potential Interim Leads could be the Local Agency Formation Commission (LAFCO), County of San Bernardino, or SANBAG. LAFCO and SANBAG could be potential interim leaders for conservation planning efforts, given their innate role as the representative for all the local jurisdictions in the county. The County of San Bernardino could also be the Interim Lead since they oversee the Countywide Vision program.

The Interim Lead could employ individuals with conservation planning backgrounds to facilitate the management of the conservation planning efforts on behalf of the local jurisdictions. The Interim Lead should have good working relationships with the regulatory agencies, and be able to facilitate and foster those relationships which would be important in developing the conservation plan.

The Interim Lead should work with a consortium (or steering committee) of jurisdictions and entities that would focus on conservation planning in the county. The consortium could include representatives of jurisdictions from each region and entities already involved in either land acquisition and/or management in the county such as Inland Empire Resource Conservation District (IERCD), Riverside Land Conservancy (RLC), Center for Natural Lands Management (CNLM), and County Special Districts. Because the Valley Region has the most focus for development, representatives from multiple cities for this region should be involved. Coordination with landowners should be encouraged. Other considerations could include personnel from other Habitat Conservation Plans, such as San Bernardino Valley Water Conservation District and/or San Bernardino Valley Municipal Water District, inclusion of a qualified biologist, and personnel knowledgeable in GIS.

2. *Create an Inventory and Tracking System.*

The Interim Lead entity, or a designee (e.g., management agency, academic institution), would create an inventory of conservation lands in the county and establish a system for long-term tracking of new conservation acquisitions. The Interim Lead entity or designee managing the inventory and tracking system will be trusted with maintaining data quality and accuracy, and appropriate confidentiality. The inventory presented as part of this report (Section 2) would serve as a starting point, and obtaining missing data identified in Section 3 should be a priority. A digital format inventory integrated with GIS should be required, as this is easily shared with other entities. The tracking and inventory system should be established in an acceptable, uniform format for ease of use by multiple jurisdictions and integration into a single tracking system. Once the inventory of

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previous, existing conservation ownership is complete, a long-term tracking/collection system needs to be established to document new conservation lands set asides and/or acquisitions that occur through the development process as a result of hillside ordinance compliance, or land set asides required by the local jurisdiction, or from the regulatory permitting process for waters (i.e., 1600 Permits, 404 permits). The inventory and tracking system should include and distinguish among lands legally committed to conservation through signed and executed easements or other similar agreements as well as proposed conservation lands not yet legally transferred into conservation. Tracking existing and new conservation efforts is imperative to developing and maintaining a cohesive conservation plan. The tracking system could be linked to the development entitlement process so that all applicants are required to report their digital footprint of conservation and the permitting local agency could provide an annual report of their conservation efforts to the Interim Lead/Lead entity. The reporting requirements could also apply to the consortium of participants (mentioned above) responsible for management of conservation lands. Demonstrating the ability to track and manage connected conservation lands would provide the regulatory agencies with assurances that conservation lands function as intended for mitigation for impacts and may result in more streamlined processing for projects.

3. Identify Funding Sources.

As stated in Principle 3, multiple funding sources should be sought, and in the spirit of collaboration, there should be multiple entities working on seeking out funding sources. A priority for next steps should be to identify qualified personnel to pursue and prepare grant funding opportunities needed to continue the conservation study. Grant funding sources may be from federal/state government agencies, non-profits and may include an emphasis on habitats, wildlife movement, and wildlife protection measures. In addition, long-term funding will be needed to acquire and/or manage land. Other potential long-term funding sources may be provided through; open space ordinance fees; tipping fees, private sources, and/or non-profit organizations. A single entity should function as the clearinghouse for funding efforts. Budgeting efforts should also consider allocating funds to support regulatory staff to work exclusively on conservation planning in the County.

4. Conduct a Conservation Gap Analysis and Develop a Reserve Design.

Based on the information presented in Section 3, Data Gaps, as well as what is outlined in Principles 3, 7, 9, 11, 12, and 13, a detailed analysis of focal species occurrences and known conservation lands should be initiated. An important step in conservation planning is to conduct a gap analysis, the results of which help develop the biological goals and objectives of a conservation plan. A gap analysis relies on GIS analysis of spatial data (i.e., biological

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data, land ownership, land uses, and designated management status) to assess the distribution of biological resources (e.g., natural communities, species distributions, known occurrence data) relative to the distribution of protected lands (areas protected and managed to maintain biological resource value) to identify any “gaps” in protection (e.g., biological resources that are on private lands and not well protected). A gap analysis is used to identify gaps in representation, ecological processes or functions, and management of existing protected areas. The identification of gaps helps to focus the attention of the conservation strategy on areas most at risk or that would most benefit from conservation actions (e.g., acquisition, restoration, management, monitoring).

The Vacant Land Survey conducted by the County should be incorporated into the conservation gap analysis to understand what areas are viewed to be generally available for development and what areas could be considered for conservation. The conservation lands inventory and tracking system (discussed above) will also be important for providing the location, ownership, and management regime data that informs the GIS spatial analyses.

A gap analysis is integral to developing the Reserve Design because it provides an understanding of land ownership encumbrances and identifies the wildlife and habitat linkages or connections that can be made with existing conservation areas that would be most beneficial for focal species conservation. Reserve Design is a process which identifies lands needing protection to sustain natural resources while considering ecological, social, and political factors. Reserves are areas set aside to protect natural values such as biodiversity, ecosystem functions, or to offset adverse effects from use or development. The two main objectives of reserves are to achieve species, habitat, and function representativeness and persistence. To meet these basic objectives, a reserve design must consider not only location but size, connectivity, replication, and alignment of boundaries. The Reserve Design will need to incorporate current and future conditions, within reasonable and practical limitations, including climate and urbanization changes to be successful long-term. Datasets used in Reserve Design analyses should be reviewed for quality and accuracy. Areas considered for inclusion into the Reserve Design should be verified through surveys or assessments by a qualified biologist(s) to ensure that the area provides suitable, quality habitat for focal or other target species. Identify Focal Species for Conservation Planning.

As outlined in Section 4, and consistent with Principle 13, more detailed biological analyses are needed for species that would most likely require mitigation in association with regulatory permitting. To understand where focal species locations overlap with development concerns, biological analyses should focus on incorporating complete datasets of species occurrences to support species habitat modeling. This task would be

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integral to the Gap Analysis and Reserve Design process which identifies important areas for long-term protection and management for focal species. The practicality of “species relocation” should also be considered in cases when abundant and suitable species habitat exists nearby. Forcing habitat connectivity where and when the existing built environment would make for unsafe interactions between humans and some protected (predator) species should be avoided.

Secondary Priorities: Timeframe: 6 to 24 months

5. Create Detailed Conservation Strategies by Conservation Subarea

As presented in Principle 7, conservation planning should be divided into practical subareas. As outlined in Section 5, refinement of the subarea approach should occur to determine which jurisdictions are interested or better suited to be included into specific sub-regions.

Given that the land in the Desert Region is primarily government-owned, coordination with the federal land owners in these areas is the best alternative for conducting conservation planning whereby local jurisdictions may link their open space and/or conservation lands with large areas of government-owned properties. Additionally, if the Desert Renewable Energy Conservation Plan (DRECP) is finalized and approved, local jurisdictions within the DRECP boundaries should confer to decide if the conservation framework identified in the DRECP could benefit their conservation objectives. One potential for the Desert Region would be to have a County led effort with participation from the local jurisdictions which incorporates the conceptual reserve presented in the DRECP into the jurisdiction General Plans. General Plan Policies or overlays can be created that address conservation needs in areas identified in the Gap Analysis, focusing on the areas that lack protection. Aligning local General Plans with the DRECP will allow those jurisdictions to tier off of the DRECP for species permitting. While General Plans provide a potential avenue for obtaining conservation and open space areas, these policies do not include a mechanism to guarantee long-term protection in perpetuity.

The Mountain Region is also predominantly federally owned and managed, therefore connecting jurisdictional open space and conservation lands with public ownership lands through land acquisition or easement procurement should be considered. This is a similar approach recommended for the Desert Region which tiers off of existing protected federal and/or state lands to create a connected system of open space and/or protected lands.

For the Valley Region, several different strategies could be employed. Since the Valley Region consists of 15 different local jurisdictions, each with their own land use authorities, focus should be given to land use patterns for each jurisdiction and potential undeveloped lands that could be conserved should be analyzed. For instance, some

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jurisdictions in the West Valley area (i.e., Chino, Ontario, Montclair) have few decisions remaining to be made regarding open space that could support listed species (i.e., decisions on open space that would require ESA permitting). Also, these jurisdictions would not have lands that would pose viable biological links to other open space areas. However, other Cities such as Rancho Cucamonga, Fontana, San Bernardino and Rialto still have decisions that will need to be made regarding open space areas. An option for these jurisdictions may be to combine land use planning efforts (with or without the County) to establish a sub-regional comprehensive Reserve Design.

Initially, the focus should be on identifying the areas and linkages that could constitute a cohesive, functional conservation strategy. How best to implement that strategy, and with what specific tools, is a separate but equally important issue (discussed below). It will be important in moving forward not to confuse the end with the means to that end.

One alternative to the more traditional route of completing a Habitat Conservation Plan or a programmatic U.S. Fish and Wildlife Service (USFWS) Section 7 permit, would be to prepare an “alternative conservation plan”. This “alternative plan” approach would utilize the inventory and tracking system, along with the reserve design mentioned above, to provide a plan for which areas of known species occupation or suitable habitat is avoided and conserved through the development process and other means. This “alternative plan” could be implemented voluntarily at a General Plan level. The jurisdictions would need to evaluate the results of the Vacant Land Survey completed by the County, as well as understand the focal species for which regulatory permitting would most likely be required. The jurisdictions’ General Plans could be modified, or the County’s upcoming Countywide Plan could identify the mechanism for which each of these jurisdictions could transfer density credits or bonuses either within a jurisdiction or between jurisdictions to compensate for the “lost” development potential that would become open space/conservation. The Interim Lead/Lead would be responsible for tracking and coordinating these land use efforts to establish the comprehensive reserve design through the alternative plan. The alternative plan would ideally result in no “take” of listed or sensitive species. If “take” permitting is needed, the alternative plan would provide a comprehensive conservation approach to use for species or habitat mitigation. This could be combined with a Waters mitigation plan or County’s programmatic permitting efforts. This alternative plan would provide a more flexible and smaller-scale approach than a traditional HCP, with “front loaded” analysis efforts. Therefore, the alternative plan would speed the development process and also give the conservation community a clear idea, combined with accurate tracking and reporting, of where the conservation will occur. This would be combined with effective management methods, as explained in the next section. The alternative plan approach does not include issuance of a permit by the regulatory Agencies therefore, development of a mechanism (e.g.,

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Memorandum of Understanding) to provide long-term assurances of Agency acceptance and protection from future changes is needed.

6. *Identify Management Methods.*

Consistent with Principles 14 and 15, management mechanisms for existing and future conservation lands would need to be established by the Interim Lead/Lead. Direct employment of qualified personnel, including qualified biologists, and/or contracting with entities such as IERCD, RLC or CNLM who are qualified and experienced in land management should be a priority. Though the areas to be managed must first be identified before this step could be executed, efforts should be made early to seek out potential entity(ies) that would be able and willing to manage the conservation lands. To ensure that long-term management is sustainable, the Interim Lead/Lead should work with the entity(ies) to identify the costs needed for management and conduct the appropriate analysis (e.g., Property Analysis Record [PAR] analysis) and documentation to substantiate the management funding requirements. It would be in the best interest (i.e., more logistically feasible), and generally looked upon favorably by the Wildlife Agencies, to have one management entity involved, at least for each regional Subarea.

Tertiary Priority: Timeframe: 18 to 36 months

7. *Develop Implementation Strategy.*

Based on the results of the above steps, an implementation strategy should then be developed. The various outcomes could include options outlined in Principle 9 such as: development of habitat conservation plans, mitigation banks, and conservation easements managed by one entity, programmatic Section 7 permits, in lieu fee programs, General Plan policy implementation, and alternative plans (as discussed above in No. 6).

An integral part of any future implementation strategy should be early and ongoing communication with the regulatory agencies about conservation plans. One best practice in the development process to facilitate streamlined regulatory permitting requirements would be to initiate “pre-application” meetings with the regulatory agencies (Army Corps of Engineers, Regional Water Quality Control Board, California Department of Fish and Wildlife, and USFWS). Including these entities in the development process early to discuss mitigation requirements will ultimately provide increased certainty to the development community, and provide a clear path for mitigation requirements which will help move development forward. The Interim Lead/Lead could be the conduit for these “pre-application” meetings, or they may be set up by sub-regions. Incorporating pre-application meetings into the General Plans and land use planning for development is also a way to create comprehensive and cohesive conservation.

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APPENDIX 2A

Outreach Summary – Meetings and Phone Calls

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OUTREACH SUMMARY – MEETINGS AND PHONE CALLS

Local Agency Formation Commission for San Bernardino County (LAFCO) Meeting – May 7, 2014

Location: SANBAG Office

Attendees: LAFCO, SANBAG, Dudek

This meeting was for Dudek, SANBAG and LAFCO to discuss the conservation framework study objectives and how each agencies' efforts are related to the framework study. LAFCO provided a history of their efforts related to the conservation surveys they had recently employed. There was lengthy discussion about the history and status of the County Service Area (CSA) 120, which could inform aspects of the framework study. SANBAG and LAFCO shared ideas about conservation in the County and some of the challenges and opportunities that exist throughout the county.

Desert and Mountain Cities Meeting – May 21, 2014

Location: Town of Apple Valley

Attendees: Adelanto, Barstow, Big Bear, Victorville, Yucca Valley, Apple Valley, Dudek, SANBAG

Each jurisdiction discussed their development potential and conservation potential. The relationship of where potential and proposed wildlife corridors are in the desert will be important to understand in relation to where jurisdictions have proposed open space/conservation areas. Adelanto is updating their General Plan to change the land use designation of a large area on the west edge of the City from manufacturing/industrial/residential uses to open space. This could provide an additional conservation buffer to the City and regionally. Victorville has a large specific plan on the north edge of the City that could have open space in the hills that abut other BLM open space areas. Barstow has open space areas proposed as part of their general plan update process as well as some areas owned by PG&E in Hinkley, California that could potentially be set aside as open space. Big Bear has mapped open space and conservation lands which are Flood Control lands or individual project mitigation lands. IERCD manages many of the conserved properties. Yucca Valley adopted an updated General Plan in February 2014. Yucca Valley has mapped wildlife corridor linkage areas. Apple Valley is preparing an HCP which is scheduled for completion in October 2015. The HCP includes important wildlife corridor linkages for big horn sheep and desert tortoise. Dudek requested GIS information from all jurisdictions as a follow up to the meeting discussions.

APPENDIX 2A (Continued)

East Valley Cities Meeting – May 28, 2014

Location: City of Highland

Attendees: Highland, Colton, Yucaipa, Redlands, SANBAG, Dudek

Each jurisdiction discussed development projects that may be associated with conservation or future conservation. Land use policies such as hillside ordinances that may result in open space were discussed. Current development pressures in proximity to the Santa Ana River and conservation lands associated with Delhi Sands Flower-loving Fly were discussed. Highland and Yucaipa have the most potential for additional open space/conservation areas near U.S. Forest Service Lands or other State Park lands that could potentially add to conservation in the future. Highland has potential for over 1,000 acres associated with at least three contiguous projects that could be shared with IERCD, or set aside for a more localized conservation area (i.e. shared with Yucaipa, Redlands, others). Jurisdictions voiced a desire to have the study help identify where consolidated open space could be located, and how those areas could assist multiple jurisdictions with mitigation needs in the future. Jurisdictions voiced the need to understand where the County is in this conservation process.

County Meeting – May 29, 2014

Location: County of San Bernardino Offices

Attendees: County Department of Public Works, Land Use Services, Special Districts, SANBAG, Dudek

The County Department of Public Works has a number of mitigation areas related to past projects. Understanding the geographic distribution of these mitigation areas is important. Flood Control has a lot of ownership in the County that is typically considered open space. They want to keep what is not currently used for Flood Control purposes, as they will need those lands for mitigation for their programmatic permits they are working on with the U.S. Army Corps of Engineers and California Department of Fish and Wildlife. There are some large developments that will need conservation set asides near Lytle Creek and Cajon Creek. County Transportation has no plans for any new major roads that would need significant conservation requirements, nor have there been any significant projects that set aside Conservation. However, the County noted that Route 66 is in need of bridge repairs and that project, if pursued, would require considerable conservation mitigation. Landfill expansions would be within their permitted areas, and so no significant conservation needs would be expected. Vulcan mitigation bank was discussed. County Special Districts provided an overview of their role related to the Etiwanda Preserve and LAFCO's CSA 120. The County has easement over that area, and manages it (1,200 acres). Currently, Special Districts is focused on increasing the endowment funding. There is another area near Joshua Tree that Special Districts is working towards doing the same conservation model as CSA 120.

APPENDIX 2A (Continued)

Inland Empire Resource Conservation District and County Special Districts seem to have an overlap of potential services in the County. One current method for applicants to mitigate for impacts is to set up a CSA or go to the IERCD. There was discussion of how BLM can be used for potential mitigation, or retirement of grazing allotments and mining rights.

A vacant lands inventory was completed by the County which would provide valuable information towards this Conservation Framework study effort.

West Valley Cities Meeting – May 29, 2014

Location: City of Rancho Cucamonga

Attendees: Fontana, Rancho Cucamonga, Ontario, SANBAG, Dudek

Each jurisdiction discussed development projects and where conservation efforts have been focused. The City of Fontana discussed their Delhi Sands Flower-loving Fly mitigation areas as well as an HCP in the north part of the City. The City of Ontario does not have significant open spaces areas. The New Model Colony annexation did require some mitigation which was supposed to take place near Prado Basin. Riverside Land Conservancy was supposed to take fees that the City collected and use that to purchase property in Prado Basin. These efforts have not been started due to the economic downturn. City of Rancho Cucamonga does not have conservation in its City limits, aside from what County Flood Control owns in their City, but there is potential for conservation within its Sphere along the northern boundary. They currently use IERCD for mitigation for projects and this system works well. The City of Rancho Cucamonga has concerns over the long term viability of CSA 120. The Cities of Fontana and Rancho Cucamonga have Hillside Ordinances. Other entities to follow up with related to conservation efforts near and in Rancho Cucamonga include Cucamonga Water District, San Antonio Water Company and City of Los Angeles.

City of Hesperia – June 2, 2014

Phone call – Dave Reno (Hesperia) Scott Priester (Hesperia), Dudek

Hesperia shared past bad experiences related to conservation planning– the West Mojave Plan and the Summit Valley HCP. Both, in their opinions, failed miserably and were a large waste of city resources and time. They are very against any regional HCP planning efforts. In short, the City of Hesperia would not support or be a part of any regional planning efforts, and prefers to do things status quo on a project-by-project basis. If conservation is needed for projects, the City requests avoidance as a first measure and any set asides are given to non-profit or land conservation entities. Currently there are no executed conservation easements in the City. There is only one 11-acre site set aside by a developer for 404 mitigation.

APPENDIX 2A (Continued)

City of Chino Hills – June 3, 2014

Phone call – Joann Lombardo (Chino Hills), Dudek

The City of Chino Hills is almost at build-out. There are currently about 3,000 acres of city-owned open space and 2,000 acres of HOA-owned open space lands mainly focused in the hillside areas. They do have a development code requirement which requires open space set-asides based on slope, so any development that would be proposed in the future in the hillside area would be required to set aside some part of their project for open space. Long term funding is an issue the city is now facing related to their open space areas. The City would most be interested in any county-wide conservation efforts related to funding for maintenance and management of the open space lands.

SANBAG Internal Meeting – Transportation Projects – June 4, 2014

Phone Call – Paula Beauchamp (SANBAG), Julie Vandermost (consultant to SANBAG), Steve Smith (SANBAG), Josh Lee (SANBAG), Dudek

An update was provided to the SANBAG Transportation project manager and consultant about efforts of the conservation planning study. Past SANBAG projects have used mitigation banks as preferred species mitigation methods. Past experience using Flood Control property for SANBAG mitigation worked poorly and they do not want to replicate this again. Vulcan mitigation bank in Cajon Creek is one they have used, as well as Wildlands Mitigation Bank near Cajon Creek and Lytle Creek. Land Veritas Corp. is also proposing another mitigation bank in Chino Hills. SANBAG projects typically result in impacts to San Bernardino kangaroo rat (SBKR) and Waters of the U.S. SANBAG has used Riverside-Corona Resource Conservation District and Santa Ana Watershed Agency (SAWA) for mitigation. Julie Vandermost is currently working on compiling GIS layers of where SANBAG expects to have impacts to habitat and how much mitigation they will need for those impacts. Julie can send to Dudek the GIS data she has for the mitigation study as well as for past mitigation projects. SANBAG plans to use mitigation banks in the future and is in the process of identifying what they will need for mitigation in the future. They have considered setting up their own mitigation bank for their own projects. There was acknowledgement that Caltrans would have their own list of mitigation areas for their projects.

Wildlife Agencies – June 11, 2014

Location: SCAG Riverside Offices

Attendees: USFWS, CDFW, SCAG, SANBAG, Dudek

The USFWS and CDFW (Wildlife Agencies) understand the intent of the SANBAG Conservation Framework project. USFWS noted that San Bernardino County's biggest impacts to species would likely be from water infrastructure projects, namely from groundwater management and controlling water coming off mountains and into valleys. There was

APPENDIX 2A (Continued)

acknowledgement from the group that there are no large transportation projects that are proposed in the foreseeable future that would be an impetus for large amounts of conservation mitigation. Any future transportation projects should however incorporate improvements to bridge culverts and underpasses. There was acknowledgement that flood control activities in the past and from future needs may require some attention related to species mitigation.

There was discussion of the two main HCPs in the Valley area – the Santa Ana River HCP (“River Plan”) being prepared by the water districts to cover Santa Ana Sucker and other species, as well as the “Wash Plan” prepared for the gravel mines in the Santa Ana River near Highland. The USFWS clarified aspects and history of each HCP.

Prado Basin was discussed; discussions were related to connectivity to Chino Creek and how a regional conservation scenario that includes Riverside County is appropriate to understand in this part of San Bernardino County. It was noted that the City of Ontario had plans to mitigate for the New Model Colony project in and around Prado Basin but that the conservation plan had not been started to date.

Species and habitat that commonly need mitigation through the CEQA process in San Bernardino County are burrowing owl, golden eagle and alluvial fan sage scrub. The USFWS indicated that it would be good for jurisdictions to consider proactive ways to mitigate for these species/habitats ahead of time. In order to address complaints from environmental groups against projects, jurisdictions might consider a unified CEQA approach to mitigation for these impacts, or other impacts. Funding of conservation areas is also an area identified by Wildlife Agencies that needs improvement or thought in future conservation planning. Making sure that identification of a management entity that is well funded to undertake the management responsibilities is important to the Wildlife Agencies.

There was discussion about various Mitigation Banks that the Wildlife Agencies were aware of: Vulcan’s Cajon Creek Mitigation Bank and Wildlands Mitigation Bank near the confluence of Cajon Creek and Lytle Creek were discussed. The Wildlife Agencies know of another proposed mitigation bank in Chino Hills area proposed by Land Veritas Corp. and said that they were not sure of the status of that Bank. GIS data for these known Banks would be available upon request.

There was discussion about cross-jurisdictional mitigation and whether that would be something the Wildlife Agencies would view as acceptable. The Wildlife Agencies indicated that there might be biological or ecological reasons for mitigation to occur in a separate jurisdiction as the impact, but there was acknowledgement that there would have to be political support to do this.

There was discussion about how “open space” was defined and if that was the same or different as “conservation”. The Wildlife Agencies said that there would not necessarily be an inherent

APPENDIX 2A (Continued)

conflict between the two, but that if public access was going to be included, as it should, in conservation, that appropriate consideration in the form of possibly, additional lands should be considered to allow for trails, parking areas, etc. There was discussion about the importance of the community and folks living near open space/conservation to buy-in to the principles of those lands and for people to be engaged in using it and protecting it.

When asked about “best practices” related to conservation planning the Wildlife Agencies provided this list: brief the regulatory agencies early; get all regulatory agencies in one room at one time, do not piecemeal the regulatory agency engagement; do not minimize the appearance of project impacts or try to do things that are not practical to avoid impacts; be straightforward with what the impacts are, what the mitigation is – provide a “bright line” for what these are; prepare adequate CEQA documents for projects that will need regulatory permits or approvals.

SCAG shared that they are almost done with their own conservation planning study and will have their own “best practices” list. One area they have found that is popular is having local jurisdictions fund “reimbursable employees”. The employees are funded by the local jurisdiction or project proponent at the regulatory agency and that agency would then have that employee work specifically on that jurisdiction’s projects. This led to a discussion about implementing the “Pre-Application Meetings” for San Bernardino County, similar to what is done for western Riverside County.

Related to the Forest Service areas, the USFWS mentioned that there are areas of known Bald Eagle nesting (Highland area) outside of Forest Service ownership as well as for the unarmored threespine stickleback (fish)(Big Bear Lake area). There was also discussion of the Shay Pond project which supports stickleback. Shay Pond is currently maintained by supplemental water provided through pipelines from the Big Bear City Community Services District. These areas should be considered in future conservation scenarios.

Southern California Gas Company – July 16, 2014 Phone Call with Dudek – Justin Meyer (So Cal Gas)

Southern California Gas Company does not own excess lands that they keep for conservation purposes; their land ownership is related to facilities. Most of their projects that require mitigation are in the high desert and not in the valley areas (as most of those facilities are in developed/disturbed areas). For Waters mitigation, they typically go to IERCD and Mojave RCD. They do not want to be in the business of conducting their own mitigation. For most of their projects they need to mitigate for desert tortoise and utilize existing programmatic permits with BLM/USFWS and an MOU with CDFW. Per these permits, So Cal Gas provides funds directly to BLM and CDFW for mitigation for Endangered Species Act (ESA) issues. If a

APPENDIX 2A (Continued)

regional conservation plan were to be created in San Bernardino County, So Cal Gas would be interested; it would provide one more mitigation option for them.

San Bernardino Valley Water Conservation District and San Bernardino Valley Municipal Water District – July 24, 2014

Location: SANBAG

Attendees: SBVWCD, SBVMWD, SANBAG, Dudek

SBVMWD (MWD) and SBVWCD (WCD) are both actively involved with preparing HCPs. Both Districts have extensive experience and insights with the HCP processes. MWD shared information about their working relationship with the US Fish and Wildlife Service (Service). MWD's opinion was that if the following three things are done, the HCP process will be successful: 1) invest in the science; 2) don't leave the Service to guess; and 3) don't waste the Services' time. The recommendation was to always "leave space on the table" for negotiation. There was discussion about the details of the "Wash Plan" HCP being proposed by WCD and the "Upper Santa Ana River" HCP being proposed by MWD.

The Wash Plan is comprised of public agencies and will include land swaps in order to facilitate more conservation and allow for projects to move forward. The Covered Activities analysis for the Wash Plan took an extensive period of time. Operations and maintenance is included in the Plan. The District is acting on behalf of the other public entities, but a Task Force has been established to oversee the Plan implementation.

The Upper Santa Ana River (SAR) HCP is not a land-consumptive HCP, which is different from most HCP models. The Upper SAR HCP includes specific water projects, and then identifies various restoration projects that will serve as their "mitigation" for the HCP.

The following were helpful insights: funding a full time employee at the Service to work exclusively on the HCP; including Stakeholders that have the ability to thrust and stall the process; be prepared to spend lots of time on the Covered Species list; do not underestimate the human factor; there is a need for someone to champion the HCP effort and make it their mission to have it succeed; it may be harder to complete individual Section 7 consultations in the future as the Service sees that HCPs can be successfully implemented; the staff at the Service are good right now and this is a good time to be processing these kinds of plans.

BLM – August 6, 2014

Phone Call with Dudek: Terri Raml, Russell Schofield, 951-697-5203

Dudek provided BLM with some background on SANBAG's efforts related to the Conservation Planning Study. BLM was interested in how the SANBAG effort would interface with the Desert Renewable Energy Conservation Plan (DRECP). They indicated that the public review draft of

APPENDIX 2A (Continued)

the DRECP was likely to be available in the next few months and portions of it would be helpful to the SANBAG study. Namely, the No Action Alternative would provide good explanations about BLM land uses and designations as well as all the Regional Management Plans that are within the County of San Bernardino. BLM also indicated that the General Conservation Plan within the DRECP was written by the US Fish and Wildlife Service and is intended to provide a programmatic framework of Habitat Conservation Plans so that other jurisdictions or projects could use the same framework for future HCPs. BLM provided clarification about their existing Areas of Critical Environmental Concern (ACEC) designations. The ACECs are areas that have management considerations designed to protect biological or sometimes cultural resources. It is helpful to know that the ACEC designation does indicate a level of biological conservation amongst BLM lands.

Inland Empire Resource Conservation District (IERCD) – August 19, 2014

Location: Dudek Offices

Attendees: IERCD, Dudek

The discussion focused on IERCD's involvement with conservation efforts in the County. Background information was provided by IERCD related to CSA 120, local conservancies, local jurisdictions and LAFCO. IERCD has the ability to collect and manage fees related to endowments. IERCD holds conservation easement for conservation lands. IERCD is working on preparing an In Lieu Fee Program through the Army Corps of Engineers. IERCD is interested in a multi-jurisdictional cooperative for conservation planning. IERCD would be willing to partner with any entity for conservation purposes.

Mojave Desert Resource Conservation District (MDRCD) – August 20, 2014

Phone call with Janet Lindgren, 760-843-6882

The MDRCD does not take ownership or hold land in perpetuity for land conservation. Rather, MDRCD conducts invasive species removal along the Mojave River for various projects and entities needing waters permitting.

APPENDIX 2B

*GIS Database Inventory for the SANBAG
Countywide Habitat Preservation/Conservation
Framework study, San Bernardino County*

APPENDIX 2B
GIS Database Inventory for the SANBAG Countywide Habitat
Preservation/Conservation Framework study, San Bernardino County

Table 2-2
GIS Database Inventory for the SANBAG Countywide Habitat Preservation/Conservation Framework study, San Bernardino County

Source Category	Source	Name of Database (Bold Indicates used in Dudek mapping)+	Year	Relevancy*	Description
Federal	Bureau of Land Management (BLM)	National Landscape Conservation System (NLCS) - Wilderness Areas (NLCS_WLD)	2014	1	Polygon data layer of BLM NLCS wilderness areas. Created in 2000, the NLCS includes National Scenic and Historic Trails, Wild and Scenic Rivers, National Monuments, Wilderness Areas, National Conservation Areas and several other specially designated areas. These areas safeguard and unify the best cultural, natural, and recreational resources in the west.
Federal	BLM	National Landscape Conservation System (NLCS) - Wilderness Study Area (WSA) (NLCS_WSA)	2014	2	Polygon data layer of NLCS Wilderness Study Areas. The Federal Land Policy and Management Act of 1976 directed BLM to inventory and study its roadless areas for wilderness characteristics. To be designated as a WSA, an area had to have the following characteristics: <ul style="list-style-type: none"> • Size - roadless areas of at least 5,000 acres of public lands or of a manageable size; • Naturalness - generally appears to have been affected primarily by the forces of nature; • Opportunities - provides outstanding opportunities for solitude or primitive and unconfined types of recreation. WSAs often have special qualities such as ecological, geological, educational, historical, scientific and scenic values. Until Congress makes a final determination on a WSA, the BLM manages these areas to preserve their suitability for designation as wilderness.
Federal	BLM	Wildlife Habitat Management Areas (WHMA) - Multispecies	2002	2	Multispecies management areas on 5 BLM land areas (Bristol, Marble, Cadiz, Danby, Rice). Polygon coverage.
Federal	BLM	Wildlife Habitat Management Areas (WHMA) - Bighorn	2002	2	Management areas on BLM lands for Bighorn Sheep.
Federal	BLM	Wildlife Habitat Management Areas (WHMA) - low3	2002	2	Final "Low Risk" WHMA's (Wildlife Habitat Management Areas) for multiple sensitive plant and animal species and ecological features, Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) Plan Area (from the Preferred, FEIS) (2002).
Federal	BLM	Area of Critical Environmental Concern (ACEC)	2014	1	ACEC designations on BLM lands highlight areas where special management attention is needed to protect, and prevent irreparable damage to important historical, cultural, and scenic values, fish, or wildlife resources or other natural systems or processes; or to protect human life and safety from natural hazards. http://www.blm.gov/ca/gis/
Federal	BLM	Area of Critical Environmental Concern (ACEC) - carb	2014	1	Area of Critical Conservation Concern (ACEC) Conservation Area for carbonate endemic plants (2004), West Mojave Plan portion.
Federal	BLM	Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) - Landforms 1978	1978	2	A landscape-scale, multi-agency planning effort that protects and conserves natural resources while simultaneously balancing human uses of the California portion of the Sonoran Desert ecosystem. The planning area encompasses over five million acres and hosts 60 sensitive plant and animal species. Lands within the planning area are also popular for hiking, hunting, rock hounding, and driving for pleasure. Several commercial mining operations, livestock grazing, and utility transmission lines exist in the area as well. NECO amends the 1980 California Desert Conservation Area (CDCA) plan. Record of Decision approving plan signed 12/19/02. Landforms are habitat types such as alluvial fans, sand dunes, pediments, plains, badlands, lava flows, river washes, dry playas, mesas, tilted plateaus, mountains.
Federal	BLM	Plant, bird, other animal sightings	2001	1	This coverage contains animal, primarily bird, and plant sightings recorded by the biologist at the Ridgecrest and Barstow Field Offices (1968-1996)(n= 136). Note: Several species can exist at a single point, up to five, based on the way the attribution was designed. One must query each of the five attributes when searching for a certain species. Also, there may be duplicate points at a sight if there are more than one species.
Federal	BLM	BLM Eagle Nests	2012	1	Golden eagle (<i>Aquila chrysaetos</i>) nest occurrences. Used for creation of species distribution model for DRECP planning purposes. Golden eagle nest occurrences within 12 km of the Desert Renewable Energy Conservation Plan area. This dataset was created by merging the DRAFT_BRC_EagleNest_Data and Golden_Eagle_DFG layers, which were provided by the BLM. These data represent nest locations recorded by various California State agencies and their contractors during 2008, 2010, 2012 and potentially other unknown time periods.
Federal	BLM	Bat Roost Sites	1998	1	Describes and shows the location of bat roosts within the West Mojave Planning boundary (1978-1998) (n= 23). Data collected by Patricia Brown, Brown-Berry Consulting.
Federal	BLM	Bighorn Sheep Habitat	2006	1	This coverage contains habitat and range characteristics for bighorn sheep within the West Mojave Planning boundary. These data developed and maintained by the BLM, Barstow Field Office and California Desert District.
Federal	BLM	kcm Habitat	2006	1	Kelso Creek monkeyflower (<i>Mimulus shevockii</i>) potential habitat, West Mojave Plan.

Table 2-2
GIS Database Inventory for the SANBAG Countywide Habitat Preservation/Conservation Framework study, San Bernardino County

Source Category	Source	Name of Database (Bold Indicates used in Dudek mapping)+	Year	Relevancy*	Description
Federal	BLM	mimo Populations	2006	1	Mojave monkeyflower (<i>Mimulus mohavensis</i>) population locations, West Mojave Plan.
Federal	BLM	West Mojave Plan (WEMO) - Plan Boundary	2006	2	Boundary of the West Mojave Plan. The Plan encompasses 9.3 million acres in the western portion of the Mojave desert and covers sections of San Bernardino, Los Angeles, Kern and Inyo Counties. http://www.blm.gov/ca/st/en/fo/cdd/west_mojave__wemo.html
Federal	BLM	West Mojave Plan (WEMO) - Grazing Allotments	2006	2	Final version of BLM grazing allotments within the West Mojave Plan Area after Plan adoption. Updated with post-Plan changes (i.e. relinquished allotments). Grazing allotment polygons represent BLM land in and surrounding San Bernardino County which have been permitted for rangeland grazing. http://www.blm.gov/ca/st/en/fo/cdd/west_mojave__wemo.html
Federal	BLM	West Mojave Plan (WEMO) - Vegetation	2006	1	Vegetation communities in the West Mojave Planning area. Includes missing data from WM boundary extension. May be somewhat out of date, particularly in urbanizing areas. Vegetation mapping data primarily from West Mojave, China Lake, Ft. Irwin, and Edwards Air Force Base. http://www.blm.gov/ca/st/en/fo/cdd/west_mojave__wemo.html
Federal	BLM	West Mojave Plan (WEMO) - rts Subregions	2002	2	Polygons depicting the route subregions delineated for 2001-2002 inventory, West Mojave Plan (used in DEIS and FEIS). The routes are a network of motorized vehicle access routes. Websites: http://www.blm.gov/ca/st/en/fo/cdd/west_mojave__wemo.html http://www.blm.gov/ca/pdfs/cdd_pdfs/wemo_pdfs/plan/wemo/Vol-1-Chapter1_Bookmarks.pdf
Federal	BLM	West Mojave Plan (WEMO) - rts pt1	2005	2	This is the proposed route network published in the West Mojave Plan FEIS, Nov. 2004, for those areas outside the subregions inventoried in 2002-03. The routes are a network of motorized vehicle access routes. These data are to document the designation decisions of the West Mojave Plan, to create maps for public use, and to share with cooperators and the general public. These data developed and maintained by the U.S. Bureau of Land Management, California Desert District. http://www.blm.gov/ca/st/en/fo/cdd/west_mojave__wemo.html
Federal	BLM	West Mojave Plan (WEMO) - rts pt2	2005	2	This is the proposed route network published in the West Mojave Plan FEIS, February, 2005, for the Superior, Red Mountain, Newberry-Rodman, and Juniper subregions. The routes are a network of motorized vehicle access routes. These data are to document the designation decisions of the West Mojave Plan, to create maps for public use, and to share with cooperators and the general public. These data developed and maintained by the U.S. Bureau of Land Management, California Desert District. http://www.blm.gov/ca/st/en/fo/cdd/west_mojave__wemo.html
Federal	BLM	West Mojave Plan (WEMO) - rts pt3	2005	2	This is the proposed route network published in the West Mojave Plan FEIS, February, 2005, for the Coyote, El Mirage, Kramer, and Fremont subregions. The routes are a network of motorized vehicle access routes. These data are to document the designation decisions of the West Mojave Plan, to create maps for public use, and to share with cooperators and the general public. These data developed and maintained by the U.S. Bureau of Land Management, California Desert District. http://www.blm.gov/ca/st/en/fo/cdd/west_mojave__wemo.html
Federal	BLM	Mohave Ground Squirrel	2006	1	This coverages shows the boundary of the Mohave ground squirrel range within the West Mojave Planning boundary. It was used as a basis for the West Mojave Plan, Mohave Ground Squirrel Conservation Areas. This coverage is old and may be out of date. It is also not very precise and should be used for general display purposes only. These data developed and maintained by the BLM, California Desert District.
Federal	BLM	Conservation Area - alkml	2006	2	Polygon data describing Alkali mariposa lily (<i>Calochortus striatus</i> Parish) conservation areas (Final, used in FEIS West Mojave Plan). This plant is a covered species in the West Mojave Plan.
Federal	BLM	Conservation Area - bws	2006	2	Polygon data describing Barstow woolly sunflower (<i>Eriophyllum mohavense</i>) conservation areas for the West Mojave Plan (used in DEIS and FEIS). This plant is a covered species in the West Mojave Plan.
Federal	BLM	Conservation Area - Imm	2006	2	Polygon data describing Lane Mountain milkvetch (<i>Astragalus jaegerianus</i>) conservation areas for the West Mojave Plan (used in DEIS and FEIS). This plant is a covered species in the West Mojave Plan.
Federal	BLM	Conservation Area - mimo	2006	2	Polygon data describing Mojave monkeyflower (<i>Mimulus mohavensis</i>) conservation areas for the West Mojave Plan (used in DEIS and FEIS). Also includes mining areas and survey areas. This plant is a covered species in the West Mojave Plan.
Federal	BLM	Conservation Area - paph	2006	2	Polygon data describing Parish's phacelia (<i>Phacelia parishii</i>) conservation areas for the West Mojave Plan (used in DEIS and FEIS). This plant is a covered species in the West Mojave Plan.
Federal	BLM	Conservation Area - tobe	2006	2	Polygon data describing Bendire's thrasher (<i>Toxostoma bendirei</i>) conservation areas. This bird is a covered species in the West Mojave Plan.
Federal	BLM	Cattle Exclusion Areas	2006	2	Proposed grazing exclusion areas on cattle allotments for the West Mojave Plan (used in DEIS and FEIS). Polygon data.
Federal	BLM	Grazing Allotments	2014	2	These grazing allotment areas have been discussed and used as potential mitigation/compensation action for certain renewable energy projects through retirement. Grazing allotments have been listed as potential recovery action for desert tortoise. http://www.blm.gov/ca/gis/

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GIS Database Inventory for the SANBAG Countywide Habitat Preservation/Conservation Framework study, San Bernardino County

Source Category	Source	Name of Database (Bold Indicates used in Dudek mapping)+	Year	Relevancy*	Description
Federal	BLM	Historical Horse Herd Areas	2006	2	Polygon data depicting Historic Herd Areas which are geographic areas where wild horses and/or burros were found at the passage of the Wild Horse and Burros Act in 1971. Herd Management Areas (HMAs) are those areas within Herd Areas where the decision has been made to manage for populations of wild horses and/or burros. There are 33 Herd Areas and 22 Herd Management Areas within California. http://www.blm.gov/ca/gis/
Federal	BLM	Herd Management Areas	2006	2	The Herd Management Area coverage is a polygon layer of Wild Horse and Burro use areas. A "Herd Area" is defined by the "Wild and Free-Roaming Horse and Burro Program Guidance, January 1983" as "The geographic area identified as having been used by a herd as its yearlong habitat in 1971" and a Herd Management Area" is defined as "A herd area identified in an approved land use plan where wild horses and burros will be maintained and managed." There are nine Herd Management Areas on the Surprise Resource Area, boundaries and attributes for these areas were gathered from various maps and reports. http://www.blm.gov/ca/gis/
Federal	BLM	Minerals	2012	2	Polygon data showing areas of mineral deposits that have some level of existing or foreseeable potential to be collected or mined.
Federal	BLM	Land Surface Estate Boundaries	2014	2	Polygon data showing the administration responsible for lands within SB County (e.g., State, local, preserve management, military).
Federal	BLM	Geothermal Leasing Areas	2014	2	Geothermal lease use areas provide an indication of where impacts from these actions on biological resources are likely to occur. ftp://ftp.blm.gov/pub/CA/gis/ca_sync/geodatabasesZIP
Federal	BLM	Preliminary Renewable Energy ROW	2014	2	This dataset shows proposed and existing solar and wind project site data ; obtained from various BLM field offices or from other sources. Data is "preliminary" due to not being constructed with the official legal descriptions/maps. http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas.html
Federal	BLM	Verified Renewable Energy ROW	2014	2	This dataset shows proposed and existing solar and wind project site data which was constructed in GIS at the California State BLM Office, using hardcopy legal information and/or maps obtained from various California field offices. http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas.html
Federal	BLM	Vegetation Treatment Areas - Proposed	2014	2	The BLM vegetation treatments data contains locations where prescribed burns are planned to take place as well as possible physical vegetation thinning locations. http://www.blm.gov/ca/gis/
Federal	BLM	Vegetation Treatment Areas - Completed	2014	2	The BLM vegetation treatments data contains locations where prescribed burns took place as well as physical vegetation thinning locations. http://www.blm.gov/ca/gis/
Federal	BLM	Off Highway Vehicle (OHV) Areas	2008	2	Off-highway vehicle use areas. Polygon data. Attributes include area names, and status (open, limited use, closed). http://www.blm.gov/ca/gis/
Federal	BLM	Special Recreation Management Area (SRMA) - Existing	2014	2	Polygon coverage that includes nine Special Recreation Management Areas (SRMAs) to be managed Data on areas to be managed for recreation emphasis.
Federal	BLM	Desert Renewable Energy Conservation Plan (DRECP) - Boundary	2014	2	DRECP area boundaries which are used in biological resource planning. http://www.drecp.org/maps/
Federal	BLM	Land Use Planning Areas	2013	2	Boundaries of BLM land use planning areas (v10). http://www.blm.gov/ca/gis/
Federal	BLM	Taylor Grazing Act Districts	2011	2	Taylor Grazing Act districts. The Taylor Grazing Act of 1934 was intended to "stop injury to the public grazing lands by preventing overgrazing and soil deterioration; to provide for their orderly use, improvement, and development; [and] to stabilize the livestock industry dependent upon the public range." This Act was pre-empted by the Federal Land Policy and Management Act of 1976 (FLPMA). http://www.blm.gov/ca/gis/
Federal	BLM	Rapid Environmental Assessments (REAs) - Mojave and Sonoran Deserts	2012	1	Rapid Ecoregional Assessments are intended to provide a landscape-scale perspective of the ecological conditions and trends of an ecoregion, identifying important resource values and patterns of environmental change that may not be evident when managing smaller, local land areas. Various natural resources and biological datasets for the Mojave Basin and Range are available. Data completed 2012 and released to the public August 2013. http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas.html
Federal	BLM	BLM Land Status Dataset	2014	2	BLM land ownership dataset. Land ownership includes Bureau of Land Management, Bureau of reclamation, US Army Corps of Engineers, US Forest Service, National Park Service (Death Valley national Park, Joshua Tree National Park), National Preserves (Mojave National Preserve), Department of Defense (military lands), Bureau of Indian Affairs (Tribal lands), California State Lands Commission. Available at: http://www.blm.gov/ca/gis/
Federal	BLM	BLM Administrative Offices	2014	3	Point data of the BLM administrative offices in San Bernardino County. http://www.geocommunicator.gov/GeoComm/index.htm
Federal	US Department of Agriculture (USDA)	Ecoregions	2013	1	Dataset shows ecoregions that were extracted from a seamless national shapefile. Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. Contains information on division, province, and section. http://www.fs.fed.us/rm/ecoregions/products/map-ecoregions-united-states/

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Federal	USDA	Ecoregions - Subsections	2013	1	Dataset shows ecoregions subsections that were extracted from a seamless national shapefile. Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. Contains information on division, province, and section. http://www.fs.fed.us/rm/ecoregions/products/map-ecoregions-united-states/
Federal	Natural Resources Conservation Service (NRCS)	Soils - SSURGO Database	2012	1	This SSURGO dataset was created for use in national, regional, and statewide resource planning and analysis of soil data. This is a grid dataset and cannot be used below the grid scale. Partial coverage for San Bernardino county. San Bernardino County has had some soil mapping, predominantly in the southwestern portions, but large tracts of land remain unmapped. The SSURGO database contains information about soil as collected by the National Cooperative Soil Survey over the course of a century. The information can be displayed in tables or as maps. SSURGO datasets consist of map data, tabular data, and information about how the maps and tables were created. The extent of a SSURGO dataset is a soil survey area, which may consist of a single county, multiple counties, or parts of multiple counties. SSURGO map data can be viewed in the Web Soil Survey or downloaded in ESRI® Shapefile format. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053627
Federal	US Geological Survey (USGS)	National Hydrography Dataset (NHD) - point	2012	1	This layer is point data identifying hydrological resources within San Bernardino County. The National Hydrography Dataset (NHD) and Watershed Boundary Dataset (WBD) are used to portray surface water on The National Map. The NHD represents the drainage network with features such as rivers, streams, canals, lakes, ponds, coastline, dams, and stream gages. The WBD represents drainage basins as enclosed areas in eight different size categories. Both datasets represent the real world at a nominal scale of 1:24,000-scale, which means that one inch of The National Map data equals 2,000 feet on the ground. To maintain mapping clarity not all water features are represented and those that are use a moderate level of detail. http://nhd.usgs.gov/data.html
Federal	USGS	National Hydrography Dataset (NHD) - flow line	2012	1	This layer is linear data of hydrological flow in San Bernardino County. The National Hydrography Dataset (NHD) and Watershed Boundary Dataset (WBD) are used to portray surface water on The National Map. The NHD represents the drainage network with features such as rivers, streams, canals, lakes, ponds, coastline, dams, and stream gages. The WBD represents drainage basins as enclosed areas in eight different size categories. Both datasets represent the real world at a nominal scale of 1:24,000-scale, which means that one inch of The National Map data equals 2,000 feet on the ground. To maintain mapping clarity not all water features are represented and those that are use a moderate level of detail. http://nhd.usgs.gov/data.html
Federal	USGS	National Hydrography Dataset (NHD) - waterbody	2012	1	This layer is water body resource data in San Bernardino County. The National Hydrography Dataset (NHD) and Watershed Boundary Dataset (WBD) are used to portray surface water on The National Map. The NHD represents the drainage network with features such as rivers, streams, canals, lakes, ponds, coastline, dams, and stream gages. The WBD represents drainage basins as enclosed areas in eight different size categories. Both datasets represent the real world at a nominal scale of 1:24,000-scale, which means that one inch of The National Map data equals 2,000 feet on the ground. To maintain mapping clarity not all water features are represented and those that are use a moderate level of detail. http://nhd.usgs.gov/data.html
Federal	USGS	Watershed Boundary Dataset (WBD) - HUC12	2012	1	This layer is of watershed boundary data in San Bernardino County. The National Hydrography Dataset (NHD) and Watershed Boundary Dataset (WBD) are used to portray surface water on The National Map. The NHD represents the drainage network with features such as rivers, streams, canals, lakes, ponds, coastline, dams, and stream gages. The WBD represents drainage basins as enclosed areas in eight different size categories. Both datasets represent the real world at a nominal scale of 1:24,000-scale, which means that one inch of The National Map data equals 2,000 feet on the ground. To maintain mapping clarity not all water features are represented and those that are use a moderate level of detail. http://nhd.usgs.gov/data.html
Federal	USGS	mineplant_clip	2005	2	USGS Active mines and mineral plants in the U.S., 2003, published 2005. Received by Dudek via email on June 9, 2014 from Colin Drukker, Placeworks, at the request of Terri Rahhal, Planning Director, Land Use Services Department (LUS). http://mrddata.usgs.gov/mineplant/
Federal	USGS	CA GAP Vegetation	2008	1	The USGS GAP Land Cover Data Set includes detailed vegetation and land use patterns for the continental United States. The data set incorporates the Ecological System classification system developed by NatureServe to represent natural and semi-natural land cover. The 590 land use classes in the data set can be displayed at three levels of detail, from general (8 classes) to most detailed. The Land Cover Data Set can be used to identify those places in the country with sufficient good quality habitat to support wildlife, a key step in developing sound conservation plans. The GAP Land Cover data set is mainly focused on habitat identification. The USGS National Land Cover Database (NLCD) is also available and has more detail in developed areas. http://gapanalysis.usgs.gov/gaplandcover/data/download/

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Federal	USGS	National Elevation Dataset (NED)	2014	1	The National Elevation Dataset (NED) is the primary elevation data product of the USGS and serves as the elevation layer of The National Map. The NED provides basic elevation information for earth science studies and mapping applications in the United States. NED data is used for global change research, hydrologic modeling, resource monitoring, mapping, visualization, and many other applications. The NED is updated continually to integrate newly available, improved elevation source data. The NED is generated at various horizontal resolutions. These various resolutions, referred to as NED layers, are stored and distributed in geographic coordinates at 1/9, 1/3, 1, and 2 seconds of arc. Each of these layers is derived from the highest quality DEMs available in the NED source database for any geographic location within the conterminous United States, Alaska, Hawaii, Puerto Rico, U.S. territorial islands, Mexico and Canada. The extent of geographic coverage varies by layer. http://nationalmap.gov/elevation.html
Federal	US Forest Service (USFS)	USFS - Species - Wildlife	2014	1	Microsoft Access database sent by Chris Chandler, GIS Coordinator, San Bernardino National Forest via email on May 29, 2014. Database of wildlife observation point data for the San Bernardino National Forest. Observations include reptiles, birds, mammals, insects. Observation dates range from 1900-2014 (some dates in database are unknown). Access database imported into ArcMap 10.2.2 by Dudek GIS staff.
Federal	USFS	USFS - Species - Plants	2014	1	Microsoft Access database sent by Chris Chandler, GIS Coordinator, San Bernardino National Forest via email on May 29, 2014. Database of plant observation point data for the San Bernardino National Forest. Observations include threatened and endangered plant species. Observation dates range from 1981-2014. Access database imported into ArcMap 10.2.2 by Dudek GIS staff.
Federal	USFS	Arroyo Toad (ArroyoToad_ARTO_UPLANDHAB_RIP_OB_BA)	2007	1	Arroyo Toad (ARTO) polygon data layer that includes both known occupied habitat and upland breeding habitat for the San Bernardino National Forest. Upland breeding habitat is based on ARTO_RIP_OB_BA (riparian obligate) plus 100 feet in elevation.
Federal	USFS	Bald Eagle (BaldEagle_BAEA_LOP_060509)	2009	1	Bald Eagle Limiting Operating Period (LOP) Areas for the San Bernardino National Forest. 1/4 mile buffer of Night Roost and known nest sites plus unbuffered known day use areas. Limited Operating Period is Dec 1 - March 31. Polygon data layer. Data credits: Chris Chandler and Sean Redar (SBNF SO). 1989-2002 Update 2007 by Jason Bill.
Federal	USFS	Meadow Habitat (BDF_MEADOW_HABITAT_090408)	2008	1	Final Meadow Habitat layer, with Condition Types, used in Molly Ward's Meadow Recovery Plan, March 2004. San Bernardino National Forest. Chris Wagner of the Mountaintop District Botany staff updated meadows layer using aerial photo interpretation to whole forest as part of Fen assessment in 2007 (unpublished report - Mountaintop Ranger District, San Bernardino National Forest). Many mapped meadows were ground truthed, many were not. Attribute fields for ground truth and remap priority came from this effort. Polygon data layer. Credits: SBNF Fawnskin, Resources Team.
Federal	USFS	Pebble Plains (BDF_PEBBLEPLAINS)	2004	1	Final Pebble Plain Habitat with Condition for San Bernardino National Forest. March 2004. Polygon data layer.
Federal	USFS	Least Bell's Vireo (LeastBellsVireo_LBV_RIP_OB_BA)	2007	1	Least Bell's Vireo - mapped habitat and occurrence data - prepared for Riparian Obligate BA. San Bernardino National Forest.
Federal	USFS	Mountain Yellow-legged Frog (MtnYellowLeggedFrog_MYLF_LOP_INT_061509)	2009	1	Mountain Yellow-legged Frog - mapped habitat and occurrence data LOP (February 1 - October 31). LOP = Limited Operating Period. 500 ft. buffer of MYLF_RIP_OB_BA. Intersected with USGS 7.5' Quadrangles. San Bernardino National Forest. Polygon data layer.
Federal	USFS	Southern Rubber Boa (SouthernRubberBoa_SRB_Habitat_041508)	2008	1	Rubber boa historical habitat. Requires a "Habitat = Yes" Definition Query to show only true habitat (this will exclude the higher elevation areas). Polygon data layer.
Federal	US Fish and Wildlife Service (USFWS)	Designated Critical Habitat	2014	1	These data identify, in general, the areas where final critical habitat exist for species listed as endangered or threatened. Critical habitat are areas considered essential for the conservation of a listed species. Special protections and/or restrictions are possible in areas where federal funding, permits, licenses, authorizations, or actions occur or are required. This dataset is composite of all current final critical habitat datasets that are submitted from various USFWS regional and field offices. The features from these individual datasets are merged into 2 database layers and the shapefiles are an exported product of the polygonal and linear composite database layers. Contains the critical habitat spatial features as described in the Federal Register. http://criticalhabitat.fws.gov/docs/crithab/crithab_all/crithab_all_layers.zip
Federal	USFWS	National Wildlife Refuges (Region1_NWR_Bndy)	2014	2	This dataset depicts approved refuge boundaries for National Wildlife Refuges located in Oregon, Washington, Idaho, Nevada, California, Hawaii and the U.S. Trust Territories in the Pacific Ocean. The primary source for boundary information is the USFWS Realty and Refuge Planning programs. Havasu National Wildlife Refuge is the only refuge in San Bernardino County. Credits: USFWS, Region 1, Division. August 2014. http://www.fws.gov/gis/data/CadastralDB/index.htm
Federal	USFWS	Species Occurrence (USFWS Occurrence)	2014	1	These data identify, in general, multiple species occurrences within jurisdiction of the Carlsbad Fish and Wildlife Office. The database was initially created to map locations of threatened and endangered species which require a survey report under Section 10 of the Endangered Species Act. The database has been expanded to include a few other species of interest. Species observation date range is from 1908-2013.

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Federal	USFWS	DRECP Species Occurrence (DRECP_SpeciesOccurrence)	2013	1	Species occurrence points within the Desert Renewable Energy Conservation Plan (DRECP) area boundaries. This database was compiled from various sources to create a comprehensive database for special-status plant and wildlife species that have been recorded within the Plan Area and may be considered for coverage under the Plan. Data sources include BLM, USFWS, CDFW, and USFS (San Bernardino National Forest).
Federal	USFWS	Desert Renewable Energy Conservation Plan (DRECP)	2012	2	DRECP area boundaries. The DRECP Plan Area is focused on the Mojave and Colorado desert regions and adjacent lands of seven California counties - Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, and San Diego. The Plan Area covers about 22,587,000 acres. http://www.drecp.org/maps/
Federal	USFWS	Lytle Creek Conservation Bank ("Wildlands")	2014	2	Polygon data describing the boundary location of the Lytle Creek Conservation Bank. Data layer received by Dudek via email on October 15, 2014 from Tony McKinney, USFWS Carlsbad Office. Bank was approved in September 2014: The Lytle Creek Conservation Bank ("Bank") has been approved by the U.S. Fish and Wildlife Service, Palm Springs Regional Office ("USFWS"). The Bank will permanently protect and preserve approximately 182 acres of habitat suitable for the protection of the federally endangered San Bernardino kangaroo rat and Santa Ana River woolly-star. The Bank is located in the Lytle Creek wash area north of interstate 210, southwest of Interstate 215 in San Bernardino County, California near the cities of Fontana and Rialto. The San Bernardino kangaroo rat is federally endangered and listed by the State of California as a Species of Special Concern. It is a small, nocturnal rodent usually found in alluvial washes in the Inland Empire. The Santa Ana River woolly-star is a federally endangered shrub found in similar habitat to the kangaroo rat along the Santa Ana River and its tributaries. A conservation bank is a habitat preserve developed to offset unavoidable permitted impacts to federally endangered species habitat. Public and private development projects occurring within the approved service area can purchase habitat "credits" from the Lytle Creek Conservation Bank with approval from USFWS.
Federal	USFWS	National Wetlands Inventory (NWI)	2014	1	The U.S. Fish and Wildlife Service is the principal Federal agency that provides information to the public on the extent and status of the Nation's wetlands. Through the National Wetlands Inventory, the agency has developed a series of topical maps to show wetlands and deep water habitats. The National Wetlands Inventory provides current geospatially referenced information on the status, extent, characteristics and functions of wetland, riparian, deep water and related aquatic habitats in priority areas to promote the understanding and conservation of these resources. As of May 2014, the wetland geospatial data layer provides on-line map information for all of the conterminous U.S., Hawaii, Puerto Rico, the Virgin Islands, Guam, the major Northern Mariana Islands and 35% of Alaska. This has been accomplished by working with numerous public and private cooperators to produce maps, digital data, and publications. Available at: http://www.fws.gov/wetlands/Data/State-Downloads.html
Federal	Federal Emergency Management Agency (FEMA)	National Flood Hazard Layer (NFHL) (FEMA_FloodHazard)	2014	2	The NFHL is a computer database that contains the flood hazard map information from FEMA's Flood Map Modernization program. These map data are from Digital Flood Insurance Rate Map (DFIRM) databases and Letters of Map Revision (LOMRs). Products and services include MapViewer - Web, utility files to view the NFHL in Google Earth, a Web Map Service, and NFHL GIS data. All of these are available from the Map Service Center at http://msc.fema.gov . FEMA flood risk areas provide an indication of where impacts on biological resources are likely to occur.
State	California Department of Fish and Wildlife (CDFW)	California Essential Habitat Connectivity Project	2010	2	The California Department of Fish and Wildlife and the California Department of Transportation (CalTrans) commissioned a team of consultants to produce a statewide assessment of essential habitat connectivity by February of 2010, using the best available science, data sets, spatial analyses and modeling techniques. The Project identifies large remaining blocks of intact habitat or natural landscape and models linkages between them that need to be maintained, particularly as corridors for wildlife. GIS data is available for download at: http://www.dfg.ca.gov/biogeodata/bios/
State	CDFW	Vegetation	2013	1	Vegetation datasets for the California Deserts. Includes natural communities. Cooperatively produced and maintained by CDFW. Available for download at: http://www.dfg.ca.gov/biogeodata/gis/veg.asp
State	CDFW	California Natural Diversity Database (CNDDDB) - Plants and Animals	2014	1	Inventories the status and locations of rare plants and animals in California . CNDDDB staff work with partners to maintain current lists of rare species as well as maintain an ever-growing database of GIS-mapped locations for these species. The CNDDDB is a "natural heritage program" and is part of a nationwide network of similar programs overseen by NatureServe (formerly part of The Nature Conservancy). http://www.dfg.ca.gov/biogeodata/cnddb/
State	CDFW	California Spotted Owl Nests (CASPO_NEST_052209)	2009	1	From California Natural Diversity Database (CNDDDB). Point data of mapped California spotted owl nests and sites. Includes centroid data. Data range from 1986-2008 (some dates unknown).
State	CDFW	CDFW Owned and Operated Lands	2014	2	Boundary layer of CDFW-owned and operated lands. Downloaded November 20, 2014. Available at: http://www.dfg.ca.gov/biogeodata/gis/clearinghouse.asp

Table 2-2
GIS Database Inventory for the SANBAG Countywide Habitat Preservation/Conservation Framework study, San Bernardino County

Source Category	Source	Name of Database (Bold Indicates used in Dudek mapping)+	Year	Relevancy*	Description
State	CDFW	California Wildlife Habitat Relationships (CWHR)	2008	1	California Wildlife Habitat Relationships (CWHR) is an information system for California's wildlife. CWHR contains life history, geographic range, habitat relationships, and management information on 694 species of amphibians, reptiles, birds, and mammals known to occur in the state. The GIS shapefiles are at a 1:1,000,000 scale showing statewide range by season of the 694 terrestrial vertebrates in CWHR. The CWHR System was developed to support habitat conservation and management, land use planning, impact assessment, education, and research involving terrestrial vertebrates in California. Range maps represent the maximum, current geographic extent of each species within California. They were originally delineated at a scale of 1:5,000,000 by species-level experts and have gradually been revised at a scale of 1:1,000,000. Range maps were digitized as GIS layers to support the predictions of the CWHR System software, which allows users to query for wildlife species meeting a set of location and habitat conditions. Presently, they are used to help generate a tabular location database for the system software. Outside the system software, the GIS layers are used to support species richness assessments for statewide conservation planning. Available at: http://www.dfg.ca.gov/biogeodata/cwhr/
State	California Department of Water Resources	Groundwater Basins	2012	3	The shape file shows groundwater basins and subbasins as defined by the California Department of Water Resources. The file is intended for use with GIS software able to import files of suffix '.shp'. Groundwater basins are designated on the basis of geological and hydrological conditions, these usually being the occurrence of alluvial or unconsolidated deposits. When practical, large basins are also subdivided by political boundaries. Basins are named and numbered per the convention of the Department of Water Resources. Many of the subbasin boundaries were developed or modified with public input, but little physical data. Because they should not be considered precise boundaries, a detailed local study should determine whether any specific area lies within a groundwater basin boundary. Available at: http://www.water.ca.gov/groundwater/bulletin118/gwbasins.cfm
County	Southern California Association of Governments (SCAG)	Land Use Data	2008	2	Polygon data on land use within San Bernardino County from SCAG. This database is 2008 GIS land use dataset for 2009. The dataset is parcel-based and developed based on SCAG 2005 land use information, InfoUSA 2008 employment data, 2005-2008 new construction data, as well as inputs from local jurisdictions in the SCAG region.
County	SCAG	Prado Dam - baseline	2014	2	This polygon coverage represents data for baseline habitat values in the Prado Basin and Dam area along the Santa Ana River between the cities of Chino Hills and Norco, San Bernardino and western Riverside Counties. The baseline is a per acre value by habitat type and overall site value for mitigation areas. The values were calculated using a fine-scale CHAP analysis. The purpose of the values are for USACE ecosystem restoration projects. This is from a pilot study. The overall goal of the pilot study, Prado Basin Fine-Scale Assessment, is to evaluate existing habitat conditions at a fine level of resolution within an ecosystem context. Assessment areas include Chino Creek, Mill Creek, Upper Santa Ana River Main Stem, Prado Dam, and Reach 9. Per-acre values were computed for each polygon by adding the species-function matrix (MFRI) value for the habitat type of the polygon and polygon specific habitat-function matrix value. The per-acre value represents the intrinsic worth of an area to fish and wildlife, determined by accounting for species, habitats, and functions. Data layer received by Dudek via email on September 9, 2014 from Kristin Pawling, SCAG. This data is DRAFT only. A final version will be needed prior to use for final conservation planning.
County	SCAG	Land Use Data - General Plan (GP_LandUse)	2008	2	Polygon data describing land use in the County General Plan. This database is 2008 GIS general plan dataset for 2009. The dataset is parcel-based and updated based on local jurisdictions' input in the SCAG region. These data are intended to aid in forecasting land supply and demand for the SCAG region and to be used as a planning tool. To provide GIS users with countywide general plan parcel coverage.
County	Land Use Services (LUS)	Vacant Land Survey (VacantLandSurvey_HeatMap)	2013	2	Polygon coverage showing aggregate heat map of potential development constraints for the entire San Bernardino County. There are 7 categories of potential development constraints: mining, water infrastructure/developed lands, highways and major roads, residential density, lands in planning boundaries, sensitive agricultural lands, and sensitive habitats. Higher point values (red) = more constraints and lower point values (blue) = fewer constraints. Data received by Dudek via email on June 9, 2014 from Colin Drukker, Placeworks, at the request of Terri Rahhal, Planning Director, Land Use Services Department (LUS).
County	LUS	DWR_pipeline	2014	2	Major Water Pipelines, San Bernardino County. Received by Dudek via email on June 9, 2014 from Colin Drukker, Placeworks, at the request of Terri Rahhal, Planning Director, Land Use Services Department (LUS).
County	LUS	MWA_pipeline	2014	2	Major Water Pipelines, San Bernardino County. Received by Dudek via email on June 9, 2014 from Colin Drukker, Placeworks, at the request of Terri Rahhal, Planning Director, Land Use Services Department (LUS).
County	LUS	MWD_pipeline	2014	2	Metropolitan Water District Pipeline Dataset. Major Water Pipelines, San Bernardino County. Received by Dudek via email on June 9, 2014 from Colin Drukker, Placeworks, at the request of Terri Rahhal, Planning Director, Land Use Services Department (LUS).
County	LUS	SBVMWD_pipeline	2014	2	Major Water Pipelines, San Bernardino County. Received by Dudek via email on June 9, 2014 from Colin Drukker, Placeworks, at the request of Terri Rahhal, Planning Director, Land Use Services Department (LUS).

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GIS Database Inventory for the SANBAG Countywide Habitat Preservation/Conservation Framework study, San Bernardino County

Source Category	Source	Name of Database (Bold Indicates used in Dudek mapping)+	Year	Relevancy*	Description
County	Local Agency Formation Commission (LAFCO)	CSA 120 - Conservation Area	2014	2	County Service Area (CSA) 120 is a single purpose Board-governed Special District that performs open space and habitat management services. Services include acquisition, preservation, maintenance and operation of land to protect species and historically significant properties. CSA 120 is approx. 9,265 acres. Data layer received by Dudek via email on May 14, 2014 from Samuel Martinez, LAFCO.
County	LAFCO	CSA 70 - Conservation Area (CSA79GH)	2014	2	Polygon layer depicting the boundary of County Service Area (CSA) 70 - Glen Helen (GH). This CSA represents open space/conservation areas. County Service Area 70 Zone GH is governed by the County Board of Supervisors. The zone provides park and recreation, open space and habitat mitigation, sewer, and streetlight services to the Glen Helen area. Data layer received by Dudek via email on May 14, 2014 from Samuel Martinez, LAFCO.
County	Flood Control District	Flood Control District Parcels (FloodControlDistrict_Parcels)	2014	2	Polygon data that depicts the approximate Right-of-Way of the San Bernardino County Flood Control system. Data includes information on type of parcel, responsible party, and dates (e.g., easement, fee owned parcel). Credit: County of San Bernardino Flood Control District.
County	San Bernardino County Museum	SBCM_SBCo_all_species	2009	1	This biological species distribution dataset (point data) was derived from the FWS, CNDDDB, various museum records as delineated in table and San Bernardino County field and collections records and was compiled by San Bernardino County Museum biological research staff. The data represents California and federally listed species, species of special concern, species of interest, and all species detected within the county by SBCM staff during various research projects. This data was compiled for the Museum and other County organizations - specifically SANBAG, to integrate improved biological inventory data into their planning and decision support efforts. This data is derived for planning purposes only. Data is primarily wildlife data (including insects) with a few plant species. Credits: San Bernardino County Museum 2009. Complete Museum dataset received by Dudek via email on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.
County	San Bernardino County Museum	SBCM_SBCo_listed_species	2009	1	This biological species distribution dataset (point data) was derived from the FWS, CNDDDB, various museum records as delineated in table and San Bernardino County field and collections records and was compiled by San Bernardino County Museum biological research staff. The data represents California state and federally listed species, species of special concern, and species of interest within San Bernardino County. This data was compiled for the Museum and other County organizations - specifically SANBAG, to integrate improved biological inventory data into their planning and decision support efforts. This data is derived for planning purposes only. Credits: San Bernardino County Museum 2009. Complete Museum dataset received by Dudek via email with download link on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.
County	San Bernardino County Museum	Kernals - SBCMall_50	2009	1	This data was compiled for the Museum and other County organizations - specifically SANBAG, to integrate improved biological inventory data into their planning and decision support efforts. This analysis footprint is representative of a combined dataset incorporating a Hawth's tools Kernal Density 50% Volume Contour Analysis. This data represents areas within the defined Study Area for the SANBAG biological resources mapping project. These areas would merit further analysis for conservation/mitigation opportunities (polygon data). This data was compiled over 2008 and 2009 and the datasets incorporated into this analysis included species siting data from: San Bernardino County Museum, Los Angeles County Museum, UC Berkeley, US Fish & Wildlife data, California Fish & Game -California Natural Diversity Database (CNDDDB). Each dataset has been compiled from various starting points. The end date for this analysis was Fall of 2008. The study area extent was defined by the San Bernardino County Museum for analyzing data compiled by County biological research staff. The project analysis was limited to a Study Area consisting of county boundaries on the West and South sides extending East near Cabazon and the North including Wrightwood and Big Bear Lake. The Study Area represents SANBAG's greatest concentration of transportation infrastructure for the project analysis. Credits: San Bernardino County Museum 2009. Complete Museum dataset received by Dudek via email on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.
County	San Bernardino County Museum	Kernals - SBCMbioAreasLU06Final	2009	2	Polygon data layer showing land use in San Bernardino County. This SANBAG 2006 Land use dataset has been extracted to define land uses that extent was defined by the San Bernardino County Museum for analyzing data compiled by County biological research staff. The project analysis was limited to Study Area consisting of county boundaries on the West and South sides extending East near Cabazon and the North including Wrightwood and Big Bear Lake. The assumption was made by the team that some existing specific land uses have a higher likelihood to be appropriate for mitigation opportunities than others. The team suggested separating SANBAG's 2006 Land use designations into "Eliminated" and "Retained" land uses for possible mitigation. This data was compiled for the Museum and other County organizations - specifically SANBAG, to integrate improved biological inventory data into their planning and decision support efforts. Credits: San Bernardino County Museum 2009. Complete Museum dataset received by Dudek via email on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.

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Source Category	Source	Name of Database (Bold Indicates used in Dudek mapping)+	Year	Relevancy*	Description
County	San Bernardino County Museum	Kernals - SBCMBioAreasOppsFinal	2008	2	This analysis footprint is representative of a combined dataset incorporating a Hawth's tools Kernal Density 50% Volume Contour Analysis. This data represents areas within the defined Study Area for the SANBAG biological resources mapping project (polygon data). This data was compiled over 2008 and 2009. These areas would merit further analysis for conservation/mitigation opportunities. The datasets incorporated into this analysis included species siting data from: San Bernardino County Museum, Los Angeles County Museum, UC Berkeley, US Fish & Wildlife data, California Fish & Game -California Natural Diversity Database (CNDDDB). The end date for this analysis was Fall of 2008. The study area extent was defined by the San Bernardino County Museum for analyzing data compiled by County biological research staff. The project analysis was limited to Study Area consisting of county boundaries on the West and South sides extending East near Cabazon and the North including Wrightwood and Big Bear Lake. Study Area represents SANBAG's greatest concentration of transportation infrastructure for the project analysis. Credits: San Bernardino County Museum 2008. Complete Museum dataset received by Dudek via email with download link on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.
County	San Bernardino County Museum	Kernals - SBCMlist50	2008	2	This analysis footprint is representative of a combined dataset incorporating a Hawth's tools Kernal Density 50% Volume Contour Analysis. This data represents areas within the defined Study Area for the SANBAG biological resources mapping project (polygon data). This data was compiled over 2008 and 2009. These areas would merit further analysis for conservation/mitigation opportunities. The datasets incorporated into this analysis included species siting data from: San Bernardino County Museum, Los Angeles County Museum, UC Berkeley, US Fish & Wildlife data, California Fish & Game -California Natural Diversity Database (CNDDDB). The end date for this analysis was Fall of 2008. The study area extent was defined by the San Bernardino County Museum for analyzing data compiled by County biological research staff. The project analysis was limited to Study Area consisting of county boundaries on the West and South sides extending East near Cabazon and the North including Wrightwood and Big Bear Lake. Study Area represents SANBAG's greatest concentration of transportation infrastructure for the project analysis. Credits: San Bernardino County Museum 2008. Complete Museum dataset received by Dudek via email on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.
County	San Bernardino County Museum	Kernals - Study Area	2008	2	Polygon boundary layer depicting the San Bernardino County Museum study area. This study area extent was defined by the San Bernardino County Museum for analyzing data compiled by County biological research staff. The project analysis was limited to Study Area consisting of county boundaries on the West and South sides extending East near Cabazon and the North including Wrightwood and Big Bear Lake. Study Area represents SANBAG's greatest concentration of transportation infrastructure for the project analysis. Credits: San Bernardino County Museum 2008. Complete Museum dataset received by Dudek via email on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.
County	San Bernardino County Museum	Amphibian Distribution Maps	2009	1	Polygon dataset depicting the distribution of 20 amphibian species in San Bernardino County. This biological species distribution dataset was compiled by San Bernardino County Museum biological research staff. The data represents generalized herptile distributions within San Bernardino County. The data was derived by digitizing each species distribution using a variety of published distribution maps. These maps were modified to reflect current species distribution through firsthand knowledge. The footprints represented by this distribution area is for general purposes only and is not meant to be considered accurate beyond a 1:24000 scale use. Credits: San Bernardino County Museum 2009. Complete Museum dataset received by Dudek via email on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.
County	San Bernardino County Museum	Bird Distribution Maps	2009	1	Polygon dataset depicting the distribution of 68 bird species in San Bernardino County. General distribution maps for each species. Original distribution maps provided by NatureServe.Org. Clipped to San Bernardino County boundary. Complete Museum dataset received by Dudek via email on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.
County	San Bernardino County Museum	Historic Distribution Maps	2008	1	Historical point data distribution dataset for 21 species of select birds and mammals only. This historical point data distribution was compiled from sources that estimate the historical sightings and actual collection of certain species of interest. This data has been converted to digital form for the Museum and other County organizations - specifically SANBAG, to integrate improved biological inventory of actual and historical data into their planning and decision support efforts. This biological species dataset for includes select bird and mammal species and were derived from two Key resources defining Historical biological point distribution of species in California. This data was compiled for San Bernardino County Museum biological research staff. For the purpose of comparing their compiled data with known historical distribution ranges. The points represent the location of where the specific species was sighted and/or collected. However, it should be noted that the accuracy of these points cannot be relied upon for ground truthing for these points are rough sketches of the approximate location. The sighting and/or collection could be within a 20 mile radius of the specified point. Credits: San Bernardino County Museum 2008. Complete Museum dataset received by Dudek via email on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.

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Source Category	Source	Name of Database (Bold Indicates used in Dudek mapping)+	Year	Relevancy*	Description
County	San Bernardino County Museum	Mammal Distribution Maps	2009	1	Polygon dataset depicting the distribution of 39 mammal species in San Bernardino County. General distribution maps for each species. Original distribution maps provided by NatureServe.Org. Clipped to San Bernardino County boundary. Complete Museum dataset received by Dudek via email on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.
County	San Bernardino County Museum	Reptile Distribution Maps	2009	1	Polygon dataset depicting the distribution of 58 reptile species in San Bernardino County. This biological species distribution dataset was compiled by San Bernardino County Museum biological research staff. The data represents generalized herptile distributions within San Bernardino County. The data was derived by digitizing each species distribution using a variety of published distribution maps. These maps were modified to reflect current species distribution through firsthand knowledge. The footprints represented by this distribution area is for general purposes only and is not meant to be considered accurate beyond a 1:24000 scale use. Credits: San Bernardino County Museum 2009. Complete Museum dataset received by Dudek via email on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.
County	San Bernardino County Museum	Critical Habitat	2009	1	Polygon data depicting federally designated Critical Habitat for listed bird, mammal, fish, amphibian, reptile, and plant species that occur in San Bernardino County. Museum dataset received by Dudek via email on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.
County	San Bernardino County Museum	Vegetation (Vegetation_SanBernMuseum)	2009	1	Polygon data depicting habitat communities within the mountain and valley planning regions of San Bernardino County. Museum dataset received by Dudek via email on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.
County	San Bernardino County Museum	Southern California Critical Biological Areas (SoCal_CriticalBiologicalAreas)	2009	1	Polygon data depicting critical biological land use zones on southern California National Forest lands in San Bernardino County. Data layers includes 8 critical biological areas. Critical Biological Land Use Zones include the most important areas on the Southern California National Forests to manage for the protection of species-at-risk. Facilities are minimal to discourage human use. The level of human use and infrastructure is low to moderate. Wildland/Urban Interface Threat Zones (see Appendix K in Part 3 of the below referenced forest plan) may occur in this zone. Community protection vegetation treatments within the Critical Biological land use zone may occur by exception. In these cases, managers will consider species and habitat needs. The management intent is to retain the natural character and habitat characteristics in this zone and limit the level of human development to manage for protection of species-at-risk. Activities and modification to existing infrastructure are allowed if they are beneficial or neutral to the species for which the zone was primarily designated. Human uses are more restricted in this zone than in Back Country Non-Motorized zones in order to protect species needs, but are not excluded. Low impact uses, such as hiking, mountain biking and hunting are generally allowed. Motorized use of existing National Forest System roads is allowed. Approximately .2 percent of the National Forest System and non-system roads are found in this zone, including three miles of unclassified road. Road density will not be increased and may be decreased as a result of species protection requirements. Used for National Forest planning and assessment and other natural resource applications. Not recommended for use at scales greater than 1:24000. Museum dataset received by Dudek via email on October 15, 2014 from Cameron Brown, GIS Administrator, San Bernardino Associated Governments.
County	San Bernardino County Museum	CSA 120 Conservation Area Species (CSA120_Species_SanBernMuseum)	2012	1	Polygon data depicting the location of listed/sensitive species (bird, plants, mammal, amphibian, reptiles) documented within and adjacent to CSA 120 (County Service Area 120) conservation and open space area in the City of Rancho Cucamonga. Data on biological resources distributions is for General Plan Biotic Resources Overlay data approved by the County of San Bernardino Board of Supervisors on May 22, 2012 under BOS item 92. Data received by Dudek in April 2014 from SANBAG.
County	San Bernardino County Museum	Species Occurrences - Arizona Bell's Vireo, Bald Eagle, Bendire's Thrasher, Burrowing Owl, California Gnatcatcher, Crissal Thrasher, Gila Woodpecker, Least bell's Vireo, Lucy's Warbler, Santa Ana River Woolly-Star, Southwestern Willow Flycatcher, Vermillion Flycatcher, Yuma Clapper Rail	2012	1	Polygon data depicting distribution maps for these select listed/sensitive species in San Bernardino County. Data on biological resources distributions is for General Plan Biotic Resources Overlay data approved by the County of San Bernardino Board of Supervisors on May 22, 2012 under BOS item 92. Data received by Dudek in April 2014 from SANBAG.
County	San Bernardino Valley Water Conservation District	Upper Santa Ana River Habitat Conservation Plan (Santa Ana_HCP)+	2014	2	This polygon layer represents the boundaries of the draft Upper Santa Ana River Habitat Conservation Plan (Upper SAR HCP) area, located mostly in the City of Highland. This draft plan includes 10 water resource, county, and/or city agencies. This coverage was digitized from hard copy maps by Dudek GIS Department staff. It represents the draft Plan area. A final boundary will be needed for any future conservation analyses.

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City/Town	Highland	Community Development Projects (CityofHighland_CommunityDevProjects)	2014	2	Polygon shapefile data depicting project boundaries for 13 planned/proposed development projects in the City of Highland: Harmony Specific Plan, East Valley Water District Corp Campus, Mediterra Residential Community, Wright Grove, Wood Bridge Planned Development, Glenrose Ranch Planned Development, Greenspot Village & Market Place Specific Plan, Paseo Del Oro Mixed Use Project, East Highlands Ranch PA 39, Hispano Investors, EHR PA 40/42 Blossom Trails, Christianson Property, Development 1 Group. Data coverage received by Dudek via email on May 29, 2014 from Sergio Madera, Associate Planner, City of Highland.
City/Town	Adelanto	North Open Space (AdelantoNorthOpenSpace)+	2014	2	Polygon data depicting the open space area on the west edge of the City of Adelanto as shown on the Adelanto North Composite Plan General Land Use and Zoning map (dated August 29, 2013). This data was received by Dudek on May 21, 2014 as a hard copy land use and zoning map by Mark de Manicor, City of Adelanto. The map was then digitized by Dudek GIS Department staff to create a GIS shapefile.
City/Town	Apple Valley	HCP Proposed Connectivity (AppleValleyHCP_ProposedConnectivity)+	2014	2	Polygon data depicting conservation areas and proposed habitat connectivity areas for the Town of Apple Valley Natural Community Conservation Plan and Habitat Conservation Plan (NCCP/HCP). Data coverage shows the conservation areas under federal or state control that surround Apple Valley and the connectivity proposed through the MSHCP/NCCP that would provide habitat corridors connecting the San Bernardino Mountains and the east and west areas on each side of the 15 freeway through the Wild Wash. With this proposed connectivity there would be approximately 2.4 million square miles of conservation land completely connected in the area. The connection from the San Bernardino Mountains is the only corridor that connects the coastal areas to the desert areas that exists in southern California. This information is a proposed draft. This map and all other maps will be available electronically once the draft HCP/NCCP goes out for public comment in the fall 2014. This data was received by Dudek as a hard copy map (Alternative A Conservation Areas, West Mojave Plan Final EIS/R, Map 2-1, dated July 9, 2004) which was then digitized by Dudek GIS Department staff to create a GIS shapefile. Hard copy map information was received by Dudek May 29, 2014 from Lori Lamson, Assistant Town Manager, Town of Apple Valley.
City/Town	Barstow	Open Space (BarstowOpenSpace)+	2014	2	Polygon data depicting open space/conservation lands and interim open space lands in and surrounding the City of Barstow. This data was received by Dudek as a hard copy land use and zoning map (dated 2014) with land use designations which were then digitized by Dudek GIS Department staff to create a GIS shapefile. The digitized shapefile shows only open space and interim open space areas. The data includes a category description of each location. Land Use and Zoning hard copy map received by Dudek via email on June 12, 2014 by Jennifer Riley, City of Barstow.
City/Town	Big Bear Lake	Habitat Conservation - Possible Sites (BigBearLake_HabitatConservationPossibleSites)+	2014	2	Polygon data depicting boundaries of areas in and surrounding Big Bear Lake for possible conservation set aside. This data was received by Dudek as a list of Assessor Parcel Numbers (APNs) which were then digitized by Dudek GIS Department staff to create a GIS shapefile. The data includes a category description of each location. Additional properties are possible. Data list received by Dudek via email on May 29, 2014 from Jim Miller, City of Big Bear Lake.
City/Town	Fontana	Conservation Areas (CityofFontana_Conservation)+	2014	2	Polygon data depicting the boundaries of two conservation areas within the City of Fontana: Jurupa Hills Conservation Site and Mary Vagle Conservation Site (combined acres = 41). These sites are managed as a Delhi Sands Flower-loving fly preserve. This data was not available from the City as a shapefile. It was received by Dudek as a hard copy report with maps which were then digitized by Dudek GIS Department staff to create a GIS shapefile. Information on preserve boundaries received by Dudek via email on June 3, 2014 from Shannon Casey, Senior Planner, City of Fontana.
Resource Conservation District	Inland Empire Resource Conservation District (IERCD)	IERCD Jurisdiction Boundary (InlandEmpire_RCD)	2014	2	Polygon boundary data showing the area of the IERCD jurisdiction. Data supplied to Mike Sweesy (Dudek) by Mandy Parkes (IERCD) with permission for use.
Resource Conservation District	IERCD	IERCD Mitigation Areas for LAFCO	2014	2	Polygon boundary data of mitigation areas managed by IERCD for LAFCO. Data shows 8 areas that are either mitigation projects or fee title properties/conservation easements. Internal data supplied to Mike Sweesy (Dudek) by Mandy Parkes (IERCD) with permission for use.
Environmental Group	South Coast Wildlands	South Coast Missing Linkages Project – Wildlife Corridors (SCML_WildlifeCorridors)	2010	1	Polygon data showing four wildlife corridor areas in the San Bernardino Mountains, Little San Bernardino Mountains, San Jacinto Mountains, and San Gabriel Mountains. This data is suitable for general map display only and is not appropriate for use for analyses. The South Coast Wildlands is working to maintain and restore connections between wildlands in the South Coast Ecoregion through an effort called the South Coast Missing Linkages Project. This project addresses fragmentation at a landscape scale. The approach is to identify and prioritize linkages that conserve essential biological and ecological processes. This project gathers the most current biological data for each linkage design to ensure the viability of the full complement of species native to the region. Methods involve partnering, gathering existing data, identifying impediments to and opportunities for connectivity, and stimulating a collaborative effort for each important linkage. http://www.scwildlands.org/projects/scml.aspx

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GIS Database Inventory for the SANBAG Countywide Habitat Preservation/Conservation Framework study, San Bernardino County

Source Category	Source	Name of Database (Bold Indicates used in Dudek mapping)+	Year	Relevancy*	Description
Environmental Group	South Coast Wildlands	California Desert Connectivity Project – Desert Linkage Network (DesertLinkageNetwork)	2010	1	Polygon data showing wildlife corridor linkages in the mountain and desert regions of San Bernardino County. These linkages connect the South Coast Wildlands Landscape Blocks. Data is for the South Coast Wildlands California Deserts Connectivity Project. This project informs land management and conservation decisions by identifying areas where maintaining or restoring ecological connectivity is essential to conserving the California Desert's biological diversity. This comprehensive connectivity assessment developed 23 Linkage Designs based on several science-based models (e.g., landscape permeability, habitat suitability, patch size and configuration analyses) and field work that evaluates the habitat suitability and movement needs of over 40 selected focal species. http://www.scwildlands.org/projects/desert.aspx
Environmental Group	South Coast Wildlands	Joshua Tree-Twenty-nine Palms Connection – Wildlife Corridors (JT_TP_WildlifeCorridors)	2010	1	Polygon data showing wildlife corridor linkages connecting Joshua Tree National Park and the Marine Corps Air Ground Combat Center (MCAGCC) at Twenty-nine Palms. The Linkage Design for the Joshua Tree – Twenty-nine Palms Connection encompasses basin and range topography with an impressive array of geological formations and broad alluvial fans or bajadas. It includes several major swaths of habitat to accommodate diverse species and ecosystem functions. The two areas targeted to be served by the linkage support a great diversity of species. Joshua Tree provides habitat for more than 250 resident and migratory birds, 52 mammals, 44 reptiles, 3 amphibians, and more than 700 vascular plant species while MCAGCC supports nearly 400 plant species and more than 250 vertebrate wildlife species. http://www.scwildlands.org/projects/jtree.aspx
Environmental Group	South Coast Wildlands	Landscape Blocks (Wildland_Blocks)	2010	1	South Coast Wildlands Landscape Blocks (i.e., areas protected from energy development and roads) used in developing California desert linkage designs. Landscape Blocks include BLM Wilderness Areas and Areas of Critical Environmental Concern (ACEC), national and state parks, federal and state wildlife refuges, private conservation reserves, and military reservations. Data coverage includes 16 different habitat blocks. http://www.scwildlands.org/index.aspx
Environmental Group	Audubon	Christmas Bird Count Data	2013	1	Bird species observations. The longest running Citizen Science survey in the world, the Christmas Bird Count provides critical data on bird population trends. Data from the over 2,300 survey circles are entered after the count and become available to query under the Data & Research link. Data range for observations throughout California is 1900-2013. Data search available at: http://netapp.audubon.org/cbcobservation/
Environmental Group	Audubon	Important Bird Areas	2014	2	A global initiative of BirdLife International, implemented by Audubon and local partners in the United States, the Important Bird Areas Program (IBA) is an effort to identify and conserve areas that are vital to birds and other biodiversity. Main website: http://web4.audubon.org/bird/iba/ Data for San Bernardino County includes polygon boundaries for 9 IBAs: Big Morongo Canyon, Cima Dome, Colorado Desert Microphyll Woodland, East Mojave Peaks, East Mojave Springs, Edwards Air Force Base, Lower Colorado River Valley, Mojave River, North Mojave Dry Lakes. The IBAs are all located in the Desert Region of the County. Data request available at: http://web4.audubon.org/bird/iba/IBADataRequest.html
Environmental Group	Audubon (eBird)	Golden Eagle Occurrence Data	2011	1	Launched in 2002 by the Cornell Lab of Ornithology and National Audubon Society, eBird provides rich data sources for basic information on bird abundance and distribution at a variety of spatial and temporal scales. eBird documents the presence or absence of species, as well as bird abundance through checklist data. A simple and intuitive web-interface engages tens of thousands of participants to submit their observations or view results via interactive queries into the eBird database. eBird collects observations from birders through portals managed and maintained by local partner conservation organizations. California eBird: http://ebird.org/content/ca/ . California eBird data: http://ebird.org/ebird/ca/eBirdReports?cmd=Start . Point data for occurrence locations for Golden Eagle. Data records are from 1969 – 2011.
Environmental Group	Audubon (eBird)	Listed and Sensitive Bird Species Occurrences	2014	1	Point data for occurrence locations for sensitive bird species in San Bernardino County. California eBird data: http://ebird.org/ebird/ca/eBirdReports?cmd=Start .
Environmental Group	HerpNet	HerpNet (Herpetological Occurrences – Museum Records)	2014	1	HerpNet is a collaborative effort by natural history museums to establish a global network of herpetological collections data, funded by the National Science Foundation (NSF No. 0132303) and a GBIF DIGIT grant. Sixty-four institutions participated in the HerpNet community. Data were obtained from records held in museums and institutions and accessed through the HerpNet data portal: http://www.herpNet.org . Note: On 5 January 2015, the HerpNet2 portal will be replaced by the VertNet data portal.
Environmental Group	Hills for Everyone	State Park lands	2015	2	Polygon boundary data showing California State Park lands in San Bernardino County. GIS data sent by Hills for Everyone via email on December 30, 2014 from Melanie Schlotterbeck (Hills for Everyone) to Josh Lee (SANBAG). GIS data was forwarded to Dudek on January 5, 2015 via email.

Table 2-2
GIS Database Inventory for the SANBAG Countywide Habitat Preservation/Conservation Framework study, San Bernardino County

Source Category	Source	Name of Database (Bold Indicates used in Dudek mapping)+	Year	Relevancy*	Description
Environmental Group	GreenInfo Network	California Protected Areas Database (CPAD)	2014	2	The California Protected Areas Database (CPAD) contains GIS data about lands that are owned in fee and protected for open space purposes by almost 1,000 public agencies or non-profit organizations. CPAD includes national/state/regional parks, forests, preserves, and wildlife areas; large and small urban parks that are mainly open space (as opposed to recreational facility structures); land trust preserves owned outright; special district open space lands (watershed, recreation, etc.) and other types of open space. Some lands in CPAD are subject to extensive human use (park development, logging, off-highway vehicle use, etc.) - the term "protected" in CPAD is used broadly and allows that in the entire system of these lands some are owned and managed for other than natural resource purposes. CPAD version 2014a, March 2014. Download available at: www.CALands.org
Environmental Group	U.S. Endowment for Forestry and Communities, Inc.	National Conservation Easement Database (NCED)	2014	2	The National Conservation Easement Database (NCED) is a collaborative venture to compile easement records (both spatial and tabular) from land trusts and public agencies throughout the United States in a single, up-to-date, sustainable, GIS compatible, online source. The goal of the NCED is to provide a comprehensive picture of the privately owned conservation easement lands, recognizing their contribution to America's natural heritage, a vibrant economy, and healthy communities. Conservation easements are legal agreements voluntarily entered into between landowners and conservation entities (agencies or land trusts) for the express purpose of protecting certain societal values such as open space or vital wildlife habitats. In some cases landowners transfer "development rights" for direct payment or for federal and state tax benefits. NCED shows a comprehensive picture of privately owned conservation easement lands in the U.S. The NCED will allow better strategic planning for conservation and development by merging data on land protection with biodiversity and resources, improving ecological and economic plans and investments. State and regional planners and managers will appreciate this dataset as it provides critical contextual information for their work. Institutions responsible for national and international reporting will find this database full of reliable, accurate information for their purposes. The scientific and conservation community will similarly benefit from having this standardized base map to carry out their research and planning objectives. Downloaded October 15, 2014 from: http://nced.conservationregistry.org/projects
Private	Dudek	Bark Beetle Monitoring Data	2011	1	This dataset is a collection of species and resource information by Dudek biologists on lands monitored during the removal of trees infected with bark beetle. Southern California Edison (SCE) project.
Private	Vulcan Materials Company	Vulcan Materials Conservation Parcels - Colton (VMC_Colton)	2014	2	Single polygon representing Vulcan Materials Company conservation parcels for mitigation within the City of Colton. The conservation parcel is 160 acres. Data received by Dudek via email on July 22, 2014 from Michael Linton, Vulcan Materials Company.
Private	Vulcan Materials Company	Cajon Creek Conservation Bank	2014	2	Single polygon representing Vulcan Materials Company conservation bank, north of Rialto. Boundary layer for lands set aside for conservation. Data received by Dudek via email on July 22, 2014 from Michael Linton, Vulcan Materials Company. Data layer also received by Dudek via email from USFWS, Carlsbad office on September 24, 2014. Conservation Bank lands per Doc. 19980046436 recorded 02-09-98 as amended.
Private	Vulcan Materials Company	Cajon Creek Conservation Lands	2014	2	Single polygon representing Vulcan Materials Company conservation lands north of Rialto. Boundary layer for lands set aside for conservation. The conservation lands are adjacent to the Cajon Creek Conservation Bank. Data received by Dudek via email on July 22, 2014 from Michael Linton, Vulcan Materials Company. Conservation lands per Conservation Easement Grant per Doc. 19980046436 recorded 02-09-98.

+ Data coverages received or downloaded as GIS shapefiles or geodatabases unless otherwise noted. Databases denoted with a "+" were received as hard copy maps or location data lists (e.g., locations listed in Microsoft Word document format) which were then digitized by Dudek GIS Department staff to create a GIS shapefile. These data should be considered draft versions requiring follow up verification.

* Relevancy Rank taken from Leidos 2014 for purposes of consistency. Rank 1 = Directly Useful. Can be used to assess habitat or ecosystem conditions or functions in a spatial context. Examples include vegetation maps, wildlife habitat maps, soil surveys, and fire risk maps. Rank 2 = Indirectly Useful. Can be used for land use planning or impact predictions related to habitats and ecosystems. Examples include planning boundaries related to natural resources, land use designations, and management designations. Rank 3 = Little or No Use. Not related to or only tangentially related to identification or assessment of impacts on natural resources. Examples include political boundaries, U.S. Census data, employment data, and earthquake faults.

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APPENDIX 2C

SCAG GIS Database Inventory (Abbreviated)
Compared with Dudek GIS Database Inventory,
San Bernardino County*

APPENDIX 2C
SCAG GIS Database Inventory (Abbreviated*) Compared with Dudek GIS Database Inventory, San Bernardino County

Table 2-3
SCAG GIS Database Inventory (Abbreviated*) Compared with Dudek GIS Database Inventory, San Bernardino County.

Dudek Inventory Comparison **	Name of Database	Version	File Type	Data Source	Type	Description	Coverage of San Bernardino County	Relevancy Rank
No	Agricultural Lands	2010	shapefile	Farmland Mapping and Monitoring Program - California Department of Conservation	State	The Farmland Mapping and Monitoring Program (FMMP) produces maps and statistical data used for analyzing impacts on California's agricultural resources. Agricultural land is rated according to soil quality and irrigation status; the best quality land is called Prime Farmland.	Yes	2
No - online	CDFW - Areas of Conservation Emphasis (ACE 2)	On-line database	On-line database	California Department of Fish and Wildlife	State	Areas of Conservation Emphasis (ACE-II) is a Department of Fish and Wildlife (CDFW) project that was begun in 2009 to provide data to help guide and inform conservation priorities in California. The purpose of ACE-II was to compile and analyze the best available statewide, spatial information on California's biological richness, including species diversity, rarity, and sensitive habitats, collect information on recreational needs and opportunities throughout the state, including fishing, hunting and wildlife-viewing, develop a set of tools and produce maps that summarize and display this information for use in conservation decision-making, and integrate these data into a spatial model that can be used to identify areas of biological or conservation interest throughout the state. ACE-II provides an easily-accessible and standardized way to view the best available statewide data on California's biological richness and biodiversity. These datasets have many uses ranging from ecological research and modeling to local land-use planning and conservation decision making. The ACE-II data are dynamic and will be updated periodically as new data warrant. SCAG Staff Note: The data you will have to request from the BIOS Coordinator. I have cc'd Sandra Summers here. Sandra – This is an appropriate use of the data = regional transportation planning.	Yes	1
No+	BLM - Administrative Unit Boundaries	07/01/2011	geodatabase	BLM Geospatial Downloads	Federal	BLM - Administrative Unit Boundaries	Yes	3
Yes	BLM - Areas of Critical Environmental Concern	11/14/2012	geodatabase	BLM Geospatial Downloads	Federal	BLM - Areas of Critical Environmental Concern (ACEC). Where BLM determines that certain public land areas require special management to prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems, it may designate such lands as ACECs.	Yes	1
Yes	BLM - Federal Off Highway Vehicle Areas, CA	12/02/2008	Arc/Info	BLM Geospatial Downloads	Federal	BLM - Federal Off Highway Vehicle Areas, CA	Yes	2
Yes	BLM - Geothermal Leases	01/15/2013	geodatabase	BLM Geospatial Downloads	Federal	BLM - Geothermal Leases	Yes	2
Yes	BLM - grzpca California Range Allotment	12/06/2012	geodatabase	BLM Geospatial Downloads	Federal	BLM - grzpca California Range Allotment	Yes	2
Yes	BLM - Herd Management Area	09/08/2006	Arc/Info	BLM Geospatial Downloads	Federal	BLM - Herd Management Area (HMA). Herd Areas (HAs) are those geographic areas where wild horses and/or burros were found at the passage of the Wild Horse and Burros Act in 1971. Herd Management Areas (HMAs) are those areas within Herd Areas where the decision has been made to manage for populations of wild horses and/or burros. There are 33 Herd Areas and 22 Herd Management Areas within California.	Yes	2
Yes	BLM - Historical Herd Area for Wild Horse and Burro	09/08/2006	Arc/Info	BLM Geospatial Downloads	Federal	BLM - Historical Herd Area for Wild Horse and Burro	Yes	2
Yes	BLM - Land Use Planning Area Boundaries	05/30/2012	geodatabase	BLM Geospatial Downloads	Federal	BLM - Land Use Planning Area Boundaries	Yes	2
Yes	BLM - NLCS Wilderness	11/08/2011	geodatabase	BLM Geospatial Downloads	Federal	BLM - NLCS Wilderness	Yes	2
Yes	BLM - Renewable Energy ROW	01/15/2013	geodatabase	BLM Geospatial Downloads	Federal	BLM - Renewable Energy ROW	Yes	2

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Dudek Inventory Comparison **	Name of Database	Version	File Type	Data Source	Type	Description	Coverage of San Bernardino County	Relevancy Rank
Yes	BLM - Taylor Grazing Act Districts	10/03/2011	geodatabase	BLM Geospatial Downloads	Federal	BLM - Taylor Grazing Act Districts. The Taylor Grazing Act of 1934 was intended to "stop injury to the public grazing lands by preventing overgrazing and soil deterioration; to provide for their orderly use, improvement, and development; [and] to stabilize the livestock industry dependent upon the public range." This Act was pre-empted by the Federal Land Policy and Management Act of 1976 (FLPMA).	Yes	2
Yes	BLM - Veg Treatments	11/19/2013	geodatabase	BLM Geospatial Downloads	Federal	The BLM vegetation treatments data contained locations where prescribed burns took place as well as physical vegetation thinning locations.	Yes	2
Yes	BLM West Mojave Plan	February 2011	geodatabase	BLM Geospatial Downloads	Federal	West Mojave Plan datasets including air quality, study boundary, grazing, plant, bird, mammal sitings, conservation areas, etc	Yes	3
Yes	California Natural Diversity Database (CNDDB)	Updated every month	shapefile	California Department of Fish and Wildlife	State	Inventories the status and locations of rare plants and animals in California . CNDDB staff work with partners to maintain current lists of rare species as well as maintain an ever-growing database of GIS-mapped locations for these species	Yes	1
Yes	California Protected Areas Database (CPAD)	V2013b	geodatabase	GreenInfo Network	State	Protected open space lands through fee ownerships (does not include all public lands, easements, or most private owners). This dataset is updated regularly - at least once a year. Please check the CPAD website for latest version.	Yes	2
Yes	Desert Renewable Energy Conservation Plan	January 28, 2011	shapefile	Desert Renewable Energy Conservation Plan - implemented by multi agency (federal and state) team called Renewable Energy Action Team (REAT)	Regional	NCCP/HCP/ Land Use Plan Amendment. - California Executive Order S-14-08 requires the development of the Desert Renewable Energy Conservation Plan (DRECP) for the Mojave and Colorado deserts in order to provide binding, long-term endangered species permit assurances and to facilitate the review and approval of compatible renewable energy projects.	Yes	2
N/A	Earthquake / Fault	N/A	.lyr	USGS	Federal	includes ArcGIS files for the Hayward fault map and 1:24,000 USGS base maps		3
Yes	Habitat Essential Connectivity Project	February 2013	geodatabase	California Department of Fish and Wildlife	State	The California Department of Fish and Wildlife and the California Department of Transportation (CalTrans) commissioned a team of consultants to produce a statewide assessment of essential habitat connectivity by February of 2010, using the best available science, data sets, spatial analyses and modeling techniques. The goal was to identify large remaining blocks of intact habitat or natural landscape and model linkages between them that need to be maintained, particularly as corridors for wildlife.	Yes	1
No+	HCP/NCCP Boundaries	February 2013	shapefile	California Department of Fish and Wildlife	State	List of HCP and NCCP boundaries ONLY. Does not include details on conservation areas located within the boundaries	Yes	2
No+	Land Ownership	2009	Access database file	Cal-Atlas Geospatial Clearinghouse	State	A 1:100,000 polygon features class representing public, conservation and trust land ownership in the state of California. Developed for the California Resources Agency's Legacy Project, this dataset depicts ownership features as submitted by major public, trust, and non-profit groups in the state.	Yes	2
No	Landfill locations	updated on weekly basis	text (converted into shapefile)	CalRecycle	State	Data shows location of landfill ONLY, does NOT show location. Includes basic information on each facility in the database including site, enforcement agency, operator, activity type, regulatory status, operational status and latitude/longitude coordinates.	Yes	3

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Dudek Inventory Comparison **	Name of Database	Version	File Type	Data Source	Type	Description	Coverage of San Bernardino County	Relevancy Rank
N/A	Landslide and Liquefaction - USGS 2003	2003	Arc/Info Grid	US Geological Survey	Federal	This group of maps shows relative susceptibility of hill slopes to the initiation sites of rainfall-triggered soil slip-debris flows in southwestern California. As such, the maps offer a partial answer to one part of the three parts necessary to predict the soil-slip/debris-flow process. A complete prediction of the process would include assessments of "where", "when", and "how big". These maps empirically show part of the "where" of prediction (i.e., relative susceptibility to sites of initiation of the soil slips) but do not attempt to show the extent of run out of the resultant debris flows. Some information pertinent to "when" the process might begin is developed. "When" is determined mostly by dynamic factors such as rainfall rate and duration, for which local variations are not amenable to long-term prediction. "When" information is not provided on the maps but is described later in this narrative. The prediction of "how big" is addressed indirectly by restricting the maps to a single type of landslide process—soil slip-debris flows.	Partial	2
N/A	Landslide and Liquefaction - USGS 1997	1997	.e00	US Geological Survey	Federal	Digital Compilation of Landslide Overview Map of the Conterminous United States. This dataset consists of polygons enclosing areas of landslide incidence and susceptibility for the conterminous United States.	Yes	2
N/A	Landslide and Liquefaction - USGS 2007	2007	shapefile and dbf	US Geological Survey	Federal	This data compilation for open-ocean cliff edges for the California coast is a separate, yet related study to Hapke and others, 2006 documenting shoreline change along sandy shorelines of the California coast, which is itself one in a series that includes the Gulf of Mexico and the Southeast Atlantic coast (Morton and others, 2004; Morton and Miller, 2005). Future reports and data compilations will include coverage of the Northeast U.S., the Great Lakes, Hawaii and Alaska. Cliff edge change is determined by comparing the positions of one historical cliff edge digitized from maps with a modern cliff edge derived from topographic LIDAR (light detection and ranging) surveys. Historical cliff edges for the California coast represent the 1920s-1930s time-period; the most recent cliff edge was delineated using data collected between 1998 and 2002. End-point rate calculations were used to evaluate rates of erosion between the two cliff edges. Please refer to our full report on cliff edge erosion along the California coastline at http://pubs.usgs.gov/of/2007/1133/ for additional information regarding methods and results (Hapke and others, 2007). Data in this report are organized into downloadable layers by region (Northern, Central and Southern California) and are provided as vector datasets with accompanying metadata. Vector cliff edges may represent a compilation of data from one or more sources and the sources used are included in the dataset metadata. This project employs the Environmental Systems Research Institute's (ESRI) ArcGIS as it's Geographic Information System (GIS) mapping tool and contains several data layers (shapefiles) that are used to create a geographic view of the California coast. The vector data form a basemap comprising polygon and line themes that include a U.S. coastline (1:80,000), U.S. cities, and state boundaries.	No	2
N/A	Landslide and Liquefaction - CDC 2002	2002	shapfile and dbf	California Department of Conservation	State	City by city data only. This is a digital Seismic Hazard Zone Map presenting areas where liquefaction and landslides may occur during a strong earthquake. Three types of geological hazards, referred to as seismic hazard zones, may be featured on the map: 1) liquefaction, 2) earthquake-induced landslides, and 3) overlapping liquefaction and earthquake-induced landslides. Developers of properties falling within any of the three zones may be required to investigate the potential hazard and mitigate its threat during the local permitting process	No	2
N/A	Los Angeles County - Significant Ecological Areas (SEAs) - Existing and proposed SEAs	December 2012	shapefile	Los Angeles County	County	The SEA Program is a component of the Los Angeles County General Plan Conservation/Open Space Element. SEAs are areas identified as ecologically important habitat integral to the preservation of rare, threatened or endangered species and the conservation of biological diversity in the County. SEAs are not preserves. Development activities in the SEAs are reviewed by a scientific advisory committee and require a conditional use permit.	No	1

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Dudek Inventory Comparison **	Name of Database	Version	File Type	Data Source	Type	Description	Coverage of San Bernardino County	Relevancy Rank
Yes	National Conservation Easement (NCED)	September 2013	geodatabase	The Conservation Registry	Federal	The National Conservation Easement Database (NCED) is the first national database of conservation easement information, compiling records from land trusts and public agencies throughout the United States. Voluntary and secure, the NCED respects landowner privacy and will not collect landowner names or sensitive information. This public-private partnership brings together national conservation groups, local and regional land trusts, and state and federal agencies around a common objective. The NCED provides a comprehensive picture of the estimated 40 million acres of conservation easement lands, recognizing their contribution to America's natural heritage, a vibrant economy, and healthy communities.	Yes	2
No	Pacific Crest National Scenic Trail	07-17-2012	shapefile	USDA Forest Service	Federal	2,650 mile scenic trail from California to Canadian border.	Yes	3
No	Protected Areas Database - US by land conservation coop	v1.2	shapefile	USGS Gap Analysis Program	Federal	same as Protected Areas Database - USv10	Yes	2
No	Protected Areas Database - US v10	v1.2	geodatabase	USGS Gap Analysis Program	Federal	geodatabase that illustrates and describes public land ownership, management and conservation lands nationally, including voluntarily provided privately protected areas. The lands included in PAD-US are assigned conservation measures that qualify their intent to manage lands for the preservation of biological diversity and to other natural, recreational and cultural uses; managed for these purposes through legal or other effective means.	Yes	2
No	Protected Areas Database - US v9.3	v.12	geodatabase	USGS Gap Analysis Program	Federal	same as Protected Areas Database - USv10	Yes	2
N/A	Riverside County - Conserved Lands	March 2013	shapefile	Riverside County	County	List of conserved areas in Western Riverside County	No	2
N/A	Santa Monica Mountains Conservancy	March 7, 2013	shapefile	Santa Monica Mountains Conservancy	Regional	List of lands in Conservancy.	No	2
N/A	Coastal Spill Risk Sites (OSPR)	2010, version 2	shapefile	US Fish & Wildlife Service and CDFW Office of Spill Prevention (OSPR)	Federal	Office of Spill Prevention (OSPR) of CDFW identified sites at risk of spills along the coast and links other datasets for sensitive biological resources including species occurrences, natural communities, and ESA Designated Critical Habitat for Threatened & Endangered Species at potential spill sites along the coast. The mission of OSPR is to provide best achievable protection of California's natural resources by preventing, preparing for, and responding to spills of oil and other deleterious materials, and through restoring and enhancing affected resources.	No	2
N/A	Sensitive Species Habitat - Spill Sensitive	2010	shapefile	NOAA	Federal	This data set contains data for Area Contingency Plan (ACP) sensitive sites in Southern California. Vector points in this data set represent sites identified as sensitive for biological and/or human-use resources that should be prioritized for protection during spill response activities. This data set comprises a portion of the ESI data for Southern California. ESI data characterize the marine and coastal environments and wildlife by their sensitivity to spilled oil. The ESI data include information for three main components: shoreline habitats, sensitive biological resources, and human-use resources.	No	1
Yes	Sensitive Species Habitat - ESA Critical Habitat	Dates for each species vary. All critical habitat layers are merged into one dataset so the latest merged dataset was downloaded.	Shapefile	US Fish & Wildlife Service	Federal	View a list of species with final, published critical habitat from the Critical Habitat Data folder. From the species lists you may access: <ul style="list-style-type: none"> • critical habitat spatial data • critical habitat metadata • Federal Register Documents • FWS species profile information 	Yes	1

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Dudek Inventory Comparison **	Name of Database	Version	File Type	Data Source	Type	Description	Coverage of San Bernardino County	Relevancy Rank
No+	Soil Types	2009	shapefile	Natural Resources Conservation Service	Federal	This data set is a digital soil survey and generally is the most detailed level of soil geographic data developed by the National Cooperative Soil Survey. The information was prepared by digitizing maps, by compiling information onto a planimetric correct base and digitizing, or by revising digitized maps using remotely sensed and other information. This data set consists of georeferenced digital map data and computerized attribute data. The map data are in a 7.5 minute quadrangle format and include a detailed, field verified inventory of soils and nonsoil areas that normally occur in a repeatable pattern on the landscape and that can be cartographically shown at the scale mapped. A special soil features layer (point and line features) is optional. This layer displays the location of features too small to delineate at the mapping scale, but they are large enough and contrasting enough to significantly influence use and management. The soil map units are linked to attributes in the National Soil Information System relational database, which gives the proportionate extent of the component soils and their properties.	Partial	1
No+	Vegetation - USFS	2011	geodatabase	USDA Forest Service	Federal	Northwest California, Sierra Nevada, and Southern California Land and Resource Management Plans and the Quincy Library Group GIS data sets	Yes	1
Yes	Vegetation - CDFW		geodatabase	California Department of Fish and Wildlife	State		No	1
No	Vegetation - CalFire (FRAP mapping)	2003	ArctInfo Grid	California Department of Forestry and Fire Protection	State	Land cover data provide the basis for FRAP analyses of wildlife habitat, water, grazing, and development impacts. No single mapping effort provides GIS data adequate to address this broad range of issues. Efforts to map land cover statewide typically provide insufficient resolution to capture types that occur as "inclusions", such as wet meadows, riparian areas, or certain types of development. Other efforts tend to focus on mapping land cover for a specific geographic area (e.g. bioregion, national park), or theme (e.g. wetlands, farmland). Since resources were targeted to a narrow focus, many of these efforts can make a reasonable claim to be the "best" for their respective area or theme. In order to provide the most solid basis for our analyses, FRAP staff made the decision to take advantage of these sources and merge them into a single GIS data layer.	Yes	1
N/A	Water: Boundary of the 48 Integrated Regional Water Management (IRWM) areas	11/08/2012	shapefile	California Department of Water Resources	State	Boundary of the 48 Integrated Regional Water Management (IRWM) areas	Yes	3
Yes	Water: California Groundwater Basins	v4_1	shapefile	California Department of Water Resources	State	The shape file shows groundwater basins and subbasins as defined by the California Department of Water Resources. The file is intended for use with GIS software able to import files of suffix '.shp'. Groundwater basins are designated on the basis of geological and hydrological conditions, these usually being the occurrence of alluvial or unconsolidated deposits. When practical, large basins are also subdivided by political boundaries, as in the Central Valley. Basins are named and numbered per the convention of the Department of Water Resources. Many of the subbasin boundaries were developed or modified with public input, but little physical data. Because they should not be considered precise boundaries, a detailed local study should determine whether any specific area lies within a groundwater basin boundary. Contact specific agencies listed near end of basin description.	Yes	3
No	Water: Ecosystems	N/A	txt file	NASA Goddard Institute for Space Studies	Federal	Global Distribution of Wetland Ecosystems at 1degree by 1 degree resolution - 5 class distinctions	Yes	1
N/A	Water: Fractional Inundation	N/A	txt file	NASA Goddard Institute for Space Studies	Federal	Global Distribution of Inundated Areal Fraction of 1°x° Cells". In combination with the Wetland Ecosystem dataset, it may be used to calculate wetland areas.	Yes	2

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Dudek Inventory Comparison **	Name of Database	Version	File Type	Data Source	Type	Description	Coverage of San Bernardino County	Relevancy Rank
No	Water: Impaired Water Bodies	shapefiles revised 2013	shapefile, excel database	State Water Resources Control Board	State	The State Water Board Staff Proposed California 2010 Integrated Report is a compilation of the Regional Water Quality Control Boards' 2008 Integrated Reports with State Board staff recommendations for additions, deletions, or changes. The 2010 Integrated Report provides the recommendations of the staff of the State Water Board for changes to the 2006 Clean Water Act Section 303(d) list of impaired water bodies and Clean Water Act Section 305(b) report on the quality of waters in California. Although the reporting process for 303(d) and 305(b) has been combined, only the 303(d) list requires approval by the State Water Board and USEPA. On August 4, 2010, the State Water Board approved the 303(d) List portion of the 2010 Integrated Report. The 2010 Integrated Report and supporting documents were submitted to the USEPA for final approval on October 11, 2010.	Yes	1
N/A	Water: Inundation Maps	completed 03-12-2010 (Santa Monica), 03-07-2012 (San Diego), 12-15-2008 (Santa Barbara)	ESRI Arc ASCII	NOAA	Federal	The Santa Monica NAVD 88 DEM covers the coastal area surrounding Santa Monica, California including the communities of Los Angeles, Malibu, Marina del Rey, Redondo Beach, Long Beach, and Huntington Beach. The coordinate boundaries are 117.80° to 119.14°W and 33.20°N to 34.20°N. The San Diego DEMs provide coverage of the southern coast of California. The DEMs border Mexico to the south and extends north to Laguna Beach, California. The Santa Barbara DEM covers the coastal region surrounding the town of Santa Barbara, California from Port Hueneme in the southeast to Point Conception in the north west and includes the communities of Port Hueneme, Oxnard, Ventura, Carpinteria, Santa Barbara, Isla Vista, and Goleta. The coordinate boundaries are 119.14°W to 120.51°W and 33.77°N to 34.62°N. ----- Santa Monica, CA 1/3 arc-second NAVD 88 DEM. - downloaded - Santa Monica, CA 1/3 arc-second MHW DEM. ----- San Diego, CA 1/3 arc-second NAVD 88 DEM. - downloaded - San Diego, CA 1/3 arc-second MHW DEM. ----- Santa Barbara, CA 1/3 arc-second MHW DEM - downloaded - no NAVD 88 available	No	3
Yes	Water: National Hydrography Dataset	September 2012	geodatabase	USGS National Hydrography Dataset	Federal	The Watershed Boundary Dataset (WBD) defines the areal extent of surface water drainage to a point, accounting for all land and surface areas. Watershed Boundaries are determined solely upon science-based hydrologic principles, not favoring any administrative boundaries or special projects, nor particular program or agency. The intent of defining Hydrologic Units (HU) for the Watershed Boundary Dataset is to establish a baseline drainage boundary framework, accounting for all land and surface areas. At a minimum, the WBD is being delineated and georeferenced to the USGS 1:24,000 scale topographic base map meeting National Map Accuracy Standards (NMAS). Hydrologic units are given a Hydrologic Unit Code (HUC). For example, a hydrologic region has a 2-digit HUC. A HUC describes where the unit is in the country and the level of the unit. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_021581.pdf	Yes	1
No	Water: Regional Water Quality Control Board jurisdictional boundaries	2012	shapefile	State Water Resources Control Board	State	Jurisdictional boundaries for the 9 regional water quality control boards.	Yes	3
No	Watershed Boundary Datasets	September 2012	geodatabase	USDA Natural Resources Conservation Service (NRCS)	Federal	Watershed Boundary Datasets (WBD) provides a uniquely identified and uniform method of subdividing large drainage areas. The data is intended to be used as a tool for water-resource management and planning activities, particularly for site-specific and localized studies requiring a level of detail provided by large-scale map information.	Yes	1

Table 2-3
SCAG GIS Database Inventory (Abbreviated*) Compared with Dudek GIS Database Inventory, San Bernardino County.

Dudek Inventory Comparison **	Name of Database	Version	File Type	Data Source	Type	Description	Coverage of San Bernardino County	Relevancy Rank
Yes	Wetlands - USFWS Wetlands Data Layer (National Wetlands Inventory [NWI])	October 1, 2012	shapefile and geodatabase	US Fish & Wildlife Service	Federal	As of October of 2009, the wetland geospatial data layer provides on-line map information for 82 percent of the conterminous U.S., 31 percent of Alaska and 100 percent of Hawaii. This has been accomplished by working with numerous public and private cooperators to produce maps, digital data, and publications. Currently, efforts are underway to complete and maintain a seamless digital wetlands data set for the Nation. This effort constitutes the Wetlands Data Layer of the National Spatial Data Infrastructure	Yes	1
No	Wetlands - Thematic Mapping of Coastal Wetlands	2006	shapefile	NOAA Coastal Services Center	Federal	Land cover/land use data were developed for the Southern California counties of San Diego, Orange, Los Angeles, Ventura, Santa Barbara, and parts of Riverside and San Bernardino, using 30-meter Landsat satellite imagery. The data separates the area into 39 land types based on the standard Coastal Change Analysis Program (C-CAP) land cover categories. The standard C-CAP categories were expanded to identify certain land use types such as commercial and industrial, golf courses, and suburban residential.	Partial	1
No	Wildfire and hazard areas	11/2007	shapefile	California Department of Forestry and Fire Protection	State	Data shows Fire Hazard Severity Zones in State Responsibility Areas ONLY. Shows "Moderate", "High" and "Very High". Does not show Federal or Local Responsibility Area. Data for local areas is not available from the State website. These zones, referred to as Fire Hazard Severity Zones (FHSZ), provide the basis for application of various mitigation strategies to reduce risks to buildings associated with wildland fires. The zones also relate to the requirements for building codes designed to reduce the ignition potential to buildings in the wildland-urban interface zones. This map has been created by CAL FIRE's Fire and Resource Assessment Program (FRAP) using data and models describing development patterns, estimated fire behavior characteristics based on potential fuels over a 30-50 year time horizon, and expected burn probabilities to quantify the likelihood and nature of vegetation fire exposure to new construction. Details on the project and specific modeling methodology can be found at http://frap.cdf.ca.gov/projects/hazard/methods.htm .	Yes	1
Yes	FEMA: National Flood Hazard Layer (NFHL)	2012	shapefiles	FEMA	Federal	National Flood Hazard Layer (NFHL) dataset is a compilation of effective Digital Flood Insurance Rate Map (DFIRM) databases (a collection of the digital data that are used in GIS systems for creating new Flood Insurance Rate Maps) and Letters of Map Change (Letters of Map Amendment and Letters of Map Revision only) that create a seamless GIS data layer for a State or Territory. It is updated on a monthly basis. Note: Currently, not all areas of a State or Territory have effective DFIRM data. As a result, users may need to refer to the effective Flood Insurance Rate Map for effective flood hazard information. Order from FEMA Map Service Center.	Yes	2
No	USFS Aerial Disease Detection Surveys	2012	geodatabase	USFS	Federal	USFS Aerial Disease Mapping for Region 5 (Southern California) for 2012. More recent data (2013) wasn't currently available in geospatial format.	Partial	1
No+	USFS Forest Inventory	2005	geodatabase	USFS	Federal	USFS Forest Inventory from 2005, most recent data for Cleveland, San Bernardino, Angeles and Los Padres National Forests.	Partial	1
No	Landfire Existing Vegetation Type	2008	raster	USGS	Federal	Landfire Existing Vegetation Type at a 30m pixel resolution	Yes	1
No	Landfire Vegetation Condition Class	2008	raster	USGS	Federal	Landfire Vegetation Condition Class at a 30m pixel resolution	Yes	1
No	FSIM Burn Probability	2012	raster	USFS	Federal	Fire Simulation Burn Probabilities modeled by the US Forest Service Missoula Fire Sciences Laboratory and NIFC	Yes	1
No	Human Footprint	2008	raster	USGS	Federal	Model the influence of anthropogenic disturbance in the western United States	Yes	1
No	Cropland Data Layer	2012	raster	USDA	Federal	The purpose of the Cropland Data Layer Program is to use satellite imagery to (1) provide acreage estimates to the Agricultural Statistics Board for the state's major commodities and (2) produce digital, crop-specific, categorized geo-referenced output products.	Yes	1

Table 2-3
SCAG GIS Database Inventory (Abbreviated*) Compared with Dudek GIS Database Inventory, San Bernardino County.

Dudek Inventory Comparison **	Name of Database	Version	File Type	Data Source	Type	Description	Coverage of San Bernardino County	Relevancy Rank
Yes	gSSurgo Soils Data	2013	vector	NRCS	Federal	The gridded SSURGO (gSSURGO) dataset was created for use in national, regional, and statewide resource planning and analysis of soils data	Partial	1
No	GeoMAC Fire Perimeter	2013	vector	Multi Agency	Federal	Wildland fire perimeters are submitted to GeoMAC by the incidents and then posted to the HTTP site for downloading. While every effort is made to provide accurate and complete information, there may be gaps in daily coverage. Please note: Files only contain perimeter data as they are submitted by the incidents. Files do not contain all fires. This data are not the authoritative fire perimeter data and should not be used as such	Yes	1
No	FAA Wind Turbine Locations	2013	vector	USFWS/FAA	Federal	Locations of Wind turbines assessed for Flight Hazard risk including planned and existing turbines	Yes	2
N/A	Coastal DEM from LIDAR	2010	Raster	NOAA	Federal	Light Detection and Ranging (LiDAR) data is remotely sensed high-resolution elevation data collected by an airborne collection platform. This LiDAR dataset is a survey of Coastal California. The project area consists of approximately 2616 square miles. The project design of the LiDAR data acquisition was developed to support a nominal post spacing of 1 meter. Fugro EarthData, Inc. acquired 1546 flight lines in 108 lifts between October 2009 and August 2011. LiDAR data collection was performed with two Piper Navajo twin engine aircrafts, utilizing a Leica ALS60 MPIA sensor; collecting multiple return x, y, and z as well as intensity data. The bare-earth lidar data was used to create hydro-flattened DEMs (Digital Elevation Models) available for download from the NOAA CSC Digital Coast	No	1
Yes	CA GAP Vegetation	2008	raster	USGS	Federal	The USGS GAP Land Cover Data Set includes detailed vegetation and land use patterns for the continental United States. The data set incorporates the Ecological System classification system developed by NatureServe to represent natural and semi-natural land cover. The 590 land use classes in the data set can be displayed at three levels of detail, from general (8 classes) to most detailed. The Land Cover Data Set can be used to identify those places in the country with sufficient good quality habitat to support wildlife, a key step in developing sound conservation plans.	Yes	1
Yes	National Elevation Dataset (NED) - 30m	2014	raster	USGS	Federal	National Elevation Dataset (NED) at a 30m resolution for the SCAG counties. NED is a new raster product assembled by the U.S. Geological Survey. NED is designed to provide National elevation data in a seamless form with a consistent datum, elevation unit, and projection. Data corrections were made in the NED assembly process to minimize artifacts, perform edge matching, and fill sliver areas of missing data. NED has a resolution of one arc-second (approximately 30 meters) for the conterminous United States, Hawaii, Puerto Rico and the island territories and a resolution of two arc-seconds for Alaska. NED data sources have a variety of elevation units, horizontal datums, and map projections. In the NED assembly process the elevation values are converted to decimal meters as a consistent unit of measure, NAD83 is consistently used as horizontal datum, and all the data are recast in a geographic projection. Older DEM's produced by methods that are now obsolete have been filtered during the NED assembly process to minimize artifacts that are commonly found in data produced by these methods. Artifact removal greatly improves the quality of the slope, shaded-relief, and synthetic drainage information that can be derived from the elevation data.	Yes	1

Table 2-3
SCAG GIS Database Inventory (Abbreviated*) Compared with Dudek GIS Database Inventory, San Bernardino County.

Dudek Inventory Comparison **	Name of Database	Version	File Type	Data Source	Type	Description	Coverage of San Bernardino County	Relevancy Rank
No - online	Calflora	On-line database	On-line database	Calflora	Non-profit	Calflora is a website you can use to learn about plants that grow wild in California (both native plants and weeds). Calflora is a nonprofit organization responsible for the website run by two paid staff members and a few volunteers. Information in Calflora comes from many sources: public agencies, non-profits, scientists, private donors, and you! To find out about a plant species, you can enter the common or scientific name and search the database on-line. The result is an illustrated table of plants that match the name you entered. Click one of the plants in the table to learn a lot of detail about that plant, including where it has been observed in California. You can also enter a place and get an illustrated list of the plants that grow there. We call that What Grows Here? You define "here" by zip code, place name, or any of a number of other ways. You refine "here" by zooming in and out of a map. Then click "Search for Plants" to get an illustrated list of plants known to grow "here."	Yes	1
No - online	Jepson Herbarium	On-line database	On-line database	University of California - University and Jepson Herbaria	State	The University and Jepson Herbaria of the University of California at Berkeley are two collections of pressed plants housed together along with research labs, libraries, and archives. Together the Herbaria hold about 2,200,000 specimens, one of the largest collections in North America	Yes	1
Yes	California Wildlife Habitat Relationships (CWHR)	2008a	Shapefile	California Wildlife Habitat Relationships (WHR) database is a branch of the California Department of Fish and Wildlife (CDFW)	State	The California Wildlife Habitat Relationships (CWHR) database is maintained by the California Department of Fish and Wildlife. The CWHR software is a database application compiled as a stand-alone program in Visual dBase. It can be used to predict the presence of and habitat suitability for 694 terrestrial vertebrates based on geographic distribution, relationships to habitats and stages, seasonal use patterns and presence of habitat elements. Species life history descriptions, habitat descriptions, and custom reports of database queries can be printed. The software also includes BIOVIEW, an application that translates habitat suitability values for wildlife species into data that can be used in a GIS, with an option to apply fuzzy logic to the calculation of these values. A user's manual is included on CD and may be downloaded separately.	Yes	1
N/A	NMFS - DPS and Critical Habitat Datasets	2014	geodatabase	National Marine Fisheries Service (NMFS) of the National Oceanic and Atmospheric Administration (NOAA)	Federal	National Marine Fisheries Service (NMFS) data for ESA listed endangered Southern California Steelhead Distinct Population Segment (DPS) boundary (streams and watersheds) and for ESA listed endangered Black Abalone critical habitat. Data also includes historical distribution (streams and watersheds) of Southern California Steelhead DPS.	No	1

* Source of the complete SCAG Natural Resources GIS database Inventory table can be found in Leidos 2014 as Appendix A.

** Yes = Dudek has data layer in GIS inventory database and catalog; No = Dudek does not have data layer in inventory database; No - online = Dudek has not downloaded data layer to inventory database however this data is readily available as an online, searchable database; No+ = Dudek does not have the specific database however Dudek has similar data layers or partial data; N/A = Dudek does not have data layer however it is of little or no use for conservation planning or it is not available for San Bernardino County.

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APPENDIX 4A-4B

*Wildlife and Plant Species Known to Occur in
San Bernardino County*

APPENDIX 4A-4B
Wildlife and Plant Species Known to Occur in
San Bernardino County

Wildlife Species Known to Occur in San Bernardino County

Common Name	Scientific Name	Federal Status	State Status	Habitat	Status in San Bernardino County
<i>Amphibians</i>					
arroyo toad	<i>Anaxyrus californicus</i>	FE	SSC	Semi-arid areas near washes, sandy riverbanks, riparian areas, palm oasis, Joshua tree, mixed chaparral and sagebrush; stream channels for breeding (typically 3rd order); adjacent stream terraces and uplands for foraging and wintering	Y
California red-legged frog	<i>Rana draytonii</i>	FT	SSC	Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands	Y
Couch's spadefoot	<i>Scaphiopus couchii</i>	BLM	SSC	Desert and arid areas including desert washes, desert riparian, palm oasis, desert succulent scrub and desert scrub habitats; also cultivated cropland	Y
large-blotched salamander	<i>Ensatina klauberi</i>	USFS	SSC	Moist and shaded evergreen and deciduous woodlands	Y
lowland (=Yavapai, San Sebastian & San Felipe) leopard frog	<i>Lithobates yavapaiensis</i>	BLM	SSC	Streams, river side channels, springs, artificial and natural ponds in desert scrub, grassland, woodland and pinyon-juniper woodland	Likely extirpated from CA.
San Gabriel slender salamander	<i>Batrachoseps gabrieli</i>	USFS	None	Talus slopes in forested areas, often near streams	Y
Sonoran desert toad	<i>Incilius alvarius</i>	None	SSC	Aquatic and wetland habitats, artificial flowing waters, and desert washes	Y
Sierra Madre yellow-legged frog	<i>Rana muscosa</i>	FE; USFS	Candidate SE; SSC	Lakes, ponds, meadow streams, isolated pools and open riverbanks; rocky canyons in narrow canyons and in chaparral	Y
yellow-blotched salamander	<i>Ensatina eschscholtzii croceator</i>	BLM; USFS	SSC	Evergreen and deciduous forests, shaded canyons, oak woodlands and chaparral	Y (HYBRID)
<i>Reptiles</i>					
banded gila monster	<i>Heloderma suspectum cinctum</i>	BLM	SSC	Rocky areas in desert scrub and semi-desert grassland	Y
California mountain kingsnake (San Bernardino population)	<i>Lampropeltis zonata (parvirubra)</i>	USFS	SSC	Wide range of habitats including conifer forest, oak-pine woodlands, riparian woodland, chaparral, manzanita and coastal scrub	Y

APPENDIX 4A-4B (Continued)

Wildlife Species Known to Occur in San Bernardino County

Common Name	Scientific Name	Federal Status	State Status	Habitat	Status in San Bernardino County
coast horned lizard	<i>Phrynosoma blainvillii</i>	BLM; USFS	SSC	Open areas of sandy soil in valleys, foothills and semi-arid mountains including coastal scrub, chaparral, valley-foothill hardwood, conifer, riparian, pine-cypress, juniper and annual grassland	Y
coastal whiptail	<i>Aspidoscelis tigris stejnegeri</i>	None	None	Open areas in semiarid grasslands, scrublands, and woodlands	Y
desert tortoise	<i>Gopherus agassizii</i>	FT	ST	Arid and semi-arid habitats including sandy or gravelly locations along riverbanks, washes sandy dunes, canyon bottoms, desert oases, rocky hillsides, creosote flats and hillsides.	Y
Mojave fringe-toed lizard	<i>Uma scoparia</i>	BLM	SSC	Loose wind-blown sand dunes, flats with sandy hummocks, washes and banks of rivers	Y
orangethroat whiptail	<i>Aspidoscelis hyperythra</i>	None	SSC	Low-elevation coastal scrub, chaparral, and valley-foothill hardwood	Y
red-diamond rattlesnake	<i>Crotalus ruber</i>	None	SSC	Coastal scrub, chaparral, oak and pine woodlands, rocky grasslands, cultivated areas, and desert flats	Y
rosy boa	<i>Charina trivirgata</i>	USFS	None	Desert and chaparral habitats with rocky soils in coastal canyons and hillsides, desert canyons, washes and mountains	Y
San Bernardino ringneck snake	<i>Diadophis punctatus modestus</i>	USFS	None	Moist habitats, wet meadows, rocky hillsides, gardens, farmland, grassland, chaparral, mixed coniferous forests, and woodlands	Y
San Diego ringneck snake	<i>Diadophis punctatus similis</i>	USFS	None	Moist habitats including wet meadows, rocky hillsides, gardens, farmland grassland, chaparral, mixed conifer forest, and woodland habitats	Y
silvery legless lizard	<i>Anniella pulchra pulchra</i>	USFS	SSC	Stabilized dunes, beaches, dry washes, chaparral, scrubs, pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils	Y
Sonoran mud turtle	<i>Kinosternon sonoriense</i>	None	SSC	Desert ponds, slow-moving shaded streams and rivers and cattle tanks; usually in woodlands and occasionally grasslands	Thought to be extinct in CA.
southern rubber boa	<i>Charina umbratica</i>	USFS	ST	Montane oak-conifer and mixed conifer forests, montane chaparral, wet meadows; usually in vicinity of streams or wet meadows	Y
two-striped garter snake	<i>Thamnophis hammondi</i>	BLM; USFS	SSC	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	Y
western pond turtle	<i>Emys marmorata</i>	BLM; USFS	SSC	Slow-moving permanent or intermittent streams, ponds, small lakes, reservoirs with emergent basking sites; adjacent uplands used during winter	Y

APPENDIX 4A-4B (Continued)

Wildlife Species Known to Occur in San Bernardino County

Common Name	Scientific Name	Federal Status	State Status	Habitat	Status in San Bernardino County
<i>Birds</i>					
American bittern	<i>Botaurus lentiginosus</i>	None	None	Nests in marshes with fairly tall freshwater vegetation (3-4 feet) and shallow water (less than 1 foot) near rivers, ponds, and lakes	W
American white pelican	<i>Pelecanus erythrorhynchos</i> (nesting colony)	None	SSC	Nests colonial on isolated islands in freshwater lakes with sandy, earthen, or rocky substrates; minimal disturbance from humans or mammalian predators required, as is close access to productive foraging areas; forages on inland marshes, lakes or rivers; winters on shallow coastal bays, inlets and estuaries	NB
Arizona bell's vireo	<i>Vireo bellii arizonae</i> (nesting)	BCC	SE	Nests and forages in lowland riparian areas with low, shrubby vegetation	Y
bald eagle	<i>Haliaeetus leucocephalus</i> (nesting & wintering)	Delisted; USFS; BCC	SE; CDF; FP	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters at large bodies of water in lowlands and mountains	B/W
Bell's sage sparrow	<i>Amphispiza belli belli</i>	None	WL	Nests and forages in coastal scrub and dry chaparral; typically in large, unfragmented patches dominated by chamise; nests in more dense patches but uses more open habitat in winter	Y
Bendire's thrasher	<i>Toxostoma bendirei</i>	BLM; BCC	SSC	Nests and forages in desert succulent shrub and Joshua tree habitat in Mojave Desert; nests in yucca, cholla and other thorny scrubs or small trees	Y
black swift	<i>Cypseloides niger</i> (nesting)	BCC	SSC	Nests in moist crevices, caves, and cliffs behind or adjacent to waterfalls in deep canyons; forages over a wide range of habitats	B
black-chinned sparrow	<i>Spizella atrogularis</i> (nesting)	BCC	None	Nests and forages in mixed chaparral, chamise-redshank chaparral, sagebrush and other brushy habitats	B
Brewer's sparrow	<i>Spizella breweri</i> (nesting)	BCC	None	Nests in treeless shrub habitat with moderate canopy, especially sagebrush; winters in open desert scrub and croplands in southern Mojave and Colorado deserts	B/W
brown-crested flycatcher	<i>Myiarchus tyrannulus</i> (nesting)	None	WL	Desert riparian habitat along Colorado River and other desert oases; riparian thickets, trees, snags, and shrubs uses a perches; nests in woodpecker-excavated cavities	B

APPENDIX 4A-4B (Continued)

Wildlife Species Known to Occur in San Bernardino County

Common Name	Scientific Name	Federal Status	State Status	Habitat	Status in San Bernardino County
burrowing owl	<i>Athene cunicularia</i> (burrow sites & some wintering sites)	BLM; BCC	SSC	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows.	Y
California black rail	<i>Laterallus jamaicensis coturniculus</i>	BCC	ST; FP	Tidal marshes, shallow freshwater margins, wet meadows and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra foothill populations	Y (SE CORNER ONLY)
California brown pelican	<i>Pelecanus occidentalis californicus</i> (nesting colonies and important communal roosting sites)	Delisted	Delisted; FP	Forage in warm coastal marine and estuarine environments; in California, breeds on dry, rocky offshore islands	Dispersal only
California horned lark	<i>Eremophila alpestris actia</i>	None	WL	Nests and forages in grasslands disturbed lands, agriculture, and beaches; nests in alpine fell fields of the high Sierra	Y
California spotted owl	<i>Strix occidentalis occidentalis</i>	BLM; BCC; USFS	SSC	Nests and forages in dense, old-growth, multi-layered mixed conifer, redwood and Douglas-fir habitats	Y
coastal California gnatcatcher	<i>Poliophtila californica californica</i>	FT	None	Nests and forages in various sage scrub communities, often dominated by California sagebrush and buckwheat; generally avoids nesting in areas with a slope of greater than 40%, and typically less than 1,000 feet in elevation	Y
Cooper's hawk	<i>Accipiter cooperii</i> (nesting)	None	WL	Nests and forages in dense stands of live oak, riparian woodlands, or other woodland habitats often near water	Y/NB
Crissal thrasher	<i>Toxostoma crissale</i>	None	SSC	Nests and forages in desert riparian and desert wash; dense thickets of sagebrush and other shrubs such as mesquite, iron catclaw acacia, and arrowweed willow within juniper and pinyon-juniper woodlands	Y
double-crested cormorant	<i>Phalacrocorax auritus</i> (nesting colony)	None	WL	Nests in riparian trees near ponds, lakes, artificial impoundments, slow-moving rivers, lagoons, estuaries and open coastlines; winter habitat includes lakes, rivers, and coastal areas	B/W
Eagle Mountain scrub-jay	<i>Aphelocoma californica cana</i>	None	WL	Nests and forages in pinyon-juniper woodlands	Y (EAGLE MOUNTAIN ONLY)

APPENDIX 4A-4B (Continued)

Wildlife Species Known to Occur in San Bernardino County

Common Name	Scientific Name	Federal Status	State Status	Habitat	Status in San Bernardino County
elf owl	<i>Micrathene whitneyi</i> (nesting)	BCC	SE	Nests in desert riparian with cottonwood, sycamore, willow, and mesquite.	B
ferruginous hawk	<i>Buteo regalis</i> (wintering)	BCC	WL	Winters and forages in open, dry country, grasslands, open fields, agriculture	W
flammulated owl	<i>Otus flammeolus</i> (nesting)	BCC	None	Coniferous forest with low to intermediate canopy cover at 6,000-10,000 ft in elevation.	B
Gila woodpecker	<i>Melanerpes uropygialis</i>	BCC	SE	Nests and forages in Saguaro desert, riparian woodland and residential areas	Y
gilded flicker	<i>Colaptes chrysoides</i>	BCC	SE	Nests and forages in desert riparian, desert wash and Joshua tree woodland	Y
golden eagle	<i>Aquila chrysaetos</i> (nesting & wintering)	BCC	CDF; WL; FP	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas	B/W
gray vireo	<i>Vireo vicinior</i> (nesting)	BLM; BCC	SSC	Nests and forages in pinyon-juniper woodland, oak, and chamise and redshank chaparral	B
gray-headed junco	<i>Junco hyemalis caniceps</i> (nesting)	None	WL	Nests and forages in pine and juniper-pine forests	B
great blue heron	<i>Ardea herodias</i> (nesting colony)	None	CDF	Nests in large trees or snags; forages in wetlands, water bodies, water courses, and opportunistically in uplands, including pasture and croplands	Y
great egret	<i>Ardea alba</i> (nesting colony)	None	CDF	Nests and roosts in large trees over water or on islands, both in freshwater and marine estuarine habitats; forages in wetlands, including marshes, streams, ditches and fish-rearing ponds, but also in irrigated pastures and croplands	W
hepatic tanager	<i>Piranga flava</i> (nesting)	None	WL	Nests and forages in white-fir-pinyon forest, open woods, woodland edges and scattered trees in open areas	B
Lawrence's goldfinch	<i>Spinus lawrencei</i> (nesting)	BCC	None	Nests and forages in open oak, arid woodlands and chaparral near water	W
Le Conte's thrasher	<i>Toxostoma lecontei</i>	BCC	SSC	Nests and forages in desert wash, desert scrub, alkali desert scrub, desert succulent, and Joshua tree; nests in spiny shrubs or cactus	Y

APPENDIX 4A-4B (Continued)

Wildlife Species Known to Occur in San Bernardino County

Common Name	Scientific Name	Federal Status	State Status	Habitat	Status in San Bernardino County
least Bell's vireo	<i>Vireo bellii pusillus</i> (nesting)	FE	SE	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season	B
least bittern	<i>Ixobrychus exilis</i> (nesting)	BCC	SSC	Nests in freshwater and brackish marshes with dense, tall growths of aquatic and semi-aquatic vegetation	Y
Lewis' woodpecker	<i>Melanerpes lewis</i> (nesting)	BCC	None	Winters in open oak woodland and savanna; breeds in open ponderosa pine forest, and logged or burned pine forest	NB
loggerhead shrike	<i>Lanius ludovicianus</i> (nesting)	BBC	SSC	Nests and forages in open habitats with scattered shrubs, trees, or other perches	Y
long-billed curlew	<i>Numenius americanus</i> (nesting)	BCC	WL	Nests in grazed, mixed grass, and short-grass prairies. Localized nesting along the California coast; winters and forages in coastal estuaries, mudflats, open grassland and cropland	W (SW CORNER)
long-eared owl	<i>Asio otus</i> (nesting)	None	SSC	Nests in riparian habitat, live oak thickets, other dense stands of trees, edges of coniferous forest; forages in nearby open habitats	Y/W
Lucy's warbler	<i>Oreothlypis luciae</i> (nesting)	BCC	SSC	Nests and forages in desert wash and desert riparian habitats, especially dominated by mesquite, but also in other shrubs and tamarisk	B
merlin	<i>Falco columbarius</i> (wintering)	None	WL	Forages in semi-open areas used for foraging, including coastline, grassland, agriculture, savanna, woodland, lakes, and wetlands	W
mountain plover	<i>Charadrius montanus</i> (wintering)	Proposed FT; BLM; BBC	SSC	Winters in shortgrass prairies, plowed fields, open sagebrush and sandy deserts	W
northern cardinal	<i>Cardinalis cardinalis</i>	None	WL	Nests and forages in dense riparian and desert scrub along lower Colorado River	Y (probably extirpated)
northern goshawk	<i>Accipiter gentilis</i> (nesting)	BLM	CDF; SSC	Nests primarily in middle and higher elevation dense conifer forests; winters at lower elevations along coast, foothills and northern deserts in riparian and pinyon-juniper woodland	B/W
northern harrier	<i>Circus cyaneus</i> (nesting)	None	SSC	Nests in open wetlands including marshy meadows, wet lightly-grazed pastures, old fields, freshwater and brackish marshes, but also in drier habitats such as grassland and grain fields; forages in variety of habitats, including grassland, scrubs, rangelands, emergent wetlands, and other open habitats	W

APPENDIX 4A-4B (Continued)

Wildlife Species Known to Occur in San Bernardino County

Common Name	Scientific Name	Federal Status	State Status	Habitat	Status in San Bernardino County
Nuttall's woodpecker	<i>Picoides nuttallii</i> (nesting)	BCC	None	Nests and forages in low-elevation riparian forests and oak woodlands	Y
olive-sided flycatcher	<i>Contopus cooperi</i> (nesting)	BCC	SSC	Nests in mixed conifer, montane hardwood-conifer, Douglas-fir, redwood, red fir, lodgepole pine; usually close to water	B
osprey	<i>Pandion haliaetus</i> (nesting)	None	WL; CDF	Large waters (lakes, reservoirs, rivers) supporting fish; usually near forest habitats, but widely observed along the coast	W (SW CORNER)
prairie falcon	<i>Falco mexicanus</i> (nesting)	BCC	WL	Forages in grassland, savanna, rangeland, agriculture, desert scrub, alpine meadows; nest on cliffs or bluffs	Y
purple martin	<i>Progne subis</i> (nesting)	None	SSC	Nest and forages in woodland habitats including riparian, coniferous, and valley foothill and montane woodlands; in the Sacramento region often nests in weep holes under elevated freeways	B
rufous hummingbird	<i>Selasphorus rufus</i> (nesting)	BCC	None	Does not nest in California; migrates through a wide variety of habitats including coastal scrub, valley foothill hardwood, and valley foothill riparian habitats, and residential areas with feeders	M
sharp-shinned hawk	<i>Accipiter striatus</i> (nesting)	None	WL	Nests in coniferous forests, ponderosa pine, black oak, riparian deciduous, mixed conifer, Jeffrey pine; winters in lowland woodlands and other habitats	W (LOCAL)
Sonoran yellow warbler	<i>Setophaga petechia sonorana</i> (nesting)	BCC	SSC	Nests and forages in willow and riparian habitats along Colorado River	B
southern California rufous-crowned sparrow	<i>Aimophila ruficeps canescens</i>	None	WL	Nests and forages open scrub and chaparral with low cover of scattered scrub interspersed with rocky and grassy patches	Y
southwestern willow flycatcher	<i>Empidonax traillii extimus</i> (nesting)	FE	SE	Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration	B
summer tanager	<i>Piranga rubra</i> (nesting)	None	SSC	Nests and forages in mature desert riparian habitats dominated by cottonwoods and willows	B
Swainson's hawk	<i>Buteo swainsoni</i> (nesting)	BCC; USFS	ST	Nests in open woodland and savanna, riparian and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture	B
tricolored blackbird	<i>Agelaius tricolor</i> (nesting colony)	BLM; BCC	SSC	Nests near fresh water, emergent wetland with cattails or tules, but also in Himalayan blackberry; forages in grasslands, woodland, and agriculture	Y

APPENDIX 4A-4B (Continued)

Wildlife Species Known to Occur in San Bernardino County

Common Name	Scientific Name	Federal Status	State Status	Habitat	Status in San Bernardino County
vermillion flycatcher	<i>Pyrocephalus rubinus</i> (nesting)	None	SSC	Nests in riparian woodlands, riparian scrub, and freshwater marshes; typical desert riparian with cottonwood, willow, mesquite adjacent to irrigated fields, ditches or pastures	Y
Virginia's warbler	<i>Oreothlypis virginiae</i> (nesting)	BBC	WL	Nests and forages in arid, shrubby mixed conifer, pinyon-juniper, montane chaparral, and montane riparian habitats	B
western snowy plover	<i>Charadrius alexandrinus nivosus</i> (nesting)	FT (Coastal population only); BCC	SSC (Interior population only)	Sandy marine and estuarine shores; in the interior breed on sandy, barren or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds	S (LOCAL)
western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i> (nesting)	FC; USFS; BCC	SE	Nests dense, wide riparian woodlands and forest with well-developed understories	B
white-faced ibis	<i>Plegadis chihi</i> (nesting colony)	None	WL	Nests in shallow marshes with areas of emergent vegetation; winter foraging in shallow lacustrine waters, flooded agricultural fields, muddy ground of wet meadows, marshes, ponds, lakes, rivers, flooded fields and estuaries	B/W
White-headed woodpecker	<i>Picoides albolarvatus</i> (nesting)	BCC	None	Nests and forages in coniferous forests with lodgepole pine and red fir; semi-open areas with large trees and 40-70% cover	Y
white-tailed kite	<i>Elanus leucurus</i> (nesting)	None	FP	Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands	Y
yellow warbler	<i>Setophaga</i> [= <i>Dendroica</i>] <i>petechia brewsteri</i> (nesting)	BBC	SSC	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine and mixed conifer habitats	B/W
yellow-breasted chat	<i>Icteria virens</i> (nesting)	None	SSC	Nests and forages in dense, relatively wide riparian woodlands and thickets of willows, vine tangles and dense brush	B
yellow-headed blackbird	<i>Xanthocephalus</i> <i>xanthocephalus</i> (nesting)	None	SSC	Nests in marshes with tall emergent vegetation, often along borders of lakes and ponds; forages in emergent wetlands, open areas, croplands, and muddy shores of lacustrine habitat	B

APPENDIX 4A-4B (Continued)

Wildlife Species Known to Occur in San Bernardino County

Common Name	Scientific Name	Federal Status	State Status	Habitat	Status in San Bernardino County
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	FE	ST; FP	Freshwater marsh dominated by cattail, bulrush and with a mix of riparian tree and shrub species along the marsh edge; many occupied areas are now manmade such as managed ponds or effluent-supported marshes	Y (COLORADO RIVER)
<i>Mammals</i>					
American badger	<i>Taxidea taxus</i>	None	SSC	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, pastures, especially with friable soils	Y
Arizona Myotis	<i>Myotis occultus</i>	None	SSC	Conifer forests 6,000-9,000 ft elevation, but nursery sites at lower elevation along lower Colorado River, roosts in buildings, tree snags; forages in riparian, orchards, permanent water at lower elevations and ponds in forest clearings at higher elevations	X (southeastern portion)
California leaf-nosed bat	<i>Macrotus californicus</i>	BLM, USFS	SSC	Riparian woodlands, desert wash, desert scrub; roosts in mines and caves, occasionally buildings	Y (Eastern Mojave)
cave myotis	<i>Myotis velifer</i>	BLM	SSC	Creosote bush scrub, palo verde, brittlebush, and cactus; roosts in crevices in caves, mines, occasionally buildings and bridges; forages in riparian and desert wash	Y
Colorado River cotton rat	<i>Sigmodon arizonae plenus</i>	None	SSC	Moist riverine habitats along the Colorado River floodplain	Y
fringed myotis	<i>Myotis thysanodes</i>	BLM	None	Primarily drier woodlands, including oak, pinyon-juniper, ponderosa pine, and also desert scrub, mesic coniferous forest, grassland, and sage-grass steppe from sea level to 9,350 ft; roosts in crevices in buildings, mines, rocks, cliff faces, and bridges, and large, decadent trees and snags	Y
hoary bat	<i>Lasiurus cinereus</i>	None	None	Forest, woodland riparian, and wetland habitats, also juniper scrub, riparian forest, and desert scrub in arid areas; roosts in tree foliage and sometimes cavities, such as woodpecker holes	Y
long-eared myotis	<i>Myotis evotis</i>	BLM	None	Nearly all brush, woodland, and forest habitats from sea level to 9,000 ft, but prefers coniferous habitats; forages along habitat edges, in open habitats, and over water; roosts in buildings, crevices, under bark, and snags; caves are used as night roosts	Y
Los Angeles pocket mouse	<i>Perognathus longimembris brevinasus</i>	USFS	SSC	Lower elevation grassland, alluvial sage scrub, and coastal scrub	Y

APPENDIX 4A-4B (Continued)

Wildlife Species Known to Occur in San Bernardino County

Common Name	Scientific Name	Federal Status	State Status	Habitat	Status in San Bernardino County
Mohave ground squirrel	<i>Xerospermophilus mohavensis</i>	None	ST	Desert scrub habitats including those dominated by creosote bush and burrobush, desert sink scrub, and desert saltbush scrub	Y
Mohave river vole	<i>Microtus californicus mohavensis</i>	None	SSC	Wet, weedy, herbaceous areas along the Mojave River	Y
mountain lion	<i>Puma concolor</i>	None	None	Scrubs, chaparral, riparian, woodland, forest; rests in rocky area, and on cliffs and ledges that provide cover; most abundant in riparian area and brushy stages of most habitats throughout California, except deserts	Y
Nelson's bighorn sheep	<i>Ovis canadensis nelsoni</i>	BLM; USFS	None	Steep slopes and cliffs, rough and rocky topography, sparse vegetation; also canyons, washes and alluvial fans	Y
northwestern San Diego pocket mouse	<i>Chaetodipus fallax fallax</i>	None	SSC	Coastal scrub, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper, and annual grassland	Y
pallid bat	<i>Antrozous pallidus</i>	BLM, USFS	SSC	Grasslands, shrublands, woodlands, forests; most common in open dry habitats with rocky outcrops for roosting, but also roosts in manmade structures and trees	Y
pallid San Diego pocket mouse	<i>Chaetodipus fallax pallidus</i>	None	SSC	Desert wash, desert scrub, desert succulent scrub and pinyon-juniper woodland	Y
Pocketed free-tailed bat	<i>Nyctinomops femorosaccus</i>	None	SSC	Pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, palm oases; roosts in high cliffs or rock outcrops with dropoffs, caverns, buildings	Y
ringtail	<i>Bassariscus astutus</i>	None	FP	Mixed forests and shrublands near rocky area or riparian habitats; forages near water and is seldom found more than 0.62 mile from a water source	Y
San Bernardino flying squirrel	<i>Glaucomys sabrinus californicus</i>	USFS	SSC	Coniferous and deciduous forests including riparian forests	Y
San Bernardino kangaroo rat	<i>Dipodomys merriami parvus</i>	FE	SSC	Sparse scrub habitat, alluvial scrub/coastal scrub habitats on gravelly and sandy soils near river and stream terraces	Y
Stephens' kangaroo rat	<i>Dipodomys stephensi</i>	FE	ST	Annual and perennial grassland habitats, coastal scrub or sagebrush with sparse canopy cover or in disturbed areas	
San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	None	SSC	Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed area, and rangelands	Y

APPENDIX 4A-4B (Continued)

Wildlife Species Known to Occur in San Bernardino County

Common Name	Scientific Name	Federal Status	State Status	Habitat	Status in San Bernardino County
San Diego desert woodrat	<i>Neotoma lepida intermedia</i>	None	SSC	Coastal scrub, desert scrub, chaparral, cacti, rocky areas	Y
southern grasshopper mouse	<i>Onychomys torridus ramona</i>	None	SSC	Grassland and sparse coastal scrub	Y
southwestern river otter	<i>Lontra canadensis sonora</i>	None	SSC	Riparian habitat along streams and rivers with sufficient prey	Y
spotted bat	<i>Euderma maculatum</i>	BLM	SSC	Foothills, mountains, desert regions of Southern California, including arid deserts, grasslands, and mixed conifer forests; roosts in rock crevices and cliffs; feeds over water and along washes	Y
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM, USFS	SSC	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, also man-made structures and tunnels	Y
western mastiff bat	<i>Eumops perotis californicus</i>	BLM	SSC	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees and tunnels	Y
western red bat	<i>Lasiurus blossevillii</i>	USFS	SSC	Forest, woodland, riparian, mesquite bosque and orchards, including fig, apricot, peach, pear, almond, walnut, and orange; roosts in tree canopy	Y (Colorado River)
western small-footed myotis	<i>Myotis ciliolabrum</i>	BLM	None	Arid woodlands and shrublands, but near water; roosts in caves, crevices, mines, abandoned buildings	Y
western yellow bat	<i>Lasiurus xanthinus</i>	None	SSC	Valley foothill riparian, desert riparian, desert wash, and palm oasis habitats; below 2,000 ft; roost in riparian and palms	Y (southern edge)
white-eared pocket mouse	<i>Perognathus alticolus alticolus</i>	BLM; USFS	SSC	Arid ponderosa pine communities	Y
Yuma myotis	<i>Myotis yumanensis</i>	BLM	None	Riparian, arid scrublands and deserts, and forests associated with water (streams, rivers, tinajas); roosts in bridges, buildings, cliff crevices, caves, mines, and trees;	Y
<i>Fish</i>					
Amargosa Canyon speckled dace	<i>Rhinichthys osculus ssp. 1</i>	BLM	SSC	Great Basin flowing waters	Y
Amargosa pupfish	<i>Cyprinodon nevadensis amargosae</i>	BLM	SSC	Great Basin flowing waters	Y

APPENDIX 4A-4B (Continued)

Wildlife Species Known to Occur in San Bernardino County

Common Name	Scientific Name	Federal Status	State Status	Habitat	Status in San Bernardino County
arroyo chub	<i>Gila orcuttii</i>	USFS	SSC	Slow water stream sections with mud or sand bottoms. Feeds heavily on aquatic vegetation and associated invertebrates. Native to streams from Malibu Cr to San Luis Rey River basin. Introduced into streams in Santa Clara, Ventura, Santa Ynez, Mohave, and San Diego river basins.	Y
bonytail	<i>Gila elegans</i>	FE	SE	Adapted for swimming in swift water, but both adults & young need backwaters & eddies. Needs gravel riffles for spawning. Found in the Colorado River bordering California.	Y
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	FE	SE	Colorado River basin flowing waters	Y
Mohave tui chub	<i>Siphateles bicolor mohavensis</i>	FE	SE	Needs deep pools, ponds, or slough-like areas. Needs vegetation for spawning. Endemic to the Mojave River basin, adapted to alkaline, mineralized waters.	Y
razorback sucker	<i>Xyrauchen texanus</i>	FE	SE	Adapted for swimming in swift currents but also need quiet waters. Spawn in areas of sand/gravel/rocks in shallow water. Found in the Colorado River bordering California.	Y
Santa Ana speckled dace	<i>Rhinichthys osculus ssp. 3</i>	USFS	SSC	South coast flowing waters	Y
Santa Ana sucker	<i>Catostomus santaanae</i>	FT	SSC	Habitat generalists, but prefer sand-rubble-boulder bottoms, cool, clear water, & algae. Endemic to Los Angeles Basin south coastal streams.	Y
Saratoga Springs pupfish	<i>Cyprinodon nevadensis nevadensis</i>	None	SSC	Flowing and standing waters of the Great Basin	Y
unarmored threespine stickleback	<i>Gasterosteus aculeatus williamsoni</i>	FE	SE, FP	South coast flowing waters	Y (probably extirpated)
<i>Invertebrates</i>					
alkali skipper	<i>Pseudocopae odes eunus eunus</i>	None	None	Grassy spots on alkali flats; playa/salt flats	Y
Delhi Sands flower-loving fly	<i>Rhaphiomidas terminatus abdominalis</i>	FE	None	Delhi fine sandy soils and dunes, scrub and ruderal vegetation in the sand verbena series with <50% cover	Y
quino checkerspot butterfly	<i>Euphydryas editha quino</i>	FE	None	Patchy shrub or small tree landscapes; scrublands	Y
San Emigdio blue butterfly	<i>Plebulina emigdionis</i>	USFS	None	Near streambeds, washes, or alkaline areas; associated with <i>Atriplex canescens</i> and <i>A. lentiformis</i>	Y

APPENDIX 4A-4B (Continued)

Wildlife Species Known to Occur in San Bernardino County

Common Name	Scientific Name	Federal Status	State Status	Habitat	Status in San Bernardino County
San Gabriel Mountains blue butterfly	<i>Plebejus saepiolus aureolus</i>	USFS	None	Wet meadow seep in yellow pine forest	Y
San Gabriel Mountains elfin butterfly	<i>Callophrys mossii hidakupa</i>	USFS	None	Endemic to San Gabriel and San Bernardino Mountains at elevations of 3,000 to 5,000 ft; southern mixed evergreen forest; foodplant is <i>Sedum spathulifolium</i>	Y

Status Abbreviations

FE	Federally Endangered
FT	Federally Threatened
FC	Federal Candidate
BCC	U.S. Fish and Wildlife Service Bird of Conservation Concern
BLM	Bureau of Land Management Sensitive Species
USFS	U.S. Forest Service Sensitive Species
SSC	California Species of Special Concern
FP	California Fully Protected Species
WL	California Watch List Species
SE	State Endangered
ST	State Threatened

Occurrence Abbreviations

Y	Known or expected to occur as resident
W	Known or expected to occur during winter
B	Known or expected occur as breeder
Y/NB	Known or expected to occur both as breeding resident as non-breeder
NB	Known or expected to occur as non-breeder
B/W	Known or expected to occur both as breeder and winterer
Y/W	Known or expected to occur as resident and winterer
M	Occurs in migration only

APPENDIX 4A-4B (Continued)

APPENDIX 4-B

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Abronia nana</i> var. <i>covillei</i>	Coville's dwarf abronia	None/ None/ 4.2	Great Basin scrub, Joshua tree "woodland", Pinyon and juniper woodland, Subalpine coniferous forest, Upper montane coniferous forest/carbonate, sandy/ perennial herb/ May-Aug/ 5000-10171
<i>Abronia villosa</i> var. <i>aurita</i>	chaparral sand- verbena	None/ None/ 1B.1	Chaparral, Coastal scrub, Desert dunes/sandy/ annual herb/ Jan-Sep/ 246-5249
<i>Abutilon parvulum</i>	dwarf abutilon	None/ None/ 2.3	Chenopod scrub(rocky)/ perennial herb/ Apr-May/ 2953-4265
<i>Acanthoscyphus parishii</i> var. <i>cienegensis</i>	Cienega Seca oxytheca	None/ None/ 1B.3	Joshua tree "woodland", Pinyon and juniper woodland, Upper montane coniferous forest(sandy, granitic)/ annual herb/ Jun-Sep/ 6906-8038
<i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i>	Cushenbury oxytheca	FE/ None/ 1B.1	Pinyon and juniper woodland(carbonate, talus)/sandy, carbonate/ annual herb/ May-Oct/ 3999-7799
<i>Acanthoscyphus parishii</i> var. <i>parishii</i>	Parish's oxytheca	None/ None/ 4.2	Chaparral, Lower montane coniferous forest/sandy or gravelly/ annual herb/ Jun-Sep/ 4003-8530
<i>Acleisanthes nevadensis</i>	desert wing-fruit	None/ None/ 2.3	Joshua tree "woodland", Mojavean desert scrub/rocky, gravelly/ perennial herb/ Apr-Sep/ 2608-4101
<i>Acmispon argyraeus</i> var. <i>multicaulis</i>	scrub lotus	None/ None/ 1B.3	Pinyon and juniper woodland(granitic)/ perennial herb/ Apr-Jun/ 3937-4921
<i>Acmispon argyraeus</i> var. <i>notitius</i>	Providence Mountains lotus	None/ None/ 1B.3	Pinyon and juniper woodland/ perennial herb/ May-Aug/ 3937-6562
<i>Agave utahensis</i> var. <i>nevadensis</i>	Clark Mountain agave	None/ None/ 4.2	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/carbonate or volcanic/ perennial leaf succulent/ May-Jul/ 2953-5200
<i>Ageratina herbacea</i>	desert ageratina	None/ None/ 2.3	Pinyon and juniper woodland(rocky)/ perennial herb/ Jul-Oct/ 5003-7218
<i>Aliciella ripleyi</i>	Ripley's aliciella	None/ None/ 2.3	Mojavean desert scrub(carbonate)/ perennial herb/ May-Jul/ 1001-6398
<i>Aliciella triodon</i>	coyote gilia	None/ None/ 2.3	Great Basin scrub, Pinyon and juniper woodland/sometimes sandy/ annual herb/ Apr-Jun/ 2001-5577
<i>Allium atrorubens</i> var. <i>atorubens</i>	Great Basin onion	None/ None/ 2.3	Great Basin scrub, Pinyon and juniper woodland/rocky or sandy/ perennial bulbiferous herb/ May-Jun/ 3937-7595
<i>Allium atrorubens</i> var. <i>cristatum</i>	Inyo onion	None/ None/ 4.3	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/sandy or rocky/ perennial bulbiferous herb/ Apr-Jun/ 3937-8399
<i>Allium marvinii</i>	Yucaipa onion	None/ None/ 1B.1	Chaparral(clay, openings)/ perennial bulbiferous herb/ Apr-May/ 2493-3494

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Allium nevadense</i>	Nevada onion	None/ None/ 2.3	Pinyon and juniper woodland(sandy or gravelly)/ perennial bulbiferous herb/ Apr-May/ 2657-5577
<i>Allium parishii</i>	Parish's onion	None/ None/ 4.3	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/rocky/ perennial bulbiferous herb/ Apr-May/ 2953-4806
<i>Aloysia wrightii</i>	Wright's beebrush	None/ None/ 4.3	Joshua tree "woodland", Pinyon and juniper woodland/rocky, often carbonate/ perennial evergreen shrub/ Apr-Oct/ 2953-5249
<i>Amaranthus watsonii</i>	Watson's amaranth	None/ None/ 4.3	Mojavean desert scrub, Sonoran desert scrub/ annual herb/ Apr-Sep/ 66-5577
<i>Ambrosia monogyra</i>	singlewhorl burrobrush	None/ None/ 2.3	Chaparral, Sonoran desert scrub/sandy/ perennial shrub/ Aug-Nov/ 33-1640
<i>Androsace elongata</i> ssp. <i>acuta</i>	California androsace	None/ None/ 4.2	Chaparral, Cismontane woodland, Coastal scrub, Meadows and seeps, Pinyon and juniper woodland, Valley and foothill grassland/ annual herb/ Mar-Jun/ 492-3937
<i>Androstephium breviflorum</i>	small-flowered androstephium	None/ None/ 2.3	Desert dunes, Mojavean desert scrub (bajadas)/ perennial bulbiferous herb/ Mar-Apr/ 722-2625
<i>Antennaria marginata</i>	white-margined everlasting	None/ None/ 2.3	Lower montane coniferous forest, Upper montane coniferous forest/ perennial stoloniferous herb/ May-Aug/ 6955-11001
<i>Arctomecon merriamii</i>	white bear poppy	None/ None/ 2.3	Chenopod scrub, Mojavean desert scrub/rocky/ perennial herb/ Apr-May/ 1608-5906
<i>Arctostaphylos glandulosa</i> ssp. <i>gabrielensis</i>	San Gabriel manzanita	None/ None/ 1B.2	Chaparral(rocky)/ perennial evergreen shrub/ Mar/ 1952-4921
<i>Arctostaphylos parryana</i> ssp. <i>tumescens</i>	interior manzanita	None/ None/ 4.3	Chaparral(montane), Cismontane woodland/ perennial evergreen shrub/ Feb-Apr/ 6890-7579
<i>Arctostaphylos refugioensis</i>	Refugio manzanita	None/ None/ 1B.2	Chaparral(sandstone)/ perennial evergreen shrub/ Dec-Mar(May),/ 899-2690
<i>Arenaria lanuginosa</i> var. <i>saxosa</i>	rock sandwort	None/ None/ 2.3	Subalpine coniferous forest, Upper montane coniferous forest/mesic, sandy/ perennial herb/ Jul-Aug/ 5906-8530
<i>Arenaria paludicola</i>	marsh sandwort	FE/ SE/ 1B.1	Marshes and swamps (freshwater or brackish)/sandy, openings/ perennial stoloniferous herb/ May-Aug/ 10-558
<i>Argyrochosma limitanea</i> ssp. <i>limitanea</i>	southwestern false cloak-fern	None/ None/ 2.3	Pinyon and juniper woodland (carbonate, rocky)/ perennial rhizomatous herb/ Apr-Oct/ 5906-5906
<i>Asclepias asperula</i> ssp. <i>asperula</i>	antelope-horns	None/ None/ 4.3	Mojavean desert scrub, Pinyon and juniper woodland/rocky/ perennial herb/ May-Sep/ 3002-7201
<i>Asclepias nyctaginifolia</i>	Mojave milkweed	None/ None/ 2.3	Mojavean desert scrub, Pinyon and juniper woodland/ perennial herb/ May-Jun/ 2871-5577
<i>Asplenium vespertinum</i>	western spleenwort	None/ None/ 4.2	Chaparral, Cismontane woodland, Coastal scrub/rocky/ perennial rhizomatous herb/ Feb-Jun/ 591-3281

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Astragalus albens</i>	Cushenbury milk-vetch	FE/ None/ 1B.1	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/usually carbonate, rarely granitic/ perennial herb/ Mar-Jun/ 3593-6562
<i>Astragalus allochrous</i> var. <i>playanus</i>	playa milk-vetch	None/ None/ 2.3	Mojavean desert scrub(sandy)/ perennial herb/ Apr/ 2625-2625
<i>Astragalus bernardinus</i>	San Bernardino milk-vetch	None/ None/ 1B.2	Joshua tree "woodland", Pinyon and juniper woodland/Often granitic or carbonate/ perennial herb/ Apr-Jun/ 2953-6562
<i>Astragalus bicristatus</i>	crested milk-vetch	None/ None/ 4.3	Lower montane coniferous forest, Upper montane coniferous forest/sandy or rocky, mostly carbonate/ perennial herb/ May-Aug/ 5577-9006
<i>Astragalus cimae</i> var. <i>cimae</i>	Cima milk-vetch	None/ None/ 1B.2	Great Basin scrub, Joshua tree "woodland", Pinyon and juniper woodland/clay/ perennial herb/ Apr-May/ 2920-6070
<i>Astragalus hornii</i> var. <i>hornii</i>	Horn's milk-vetch	None/ None/ 1B.1	Meadows and seeps, Playas/lake margins, alkaline/ annual herb/ May-Oct/ 197-2789
<i>Astragalus insularis</i> var. <i>harwoodii</i>	Harwood's milk-vetch	None/ None/ 2.3	Desert dunes, Mojavean desert scrub/sandy or gravelly/ annual herb/ Jan-May/ 0-2329
<i>Astragalus jaegerianus</i>	Lane Mountain milk-vetch	FE/ None/ 1B.1	Joshua tree "woodland", Mojavean desert scrub/granitic, sandy or gravelly/ perennial herb/ Apr-Jun/ 2953-3937
<i>Astragalus lentiginosus</i> var. <i>antoniuis</i>	San Antonio milk-vetch	None/ None/ 1B.3	Lower montane coniferous forest, Upper montane coniferous forest/ perennial herb/ Apr-Jul/ 4921-8530
<i>Astragalus lentiginosus</i> var. <i>borreganus</i>	Borrego milk-vetch	None/ None/ 4.3	Mojavean desert scrub, Sonoran desert scrub/sandy/ annual herb/ Feb-May/ 98-1050
<i>Astragalus lentiginosus</i> var. <i>sierrae</i>	Big Bear Valley milk-vetch	None/ None/ 1B.2	Mojavean desert scrub, Meadows and seeps, Pinyon and juniper woodland, Upper montane coniferous forest/gravelly or rocky/ perennial herb/ Apr-Aug/ 5906-8530
<i>Astragalus leucolobus</i>	Big Bear Valley woollypod	None/ None/ 1B.2	Lower montane coniferous forest, Pebble plain, Pinyon and juniper woodland, Upper montane coniferous forest/rocky/ perennial herb/ May-Jul/ 5741-9465
<i>Astragalus nutans</i>	Providence Mountains milk-vetch	None/ None/ 4.3	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland, Sonoran desert scrub/sandy or gravelly/ annual herb/ Mar-Jun(Oct),/ 1476-6398
<i>Astragalus preussii</i> var. <i>laxiflorus</i>	Lancaster milk-vetch	None/ None/ 1B.1	Chenopod scrub/ perennial herb/ Mar-May/ 2297-2297
<i>Astragalus preussii</i> var. <i>preussii</i>	Preuss' milk-vetch	None/ None/ 2.3	Chenopod scrub, Mojavean desert scrub/clay/ perennial herb/ Apr-Jun/ 2461-2641
<i>Astragalus tidentromii</i>	Tidestrom's milk-vetch	None/ None/ 2.3	Mojavean desert scrub/carbonate, sandy or gravelly/ perennial herb/ (Jan),Apr-Jul/ 1969-5200

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Astragalus tricarinatus</i>	triple-ribbed milk-vetch	FE/ None/ 1B.2	Joshua tree "woodland", Sonoran desert scrub/sandy or gravelly/ perennial herb/ Feb-May/ 1476-3904
<i>Astrolepis cochisensis</i> ssp. <i>cochisensis</i>	scaly cloak fern	None/ None/ 2.3	Joshua tree "woodland", Pinyon and juniper woodland/carbonate/ perennial rhizomatous herb/ Apr-Oct/ 2953-5906
<i>Atriplex coulteri</i>	Coulter's saltbush	None/ None/ 1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub, Valley and foothill grassland/alkaline or clay/ perennial herb/ Mar-Oct/ 10-1509
<i>Atriplex parishii</i>	Parish's brittlescale	None/ None/ 1B.1	Chenopod scrub, Playas, Vernal pools/alkaline/ annual herb/ Jun-Oct/ 82-6234
<i>Ayenia compacta</i>	California ayenia	None/ None/ 2.3	Mojavean desert scrub, Sonoran desert scrub/rocky/ perennial herb/ Mar-Apr/ 492-3593
<i>Azolla microphylla</i>	Mexican mosquito fern	None/ None/ 4.2	Marshes and swamps(ponds, slow water)/ annual/perennial herb/ Aug/ 98-328
<i>Bahia neomexicana</i>	many-flowered bahia	None/ None/ 2.3	Pinyon and juniper woodland(sandy)/ annual herb/ Sep-Oct/ 4921-5577
<i>Berberis fremontii</i>	Fremont barberry	None/ None/ 3	Chaparral, Joshua tree "woodland", Pinyon and juniper woodland/rocky/ perennial evergreen shrub/ Apr-Jun/ 2756-6070
<i>Berberis harrisoniana</i>	Kofa Mountain barberry	None/ None/ 1B.2	Chaparral, Mojavean desert scrub/usually north-facing talus slopes, sometimes volcanic/ perennial evergreen shrub/ Jan-Mar/ 2559-2756
<i>Berberis nevini</i>	Nevin's barberry	FE/ SE/ 1B.1	Chaparral, Cismontane woodland, Coastal scrub, Riparian scrub/sandy or gravelly/ perennial evergreen shrub/ Mar-Jun/ 899-2707
<i>Blepharidachne kingii</i>	King's eyelash grass	None/ None/ 2.3	Great Basin scrub(usually carbonate)/ perennial herb/ May/ 3494-7005
<i>Boechera dispar</i>	pinyon rockcress	None/ None/ 2.3	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/granitic, gravelly/ perennial herb/ Mar-Jun/ 3937-8333
<i>Boechera lincolnensis</i>	Lincoln rockcress	None/ None/ 2.3	Chenopod scrub, Mojavean desert scrub/carbonate/ perennial herb/ Mar-May/ 3609-8875
<i>Boechera parishii</i>	Parish's rockcress	None/ None/ 1B.2	Pebble plain, Pinyon and juniper woodland, Upper montane coniferous forest/rocky, quartzite on clay, or sometimes carbonate/ perennial herb/ Apr-May/ 5807-9810
<i>Boechera peirsonii</i>	San Bernardino rockcress	None/ None/ 1B.2	Subalpine coniferous forest(rocky)/ perennial herb/ Mar-Aug/ 8858- 10499
<i>Boechera shockleyi</i>	Shockley's rockcress	None/ None/ 2.3	Pinyon and juniper woodland(carbonate or quartzite, rocky or gravelly)/ perennial herb/ May-Jun/ 2871-7579
<i>Botrychium crenulatum</i>	scalloped moonwort	None/ None/ 2.3	Bogs and fens, Lower montane coniferous forest, Meadows and seeps, Marshes and swamps(freshwater), Upper montane coniferous forest/ perennial rhizomatous herb/ Jun-Sep/ 4160-10761
<i>Botrychium minganense</i>	Mingan moonwort	None/ None/ 2.3	Bogs and fens, Lower montane coniferous forest, Upper montane coniferous forest/Mesic/ perennial rhizomatous herb/ Jul-Sep/ 4774- 6906
<i>Bouteloua eriopoda</i>	black grama	None/ None/ 4.2	Joshua tree "woodland", Pinyon and juniper woodland/ perennial stoloniferous herb/ May-Aug/ 2953-6234

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Bouteloua trifida</i>	three-awned grama	None/ None/ 2.3	Mojavean desert scrub(carbonate, rocky)/ perennial herb/ May-Sep/ 2297-6562
<i>Brodiaea filifolia</i>	thread-leaved brodiaea	FT/ SE/ 1B.1	Chaparral(openings), Cismontane woodland, Coastal scrub, Playas, Valley and foothill grassland, Vernal pools/often clay/ perennial bulbiferous herb/ Mar-Jun/ 82-3675
<i>Calandrinia breweri</i>	Brewer's calandrinia	None/ None/ 4.2	Chaparral, Coastal scrub/sandy or loamy, disturbed sites and burns/ annual herb/ Mar-Jun/ 33-4003
<i>Calochortus catalinae</i>	Catalina mariposa lily	None/ None/ 4.2	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland/ perennial bulbiferous herb/ (Feb),Mar-Jun/ 49-2297
<i>Calochortus palmeri</i> var. <i>palmeri</i>	Palmer's mariposa lily	None/ None/ 1B.2	Chaparral, Lower montane coniferous forest, Meadows and seeps/mesic/ perennial bulbiferous herb/ Apr-Jul/ 3281-7841
<i>Calochortus plummerae</i>	Plummer's mariposa lily	None/ None/ 4.2	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland/granitic, rocky/ perennial bulbiferous herb/ May-Jul/ 328-5577
<i>Calochortus striatus</i>	alkali mariposa lily	None/ None/ 1B.2	Chaparral, Chenopod scrub, Mojavean desert scrub, Meadows and seeps/alkaline, mesic/ perennial bulbiferous herb/ Apr-Jun/ 230-5233
<i>Calochortus weedii</i> var. <i>intermedius</i>	intermediate mariposa lily	None/ None/ 1B.2	Chaparral, Coastal scrub, Valley and foothill grassland/rocky, calcareous/ perennial bulbiferous herb/ May-Jul/ 344-2805
<i>Calyptidium pygmaeum</i>	pygmy pussypaws	None/ None/ 1B.2	Subalpine coniferous forest, Upper montane coniferous forest/sandy or gravelly/ annual herb/ Jun-Aug/ 6496-10203
<i>Calystegia felix</i>	lucky morning-glory	None/ None/ 3.1	Historically associated with wetland and marshy places, but possibly in drier situations as well. Possibly silty loam and alkaline, Meadows and seeps (sometimes alkaline), Riparian scrub (alluvial)/ annual rhizomatous herb/ Mar-Sept/ 98-705
<i>Calystegia sepium</i> ssp. <i>binghamiae</i>	Santa Barbara morning-glory	None/ None/ 1B.1	Marshes and swamps(coastal), Riparian scrub(alluvial)/Historically associated with wetland and marshy places, but possibly in drier situations as well. P/ perennial rhizomatous herb/ Apr-May/ 0-722
<i>Canbya candida</i>	white pygmy-poppy	None/ None/ 4.2	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/gravelly, sandy, granitic/ annual herb/ Mar-Jun/ 1969-4790
<i>Carex comosa</i>	bristly sedge	None/ None/ 2.3	Coastal prairie, Marshes and swamps(lake margins), Valley and foothill grassland/ perennial rhizomatous herb/ May-Sep/ 0-2051
<i>Carex occidentalis</i>	western sedge	None/ None/ 2.3	Lower montane coniferous forest, Meadows and seeps/ perennial rhizomatous herb/ Jun-Aug/ 5397-10285
<i>Carnegiea gigantea</i>	saguaro	None/ None/ 2.3	Sonoran desert scrub(rocky)/ perennial stem succulent/ May-Jun/ 164-4921
<i>Castela emoryi</i>	Emory's crucifixion-thorn	None/ None/ 2.3	Mojavean desert scrub, Playas, Sonoran desert scrub/gravelly/ perennial deciduous shrub/ (Apr),Jun-Jul(Sep),(Oct),/ 295-2198
<i>Castilleja cinerea</i>	ash-gray paintbrush	FT/ None/ 1B.2	Mojavean desert scrub, Meadows and seeps, Pebble plain, Pinyon and juniper woodland, Upper montane coniferous forest(clay openings)/ perennial herb hemiparasitic/ Jun-Aug/ 5906-9711

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Castilleja lasiorhyncha</i>	San Bernardino Mountains owl's-clover	None/ None/ 1B.2	Chaparral, Meadows and seeps, Pebble plain, Riparian woodland, Upper montane coniferous forest/mesic/ annual herb hemiparasitic/ May-Aug/ 4265-7841
<i>Castilleja montigena</i>	Heckard's paintbrush	None/ None/ 4.3	Lower montane coniferous forest, Pinyon and juniper woodland, Upper montane coniferous forest/ perennial herb hemiparasitic/ May-Aug/ 6398-9186
<i>Castilleja plagiotoma</i>	Mojave paintbrush	None/ None/ 4.3	Great Basin scrub(alluvial), Joshua tree "woodland", Lower montane coniferous forest, Pinyon and juniper woodland/ perennial herb hemiparasitic/ Apr-Jun/ 984-8202
<i>Centromadia pungens</i> ssp. <i>laevis</i>	smooth tarplant	None/ None/ 1B.1	Chenopod scrub, Meadows and seeps, Playas, Riparian woodland, Valley and foothill grassland/alkaline/ annual herb/ Apr-Sep/ 0-2100
<i>Chamaesyce abramsiana</i>	Abrams' spurge	None/ None/ 2.3	Mojavean desert scrub, Sonoran desert scrub/sandy/ annual herb/ (Aug),Sep-Nov/ -16-3002
<i>Chamaesyce parryi</i>	Parry's spurge	None/ None/ 2.3	Desert dunes, Mojavean desert scrub(sandy)/ annual herb/ May-Nov/ 1296-2395
<i>Chamaesyce platysperma</i>	flat-seeded spurge	None/ None/ 1B.2	Desert dunes, Sonoran desert scrub(sandy)/ annual herb/ Feb-Sep/ 213-328
<i>Chamaesyce revoluta</i>	revolute spurge	None/ None/ 4.3	Mojavean desert scrub(rocky)/ annual herb/ Aug-Sep/ 3593-10171
<i>Chamaesyce vallis-mortae</i>	Death Valley sandmat	None/ None/ 4.2	Mojavean desert scrub(sandy or gravelly)/ perennial herb/ May-Oct/ 755-4790
<i>Cheilanthes wootonii</i>	Wooton's lace fern	None/ None/ 2.3	Joshua tree "woodland", Pinyon and juniper woodland/rocky/ perennial rhizomatous herb/ May-Oct/ 5249-6234
<i>Chloropyron maritimum</i> ssp. <i>maritimum</i>	salt marsh bird's-beak	FE/ SE/ 1B.2	Coastal dunes, Marshes and swamps(coastal salt)/ annual herb hemiparasitic/ May-Oct/ 0-98
<i>Chloropyron tecopense</i>	Tecopa bird's-beak	None/ None/ 1B.2	Mojavean desert scrub, Meadows and seeps/Mesic, alkaline/ annual herb hemiparasitic/ Jul-Oct/ 197-2953
<i>Chorizanthe leptotheca</i>	Peninsular spineflower	None/ None/ 4.2	Chaparral, Coastal scrub, Lower montane coniferous forest/alluvial fan, granitic/ annual herb/ May-Aug/ 984-6234
<i>Chorizanthe parryi</i> var. <i>parryi</i>	Parry's spineflower	None/ None/ 1B.1	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland/sandy or rocky, openings/ annual herb/ Apr-Jun/ 902-4003
<i>Chorizanthe spinosa</i>	Mojave spineflower	None/ None/ 4.2	Chenopod scrub, Joshua tree "woodland", Mojavean desert scrub, Playas/Sometimes alkaline/ annual herb/ Mar-Jul/ 20-4265
<i>Chorizanthe xanti</i> var. <i>leucotheca</i>	white-bracted spineflower	None/ None/ 1B.2	Coastal scrub(alluvial fans), Mojavean desert scrub, Pinyon and juniper woodland/sandy or gravelly/ annual herb/ Apr-Jun/ 984-3937
<i>Chylismia arenaria</i>	sand evening-primrose	None/ None/ 2.3	Sonoran desert scrub(sandy or rocky)/ annual/perennial herb/ Nov-May/ -230-3002
<i>Cirsium arizonicum</i> var. <i>tenuisectum</i>	desert mountain thistle	None/ None/ 1B.2	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/rocky, disturbed areas, often roadsides/ perennial herb/ Jun-Nov/ 4921-9186

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Cladium californicum</i>	California sawgrass	None/ None/ 2.3	Meadows and seeps, Marshes and swamps/Alkaline or Freshwater/ perennial rhizomatous herb/ Jun-Sep/ 197-2838
<i>Claytonia lanceolata</i> var. <i>peirsonii</i>	Peirson's spring beauty	None/ None/ 3.1	Subalpine coniferous forest, Upper montane coniferous forest/screel/ perennial herb/ May-Jun/ 7005-9006
<i>Cleomella brevipes</i>	short-pedicelled cleomella	None/ None/ 4.2	Meadows and seeps, Marshes and swamps, Playas/alkaline/ annual herb/ May-Oct/ 1296-7201
<i>Cordylanthus eremicus</i> ssp. <i>eremicus</i>	desert bird's-beak	None/ None/ 4.3	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/ annual herb hemiparasitic/ Jul-Oct/ 3281-9843
<i>Cordylanthus parviflorus</i>	small-flowered bird's-beak	None/ None/ 2.3	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/ annual herb hemiparasitic/ Aug-Oct/ 2297-7218
<i>Coryphantha alversonii</i>	foxtail cactus	None/ None/ 4.3	Mojavean desert scrub, Sonoran desert scrub/sandy or rocky, usually granitic/ perennial stem succulent/ Apr-Jun/ 246-5003
<i>Coryphantha chlorantha</i>	desert pincushion	None/ None/ 2.3	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/carbonate, gravelly, rocky/ perennial stem succulent/ Apr- Sep/ 148-5594
<i>Coryphantha vivipara</i> var. <i>rosea</i>	viviparous foxtail cactus	None/ None/ 2.3	Mojavean desert scrub, Pinyon and juniper woodland/carbonate/ perennial stem succulent/ May-Jun/ 4101-8858
<i>Cryptantha clokeyi</i>	Clokey's cryptantha	None/ None/ 1B.2	Mojavean desert scrub/ annual herb/ Apr/ 2379-4478
<i>Cryptantha costata</i>	ribbed cryptantha	None/ None/ 4.3	Desert dunes, Mojavean desert scrub, Sonoran desert scrub/sandy/ annual herb/ Feb-May/ -197-1640
<i>Cryptantha holoptera</i>	winged cryptantha	None/ None/ 4.3	Mojavean desert scrub, Sonoran desert scrub/ annual herb/ Mar-Apr/ 328-5545
<i>Cryptantha tumulosa</i>	New York Mountains cryptantha	None/ None/ 4.3	Mojavean desert scrub, Pinyon and juniper woodland/gravelly or clay, granitic or carbonate/ perennial herb/ Apr-Jun/ 3002-6988
<i>Cuscuta californica</i> var. <i>apiculata</i>	pointed dodder	None/ None/ 3	Mojavean desert scrub, Sonoran desert scrub/sandy/ annual vine parasitic/ Feb-Aug/ 0-1640
<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>	Peruvian dodder	None/ None/ 2.3	Marshes and swamps(freshwater)/ annual vine parasitic/ Jul-Oct/ 49- 919
<i>Cymopterus deserticola</i>	desert cymopterus	None/ None/ 1B.2	Joshua tree "woodland", Mojavean desert scrub/sandy/ perennial herb/ Mar-May/ 2067-4921
<i>Cymopterus gilmanii</i>	Gilman's cymopterus	None/ None/ 2.3	Mojavean desert scrub(often carbonate)/ perennial herb/ Apr-May/ 3002-6562
<i>Cymopterus multinervatus</i>	purple-nerve cymopterus	None/ None/ 2.3	Mojavean desert scrub, Pinyon and juniper woodland/sandy or gravelly/ perennial herb/ Mar-Apr/ 2592-5906
<i>Deinandra mohavensis</i>	Mojave tarplant	None/ SE/ 1B.3	Chaparral, Coastal scrub, Riparian scrub/mesic/ annual herb/ (May),Jun-Oct(Jan),/ 2100-5249

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Deinandra paniculata</i>	paniculate tarplant	None/ None/ 4.2	Coastal scrub, Valley and foothill grassland, Vernal pools/usually vernal mesic, sometimes sandy/ annual herb/ Apr-Nov/ 82-3084
<i>Delphinium scaposum</i>	bare-stem larkspur	None/ None/ 2.3	Sonoran desert scrub/rocky, sometimes washes/ perennial herb/ Mar-Apr/ 886-3461
<i>Digitaria californica</i> var. <i>californica</i>	Arizona cottontop	None/ None/ 2.3	Mojavean desert scrub, Sonoran desert scrub/rocky/ perennial herb/ Jul-Nov/ 951-4888
<i>Ditaxis claryana</i>	glandular ditaxis	None/ None/ 2.3	Mojavean desert scrub, Sonoran desert scrub/sandy/ perennial herb/ Oct-Mar/ 0-1526
<i>Ditaxis serrata</i> var. <i>californica</i>	California ditaxis	None/ None/ 3.2	Sonoran desert scrub/ perennial herb/ Mar-Dec/ 98-3281
<i>Dodecahema leptoceras</i>	slender-horned spineflower	FE/ SE/ 1B.1	Chaparral, Cismontane woodland, Coastal scrub(alluvial fan)/sandy/ annual herb/ Apr-Jun/ 656-2493
<i>Draba saxosa</i>	Southern California rock draba	None/ None/ 1B.3	Alpine boulder and rock field, Subalpine coniferous forest, Upper montane coniferous forest/rocky/ perennial herb/ Jun-Sep/ 8005-11811
<i>Drymocalis cuneifolia</i> var. <i>cuneifolia</i>	wedgeleaf woodbeauty	None/ None/ 1B.1	Riparian scrub, Upper montane coniferous forest/Sometimes carbonate/ perennial herb/ Jun-Aug/ 5906-7267
<i>Dryopteris filix-mas</i>	male fern	None/ None/ 2.3	Upper montane coniferous forest(granitic, rocky)/ perennial rhizomatous herb/ Jul-Sep/ 7874-10171
<i>Dudleya abramsii</i> ssp. <i>affinis</i>	San Bernardino Mountains dudleya	None/ None/ 1B.2	Pebble plain, Pinyon and juniper woodland, Upper montane coniferous forest/granitic, quartzite, or carbonate/ perennial herb/ Apr-Jul/ 4101-8530
<i>Dudleya multicaulis</i>	many-stemmed dudleya	None/ None/ 1B.2	Chaparral, Coastal scrub, Valley and foothill grassland/often clay/ perennial herb/ Apr-Jul/ 49-2592
<i>Echinocereus engelmannii</i> var. <i>howei</i>	Howe's hedgehog cactus	None/ None/ 1B.1	Mojavean desert scrub/ perennial stem succulent/ Apr-May/ 1411-2543
<i>Elymus salina</i>	Salina Pass wild-rye	None/ None/ 2.3	Pinyon and juniper woodland(rocky)/ perennial rhizomatous herb/ May-Jun/ 4429-7005
<i>Enceliopsis nudicaulis</i> var. <i>nudicaulis</i>	naked-stemmed daisy	None/ None/ 4.3	Great Basin scrub, Mojavean desert scrub/volcanic or carbonate/ perennial herb/ Apr-May/ 3117-6562
<i>Enneapogon desvauxii</i>	nine-awned pappus grass	None/ None/ 2.3	Pinyon and juniper woodland(rocky, carbonate)/ perennial herb/ Aug-Sep/ 4183-5988
<i>Eremogone congesta</i> var. <i>charlestonensis</i>	Charleston sandwort	None/ None/ 1B.3	Pinyon and juniper woodland(sandy)/ perennial herb/ Jun/ 7218-7300
<i>Eremogone ursina</i>	Big Bear Valley sandwort	FT/ None/ 1B.2	Meadows and seeps, Pebble plain, Pinyon and juniper woodland/mesic, rocky/ perennial herb/ May-Aug/ 5906-9514

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Eremothera boothii</i> ssp. <i>boothii</i>	Booth's evening-primrose	None/ None/ 2.3	Joshua tree "woodland", Pinyon and juniper woodland/ annual herb/ Apr-Sep/ 2674-7874
<i>Eremothera boothii</i> ssp. <i>intermedia</i>	Booth's hairy evening-primrose	None/ None/ 2.3	Great Basin scrub(sandy), Pinyon and juniper woodland/ annual herb/ (May),Jun/ 4921-7054
<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>	Santa Ana River woollystar	FE/ SE/ 1B.1	Chaparral, Coastal scrub(alluvial fan)/sandy or gravelly/ perennial herb/ Apr-Sep/ 299-2001
<i>Eriastrum harwoodii</i>	Harwood's eriastrum	None/ None/ 1B.2	Desert dunes/ annual herb/ Mar-Jun/ 410-3002
<i>Ericameria nana</i>	dwarf goldenbush	None/ None/ 4.3	Pinyon and juniper woodland(rocky, carbonate or granitic)/ perennial shrub/ Jul-Nov/ 4806-9186
<i>Erigeron breweri</i> var. <i>jacinteus</i>	San Jacinto Mountains daisy	None/ None/ 4.3	Subalpine coniferous forest, Upper montane coniferous forest/rocky/ perennial rhizomatous herb/ Jun-Sep/ 8858-9514
<i>Erigeron oxyphyllus</i>	wand-like fleabane daisy	None/ None/ 2.3	Sonoran desert scrub/dry, rocky slopes and washes/ perennial herb/ May/ 2116-2592
<i>Erigeron parishii</i>	Parish's daisy	FT/ None/ 1B.1	Mojavean desert scrub, Pinyon and juniper woodland/usually carbonate, sometimes granitic/ perennial herb/ May-Aug/ 2625-6562
<i>Erigeron uncialis</i> var. <i>uncialis</i>	limestone daisy	None/ None/ 1B.2	Great Basin scrub, Pinyon and juniper woodland, Subalpine coniferous forest/carbonate/ perennial herb/ May-Jul/ 6234-9514
<i>Erigeron utahensis</i>	Utah daisy	None/ None/ 2.3	Pinyon and juniper woodland(carbonate)/ perennial herb/ May-Jun/ 4921-7612
<i>Eriodictyon angustifolium</i>	narrow-leaved yerba santa	None/ None/ 2.3	Pinyon and juniper woodland/ perennial evergreen shrub/ May-Aug/ 4921-6234
<i>Eriogonum bifurcatum</i>	forked buckwheat	None/ None/ 1B.2	Chenopod scrub(sandy)/ annual herb/ Apr-Jun/ 2116-2657
<i>Eriogonum contiguum</i>	Reveal's buckwheat	None/ None/ 2.3	Mojavean desert scrub(sandy)/ annual herb/ (Feb),Mar-May(Jun),/ 98-4331
<i>Eriogonum evanidum</i>	vanishing wild buckwheat	None/ None/ 1B.1	Chaparral, Cismontane woodland, Lower montane coniferous forest, Pinyon and juniper woodland/sandy or gravelly/ annual herb/ Jul-Oct/ 3609-7300
<i>Eriogonum heermannii</i> var. <i>floccosum</i>	Clark Mountain buckwheat	None/ None/ 4.3	Pinyon and juniper woodland(carbonate)/ perennial deciduous shrub/ Aug-Oct/ 2953-7874
<i>Eriogonum kennedyi</i> var. <i>alpigenum</i>	southern alpine buckwheat	None/ None/ 1B.3	Alpine boulder and rock field, Subalpine coniferous forest/granitic, gravelly/ perennial herb/ Jul-Sep/ 8530-11483
<i>Eriogonum kennedyi</i> var. <i>austromontanum</i>	southern mountain buckwheat	FT/ None/ 1B.2	Lower montane coniferous forest(gravelly), Pebble plain/ perennial herb/ Jun-Sep/ 5807-9482

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Eriogonum microthecum</i> var. <i>alpinum</i>	northern limestone buckwheat	None/ None/ 4.3	Alpine dwarf scrub, Great Basin scrub/sometimes rocky or gravelly/ perennial herb/ Jul-Sep/ 8202-10827
<i>Eriogonum microthecum</i> var. <i>johnstonii</i>	Johnston's buckwheat	None/ None/ 1B.3	Subalpine coniferous forest, Upper montane coniferous forest/rocky/ perennial deciduous shrub/ Jul-Sep/ 6001-9600
<i>Eriogonum microthecum</i> var. <i>lacus-ursi</i>	Bear Lake buckwheat	None/ None/ 1B.1	Great Basin scrub, Lower montane coniferous forest/clay outcrops/ perennial shrub/ Jul-Aug/ 6562-6890
<i>Eriogonum ovalifolium</i> var. <i>vineum</i>	Cushenbury buckwheat	FE/ None/ 1B.1	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/carbonate/ perennial herb/ May-Aug/ 4593-8005
<i>Eriogonum thornei</i>	Thorne's buckwheat	None/ SE/ 1B.2	Pinyon and juniper woodland(gravelly)/ perennial shrub/ Jul-Aug/ 5906- 6004
<i>Eriogonum umbellatum</i> var. <i>juniporinum</i>	juniper sulphur-flowered buckwheat	None/ None/ 2.3	Mojavean desert scrub, Pinyon and juniper woodland/ perennial herb/ Jul-Oct/ 4265-8202
<i>Eriogonum umbellatum</i> var. <i>minus</i>	alpine sulfur-flowered buckwheat	None/ None/ 4.3	Subalpine coniferous forest, Upper montane coniferous forest/gravelly/ perennial herb/ Jun-Sep/ 5906-10066
<i>Erioneuron pilosum</i>	hairy erioneuron	None/ None/ 2.3	Pinyon and juniper woodland(rocky, sometimes carbonate)/ perennial herb/ May-Jun/ 4659-6594
<i>Eriophyllum lanatum</i> var. <i>obovatum</i>	southern Sierra woolly sunflower	None/ None/ 4.3	Lower montane coniferous forest, Upper montane coniferous forest/sandy loam/ perennial herb/ Jun-Jul/ 3655-8202
<i>Eriophyllum mohavense</i>	Barstow woolly sunflower	None/ None/ 1B.2	Chenopod scrub, Mojavean desert scrub, Playas/ annual herb/ (Mar),Apr-May/ 1640-3150
<i>Eschscholzia minutiflora</i> ssp. <i>twisselmannii</i>	Red Rock poppy	None/ None/ 1B.2	Mojavean desert scrub(volcanic tuff)/ annual herb/ Mar-May/ 2231-4035
<i>Euphorbia exstipulata</i> var. <i>exstipulata</i>	Clark Mountain spurge	None/ None/ 2.3	Mojavean desert scrub(rocky)/ annual herb/ Sep/ 4199-6562
<i>Euphorbia jaegeri</i>	Orocopia Mountains spurge	None/ None/ 1B.1	Mojavean desert scrub/Rocky hillsides and arroyos, gravelly or rocky crevices; granitic, carbonate, or metamorphic/ perennial shrub/ Oct- May/ 1969-2789
<i>Fendlerella utahensis</i>	yerba desierto	None/ None/ 4.3	Lower montane coniferous forest, Mojavean desert scrub, Pinyon and juniper woodland/carbonate/ perennial deciduous shrub/ Jun-Aug/ 4265-9186
<i>Fimbristylis thermalis</i>	hot springs fimbristylis	None/ None/ 2.3	Meadows and seeps(alkaline, near hot springs)/ perennial rhizomatous herb/ Jul-Sep/ 361-4396

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Frasera albomarginata</i> var. <i>albomarginata</i>	desert green-gentian	None/ None/ 2.3	Pinyon and juniper woodland(rocky or gravelly)/ perennial herb/ Apr-Jun(Jul),(Aug),(Sep),/ 4495-7595
<i>Frasera albomarginata</i> var. <i>induta</i>	Clark Mountain green-gentian	None/ None/ 1B.2	Pinyon and juniper woodland/Rocky or gravelly, usually carbonate./ perennial herb/ May-Jun(Sep),/ 5594-5807
<i>Frasera neglecta</i>	pine green-gentian	None/ None/ 4.3	Lower montane coniferous forest, Pinyon and juniper woodland, Upper montane coniferous forest/ perennial herb/ May-Jul/ 4593-8202
<i>Fritillaria pinetorum</i>	pine fritillary	None/ None/ 4.3	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland, Subalpine coniferous forest, Upper montane coniferous forest/granitic or metamorphic/ perennial bulbiferous herb/ May-Jul(Sep),/ 5692-10827
<i>Funastrum utahense</i>	Utah vine milkweed	None/ None/ 4.2	Mojavean desert scrub, Sonoran desert scrub/sandy or gravelly/ perennial herb/ (Mar),Apr-Jun(Sep),(Oct),/ 328-4708
<i>Galium angustifolium</i> ssp. <i>gabrielense</i>	San Antonio Canyon bedstraw	None/ None/ 4.3	Chaparral, Lower montane coniferous forest/granitic, sandy or rocky/ perennial herb/ Apr-Aug/ 3937-8694
<i>Galium angustifolium</i> ssp. <i>gracillimum</i>	slender bedstraw	None/ None/ 4.2	Joshua tree "woodland", Sonoran desert scrub/granitic, rocky/ perennial herb/ Apr-Jun/ 427-5085
<i>Galium californicum</i> ssp. <i>primum</i>	Alvin Meadow bedstraw	None/ None/ 1B.2	Chaparral, Lower montane coniferous forest/granitic, sandy/ perennial herb/ May-Jul/ 4429-5577
<i>Galium hilendiae</i> ssp. <i>kingstonense</i>	Kingston Mountains bedstraw	None/ None/ 1B.3	Lower montane coniferous forest, Pinyon and juniper woodland/rocky/ perennial herb/ (May),Jun/ 3937-6890
<i>Galium jepsonii</i>	Jepson's bedstraw	None/ None/ 4.3	Lower montane coniferous forest, Upper montane coniferous forest/granitic, rocky or gravelly/ perennial rhizomatous herb/ Jul-Aug/ 5052-8202
<i>Galium johnstonii</i>	Johnston's bedstraw	None/ None/ 4.3	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland, Riparian woodland/ perennial herb/ Jun-Jul/ 4003-7546
<i>Galium munzii</i>	Munz's bedstraw	None/ None/ 4.3	Great Basin scrub, Lower montane coniferous forest, Pinyon and juniper woodland, Upper montane coniferous forest/ perennial herb/ May-Jul/ 3609-10925
<i>Galium proliferum</i>	desert bedstraw	None/ None/ 2.3	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/rocky, carbonate/ annual herb/ Mar-Jun/ 3904-5348
<i>Galium wrightii</i>	Wright's bedstraw	None/ None/ 2.3	Lower montane coniferous forest, Pinyon and juniper woodland/carbonate, rocky/ perennial herb/ Jun-Oct/ 5249-6562
<i>Gentiana fremontii</i>	Fremont's gentian	None/ None/ 2.3	Meadows and seeps(mesic), Upper montane coniferous forest/ annual herb/ Jun-Aug/ 7874-8858
<i>Gilia leptantha</i> ssp. <i>leptantha</i>	San Bernardino gilia	None/ None/ 1B.3	Lower montane coniferous forest(sandy or gravelly)/ annual herb/ Jun-Aug/ 4921-8399

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Glossopetalon pungens</i>	pungent glossopetalon	None/ None/ 1B.2	Chaparral, Pinyon and juniper woodland/carbonate/ perennial deciduous shrub/ May-Jun/ 5495-6562
<i>Grimmia vaginulata</i>	vaginulate grimmia	None/ None/ 1B.1	Chaparral (openings)/ Rocky, boulder and rock walks, carbonate/ moss/ NA/
<i>Grusonia parishii</i>	Parish's club-cholla	None/ None/ 2.3	Joshua tree "woodland", Mojavean desert scrub, Sonoran desert scrub/sandy, rocky/ perennial stem succulent/ May-Jun(Jul)/ 984-5000
<i>Hecastocleis shockleyi</i>	prickle-leaf	None/ None/ 3	Chenopod scrub, Mojavean desert scrub/rocky slopes, washes; often carbonate or slate/ perennial evergreen shrub/ May-Jul/ 3937-7218
<i>Hedeoma drummondii</i>	Drummond's false pennyroyal	None/ None/ 2.3	Great Basin scrub, Pinyon and juniper woodland/rocky or gravelly, usually carbonate/ perennial herb/ May-Jul/ 4593-5577
<i>Hedeoma nana</i> ssp. <i>californica</i>	California mock pennyroyal	None/ None/ 4.3	Joshua tree "woodland", Pinyon and juniper woodland/rocky, often carbonate/ perennial herb/ Apr-Jun/ 2805-6890
<i>Helianthus nuttallii</i> ssp. <i>parishii</i>	Los Angeles sunflower	None/ None/ 1A	Marshes and swamps(coastal salt and freshwater)/ perennial rhizomatous herb/ Aug-Oct/ 33-5495
<i>Heuchera abramsii</i>	Abrams' alumroot	None/ None/ 4.3	Upper montane coniferous forest(rocky)/ perennial rhizomatous herb/ Jul-Aug/ 9186-11483
<i>Heuchera caespitosa</i>	urn-flowered alumroot	None/ None/ 4.3	Cismontane woodland, Lower montane coniferous forest, Riparian forest(montane), Upper montane coniferous forest/rocky/ perennial rhizomatous herb/ May-Aug/ 3789-8694
<i>Heuchera hirsutissima</i>	shaggy-haired alumroot	None/ None/ 1B.3	Subalpine coniferous forest, Upper montane coniferous forest/rocky, granitic/ perennial rhizomatous herb/ (May),Jun-Jul/ 4987-11483
<i>Heuchera parishii</i>	Parish's alumroot	None/ None/ 1B.3	Alpine boulder and rock field, Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest/rocky, sometimes carbonate/ perennial rhizomatous herb/ Jun-Aug/ 4921-12467
<i>Horkelia cuneata</i> var. <i>puberula</i>	mesa horkelia	None/ None/ 1B.1	Chaparral(maritime), Cismontane woodland, Coastal scrub/sandy or gravelly/ perennial herb/ Feb-Jul(Sep)/ 230-2657
<i>Horkelia wilderae</i>	Barton Flats horkelia	None/ None/ 1B.1	Chaparral(edges), Lower montane coniferous forest, Upper montane coniferous forest/ perennial herb/ May-Sep/ 5495-9596
<i>Hulsea vestita</i> ssp. <i>gabrielensis</i>	San Gabriel Mountains sunflower	None/ None/ 4.3	Lower montane coniferous forest, Upper montane coniferous forest/rocky/ perennial herb/ May-Jul/ 4921-8202
<i>Hulsea vestita</i> ssp. <i>parryi</i>	Parry's sunflower	None/ None/ 4.3	Lower montane coniferous forest, Pinyon and juniper woodland, Upper montane coniferous forest/granitic or carbonate, rocky, openings/ perennial herb/ Apr-Aug/ 4495-9498
<i>Hulsea vestita</i> ssp. <i>pygmaea</i>	pygmy hulsea	None/ None/ 1B.3	Alpine boulder and rock field, Subalpine coniferous forest/granitic, gravelly/ perennial herb/ Jun-Oct/ 9301-12795
<i>Hymenopappus filifolius</i> var. <i>eriopodus</i>	hairy-podded fine-leaf hymenopappus	None/ None/ 2.3	Pinyon and juniper woodland/carbonate/ perennial herb/ May-Jul/ 5249-5577
<i>Hymenoxys odorata</i>	bitter hymenoxys	None/ None/ 2.3	Riparian scrub, Sonoran desert scrub/sandy/ annual herb/ Feb-Nov/ 148-492

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Imperata brevifolia</i>	California satintail	None/ None/ 2.3	Chaparral, Coastal scrub, Mojavean desert scrub, Meadows and seeps(often alkali), Riparian scrub/mesic/ perennial rhizomatous herb/ Sep-May/ 0-3986
<i>Ivesia argyrocoma</i> var. <i>argyrocoma</i>	silver-haired ivesia	None/ None/ 1B.2	Meadows and seeps(alkaline), Pebble plain, Upper montane coniferous forest/ perennial herb/ Jun-Aug/ 4800-9711
<i>Ivesia jaegeri</i>	Jaeger's ivesia	None/ None/ 1B.3	Pinyon and juniper woodland, Upper montane coniferous forest/carbonate, rocky/ perennial herb/ Jun-Jul/ 6004-11811
<i>Ivesia patellifera</i>	Kingston Mountains ivesia	None/ None/ 1B.3	Pinyon and juniper woodland(granitic, rocky)/ perennial herb/ Jun-Oct/ 4593-6890
<i>Jaffuelobryum raui</i>	Rau's jaffuelobryum moss	None/ None/ 2B.3	Alpine dwarf scrub, Chaparral, Mojavean desert scrub, Sonoran desert scrub/ dry openings, rock crevices, carbonate/ moss/ NA/ 1608-6890
<i>Jaffuelobryum wrightii</i>	Wright's jaffuelobryum moss	None/ None/ 2B.3	Alpine dwarf scrub, Mojavean desert scrub, Pinyon and juniper woodland/ dry openings, rock crevices, carbonate/ moss/ NA/ 525 - 8202
<i>Juglans californica</i>	Southern California black walnut	None/ None/ 4.2	Chaparral, Cismontane woodland, Coastal scrub/alluvial/ perennial deciduous tree/ Mar-Aug/ 164-2953
<i>Juncus cooperi</i>	Cooper's rush	None/ None/ 4.3	Meadows and seeps(mesic, alkaline or saline)/ perennial herb/ Apr-May(Aug),/ -853-5807
<i>Juncus duranii</i>	Duran's rush	None/ None/ 4.3	Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest/mesic/ perennial rhizomatous herb/ Jul-Aug/ 5801-9199
<i>Juncus interior</i>	inland rush	None/ None/ 2.3	Pinyon and juniper woodland/ perennial herb/ Jun-Aug/ 6004-6053
<i>Juncus nevadensis</i> var. <i>inventus</i>	(blank)	None/ None/ 2.3	Bogs and fens/ perennial rhizomatous herb/ Jul-Nov/ 0-33
<i>Juncus nodosus</i>	knotted rush	None/ None/ 2.3	Meadows and seeps(mesic), Marshes and swamps(lake margins)/ perennial rhizomatous herb/ Jul-Sep/ 98-6496
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	Coulter's goldfields	None/ None/ 1B.1	Marshes and swamps(coastal salt), Playas, Vernal pools/ annual herb/ Feb-Jun/ 3-4003
<i>Lepechinia fragrans</i>	fragrant pitcher sage	None/ None/ 4.2	Chaparral/ perennial shrub/ Mar-Oct/ 66-4298
<i>Lepidium virginicum</i> var. <i>robinsonii</i>	Robinson's pepper-grass	None/ None/ 4.3	Chaparral, Coastal scrub/ annual herb/ Jan-Jul/ 3-2904
<i>Lewisia brachycalyx</i>	short-sepaled lewisia	None/ None/ 2.3	Lower montane coniferous forest, Meadows and seeps/mesic/ perennial herb/ Feb-Jun(Jul),/ 4495-7546
<i>Lilium humboldtii</i> ssp. <i>ocellatum</i>	ocellated Humboldt lily	None/ None/ 4.2	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Riparian woodland/openings/ perennial bulbiferous herb/ Mar-Jul(Aug),/ 98-5906

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Lilium parryi</i>	lemon lily	None/ None/ 1B.2	Lower montane coniferous forest, Meadows and seeps, Riparian forest, Upper montane coniferous forest/mesic/ perennial bulbiferous herb/ Jul-Aug/ 4003-9006
<i>Linanthus bernardinus</i>	Pioneertown linanthus	None/ None/ 1B.2	Joshua tree "woodland", Pinyon and juniper woodland/ annual herb/ Mar-May/ 3904-4396
<i>Linanthus concinnus</i>	San Gabriel linanthus	None/ None/ 1B.2	Chaparral, Lower montane coniferous forest, Upper montane coniferous forest/rocky, openings/ annual herb/ Apr-Jul/ 4987-9186
<i>Linanthus killipii</i>	Baldwin Lake linanthus	None/ None/ 1B.2	Joshua tree "woodland", Meadows and seeps(alkaline), Pebble plain, Pinyon and juniper woodland/ annual herb/ May-Jul/ 5577-7874
<i>Linanthus maculatus</i>	Little San Bernardino Mtns. linanthus	None/ None/ 1B.2	Desert dunes, Joshua tree "woodland", Mojavean desert scrub, Sonoran desert scrub/sandy/ annual herb/ Mar-May/ 640-6808
<i>Linanthus orcuttii</i>	Orcutt's linanthus	None/ None/ 1B.3	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland/openings/ annual herb/ May-Jun/ 3002-7037
<i>Linum puberulum</i>	plains flax	None/ None/ 2.3	Great Basin scrub, Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/ perennial herb/ May-Jul/ 3281-8202
<i>Lithospermum incisum</i>	plains stoneseed	None/ None/ 2.3	Pinyon and juniper woodland/ perennial herb/ May/ 5413-5643
<i>Loeflingia squarrosa</i> var. <i>artemisiarum</i>	sagebrush loeflingia	None/ None/ 2.3	Desert dunes, Great Basin scrub, Sonoran desert scrub/sandy/ annual herb/ Apr-May/ 2297-5299
<i>Loeseliastrum depressum</i>	depressed standing-cypress	None/ None/ 4.3	Great Basin scrub, Mojavean desert scrub, Pinyon and juniper woodland/sandy or gravelly/ annual herb/ NA/ 4003-6890
<i>Lupinus magnificus</i> var. <i>glarecola</i>	Coso Mountains lupine	None/ None/ 4.3	Great Basin scrub, Joshua tree "woodland", Mojavean desert scrub/granitic, often talus and scree/ perennial herb/ Apr-Jun/ 3642-8005
<i>Lycium californicum</i>	California box-thorn	None/ None/ 4.2	Coastal bluff scrub, Coastal scrub/ perennial shrub/ (Dec),Mar-Aug/ 16-492
<i>Lycium parishii</i>	Parish's desert-thorn	None/ None/ 2.3	Coastal scrub, Sonoran desert scrub/ perennial shrub/ Mar-Apr/ 443-3281
<i>Malacothamnus parishii</i>	Parish's bush-mallow	None/ None/ 1A	Chaparral, Coastal scrub/ perennial deciduous shrub/ Jun-Jul/ 1001-1493
<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	white bog adder's-mouth	None/ None/ 2.3	Bogs and fens, Meadows and seeps, Upper montane coniferous forest/mesic/ perennial bulbiferous herb/ Jun-Aug/ 7218-8999
<i>Mammillaria grahamii</i> var. <i>grahamii</i>	Graham's fishhook cactus	None/ None/ 2.3	Sonoran desert scrub/gravelly or rocky/ perennial stem succulent/ Apr-Sep/ 984-2953
<i>Matelea parvifolia</i>	spearleaf	None/ None/ 2.3	Mojavean desert scrub, Sonoran desert scrub/rocky/ perennial herb/ Mar-May/ 1444-3593
<i>Maurandella antirrhiniflora</i>	violet twining snapdragon	None/ None/ 2.3	Joshua tree "woodland", Mojavean desert scrub/carbonate/ perennial herb/ Apr-May/ 2493-5003

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Menodora scabra</i>	rough menodora	None/ None/ 2.3	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/ perennial herb/ May-Jun/ 3937-5906
<i>Menodora spinescens</i> var. <i>mohavensis</i>	Mojave menodora	None/ None/ 1B.2	Mojavean desert scrub/Andesite gravel, rocky hillsides, canyons/ perennial deciduous shrub/ Apr-May/ 2264-6562
<i>Mentzelia eremophila</i>	solitary blazing star	None/ None/ 4.2	Mojavean desert scrub/ annual herb/ Mar-May/ 2297-4003
<i>Mentzelia polita</i>	polished blazing star	None/ None/ 1B.2	Mojavean desert scrub/carbonate/ perennial herb/ Apr-Aug/ 3937-5184
<i>Mentzelia pterosperma</i>	wing-seed blazing star	None/ None/ 2.3	Mojavean desert scrub/clay, gypseous/ annual/perennial herb/ Apr-Jun/ 3740-3740
<i>Mentzelia puberula</i>	Darlington's blazing star	None/ None/ 2.3	Mojavean desert scrub, Sonoran desert scrub/sandy or rocky/ perennial herb/ Mar-May/ 295-4199
<i>Mentzelia tricuspis</i>	spiny-hair blazing star	None/ None/ 2.3	Mojavean desert scrub/sandy, gravelly, slopes, and washes/ annual herb/ Mar-May/ 492-4199
<i>Mentzelia tridentata</i>	creamy blazing star	None/ None/ 1B.3	Mojavean desert scrub/rocky, gravelly, sandy/ annual herb/ Mar-May/ 2297-3806
<i>Mimulus exiguus</i>	San Bernardino Mountains monkeyflower	None/ None/ 1B.2	Meadows and seeps, Pebble plain, Upper montane coniferous forest/mesic, clay/ annual herb/ May-Jul/ 5906-7595
<i>Mimulus johnstonii</i>	Johnston's monkeyflower	None/ None/ 4.3	Lower montane coniferous forest(scree, disturbed areas, rocky or gravelly, roadside)/ annual herb/ May-Aug/ 3199-9580
<i>Mimulus mohavensis</i>	Mojave monkeyflower	None/ None/ 1B.2	Joshua tree "woodland", Mojavean desert scrub/sandy or gravelly, often in washes/ annual herb/ Apr-Jun/ 1969-3937
<i>Mimulus purpureus</i>	little purple monkeyflower	None/ None/ 1B.2	Meadows and seeps, Pebble plain, Upper montane coniferous forest/ annual herb/ May-Jun/ 6234-7546
<i>Mirabilis coccinea</i>	red four o'clock	None/ None/ 2.3	Pinyon and juniper woodland/ perennial herb/ May-Jul/ 3510-5906
<i>Mirabilis tenuiloba</i>	slender-lobed four o'clock	None/ None/ 4.3	Sonoran desert scrub/ perennial herb/ (Feb),Mar-May/ 984-3593
<i>Monarda pectinata</i>	plains bee balm	None/ None/ 2.3	Joshua tree "woodland", Pinyon and juniper woodland/rocky/ annual herb/ Jul-Sep/ 3773-5003
<i>Monardella australis</i> ssp. <i>cinerea</i>	gray monardella	None/ None/ 4.3	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest/ perennial rhizomatous herb/ Jul-Aug/ 5906-10007
<i>Monardella australis</i> ssp. <i>jokerstii</i>	Jokerst's monardella	None/ None/ 1B.1	Chaparral, Lower montane coniferous forest/Steep scree or talus slopes between breccia, secondary alluvial benches along drainages and washes./ perennial rhizomatous herb/ Jul-Sep/ 4429-5741
<i>Monardella boydii</i>	Boyd's monardella	None/ None/ 1B.2	Mojavean desert scrub, Pinyon and juniper woodland, Riparian scrub(desert)/Usually in alluvial soils and cracks of bedrock in washes on canyon bottoms and rocky slopes./ perennial shrub/ Aug-Oct/ 4593-5413

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Monardella eremicola</i>	Clark Mountain monardella	None/ None/ 1B.3	Pinyon and juniper woodland, Riparian scrub(desert)/Granitic or carbonate. Usually in bedrock cracks and benches along canyon washes./ perennial shrub/ Jun-Aug/ 4921-6890
<i>Monardella macrantha</i> ssp. <i>hallii</i>	Hall's monardella	None/ None/ 1B.3	Broadleaved upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland/ perennial rhizomatous herb/ Jun-Oct/ 2395-7201
<i>Monardella pringlei</i>	Pringle's monardella	None/ None/ 1A	Coastal scrub(sandy)/ annual herb/ May-Jun/ 984-1312
<i>Monardella robisonii</i>	Robison's monardella	None/ None/ 1B.3	Pinyon and juniper woodland/ perennial rhizomatous herb/ (Feb),Apr-Sep(Oct),/ 2001-4921
<i>Monardella saxicola</i>	rock monardella	None/ None/ 4.2	Closed-cone coniferous forest, Chaparral, Lower montane coniferous forest/rocky, usually serpentinite/ perennial rhizomatous herb/ Jun-Sep/ 1640-5906
<i>Mortonia utahensis</i>	Utah mortonia	None/ None/ 4.3	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/carbonate/ perennial evergreen shrub/ Mar-May/ 2493-6890
<i>Mucrona californica</i>	California spineflower	None/ None/ 4.2	Chaparral, Cismontane woodland, Coastal dunes, Coastal scrub, Valley and foothill grassland/sandy/ annual herb/ Mar-Jul(Aug),/ 0-4593
<i>Muhlenbergia alopecuroides</i>	wolftail	None/ None/ 2.3	Joshua tree "woodland", Pinyon and juniper woodland/ perennial herb/ Aug-Sep/ 1640-1640
<i>Muhlenbergia appressa</i>	appressed muhly	None/ None/ 2.3	Coastal scrub, Mojavean desert scrub, Valley and foothill grassland/rocky/ annual herb/ Apr-May/ 66-5249
<i>Muhlenbergia arsenei</i>	tough muhly	None/ None/ 2.3	Pinyon and juniper woodland(rocky, carbonate)/ perennial rhizomatous herb/ Aug-Oct/ 4593-6102
<i>Muhlenbergia californica</i>	California muhly	None/ None/ 4.3	Chaparral, Coastal scrub, Lower montane coniferous forest, Meadows and seeps/mesic, seeps and streambanks/ perennial rhizomatous herb/ Jun-Sep/ 328-6562
<i>Muhlenbergia fragilis</i>	delicate muhly	None/ None/ 2.3	Pinyon and juniper woodland(carbonate, gravelly)/ annual herb/ Oct/ 5249-5249
<i>Muhlenbergia pauciflora</i>	few-flowered muhly	None/ None/ 2.3	Pinyon and juniper woodland(rocky)/ perennial rhizomatous herb/ Sep-Oct/ 5758-6102
<i>Muilla coronata</i>	crowned muilla	None/ None/ 4.2	Chenopod scrub, Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/ perennial bulbiferous herb/ Mar-Apr(May),/ 2510-6430
<i>Munroa squarrosa</i>	false buffalo-grass	None/ None/ 2.3	Pinyon and juniper woodland(gravelly or rocky)/ annual herb/ Oct/ 4921-5906
<i>Myosurus minimus</i> ssp. <i>apus</i>	little mouse-tail	None/ None/ 3.1	Valley and foothill grassland, Vernal pools(alkaline)/ annual herb/ Mar-Jun/ 66-2100
<i>Nama dichotomum</i> var. <i>dichotomum</i>	forked purple mat	None/ None/ 2.3	Pinyon and juniper woodland(granitic or carbonate)/ annual herb/ Sep-Oct/ 6234-7218
<i>Nasturtium gambelii</i>	Gambel's water cress	FE/ ST/ 1B.1	Marshes and swamps(freshwater or brackish)/ perennial rhizomatous herb/ Apr-Oct/ 16-1083

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Navarretia peninsularis</i>	Baja navarretia	None/ None/ 1B.2	Chaparral(openings), Lower montane coniferous forest, Meadows and seeps, Pinyon and juniper woodland/mesic/ annual herb/ Jun-Aug/ 4921-7546
<i>Navarretia prostrata</i>	prostrate vernal pool navarretia	None/ None/ 1B.1	Coastal scrub, Meadows and seeps, Valley and foothill grassland(alkaline), Vernal pools/Mesic/ annual herb/ Apr-Jul/ 49-3970
<i>Nemacaulis denudata</i> var. <i>gracilis</i>	slender cottonheads	None/ None/ 2.3	Coastal dunes, Desert dunes, Sonoran desert scrub/ annual herb/ (Mar),Apr-May/ -164-1312
<i>Oenothera caespitosa</i> ssp. <i>crinita</i>	caespitose evening-primrose	None/ None/ 4.2	Pinyon and juniper woodland, Subalpine coniferous forest, Sonoran desert scrub/ perennial rhizomatous herb/ Jun-Sep/ 3773-11056
<i>Oenothera cavernae</i>	cave evening-primrose	None/ None/ 2.3	Great Basin scrub, Joshua tree "woodland", Mojavean desert scrub/gravelly, often calcareous/ annual herb/ Mar-Nov/ 2493-4199
<i>Oenothera longissima</i>	long-stem evening-primrose	None/ None/ 2.3	Mojavean desert scrub, Pinyon and juniper woodland/seasonally mesic/ annual/perennial herb/ Jul-Sep/ 3281-5577
<i>Ophioglossum californicum</i>	California adder's-tongue	None/ None/ 4.2	Chaparral, Valley and foothill grassland, Vernal pools(margins)/mesic/ perennial rhizomatous herb/ (Dec),Jan-Jun/ 197-1722
<i>Opuntia basilaris</i> var. <i>brachyclada</i>	short-joint beavertail	None/ None/ 1B.2	Chaparral, Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/ perennial stem succulent/ Apr-Jun(Aug),/ 1394-5906
<i>Opuntia wigginsii</i>	Wiggins' cholla	None/ None/ 3.3	Sonoran desert scrub(sandy)/ perennial stem succulent/ Mar/ 98-2904
<i>Opuntia xcurvispina</i>	curved-spine beavertail	None/ None/ 2.3	Chaparral, Mojavean desert scrub, Pinyon and juniper woodland/ perennial stem succulent/ Apr-Jun/ 3281-4593
<i>Oreonana vestita</i>	woolly mountain-parsley	None/ None/ 1B.3	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest/gravel or talus/ perennial herb/ Mar-Sep/ 5299-11483
<i>Orobanche valida</i> ssp. <i>valida</i>	Rock Creek broomrape	None/ None/ 1B.2	Chaparral, Pinyon and juniper woodland/granitic/ perennial herb parasitic/ May-Sep/ 4101-6562
<i>Oxytropis oreophila</i> var. <i>oreophila</i>	rock-loving oxytrope	None/ None/ 2.3	Alpine boulder and rock field, Subalpine coniferous forest/gravelly or rocky/ perennial herb/ Jun-Sep/ 11155-12467
<i>Packera bernardina</i>	San Bernardino ragwort	None/ None/ 1B.2	Meadows and seeps(mesic, sometimes alkaline), Pebble plain, Upper montane coniferous forest/ perennial herb/ May-Jul/ 5906-7546
<i>Packera ionophylla</i>	Tehachapi ragwort	None/ None/ 4.3	Lower montane coniferous forest, Upper montane coniferous forest/granitic, rocky/ perennial herb/ Jun-Jul/ 4921-8858
<i>Panicum hirticaule</i> ssp. <i>hirticaule</i>	roughstalk witch grass	None/ None/ 2.3	Desert dunes, Joshua tree "woodland", Mojavean desert scrub, Sonoran desert scrub/sandy, silty, depressions/ annual herb/ Aug-Dec/ 148-4314
<i>Parkinsonia microphylla</i>	little-leaved palo verde	None/ None/ 4.3	Mojavean desert scrub(rocky or gravelly)/ perennial deciduous shrub/ Apr-May/ 148-3510

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Parnassia cirrata</i> var. <i>cirrata</i>	San Bernardino grass-of- Parnassus	None/ None/ 1B.3	Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest/mesic, stream sides, sometimes calcareous/ perennial herb/ Aug-Sep/ 4101-8005
<i>Pediomelum castoreum</i>	Beaver Dam breadroot	None/ None/ 1B.2	Joshua tree "woodland", Mojavean desert scrub/Sandy, washes and roadcuts/ perennial herb/ Apr-May/ 2001-5003
<i>Pellaea truncata</i>	spiny cliff-brake	None/ None/ 2.3	Pinyon and juniper woodland(volcanic or granitic, rocky)/ perennial rhizomatous herb/ Apr-Jun/ 3937-7054
<i>Penstemon albomarginatus</i>	white-margined beardtongue	None/ None/ 1B.1	Desert dunes(stabilized), Mojavean desert scrub(sandy)/ perennial herb/ Mar-May/ 2100-3494
<i>Penstemon bicolor</i> ssp. <i>roseus</i>	rosy two-toned beardtongue	None/ None/ 1B.1	Joshua tree "woodland", Mojavean desert scrub/rocky or gravelly, sometimes disturbed areas/ perennial herb/ May/ 2297-4921
<i>Penstemon calcareus</i>	limestone beardtongue	None/ None/ 1B.3	Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland/carbonate, rocky/ perennial herb/ Apr-May/ 3494-6693
<i>Penstemon fruticiformis</i> var. <i>amargosae</i>	Amargosa beardtongue	None/ None/ 1B.3	Mojavean desert scrub/ perennial herb/ Apr-Jun/ 2789-4593
<i>Penstemon pseudospectabilis</i> ssp. <i>pseudospectabilis</i>	desert beardtongue	None/ None/ 2.3	Mojavean desert scrub, Sonoran desert scrub/often sandy washes, sometimes rocky/ perennial herb/ Jan-May/ 262-6348
<i>Penstemon stephensii</i>	Stephens' beardtongue	None/ None/ 1B.3	Mojavean desert scrub, Pinyon and juniper woodland/usually carbonate, rocky/ perennial herb/ Apr-Jun/ 3806-6070
<i>Penstemon thompsoniae</i>	Thompson's beardtongue	None/ None/ 2.3	Pinyon and juniper woodland(gravelly, carbonate)/ perennial herb/ May-Jun/ 4921-8858
<i>Penstemon thurberi</i>	Thurber's beardtongue	None/ None/ 4.2	Chaparral, Joshua tree "woodland", Pinyon and juniper woodland, Sonoran desert scrub/ perennial herb/ May-Jul/ 1640-4003
<i>Penstemon utahensis</i>	Utah beardtongue	None/ None/ 2.3	Chenopod scrub, Great Basin scrub, Mojavean desert scrub, Pinyon and juniper woodland/rocky/ perennial herb/ Apr-May/ 3494-8202
<i>Pentachaeta aurea</i> ssp. <i>aurea</i>	golden-rayed pentachaeta	None/ None/ 4.2	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Riparian woodland, Valley and foothill grassland/ annual herb/ Mar-Jul/ 262-6070
<i>Perideridia parishii</i> ssp. <i>parishii</i>	Parish's yampah	None/ None/ 2.3	Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest/ perennial herb/ Jun-Aug/ 4806-9843
<i>Petalonyx thurberi</i> ssp. <i>gilmanii</i>	Death Valley sandpaper-plant	None/ None/ 1B.3	Desert dunes, Mojavean desert scrub/ perennial evergreen shrub/ May-Sep/ 853-4741
<i>Petradoria pumila</i> ssp. <i>pumila</i>	rock goldenrod	None/ None/ 4.3	Pinyon and juniper woodland(rocky, carbonate)/ perennial herb/ Jul-Oct/ 3510-11155
<i>Phacelia anelsonii</i>	Aven Nelson's phacelia	None/ None/ 2.3	Joshua tree "woodland", Pinyon and juniper woodland/carbonate, sandy or gravelly/ annual herb/ Apr-May/ 3937-4921
<i>Phacelia barnebyana</i>	Barneby's phacelia	None/ None/ 2.3	Great Basin scrub, Pinyon and juniper woodland/usually carbonate, gravelly, rocky/ annual herb/ May-Jul/ 5249-8858

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Phacelia coerulea</i>	sky-blue phacelia	None/ None/ 2.3	Mojavean desert scrub, Pinyon and juniper woodland/ annual herb/ Apr-May/ 4593-6562
<i>Phacelia exilis</i>	Transverse Range phacelia	None/ None/ 4.3	Lower montane coniferous forest, Meadows and seeps, Pebble plain, Upper montane coniferous forest/sandy or gravelly/ annual herb/ May-Aug/ 3609-8858
<i>Phacelia mohavensis</i>	Mojave phacelia	None/ None/ 4.3	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Pinyon and juniper woodland/sandy or gravelly/ annual herb/ Apr-Aug/ 4593-8202
<i>Phacelia mustelina</i>	Death Valley round-leaved phacelia	None/ None/ 1B.3	Mojavean desert scrub, Pinyon and juniper woodland/carbonate or volcanic, gravelly or rocky/ annual herb/ May-Jul/ 2395-8596
<i>Phacelia parishii</i>	Parish's phacelia	None/ None/ 1B.1	Mojavean desert scrub, Playas/clay or alkaline/ annual herb/ Apr-May(Jun),(Jul),/ 1772-3937
<i>Phacelia perityloides</i> var. <i>jaegeri</i>	Jaeger's phacelia	None/ None/ 1B.3	Pinyon and juniper woodland(rocky, often carbonate)/ perennial herb/ May-Jul/ 6004-7694
<i>Phacelia pulchella</i> var. <i>gooddingii</i>	Goodding's phacelia	None/ None/ 2.3	Mojavean desert scrub(clay, often alkaline)/ annual herb/ Apr-Jun/ 2510-3281
<i>Phacelia stellaris</i>	Brand's star phacelia	FC/ None/ 1B.1	Coastal dunes, Coastal scrub/ annual herb/ Mar-Jun/ 3-1312
<i>Phlox dolichantha</i>	Big Bear Valley phlox	None/ None/ 1B.2	Pebble plain, Upper montane coniferous forest(openings)/ perennial herb/ May-Jul/ 6004-9744
<i>Pholistoma auritum</i> var. <i>arizonicum</i>	Arizona pholistoma	None/ None/ 2.3	Mojavean desert scrub/ annual herb/ Mar/ 902-2740
<i>Physalis lobata</i>	lobed ground-cherry	None/ None/ 2.3	Mojavean desert scrub(decomposed granitic), Playas/ perennial herb/ (May),Sep-Jan/ 1640-2625
<i>Physaria chambersii</i>	Chambers' physaria	None/ None/ 2.3	Pinyon and juniper woodland(carbonate, rocky)/ perennial herb/ Apr-May/ 4921-8497
<i>Physaria kingii</i> ssp. <i>bernardina</i>	San Bernardino Mountains bladderpod	FE/ None/ 1B.1	Lower montane coniferous forest, Pinyon and juniper woodland, Subalpine coniferous forest/usually carbonate/ perennial herb/ May-Jun/ 6070-8858
<i>Pickeringia montana</i> var. <i>tomentosa</i>	woolly chaparral-pea	None/ None/ 4.3	Chaparral/Gabbroic, granitic, clay/ evergreen shrub/ May-Aug/ 0-5577
<i>Pinus edulis</i>	two-needle pinyon pine	None/ None/ 3.3	Lower montane coniferous forest, Pinyon and juniper woodland/ perennial evergreen tree/ NA/ 4265-8858
<i>Piperia cooperi</i>	chaparral rein orchid	None/ None/ 4.2	Chaparral, Cismontane woodland, Valley and foothill grassland/ perennial herb/ Mar-Jun/ 49-5200
<i>Piperia leptopetala</i>	narrow-petaled rein orchid	None/ None/ 4.3	Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest/ perennial herb/ May-Jul/ 1247-7300
<i>Plagiobothrys parishii</i>	Parish's popcorn-flower	None/ None/ 1B.1	Great Basin scrub, Joshua tree "woodland"/alkaline, mesic/ annual herb/ Mar-Jun(Nov),/ 2461-4593

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Plagiobryoides vinosula</i>	wine-colored tufa moss	None/ None/ 4.2	Cismontane woodland/ Mojavean desert scrub/ Meadows and seeps/ Pinyon and juniper woodland/ Riparian woodland/ usually granitic rock or granitic soil along seeps and streams, sometimes clay/moss/ NA/ 98-5692
<i>Poa atropurpurea</i>	San Bernardino blue grass	FE/ None/ 1B.2	Meadows and seeps(mesic)/ perennial rhizomatous herb/ (Apr),May-Jul(Aug),/ 4462-8054
<i>Podistera nevadensis</i>	Sierra podistera	None/ None/ 4.3	Alpine boulder and rock field/ perennial herb/ Jul-Sep/ 9843-13123
<i>Poliomintha incana</i>	frosted mint	None/ None/ 2.3	Lower montane coniferous forest(mesic)/ perennial shrub/ Jun-Jul/ 5249-5577
<i>Polygala acanthoclada</i>	thorny milkwort	None/ None/ 2.3	Chenopod scrub, Joshua tree "woodland", Pinyon and juniper woodland/ perennial shrub/ May-Aug/ 2493-7497
<i>Polygala intermontana</i>	intermountain milkwort	None/ None/ 2.3	Pinyon and juniper woodland/ perennial shrub/ Jun-Jul/ 6594-10105
<i>Polystichum kruckebergii</i>	Kruckeberg's sword fern	None/ None/ 4.3	Subalpine coniferous forest, Upper montane coniferous forest/rocky/ perennial rhizomatous herb/ Jun-Aug/ 6890-10499
<i>Populus angustifolia</i>	narrow-leaved cottonwood	None/ None/ 2.3	Riparian forest/ perennial deciduous tree/ Mar-Apr/ 3937-5906
<i>Portulaca halimoides</i>	desert portulaca	None/ None/ 4.2	Joshua tree "woodland"(sandy)/ annual herb/ Sep/ 3281-3937
<i>Proboscidea althaeifolia</i>	desert unicorn-plant	None/ None/ 4.3	Sonoran desert scrub(sandy)/ perennial herb/ May-Aug(Sep),(Oct),/ 279-3281
<i>Prunus eremophila</i>	Mojave Desert plum	None/ None/ 1B.2	Mojavean desert scrub/granitic or rhyolitic, usually washes/ perennial deciduous shrub/ Mar-Apr/ 3199-3855
<i>Psoralethamnus arborescens</i> var. <i>arborescens</i>	Mojave indigo-bush	None/ None/ 4.3	Mojavean desert scrub, Riparian scrub/ perennial deciduous shrub/ Apr-May/ 1312-3888
<i>Psoralethamnus fremontii</i> var. <i>attenuatus</i>	narrow-leaved psoralethamnus	None/ None/ 2.3	Sonoran desert scrub(granitic or volcanic)/ perennial shrub/ Apr/ 1099-3002
<i>Puccinellia parishii</i>	Parish's alkali grass	None/ None/ 1B.1	Meadows and seeps(alkaline springs and seeps)/ annual herb/ Apr-May/ 2297-3281
<i>Pyrrocoma uniflora</i> var. <i>gossypina</i>	Bear Valley pyrrocoma	None/ None/ 1B.2	Meadows and seeps, Pebble plain/ perennial herb/ Jul-Sep/ 5249-7546
<i>Quercus turbinella</i>	shrub live oak	None/ None/ 4.3	Chaparral, Cismontane woodland, Lower montane coniferous forest, Pinyon and juniper woodland/ perennial evergreen shrub/ Apr-Jun/ 3937-6562
<i>Ribes divaricatum</i> var. <i>parishii</i>	Parish's gooseberry	None/ None/ 1A	Riparian woodland/ perennial deciduous shrub/ Feb-Apr/ 213-984
<i>Robinia neomexicana</i>	New Mexico locust	None/ None/ 2.3	Pinyon and juniper woodland(sandy)/ perennial deciduous shrub/ May-Jul/ 4921-5807

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Rupertia rigida</i>	Parish's rupertia	None/ None/ 4.3	Chaparral, Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Pebble plain, Valley and foothill grassland/ perennial herb/ Jun-Aug/ 2297-8202
<i>Sagittaria sanfordii</i>	Sanford's arrowhead	None/ None/ 1B.2	Marshes and swamps(assorted shallow freshwater)/ perennial rhizomatous herb emergent/ May-Oct/ 0-2133
<i>Saltugilia latimeri</i>	Latimer's woodland-gilia	None/ None/ 1B.2	Chaparral, Mojavean desert scrub, Pinyon and juniper woodland/rocky or sandy, often granitic, sometimes washes/ annual herb/ Mar-Jun/ 1312-6234
<i>Salvia greatae</i>	Orocopia sage	None/ None/ 1B.3	Mojavean desert scrub, Sonoran desert scrub/ perennial evergreen shrub/ Mar-Apr/ -131-2707
<i>Sanvitalia abertii</i>	Abert's sanvitalia	None/ None/ 2.3	Pinyon and juniper woodland(carbonate)/ annual herb/ Aug-Sep/ 5151-5906
<i>Schoenus nigricans</i>	black bog-rush	None/ None/ 2.3	Marshes and swamps(often alkaline)/ perennial herb/ Aug-Sep/ 492-6562
<i>Sclerocactus johnsonii</i>	Johnson's bee-hive cactus	None/ None/ 2.3	Mojavean desert scrub(granitic)/ perennial stem succulent/ Apr-May/ 1640-3937
<i>Sclerocactus polyancistrus</i>	Mojave fish-hook cactus	None/ None/ 4.2	Great Basin scrub, Joshua tree "woodland", Mojavean desert scrub/usually carbonate/ perennial stem succulent/ Apr-Jul/ 2100-7612
<i>Scleropogon brevifolius</i>	burro grass	None/ None/ 2.3	Mojavean desert scrub(decomposed granitic)/ perennial stoloniferous herb/ Oct/ 5200-5249
<i>Scutellaria bolanderi</i> ssp. <i>austromontana</i>	southern mountains skullcap	None/ None/ 1B.2	Chaparral, Cismontane woodland, Lower montane coniferous forest/mesic/ perennial rhizomatous herb/ Jun-Aug/ 1394-6562
<i>Sedum niveum</i>	Davidson's stonecrop	None/ None/ 4.2	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest/rocky/ perennial rhizomatous herb/ Jun-Aug/ 6808-9843
<i>Selaginella asprella</i>	bluish spike-moss	None/ None/ 4.3	Cismontane woodland, Lower montane coniferous forest, Pinyon and juniper woodland, Subalpine coniferous forest, Upper montane coniferous forest/granitic, rocky/ perennial rhizomatous herb/ Jul/ 5249-8858
<i>Selaginella leucobryoides</i>	Mojave spike-moss	None/ None/ 4.3	Great Basin scrub, Lower montane coniferous forest, Mojavean desert scrub, Pinyon and juniper woodland/rocky, usually carbonate/ perennial rhizomatous herb/ Jun/ 1969-10335
<i>Senecio aphanactis</i>	chaparral ragwort	None/ None/ 2.3	Chaparral, Cismontane woodland, Coastal scrub/sometimes alkaline/ annual herb/ Jan-Apr/ 49-2625
<i>Senecio astephanus</i>	San Gabriel ragwort	None/ None/ 4.3	Coastal bluff scrub, Chaparral/rocky slopes/ perennial herb/ May-Jul/ 1312-4921
<i>Senna covesii</i>	Coves' cassia	None/ None/ 2.3	Sonoran desert scrub(sandy)/ perennial herb/ Mar-Jun/ 935-3510
<i>Sidalcea hickmanii</i> ssp. <i>parishii</i>	Parish's checkerbloom	None/ SR/ 1B.2	Chaparral, Cismontane woodland, Lower montane coniferous forest/ perennial herb/ Jun-Aug/ 3281-8199

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Sidalcea malviflora</i> ssp. <i>dolosa</i>	Bear Valley checkerbloom	None/ None/ 1B.2	Lower montane coniferous forest(meadows and seeps), Meadows and seeps, Riparian woodland, Upper montane coniferous forest(meadows and seeps)/ perennial herb/ May-Aug/ 4905-8809
<i>Sidalcea neomexicana</i>	salt spring checkerbloom	None/ None/ 2.3	Chaparral, Coastal scrub, Lower montane coniferous forest, Mojavean desert scrub, Playas/alkaline, mesic/ perennial herb/ Mar-Jun/ 49-5020
<i>Sidalcea pedata</i>	bird-foot checkerbloom	FE/ SE/ 1B.1	Meadows and seeps(mesic), Pebble plain/ perennial herb/ May-Aug/ 5249-8202
<i>Sidothea caryophylloides</i>	chickweed oxytheca	None/ None/ 4.3	Lower montane coniferous forest(sandy)/ annual herb/ Jul-Sep/ 3655-8530
<i>Sisyrinchium longipes</i>	timberland blue-eyed-grass	None/ None/ 2.3	Meadows and seeps/mesic/ perennial herb/ Jun-Aug/ 6759-6759
<i>Sphaeralcea rusbyi</i> var. <i>eremicola</i>	Rusby's desert-mallow	None/ None/ 1B.2	Joshua tree "woodland", Mojavean desert scrub/ perennial herb/ Mar-Jun/ 3199-5397
<i>Sphenopholis obtusata</i>	prairie wedge grass	None/ None/ 2.3	Cismontane woodland, Meadows and seeps/mesic/ perennial herb/ Apr-Jul/ 984-6562
<i>Stipa arida</i>	Mormon needle grass	None/ None/ 2.3	Joshua tree "woodland", Pinyon and juniper woodland/carbonate/ perennial herb/ May-Jul/ 1640-8432
<i>Stipa divaricata</i>	small-flowered rice grass	None/ None/ 2.3	Pinyon and juniper woodland(gravelly, carbonate)/ perennial herb/ Jun-Sep/ 2297-9678
<i>Streptanthus bernardinus</i>	Laguna Mountains jewel-flower	None/ None/ 4.3	Chaparral, Lower montane coniferous forest/ perennial herb/ May-Aug/ 2198-8202
<i>Streptanthus campestris</i>	southern jewel-flower	None/ None/ 1B.3	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland/rocky/ perennial herb/ (Apr),May-Jul/ 2953-7546
<i>Symphotrichum defoliatum</i>	San Bernardino aster	None/ None/ 1B.2	Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Meadows and seeps, Marshes and swamps, Valley and foothill grassland(vernally mesic)/near ditches, streams, springs/ perennial rhizomatous herb/ Jul-Nov/ 7-6693
<i>Symphotrichum greatae</i>	Greata's aster	None/ None/ 1B.3	Broadleaved upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Riparian woodland/mesic/ perennial rhizomatous herb/ Jun-Oct/ 984-6594
<i>Syntrichopappus lemmonii</i>	Lemmon's syntrichopappus	None/ None/ 4.3	Chaparral, Joshua tree "woodland", Pinyon and juniper woodland/sandy or gravelly/ annual herb/ Apr-May(Jun),/ 1640-6004
<i>Taraxacum californicum</i>	California dandelion	FE/ None/ 1B.1	Meadows and seeps(mesic)/ perennial herb/ May-Aug/ 5315-9186
<i>Tetracoccus hallii</i>	Hall's tetracoccus	None/ None/ 4.3	Mojavean desert scrub, Sonoran desert scrub/ perennial deciduous shrub/ Jan-May/ 98-3937
<i>Tetradymia argyraea</i>	striped horsebrush	None/ None/ 4.3	Pinyon and juniper woodland(rocky)/ perennial deciduous shrub/ (May),Jun-Sep/ 4593-7316
<i>Teucrium glandulosum</i>	desert germander	None/ None/ 2.3	Sonoran desert scrub(rocky)/ perennial stoloniferous herb/ Apr-May/ 1312-2592

APPENDIX 4A-4B (Continued)

Plant Species Known to Occur in San Bernardino County

Scientific Name	Common Name	Status (Federal/ State/ CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)
<i>Thelypodium stenopetalum</i>	slender-petaled thelypodium	FE/ SE/ 1B.1	Meadows and seeps(mesic, alkaline)/ perennial herb/ May-Sep/ 5249-8202
<i>Thelypteris puberula</i> var. <i>sonorensis</i>	Sonoran maiden fern	None/ None/ 2.3	Meadows and seeps(seeps and streams)/ perennial rhizomatous herb/ Jan-Sep/ 164-2001
<i>Thysanocarpus rigidus</i>	rigid fringe-pod	None/ None/ 1B.2	Pinyon and juniper woodland/Dry rocky slopes/ annual herb/ Feb-May/ 1969-7218
<i>Tiquilia canescens</i> var. <i>pulchella</i>	Chocolate Mountains tiquilia	None/ None/ 3.2	Sonoran desert scrub/sometimes slopes, ridges, or washes/ perennial shrub/ Feb-May/ 820-2297
<i>Tragia ramosa</i>	desert tragia	None/ None/ 4.3	Chenopod scrub, Pinyon and juniper woodland/rocky/ perennial herb/ Apr-May/ 2953-6102
<i>Trichostema micranthum</i>	small-flowered bluecurls	None/ None/ 4.3	Lower montane coniferous forest, Meadows and seeps/mesic/ annual herb/ Jun-Sep/ 5003-7546
<i>Tripterocalyx micranthus</i>	small-flowered sand-verbena	None/ None/ 2.3	Desert dunes, Mojavean desert scrub(sandy)/ perennial herb/ Apr-May/ 1804-2805
<i>Viola pinetorum</i> var. <i>grisea</i>	grey-leaved violet	None/ None/ 1B.3	Meadows and seeps, Subalpine coniferous forest, Upper montane coniferous forest/ perennial herb/ Apr-Jul/ 4921-11155
<i>Viola purpurea</i> ssp. <i>aurea</i>	golden violet	None/ None/ 2.3	Great Basin scrub, Pinyon and juniper woodland/sandy/ perennial herb/ Apr-Jun/ 3281-8202
<i>Wislizenia refracta</i> ssp. <i>refracta</i>	jackass-clover	None/ None/ 2.3	Desert dunes, Mojavean desert scrub, Playas, Sonoran desert scrub/ annual herb/ Apr-Nov/ 1969-2625
<i>Woodsia plummerae</i>	Plummer's woodsia	None/ None/ 2.3	Pinyon and juniper woodland(granitic, rocky)/ perennial rhizomatous herb/ May-Sep/ 5249-6562
<i>Xanthisma gracile</i>	annual bristleweed	None/ None/ 4.3	Joshua tree "woodland", Mojavean desert scrub/ annual herb/ Apr-Jul(Sep),/ 4003-5102

Status Legend:

FE: Federally listed as endangered

FT: Federally listed as threatened

FC: Federal Candidate for listing

SE: State listed as endangered

ST: State listed as threatened

SR: State Rare

CRPR 1A: Plants presumed extinct in California

CRPR List 1B: Plants rare, threatened, or endangered in California and elsewhere

CRPR List 2: Plants rare, threatened, or endangered in California but more common elsewhere

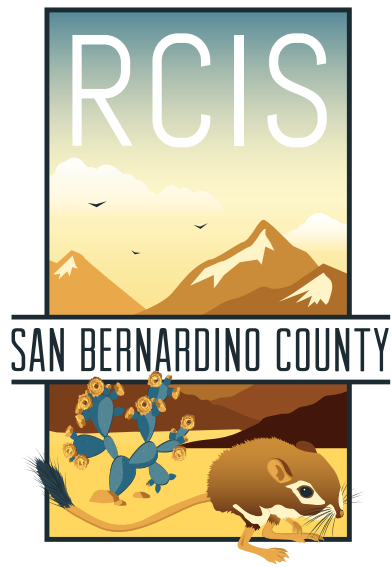
CRPR List 3: Plants about which more information is needed – a review list

CRPR List 4: Plants of limited distribution – a watch list

1 Seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)

2 Fairly endangered in California (20% to 80% of occurrences threatened)

3 Not very endangered in California (less than 20% of occurrences threatened or no current threats known).



APPENDIX G
Public Comments and Responses

Appendix G
Responses to Comments

Regional Conservation Investment Strategy (RCIS)

San Bernardino Council of Governments
1170 W. 3rd Street, 2nd Floor
San Bernardino, California 92410

October 2023

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SECTION 1.0 INTRODUCTION

The following comments were received because of the public review of the San Bernardino County Regional Conservation Investment Strategy (SBC RCIS). On April 7, 2023, San Bernardino Council of Governments (SBCOG) submitted the SBC RCIS to the California Department of Fish and Wildlife (CDFW) for the Completeness review pursuant to Fish and Game Code (FGC) section 1854(c)(2). On May 8, 2023, CDFW provided their response, and Completeness Review was deemed complete. On June 6, 2023, CDFW released the SBC RCIS for the Public Review. The public review period was from June 6, 2023 to August 4, 2023. The received public comments were considered and responded to during preparation of the final RCIS in coordination with CDFW.

SECTION 2.0 COMMENT LETTERS AND RESPONSES TO COMMENTS

LIST OF PERSONS, ORGANIZATIONS AND AGENCIES THAT COMMENTED ON THE SBC RCIS

Commenting Party	Date
Building Industry Association of Southern California (BIA)	August 3, 2023
Carol L. Blaney (CB)	August 4, 2023
California Construction and Industrial Materials Association (CalCIMA)	August 4, 2023
California Department of Transportation (Caltrans)	August 2, 2023
Center for Biological Diversity (CBD)	August 4, 2023
Desert Tortoise Council (DTC)	August 3, 2023
Endangered Habitats League (EHL)	August 1, 2023
Friends of Live Oak Canyon (FLOC)	August 1, 2023
Hills for Everyone (HFE)	August 3, 2023
Joanne Lessard (JL)	August 3, 2023
Large Scale Solar Association (LSSA)	August 4, 2023
Morongo Basin Conservation Association (MBCA)	August 4, 2023
Mohave Ground Squirrel Conservation Council (MGSCC)	August 3, 2023
O'Neil LLP	August 1, 2023
San Bernardino County Department of Public Works (SBC DPW)	July 31, 2023
SC Wildlands (SCW)	August 4, 2023
The Nature Conservancy (TNC)	August 4, 2023

Building Industry Association of Southern California Inc. (BIA) Comment Letter

Comment letter commences on the next page.

August 3, 2023

California Department of Fish & Wildlife
Habitat Conservation Planning Branch
P.O. Box 944209
Sacramento CA. 94244-2090

Sent via email to
CDFW: rcis@wildlife.ca.gov
San Bernardino County Transportation
Authority: Josh Lee:
jlee@gosbcta.com

SUBJECT: Building Industry Association of Southern California Comments on the San Bernardino County Regional Conservation Investment Strategy

To Whom It May Concern:

On behalf of the Building Industry Association of Southern California (BIA), please accept this comment letter with Attachment 1 below, outlining our concerns regarding the San Bernardino County Regional Conservation Investment Strategy (RCIS) draft. The BIA has been involved in the RCIS Working Group since its inception. We were originally told that the RCIS would help to more easily process, and provide more certainty, with California Department of Fish & Wildlife (CDFW) Section 1600 Streambed Alteration Agreements and that the RCIS would balance housing and conservation. This has not proven to be the case. Moreover, the RCIS is targeting the conservation of 621,818 acres or 54% of private land ownership within the cities of Adelanto, Apple Valley, Barstow, Big Bear Lake, Chino Hills, Colton, Fontana, Hesperia, Ontario, Rancho Cucamonga, Redlands, Victorville, Yucaipa, Yucca Valley and the County of San Bernardino. This conservation goal is excessive and arbitrary while also lacking any local planning coordination with cities pertaining to their respective Regional Housing Needs Assessment requirements.

1
2
3

The RCIS, while called voluntary, is attempting to achieve numeric regional conservation objectives on an analysis that “was done at the landscape scale and does not address habitat quality or value of specific properties or resources in particular land designations.” These numeric targets appear to be grossly overstated.

3

The BIA remains concerned that property owners and municipalities may not be aware of the magnitude of the RCIS. We do not believe that the RCIS represents local city land use priorities and potentially undermines their local control. Additional comments on the RCIS Draft are attached in Addendum 1 below. Thank you for your consideration of our comments. Please do not hesitate to contact me at carlos@biabuild.com

4

Sincerely,

Carlos Rodriguez, Chief Policy Officer, BIA

Attachment One

BIA Comments on the draft RCIS

The draft RCIS is problematic in that it was derived by first identifying an extremely large portion of San Bernardino County, which was then considered only at a “landscape scale.” Once the spatial boundaries were delineated, then essentially arbitrary percentages of the vast, identified land areas were deemed to merit being forever conserved, including over a half a million acres collectively of non-native grasses, chaparral and desert scrub that typically **do not require mitigation under CEQA**. **As such, we urge the removal of those habitats that the local land use agencies do not currently require be mitigated under CEQA from the conservation goal.**

5

To illustrate, the present draft RCIS sets forth as a “conservation goal” the preservation of 54% of the privately held lands in the high desert area of the County within the RCIS’s spatial scope. Throughout the extensive area within the RCIS’s set boundaries, the **RCIS aims to conserve 972 square miles (621,818 acres)** of privately held land located within the limits of the cities of Adelanto, Apple Valley, Barstow, Big Bear Lake, Chino Hills, Colton, Fontana, Hesperia, Ontario, Rancho Cucamonga, Redlands, Victorville, Yucaipa, Yucca Valley and in unincorporated county areas. Importantly, all of this was undertaken without any reference to the local city RHNA implications (total units) of actual residential zoning of any specific land areas that may be either (i) developed or (ii) committed to conservation.

6

Page 1-1, Background: states that stakeholder groups were formed around nine community elements. Where is the comparable analysis of these elements in the RCIS?

7

Page 1-2, Policy Principles: Principle 1 states “Increase certainty for both the preservation/conservation of habitat as well as for land development and infrastructure permitting.” We see nothing in the document that provides certainty for land development and infrastructure permitting.

8

Page 1-2, Policy Principles: Principle 2 states “Recognize that San Bernardino County needs to have a growing economy to be able to afford the acquisition and ongoing management of habitat.” The RCIS calls for 54% conservation of private lands in San Bernardino County. Please explain how this will not negatively affect the local economy.

9

Policy Principle 3: Please define the term “institutional structure.”

10

Policy Principle 4: “Conservation planning efforts should be led by a funded institutional structure that can provide champions to keep the process moving...” Please explain how this will work.

11

Policy Principle 5: Please explain the benefits of participation in the conservation planning.

12

Policy Principle 6: If the goal is to leverage existing conservation efforts, why is more than half of the private land in the County targeted for conservation?

13

Policy Principle 7: Please provide the geographic areas related to matching potential tools for conservation with unique conservation and development needs within specific subareas. We are concerned that the County and cities will be assigned numeric conservation goals in subareas.

14

Policy Principle 8: “Consider conservation planning strategies that go outside the County boundaries, if needed.” How will one County conserve land in another County?

15

Biological Principles

Principle 5: Please explain what type of “mechanisms” are available for “long term, sustainable, management and monitoring.”

16

Principle 8: Please further elaborate on the definition of “implementation mechanisms” in the context of identified conservation priority areas.

17

Page 1-3 Purpose and Need: Please revise to include housing, infrastructure and renewable energy production.

18

Section 1.6, Planning Process: Please specify that approved mitigation banks with service areas within the RCIS boundary can be used for projects within the RCIS area even if the Bank is outside of the RCIS. This is important because in Riverside County, the western Riverside Multiple Species Habitat

19

Conservation Plan (MSHCP) will not allow projects to mitigate outside of the MSHCP boundary and that has driven waters mitigation costs into the \$400k range.

19
Cont.

Section 1.7 Relationship to Other Planning: “Therefore, the SBC RCIS does not change in any way the land use policies, designations, or recommendations of other federal, state, or local planning.” However, the RCIS identifies 54% conservation. **This definitely affects local planning and the cities and the County should specifically identify where conservation is appropriate in light of housing, infrastructure, agriculture, etc.**

20

Please overlay Figures 2-5 (Land Ownership) and 2-6 (Land Designations). It is difficult to determine if there are discrepancies between the maps. Also, Figure 2-5 shows undesignated lands in yellow/buff and 2-6 shows just the underlying aerial. Please make consistent.

21

Additionally, there are a lot of checkerboard colors on these maps and it is unclear what this represents. Please check the accuracy of these maps.

22

Page 2-25: Table 2-2 shows that “nearly 85% of the Valley region in the RCIS is private lands with no public land designations.” Page 2-17, Section 2.5, states that the Valley region of the RCIS is nearly all private land (95%).” Please explain this discrepancy. Also, the Desert and Mountain percentages are slightly different.

23

Page 2-31: Existing Mitigation and Conservation Banks – It would be better to have a category for mitigation and conservation banks rather than lump them in the Local Conserved Land Inventory. These banks need to specifically be cited in the document. They carry more weight than other conserved land because of the significant habitat management that is required on these lands. Additionally, these Banks have funded endowments to manage the land for habitat values in perpetuity.

24

Page 2-33: Third paragraph of Section 2.6.2 appears to be missing a word after “approximately 1,170 acres of ... during phase 1” – of what?

25

Section 2.7 on the bottom of page 2-35 through 2-37 describe Land Uses and Reasonably Foreseeable Development. Land use and reasonably foreseeable development should hold equal weight in the document. Figure 2-8 that shows Existing and Reasonably Foreseeable Development does not show any residential or commercial development. It simply shows City boundaries, spheres of influence and community plans. **This Figure should show the planned and future development areas for the cities**

26

and the County and should be provided by them. With existing and future Regional Housing Needs Assessment (RHNA) requirements coming from the State, municipalities may be rezoning land to accommodate additional development.

26
Cont.

Figure 2-7 entitled Habitat Conservation Planning in the Region has a key header that identifies the Existing and Planned Habitat Conservation Planning. This graphic should include the Mitigation Banks currently under development.

27

Page 3-1, add the word “with” to the first sentence of this section before “CDFW RCIS Guidelines”.

28

Page 3-6 says “Although not included as a habitat linkage on Figure 3-1, the Santa Ana River and its tributaries are known to provide wildlife movement corridors.” Why were the Santa Ana River and its tributaries not included in the mapping?

29

Please explain why overlapping habitat linkages were mapped – what is the significance of this? And please explain what the habitat linkages represent on Figure 3-1. This figure maps overlapping habitat linkages and identifies a significant amount of acreage as a linkage of some level. The legend just says 1, 2, 3, 4 with no explanation?

30

Page 3-29 discusses focal species occurrences and states that “In cases where existing models were not available, the habitat areas are not the product of statistically rigorous modeling. These species habitat areas should not be used to determine where species occur or do not occur.” Isn’t it the case that most privately held parcels do not have specific data as to whether focal species occur or do not occur?

31

Table 3-4 is titled Focal Species Habitat by Region in the RCIS Area. By way of example, this table listed Least Bell’s vireo habitat as 41,999 acres and American Badger at 3,248,738 acres. It includes very large acreages for all of the species. This makes it sound like these species are living in these acreages. This information is then being used to create a focal species heat map which in turn is presumably used to justify targeted conservation acreages. Page 3-31 states that “large portions of the RCIS Area lack comprehensive species surveys”. **We believe the species occurrences are grossly over estimated.**

32

Page 3-32 discusses wildlife movement and habitat linkages and notes that wildlife movement is “inherently local and facilitated or constrained by on-the-ground features”. Please confirm we are referring to the focal species and not animals that adapt to an urban environment.

33

Page 3-35: The Public Lands Component section states that “Military and tribal lands were excluded from the analysis of conservation gaps as these lands have separate resource management programs”. Please confirm that these conservation lands are or can be included in the overall open space protection statistics for the RCIS area.

34

Page 3-39: Why was Table 3-6 revised to eliminate the columns for Target Conservation Areas and Percentages? **This is the key public disclosure information in this document and should be added back into the table.**

35

Page 3-43, Analysis Limitations, third bullet states: “This analysis was done at the landscape scale and does not address habitat quality or value of specific properties or resources in particular land designations.” However, the document goes on to very precisely define very large target conservation numbers based on this data.

36

On Page 3-45, Section 3.3, the document states “The conservation objectives related to private lands reference specific conservation priority areas on private lands and provide measurable metrics (i.e., acreage of private lands) based on the private land component of the conservation gap analysis (Section 3.2.2).” How does the acreage of private lands equate to the conservation objective? Who decided what the appropriate percentage was when the analysis does not address habitat quality or value? **We do not see an appropriate justification for conservation objectives that, for example, identify over half of the private lands in the desert region for conservation.**

37

Page 3-46 includes the objective of “protecting and managing, restoring, and/or enhancing DS habitats in 870,855 acres of undesignated private lands”. Are the cities and the County aware that so much of their collective jurisdictions are being earmarked for conservation? We have the same question about municipal awareness of conservation objectives of Dune and Playa Objective DP-1.3 (19,346 acres), Grassland Objective GRS-1.3 (17,772 acres), Riparian and Woodland (21,307 acres), Riverside Alluvial Fan Sage Scrub Objective RAFSS-1.3 1.3 (5,413 acres), Transitional Scrub, Chaparral, and Woodland Objective TSCW-1.3 (179,654 acres).

38

A financial calculation on protecting, restoring and/or enhancing over 1,093,238 acres should be prepared and publicly distributed.

39

Page 3-54, Section 3.3.7 - Developed and Agriculture – have the owners of agricultural lands in Redlands, Mentone, Yucaipa, El Mirage valley and Newberry Springs/Lower Mojave River valley been contacted about the objective of protecting, managing, or otherwise maintaining agriculture habitats over the next ten years? Has the Farm Bureau participated in the development of the RCIS? What happens if water costs become too high to farm? What happens if these areas need to be developed to meet the Governor’s mandates on housing? How would the RCIS protect, manage or maintain privately held farmland?

40

Table 3-7 instructs the reader to overlay RCIS Figure 2-5 (Land Ownership and Jurisdiction), Figure 2-6 (Land Designations), Figure 3-2 (Habitat Groups and Vegetation Communities) and Figure 3-4B (Habitat Value) to identify private/undesigned lands for acquisition. **Why was a Figure showing all of this data omitted from the RCIS? This is the graphic that private landowners and the Cities/San Bernardino County need to understand. It should be clear which lands are being targeted for conservation and this figure should also show the specific areas of housing, infrastructure and renewable energy.**

41

Table 3-7 is a very long table that “is intended to provide the conservation action toolbox for entities seeking to implement conservation actions or needing to implement mitigation in these regions.” Who are the entities that are being referenced in this sentence?

42

Table 3-7 notes that private lands should be acquired from willing sellers. Who will pay for this acquisition?

43

Table 3-7 appears to describe some of the studies and actions for mitigation. This table is too long and repetitive and needs to be simplified to allow the public to understand the key actions.

44

Additionally, the process to prepare an MCA must be identical to the process outlined for a Mitigation Bank pursuant to SB 1148.

45

Table 3-7 – it is important to note that the impact assessments and mitigation actions are duplicative of what a CEQA Biological Technical Report would require for a site to be developed.

46

Table 3-7 – please explain what climate change refugia would be for Joshua trees.

47

Table 3-7 – please explain who is envisioned to fund presence, distribution and/or abundance of focal species studies on public lands? And because we do not know presence, distribution or abundance (since we have to conduct studies to determine this), the document cannot and should not have specific conservation acreages identified.

48

Table 3-7 – calls for many studies that have no funding. It needs to be made clear that funding for studies that are in excess of what an applicant would have to do for CEQA cannot be required by a specific project. For example, DP-CA 3 states “Fund and implement studies to understand the site-specific processes related to sediment transport and deposition. The assessments should identify the sand supply, transport, and/or deposition functions of the DP system and include eolian system maps of the RCIS area, where not currently available.” **A single landowner cannot and should not be required to conduct this type of study. The RCIS must have a policy that specifically protects landowners from having to fund or conduct these surveys. The RCIS also needs to specifically state that CDFW cannot leverage applicants to conduct these studies through the Section 1600 Streambed Alteration Agreement, Incidental Take Permit process and/or CEQA comment letters.**

49
50

Table 3-7 and Section 3.5 “Consistency with Conservation Plans and Recovery Plans” appears to be duplicative. **Please remove one or the other.** It is important that the RCIS be as concise as possible to allow policy makers and the public to be able to read it and understand it easily and quickly.

51

Table 3-7, GRS-CA 1 - Please be sure that all landowners understand that the RCIS is targeting not only high-quality grassland but also non-native grassland for conservation. Grassland covers 58,257 acres according to Objective GRS-1.3 and the RCIS is calling for 50% conservation. Non-native grassland should not be included as a category of protected species by itself. By targeting non-native grasslands, a policy is ultimately created to mitigate for non-native grassland, regardless of whether it is specifically affiliated with a sensitive species.

52

Table 3-7 references the CDFW State Wildlife Action Plan (SWAP). Please delete any duplication of this Plan in the RCIS and thoroughly explain the policy implication of any referenced section of the SWAP.

53

Table 3-7, GRS-CA3 calls for control of invasive species in grasslands. Non-native grasslands are invasive. Control of invasive grasses is extremely difficult, if not impossible, and many restoration specialists have concluded that limited resources are better spent elsewhere. The RCIS should not set up a condition of removal of non-native grasses.

54

Table 3-7. RW-CA1 – We fail to see the cost/benefit of fluvial geomorphology studies, water quality assessments, and biological surveys in riparian and wetland habitats in conserved public land. Rivers, streams, creeks and channels cannot be removed under U.S. Army Corps of Engineers Section 404, California Department of Fish & Wildlife Section 1602 and Regional Water Quality Control Board Section 401 requirements. **Conducting expensive studies on habitat that is already protected by permitting requirements does not seem to be the best priority.**

55

Removal of invasive vegetation is a simpler way to protect the health of a system. The management actions in the entire RCIS need to be based on the reality of the funding available and create a hierarchy of actions that allow for the maximum cost/benefit. Studies, monitoring, success standards, etc. all sound great, but the necessary revenue to do this is significant. **By piling on too many actions, conservation becomes too expensive and is set up for failure.**

56

SBKR Mitigation Banks are plentiful and are looking to sell their credits. By definition, they are managing the land for the protection of the species. Asking public agencies to implement management activities in public lands to enhance habitat quality by conducting expensive studies to determine presence, distribution and/or abundance seems excessive. SBKR has designated critical habitat and all projects that would impact occupied habitat are required to conduct studies. This can be said for most, if not all, of the Focal Species. **The RCIS needs to acknowledge this and focus on high level, common-sense regional priorities rather than identifying actions that duplicate efforts. And rather than a 58-page table of requirements, create a concise action plan that a person can read and understand in a matter of minutes.**

57
58

Page 3-116, Guidelines for Prioritizing Actions states that Table 3-7 “provides a valuable synthesis of the suite of actions available for the conservation and mitigation that would contribute towards achieving regional conservation objectives for the conservation elements.” **We disagree. The RCIS goes from macro level mapping to precise acreages of conservation objectives and from regional conservation objectives to very precise objectives that create a cost-prohibitive set of actions.**

59

We suggest removing Table 3-7 in its entirety and replacing it with a much simpler set of Guiding Principles.

60

Please provide a cost estimate of the entire Conservation Actions Summary (Table 3-7).

61

Section 3.4.2 Guidelines for Prioritizing Actions identifies priority areas based on various resources. The Desert Region Habitat Value Mapping is based on the Conservation Framework Map created by CDFW, USFWS, BLM and the California Energy Commission. **We note that cities and the County do not seem to be parties to this map. The RCIS requires that development and infrastructure be given equal priority. Prioritization of actions needs to be based on the reality of funding and the Cities, County, building industries and infrastructure providers.**

62

The Mountains and Valley Region Habitat Value Mapping described on page 3-116-117 says that areas with three or more overlaying habitat factors were mapped as areas of moderate to high habitat value in the Mountain and Valley regions. Why three factors? Why Focal species occurrences not just on the land but within a 400-foot buffer? Where did this buffer come from and what is the basis for it? How would vegetation communities be one of the three factors? And the focal species mapping is so overbroad as to be inaccurate. **This is another example of going from a macro analysis to a very precise objective.**

63

We appreciate the last sentence of this section that states: “Conservation/mitigation and land use decisions depend on a variety of considerations that are unique to each situation, and Figures 3-4A and 3-4B are intended only to provide landscape-scale guidance to consider when making conservation and mitigation decisions in the RCIS area.” **While we believe that Figures 3-4A and 3-4B require a significant amount of vetting and refinement, the fact that there are a variety of considerations for each project underscores why the RCIS should not have specific numeric targets for conservation.**

64

Table 3-8 explains how the RCIS is consistent with the existing Santa Ana River Wash HCP. Again, the HCP should control and the RCIS should not duplicate the effort of this HCP.

65

The section on Recovery Plans should also be deleted. It is duplicative and these plans should control for the areas and species they reflect. A long discussion on this seems unnecessary and further complicates the document.

66

Section 3.6, Adaptive Management and Monitoring Strategy Framework should be deleted and instead the MCA should follow SB 1148 requirements and not create a new set of duplicative requirements for mitigation credits.

67

Section 4, Implementation Framework, states that “Following CDFW approval of the SBC RCIS, it will be available for use by the public agencies, the development community, environmental groups, other interested entities, and the public to inform the implementation of conservation and mitigation actions in the RCIS area.” **The RCIS must demarcate areas of future development, including infrastructure. This Plan must balance the competing interests in the County if it is to be successful.**

68

Section 4 should remind the reader that the RCIS is not to be analyzed in CEQA documents.

69

Section 4.2 – Adaptive Management and Monitoring Strategy Implementation creates a new process to monitor MCAs and track and report on the CGO’s. Mitigation banks should not be required to do this. The banks should only be required to report per SB 1148. **If the RCIS is voluntary and non-regulatory, why are we adopting adaptive management and how will the county and cities be notified of what is being adapted?**

70

Section 4.3 Mitigation Credit Agreement Development. Mitigation credits should only be allowed through approved Mitigation Banks pursuant to SB 1148. Anything less will create an unfair playing field and water down the entire banking system in CA. **There is no reason for the RCIS Implementation Team to oversee mitigation credits when CDFW has a process to do this already.**

71

Section 4.4 states that ongoing RCIS updates will occur. There are species databases that are regularly updated that the environmental consulting industry uses. **Why are we duplicating this effort by updating the RCIS data?** Why are we compiling data and reporting on mitigation credit agreements instead of relying on established programs? This is money wasted that could go to conservation objectives.

72

Section 4.6 states that RCIS Amendments may be proposed with the written support of the original proponents. Why is that distinction being made – only original proponents?

73

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Response to Building Industry Association of Southern California Inc. (BIA) Comment Letter - Carlos Rodriguez dated August 3, 2023

Response to BIA Comment 1

San Bernardino Council of Governments (SBCOG) and the County of San Bernardino (County) acknowledge and appreciate the BIA's involvement throughout the SBC RCIS development process. With regard to balancing housing and conservation and providing more certainty and ease of processing for California Department of Fish and Wildlife (CDFW) streambed alteration agreements, the SBC RCIS, as stated in Section 1.3 (Intended Uses), is "intended to provide a regional biological conservation guidebook to public agencies, the development community, environmental groups, other interested entities, and the public for science-based nonbinding and voluntary conservation and mitigation actions in San Bernardino County." Once approved by CDFW, the mitigation actions in the SBC RCIS could be used to streamline CDFW processing of streambed alteration agreements.

Response to BIA Comment 2

Comment pertains to conservation targets and balance of housing and conservation. As stated throughout the SBC RCIS, it is a nonbinding and voluntary program developed consistent with the CDFW RCIS Guidelines. With regard to the development of measurable objectives and conservation targets, the SBC RCIS was developed consistent with the California Fish and Game Code, which calls for a description of the general amounts and types of habitat that if conserved could achieve the conservation objectives, and the CDFW RCIS Guidelines, which states that the objectives shall be specific and measurable. SBC RCIS Section 3.2 provides a conservation inventory that identifies the acreage of unprotected lands on public and private lands by habitat group. California Fish and Game Code Section 1852(c)(9) specifies that an RCIS include "a description of the general amounts and types of habitat that, if preserved or restored and permanently protected, could achieve the conservation goals and objectives," and the SBC RCIS states that "implementation of any amount of the SBC RCIS actions identified in SBC RCIS Section 3.4.1 would contribute toward meeting these conservation goals and objectives." SBC RCIS Section 3.3 provide conservation objectives that are specific and measurable by providing an estimated number of acres by habitat group and specific conservation priority areas in each objective where the actions should be focused on public lands and private lands in the RCIS area.

Response to BIA Comment 3

As stated throughout the SBC RCIS, it is a nonbinding and voluntary program developed consistent with the CDFW RCIS Guidelines. See Response to BIA Comment 2.

Response to BIA Comment 4

As stated throughout the SBC RCIS, it is a nonbinding and voluntary program, and nothing in the SBC RCIS undermines local land use priorities or local control (California Fish and Game Code Section 1855(a)). As described in SBC RCIS Section 1.6 (Planning Process), extensive outreach has been conducted with municipalities, public agencies, and the public throughout the planning process.

Response to BIA Comment 5

Comment pertains to arbitrary percentages for conservation of non-native grasses, chaparral, and desert scrub. The percentages mentioned in this comment are from an earlier version of the document and were not present in the Public Draft SBC RCIS and are not included in the Final RCIS. Additionally, see Response to BIA Comment 2. Additionally, as stated in the SBC RCIS: As a voluntary and nonregulatory document, the RCIS shall not require conservation of vegetation that does not currently require mitigation under CEQA by the local lead agency, including desert scrub, transitional scrub, chaparral, and woodland, and non-native grasslands or other habitats that do not support focal species.

Response to BIA Comment 6

Comment pertains to conservation goals. The percentages mentioned in this comment are from an earlier version of the document and were not present in the Public Draft SBC RCIS and are not included in the Final RCIS. Additionally, see Response to BIA Comment 2.

Response to BIA Comment 7

As described in SBC RCIS Section 1.1 (Background), the Environmental Element Group served as the stakeholder group during early habitat conservation planning phases and during development of the SBC RCIS and was formed during the County's Countywide Vision effort along with eight other community elements. The SBC RCIS was developed consistent with the CDFW RCIS Guidelines that do not require a comparable analysis of each of these elements, and a number of these elements are not relevant to development of an RCIS.

Response to BIA Comment 8

Comment pertains to the policy principles described in SBC RCIS Section 1.1 (Background). These principles were included to provide background and context for the planning process. These principles were established and published during early habitat conservation planning phases by the Environment Element Group prior to preparation of the SBC RCIS.

Response to BIA Comment 9

See response to BIA Comment 8.

Response to BIA Comment 10

See response to BIA Comment 8.

Response to BIA Comment 11

See response to BIA Comment 8.

Response to BIA Comment 12

See response to BIA Comment 8.

Response to BIA Comment 13

See response to BIA Comment 8.

Response to BIA Comment 14

See response to BIA Comment 8.

Response to BIA Comment 15

See response to BIA Comment 8.

Response to BIA Comment 16

Comment pertains to the biological principles described in SBC RCIS Section 1.1 (Background). These principles were included to provide background and context for the planning process. These principles were established and published during early habitat conservation planning phases by the Environment Element Group prior to preparation of the SBC RCIS.

Response to BIA Comment 17

See response to BIA Comment 16.

Response to BIA Comment 18

The SBC RCIS purpose and need (Section 1.3) was developed consistent with the purpose of CDFW's RCIS program with direction from the SBCOG, County, Environment Element Group. The purpose and need statements include reference to enhancing streamlining and predictability of land development processes; however, CDFW's RCIS program is not for planning housing, infrastructure, and renewable energy production.

Response to BIA Comment 19

Comment requests that information regarding mitigation bank service areas be added to SBC RCIS Section 1.6 (Planning Process). This addition is not relevant to the RCIS planning process described in this section. Section 1.7 (Relationship to Other Planning) specifically states that "mitigation/conservation banks and in-lieu fee programs are not affected by the RCIS program. Additionally in accordance with the CDFW RCIS Guidelines, SBC RCIS Section 2.6 (Other Resource Conservation and Management Plans and Programs) describes the mitigation and conservation banks relevant to the SBC RCIS; however, mitigation bank services areas do not specifically need to be described.

Response to BIA Comment 20

The SBC RCIS is a nonbinding and voluntary program developed consistent with the CDFW RCIS Guidelines, and as stated in SBC RCIS Section 1.7 (Relationship to Other Planning), would not change land use policies, designations, or recommendations of other federal, state, or local planning (California Fish and Game Code Section 1855(a)). The percentages mentioned in this comment are from an earlier version of the document and were not present in the Public Draft SBC RCIS and are not included in the Final RCIS. Additionally, see Response to BIA Comment 2 and Response to BIA Comment 5.

Response to BIA Comment 21

The land ownership and land designation figures (SBC RCIS Figure 2-5 and Figure 2-6) were developed using consistent data sources, as are described in the document. Figure 2-5 has been revised to use consistent symbology for undesignated lands.

Response to BIA Comment 22

The land ownership and land designation maps (SBC RCIS Figure 2-5 and Figure 2-6) and associated legends clearly indicate what is represented by the associated symbologies.

Response to BIA Comment 23

As noted by the comment, the acreage of land ownership identified as private lands in the Valley region (SBC RCIS Table 2-1) is higher than the acreage of undesignated private lands shown in SBC RCIS Table 2-2. The acreage of private lands reported in Table 2-1 is based strictly on land ownership information. Certain land designations, including local conserved lands, other parks and open space, San Bernardino County Flood Control District lands, include private lands with designations and/or easements over them; therefore, the undesignated private lands acreage is less than the acreage of private land ownership.

Response to BIA Comment 24

Consistent with CDFW RCIS Guidelines, existing mitigation and conservation banks are described in SBC RCIS Section 2.6 (Other Resource Conservation and Management Plans and Programs). As noted in the comment, mitigation and conservation banks were grouped with other conserved lands (e.g., lands with conservation easements held by land trusts) for the purpose of mapping and acreage summaries.

Response to BIA Comment 25

Comment notes a typo in Section 2.6.2 (Upper Santa River Wash Habitat Conservation Plan). This section has been revised.

Response to BIA Comment 26

The CDFW RCIS Guidelines and RCIS requirements specify that an RCIS should be developed in consideration of major water, transportation, and transmission infrastructure facilities; urban development areas; and city, county, and city and county general plan designations that account for reasonably foreseeable development of major infrastructure facilities including renewable energy and housing. The SBC RCIS uses incorporated city boundaries, spheres of influence, and County community plan areas to consider where existing and reasonably foreseeable residential, commercial, and industrial land uses are likely to be focused in the RCIS Area. Additionally, this section describes California's Housing Element Law and Regional Housing Needs Allocation (RHNA) process, and specifically states that the SBC RCIS is a voluntary, nonregulatory framework that would not prevent or preclude housing development or otherwise change the capacity of the County or cities in the RCIS Area to accommodate its fair share of the RHNA allocation.

Response to BIA Comment 27

Figure 2-7 (Habitat Conservation Planning in the Region) is a map showing the existing and planned habitat conservation planning areas in the RCIS Area and surrounding region, which is provided consistent with the CDFW RCIS Guidelines. Mitigation and conservation banks are described in SBC RCIS Section 2.6 (Other Resource Conservation and Management Plans and Programs) and not appropriate for showing on this figure as requested by the comment.

Response to BIA Comment 28

Comment notes a typo in the introduction to Section 3 (Conservation Strategy). This section has been revised.

Response to BIA Comment 29

The Santa Ana River and its tributaries are mapped as habitat linkages on Figure 3-1. Statement noted in comment that the Santa Ana River is not included on the figure has been removed.

Response to BIA Comment 30

In response to the comment about providing clarity regarding the significance of overlapping mapped habitat linkages, the habitat connectivity and wildlife movement subsection in SBC RCIS Section 3.1.1 has been augmented with additional detail and Figure 3-1 (Habitat Linkages) has been revised to provide greater clarity.

Response to BIA Comment 31

Comment notes that the SBC RCIS Section 3.1.3.2 (Focal Species) states that species habitat areas should not be used to determine where species occur or do not occur, and comments that most private held lands do not have specific data as to whether focal species occur or do not occur. Available species occurrence data does have an inherent limitation that it only provides information for areas where such species surveys have been conducted; however, the section referenced in the comment relates to the focal species habitat dataset, which includes habitat coverages that represent a reasonable approximation of the potentially suitable habitat areas for each Focal Species in the RCIS Area developed based on existing information (e.g., habitat associations) for each species that do not require parcel-specific or comprehensive survey data.

Response to BIA Comment 32

Comment pertains to Table 3-4 (Focal Species Habitat by Region in the RCIS Area) and contends that the acres listed for each species and the related Focal Species Habitat Heat Map (Figure 3-3) grossly overestimate species occurrences. As described in Response to BIA Comment 31, the acreages and map are based on potential habitat areas for the Focal Species, and the document does not state that the species occupy all of the acreage shown in the Table. Suitable habitat models and habitat association mapping are common tools used for regional conservation planning, and these tools were used in the

SBC RCIS consistent with the CDFW RCIS Guidelines.

Response to BIA Comment 33

Comment seeks clarification on the statement that wildlife movement is “inherently local and facilitated or constrained by on-the-ground features” and whether this refers to the Focal Species or more generally to other animals that adapt to an urban environment. Pursuant to the CDFW RCIS Guidelines, an RCIS addressed conservation elements that are required to include Focal Species but may also include other conservation elements. As described in Section 3.1 (Conservation Elements), the SBC RCIS addresses the Focal Species and vegetation communities, and important landscape processes and features including habitat connectivity and wildlife movement. Habitat connectivity and wildlife movement is important for maintaining populations of the Focal Species as well as other non-focal wildlife species.

Response to BIA Comment 34

Comment relates to the public land component of the conservation analysis that excluded military and tribal lands. As the document notes, military and tribal lands have separate resource management programs and were not the focus of the conservation objectives or actions under the SBC RCIS; therefore, it was appropriate to remove these acreages from the conservation inventory. These lands can and do provide habitat value for the conservation elements in the region, but were not a focus of the conservation strategy. There is very little tribal land in the RCIS Area. SBC RCIS Section 2.6 (Other Resource Conservation and Management Plans and Programs) describes the Department of Defense Integrated Natural Resource Management Planning and Readiness and Environmental Protection Integration.

Response to BIA Comment 35

Comment pertains to the conservation inventory provided in Table 3-6. See Response to BIA Comment 2. The SBC RCIS was developed consistent with the California Fish and Game Code and CDFW RCIS Guidelines. The percentages mentioned in this comment are from an earlier version of the document and were not present in the Public Draft SBC RCIS and are not included in the Final RCIS. California Fish and Game Code Section 1852(c)(9) specifies that an RCIS include “a description of the general amounts and types of habitat that, if preserved or restored and permanently protected, could achieve the conservation goals and objectives.” The SBC RCIS provides an inventory of conserved and non-conserved lands and states that “implementation of any amount of the SBC RCIS actions identified in SBC RCIS Section 3.4.1 would contribute toward meeting these conservation goals and objectives.”

Response to BIA Comment 36

Comment notes that the document identifies limitations of the conservation analysis done at a landscape scale, yet uses that analysis to define large target conservation numbers. See Response to BIA Comment 2, BIA Response to Comment 5, and Response to BIA Comment 35.

Response to BIA Comment 37

Comment pertains to conservation targets and measurable objectives. See Response to BIA Comment 2, BIA Response to Comment 5, and Response to BIA Comment 35.

Response to BIA Comment 38

Comment pertains to measurable objectives. See Response to BIA Comment 2, BIA Response to Comment 5, and Response to BIA Comment 35.

Response to BIA Comment 39

Comment contends that a financial calculation should be prepared and publicly distributed on the cost for the habitat protection, restoration, and enhancement identified in the document. As stated throughout the SBC RCIS, it is a nonbinding and voluntary program developed consistent with the CDFW RCIS Guidelines. Implementation is voluntary and no such cost estimate for implementation is required.

Response to BIA Comment 40

Comment relates to the objective for protecting, managing, or otherwise maintaining agricultural habitats and what happens if the cost is too high to farm or the land is needed for housing. As stated throughout the SBC RCIS, it is a nonbinding and voluntary program that would not otherwise preclude or prevent landowners from changing land uses on farmlands.

Response to BIA Comment 41

Comment contends that the figures (Figure 2-5, Figure 2-6, Figure 3-2, and Figure 3-4B) referenced in SBC RCIS Table 3-7 (RCIS Actions Summary) should be combined so that it is clear the lands being targeted for conservation relative to housing, infrastructure, and renewable energy. Table 3-7 is intended to provide an action toolbox and describes how the information in the SBC RCIS can be used to facilitate the identification and implementation of actions. The SBC RCIS is a nonbinding and voluntary program and does not target specific parcels for conservation.

Response to BIA Comment 42

Comment relates to SBC RCIS Table 3-7 (RCIS Actions Summary) and who are the intended entities that would use it. As stated in SBC RCIS Section 1.3 (Intended Uses), this information could be used by public agencies, the development community, environmental groups, other interested entities, and the public to identify conservation and mitigation actions for the Focal Species and other conservation elements in the RCIS Area; however, the RCIS is not required to identify or specify these entities.

Response to BIA Comment 43

Comment seeks clarification on who would fund acquisition of private lands from willing sellers. Acquisition of private lands from willing sellers could be funded through a variety of sources, including entities (e.g., County, cities, districts, and private developers) needing mitigation land to fulfill compensation requirements for project impacts and conservation entities (e.g., land trusts) seeking to expand their conservation holdings.

Response to BIA Comment 44

Comment contends that the SBC RCIS Table 3-7 (RCIS Actions Summary) is too long and repetitive and recommends it be simplified. The table is organized by habitat group so that users can find the particular resource of interest and see all actions available for that resource. Although this results in some repetition and length, the habitat group organization structure is consistent throughout the conservation strategy and was the best approach to use for the toolbox.

Response to BIA Comment 45

The process to prepare a Mitigation Credit Agreement, as described in SBC RCIS Section 4.3, is based on the guidelines established by CDFW for Mitigation Credit Agreements, which is separate from SB 1148 mentioned in the comment pertaining to mitigation banks.

Response to BIA Comment 46

Comment contends that the mitigation actions in SBC RCIS Table 3-7 (RCIS Actions Summary) are duplicative of what a CEQA Biological Technical Report would require for a site to be developed. Many of the actions in Table 3-7 are actions that could be used to mitigate project impacts under CEQA, as well as actions that could be used to fulfill federal and state permit requirements associated with project development. As allowed under an approved RCIS, Table 3-7 also identifies potential actions that could be implemented on public lands and actions that would benefit wildlife movement, which provides additional mitigation opportunities not typically used to fulfill CEQA or permitting requirements.

Response to BIA Comment 47

Comment requests an explanation of what climate change refugia would be for Joshua tree, as referenced in Table 3-7. Climate change refugia are areas that remain relatively buffered from the effects of climate change, for example in terms of temperature or precipitation extremes. SBC RCIS Section 3.1.1 describes other important landscape features, including the San Bernardino Mountain foothills and other desert mountain ranges that are “along elevational gradients that can provide refugia and allow for species adaptation to changing climate conditions”.

Response to BIA Comment 48

Comments seeks explanation on who would fund presence, distribution and/or abundance studies for focal species on public lands. Unique to an approved RCIS, actions and mitigation opportunities could be identified and implemented on public lands in coordination with the appropriate public agencies. If such opportunities were identified, entities (e.g., County, cities, districts, and private developers) could fund studies as part of implementing the proposed mitigation actions on public lands to meet their mitigation obligations under CEQA or other permits. Conservation entities (e.g., land trusts, environmental groups) could also fund studies on public lands in coordination with the appropriate public land agencies. With regard to the portion of the comment regarding conservation acreages, the SBC RCIS conservation objectives were developed to meet the requirement to be specific and measurable, consistent with the CDFW RCIS Guidelines. See Response to BIA Comment 2, BIA Response to Comment 5, and Response to BIA Comment 35.

Response to BIA Comment 49

Comment pertains to various studies identified in Table 3-7 that have no funding. The SBC RCIS is nonbinding and voluntary. None of the actions in Table 3-7 are required to be implemented; however, should an entity (e.g., County, cities, districts, and private developers) have mitigation obligations under CEQA or federal or state permit requirements, the actions in Table 3-7 could be proposed by that entity to fulfill those obligations.

Response to BIA Comment 50

Comment states that the RCIS needs to state the CDFW cannot leverage applicants to conduct studies identified in Table 3-7. SBC RCIS Section 1.3 (Intended Uses) specifically incorporates the California Fish and Game Code sections that state that (1) an RCIS shall not affect the authority or discretion of any public agency and shall not be binding upon public agencies other than parties to a mitigation credit agreement. Nothing in this chapter increases or decreases the authority or jurisdiction of the [CDFW] regarding any land use, species, habitat, area, resource, plan, process, or corridor. Regional conservation investment strategies are intended to provide scientific information for the consideration of public agencies. Nothing in this chapter or any other provision of law requires any public agency, other than a public agency that is party to a mitigation credit agreement, to adopt, implement, or otherwise adhere to a regional conservation investment strategy; and (2) an RCIS shall not require a project proponent seeking to provide compensatory mitigation pursuant to [FGC] Section 1602, 2080.1, 2081, or 2835 or the California Environmental Quality Act to undertake conservation actions or habitat enhancement actions identified in a regional conservation investment strategy; implement, contribute to, fund, or otherwise comply with the actions described in a regional conservation investment strategy; require or otherwise compel a project proponent to enter into a mitigation credit agreement; or use or purchase mitigation credits established pursuant to this chapter to satisfy the compensatory mitigation requirements.

Response to BIA Comment 51

Comment pertains to the perceived duplicative nature of SBC RCIS Section 3.5 (Consistency with Conservation Plans and Recovery Plans) and Table 3-8 (previously Table 3-7; SBC RCIS Consistency with Santa Ana River Wash HCP). Pursuant to the CDFW RCIS Guidelines, Section 3.5 as well as Table 3-8 are necessary for a complete RCIS.

Response to BIA Comment 52

Comment relates to conservation objectives for grasslands and contends that only high-quality grassland should be targeted and not all non-native grasslands. Grasslands is a habitat group used in the SBC RCIS and is known to provide habitat for a variety of special-status Focal Species, and there could be instances where species mitigation is required and grassland habitat actions could fulfill that species mitigation. The SBC RCIS is voluntary and nonbinding. It does not create policy that mitigation is required for grassland vegetation, but it does identify opportunities for actions related to grassland habitats. Objective GRS-1.3 uses language such as “reduce the threat of habitat loss for Focal Species that utilize GRS habitats” and conserve priority areas in “contiguous, intact areas supporting grassland in the RCIS Area supporting Focal Species or contributing to habitat connectivity”.

Response to BIA Comment 53

Comment requests that the SBC RCIS delete duplication of information from the CDFW State Wildlife Action Plan (SWAP) and explain the policy implications of references to the SWAP. As described in the SBC RCIS, it was developed consistent with the CDFW RCIS Guidelines. Those guidelines state that “An RCIS’s conservation purpose should align with the goals and objectives of the current version of the California State Wildlife Action Plan (SWAP)”. Additionally, those guidelines state that Focal Species selected for an RCIS shall consist of a range of species with conservation needs within the RCIS area, including climate-vulnerable species listed in the SWAP. Since the SBC RCIS was developed consistent with the CDFW RCIS Guidelines, it would not be appropriate to delete reference to the SWAP.

Response to BIA Comment 54

Comment relates to Action GRS-CA3 for control of invasive species in grasslands. It is acknowledged that non-native grasslands are comprised of non-native species, but many of these non-native grass species are naturalized in California’s grasslands and do continue to provide habitat value for Focal Species. This action is intended to identify an option for enhancing grassland habitat value where aggressive, invasive species are degrading grasslands, including non-native grasslands, such that habitat quality has decreased and would benefit from implementing control activities. It is not the intent of the action to control common non-native grass species within grasslands.

Response to BIA Comment 55

Comment contends that conducting studies related to riparian and wetlands on public lands should not be a priority since these are already conserved on public lands and by existing regulations. It is acknowledged that resources within public land designations have some level of protection/management and that federal and state agencies have jurisdiction over these resources under existing regulations. As is allowed under an approved RCIS, actions could be implemented to enhance habitat quality for these resources on public lands beyond which is provided by the existing management regime on those lands. This could allow the option of getting mitigation credit for implementing actions on public lands without having to acquire or otherwise protect the land, which is a mitigation option not typically available outside of an approved RCIS.

Response to BIA Comment 56

Comment contends that the management actions in the entire RCIS need to be based on funding available to allow for maximum cost/benefit and that having too many actions makes conservation too expensive and set up for failure. The list of actions identified in SBC RCIS Table 3-7 comprise the full suite of available action options, and as noted in the introduction to the table, “the selection of the appropriate actions...will depend on the specific conservation or mitigation need in each situation”. As noted throughout the SBC RCIS, it is voluntary and nonbinding. Funding for implementing actions would be provided by the entity seeking to implement mitigation or conservation and they may consider the costs of those actions.

Response to BIA Comment 57

It is acknowledged, as the comment notes, that there are existing mitigation/conservation banks with available credits for San Bernardino kangaroo rat. The SBC RCIS does not ask public agencies to implement management activities in public lands, as the comment contends. The SBC RCIS identifies action options that could be available.

Response to BIA Comment 58

Comment suggests that a concise action plan with regional priorities be created as opposed to Table 3-7 that lists all available action options. The SBC RCIS was developed consistent with the CDFW RCIS Guidelines, which states that an “RCIS shall identify conservation actions or habitat enhancement actions that support the RCIS’s conservation goals and objectives for focal species and other conservation elements. In order to adhere to these guidelines, all potential available actions are provided in Table 3-7 organized by habitat groups for the Focal Species and other conservation elements.

Response to BIA Comment 59

Comment disagrees with the statement that SBC RCIS Table 3-7 provides a valuable synthesis of available actions, and references the process of using regional data to establish conservation objectives to identify actions. The SBC RCIS was developed consistent with the CDFW RCIS Guidelines, which specifies the process of using regional data to develop conservation objectives and actions.

Response to BIA Comment 60

Comment suggests replacing Table 3-7 with guiding principles. See Response to BIA Comment 58. The SBC RCIS was developed consistent with the CDFW RCIS Guidelines, which requires identification of specific actions.

Response to BIA Comment 61

Comment requests that a cost estimate be provided for all of the actions in Table 3-7. See Response to BIA Comment 56. As noted throughout the SBC RCIS, it is voluntary and nonbinding. Implementation of all of the actions in Table 3-7 is not required; it is intended to provide the suite of options available. A cost estimate for all actions is not required.

Response to BIA Comment 62

Comment references the desert region habitat value mapping, which was based on existing published data from federal and state agencies. CDFW RCIS Guidelines state that RCIS’s be developed from existing information, and this existing data was used for this mapping with direction from the RCIS Steering Committee and Environment Element Group members. Comment also contends that the RCIS requires that development and infrastructure be given equal priority. See Response to BIA Comment 26. The SBC RCIS was developed consistent with the CDFW RCIS Guidelines and California Fish and Game Code, which states that an RCIS will be developed in “consideration of major water, transportation and transmission infrastructure facilities, urban development areas, and city, county, and city and county general plan designations that accounts for reasonably foreseeable development of major infrastructure facilities, including, but not limited to, renewable energy and housing in the strategy area.”

Response to BIA Comment 63

Comment references the mountain and valley region habitat value mapping, which was developed from existing data on focal species occurrences, habitat, vegetation communities, USFWS critical habitat, hydrologic features, land forms, and CDFW terrestrial climate change resilience rank mapping. Consistent with CDFW RCIS Guidelines, these existing data sources were used to indicate moderate to high habitat value to provide “landscape-scale guidance to consider when making conservation and mitigation decisions in the RCIS Area.” With regard to specific comments on process for overlaying these layers to identify moderate to high biological value mapping in the Mountain and Valley regions, this

habitat value mapping process was originally developed in the preliminary draft SBC RCIS published to the public in 2018. The 2018 preliminary draft document mapped each of the prioritization factors used and also included a map of aggregated conservation prioritization that categorized the map into 4 categories: low (0 or 1 overlapping factors), moderate (2 or 3 overlapping factors), high (4 or 5 overlapping factors), or very high (6 or greater factors). With guidance from the Steering Committee and Environment Element Group members, the habitat value mapping in the public draft SBC RCIS collapsed the map into a single category referred to as moderate to high habitat value, and the moderate to high was considered anything with 3 or greater factors excluding areas mapped as developed and disturbed land. This latest modification to the habitat value mapping simplified the map and also excluded lands with only 2 overlapping factors as well as lands that are developed or disturbed. With regard to the specific comment on species occurrence buffer distance, the species occurrence factor is a point dataset and these points were collected with a range of geospatial accuracy and precision. CDFW California Natural Diversity Database uses buffer distances on point data to account for various accuracy and precision discrepancies, ranging from 80 meters (262 feet) or 0.1 mile (520 feet) up to 5 miles. In order to create polygons from the point data and to account for accuracy and precision in the data, the species occurrence points were buffered 400 feet.

Response to BIA Comment 64

Comment contends that the RCIS should not have species numeric targets for conservation. See Response to BIA Comment 2, BIA Response to Comment 5, and Response to BIA Comment 35.

Response to BIA Comment 65

Comment is related to SBC RCIS Table 3-8 on RCIS consistency with the Santa Ana River Wash HCP. This table demonstrating consistency with this approved HCP is required for consistency with the CDFW RCIS Guidelines.

Response to BIA Comment 66

Comment is related to SBC RCIS description of consistency with the USFWS Recovery Plans. This description demonstrating consistency with Recovery Plans is required for consistency with the CDFW RCIS Guidelines.

Response to BIA Comment 67

Comment suggests deleting SBC RCIS Section 3.6 (Adaptive Management and Monitoring Strategy Framework) and not be duplicative of the process used for mitigation/conservation banks. SBC RCIS 3.6 is a required element of an RCIS if Mitigation Credit Agreements are to be allowed in the future under the approved RCIS, pursuant to California Fish and Game Code and the CDFW RCIS Guidelines. Additionally, see response to BIA Comment 45.

Response to BIA Comment 68

Comment suggests that the RCIS must demarcate areas of future development and balance competing interests. The SBC RCIS was developed consistent with CDFW RCIS Guidelines and California Fish and Game Code, which does not require what is suggested in this comment. See also Response to BIA Comment 26.

Response to BIA Comment 69

With regard to this comment that the SBC RCIS should state the RCIS is not to be analyzed in CEQA documents, the SBC RCIS was developed consistent with the California Fish and Game Code, and SBC RCIS Section 1.3 (Intended Uses) specifically states: “the approval or existence of a regional conservation investment strategy, mitigation credit agreement, or credit pursuant to this chapter shall not ... constitute any of the following, for the purposes of the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code): (A) A plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. (B) A local policy or ordinance

protecting biological resources. (C) An adopted local, regional, or state habitat conservation plan” and that “a project proponent seeking to provide compensatory mitigation pursuant to [FGC] Section 1602, 2080.1, 2081, or 2835 or the California Environmental Quality Act to undertake conservation actions or habitat enhancement actions identified in a regional conservation investment strategy; implement, contribute to, fund, or otherwise comply with the actions described in a regional conservation investment strategy; require or otherwise compel a project proponent to enter into a mitigation credit agreement; or use or purchase mitigation credits established pursuant to this chapter to satisfy the compensatory mitigation requirements.”

Response to BIA Comment 70

Comment questions why adaptive management is being adopted. As stated throughout the SBC RCIS, it is voluntary and nonbinding and nothing in the SBC RCIS is being adopted. As described in Section 4 (Implementation Framework), if one or more Mitigation Credit Agreements are developed within the SBC RCIS, certain implementation activities would be required including coordinating with MCA developers on the effectiveness of management and monitoring. Additionally, see response to BIA Comment 45.

Response to BIA Comment 71

Comment relates to SBC RCIS Section 4.3 (Mitigation Credit Agreement Development). This section is specific to Mitigation Credits Agreements and does not apply to mitigation/conservation banks, and was developed consistent with CDFW RCIS Guidelines.

Response to BIA Comment 72

Comment relates to the discussion of RCIS updates described in SBC RCIS Section 4.4. This section was developed consistent with CDFW RCIS Guidelines. The RCIS is developed for a 10-year period, and the updating process would be used for potential RCIS renewal.

Response to BIA Comment 73

Comment relates to the discussion of RCIS amendments described in SBC RCIS Section 4.6. This section was developed consistent with CDFW RCIS Guidelines. Per the guidelines, amendments may be proposed by the original RCIS proponents, CDFW, or third-party entities with the written support of the original proponents.

Carol L. Blaney (CB) Comment Letter dated August 4, 2023

Comment letter commences on the next page.

To the preparers of the San Bernardino County Regional Conservation Investment Strategy:

Thank you for the opportunity to comment on your draft document. I am a biologist, photographer, and retired National Park Service ranger who has lived in and cares deeply about the diverse and fragile environment of San Bernardino County.

The process of establishing this conservation investment strategy is crucial for the health of San Bernardino County's people and ecosystems. Your attention to preparing an excellent plan will be of great benefit to current human and environmental health and to the well-being of future generations.

Though I have been deeply involved in a number of environmental efforts in various parts of San Bernardino County for many years, I heard about your RCIS document and public comment period just a couple of days ago. I am sure that other concerned citizens and organizations find themselves in a similar position.

Following are my comments, which are necessarily brief, given my short time-frame:

- 1. Facilitate more participation by environmental experts and groups in the SBC RCIS planning process:** The environmental groups that have already participated in producing the RCIS are excellent. However, to create an effective RCIS—inherently an environmental document—input is needed from a broader and deeper range of environmental groups and experts.

To facilitate this participation, I respectfully request a 30-day extension of the public-comment period, so that all interested parties have the opportunity to comment thoughtfully. Experts who have intimate and crucial knowledge of western San Bernardino County's critical habitats and vulnerable species may include: Redlands Conservancy; Two Canyons Conservancy; the Wildlands Conservancy; the Crafton Hills Open Space Conservancy; the Xerces Society, the Sierra Club; the Audubon Society; faculty at the University of Redlands and Cal State University San Bernardino; and many others who may not have received timely notification of the SBC RCIS process.

- 2. Connect the SBC RCIS with other conservation plans and planning processes:** Because habitats and species cross human-designated boundaries, the RCIS strategy should reference, and where possible integrate with, other planning processes. These include the Greater I-10 Linkage Implementation process; municipality conservation-planning processes; USFS planning processes in the San Bernardino Mountains, the Riverside County Multi-Species Habitat Conservation Plan, and many others. Some of the information in the RCIS draft that refers to such planning processes (e.g. for the City of Redlands) is several years old and needs to be updated for accuracy.

- 3. Prioritize and safeguard vulnerable habitat linkages and wildlife corridors:** In order to conserve and enhance the health of individual species, an ecosystem view of wildlife corridors and habitat linkages is crucial. Please take into account recommendations from the Greater I-10 Linkage Implementation Workshop:
http://www.scwildlands.org/reports/GreaterI-10WorkshopSummaryReport_FINAL.pdf
Vulnerable linkages, such as the one in Live Oak Canyon near Redlands, are being closed off by surrounding development of warehouses and subdivisions. Taking action to

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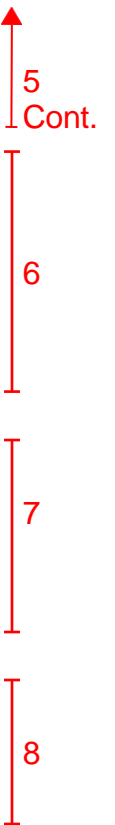
protect these bottlenecked corridors is crucial to the survival of Southern California mountain lions and other vulnerable species.

4. **Ensure that all appropriate focal species are included in the RCIS document:** The rationale for considering species as non-focal (Appendix B) seems weak in some cases. For example, Crotch's bumblebee (*Bombus crotchii*) is considered a non-focal species, even though multiple occurrences at lower elevations in the SBC RCIS coverage area have been reported. A more thorough review would likely find other such excluded species. Unless a species is clearly out of the physical range of the RCIS, it ought to be considered as a focal species.
5. **Move beyond planning for individual species protection to envisioning multi-species habitat protection.** Recent conservation biology planning has focused on the necessity of addressing multi-species habitats, an effective way to protect the health of ecosystems as a whole. I recommend that this plan use a multi-species approach to conservation, in addition to including focal species. Riverside County and many other entities are using this multi-species approach effectively.

Once again, thank you for your extensive efforts to bring this plan to fruition. Creating a detailed and effective RCIS will make a real difference to human well-being and environmental health in San Bernardino County.

Sincerely,

Carol L. Blaney
CLBLANEY@gmail.com
408-318-2731



Response to Carol L. Blaney (CB) Comment Letter dated August 4, 2023

Response to CB Comment 1

Introductory comment that provides no specific comment on the SBC RCIS.

Response to CB Comment 2

Commenter states that they were just recently made aware of the RCIS planning process. As described in SBC RCIS Section 1.6, the planning process for the SBC RCIS began in 2016 with a County Board of Supervisors resolution and public input and involvement was facilitated through the Environment Element Group. A publicly noticed public meeting was held, multiple updates were made to the San Bernardino County Transportation Authority Board, numerous outreach meetings have been held, and draft materials have been posted on public websites. Following CDFW determination that the Completeness Draft SBC RCIS was complete, CDFW posted the document for public review according to CDFW RCIS Guidelines.

Response to CB Comment 3

Comment requests extension of the public review period. See Response to CB Comment 2. The SBC RCIS public review period is specified CDFW RCIS Guidelines and the process is led by CDFW.

Response to CB Comment 4

Comment references connecting the SBC RCIS with other conservation plans and planning processes. The SBC RCIS was developed consistent with the CDFW RCIS Guidelines and includes reference to such plans and planning processes in SBC RCIS Section 2.6 (Other Resource Conservation and Management Plans and Programs). This section also includes mapping of Habitat Conservation Planning in the Region (SBC RCIS Figure 2-7). Data from the Greater I-10 Linkage Implementation document was used in the mapping of habitat linkage, and resources and connectivity with the US Forest Service lands and Western Riverside County Multiple Species Habitat Conservation Plan were considered during the planning process.

Response to CB Comment 5

Comment pertains to prioritizing and safeguarding habitat linkages and wildlife corridors. As described in SBC RCIS Section 3.1, habitat connectivity and wildlife movement is a conservation element of the SBC RCIS and Figure 3-1 provides a map of regional habitat linkages. With regard to the paper cited in the comment from SC Wildlands (Greater I-10 Workshop Summary Report), the data used in that report was used in mapping the habitat linkages shown in SBC RCIS Figure 3-1.

Response to CB Comment 6

With regard to the Focal Species list, the SBC RCIS Focal Species were selected consistent with CDFW RCIS Guidelines and with extensive input from members of the Environment Element Group and the SBC RCIS Steering Committee. Although Crotch bumble bee is not a Focal Species, it would benefit from the conservation strategy of the SBC RCIS.

Response to CB Comment 7

It is acknowledged that multi-species planning is an effective approach for habitat conservation and the SBC RCIS employs this approach while staying consistent with the CDFW RCIS Guidelines related to inclusion of Focal Species. The RCIS Actions identified in the SBC RCIS would provide benefits for multiple species. Additionally, other conservation elements are part of the SBC RCIS, including landscape processes and features and vegetation communities.

Response to CB Comment 8

Comment is a conclusory statement supporting development of the SBC RCIS.

**California Construction and Industrial Materials Association
(CalCIMA) Comment Letter -Suzanne Seivright-Sutherland dated
August 4, 2023**

Comment letter commences on the next page.



August 4, 2023

California Department of Fish and Wildlife (CDFW): rcis@wildlife.ca.gov

San Bernardino County Transportation Authority (SBCTA): jlee@gosbcta.com

Re: CalcIMA comments: 'Draft San Bernardino County Regional Conservation Investment Strategy' – 60-day public review and comment period

Dear CDFW and SBCTA,

CalcIMA appreciates the opportunity to provide comment regarding the 'Draft San Bernardino Regional Conservation Investment Strategy (RCIS)' during the 60-day public review and comment period.

CalcIMA is the statewide voice of the construction and industrial materials industry. With over 500 local plants and facilities throughout the state, producing aggregate, concrete, cement, asphalt, industrial minerals, and precast construction products, our members produce the materials that build our state's infrastructure, including housing, public roads, rail, and water projects; schools and hospitals; assist in growing crops and feeding livestock; and play a key role in manufacturing consumer products including roofing, paint, low-energy light bulbs, and battery technology for electric cars and windmills. The continued availability of our members' materials is vital to California's economy, as well as ensuring California meets its renewable energy, affordable housing, and infrastructure goals.

CalcIMA has been in communication with the County of San Bernardino regarding the draft RCIS since 2017. We have attended related San Bernardino Environmental Element Group meetings, met with County of San Bernardino Directors of the Land Use Services Department, communicated with the San Bernardino County Transportation Authority, and met/communicated with Dudek staff.

CalcIMA members have reviewed the draft RCIS mapping tool and identified several mapping errors related to mining quarries within the RCIS jurisdiction. It has been explained that the intended use of the RCIS is to provide a regional biological conservation guidebook for science-based nonbinding and voluntary conservation and mitigation actions. And, the encompassed maps via the 'California Desert Biological Conservation Framework' are not intended to represent a reserve design or influence where conservation, mitigation, or development should or should not occur. However, the plethora of pronounced errors in the mapping tools will create several unequitable consequences to facilities currently operating in the County of San Bernardino. Accordingly, CalcIMA recommends the RCIS to address these errors adequately. Specific examples are attached to this letter from the CalPortland and Cemex mining facilities. Mapping errors are not limited to the attached examples. Additionally, CalcIMA members have reviewed the draft RCIS 'Mining' section on page 2-46 and recommend inclusion of language in regard to mining's indirect benefits to conservation goals by reclaiming lands to uses inclusive of wetlands and wildlife habitat, open space, and recreation.

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Again, thank you for your consideration and please feel free to contact me with any questions, concerns, or to further discuss at (951) 941-7981 or at sseivright@calcima.org.

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Sincerely,



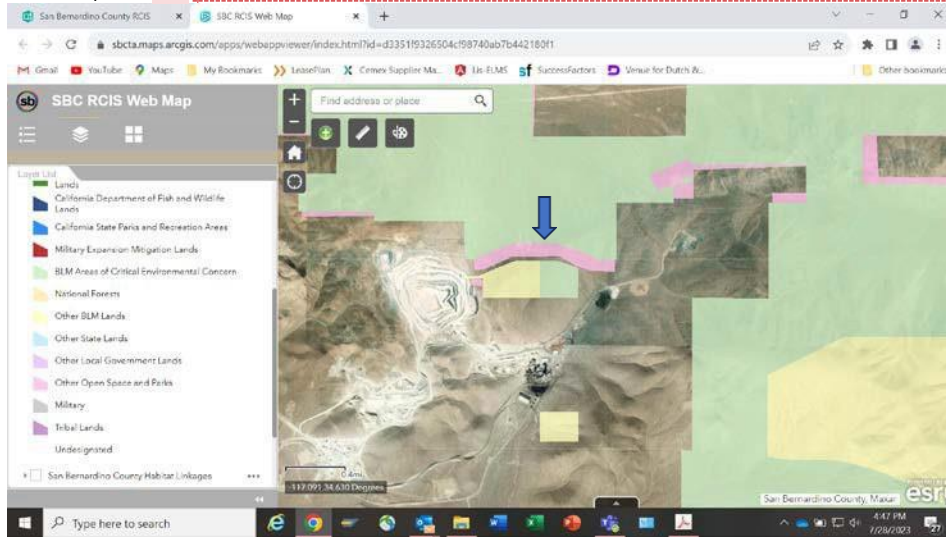
Suzanne Seivright-Sutherland
Director of Regional Governmental Affairs and Grassroots Operations

Attachments:

1. Cemex – Mapping errors
2. CalPortland – Mapping errors

ATTACHMENT 1 - CEMEX MAPPING ERRORS

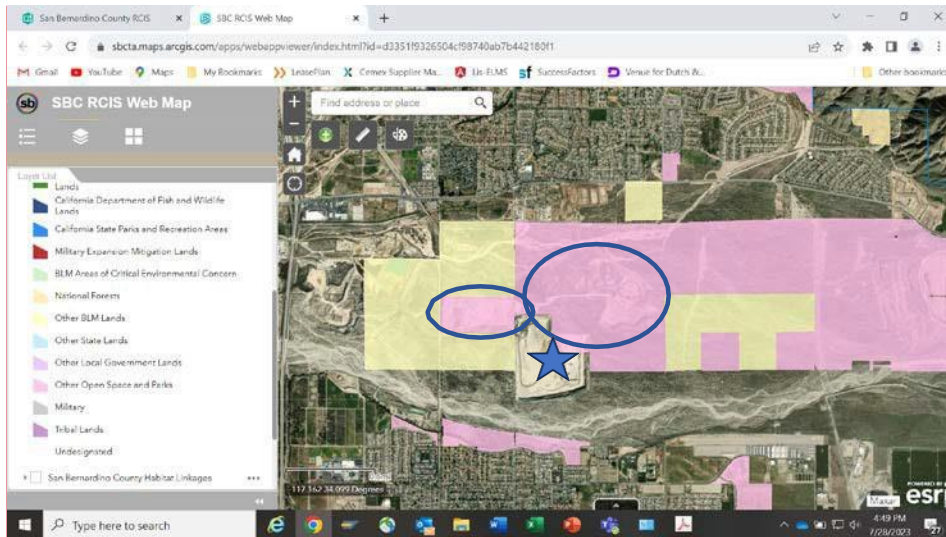
SBCO RCIS – From “Plan Base” Layer Victorville/Black Mtn



Commented [CMJ1]: Blue arrow points to pink area that my records indicate is Fee Owned by Cemex.

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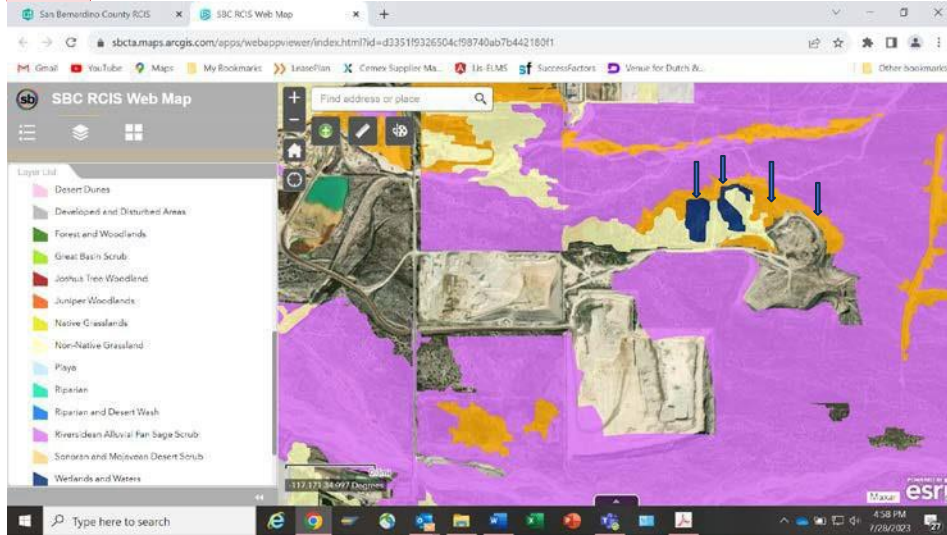
Redlands



Commented [CMJ2]: Circled areas are permitted mining areas that should not be shown as pink ("Other Open Space and Parks"). All permitted mining areas should be shown with no color like the area with the blue star.

6

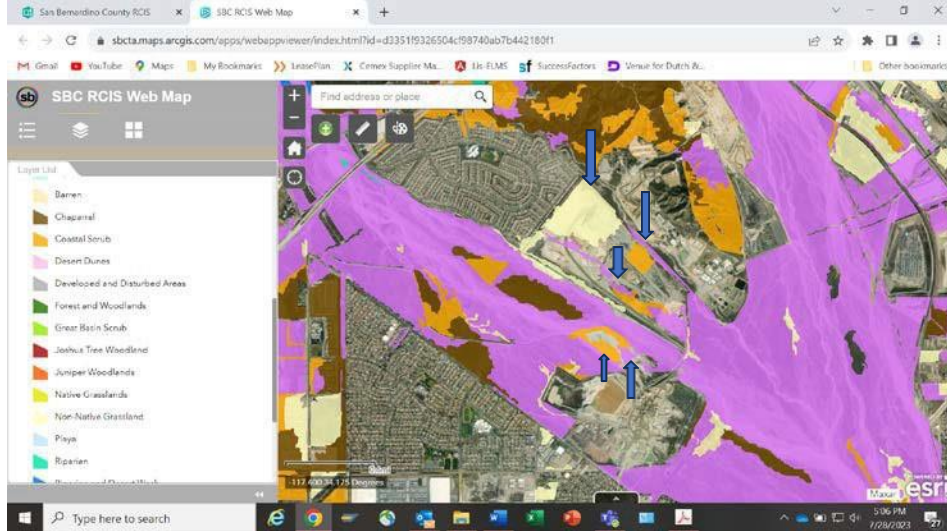
SBCO RCIS – From “Vegetation” Layer
 Redlands



Commented [CMJ3]: Blue arrows point to errors - silt ponds are labeled as "Wetlands and Waters" and quarry slopes are labeled as "Riversidean Sage Scrub", "Coastal Scrub" and "Non-Native Grassland".

7

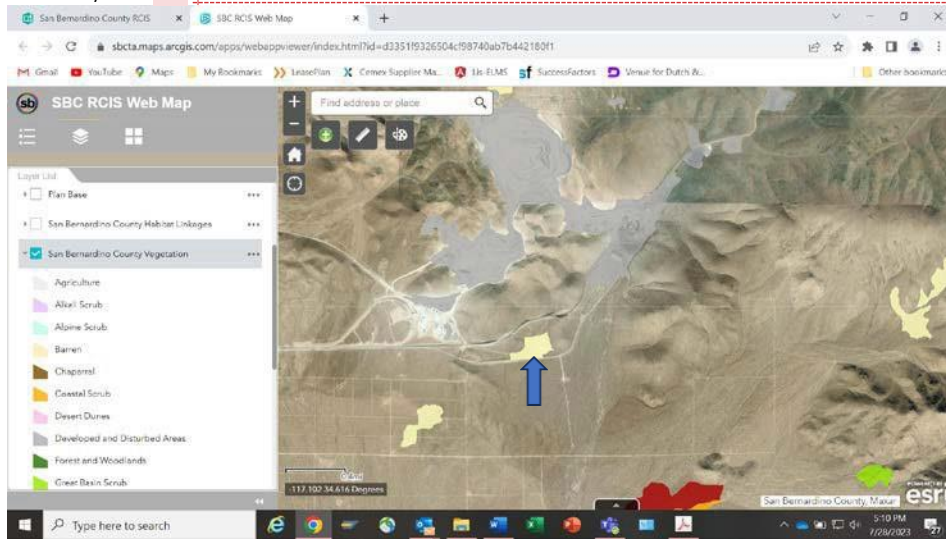
Lytle Creek



Commented [CMJ4]: Blue arrows point to errors - quarries are labeled as "Riversidean Sage Scrub", "Coastal Scrub" and "Non-Native Grassland".

8

Victorville/Black Mtn

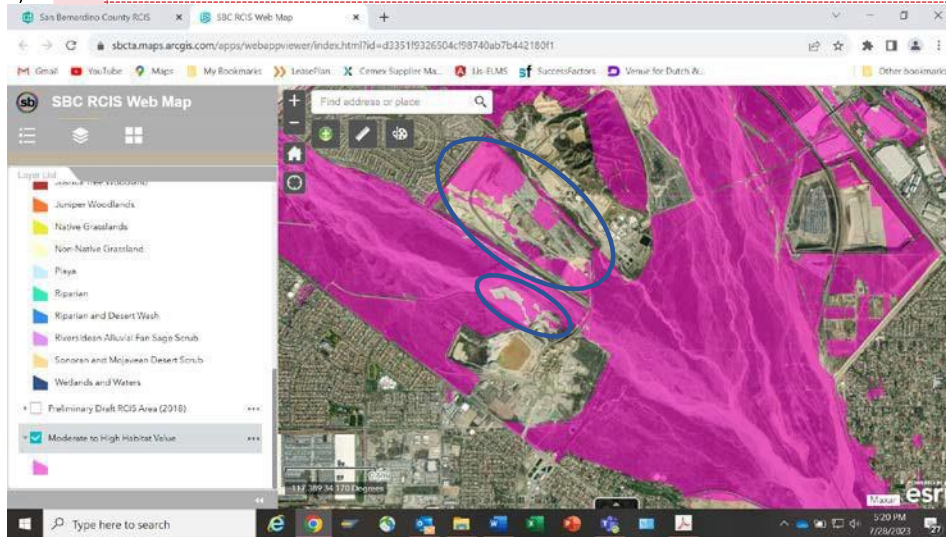


Commented [CMJ5]: Blue arrow points to a disturbed area that should be colored gray (not yellow) and labeled as "Developed and Disturbed Areas" not "Non-Native Grassland".

9

SBCO RCIS – From “Moderate to High Habitat Value” Layer

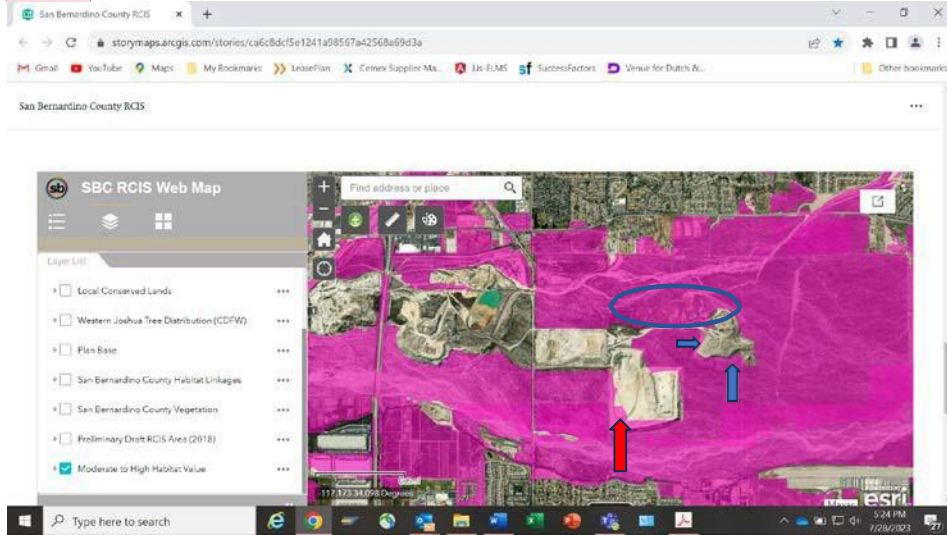
Lytle Creek



Commented [CMJ6]: Blue ovals show quarries that have been erroneously mapped as "Moderate to High Habitat Value".

10

Redlands



Commented [CMJ7]: Blue oval and blue arrows point to areas incorrectly mapped as "Moderate to High Habitat Value" - these areas are silt ponds (oval) or edges/slopes of quarries. Red arrow points to mapping error in Robertson's Ready Mix's quarry.

ATTACHMENT 2 - CALPORTLAND ORO GRANDE FACILITY MAPPING ERRORS

Parts of the facility are considered moderate to high value habitat that are being mined or are right next to and in the middle of the cement plant.



Response to California Construction and Industrial Materials Association (CalCIMA) Comment Letter -Suzanne Seivright-Sutherland dated August 4, 2023

Response to CalCIMA Comment 1

Comment is an introductory statement on the organization and its participation in the SBC RCIS development process. San Bernardino Council of Governments (SBCOG) and the County of San Bernardino (County) acknowledge and appreciate the CalCIMA's involvement throughout the planning process.

Response to CalCIMA Comment 2

Comment relates to what are referred to as mapping errors in the California Desert Biological Conservation Framework data used for the mapping of Moderate to High Habitat Value shown in SBC RCIS Figure 3-4A and Figure 3-4B. These figures are based on existing published data, consistent with CDFW RCIS Guidelines, and the data was published by the California Energy Commission (CEC) and developed by CEC, CDFW, USFWS, and BLM. As stated in the SBC RCIS and as acknowledged in the comment, "these maps are not intended to represent a reserve design or influence where conservation, mitigation, or development should or should not occur." Additionally as stated in the SBC RCIS, these maps are intended only to provide landscape-scale guidance to consider when making conservation and mitigation decisions in the RCIS Area. As a regional, landscape-scale plan, the mapping is not intended to provide parcel-specific mapping; therefore, the mapping details provided were not incorporated into the RCIS or the mapping products.

Response to CalCIMA Comment 3

Comment relates to the indirect benefits to conservation goals that mining can result from reclamation. The benefits of land reclamation are acknowledged; however, the section of the SBC RCIS referenced in the comment is Section 2.8 (Regional Pressures and Stressors), which is required for inclusion in the RCIS according to the CDFW RCIS Guidelines and focuses on the threats and stressors of activities in the region, including mining, to the Focal Species and the other conservation elements discussed in the RCIS.

Response to CalCIMA Comment 4

Comment is a conclusory statement to the comment cover letter with no comments on the SBC RCIS.

Response to CalCIMA Comment 5

Comment is regarding the parcel-level accuracy of the public land designations as shown in SBC RCIS Figure 2-6 for a particular parcel in the Victorville/Black Mountain area. Consistent with the CDFW RCIS Guidelines, the mapping of public land designations in the SBC RCIS is based on existing data sources including data from the County, SBCOG, BLM, State Parks, and the California Protected Areas Database. As noted in the SBC RCIS with regard to this mapping, it is approximate and intended to support landscape-scale assessment of land designation patterns in the County and the existing data sources used differ in quality, resolution, and accuracy. As such, the mapping in the SBC RCIS should not be used at the parcel-level.

Response to CalCIMA Comment 6

Comment is regarding the parcel-level accuracy of the public land designations as shown in SBC RCIS Figure 2-6 for particular parcels in the Redlands area. Consistent with the CDFW RCIS Guidelines, the mapping of public land designations in the SBC RCIS is based on existing public data sources including data from the County, SBCOG, BLM, State Parks, and the California Protected Areas Database. As noted in the SBC RCIS with regard to this mapping, it is approximate and intended to support

landscape-scale assessment of land designation patterns in the County and the existing data sources used differ in quality, resolution, and accuracy. As such, the mapping in the SBC RCIS should not be used at the parcel-level.

Response to CalCIMA Comment 7

Comment is regarding the parcel-level accuracy of the vegetation mapping as shown in SBC RCIS Figure 3-2 for particular parcels in the Redlands area. Consistent with the CDFW RCIS Guidelines, the mapping of vegetation in the SBC RCIS is based on existing public data sources including CDFW, US Forest Service, and San Bernardino Associated Governments (now SBCOG). This existing public data and mapping were used to support the regional, landscape-scale planning of the SBC RCIS but may not be accurate at the parcel-level.

Response to CalCIMA Comment 8

Comment is regarding the parcel-level accuracy of the vegetation mapping as shown in SBC RCIS Figure 3-2 for particular parcels in the Lytle Creek area. Consistent with the CDFW RCIS Guidelines, the mapping of vegetation in the SBC RCIS is based on existing public data sources including CDFW, US Forest Service, and San Bernardino Associated Governments (now SBCOG). This existing public data and mapping were used to support the regional, landscape-scale planning of the SBC RCIS but may not be accurate at the parcel-level.

Response to CalCIMA Comment 9

Comment is regarding the parcel-level accuracy of the vegetation mapping as shown in SBC RCIS Figure 3-2 for particular parcels in the Victorville/Black Mountain area. Consistent with the CDFW RCIS Guidelines, the mapping of vegetation in the SBC RCIS is based on existing public data sources including CDFW, US Forest Service, and San Bernardino Associated Governments (now SBCOG). This existing public data and mapping were used to support the regional, landscape-scale planning of the SBC RCIS but may not be accurate at the parcel-level.

Response to CalCIMA Comment 10

Comment is regarding the parcel-level accuracy of the moderate to high biological value mapping as shown in SBC RCIS Figure 3-4A and Figure 3-4B for particular parcels in the Lytle Creek area. As stated in the SBC RCIS and consistent with the CDFW RCIS Guidelines, this mapping is based on existing public data and these maps are intended only to provide landscape-scale guidance to consider when making conservation and mitigation decisions in the RCIS Area. As a regional, landscape-scale plan, the mapping is not intended to provide parcel-specific mapping.

Response to CalCIMA Comment 11

Comment is regarding the parcel-level accuracy of the moderate to high biological value mapping as shown in SBC RCIS Figure 3-4A and Figure 3-4B for particular parcels in the Redlands area. As stated in the SBC RCIS and consistent with the CDFW RCIS Guidelines, this mapping is based on existing public data and these maps are intended only to provide landscape-scale guidance to consider when making conservation and mitigation decisions in the RCIS Area. As a regional, landscape-scale plan, the mapping is not intended to provide parcel-specific mapping.

Response to CalCIMA Comment 12

Comment is regarding the parcel-level accuracy of the moderate to high biological value mapping as shown in SBC RCIS Figure 3-4A and Figure 3-4B for particular parcels in the Oro Grande area. As stated in the SBC RCIS and consistent with the CDFW RCIS Guidelines, this mapping is based on existing public data and these maps are intended only to provide landscape-scale guidance to consider when making conservation and mitigation decisions in the RCIS Area. As a regional, landscape-scale plan, the mapping is not intended to provide parcel-specific mapping.

**California Department of Transportation, Office of Biological Science
and Innovation, Advance Mitigation Program (Caltrans) Comment
Letter dated August 2, 2023**

Comment letter commences on the next page.

From: Josh Lee <jlee@gosbcta.com>
Sent: Wednesday, August 2, 2023 3:55 PM
To: Stephanie Standerfer; Mike Howard (mhoward@dudek.com)
Subject: FW: Comments Submittal: San Bernardino County RCIS

FYI

From: Advance Mitigation@DOT <Advance.Mitigation@dot.ca.gov>
Sent: Wednesday, August 2, 2023 3:30 PM
To: Wildlife RCIS <RCIS@wildlife.ca.gov>; Josh Lee <jlee@gosbcta.com>
Cc: Kirkham, Stuart S@DOT <stuart.kirkham@dot.ca.gov>; Loy, Carin@DOT <carin.loy@dot.ca.gov>; Riesz, Karen A@DOT <Karen.Riesz@dot.ca.gov>; Quinnell, Scott F@DOT <scott.quinnell@dot.ca.gov>; Wentworth, Craig S@DOT <Craig.Wentworth@dot.ca.gov>; Marquis, Sean@DOT <sean.marquis@dot.ca.gov>
Subject: Comments Submittal: San Bernardino County RCIS

Dear RCIS Program and Josh Lee,

The California Department of Transportation (Caltrans) appreciates the opportunity to provide feedback to the San Bernardino County Transportation Authority and the California Department of Fish and Wildlife (CDFW) on the draft San Bernardino County Regional Conservation Investment Strategy (SBC RCIS).

Caltrans' greatest interest in the SBC RCIS is in the prospect of having mitigation credits created through an MCA. Through the permitting process, Caltrans and CDFW continuously need California Endangered Species Act and Lake and Streambed Alteration Agreement compensatory mitigation to apply as offsets for unavoidable transportation project impacts. The RCIS Program and MCA credits have the potential to positively assist with Caltrans and CDFW's ability to find mitigation, and thereby help permitting. Further, when transportation projects could be accelerated, California Streets and Highways Code (SHC) § 800.6(a)(3) authorizes Caltrans Advance Mitigation Program (AMP) to invest in developing RCISs and MCAs, as well as purchase MCA credits in bulk prior to their use.

General Comments:

- CDFW's final MCA Guidelines were published on June 25, 2023, after the draft San Bernadino RCIS became available on June 6, 2023. Upon review of the MCA Guidelines, Caltrans determined that its participation in MCAs will be limited for the following reasons:
 - Caltrans cannot perform the role of MCA Sponsor. CDFW's legislation requires that MCA securities take the form of a letter of credit or cash [FGC §1856(g)(17); 1798.5(a)(2)]. Caltrans cannot provide a letter of credit or cash per the prohibition against pledging the credit of the state [Cal. Const., art. XVI, § 6 and GC § 16305.3].
 - To responsibly spend State funds, the AMP will be prioritizing funding advance mitigation projects that are aligned with multiple natural resource regulatory agencies [See [AMP Guidelines](#) and [2021 Statewide Advance Mitigation Initiative MOU](#)]. MCA created credits will be CDFW-only credits; although allowed under



Fish and Game Code for the RCIS program, a framework and process for MCA alignment with other natural resource regulatory agencies was not established through the MCA Guidelines.

- In order to not waste the Advance Mitigation Account, a revolving fund, the AMP will need reliable cost and schedule information. Because MCA development schedules and costs are not prescribed in either the RCIS legislation or MCA Guidelines and, as a brand-new program, MCAs have no track record, the information is not available.
- Hence, for the foreseeable future, Caltrans transportation projects and advance mitigation projects will be limited to purchasing MCA credits created by others.

Specific Comments:

- **Section 1.4 RCIS Area.** The SBC RCIS Area overlaps the *Mojave Desert Ecoregion Section Regional Advance Mitigation Needs Assessment (RAMNA)*, prepared for Caltrans District 8 in 2020. It can be downloaded from the [AMP webpage](#). This regional mitigation planning document can be used by Caltrans District 8 and the AMP to justify funding advance mitigation projects to purchase or establish riparian, wetland, non-wetland waters, and Mojave desert tortoise (*Gopherus agassizii*) compensatory mitigation credits.
- **Chapter 3. Conservation Strategy.** MCA credits for riparian, wetland, non-wetland waters, and/or Mojave desert tortoise, approved by multiple natural resource regulatory agencies, would be of greatest utility for Caltrans District 8.
- **Section 3.1.3.2. Table 3-3. Focal Species List for the SBC RCIS**
 - Mojave desert tortoise is both a resource focus of the RAMNA and a focal species for the SBC RCIS. Hence, for this species, there is a potential synergy between the our planning efforts.
 - Most of the SBC RCIS focal species identified in Table 3-3 are either avoided (e.g., work outside bird nesting season), do not require mitigation because of listing status, or are unlikely to exist on Caltrans transportation projects.
 - In the past, Caltrans District 8 has sometimes needed compensatory mitigation for San Bernadino Kangaroo Rat (*Dipodomys merriami parvus*) and Santa Ana River Wooley-Star (*Eriastrum densifolium* ssp. *Sanctorum*), two of the other focal species. Compensatory mitigation credits for Mojave Ground Squirrel (*Xerospermophilus mohavensis*) might also be useful.

Thank you for the opportunity to comment. If you have questions regarding these comments, please don't hesitate to contact Carin Loy at carin.loy@dot.ca.gov or Stuart Kirkham at stuart.kirkham@dot.ca.gov.

Sincerely,

Advance Mitigation Program
Office of Biological Science and Innovation
California Department of Transportation
1120 N Street, 4th Floor, MS-27
Sacramento, California 95814



Response to California Department of Transportation, Office of Biological Science and Innovation, Advance Mitigation Program (Caltrans) Comment Letter dated August 2, 2023

Response to Caltrans Comment 1

This comment expresses appreciation for the opportunity to provide comment and clarifies the primary interest in the RCIS for the author is the Mitigation Credit Agreements (MCAs). The author cites California Streets and Highways Code Section 800.6(a)(3) that authorizes investment in RCISs and MCAs, “as well as purchase MCA credits in bulk prior to their use.”

Response to Caltrans Comment 2

This comment indicates the author has reviewed the final MCA Guidelines dated June 25, 2023 and identified that Caltrans cannot perform the role of MCA Sponsor because Caltrans cannot provide a letter of credit or cash. CDFW is in the process of developing possible remedies to this issue and it may change during the RCIS term; therefore, no change to the document has been made in response to this comment.

Response to Caltrans Comment 3

This comment states that Caltrans as a state agency is obligated to prioritize the funding of advance mitigation projects that align with multiple natural resource regulatory agencies, which does not include the MCA-created credits because they are CDFW-only credits, until such time that a framework and process for MCA alignment with other natural resource regulatory agencies is established through the MCA Guidelines.

Response to Caltrans Comment 4

This comment suggests that unless reliable cost and schedule information for MCA development becomes available, the author can not participate in the MCA program.

Response to Caltrans Comment 5

This comment surmises that unless the limitations stated in Comments 2, 3, and 4 are removed, “Caltrans transportation projects and advance mitigation projects will be limited to purchasing MCA credits created by others.”

Response to Caltrans Comment 6

This comment refers to Section 1.4 of the RCIS and states the *Mojave Desert Ecoregion Section Regional Advance Mitigation Needs Assessment* (RAMNA, 2020) overlaps with the RCIS Area and the RAMNA can be downloaded from the Caltrans AMP webpage.

The RCIS references the 2020 RAMNA document in Section 6, References (p. 6-3) because the planned Caltrans projects for period 2017-2018 through 2026-2027 for the Mojave Desert region are incorporated in the RCIS by reference.

Response to Caltrans Comment 7

This comment refers to Chapter 3. Conservation Strategy of the RCIS document and states MCA credits that are approved by multiple natural resource regulatory agencies for riparian, wetland, non-wetland waters, and/or Mojave desert tortoise, would be of greatest use for Caltrans District 8.

Response to Caltrans Comment 8

This comment refers to Section 3.1.3.2, Table 3-3, Focal Species List for the SBC RCIS and states there is potential synergy between the planning efforts of the RCIS and RAMNA for Mojave desert tortoise.

Response to Caltrans Comment 9

This comment refers to Section 3.1.3.2, Table 3-3, Focal Species List for the SBC RCIS and states most of the species in Table 3-3 can be avoided, do not require mitigation because of listing status, or are unlikely to exist on Caltrans transportation projects.

Response to Caltrans Comment 10

This comment refers to Section 3.1.3.2, Table 3-3, Focal Species List for the SBC RCIS and states that compensatory mitigation credits for Mohave ground squirrel, San Bernardino kangaroo rat, and Santa Ana River woolleystar would be useful.

Response to Caltrans Comment 11

This comment provides contact emails for persons that can speak to the contents of the letter.

**Center for Biological Diversity (CBD) Comment Letter – Illene
Anderson - dated August 4, 2023**

Comment letter commences on the next page.



*protecting and restoring natural ecosystems and imperiled species through
science, education, policy, and environmental law*

via email

8/4/2023

CDFW: rcis@wildlife.ca.gov

San Bernardino County Transportation Authority: jlee@gosbcta.com

California Department of Fish and Wildlife
Habitat Conservation Planning Branch
ATTENTION: San Bernardino County RCIS Comments
P.O. Box 944209
Sacramento, CA 94244-2090

RE: Comments on the San Bernardino County – Regional Conservation Investment Strategy

Dear RCIS team,

Thank you for the opportunity to review and comment on the San Bernardino County – Regional Conservation Investment Strategy (SBC RCIS). The Center for Biological Diversity has been and continues to be involved in planning issues for the San Bernardino County, has participated in the Environmental Element Group and generally supports the concept of a RCIS in this area. We appreciate the time and effort that the team has put into pulling together information about the biologically diverse area that is covered in this RCIS. In the spirit of providing constructive comments, we submit the following comments on the SBC RCIS:

- The evaluations in **Table 2-4 -Pressures on Conservation Elements in the RCIS** are curious and do not always align with known factors of habitat degradation for the included species. For example, trash is a known threat to the Delhi Sands flower-loving fly¹, yet the “Garbage, solid waste,...urban waste” box is not checked. Neither is the “Invasive plants/animals” box checked even though invasive plants were a known threat since 2008, and more recently Argentinian ants are identified as a new threat.² Off-road vehicle impacts are typically classified as “Recreational activities” impacts, and here again the off-road vehicle activities are a known threat to the Delhi Sands flower-loving fly.³ This is just one example of numerous examples we noted in our quick review, where the Pressure on Conservation Elements of the RCIS were not accurately evaluated based on publicly accessible literature. Therefore the RCIS would benefit from a more

1 USFWS 2021 5-year Review for Delhi Sands Flower-Loving Fly. https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3499.pdf

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Arizona • California • Nevada • New Mexico • Florida • Oregon • Washington • Illinois • Minnesota • Hawaii • Washington, DC

comprehensive review of all of the species and their documented threats. Because many of the species are federally or state listed species under Endangered Species Act protections, Five-year Reviews, Species Status Assessments, Species Petitions, and other documents can provide a more comprehensive list of known threats.

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- In Table 3-2a Habitat Groups and General Vegetation Communities by Region in the RCIS Area, we believe the document would be better served by dividing the Transitional Scrub, Chaparral, and Woodland (TSCW) into two more typical vegetation types - shrublands (coastal scrub, chaparral, Great Basin scrub) and woodlands (Forest and Woodlands, Joshua Tree woodlands and Juniper woodlands). The ecological functions of shrublands differ from woodlands and therefore the RCIS prescriptions can be better addressed with more defined vegetation types.
- In Table 3-3 Focal Species List for the SBC RCIS, the status of the Santa Ana speckled dace needs to be updated to reflect it is currently “under review by the U.S. Fish and Wildlife Service for listing.”⁴

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Regarding Section 3.3 Conservation Goals and Objectives:

- In section **3.3.2 Dune and Playa, Objective DP-1.2:** States “Implement targeted conservation actions to increase or improve protection and/or management in the 47,700 acres of public land designations not considered conserved that support DP habitats in the following conservation priority areas, primarily BLM ACECs and other BLM lands:
 - Coyote Dry Lake
 - Cuddeback Dry Lake
 - El Mirage Dry Lake

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While we support the Objective for these three dry lakes, we note that El Mirage Dry Lake has been an “open area” for off-road vehicles for decades.⁵ Both Coyote Dry Lake and Cuddeback Dry Lake were opened to off-road vehicles in 2019.⁶ While the Center and others are currently opposing the opening of Coyote and Cuddeback dry lakes to off-road vehicles, the RCIS needs to recognize that the BLM designation currently may conflict with conservation actions on these three dry lakes, making them less suitable for conservation actions and investment than the remaining dry lakes on the list, where off-road vehicle use is not allowed.

- In section **3.3.3 Grassland,** the RCIS should recognize the two types of grasslands (native grasslands and non-native grasslands) that occur within the RCIS boundaries. Separate Goals and Objectives need to be included for both types of grasslands because native grasslands are much rarer (as recognized in Table 3-2b) and provide greater ecological benefits than annual non-native grasslands. In fact, non-native grasslands

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4 USFWS 2021. 90-day finding. <https://www.govinfo.gov/link/fr/86/32241?link-type=pdf>
5 <https://www.blm.gov/visit/el-mirage-ohv-area>
6 https://www.blm.gov/sites/blm.gov/files/documents/files/Record%20of%20Decision%20-%20West%20Mojave%20Route%20Network%20Project_Signed_508.pdf at pg 2.

often set up a cyclical grass-fire regime that eliminates native communities and therefore are more appropriately treated as an invasive species.

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- In section **3.3.4 Riparian and Wetland, Objective RW-1.3** states “Conserve RW vegetation communities and reduce the threat of habitat loss for Focal Species that utilize RW habitats by protecting and managing, establishing (creating), restoring, and/or enhancing RW habitats in the 21,307 acres of undesignated private lands that support these habitats that directly benefit Focal Species and habitat connectivity for this habitat group, focusing on the following conservation priority areas:” with the footnote listing Focal Species that utilize these habitats “Arroyo toad, California red-legged frog, western pond turtle, least Bell's vireo, southwestern willow flycatcher, Swainson’s hawk, tricolored blackbird, white-tailed kite, yellow-billed cuckoo, Victorville shoulderband, arroyo chub, Mohave tui chub, Santa Ana sucker, Santa Ana speckled dace, Mohave river vole, mountain lion, pallid bat, Townsend’s big-eared bat, alkali mariposa-lily, Gambel’s watercress, marsh sandwort, and San Bernardino aster.”

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However, this objective then lists numerous riparian and wetland areas including the following:

- “Seeps and springs wherever they occur, including at Box Springs and Rabbit Springs in the Lucerne Valley, Whiskey Springs and Cushenbury Springs in the San Bernardino Mountain foothills, Paradise Springs northeast of Barstow, and in the Morongo Basin.”

Conserving seeps and springs as part of the RCIS is critically important and the sentence would benefit from additional inclusion (here in red) “Seeps and springs wherever they occur, including **but not limited to** Box Springs...” etc. There are numerous additional springs and seeps within the planning area⁷, and while the intent appears to include them all, this language in red clarifies that intent.

- In **Section 3.3.5 Riversidean Alluvial Fan Sage Scrub (RAFSS)**, the Goal fails to include conservation of one of the most important processes that sustains Riversidean Alluvial Fan Sage Scrub – the natural hydrogeomorphological processes that creates and sustains this very rare and limited natural community. The RCIS must recognize that maintaining or mimicking the hydrogeomorphological processes is critical to conserving this community because without the episodic flows, the plant community becomes senescent and habitat for the species it supports is no longer available.

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Regarding **Section 3.4 Conservation Actions and Priorities**, Table 3-8 **Conservation Actions Summary** includes many actions and priorities that need to be improved:

- DS-CA4-02: Wildlife Movement Enhancement needs to include a strategy to remove wildlife movement corridor obstructions/barriers (ex. chain link fences, concrete k-rails etc.) that prevent the use of corridors by wildlife or trap animals in dangerous places (ex. Roads/highways).

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⁷ Parker et al. 2021. Conservation of Mojave Desert springs and associated biota: status, threats, and policy opportunities. <https://doi.org/10.1007/s10531-020-02090-7>

- For the Lane Mountain milkvetch, which has increasing threats, address the most recent threats identified in U.S. Fish and Wildlife Service’s 2014 12-month finding on reclassification of the Lane Mountain milkvetch as threatened⁸, including:

“increase in OHV routes in the Coolgardie Mesa area from over 67 miles (mi) (108 kilometers (km)) in 2005 to 134 mi (216 km) in 2012. OHV activities include not only development of roads but also establishment of camping and staging areas in previously undisturbed areas. OHV use in undisturbed areas not only destroys Lane Mountain milk-vetch plants or their nurse shrubs directly, it also disturbs the soil surface leading to reduced moisture-holding capabilities and provides a means for nonnative invasive plant species... to invade otherwise remote, intact habitats. These impacts contribute to changes in vegetation type; increases in fire frequency, size, and intensity; fragmentation and reduction/loss of connectivity; reduced gene exchange; and reduced population persistence.”

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Additionally, under the 2006 West Mojave Plan, the BLM was required to do a mining withdrawal to prevent additional mining activities from impacting the Lane Mountain milkvetch. The withdrawal has yet to be completed to date and needs to be included here as a conservation goal and objective.

- For Parish’s daisy, the RCIS needs to address the threats identified in the U.S. Fish and Wildlife Services most recent 5-year review⁹ which includes threats from mining, urban development, off-highway vehicle use, energy development projects, fire suppression activities, and other land use activities that could result in trampling or ground disturbance.
- DS-CA6 Conservation Action identifies implementation of the Mohave Ground squirrel Conservation Strategy (CDFW 2019), but the specific conservation actions do not reflect CDFW’s Conservation Strategy. The RCIS must include the specific conservation actions from the Conservation Strategy.
- DS-CA7 needs to be revised to implement the Western Joshua Tree Conservation Act and the most current guidance.¹⁰
- DP-CA1-02: Habitat Protection. requires “Install exclusionary fencing to restrict human access and activities, post signage to inform the public on exclusionary fencing...” for dunes, sand hummocks, sand sheets etc. However, the RCIS needs to require that the fencing not impede sand movement. Sand transport corridors must remain intact, including along the Mojave River.

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⁸ <https://www.govinfo.gov/link/fr/79/25084?link-type=pdf>

⁹ USFWS 2022. 5-year review Parish’s daisy. https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3940.pdf

¹⁰ <https://wildlife.ca.gov/Conservation/Environmental-Review/WJT>

- Specifically for playas that support groundwater dependent vegetation, DP-CA2-03 needs to require monitoring of and maintenance of groundwater at levels that are adequate to maintain the vegetation. Groundwater dependent vegetation is neither riparian or wetland, but a unique arid type of vegetation that requires recognition and special conservation requirements. 15
- For grasslands, GRS-CA1 needs to prioritize the conservation and restoration of native grasslands over non-native grasslands. 16
- RW-CA4-02: Invasive Species Management Plan needs to require that invasive plant species removal is initiated at the top of each watershed and moves down the watershed to help preclude reinfestations. 17
- RW-CA6 needs to include the opportunity to re-introduce native aquatic species to perennial waterways. 18
- The focal species list for RW-CA7 needs to consider including the Santa Ana speckled dace which the U.S. Fish and Wildlife Service is currently considering for listing. 19
- Because the California red-legged frog is currently not present in core recovery area 30 located in San Bernardino County ¹¹, the RCIS must specifically include re-introduction into core recovery area 30. 20
- For the Santa Ana sucker, the RCIS should consider including the Upper Santa Ana River HCP¹² requirements once that process is completed. 21
- Because the Gambel’s watercress and marsh sandwort do not currently occur within the RCIS area, the RCIS needs to identify and prioritize re-introduction of these species into sustainable conserved habitat within the boundary of the plan. 22
- RAFSS focal species needs to include the slender-horned spineflower (*Dodecahema leptocerus*) 23
- As discussed above, RAFSS-CA1 must include as a Specific Conservation Action, to maintain or mimic hydrogeomorphological processes for substrate transport and habitat "renewal" at appropriate timeframes. 24

Mitigation Credit Agreements (MCA) are a key component to the RCIS. While the RCIS lays out a menu of obligations that a proponent of MCAs will need to adhere to, more information on how the MCA process and advance mitigation will operate is necessary. Will MCA applications and designations be available as part of a public process? How will advance mitigation be tracked and

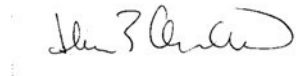
11 USFWS 2022. 5-year review California red-legged frog. https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/4025.pdf
 12 <https://www.uppersarhcp.com/>

disclosed to the public? Will the progress reports from the MCA holders be publicly available? Because the MCAs and advance mitigation is one of the key features of the RCIS, it is important that the public have access to the terms of the agreements and be able to track the use of MCAs.

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Thank you for the opportunity to submit these comments. Please feel free to reach out to me with any questions at the contact information provided.

Respectfully submitted,



Senior Scientist
Center for Biological Diversity

Response to Center for Biological Diversity (CBD) Comment Letter – Illene Anderson - dated August 4, 2023

Response to CBD Comment 1

Introductory comment describing CBD's involvement with the Environment Element Group and general support for the RCIS. San Bernardino Council of Governments (SBCOG) and the County of San Bernardino (County) acknowledge and appreciate the CBD's involvement throughout the SBC RCIS development process.

Response to CBD Comment 2

Comment recommends re-evaluation of SBC RCIS Table 2-4 (Pressures on Conservation Elements in the RCIS Area). In response to this comment, Table 2-4 has been updated on Focal Species regional pressures.

Response to CBD Comment 3

Comment suggests that the Transitional Scrub, Chaparral, and Woodland habitat group be broken up based on vegetation type. The habitat groups are used in the SBC RCIS as an useful organizational construct for elements of the conservation strategy. It is acknowledged that shrublands and woodland may have differing ecological function and potential actions. SBC RCIS Table 3-2a and Table 3-2b, and elsewhere in the document, do list the specific vegetation types within the habitat group (e.g., scrub, chaparral, and woodland) consistent with the intent of this comment. Additionally in the SBC RCIS area, the scrub, chaparral, and woodland vegetation types within this habitat group tend to be associated with transition zones (i.e., mountain ranges and other areas with elevational gradients), which was part of the rationale for grouping these vegetation types within a single habitat group.

Response to CBD Comment 4

Regarding the regulatory status of the Focal Species in Table 3-3, the status information listed is based on the Special Animals and Special Plants lists maintained by USFWS. Species under review for listing, if they are not Candidates for listing, are shown as a formal status. RCIS has been revised to reflect the current status as of the date of the document.

Response to CBD Comment 5

Comment raises the issue of ongoing off-road vehicle uses allowed on BLM lands on Coyote Dry Lake, Cuddeback Dry Lake, and El Mirage Dry Lake identified under SBC RCIS Dune and Playa Objective DP-1.2. It is acknowledged that existing uses may occur on public lands, such as BLM lands, that may preclude or prevent actions from happening under the SBC RCIS.

Response to CBD Comment 6

Comment contends that the grassland objectives should distinguish between native and non-native grassland and prioritize native grassland. The SBC RCIS identifies native grasslands and non-native grasslands in the tables and mapping of vegetation types within the grassland habitat group (see SBC RCIS Table 3-2a, Table 3-2b, and Figure 3-2). As the tables show, there is very little mapped native grassland in the SBC RCIS area; however, there may be unmapped native grasslands within the non-native grasslands. Additionally, the intent of the habitat groups is to organize the conservation strategy for the Focal Species. Focal Species of the grassland habitat group may use native and non-native grassland interchangeably and species habitat value may not need to distinguish between grassland types.

Response to CBD Comment 7

Comment suggests adding a statement to SBC RCIS Objective RW-1.3 not limiting the priority areas to the specific seeps and springs listed. The SBC RCIS has been revised to incorporate this revision.

Response to CBD Comment 8

Comment relates to SBC Goal RAFSS-1 stating that it should include reference to conservation of hydrogeomorphological processes that maintain Riversidean alluvial fan sage scrub. The importance of these processes is acknowledged; however, the format and language of the SBC RCIS goals is uniform across habitat groups and the detail related to these processes is contained in the actions for RAFSS (Table 3-7). RAFSS-CA3 addresses creating and restoring RAFSS habitat and states that such actions “should focus on restoring flow and flood regimes in creeks and rivers (fluvial processes) to reestablish vegetation succession to benefit RAFSS Focal Species.”

Response to CBD Comment 9

Comment relates to Action DS-CA4-02 on wildlife movement enhancements. In response to this comment, this action has been revised to include removal of wildlife movement corridor obstructions/barriers that prevent corridor use or entrapment.

Response to CBD Comment 10

Comment pertains to increasing threats to Lane Mountain milkvetch on public lands suggesting that they should be addressed in the actions. Actions on public lands would need to be coordinated with the applicable public agencies (i.e., BLM). Action DS-CA1 addresses this coordination, and Specific Action DS-CA1-02 specifies that a potential action could include: Install exclusionary fencing to restrict human access and activities, post signage to inform the public on exclusionary fencing, develop educational materials to distribute to the public related to protections and exclusions. This action would encompass the topic addressed in this comment.

Response to CBD Comment 11

Comment pertains to the threats to Parish’s daisy. See Response to CBD Comment 10 as it relates to public lands. In response to this comment, Table 2-4 has been updated on Focal Species regional pressures.

Response to CBD Comment 12

Regarding this comment on actions for Mohave Ground Squirrel, action DS-CA6 from SBC RCIS Table 3-7 specifically states “Implement conservation and mitigation actions for Mohave ground squirrel consistent with the Conservation Strategy for Mohave Ground Squirrel (CDFW 2019) for the most current guidance”. The CDFW 2019 conservation strategy for this species includes 66 measures organized within goals and objectives for Habitat Protection and Management, Conservation Planning, Monitoring and Research, and Outreach and Education. As opposed to repeating these 66 measures in the SBC RCIS, DS-CA6 specifically references implementation of conservation and management action consistent with the CDFW 2019 conservation strategy. The specific actions listed under SBC RCIS DS-CA6 focus on actions within the Habitat Protection and Management goals of the CDFW 2019 conservation strategy, and the SBC RCIS actions specifically reference actions for conservation, protection, and habitat restoration on public and private lands within the core population areas, peripheral population area, linkages, and habitat areas projected to remain stable and/or become suitable for the species in the future, consistent with CDFW 2019.

Response to CBD Comment 13

Comment suggests that SBC RCIS action DS-CA7 should be revised to reference implementation of the Western Joshua Tree Conservation Act. Based on this comment, DS-CA7-06 has been added: Implement measures consistent with the Western Joshua Tree Conservation Act (CFGC 1927-1927.12) or the most current CDFW guidance related to western Joshua tree.

Response to CBD Comment 14

Comment suggests that SBC RCIS action DP-CA1-02 related to fencing should not impede sand movement. It is acknowledged that if fencing is used as a management action to control access it should not impede sand movement. The action includes the following statement: "If fencing is employed as a management action, design and install it such that it shall not affect sand transport function or other fluvial and geomorphic processes."

Response to CBD Comment 15

Comment pertains to adding text to the actions pertaining to monitoring and maintaining groundwater levels adequate to support playa vegetation. In response to this comment, the action was revised.

Response to CBD Comment 16

Comment on DP-CA2 related to groundwater dependent vegetation of playas and the importance of monitoring and maintenance of groundwater levels. SBC RCIS action DP-CA2-02 and DP- CA2-03 describe actions related to resource management plans and habitat preservation for dune and playa resources, and if this action is implemented as described, the resource management plan would need to include long-term monitoring and management for these resources.

Response to CBD Comment 17

Comment pertains to SBC RCIS action RW-CA4-02 and suggests that invasive plant removal should be initiated at the top of each watershed and moves down the watershed to preclude reinfestations. SBC RCIS action RW-CA4-02 specifically states that if this action is implemented that the Invasive Species Management Plan should be developed with guidance provided in the Land Manager's Guide to Developing an Invasive Plant Management Plan (USFWS and CIPC 2018). This plan provides guidance on prioritizing areas for invasive species management and assessing pathways of spread and vectors. In riparian systems, the pathways of spread and vectors for invasive species, as referenced in the plan, would include aquatic/riparian pathways, which would inform management planning implemented under this action.

Response to CBD Comment 18

Comment recommends referencing re-introduction of native aquatic species to perennial waterways under SBC RCIS action RW-CA6. As stated under SBC RCIS action RW-CA6, it is focused on enhancing wildlife movement and habitat connectivity to improve wildlife access to and through riparian and wetland areas. As it pertains to aquatic Focal Species, re-introduction is not considered a viable action by CDFW under the RCIS.

Response to CBD Comment 19

Comment relates to including actions for Santa Ana speckled dace under SBC RCIS action RW-CA7. The CDFW RCIS Guidelines call for RCIS to be consistent with USFWS Recovery Plans, and SBC RCIS action RW-CA7 includes actions that could be implemented that are consistent with USFWS Recovery Plans. Since Santa Ana speckled dace is not a USFWS listed species, there are no USFWS recovery actions to reference under this action.

Response to CBD Comment 20

Comment pertains to California red-legged frog re-introduction. See Response to CBD Comment 18.

Response to CBD Comment 21

Regarding the comment to include requirements for Santa Ana sucker from the Upper Santa Ana River HCP in the SBC RCIS, that HCP is described in SBC RCIS Section 2.6.1, consistent with the CDFW RCIS Guidelines, and is a yet to be approved HCP developed for 11 water agencies. As a voluntary and nonbinding conservation strategy, the SBC RCIS does not require actions be implemented but rather identifies conservation and mitigation actions and priorities for Focal Species and other conservation

elements that could be implemented by any entity. SBC RCIS action RW-CA8 references implementing actions identified in existing, approved HCPs, which addresses this comment.

Response to CBD Comment 22

Comment pertains to Gambel's watercress and marsh sandwort re-introduction. See Response to CBD Comment 18. This species is not currently known in the RCIS Area, but suitable habitat for the species does occur.

Response to CBD Comment 23

Comment states that the Focal Species associated with Riversidean alluvial fan sage scrub (RAFSS) referenced in SBC RCIS Table 3-7 should include slender-horned spineflower. As shown in table footnote 6 of SBC RCIS Table 3-7 and elsewhere throughout the document, the RAFSS habitat group includes slender-horned spineflower.

Response to CBD Comment 24

Comment relates to maintaining or mimicking hydrogeomorphological processes that maintain Riversidean alluvial fan sage scrub (RAFSS). See Response to CBD Comment 8. Consistent with this comment, RAFSS-CA3 addresses creating and restoring RAFSS habitat and states that such actions "should focus on restoring flow and flood regimes in creeks and rivers (fluvial processes) to reestablish vegetation succession to benefit RAFSS Focal Species."

Response to CBD Comment 25

Comment suggests including additional detail regarding the process for Mitigation Credit Agreements (MCAs). This information is provided in SBC RCIS Section 4.3 based on guidance provided by CDFW. If MCAs are developed in the future following CDFW approval of the SBC RCIS, those MCAs would be developed consistent with the most current guidelines from CDFW.

**Desert Tortoise Council (DTC) Comment Letter -Edward L. LaRue
dated August 3, 2023**

Comment letter commences on the next page.



DESERT TORTOISE COUNCIL

3807 Sierra Highway #6-4514

Acton, CA 93510

www.deserttortoise.org

eac@deserttortoise.org

Via email only

3 August 2023

Attn: California Department of Fish and Wildlife (rcis@wildlife.ca.gov)
San Bernardino County Transportation Authority (jlee@gosbcta.com)

RE: San Bernardino County Regional Conservation Investment Strategy (RCIS)

Dear Agencies,

The Desert Tortoise Council (Council) is a non-profit organization comprised of hundreds of professionals and laypersons who share a common concern for wild desert tortoises and a commitment to advancing the public’s understanding of desert tortoise species. Established in 1975 to promote conservation of tortoises in the deserts of the southwestern United States and Mexico, the Council routinely provides information and other forms of assistance to individuals, organizations, and regulatory agencies on matters potentially affecting desert tortoises within their geographic ranges.

Both our physical and email addresses are provided above in our letterhead for your use when providing future correspondence to us. When given a choice, we prefer to receive emails for future correspondence, as mail delivered via the U.S. Postal Service may take several days to be delivered. Email is an “environmentally friendlier way” of receiving correspondence and documents rather than “snail mail.”

We appreciate this opportunity to provide comments on the above-referenced project. Given the location of the proposed project in habitats known to be occupied by Mojave desert tortoise (*Gopherus agassizii*) (synonymous with Agassiz’s desert tortoise), our comments pertain to enhancing protection of this species during activities implemented California Department of Fish and Wildlife (CDFW) and San Bernardino County Transportation Authority (SBCTA) applicable to this planning exercise. Please accept, carefully review, and include in the relevant project file the Council’s following comments and attachments for the proposed project.

The Mojave desert tortoise is among the top 50 species on the list of the world’s most endangered tortoises and freshwater turtles. The International Union for Conservation of Nature’s (IUCN) Species Survival Commission, Tortoise and Freshwater Turtle Specialist Group, now considers the Mojave desert tortoise to be Critically Endangered (Berry et al. 2021), “... based on population reduction (decreasing density), habit loss of over 80% over three generations (90 years), including past reductions and predicted future declines, as well as the effects of disease (upper respiratory tract disease/mycoplasmosis). *Gopherus agassizii (sensu stricto)* comprises tortoises in the most well-studied 30% of the larger range; this portion of the original range has seen the most human impacts and is where the largest past population losses had been documented. A recent rigorous rangewide population reassessment of *G. agassizii (sensu stricto)* has demonstrated continued adult population and density declines of about 90% over three generations (two in the past and one ongoing) in four of the five *G. agassizii* recovery units and inadequate recruitment with decreasing percentages of juveniles in all five recovery units.”

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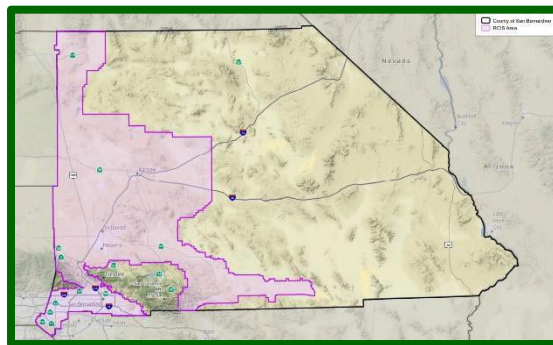
This status, in part, prompted the Council to join Defenders of Wildlife and Desert Tortoise Preserve Committee (Defenders of Wildlife et al. 2020) to petition the California Fish and Game Commission in March 2020 to elevate the listing of the Mojave desert tortoise from threatened to endangered in California.

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We read the following description of this planning effort in the Executive Summary of the “Public Draft: San Bernardino County Regional Conservation Investment Strategy,” prepared by Dudek (2023), dated May 2023: “The San Bernardino County Regional Conservation Investment Strategy (SBC RCIS) is a voluntary, nonregulatory framework for conservation and mitigation actions in key regions of San Bernardino County, California. The San Bernardino Council of Governments, County of San Bernardino, and the Environment Element Group, in collaboration with the Southern California Association of Governments, developed the SBC RCIS based on a set of biological and planning principles that arose from the Countywide Vision planning process. In an effort to streamline mitigation decisions and generate the best conservation outcomes, the SBC RCIS was developed to provide a regional, science-based conservation guidebook for use by public agencies, the development community, environmental groups, other interested entities, and the public when planning and carrying out conservation and mitigation actions in western San Bernardino County.” Unless otherwise notes, all referenced pages are from the SBC RCIS document.

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The RCIS area is shown in pink in Figure 1-1 in Dudek (2023):



Given the Council’s mission statement to protect and conserve Mojave desert tortoise, we necessarily focus on conservation in the “Desert region,” depicted in Figure 2-1 (Dudek 2023), located north of Hesperia and Lucerne Valley, which includes the Fremont-Kramer, Superior-Cronese, and Ord Mountain desert tortoise Critical Habitat Units (CHUs) and Bureau of Land Management- (BLM) designated Areas of Critical Environmental Concern (ACECs) of the same names.

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The Desert region, located north of Hesperia and Lucerne Valley, shown in yellow in Figure 2-1.

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We note on page 2-24 that the following entities are listed as Local Conserved Lands: “These areas are considered permanently protected and managed for resource conservation and include lands managed by The Nature Conservancy, Wildlands Inc., The Wildlands Conservancy, Mojave Desert Land Trust, Wildlife Heritage Foundation, Transition Habitat Conservancy, Inland Empire Resource Conservation District, and Land Veritas,” among others.

9

Please note and amend the next iteration of the RCIS to include 930 of acres on eight parcels managed by the Desert Tortoise Preserve Committee (DTPC; contact Jun Lee at junylee@gmail.com); four parcels comprising 2,318 acres in the established Mojave Desert Tortoise Conservation Bank owned and managed by DETO Inc. (contact Richard Lyons at civicrecords@gmail.com); and 18 parcels comprising 4,088 acres in the Fremont-Yermo Conservation Bank owned and managed by The Lyons Companies (contact Richard Lyons; the bank is being developed in conjunction with Region 6 of CDFW, contact Trisha Moyer at Patricia.Moyer@wildlife.ca.gov).

In regard to “Pressures on Conservation Elements in the RCIS Area,” in Table 2-4, on page 243, we note that the following elements are not checked relative to desert tortoise but should be: Dams and Water Management/Use; Garbage, Solid Waste, Household Sewage, Urban Waste Water, and Airborne Pollutants; Industrial and Military Effluents; Mining and Quarrying; and Parasites/Pathogens/Disease. Given the following information, the applicable boxes should be checked in Table 2-4 in the next iteration of the SBC RCIS.

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With the heavy rains in the winter of 2022, Los Angeles Department of Water and Power (LADWP) found it necessary to inundate adjacent desert areas on an emergency basis to protect their infrastructure in Kern and Inyo Counties, and the Cadiz Land Company is currently considering using an existing pipeline through the center of the RCIS planning area. Although these two particular projects are affecting tortoise habitats in adjacent regions, they are examples of foreseeable project types that may occur in the RCIS planning area, warranting a check in the box pertaining to Dams and Water Management/Use.

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Garbage, Solid Waste, Household Sewage, Urban Waste Water, and Airborne Pollutants are all existing, serious impacts associated with the urbanizing communities of Apple Valley, Victorville, and Barstow that are all found within the RCIS planning area. Similarly, the new use of expanded operations of Fort Irwin westward into the Superior Valley, China Lake Naval Air Weapons Station into lands east of Cuddeback Lake, and the recent expansion of the Twentynine Palms Marine Corps Base into Johnson Valley are examples of military exercises that will undoubtedly result in introducing new effluents into desert tortoise habitats. Mining and Quarrying activities throughout San Bernardino County and the RCIS planning area and their documented impacts (Chaffee and Berry 2006) warrant checking that box in Table 2-4. Finally, upper respiratory tract disease is a significant, widespread factor resulting in tortoise population declines at the Desert Tortoise Research Natural Area (Brown et al. 1999) and may be introduced to tortoises adjacent to urban areas where infected captive tortoises are common (Berry et al. 2015).

12

We note in Table 3-3 on page 3-25 that desert tortoise is restricted to “Desert Scrub” communities. Given the description of “Transitional Scrub, Chaparral, and Woodland” communities on page 3-21, we suggest that this community also be identified for desert tortoise in Table 3-3. There are anecdotal accounts of desert tortoises in these communities up to 5,500 feet elevation (LaRue, personal observation) and these higher elevation community types may also be important if climate change effects result in lateral movements of tortoise populations into adjacent, higher elevation areas.

13

Under Objective DS-1.2. on page 3-46, intended to protect important Desert Scrub habitats, we ask that USFWS-designated critical habitat be added to the list, and that the future iteration of the SBC RCIS document the overlap between BLM-designated ACECs and USFWS-designated critical habitat, which may be similar but not necessarily the same, pending results of this analysis. We believe that this is important because, although DS-1.3 focuses on protecting Desert Scrub communities on private lands then lists desert tortoise critical habitat as one of the conservation priority areas, we note that critical habitat designation applies to all lands but only those actions with a federal nexus (e.g., on private land those actions funded, authorized, or carried out by a federal agency).

14

With regards to the following objective on page 3-47, where Coyote and Cuddeback dry lakes are listed, “**Objective DP-1.2:** Implement targeted conservation actions to increase or improve protection and/or management in the 47,700 acres of public land designations not considered conserved that support DP habitats in the following conservation priority areas, primarily BLM ACECs and other BLM lands,” we note that with its 2019 record of decision, BLM (2019) introduced unrestricted recreational use of these two dry lakes, which are located within desert tortoise critical habitat, and will undoubtedly result in heightened degradation of critical habitat by

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physical impacts from increased human/vehicle access and spillover use, and windblown dust into vegetation in adjacent critical habitat. We contend that, given the significant population declines of the tortoise throughout the West Mojave Desert and RCIS area (Allison and McLuckie 2018), these decisions should be reversed, these dry lakes should retain their Limited Use designation, and unrestricted vehicle use not be allowed.

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Cont.

With regards to the Specific Conservation Actions (SCA) listed in Table 3-7 for DS-CA1-05: Habitat Monitoring and Management and DS-CA1-06: Habitat Enhancement we ask that the next iteration of the SBC RCIS specifically target the identification and restoration of habitats that have been adversely affected by illegal marijuana grow sites. Our personal observations suggest that these “hoop houses” have been identified and dismantled, however most of them still contain residual debris like wood, PVC pipes, irrigation tubing, and Visqueen plastic sheeting and all of them resulted in barren lands where the vegetation had been cleared. We ask that either these SCAs be modified or (our preference) that a SCA be newly identified to restore, remediate, revegetate, etc. each of these sites and that desert tortoise critical habitats and ACECs be identified as high priority areas for these efforts.

16

Concerning Figure 3-4a on page 3-119, which depicts Moderate and High Habitat Value in pink, please explain why wilderness areas and (presumably) private lands are not designated by the pink color. Perhaps the explanation is in one of the referenced documents? In any case, we believe that habitat value should be determined without concern for land ownership, and that those clear (presumably) private lands surrounded by pink should also be depicted as Moderate to High Habitat Value. If not, please explain why not in the next iteration of the SBC RCIS.

17

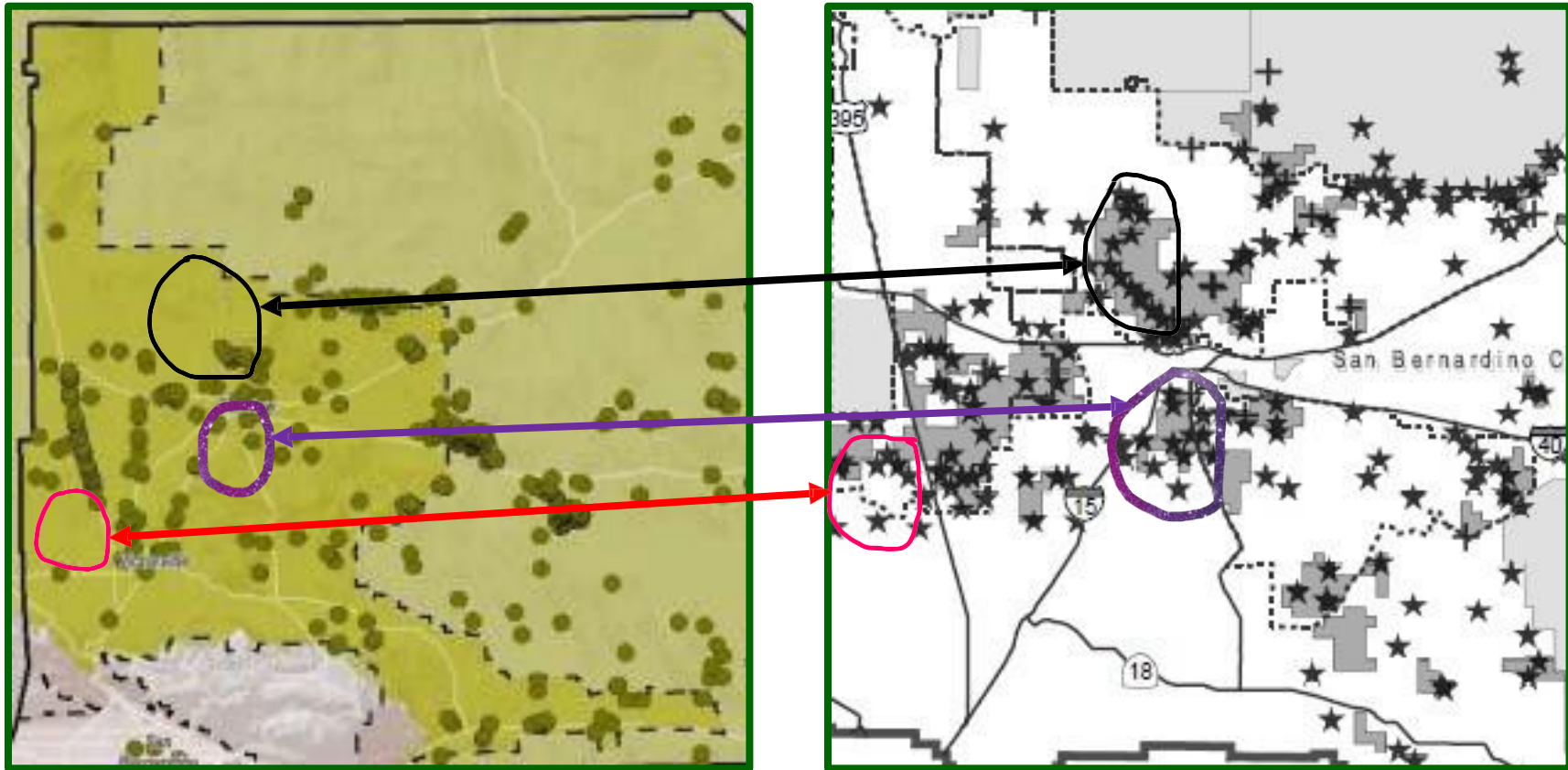
With regards to Appendix C, Focal Species Summaries, for the desert tortoise we read that there are only 242 occurrences of the desert tortoise in the RCIS based on post-1990 records. There are undoubtedly many more records than this that have not been accessed and many more sightings that are not recorded. Given that USFWS (Brian Croft) is included in the List of Preparers and Reviewers in Section 5 on page 5-1, we suggest that he be contacted so that the next iteration of the SBC RCIS include tortoises that have been detected in the RCIS by the USFWS-sponsored distance sampling surveys performed since year 2000. Additional sources of tortoise occurrences that may not have been accessed are BLM permanent study plots, including hundreds of tortoises detected on the Johnson Valley, Lucerne Valley, Stoddard Valley, Kramer Hills, and Fremont Peak study plots and tortoise occurrences from the West Mojave Plan (BLM 2006). Note for example on the next page the pattern of tortoise occurrences in the left hand map from the SBC RCIS compared to the occurrence pattern in the right hand map from the West Mojave Plan.

18

In this same section, whereas we prefer the term “brumation” to “hibernation,” the table should be modified to show that tortoises are generally active by late February in this area, so the month of March should not be checked. And since most hatchlings emerge from their nests in September or even early October, the months of August, September, and October should also be included in the nesting period for tortoises. Finally, those three records of tortoises in the Valley region are undoubtedly of pet tortoises, so we suggest removing that statement from the next SBC RCIS.

19

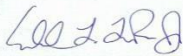
20



The linear distribution of tortoise occurrences shown as circles in the left map from the SBC RCIS suggest California Natural Diversity Data Base (CNDDB) records and do not appear to show the tortoise occurrences shown as stars in the West Mojave Plan (BLM 2006). Note the regions where missing circles in the RCIS map corresponding to the regions where stars indicate tortoise occurrences in the BLM (2006) map.

We appreciate this opportunity to provide comments on this project and trust they will help protect tortoises during any resulting authorized activities. Herein, we reiterate that the Desert Tortoise Council wants to be identified as an Affected Interest for this and all other projects funded, authorized, or carried out by the CDFW and SBCTA that may affect species of desert tortoises, and that any subsequent environmental documentation for this project is provided to us at the contact information listed above. Additionally, we ask that you respond in an email that you have received this comment letter so we can be sure our concerns have been registered with the appropriate personnel and office for this project.

Respectfully,



Edward L. LaRue, Jr., M.S.
Ecosystems Advisory Committee, Chairperson
Desert Tortoise Council

cc. Brian Croft, USFWS, Palm Springs, brian_croft@fws.gov
Mark Massar, BLM, Palm Springs, mmassar@blm.gov
Patricia Moyer, CDFW Region 6, Patricia.Moyer@wildlife.ca.gov
Richard Lyons, Mitigation Bank Manager, civicrecords@gmail.com
Jun Lee, Desert Tortoise Preserve Committee, junylee@gmail.com

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Defenders of Wildlife, Desert Tortoise Preserve Committee, and Desert Tortoise Council. 2020. A Petition to the State of California Fish And Game Commission to move the Mojave desert tortoise from listed as threatened to endangered. Formal petition submitted 11 March 2020. https://defenders.org/sites/default/files/2020-03/Desert%20Tortoise%20Petition%203_20_2020%20Final_0.pdf.

Response to Desert Tortoise Council (DTC) Comment Letter -Edward L. LaRue dated August 3, 2023

Response to DTC Comment 1

Introductory comment describing the DTC. No specific comment provided on the SBC RCIS.

Response to DTC Comment 2

Introductory comment regarding correspondence with DTC. No specific comment provided on the SBC RCIS.

Response to DTC Comment 3

Introductory comment describing the scope of DTC's comment letter. No specific comment provided on the SBC RCIS.

Response to DTC Comment 4

Comment on the status of the Mojave desert tortoise and its population. No specific comment provided on the SBC RCIS.

Response to DTC Comment 5

Comment on the petition to list the Mojave desert tortoise under the California Endangered Species Act. No specific comment provided on the SBC RCIS.

Response to DTC Comment 6

Comment provides a quote from the SBC RCIS Executive Summary and an insert map of the RCIS Area from SBC RCIS Figure 1-1. No specific comment provided on the SBC RCIS.

Response to DTC Comment 7

Comment on DTC's mission and geographic focus area. No specific comment provided on the SBC RCIS.

Response to DTC Comment 8

Comment on DTC's geographic focus area. No specific comment provided on the SBC RCIS.

Response to DTC Comment 9

Comment references SBC RCIS page 2-24 that describes some of the conservancies, districts, and land trusts that manage local conserved lands in the RCIS area and cites additional entities and lands, including lands managed by DTC, within the RCIS area. Consistent with CDFW RCIS Guidelines, the SBC RCIS identified local conserved lands based on public data to support landscape-scale planning to support RCIS development. It is acknowledged that additional conservation lands may exist and will continue to be protected in the future within the RCIS area.

Response to DTC Comment 10

Comment recommends acknowledging additional pressures related to Mojave desert tortoise in SBC RCIS Table 2-4 (Pressures on Conservation Elements in the RCIS Area). In response to this comment, Table 2-4 has been updated on Focal Species regional pressures, and the species summaries in Appendix C have also been updated.

Response to DTC Comment 11

See Response to DTC Comment 10.

Response to DTC Comment 12

See Response to DTC Comment 10.

Response to DTC Comment 13

Comment relates to the SBC RCIS identifying the Desert Scrub habitat group associated with Mojave desert scrub and contends that the species is known from or could use higher elevation habitats aggregated within the Transitional Scrub, Chaparral, and Woodland habitat group. Although Mojave desert tortoise is primarily associated with desert scrub habitats, the SBC RCIS acknowledges that Mojave desert tortoise also may utilize “rocky slopes in blackbrush (*Coleogyne* spp.) scrub and juniper woodland transition zones at higher elevations, as described in the Focal Species Summaries in SBC RCIS Appendix C. Additionally, the Focal Species Habitat Area mapping, used to represent a reasonable approximation of the potentially suitable habitat areas for each Focal Species in the RCIS Area, is not based on the mapping of Desert Scrub habitat group vegetation types but rather is based on the USGS species distribution model for the species.

Response to DTC Comment 14

Comment suggests that SBC RCIS Objective DS-1.2 include USFWS-designated critical habitat for Mojave desert tortoise in the list of priority areas on public land designations not considered conserved in the SBC RCIS area. This objective is focused on conservation objectives within public land designations, and as the comment notes, BLM ACECs, which are included in the list of priority areas in this objective, cover a similar spatial extent but is not exactly the same as the mapping of USFWS- designated critical habitat. The objective also cites other priority public land designations including USFS National Forests, other BLM lands, other state lands, other local government lands and open space and parks, and SBCFCD lands. USFWS-designated critical habitat for Mojave desert tortoise within these other public land designations are considered a priority under this objective. Further and as noted in the comment, USFWS-designated critical habitat on private lands is also included in the objectives under SBC RCIS Objective DS-1.3. Therefore, critical habitat for the species has been identified as a specific conservation priority area for the Mojave desert tortoise.

Response to DTC Comment 15

Comment raises the issue of unrestricted recreational uses allowed on BLM lands on Coyote Dry Lake and Cuddeback Dry Lake identified under SBC RCIS Dune and Playa Objective DP-1.2. It is acknowledged that existing uses may occur on public lands, such as BLM lands, that may preclude or prevent actions from happening under the SBC RCIS; however, the SBC RCIS is voluntary and nonbinding and would not restrict or modify existing lands uses allowed by BLM.

Response to DTC Comment 16

Comment suggests that the actions identified under DS-CA1 in SBC RCIS Table 3-7 address illegal marijuana grow sites and include actions for remediation of such sites. As described in SBC RCIS action DS-CA1, the action includes “Coordinat[ion] with existing land managers to identify and implement management activities within public lands that would maintain and enhance habitat quality for Focal Species”. If through that coordination, illegal marijuana grow sites were identified as a priority for enhancement, specific action DS-CA1-02 and DS-CA1-06 could be implement for habitat protection and habitat enhancement of such sites.

Response to DTC Comment 17

Comment relates to the moderate to high habitat value mapping provided in SBC RCIS Figure 3-4A. As described in SBC RCIS Section 3.4.2, the habitat value mapping for the desert region was based on the California Desert Biological Conservation Framework map developed and published by the California Energy Commission, CDFW, BLM, and USFWS. SBC RCIS Figure 3-4A represents this mapping data without the public land designations. Importantly and as noted in the comment, this habitat value mapping was intended to be used in conjunction with public land designation mapping, such as

Wilderness Areas, which is why SBC RCIS Figure 3-4B includes and overlays those designations.

Response to DTC Comment 18

Comment pertains to the occurrence data shown on map inset for Mojave desert tortoise species summary provided in SBC RCIS Appendix C. Consistent with CDFW RCIS Guidelines, the SBC RCIS was prepared using existing publicly available information. The SBC RCIS also acknowledges gaps and limitation in scientific information in Section 3.1.4 stating that the “occurrence data are “presence only” data with varying degree of spatial accuracy, and the lack of occurrence data for a species does not indicate a lack of species occurrence. Additionally, these data are compiled from surveys where they were conducted and large portions of the RCIS Area lack comprehensive species surveys.” Species occurrence data was used for reference to support the Focal Species summaries and was not used in this landscape-scale planning to characterize presence or absence of the species in specific locations. To overcome this potential data limitation, the SBC RCIS also include species range information as well as the species distribution model prepared by USGS.

Response to DTC Comment 19

Comment relates to the seasonal periods for Mojave desert tortoise. In response to this comment, the seasonal periods for hibernation has been revised in the SBC RCIS Appendix C species summary.

Response to DTC Comment 20

Comment relates to the reference of Mojave desert tortoise occurrences in the Valley region. In response to this comment, the reference to Valley region occurrences has been revised to indicate that they likely represent pet individuals in the SBC RCIS Appendix C species summary.

Response to DTC Comment 21

Comment pertains to the occurrence data shown on map inset for Mojave desert tortoise species summary provided in SBC RCIS Appendix C. See Response to DTC Comment 18.

Response to DTC Comment 22

Comment includes conclusory statements. No specific comment provided on the SBC RCIS.

**Endangered Habitats League (EHL) Comment Letter – Dan Silver -
dated August 1, 2023**

Comment letter commences on the next page.



August 1, 2023

California Department of Fish and Wildlife
Habitat Conservation Planning Branch
ATTN: San Bernardino County RCIS Comments
P.O. Box 944209
Sacramento, CA 94244-2090
CDFW: rcis@wildlife.ca.gov
San Bernardino County Transportation Authority (SBCTA): jlee@gosbcta.com

RE: Draft San Bernardino Regional Conservation Investment Strategy (RCIS)

Dear RCIS Program Team and Mr. Lee:

Endangered Habitats League (EHL) appreciates the opportunity to comment on the public review draft. For your reference, EHL is a Southern California Regional Conservation group dedicated to ecosystem protection and sustainable land use. EHL serves as Co-Chair of the County Environmental Element Group, which is the stakeholder body for the RCIS. We appreciate the commitment of the Department and SBCTA to this effort.

1

EHL *supports* adoption of an RCIS consistent with state Guidelines. With an RCIS in place, advanced and streamlined mitigation for species and habitats can be offered for renewable energy, infrastructure, and housing projects. An example is mitigation in accord with the Western Joshua Tree Conservation Act. The science-based conservation framework of the RCIS will also facilitate ecosystem protection. These benefits, all in the context of a fully voluntary plan, will occur in the Valley and in the western Mojave regions. However, we call attention to a significant deficiency relative to the RCIS statute and Guidelines. Our comments follow.

2

1) Figures

The “Undesignated Private Lands” heading in some map logos does not have an associated color box, e.g., Fig 2-6.

3

2) Conservation Actions

We concur with addition of fluvial restoration in RAFSS-CA3 (below).

Restoration of RAFSS should focus on restoring flow and flood regimes in creeks and rivers (fluvial processes) to reestablish vegetation succession to benefit RAFSS Focal Species.

4

3) Land designation mapping

In Fig 2-6 and Fig 3-4B, land designation mapping of Lytle and Cajon Creeks is erroneous. Upstream of the confluence along Lytle Creek, there is substantial privately-owned RAFSS owned by Cemex and Lytle Creek Development. These holdings are mis-mapped as San Bernardino County Flood Control District.



4) Conservation Analysis

Table 3-6 does not contain the percent of each habitat (public or private) considered conserved, but only the total acres. In other words, it does not show the “gap” between conserved and not conserved. This makes the table of relatively little use. The percentages are instead included in the *texts* for each Habitat Group. For example:



Approximately 54.5% (15,108 acres out of 27,711 acres) of the grassland habitat group on public lands in the Desert region is in public land designations considered conserved for the purpose of analysis, and approximately 45.5% (12,603 acres out of 27,711 acres) are in public land designations not considered conserved for purpose of analysis. Approximately 52.5% (5,424 acres out of 10,325 acres) of the grassland habitat group on public lands in the Valley region is in public land designations considered conserved for the purpose of analysis with the remainder (4,900 acres) in public land designations not considered conserved for purpose of analysis. Approximately 21.2% (8,585 acres out of 40,565 acres) of the grassland habitat group on private lands in the Desert region is protected in Local Conserved Lands, which leaves approximately 78.8% (31,980 acres out of 40,565 acres) of grassland in the Desert region in undesignated private lands.

These percentages, which comprise a basic gap analysis, *should be included in additional columns in an expanded Table 3-6*, so that the information of what percent of a particular habitat (public or private) is currently conserved is easily accessible rather than buried in convoluted text.

Since the 2022 draft RCIS, a vitally important level of analysis was eliminated entirely, and should be returned. Conservation targets (2022 Table 3-6¹) for each Habitat



¹

Table 3-6
Habitat Group General Conservation Targets

Habitat Group General Conservation Target	
Desert Scrub	50%
Dune and Playa	75%
Grassland	50%
Riversidean Alluvial Fan Sage Scrub	90%
Riparian and Wetland	90%
Transitional Scrub, Chaparral, and Woodland	75%

Group, expressed as percentages, were *eliminated*. Previously, these had conveyed relative depletion and guided conservation strategy. The 2022 draft recognized their planning importance (albeit missing their value for quantification):

As one frequently used measure of evaluating conservation gaps, general conservation targets were assigned to the habitat groups. Conservation targets were developed based on rarity/status, abundance, distribution of habitat in the RCIS area, and life history for the Focal Species in each habitat group. Conservation targets were assigned as follows: a target of 90% was assigned to habitat groups supporting numerous federal or state listed Focal Species and other special-status Focal Species with limited distributions, a target of 75% was assigned to habitat groups supporting few federal and state listed Focal Species with limited distributions and supporting other special-status Focal Species with more widespread distributions, and a target of 50% was assigned to habitat groups supporting with Focal Species' habitats that are widespread supporting federal or state listed Focal Species and other special-status Focal Species. The assigned habitat group conservation targets are shown in Table 3-6. These conservation targets are not conservation requirements of the SBC RCIS but were used as a relative measure for evaluating the conservation gaps and for developing the conservation objectives.

Also in the 2022 draft, the targets were translated into a basic yet crucial gap analysis (2022 Table 3-7). This table showed how much additional public and private land *in acres*, above and beyond that already conserved, would needed to achieve the target. *These acreage figures comprised measurable objectives, as required in the RCIS statute and Guidelines.* As a result of eliminating this information, as currently written, *the 2023 plan lacks measurable conservation objectives*, with metrics, as required. Relevant excerpts from statute and Guidelines are below.

According to statute, measurable objectives are mandatory elements of an RCIS:

(8) Conservation goals and measurable objectives for the focal species and important conservation elements identified in the strategy that address or respond to the identified stressors and pressures on focal species.²

The 2018 Guidelines, upon which the San Bernardino RCIS is based, translate statute into guidance as follows:

² FISH AND GAME CODE - FGC
DIVISION 2. DEPARTMENT OF FISH AND WILDLIFE [700 - 1958]
(*Heading of Division 2 amended by Stats. 2015, Ch. 154, Sec. 21.*)
CHAPTER 9. Advance Mitigation And Regional Conservation Investment Strategies [1850 - 1860]

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Cont.

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Objective

A concise, measurable statement of what is to be achieved and that supports a conservation goal. The objective should be based on the best available scientific information to conserve the focal species or other conservation elements for which the conservation goal and objective is developed. It should be measurable by using a standard metric or scale (i.e., number, percent), in a region (e.g., county, watershed, jurisdictional area) over a period of time (e.g., years).

Metric

The indicator (e.g., area, habitat quality, known or estimated population size, etc.) by which the net change can be measured, using existing technology, from implementation of the proposed conservation actions or habitat enhancement actions relative to performance standards, to determine achievement of the RCIS's objectives.

4.2.7 Conservation Goals and Objectives

An objective is a concise statement of a target outcome for a focal species or other conservation element. Objectives should be "SMART" (Specific, Measurable, Achievable, Relevant and Timebound) objectives, as described in this section.

Objectives shall be specific and measurable (e.g., percent or estimated number of acres conserved, by habitat, or habitat quality, size, connectivity) to identify the types of habitat and ecological functions that need protection or enhancement to benefit one or more species or other conservation elements. The objectives should also be linked to locations within the RCIS area where those objectives, if implemented, would provide the greatest conservation benefit.

The objectives should include the improvements to be achieved relative to the existing conditions, and the time period (e.g., years) within which the objective (or, if needed, milestone steps indicated to achieve the objective) should ideally be reached to achieve the intended conservation benefit for the focal species or other conservation elements.

Objectives in the RCIS should be achievable through conservation actions or habitat enhancement actions. In describing objectives, consistent metrics shall be used, such as the area of focal species' habitat or quality of a conservation element's ecosystem function. The metrics chosen shall be used to measure the net change resulting from the implementation of conservation actions and habitat enhancement actions.

The following metrics are acceptable in this RCIS for measuring the net change in habitat area and habitat quality resulting from habitat restoration actions:

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- Acreage
- Linear feet
- Vigor index (health of plant on scale of 1-4)
- Plant species percent cover (native vs. nonnative species)
- Native species diversity
- Number of individuals
- Gene pool / genetic diversity
- Evidence of species presence and abundance (presence/absence, # of nests, calls, scat, etc.)
- Habitat structure (number of canopy layers; percent cover; snags, etc.)
- Distribution of key resources (e.g., nesting trees, ponds, host plants) (number per acre)
- Inundation duration (e.g., consecutive days)
- Water depth
- Stream flow (e.g., cubic feet per second)
- Water temperature and chemical composition
- Stream substrate composition (percent cover; gravel size; etc.)
- Stream characterization (pool, riffle, run; length and width)

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Cont.

The new 2023 Guidelines similarly require conservation objectives. “Objective” is defined as follows:

A concise statement of a target outcome for a focal species or other conservation element. Objectives must be measurable by using standard ecologically based metrics that includes both area and quality of habitat.

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Based on the foregoing, the draft RCIS is *clearly and substantially deficient*. Without the 2022 conservation targets expressed as acres for each Habitat Group, the 2023 RCIS lacks measurable objectives and related metrics. No alternative measurable objectives are provided. As a result, users cannot prioritize conservation actions and or monitor success in implementation. Is there already sufficient conservation based on progress toward a target? Is there a need to conserve quickly, based on a long distance to go for a depleted and highly threatened habitat?

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Here is an example of an objective in the plan without measurable objectives or metrics of percent or acreage:

Conserve RAFSS vegetation communities and reduce the threat of habitat loss for Focal Species that utilize RAFSS habitat¹² by protecting and managing, establishing (creating), restoring, and/or enhancing RAFSS habitat in the 5,413 acres of undesignated private lands that support these habitats that directly benefit Focal Species and habitat connectivity for this habitat group, focusing on the following conservation priority areas:

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To summarize, there are no quantified objectives for species or habitats provided. Acreage targets and/or other measurable objectives, timelines or milestones, and metrics for restoration actions should be added as part of a final plan.

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Cont.

Also, as noted above, in the 2022 draft, the acreage targets allowed a *much more valuable* gap analysis to be performed, showing the gaps in conservation *relative to the target*, rather than relative to the total gap. (2022 Table 3-7) This refined gap analysis, done for Habitat Groups on both public and private lands, is necessary to inform the objectives and actions for each group. The 2015 Framework also recognized the importance of a gap analysis.³ We strongly urge that the refined gap analysis based on targets also return to the final plan as it is essential for practical use.

12

Finally, both the 2022 and 2023 drafts characterize priority areas in broad terms, as general regional locations, e.g., “Chino Hills” or “Morongo Basin,” or even “National Forests.” More detailed and practical guidance for priority actions within them is needed, like steps to reduce fragmentation, to maintain connectivity, and to protect key species populations. Where possible, greater geographic specificity should be provided, with more descriptions like “Mojave River and tributaries, particularly from Mojave Narrows Regional Park to Helendale.” While parcel-level information is not appropriate, *for effective implementation, greater specificity for conservation actions within priority areas should be provided.*

13

5) Implementation

The draft states as follows:

If MCAs are to be developed under the SBC RCIS, a SBC RCIS Implementation Team will be formed by SBCOG, the County, and/or other public entity MCA sponsor. The SBC RCIS Implementation Team will serve as the primary point of contact for SBC RCIS implementation responsibilities. The Implementation Team will be available to support CDFW and RCIS users with documentation, mapping, and other data products during the implementation period. The Implementation Team will play an important role as champion of the SBC RCIS and will promote its use through communications, outreach, and partnerships in the region. The SBC RCIS Implementation Team will also be involved in coordinating adaptive management and monitoring activities across the RCIS Area and facilitating MCA development. The SBC RCIS Implementation team will be responsible for RCIS updates, extensions, and amendments, as described below.

14

The SBC RCIS Implementation Team will work with RCIS users, local municipalities and agencies, and stakeholders on a coordinated adaptive

³ A gap analysis is integral to developing the Reserve Design because it provides an understanding of land ownership encumbrances and identifies the wildlife and habitat linkages or connections that can be made with existing conservation areas that would be most beneficial for focal species conservation.

management and monitoring strategy that informs RCIS implementation over time.

Implementation planning should be both more substantive and more specific. How will the Implementation Team be constituted? How will it function? How will it be effective? What are its specific tasks? How will it be involved in setting up MCAs? How will it identify parcels appropriate for acquisition and seek funding for such, as through grant applications? Who will do land transactions and own and manage land?

Note that the 2015 Preservation/Conservation Framework Development specifically listed the next steps, calling for Conservation Planning, an Interim Lead, identification of Funding Sources, Tracking and Inventory, and a Preserve Design⁴ with creation of Detailed Conservation Strategies by Conservation Subarea. This is the path to follow. Composition of, and tasks for, the Implementation Team are missing and should be fleshed out in the final plan.

In conclusion, EHL *supports* the RCIS and its many benefits to the region. However, it should be improved with measurable objectives and metrics, and a gap analysis showing acres needed to reach the conservation targets. It should also have greater specificity for priority conservation actions and a more substantive implementation program.

Yours truly,



Dan Silver
Executive Director

14
Cont.

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16

⁴ Reserve Design is a process which identifies lands needing protection to sustain natural resources while considering ecological, social, and political factors. Reserves are areas set aside to protect natural values such as biodiversity, ecosystem functions, or to offset adverse effects from use or development. The two main objectives of reserves are to achieve species, habitat, and function representativeness and persistence.

Response to Endangered Habitats League (EHL) Comment Letter – Dan Silver - dated August 1, 2023

Response to EHL Comment 1

This comment expresses appreciation for the opportunity to comment and the commitments of CDFW and SBCTA and reiterates EHL's role in the stakeholder body of the RCIS and Comment noted. SBCTA/SBGOC appreciates the dedication and leadership of EHL in the RCIS process. No specific comment provided on the SBC RCIS.

Response to EHL Comment 2

This comment expresses support of an RCIS and the benefits it can provide, while concluding that significant deficiencies exist in the document. No specific comment provided on the SBC RCIS.

Response to EHL Comment 3

This comment suggests an identifier is missing from figure legend. Lack of an associated color box for map elements indicates that everything in the figure that does not have color applies to that map element. Figure 2-6 and Figure 3-4B have been revised to make it clear that areas without color represents "Undesignated Private Lands".

Response to EHL Comment 4

This comment expresses concurrence with the addition of fluvial restoration to RAFSS-CA3.

Response to EHL Comment 5

This comment suggests that changes to certain figures are needed to reflect private ownership of certain lands instead of being identified as publicly owned. Consistent with the CDFW RCIS Guidelines, the mapping of public land designations in the SBC RCIS is based on existing data sources including data from the County, SBCOG, BLM, State Parks, and the California Protected Areas Database. As noted in the SBC RCIS with regard to this mapping, it is approximate and intended to support landscape-scale assessment of land designation patterns in the County and the existing data sources used differ in quality, resolution, and accuracy. As such, the mapping in the SBC RCIS should not be used at the parcel-level; therefore, we are not adding this detail to the mapping layers.

Response to EHL Comment 6

This comment notes that the percentages of habitat types considered conserved are found in the narrative for each Habitat Group and states these percentages should be included in Table 3-6. Consistent with CDFW RCIS Guidelines, SBC RCIS Section 3.2 provides a conservation inventory that identifies the acreage and percentages of unprotected lands on public and private lands by habitat group.

Response to EHL Comment 7

This comment references text from the 2022 draft RCIS version that was removed from the 2023 public draft version, regarding Habitat Group General Conservation Targets. With regard to the development of measurable objectives and conservation targets, the SBC RCIS was developed consistent with the California Fish and Game Code and the CDFW RCIS Guidelines. California Fish and Game Code Section 1852(c)(9) specifies that an RCIS include "a description of the general amounts and types of habitat that, if preserved or restored and permanently protected, could achieve the conservation goals and objectives." The RCIS guidelines states that the objectives shall be specific and measurable. The SBC RCIS states that "implementation of any amount of the SBC RCIS actions identified in SBC RCIS Section 3.4.1 would contribute toward meeting these conservation goals and objectives." SBC RCIS Section 3.2 provides a conservation inventory that identifies the acreage of unprotected lands on public and private lands by habitat group. SBC RCIS Section 3.3 provide conservation objectives that are specific and measurable by

providing an estimated number of acres by habitat group and specific conservation priority areas in each objective where the actions should be focused on public lands and private lands in the RCIS area.

Response to EHL Comment 8

This comment cites RCIS statute and guidance from the 2018 CDFW RCIS Guidelines regarding measurable conservation objectives with quantified metrics as a mandatory element of an RCIS, and notes that this element was present in the 2022 draft RCIS version but removed from the 2023 public draft RCIS version. With regard to the development of measurable objectives and conservation targets, the SBC RCIS was developed consistent with the California Fish and Game Code, which calls for a description of the general amounts and types of habitat if conserved could achieve the conservation objectives, and the CDFW RCIS Guidelines, which states that the objectives shall be specific and measurable. SBC RCIS Section 3.2 provides a conservation inventory that identifies the acreage of unprotected lands on public and private lands by habitat group. The CDFW RCIS Guidelines do not require setting conservation targets. SBC RCIS Section 3.3 provide conservation objectives that are specific and measurable by providing an estimated number of acres by habitat group and specific conservation priority areas in each objective where the actions should be focused on public lands and private lands in the RCIS area. Additionally, see Response to EHL Comment 7.

Response to EHL Comment 9

This comment states the 2023 RCIS guidelines require conservation objectives and includes the definition of “objective.” Since the SBC RCIS document was submitted to CDFW prior to the 2023 CDFW RCIS Guidelines were published, the SBC RCIS is subject to the previous 2018 CDFW RCIS Guidelines. See Response to EHL Comment 7 and EHL Comment 8.

Response to EHL Comment 10

This comment suggests the 2023 public review draft RCIS version is lacking conservation targets, which are a mandatory element without providing an alternative metric. See Response to EHL Comment 7 and EHL Comment 8.

Response to EHL Comment 11

This comment gives an example from the 2023 public draft RCIS of how a conservation objective is described without metrics for conservation and suggests measurable objectives for restoration actions “should” be added back to the final RCIS plan. See Response to EHL Comment 7 and EHL Comment 8.

Response to EHL Comment 12

This comment reiterates the benefits of returning measurable targets back to the final RCIS plan. See Response to EHL Comment 7 and EHL Comment 8.

Response to EHL Comment 13

This comment requests and provides examples of greater geographic specificity and practical guidance in the descriptions of priority areas. Throughout the SBC RCIS conservation objectives, and elsewhere in the document, geographic specificity was provided, at the most detailed level possible at the landscape-scale of this planning effort, to identify known conservation priority areas. Further, in the actions identified in SBC RCIS Table 3-7, the specific actions describe approaches and resources available within the SBC RCIS to identify area of interest for prioritizing conservation areas.

Response to EHL Comment 14

This comment cites text from the 2023 public review draft RCIS regarding the San Bernardino County RCIS Implementation Team that would be formed if MCAs are developed and suggests the description of the roles and responsibilities of the SBC RCIS Implementation Team are lacking substance and specificity. The information provided in SBC RCIS Section 4 is based on the necessary elements for implementation

should MCAs be developed in the future based on the CDFW RCIS Guidelines. Additional specific details regarding the Implementation Team, should it be formed in the future, are not available at this time and are not required for the RCIS.

Response to EHL Comment 15

This comment cites the 2015 Framework document for the next steps that should be taken by the Implementation Team; however, the author mentions that “composition of, and tasks for” the Team are lacking in the 2023 public review draft RCIS. See Response to EHL Comment 14.

Response to EHL Comment 16

This comment concludes the letter with support for the RCIS and requesting the aforementioned comments be addressed. No specific comment provided on the SBC RCIS.

**Friends of Live Oak Canyon (FLOC) Comment Letter dated
August 1, 2023**

Comment letter commences on the next page.

Noemi Avila

From: Josh Lee <jlee@gosbcta.com>
Sent: Tuesday, August 1, 2023 12:27 PM
To: Mike Howard (mhoward@dudek.com); Stephanie Standerfer
Subject: FW: RCIS comment

FYI

From: David Matuszak <dave@pacificsunset.com>
Sent: Tuesday, August 1, 2023 6:13 AM
To: Josh Lee <jlee@gosbcta.com>
Subject: RCIS comment

CDFW and San Bernardino County Transportation Authority:

Please consider the following input regarding Live Oak Canyon in the Regional Conservation Investment Strategies (RCIS).

Live Oak Canyon is a pristine natural environment located on the border of Riverside and San Bernardino Counties and includes portions of the cities of Redlands, Yucaipa, and unincorporated area of Calimesa.

Every effort should be made to protect the natural environment of Live Oak Canyon. Live Oak Canyon is a major wildlife corridor. It contains relic oaks dated as old as 300 years. And it is home to protected species, including mountain lion and bobcat.

The Friends of Live Oak Canyon commissioned renowned environmental biologist, Professor David Bixler to conduct a Biotic Survey of Live Oak Canyon. That document is available to you upon request. Bixler documented the specific species of flora and fauna in Live Oak Canyon and makes recommendations to protect its delicate habitat from development.

If you have any questions, or would like to obtain a copy of Bixler's report, feel free to contact me.

Lastly, please place me on your contact list for further notifications regarding RCIS.

Sincerely,

David Matuszak, president

Friends of Live Oak Canyon

30320 Live Oak Canyon Rd.

Redlands, CA 92373-0668

dave@pacificsunset.com



<https://www.facebook.com/groups/203152950549301>



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Response to Friends of Live Oak Canyon (FLOC) Comment Letter dated August 1, 2023

Response to FLOC Comment 1

This comment asks for consideration of the noted elements mentioned about Live Oak Canyon located along the Riverside/San Bernardino County border, including portions of Redlands, Yucaipa, and Calimesa.

The portion of Live Oak Canyon that is within San Bernardino County is included in the RCIS area.

Response to FLOC Comment 2

This comment informs us about a biotic study of Live Oak Canyon that was commissioned by FLOC and makes it available upon request. The study documents the flora and fauna of the canyon as well as recommendations on protecting it from development. Live Oak Canyon was identified as an area of moderate to high biological value, as an area known to provide habitat areas for focal species and vegetation communities, and as an area for habitat linkage in the SBC RCIS maps based on existing publicly available data; therefore, the referenced study was not specifically used.

Response to FLOC Comment 3

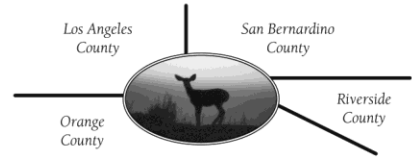
This comment requests that David Patuszak, President of Friends of Live Oak Canyon, dave@pacificsunset.com is added to the contact list for future notifications regarding RCIS.

Hills for Everyone (HFE) Comment Letter dated August 3, 2023

Comment letter commences on the next page.

H i l l s F o r E v e r y o n e

Southern California comes together at the Puente-Chino Hills



August 3, 2023

Submitted via email to: rcis@wildlife.ca.gov and jlee@gosbcta.com

California Department of Fish and Wildlife (CDFW)
Habitat Conservation Planning Branch
ATTENTION: San Bernardino County RCIS Comments
P.O. Box 944209
Sacramento, CA 94244-2090

Dear CDFW,

Hills For Everyone (HFE) is an organization dedicated to the protection of the rare, unique and disappearing landscapes of the Puente-Chino Hills Wildlife Corridor. By way of background, regional efforts to save the Puente-Chino Hills have been underway for more than three decades.

Conservationists have been remarkably successful. The entire corridor includes roughly 27,000+ acres of protected lands with anchor properties on the west as the Puente Hills Preserve and on the east as Chino Hills State Park. The entire hillside system is now connected to the Cleveland National Forest at Coal Canyon under the 91 Freeway. The Corridor spans Los Angeles, Orange, Riverside, and San Bernardino Counties.

As part of the existing San Bernardino Environment Element Group, we've been pleased with the forward progress of this voluntary conservation program and hope it finds great success. Having a diversity of voices at the table will help plan the County's future with input from all sectors—instead of having one sector dominate or maintain siloed approaches to planning.

We appreciate the public comment period offering us the ability to provide substantive feedback on the San Bernardino County Regional Conservation Investment Strategy (RCIS). HFE is supportive of creating this RCIS as development and infrastructure mitigation and acquisition opportunities are needed in San Bernardino County.

Policy & Biological Principles

We concur with the 10 principles outlined on PDF page 14, specifically that a process like the RCIS ensures greater certainty for those willing participants as projects are advanced through the development process. Further, it allows for a more comprehensive approach to both conservation planning and development. We also support Principle 8 (consider conservation planning strategies that go outside the County boundaries if needed). Ensuring conserved lands align with other conservation properties, especially wildlife connections and linkages, is critically important to the larger landscape. And, depending on the mitigation need, specific habitats may not be available in San Bernardino County and other areas may need to be considered. This principle provides flexibility.

HFE supports the Biological Principles listed in the San Bernardino County RCIS.

6

Section 2.7 Land Uses and Reasonably Foreseeable Development

We appreciate the acknowledgement that “reasonably foreseeable development” was included in the plan. In short, the Southern California Association of Governments Regional Transportation Plan and Sustainable Communities Strategies (collectively called Connect SoCal) identifies areas of growth near High Quality Transit Areas (HQTA) to help meet housing and transportation goals. Many of the places identified as potential conservation lands on the map are NOT in HQTA. Instead, the potential conservation lands are next to existing protected areas and generally rich in biodiversity. Further, being that this is a voluntary program, no landowner would be forced to participate. Instead, this is one option (of many) available to them.

7

Maps

We are pleased to relay that the following properties adjacent to Chino Hills State Park have been protected in perpetuity through the Mountains Recreation and Conservation Authority (MRCA), a local public agency. These lands include:

- Eastbridge (320 acres)
- Eastbridge (80 acres)
- First National Investment Properties (320 acres)

Attached as Exhibit 1 is a map of the three conserved MRCA owned properties. If geographic information system shapefiles are needed, we would be happy to provide those to you.

8

This means the following maps must be updated in the RCIS:

- PDF Pg. 49 (Figure 2-5) Land Ownership and Jurisdiction
- PDF Pg. 51 (Figure 2-6) Land Designations
- PDF Pg. 199 (Figure 3-4B) San Bernardino County RCIS Habitat Value with Land Designations

Additionally, the following tables must be updated as well to include these local public agency lands:

- PDF Pg. 48 (Table 2-1) Land Ownership in the RCIS Area by Region
- PDF Pg. 55 (Table 2-2) Land Designations in the RCIS Area by Region

Conservation Goals

HFE is supportive of the goals included in the grassland and transitional scrub, chaparral, and woodland sections (Goals: 3.3.3, 3.3.4, and 3.3.6).

9

Appendix C

The maps and extensive descriptions of each species in Appendix C are helpful. We suggest providing an image of the species being discussed so the reader knows what the insect, plant, animal, etc. looks like and to break up the significant blocks of text.

10

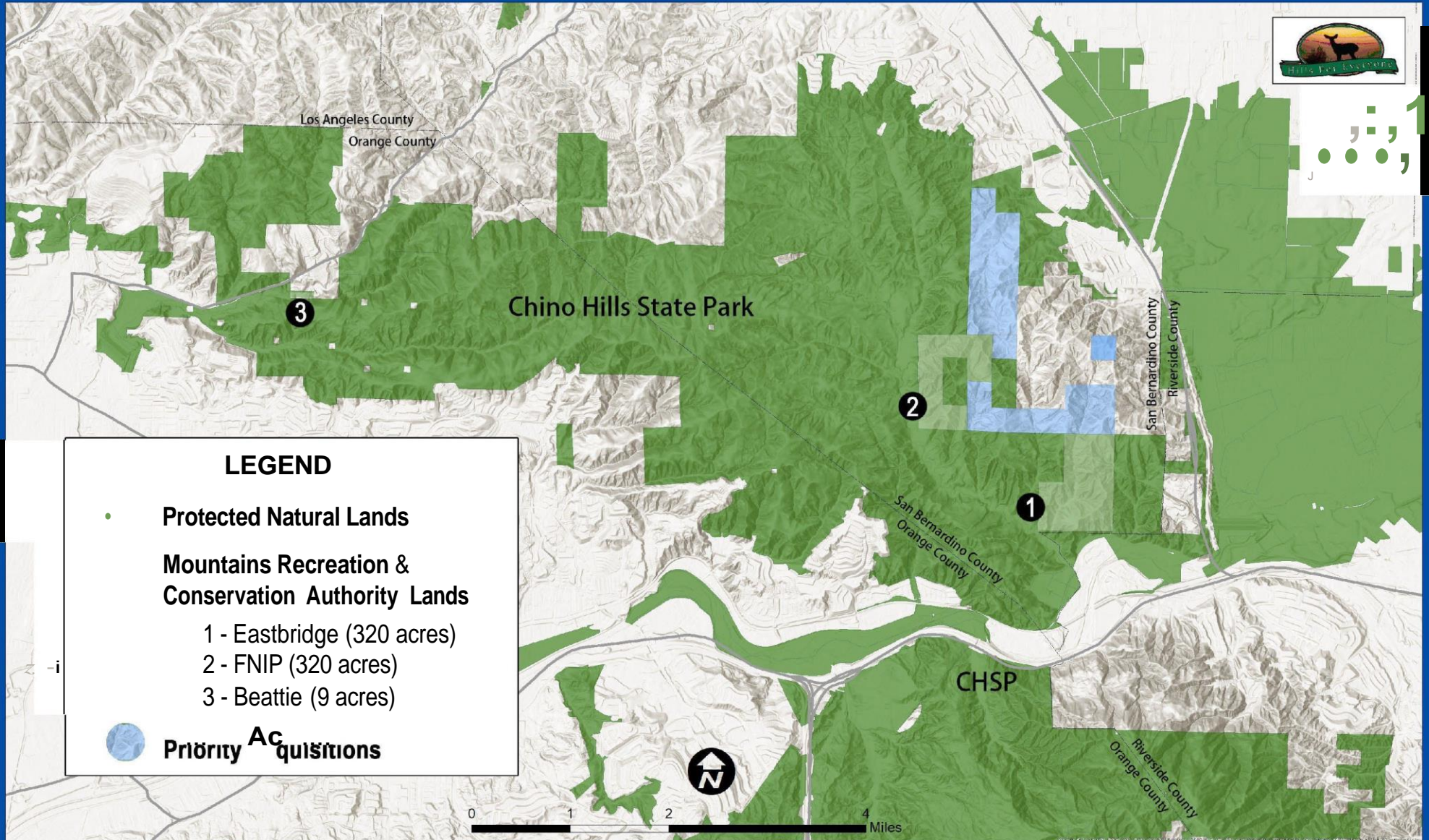
Sincerely,

Claire Schlotterbeck

Claire Schlotterbeck
Executive Director

Exhibit: 1 – Map of Recently Conserved Lands

MRCA Ownerships Near Chino Hills State Park



Response to Hills for Everyone (HFE) Comment Letter dated August 3, 2023

Response to HFE Comment 1

This comment summarizes the HFE organization's purpose, history, and successes. No change was made to the document in response to this comment.

Response to HFE Comment 2

This comment recognizes HFE's involvement in the RCIS. CDFW appreciates the dedicated participation of HFE in the RCIS process. No change was made to the document in response to this comment.

Response to HFE Comment 3

This comment expresses appreciation for the public comment period and support for a RCIS that addresses development and infrastructure mitigation and acquisition. No change was made to the document in response to this comment.

Response to HFE Comment 4

This comment expresses support for the 10 Policy Principles, especially No. 1. Note that the RCIS only lists 9 Policy Principles, not 10 referenced in the comment.

The Policy Principles on PDF page 14 were developed by the participants and are not a required element of the RCIS statute (Fish and Game Code sections 1850-1860). No change was made to the document in response to this comment.

Response to HFE Comment 5

This comment expresses support for Policy Principle No. 8.

Policy Principle 8 on PDF page 14 is consistent with the intent of Section 4.3.5.2 of the RCIS Program Guidelines, which states the required summary and map of Focal Species Information "shall, at a minimum, include the species' range within the RCIS area as well as any applicable adjacent areas that could allow for connectivity outside the RCIS area" (p. 4-13). No change was made to the document in response to this comment.

Response to HFE Comment 6

This comment expresses support for the Biological Principles of the 2023 public review draft RCIS.

The Biological Principles on PDF pages 14 and 15 were developed by the participants and are not a required element of the RCIS statute (Fish and Game Code sections 1850-1860). No change was made to the document in response to this comment.

Response to HFE Comment 7

This comment identifies that "many of the places identified as potential conservation lands are not in High Quality Transit Areas" and instead they tend to be "next to existing protected areas and generally rich in biodiversity. The commenter reiterates that the RCIS is a voluntary option available to landowners.

Including reasonably foreseeable development of major infrastructure facilities is a required element of the RCIS consistent with Fish and Game Code Section 1852(C)(6).

Because the RCIS does not quantify how many “potential conservation lands” are within “High Quality Transit Areas” or are located next to existing “protected areas”, the author’s statement is a supposition that cannot be confirmed. No change was made to the document in response to this comment.

Response to HFE Comment 8

This comment along with an exhibit describe three properties that have been “protected in perpetuity” adjacent to Chino Hills State Park but are not shown as such in Figures 2-5, 2-6, and 3-4B, nor in Tables 2-1 and 2-2 in the 2023 public review draft RCIS. In response to this comment, SBC RCIS Section 2.5 and Table 2-2 have been revised to state that: Additional local conserved lands may exist or may be conserved in the future that are not described or reflected in the mapping based on information available at the time of RCIS preparation. Based on this, no textual changes to the RCIS will be made as a result of this comment.

Response to HFE Comment 9

This comment expresses support of the Grassland, Riparian and Wetland, and Transitional Scrub, Chaparral, and Woodland Goals (Goals 3.3.3, 3.3.4, and 3.3.6).

No change was made to the document in response to this comment.

Response to HFE Comment 10

This comment finds the species maps and descriptions in Appendix C of the 2023 public review draft RCIS to be helpful and suggests adding images of the species. While species images for each of the Focal Species is suggested, they are not required and are readily available elsewhere, and no change was made to the document in response to this comment.

Joanne Lessard (JL) Comment Letter dated August 3, 2023

Comment letter commences on the next page.

RBCIS Comments

I am addressing the draft San Bernardino County Regional Conservation Investment Strategy (RCIS) 60-day public review and comment period.

- **Considerable changes have occurred in connectivity through wildlife corridors between natural open space areas.** *An updated study is required to address this successfully.* Regional environmental groups could contribute to such a study and would willingly do so. An example of the changes that have occurred relates to the connectivity between the San Bernardino Mountains of the Transverse Ranges and habitats of Riverside and San Diego Counties. New housing developments in Beaumont and Calimesa and even warehouses with accompanying car and truck traffic have obliterated large environmentally important areas. *It is suggested that an alternate corridor be investigated and prioritized from the San Bernardino Mountains through the El Dorado Ranch Park in Yucaipa, or through the Wildlands Conservancy Reserve in Oak Glen, through Mentone and the Crafton Hills to the Wabash Bridge overpass of the 10 Freeway and from thence through Live Oak Canyon to San Timoteo Canyon in Riverside County. There would then be access for wildlife to many areas of Southern California in the Peninsular Ranges such as the San Jacinto Mountains, the Anza Valley, the Santa Rosa Mountains and even the Laguna Mountains in eastern San Diego County.* I refer you to the following report, especially pages 53 and 61.

 [Greater1-10WorkshopSummaryReport_FINAL.pdf](#)

- We know that ***mountain lions*** are already using the route because we have a video from December 2022 of a cougar in the back yard of a home on Alta Vista Drive on the south side of the 10 Freeway and a springtime sighting in Live Oak Canyon. We have in addition documented the time and location of a number of cougar visits in the area.
- An extremely important change is that the City of Redlands Planning Commission has denied the imminent construction of housing in an important part of Live Oak Canyon between Highview Drive and South Lane.

RESOLUTION NO. 1612

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF REDLANDS DENYING A ONE-YEAR EXTENSION OF TIME TO THE EXPIRATION DATE OF TENTATIVE TRACT MAP NO. 18845 AND CONDITIONAL USE PERMIT NO. 1036

And from Section 2.2 of the Planning Commission report:

“Substantial evidence has been presented to document that there are significant changes in the baseline conditions between the time that the EIR was prepared (2004) and certified (April 2005) to the present day relating to biological resources, traffic, and wildfire impacts, and that there is more than one environmental impact that must be analyzed under current CEQA regulations (e.g., tribal cultural resources, greenhouse gases) which were not previously required to be analyzed at the time the previous EIR was prepared and certified, leading to potentially insufficient mitigation measures for the Project. Without preparation of additional subsequent environmental analysis for the Project, and

creation or revision of mitigation measures, development of the Project may cause or result in significant environmental impacts.”

The property owner, Mistretta Canyon Partners LLC may be amenable to financial negotiations regarding the property.

- A more complete **notification process** would be helpful and because notification appears to be limited at this time, **an extension of the public comment period is requested.**
- We ask that more attention be paid, on the basis of the RCIS statute, to state requirements and that priority be given to an updated study of surrounding ecoregions and the core linkages that protect important species and that recognize the overall value of the prime habitats in our area.

Joanne Lessard
31543 Highview Drive
Redlands CA 92373
909-794-5036
Cell 909-499-3157

Joannelessard@gmail.com

Please send me notifications in the future.

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Cont.
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Response to Joanne Lessard (JL) Comment Letter dated August 3, 2023

Response to JL Comment 1

This comment suggests an updated study is needed to address “considerable changes” in “connectivity through wildlife corridors between natural open space areas”, specifically between the Transverse Ranges and the Peninsular Ranges. The commentor provides a link to a study as reference. Specific suggestions of new transportation corridors are not the subject or purpose of the RCIS. Wildlife connections and corridors were addressed in the RCIS in a general manner as outlined in on Page 3-6 of the RCIS under Habitat Connectivity and Wildlife Movement. The studies referenced for this section appear in footnote No. 4 on that same page. The Greater I-10 Workshop document has been referenced in the Final RCIS and data from the document was used in the SBC RCIS.

Response to JL Comment 2

This comment suggests that JL has evidence of mountain lion in several unexpected places in December 2022 and springtime as evidence that a wildlife corridor study is needed. This specific data was not incorporated in the RCIS, but at a regional scale, the RCIS addresses habitat linkages important to mountain lion, which is a Focal Species.

Response to JL Comment 3

This comment includes a citation of City of Redlands Planning Commission Resolution No. 1612 which denies a one-year extension of time to the expiration date of tentative tract map no. 18845 and conditional use permit no. 1036. The citation suggests the Planning Commission found evidence that certain baseline conditions of the 2005 Certified EIR had changed, and subsequent environmental analysis is needed. The commentor speculates whether the property owner may be interested in “financial negotiations” about the property suggesting it could be purchased and placed in conservation by the RCIS. This comment is not relevant to the RCIS document; therefore, no changes or data was added to the RCIS.

Response to JL Comment 4

This comment requests an improved notification process by the RCIS and an extension of the public comment period. Fish and Game Code requires the draft RCIS be available to the public for review and comment for a period of at least 60 days. CDFW notified all of the individuals and entities on their contact list that had filed a written request for notifications. Similarly, the SBC RCIS proponent notified all interested parties on their contact list at the commencement of the public review period. As described in SBC RCIS Section 1.6, the planning process for the SBC RCIS began in 2016 with a County Board of Supervisors resolution and public input and involvement was facilitated through the Environment Element Group. A publicly noticed public meeting was held, multiple updates were made to the San Bernardino County Transportation Authority Board, numerous outreach meetings have been held, and draft materials have been posted on public websites. No changes to the RCIS were made as a result of this comment.

Response to JL Comment 5

This comment requests the RCIS is revised with “an updated study of surrounding ecoregions and the core linkages that protect important species.” The SBC RCIS is based on existing scientific information as included in the References Section 6-1 of the RCIS which is sufficient to meet the Fish and Game Code for the RCIS. As outlined in the SBC RCIS, future studies may be implemented through certain RCIS actions, which could include updated information.

Large-Scale Solar Association (LSSA) Comment Letter dated August 4, 2023

Comment letter commences on the next page.



August 4, 2023

To: California Department of Fish and Wildlife, rcis@wildlife.ca.gov
San Bernardino County Transportation Authority, jlee@gosbcta.com
From: Large-Scale Solar Association

Re: Draft San Bernardino County Regional Conservation Investment Strategy (RCIS)

The Large-Scale Solar Association (LSA) appreciates the opportunity to comment on the draft San Bernardino County Regional Conservation Investment Strategy (RCIS). We offer the following high-level comments for your consideration.

The Large-scale Solar Association (LSA) is a non-partisan association of solar and battery storage developers that advocates appropriate policies to enable market penetration of utility-scale solar technologies in California and the Western United States. LSA’s members are leaders in the utility-scale solar industry with deep experience in all disciplines necessary to site develop, engineer, construct, finance and operate utility scale solar and battery storage systems. LSA’s member companies are principally responsible for developing most of the operational and planned solar and storage capacity in California today.

LSA agrees that climate change is a major regional stressor to habitat and species conservation as noted in Section 2.8 (Regional Pressures and Stressors). The document notes that climate change is affecting ecosystems in California and should be considered in conservation and management decisions that influence the state’s natural resources. The document also identifies utilities and other infrastructure as an equal stressor, stating that energy facilities and their impacts increase the risk of damage to natural lands (2-45).

What this process fails to take into consideration is the impact of not mitigating climate change and failure to meet our renewable energy development targets. There is no account for the failure to mitigate greenhouse gas emissions (GHG) on the region and what its impacts might be for overall conservation efforts. Unlike the other identified stressors (urban development, transportation, water conveyance, grazing, mining, military uses, recreation and non-native species), the development of renewable energy has the ability to cumulatively lessen the overall impacts of climate change on species and habitat, reducing GHG emissions and offering an alternative to other more deleterious forms of energy development. We believe that effective conservation strategies must take a holistic approach that balances both conservation and clean energy needs.

Similarly, the state is working to achieve habitat conservation and renewable energy goals simultaneously. The Legislature has worked for years to prioritize conservation goals and has established a policy to conserve 30 percent of our lands and waters by 2030 (30x30). The Legislature has also approved requirements to decarbonize multiple sectors of our economy – a goal which will require exponential increases in the state’s electricity grid, which must fully decarbonize by 2045, and which will



require unprecedented amounts of new renewable energy to be built in a very short period of time. According to the Interagency SB 100 Report (2021), California will need to sustain its expansion of clean electricity generation capacity at a record-breaking rate for the next 25 years. To achieve this goal, California must add 86GWs of new zero-emitting resources to the grid by 2035, and then an additional 70GWs between 2035 and 2045.

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As we consider strategies to achieve these renewable energy development goals while working to conserve and protect habitat, landscape-scale planning can help identify opportunities for renewable energy facility and transmission development while reducing adverse effects. We must support solutions that marry critical clean energy development with conservation and biodiversity.

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Thank you for the opportunity to provide comments to the Draft San Bernardino County Regional Conservation Investment Strategy (RCIS). Should you have any questions regarding our comments, please contact Shannon Eddy, LSA Executive Director at eddyconsulting@gmail.com.

Response to Large-Scale Solar Association (LSSA) Comment Letter dated August 4, 2023

Response to LSSA Comment 1

This comment expresses appreciation to CDFW for the opportunity to comment on the RCIS and describes the purpose and makeup of LSSA.

Response to LSSA Comment 2

This comment concurs with the RCIS statements on the potential effects to habitat and species conservation from future climate change.

Response to LSSA Comment 3

This comment suggests the RCIS does not account for a scenario where climate change is not mitigated and would therefore make conservation efforts less successful. The author states renewable energy can reduce impacts of climate change and conservation plans should account for the needs of clean energy pursuits.

The author asserts the RCIS does not consider a failure in meeting greenhouse gas emission targets, which is correct. The development of clean energy sources within and beyond the RCIS Area is one component of many to reduce emissions and reduce the effects of climate change. The RCIS Climate Change Vulnerability Assessment located in Appendix E is required by the Guidelines to summarize existing available, science-based analyses to describe the exposure of the RCIS Area to climate change effects, identify areas that may be resilient to such effects, and assess the vulnerability of natural communities and Focal Species.

Response to LSSA Comment 4

This comment describes efforts by the State of California to expand habitat conservation and renewable energy, and then emphasizes that in order to meet state goals, renewable energy projects must increase significantly.

Response to LSSA Comment 5

This comment suggests the RCIS can identify locations for future renewable energy facilities and clean energy transmission lines that would have reduced adverse effects on sensitive habitats.

Fish and Game Code Section 1852(e) describes that an RCIS shall consider working lands; reasonably foreseeable development of infrastructure, housing, renewable energy; and draft natural community conservation plans in the RCIS area. The RCIS identifies the growing demand for reducing greenhouse gas emissions and efforts to increase sources of renewable energy (p. 2-45). The RCIS includes the Desert Renewable Energy Conservation Plan (“DRECP”, 2016) as a result of a comment from the Bureau of Land Management dated August 6, 2014 (see Framework, p. 2-9) and the RCIS Climate Change Vulnerability Assessment located in Appendix E cites several studies that tie renewable energy development with species protection (e.g., Esque, et al 2013 and Inman, et al 2013). The 2015 Framework goes on to describe how the DRECP “...could be used by the Desert Region jurisdictions as a template or means to facilitate species or waters permitting for future renewable energy projects...”

The RCIS Climate Change Vulnerability Assessment located in Appendix E is required by the Guidelines to summarize existing available, science-based analyses to describe the exposure of the RCIS Area to climate change effects, identify areas that may be resilient to such effects, and assess the vulnerability of natural communities and Focal Species.

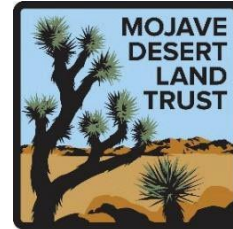
The RCIS is not required to identify opportunities to expand the goals of renewable energy nor is it to give “credit” for renewable energy’s role in reducing greenhouse gas emissions while downplaying or ignoring the documented impacts that solar and wind energy facilities have on local species. Renewable energy will continue to be correctly identified in the RCIS as a pressure and stressor for certain species (e.g., Swainson’s Hawk). One goal of the RCIS is to “...to create nonregulatory mechanisms to guide investments in...infrastructure...” (Fish and Game Code Section 1850) for entities like LSSA, such as open tracts of land with minimal biological resources exist that might be a good location for a renewable energy and/or transmission facility. But it will still have to comply with species protection laws in the approval processes and mitigate impacts accordingly.

**Morongo Basin Conservation Association (MBCA) Comment Letter
dated August 4, 2023**

Comment letter commences on the next page.



THE WILDLANDS
— CONSERVANCY —



August 4, 2023

California Department of Fish and Wildlife
Habitat Conservation Planning Branch
ATTENTION: San Bernardino County RCIS Comments
P.O. Box 944209
Sacramento, CA 94244-2090
CDFW: rcis@wildlife.ca.gov
San Bernardino County Transportation Authority (SBCTA): jlee@gosbcta.com
Re: San Bernardino Regional Conservation Investment Strategy (RCIS)

Dear RCIS Program and Mr. Lee:

Thank you for the opportunity to provide comments on the draft San Bernardino Regional Conservation Investment Strategy. As our collective desert-based organizations have worked for decades in the region to protect and enhance its fragile biodiversity, and to highlight the region's unique and extraordinary habitats, we appreciate the effort involved and commitment of SBCTA and the Department to the RCIS.

Founded in 1969, The Morongo Basin Conservation Association continues our advocacy for the healthy desert environment that nurtures our rural life, cultural wealth and economic well-being.

Founded in 1995, The Wildlands Conservancy (TWC) is dedicated to preserving the beauty and biodiversity of the earth and providing programs so that children may know the wonder and joy of nature.

Founded in 2006, the Mojave Desert Land Trust uses a multifaceted conservation approach to protect ecologically significant land, restore critical habitat, and preserve native seeds throughout the California desert.

The California Desert Coalition (CDC) elevates the voices of the people of the California desert. We build grassroots coalitions of desert lovers to promote deeper understanding of complex public policy issues. We bring our voices to bear on local, state, and federal decision-making processes that impact our desert.

We strongly support adoption of an RCIS for the region. The science-based San Bernardino County RCIS is a foundational document for the region, covering a vast area representing three ecoregions, and over fifty focal species in the region, including listed and sensitive species such as the western Joshua tree and desert tortoise. The region’s habitats, plants and animals deliver multiple conservation values and benefits to communities, such as cleaning our air and water, providing recreational opportunities that fuel our regional economies and support our mental and physical health, and supporting climate resilience.

2

The approved RCIS can guide voluntary, non-binding conservation actions, and development planning for transportation, energy, water infrastructure, and housing. In addition to facilitating the essential protection of our ecosystems, the approved RCIS will also enable Mitigation Credit Agreements, for credits used by project proponents to streamline and accelerate appropriate infrastructure and development projects. Other benefits of an approved San Bernardino RCIS include:

- Expediting implementation of the Western Joshua Tree Conservation Act,
- Incentivizing early and robust conservation actions aligned with the needs of sensitive species and habitats that may help avoid future listings,
- Providing a competitive advantage to entities applying for conservation grant funding, and
- Enabling advance mitigation credits for wildlife connectivity projects consistent with [SB 790](#).

There are many things to like about this draft. Despite this, however, we did find deficiencies related to the conservation analysis. These issues need to be corrected for the San Bernardino RCIS to be consistent with the statute and the Regional Conservation Investment Strategies Program Guidelines. We believe to ensure collaboration and ultimately conservation success that implementation of the RCIS must have goals that are tracked and measured over time. A primary need is to include objectives for the conservation strategy, targeting habitats and focal/non-focal species. This is required in the RCIS statute¹ and Guidelines², for good reason. Quantifiable goals and targets and measurable objectives are essential to define actions necessary to achieve the goals, develop gap analyses, determine highest-leveraged conservation actions, including advance mitigation actions, and to track progress and document success. This information was included in an earlier draft (2022), and we request that it be fully included in the approved RCIS.

3

Specifically, we recommend adding:

- **Columns of percentages in Table 3-6 representing the percent of each habitat (public or private) considered conserved as a baseline gap analysis.** The percentages which were included in the texts for each Habitat Group but not in the table, limit usefulness of the table.
- **Habitat Group General Conservation Targets (2022, Table 3-6) as a measure of evaluating conservation gaps.** Habitat group conservation targets are essential to understanding the conservation needs of habitats and species and to guide conservation strategy. The 2022 draft stated, “Conservation targets were developed based on rarity/status, abundance, distribution of habitat in the RCIS area, and life history for the Focal Species in each habitat group.”
- **The Gap analysis.** The conservation targets lead to a basic, yet essential, gap analysis that shows the amount of additional land in acres needed to achieve the targets. The acreage figures represent measurable objectives, as required by the RCIS statute and Guidelines.

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Without the quantified and measurable conservation targets for each Habitat Group, the RCIS does not contain measurable objectives and related metrics. This information is crucial to understand the region’s conservation

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¹ See [Fish and Game Code, Division 2. Department of Fish and Wildlife, Ch.9](#) Sections 1851, 1852

² See REGIONAL CONSERVATION INVESTMENT STRATEGIES PROGRAM GUIDELINES: Definitions, Objectives

context, assist users in prioritizing conservation actions for their specific needs, help guide highly leveraged advance mitigation actions for streamlined permitting, or accelerate implementation of the Western Joshua Tree Conservation Act. Please improve and align the current draft to be consistent with the statute and the related *Guidelines* by stating measurable objectives with metrics, and a gap analysis showing acres needed to reach conservation targets.

7
Cont.

Additionally, we suggest making the following changes:

- **To adequately consider the value of high-quality conservation lands in the Morongo Basin as established in the [Morongo Basin Conservation Priorities Report](#)**. The 2012 report was a joint planning product between the Twentynine Palms Marine Corps Air Ground Combat Center, Joshua Tree National Park, as well as representatives from local governments, from community, business, and conservation organizations, the Mojave Desert Land Trust, Morongo Basin Conservation Association, The Wildlands Conservancy, and California Desert Coalition. We request that the parcels which have a "Composite Score" of High and Moderate-High be included in the "Moderate to High Habitat Value Lands Outside Land Designations" of the RCIS analysis. These lands are recognized by the California Department of Fish and Wildlife and the Wildlife Conservation Board for their habitat value in a Conceptual Area Protection Plan which has been the blueprint for land acquisition in the Morongo Basin for over ten years.
- **Regarding the consistency and complementary aspects of the RCIS with overlapping plans**, it is important to recognize two significant conservation plans currently in the pipeline: (1) The Western Joshua Tree Conservation Act; and (2) The USFWS Desert Tortoise General Conservation Plan. It is therefore imperative that the RCIS have a mechanism in place to allow for smooth, time efficient coordination amongst both plans, including mitigation strategies, to complement the goals of the RCIS. Specifically, the Western Joshua Tree Conservation Act calls for a yet to be drafted conservation plan that will have a profound impact on many of the ecoregions presented by the RCIS. Similarly, the Desert Tortoise General Conservation Plan is currently in the introductory scoping period. The impacts of both plans within the RCIS boundaries are expected to be significant.

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The need for detailed metric information is becoming ever more apparent as the York Fire in eastern San Bernardino County is sadly now destroying exquisite keystone habitat for endangered species within San Bernardino County. At the time of this writing, the York fire has scorched approximately 100,000 acres of Mojave National Preserve and beyond, including over 560 acres of highly biodiverse Joshua tree habitat managed by the Mojave Desert Land Trust.

10

We strongly support having an approved San Bernardino RCIS in our region to help guide, incentivize and streamline conservation and development planning, investments, and implementations. Thank you again for the opportunity to comment and for your commitment to this effort.

11

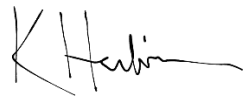
Sincerely,



Steve Bardwell, President
Morongo Basin Conservation Association
www.mbconservation.org



Frazier Haney, Executive Director
The Wildlands Conservancy
www.wildlandsconservancy.org



Cody Hanford
Kelly Herbinson
Joint Executive Directors
Mojave Desert Land Trust
www.mdlt.org



April Sall, President
California Desert Coalition
www.cadesertcoalition.org

Response to Morongo Basin Conservation Association (MBCA) Comment Letter dated August 4, 2023

Response to MBCA Comment 1

Introductory comment describing the MBCA, The Wildlands Conservancy (TWC), Mojave Desert Land Trust, and California Desert Coalition (CDC) (all signatory to the comment letter). No specific comment provided on the SBC RCIS.

Response to MBCA Comment 2

Comment expresses strong support for the SBC RCIS. No specific comment provided on the SBC RCIS.

Response to MBCA Comment 3

Comment relates to the conservation analysis and inclusion of measurable objectives in the SBC RCIS. With regard to measurable objectives, the SBC RCIS was developed consistent with the California Fish and Game Code and the CDFW RCIS Guidelines. California Fish and Game Code Section 1852(c)(9) specifies that an RCIS include “a description of the general amounts and types of habitat that, if preserved or restored and permanently protected, could achieve the conservation goals and objectives.” The CDFW RCIS Guidelines state that the objectives shall be specific and measurable. The SBC RCIS states that “implementation of any amount of the SBC RCIS actions identified in SBC RCIS Section 3.4.1 would contribute toward meeting these conservation goals and objectives.” SBC RCIS Section 3.2 provides a conservation inventory that identifies the acreage of unprotected lands on public and private lands by habitat group. SBC RCIS Section 3.3 provide conservation objectives that are specific and measurable by providing an estimated number of acres by habitat group and specific conservation priority areas in each objective where the actions should be focused on public lands and private lands in the RCIS area.

Response to MBCA Comment 4

Comment suggests that the percentages of land considered conserved for each habitat group, which are included in text, should be included in SBC RCIS Table 3-6. The SBC RCIS was developed consistent with the CDFW RCIS Guidelines that calls for an inventory of conserved lands in the planning area, which is provided in SBC RCIS Section 3.2. Additionally, see Response to MBCA Comment 3.

Response to MBCA Comment 5

Comment suggests that conservation targets for each habitat group, which were included in previous drafts, should be included in the SBC RCIS. With regard to the development of measurable objectives, the SBC RCIS was developed consistent with the California Fish and Game Code, which calls for a description of the general amounts and types of habitat if conserved could achieve the conservation objectives, and the CDFW RCIS Guidelines, which states that the objectives shall be specific and measurable. SBC RCIS Section 3.2 provides a conservation inventory that identifies the acreage of unprotected lands on public and private lands by habitat group. SBC RCIS Section 3.3 provide conservation objectives that are specific and measurable by providing an estimated number of acres by habitat group and specific conservation priority areas in each objective where the actions should be focused on public lands and private lands in the RCIS area. Additionally, see Response to MBCA Comment 3 and MBCA Comment 4.

Response to MBCA Comment 6

Comment suggests that the conservation targets used in previous drafts of the document be included. See Response to MBCA Comment 3, MBCA Comment 4, and MBCA Comment 5.

Response to MBCA Comment 7

Comment recommends that the conservation targets should be used in the conservation analysis to support measurable objectives. See Response to MBCA Comment 3, MBCA Comment 4, and MBCA Comment 5.

Response to MBCA Comment 8

Comment relates to the 2012 Morongo Basin Conservation Priorities Report and recommends including parcels with High or Moderate-High composite scores as areas of moderate to high habitat value in the SBC Figure 3-4A and Figure 3-4B. For the desert region, the SBC RCIS mapping of areas with moderate to high habitat value was based on the California Desert Biological Conservation Framework published by the California Energy Commission (CEC) and developed by CEC, CDFW, USFWS, and BLM. The 2012 Morongo Basin Conservation Priorities Report is described in SBC RCIS Section 2.6 and describes that “the habitat linkages used in this report are included in the habitat linkages mapped on Figure 3-1, are described as part of the Conservation Elements in Section 3.1.1, and are the focus of certain actions in Section 3.4.1. Additionally, parcels acquired and conserved in the Morongo Basin since this report was produced are included in the Local Conserved Land inventory described in Section 2.5.” Therefore, the SBC RCIS acknowledges the importance of this work in identifying conservation priorities in this region of the RCIS area. The composite scoring from the 2012 Report used wildlife connectivity as a factor in prioritization, but also included community identity and military mission factors in the prioritization and the report only focused on a small portion of the SBC RCIS area; therefore, the 2012 prioritization mapping was not used for mapping in the SBC RCIS. As stated in the SBC RCIS, the habitat value mapping “are intended only to provide landscape-scale guidance to consider when making conservation and mitigation decisions in the RCIS area.” Other considerations, including the priorities in the 2012 Report, can also be used in making these decisions.

Response to MBCA Comment 9

Comment pertains to consistency and complementary aspects of the yet-to-be-developed Western Joshua Tree Conservation Plan and the USFWS Desert Tortoise General Plan. Consistent with the CDFW RCIS Guidelines, the SBC RCIS describes consistency with existing regional Habitat Conservation Plans and USFWS Recovery Plans (SBC RCIS Section 3.5). It is acknowledged that the two plans referenced in the comment will be important components of conservation for these two Focal Species in the future, and the SBC RCIS is anticipated to be complementary of and would not prevent or preclude implementation of these plans in the future. The Final SBC RCIS has been revised to reference the Western Joshua Tree Conservation Act (CFGC 1927-1927.12).

Response to MBCA Comment 10

Comment refers to the importance of detailed metrics and references the recent York Fire in San Bernardino County. No specific comment provided on the SBC RCIS.

Response to MBCA Comment 11

Comment again expresses support for approval of the SBC RCIS. No specific comment provided on the SBC RCIS.

**Mohave Ground Squirrel Conservation Council (MGSCC) Comment
Letter -Edward L. LaRue dated August 3, 2023**

Comment letter commences on the next page.



Mohave Ground Squirrel Conservation Council
P.O. Box 1660
Wrightwood, CA 92397
Email: ed.larue@mgsconservation.org

Via email only

3 August 2023

Attn: California Department of Fish and Wildlife (rcis@wildlife.ca.gov)
San Bernardino County Transportation Authority (jlee@gosbcta.com)

RE: San Bernardino County Regional Conservation Investment Strategy (RCIS)

Dear Agencies,

The Mohave Ground Squirrel Conservation Council (MGSCC) is a nonprofit organization established to assure the perpetual survival of viable populations of Mohave Ground Squirrels (MGS) throughout their historical range and any future expansion areas. The MGS, for the purposes of the MGSCC, means the mammal species known scientifically as *Xerospermophilus mohavensis*. Among our objectives pertinent to this letter is to support and to advocate for such legislative, policy, and conservation measures as will contribute to ensuring the continued survival of viable MGS populations, the connectivity of these populations, and the maintenance of their habitats in a natural condition.

1

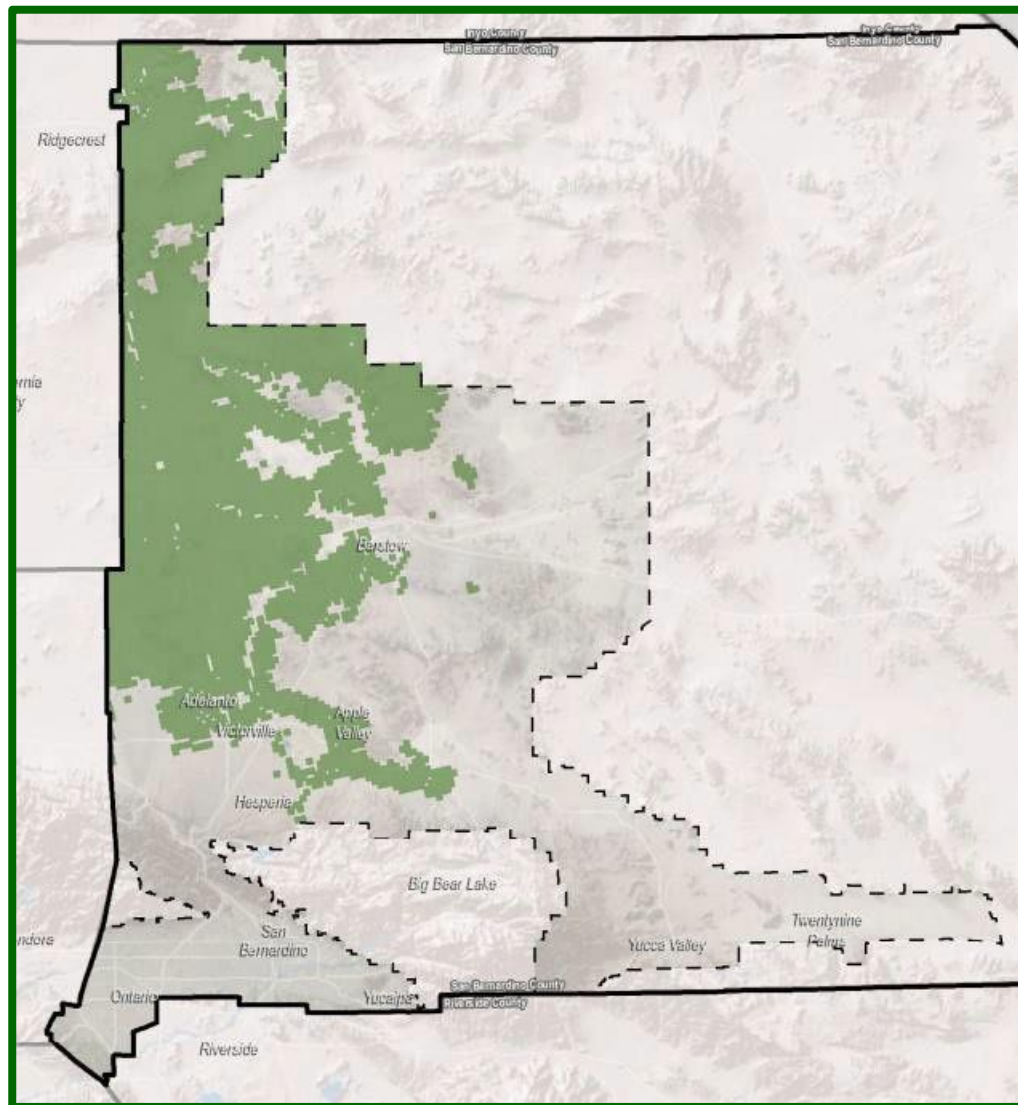
We appreciate this opportunity to provide comments on the above-referenced project. Given the location of the planning area in habitats within the range of the MGS and known to be occupied by the species, our comments pertain to enhancing protection of this species during activities implemented by California Department of Fish and Wildlife (CDFW) and San Bernardino County Transportation Authority (SBCTA) applicable to this planning exercise. Please accept, carefully review, and include in the relevant project file the Council’s following comments and attachments for the proposed project. When given a choice, we prefer to receive emails for future correspondence, as mail delivered via the U.S. Postal Service may take several days to be delivered. Email is an “environmentally friendlier way” of receiving correspondence and documents rather than “snail mail.”

2

We read the following description of this planning effort in the Executive Summary of the “Public Draft: San Bernardino County Regional Conservation Investment Strategy,” prepared by Dudek (2023), dated May 2023: “The San Bernardino County Regional Conservation Investment Strategy (SBC RCIS) is a voluntary, nonregulatory framework for conservation and mitigation actions in key regions of San Bernardino County, California. The San Bernardino Council of Governments, County of San Bernardino, and the Environment Element Group, in collaboration with the Southern California Association of Governments, developed the SBC RCIS based on a set of biological and planning principles that arose from the Countywide Vision planning process. In an effort to streamline mitigation decisions and generate the best conservation outcomes, the SBC RCIS was developed to provide a regional, science-based conservation guidebook for use by public agencies, the development community, environmental groups, other interested entities, and the public when planning and carrying out conservation and mitigation actions in western San Bernardino County.” Unless otherwise noted, all referenced pages are from the SBC RCIS document.

3

The modeled MGS habitat is depicted in green relative to the RCIS area in Figure 1 of Appendix C for the MGS in Dudek (2023):



4

Given the MGSCC’s mission statement to protect and conserve MGS, we necessarily focus on conservation in the “Desert region,” depicted in Figure 2-1 (Dudek 2023) given on the next page, located north of Hesperia and Lucerne Valley, which includes the Mohave Ground Squirrel Conservation Area delineated by the Bureau of Land Management (BLM) in the West Mojave Plan (BLM 2005, 2006) and modified by the Desert Renewable Conservation Energy Plan (DRECP) California Desert Conservation Area (CDCA) Plan amendment (BLM 2015, 2016). Herein, we assume that “Public Draft” implies there will be a “Final Draft,” and throughout this letter make recommendations that we hope will be considered and included in the final environmental document(s)

The Desert region, located north of Hesperia and Lucerne Valley, is shown in yellow in Figure 2-1 on the next page.



4
Cont.

We note on page 2-24 that the following entities are listed as Local Conserved Lands: “These areas are considered permanently protected and managed for resource conservation and include lands managed by The Nature Conservancy, Wildlands Inc., The Wildlands Conservancy, Mojave Desert Land Trust, Wildlife Heritage Foundation, Transition Habitat Conservancy, Inland Empire Resource Conservation District, and Land Veritas,” among others.

Please note and amend the Final RCIS to include 930 of acres on eight parcels managed by the Desert Tortoise Preserve Committee (DTPC; contact Jun Lee at junylee@gmail.com); four parcels comprising 2,318 acres in the established Mojave Desert Tortoise Conservation Bank owned and managed by DETO Inc. (contact Richard Lyons at civicrecords@gmail.com); and 18 parcels comprising 4,088 acres in the Fremont-Yermo Conservation Bank owned and managed by The Lyons Companies (contact Richard Lyons; the bank is being developed in conjunction with Region 6 of CDFW, contact Trisha Moyer at Patricia.Moyer@wildlife.ca.gov).

5

In regard to *Pressures on Conservation Elements in the RCIS Area*, in Table 2-4, on page 243, it is not clear to us from the information provided how the planners and document authors interpreted what are and are not perceived impacts and threats. We note that the following elements are not checked relative to MGS but should be: Dams and Water Management/Use; Fire and Fire Suppression; Garbage, Solid Waste, Household Sewage, Urban Waste Water, and Airborne Pollutants; Industrial and Military Effluents; and Mining and Quarrying. Given the following information, the applicable boxes should be checked in Table 2-4 in the final draft of the SBC RCIS. We ask that the Final RCIS be amended to clarify which references were used and how the planning team decided on what should be included and excluded as threats, i.e., “Pressures” for the identified elements, including MGS.

6

With the heavy rains in the winter of 2022, Los Angeles Department of Water and Power (LADWP) found it necessary to inundate adjacent desert areas on an emergency basis to protect their infrastructure in Kern and Inyo Counties, and the Cadiz Land Company is currently considering using an existing pipeline through the center of the RCIS planning area. Although these particular projects are affecting habitats in adjacent regions, they are examples of foreseeable project types that may occur in the RCIS planning area, warranting a check in the box pertaining to Dams and Water Management/Use.

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Garbage, Solid Waste, Household Sewage, Urban Waste Water, and Airborne Pollutants are all existing, serious impacts associated with the urbanizing communities of Apple Valley, Victorville, and Barstow that are all found within the RCIS planning area. It is also not clear why Fire and Fire Suppression are checked for desert tortoise, for example, but not the MGS. Impacts are likely similar, and this Pressure should also be indicated for MGS. The new use of expanded operations of Fort Irwin westward into the Superior Valley and the new use at China Lake Naval Air Weapons Station on lands east of Cuddeback Lake are examples of military exercises that will undoubtedly result in introducing new effluents into MGS habitats. Mining and Quarrying activities throughout San Bernardino County and the RCIS planning area and their documented impacts (Chaffee and Berry 2006) warrant checking that box in Table 2-4.

8

We note in Table 3-3 on page 3-26 that the MGS is restricted to “Desert Scrub” communities. Given the description of “Transitional Scrub, Chaparral, and Woodland” communities on page 3-21, we suggest that this community also be identified for MGS in Tables 3-1 and 3-3. MGS are known to occur up to 6,000 feet elevation, and these higher elevation community types may be important to the species if climate change effects result in lateral movements of MGS populations into adjacent, higher elevation areas.

9

The first bullet at the top of page 3-47 identifies “Mohave ground squirrel (*Xerospermophilus mohavensis*) key population centers (Coolgardie Mesa-Superior Valley, Edwards Air Force Base, *North of Edwards* [emphasis added], Ridgecrest, North Searles Valley, and Harper Lake) and habitat linkages (Fremont Valley/Spangler to *North of Edwards*, Pilot Knob to Coolgardie Mesa-Superior Valley, Harper Lake to Coolgardie Mesa-Superior Valley, and Edwards Air Force Base to North of Edwards and Harper Lake).” We note that the North of Edwards key population center (CDFW 2019), also referred to as a “core population area” in Table 3-7, coincides with the (provisional) “North of Edwards Development Focused Area (DFA)” identified in the DRECP (BLM 2015, 2016). Members of the MGSCC collected extensive data in this area in 2016 (LaRue 2016) that documents the importance of this area to MGS conservation. The area had been included in the MGS Conservation Area under the West Mojave Plan (BLM 2005, 2006), but inexplicably and in the absence of supporting data, the BLM (2015, 2016) excluded this key population center located west of Highway 395 in the DRECP. A subsequent study in 2021 (Leitner 2021a) also found MGS throughout this area.

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Given these findings, we ask that the Final SBC RCIS emphasize the importance of the North of Edwards key population center, and recognize it as a conservation area in which private lands should be consolidated (as per Objective DS-1.3) and solar development prohibited. Measures in support of Conservation Action DS-CA1 in Table 3-7 on page 3-57 should be implemented to protect this important MGS region. We also believe that protection of this area would benefit Conservation Action DS-CA4 by preserving habitat connectivity in the habitat linkage between Fremont Valley/Spangler and Edwards Air Force Base. We particularly appreciate Conservation Action DS-CA6 and multiple Specific Conservation Actions (SCAs), including DS-CA6-01 through -04 that would be facilitated by the above recommendations.

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Cont.

With regards to the following objective on page 3-47, where Coyote and Cuddeback dry lakes are listed, “Objective DP-1.2: Implement targeted conservation actions to increase or improve protection and/or management in the 47,700 acres of public land designations not considered conserved that support DP habitats in the following conservation priority areas, primarily BLM ACECs and other BLM lands,” we note that with its 2019 record of decision, BLM (2019) introduced unrestricted recreational use onto these two dry lakes, which are located within MGS habitat, and will undoubtedly result in heightened degradation of habitat by physical impacts and windblown dust onto adjacent vegetation. We contend that, given apparent population declines particularly in the western and southern extents of the MGS range (Leitner 2015, 2021a), these decisions should be reversed, these dry lakes should retain their Limited Use designation, and unrestricted vehicle use should not be allowed.

11

With regards to the SCA listed in Table 3-7 for DS-CA1-05: *Habitat Monitoring and Management* and DS-CA1-06: *Habitat Enhancement* we ask that the Final SBC RCIS specifically target the identification and restoration of habitats that have been adversely affected by illegal marijuana grow sites. Our personal observations suggest that these “hoop houses” have been identified and dismantled, however most of the sites still contain residual debris like wood, PVC pipes, irrigation tubing, and Visqueen plastic sheeting, and all of them resulted in barren lands where the vegetation is absent. We ask that either these SCAs be modified or (our preference) that a new SCA be identified to restore, remediate, revegetate, etc. each of these sites, and that the MGS Conservation Area (BLM 2005, 2006), ACECs (BLM 2015, 2016), and Core Population Areas (CDFW 2019) be identified as high priority areas for these efforts.

12


Concerning Figure 3-4a on page 3-119, which depicts Moderate and High Habitat Value in pink, please explain why wilderness areas and (presumably) private lands are not designated by the pink color. Perhaps the explanation is in one of the referenced documents? In any case, we believe that habitat value should be determined without concern for land ownership, and that those clear (presumably) private lands surrounded by pink should also be depicted as Moderate to High Habitat Value. Either way, please explain in the final draft of the SBC RCIS why these areas are excluded.

13

We appreciate this opportunity to provide comments on this project and trust they will help protect MGS during any resulting authorized activities. Herein, we reiterate that the Mohave Ground Squirrel Conservation Council wants to be identified as an Affected Interest by CDFW and SBCTA for RCIS planning, and that the Final SBC RCIS be provided to us at the contact information listed above. Additionally, we ask that you respond in an email that you have received this comment letter so we can be sure our concerns have been registered with the appropriate personnel and office for this project.

14

Respectfully,



Edward L. LaRue, Jr., M.S.
Ecosystems Advisory Committee, Chairperson
Mohave Ground Squirrel Conservation Council

cc. Brian Croft, USFWS, Palm Springs, brian_croft@fws.gov
Patricia Moyer, CDFW Region 6, Patricia.Moyer@wildlife.ca.gov
Richard Lyons, Mitigation Bank Manager, civicrecords@gmail.com
Jun Lee, Desert Tortoise Preserve Committee, junylee@gmail.com

Literature Cited

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- Leitner, P. 2021a. Current status of the Mohave ground squirrel: an update covering the period 2013-2020. *California Fish and Wildlife Special CESA Issue*:300-316.
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Response to Mohave Ground Squirrel Conservation Council (MGSCC) Comment Letter -Edward L. LaRue dated August 3, 2023

Response to MGSCC Comment 1

Introductory comment describing the MGSCC. No specific comment provided on the SBC RCIS.

Response to MGSCC Comment 2

Introductory comment regarding correspondence with MGSCC. No specific comment provided on the SBC RCIS.

Response to MGSCC Comment 3

Introductory comment describing the scope of MGSCC's comment letter. No specific comment provided on the SBC RCIS.

Response to MGSCC Comment 4

Comment on MGSCC's mission and geographic focus area. No specific comment provided on the SBC RCIS.

Response to MGSCC Comment 5

Comment references additional entities and lands within the RCIS area. Consistent with CDFW RCIS Guidelines, the SBC RCIS identified local conserved lands based on public data to support landscape-scale planning to support RCIS development. It is acknowledged that additional conservation lands may exist and will continue to be protected in the future within the RCIS area.

Response to MGSCC Comment 6

Comment recommends acknowledging additional pressures related to Mohave ground squirrel in SBC RCIS Table 2-4 (Pressures on Conservation Elements in the RCIS Area). In response to this comment, Table 2-4 has been updated on Focal Species regional pressures.

Response to MGSCC Comment 7

See Response to DTC Comment 6.

Response to MGSCC Comment 8

See Response to DTC Comment 6.

Response to MGSCC Comment 9

Comment relates to the SBC RCIS identifying the Desert Scrub habitat group associated with Mojave desert scrub and contends that Mohave ground squirrel is known from or could use higher elevation habitats aggregated within the Transitional Scrub, Chaparral, and Woodland habitat group. Although Mohave ground squirrel is primarily associated with desert scrub habitats, the SBC RCIS acknowledges that Mohave ground squirrel also may utilize Joshua tree woodlands, as described in the Focal Species Summaries in SBC RCIS Appendix C. Additionally, the Focal Species Habitat Area mapping, used to

represent a reasonable approximation of the potentially suitable habitat areas for each Focal Species in the RCIS Area, is not based on the mapping of Desert Scrub habitat group vegetation types but rather is based on the USGS species distribution model for the species.

Response to MGSCC Comment 10

Comment is related to the Mohave ground squirrel key population centers (also referred to as core population areas) that are identified in the SBC RCIS as conservation priority areas in the Conservation Goals and Objectives and in the actions in Table 3-7. Comment suggests emphasizing the importance of the North of Edwards key population center due to potential development pressure in this area. The SBC RCIS identifies all key population centers/core population areas, as well as other key areas for the species including peripheral population areas and linkages, as conservation priorities for the actions for this species.

Response to MGSCC Comment 11

Comment raises the issue of unrestricted recreational uses allowed on BLM lands on Coyote Dry Lake and Cuddeback Dry Lake identified under SBC RCIS Dune and Playa Objective DP-1.2. It is acknowledged that existing uses may occur on public lands, such as BLM lands, that may preclude or prevent actions from happening under the SBC RCIS; however, the SBC RCIS is voluntary and nonbinding and would not restrict or modify existing lands uses allowed by BLM.

Response to MGSCC Comment 12

Comment suggests that the actions identified under DS-CA1 in SBC RCIS Table 3-7 address illegal marijuana grow sites and include actions for remediation of such sites. As described in SBC RCIS action DS-CA1, the action includes "Coordinat[ion] with existing land managers to identify and implement management activities within public lands that would maintain and enhance habitat quality for Focal Species". If through that coordination, illegal marijuana grow sites were identified as a priority for enhancement, specific actions listed in SBC RCIS Table 3-7 could be implemented for habitat protection and habitat enhancement of such sites.

Response to MGSCC Comment 13

Comment relates to the moderate to high habitat value mapping provided in SBC RCIS Figure 3-4A. As described in SBC RCIS Section 3.4.2, the habitat value mapping for the desert region was based on the California Desert Biological Conservation Framework map developed and published by the California Energy Commission, CDFW, BLM, and USFWS. SBC RCIS Figure 3-4A represents this mapping data without the public land designations. Importantly and as noted in the comment, this habitat value mapping was intended to be used in conjunction with public land designation mapping, such as Wilderness Areas, which is why SBC RCIS Figure 3-4B includes and overlays those designations.

Response to MGSCC Comment 14

Comment includes conclusory statements. No specific comment provided on the SBC RCIS.

O'Neil LLP Comment Letter-Camy Townsend- dated August 1, 2023

Comment letter commences on the next page.

O'NEILLLP

ATTORNEYS AT LAW

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August 1, 2023

VIA EMAIL and U.S. Mail

rcis@wildlife.ca.gov

jlee@gosbcta.com

California Department of Fish and Wildlife
Habitat Conservation Planning Branch
ATIN: San Bernardino County RCIS Comments
P.O. Box 944209
Sacramento, CA 94244-2090

San Bernardino County Transportation Authority
ATTN: Josh Lee

Re: Comments on the Draft San Bernardino County Regional Conservation Investment Strategy

Ladies and Gentlemen:

This firm represents a number of landowners within San Bernardino County with properties located within the designated "RCIS Area" of the County's proposed Regional Conservation Investment Strategy (RCIS). Attorneys from our firm have attended a number of the meetings of the County's Environmental Element Group held to explore the development of one or more conservation planning tools for landowners within the County, including those meetings related more specifically to the formulation of an RCIS for the County. The undersigned has extensive experience both in advising landowners within the County regarding land use entitlement and development issues, especially in regards to requirements associated with local, state and federal environmental resource permitting requirements, and in working with landowners and local, state and federal agencies to appropriately address habitat and species issues associated with proposed development. As such, we appreciate the opportunity to provide comments on the draft and hope that the County Transportation Authority will give these comments proper consideration in its revisions to the document.

We provide the following comments of the draft RCIS:

1. It is Essential that the RCIS Remain a Completely Voluntary Conservation Tool.

We applaud the efforts of County staff to identify and develop biological mitigation tools intended to be available for strictly *voluntary* utilization by project proponents, when such proponents

find value in availing themselves of such tools. We appreciate and support the County’s commitment, as reflected in the draft RCIS, to ensure that the RCIS remains an entirely voluntary approach to biological mitigation – one which any given landowner or project proponent may elect to “adopt” and utilize for its project (or not), and one which is not mandated or imposed by any local or state government or governmental agency. Developing helpful, meaningful biological mitigation tools and approaches which are solely voluntary in nature – and which are meant to fit within existing regulatory programs – can effectively promote conservation-minded partnerships between the public and private sectors and promote biological mitigation and conservation within the County that is valuable and impactful. As such, it is extremely important that the County’s RCIS remains a tool which is entirely voluntary (as to its use) on the part of any particular landowner within the County.

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2. The RCIS’s Identification and List of Existing Available Biological Mitigation Banks within the RCIS Area Should Include the USFWS-authorized Angelus Block Delhi Sands Flower-loving Fly Mitigation Bank in the City of Rialto.

The draft RCIS identifies the Delhi Sands flower-loving fly (DSF) as a federally listed County “RCIS Focal Species,” and in Table 2-3, the RCIS notes that the U.S. Fish & Wildlife Service (USFWS) has issued a recovery plan for the DSF. Table 2-3 of the RCIS (at page 2-31 of the draft document) also lists existing mitigation and conservation banks in the SBC RCIS Area. However, notably absent from the list of existing mitigation banks in the RCIS Area is the Angelus Block DSF Mitigation Bank. The Angelus Block DSF Mitigation Bank *is one of only two* existing mitigation banks offering mitigation for the loss of Delhi Sands soils and impacts to the Delhi Sands flower-loving fly. Moreover, the Colton Dunes Conservation Bank (the only other DSF mitigation bank) is included in Table 2-3 and identified in the RCIS. The Angelus Block DSF Mitigation Bank is smaller in size than the Colton Dunes Bank and is less well-known to the public and to local governments and landowners. *Its inclusion in the RCIS (and in Table 2-3) is important and will enable the RCIS document to better serve its conservation purposes, by identifying an existing conservation mitigation bank which may be available to solve project biological mitigation needs within the RCIS Area and of which many entities using the RCIS may be unaware.*

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The Angelus Block Delhi Sands Flower-loving fly Mitigation Bank has been approved by the U.S. Fish & Wildlife Service for use in providing off-site biological mitigation credits for impacts to Delhi Sands soils and impacts to the federally-listed DSF. The bank is part of a larger 30.5-acre DSF conservation area established by the Angelus Block company in the early 2000s. This DSF conservation area is managed by the Rivers & Lands Conservancy.

The Angelus Block DSF Mitigation Bank still has available mitigation credits to sell. It is located within the geographic area proposed to be covered by the RCIS (i.e., the RCIS Area). Specifically, the Mitigation Bank is located north of Fortuna Way and east of Industrial Drive in the City of Rialto.

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By identifying the existence and availability of the Angelus Block DSF Mitigation Bank within the RCIS document, including in Table 2-3, the County would enhance the usefulness of the RCIS document as a biological mitigation tool and guide for local governments and project developers alike.

The undersigned assisted with the establishment of the Angelus Block DSF Mitigation Bank and the USFWS's recognition of that bank as available for use by project proponents in need of off-site biological mitigation. As such, I would be pleased to answer any additional questions you may have regarding the bank.

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3. The Angelus Block DSF Mitigation Bank and the 30.5-acre Angelus Block DSF Conservation Area Should be Included in the "Local Conserved Land" Inventory Described in Section 2.5 of the RCIS and in the Conservation Analysis in Section 3.2.

The 30.5-acre Angelus Block DSF Conservation Area should be Included in the "Local Conserved Land" inventory described in RCIS Section 2.5 and in the conservation analysis presented in Section 3.2. As the RCIS is presently written, it is not clear that the County has done so. The Angelus Block DSF Conservation Area was established pursuant to a USFWS-approved Habitat Conservation Plan in 1999, and as such this HCP should be included among the identified small, non-regional HCPs within the RCIS Area which are contributing to species and habitat conservation. As the draft RCIS document is currently written, it is not clear whether this HCP is included by the drafters as among the "10 approved HCPs" for the DSF referenced at page 3-129 of the draft RCIS and at Table 2-3 on pg. 2-30 of the draft. If the preparers of the draft RCIS have not already included this HCP among the 10, the text should be revised to include the Angelus Block HCP and its conservation lands as well.

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4. Section 2.5 of the Draft RCIS Should Include References to Conservation Lands Owned and/or Managed by the Rivers and Lands Conservancy when Identifying Local Conserved Lands Protecting Important Biological Resources.

Section 2.5 of the draft RCIS contains a discussion of "local conserved lands," which the document describes at pg. 2-24 as including lands within conservation easements, mitigation banks, and other protected conservation-oriented lands. Based on the description of this category in the draft RCIS at Section 2.5, the draft appears not to have included (and perhaps not been aware of) protected conservation lands fitting this description within the RCIS Area which are managed by the Rivers and Lands Conservancy. RCIS preparers should contact the Rivers and Lands Conservancy (RLC) and obtain from that organization a list of qualifying conservation lands within the RCIS Area which the RLC manages for the benefit of sensitive species and habitats relevant to the RCIS. The Rivers and Lands Conservancy is located at 6876 Indiana Ave., Suite J-2, Riverside, California; its telephone number is: (951) 788-0670.

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For example, the undersigned is aware that the RLC manages a number of lands providing habitat for the endangered Delhi Sands flower-loving fly within the RCIS Area. But it is unclear in reading the draft RCIS as to what extent the drafters are aware of those RLC lands or have included them in their analyses. The draft document's failure to list the Rivers and Lands Conservancy at page 2-24 suggests that the draft RCIS may not be taking into account existing conservation lands owned and/or managed by the RLC within the RCIS Area. Those lands, and the conservation value and information associated with them, should be factored into the RCIS document, as relevant.

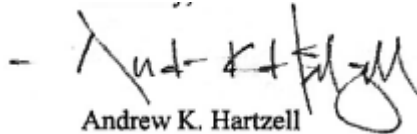
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We appreciate the opportunity to provide comments on the draft RCIS. We congratulate the County and its staff for seeking to develop additional tools for assisting with biological mitigation for economic development within the County. We request that the County modify its RCIS document to identify and include the Angelus Block DSF Mitigation Bank in appropriate locations within the document, as described in more detail herein. Additionally, we request that the County appropriately and accurately account for conservation lands within the RCIS Area which are being managed or monitored by the Rivers and Lands Conservancy.

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Please contact the undersigned should you have any questions regarding the above or desire additional information on the items discussed.

Sincerely,


Andrew K. Hartzell

AKH/clt

Response to O’Neil LLP Comment Letter-Camy Townsend- dated August 1, 2023

Response to O’Neil Comment 1

Introductory comment describing that the firm represents a number of landowners in San Bernardino County. No specific comment provided on the SBC RCIS.

Response to O’Neil Comment 2

Comment expresses support for the intent of the SBC RCIS as a voluntary, nonbinding approach to developing mitigation tools. No specific comment provided on the SBC RCIS.

Response to O’Neil Comment 3

Comment recommends that the approved Angeles Block Delhi Sands Flower-Loving Fly Mitigation Bank be added to the list provided in SBC RCIS Table 2-3. In response to this comment, this mitigation bank has been added to the list of other banks included in the table.

Response to O’Neil Comment 4

Comment provides details regarding the approved Angeles Block Delhi Sands Flower-Loving Fly Mitigation Bank. See Response to O-Neil Comment 3.

Response to O’Neil Comment 5

Comment provides details regarding the approved Angeles Block Delhi Sands Flower-Loving Fly Mitigation Bank. See Response to O-Neil Comment 3.

Response to O’Neil Comment 6

Comment suggests that the Angeles Block Delhi Sands Flower-Loving Fly Mitigation Bank be included in the description of lands within the Local Conserved Lands mapping category in SBC RCIS Section 2-5. See Response to O-Neil Comment 3, this mitigation bank has been added to the description of existing mitigation banks in SBC RCIS Table 2-3. As it relates to this comment, the description of Local Conserved Lands provided in SBC RCIS Section 2-5 states that this mapping category includes mitigation banks. Consistent with the CDFW RCIS guidelines, the SBC RCIS was prepared with existing, publicly available data and it acknowledges that “Land designation data differs in quality, resolution, and accuracy from different sources”. In response to this comment, the description of Local Conserved Lands has been revised to state: Additional local conserved lands may exist or may be conserved in the future that are not described or reflected in the mapping. Related to the comment reference to the Angeles Block HCP, although none of the Other Local HCPs are listed by name, the Angeles Block HCP is one of the “10 approved HCPs” for Delhi Sands flower-loving fly referenced in SBC RCIS Table 2-3 and Section 3.5.2 based on information from the USFWS HCP database.

Response to O’Neil Comment 7

Comment pertains to the description of the Local Conserved Lands category in SBC RCIS Section 2.5 and suggests contacting the Rivers and Lands Conservancy to identify additional lands that may be appropriate for inclusion. Consistent with the CDFW RCIS Guidelines and as described in the SBC RCIS, the SBC RCIS was developed from existing, publicly available information and data from public agencies

And it acknowledges that “Land designation data differs in quality, resolution, and accuracy from different sources”. In response to this comment, the description of Local Conserved Lands has been revised to state: Additional local conserved lands may exist or may be conserved in the future that are not described or reflected in the mapping; therefore, the specific additional lands were not incorporated into the mapping provided in the RCIS.

Response to O’Neil Comment 8

Comment relates to additional lands within the SBC RCIS area managed by Rivers and Lands Conservancy. See Response to O’Neil Comment 7.

Response to O’Neil Comment 9

Comment is a conclusory statement supporting the intent of the SBC RCIS and requests making appropriate revisions to the document based on the previous comments related to the Angeles Block Mitigation Bank. See responses above on revisions made to the SBC RCIS based on these comments.

Response to O’Neil Comment 10

Comment requests making appropriate revisions to the document based on the previous comments related to the Rivers and Lands Conservancy. See responses above on revisions made to the SBC RCIS based on these comments.

**San Bernardino County Department of Public Works Comment Letter-
Nancy J. Sansonetti- dated July 31, 2023**

Comment letter commences on the next page.



Department of Public Works

- Flood Control
- Operations
- Solid Waste Management
- Special Districts
- Surveyor
- Transportation

www.SBCounty.gov

Brendon Biggs, M.S., P.E.
Director

Noel Castillo, P.E.
Assistant Director

David Doublet, M.S., P.E.
Assistant Director

July 31, 2023

San Bernardino County Transportation Authority
1170 W. Third Street, 2nd Floor
San Bernardino, CA 92410
jlee@gosbcta.com

California Department of Fish and Wildlife
Habitat Conservation Planning Branch
Attn: San Bernardino RCIS Comments
P.O. Box 944209
Sacramento, CA 94244-2090
rcis@wildlife.ca.gov

Transmitted Via Email
File: 10(ENV)-4.01

RE: PROJECT REVIEW – SAN BERNARDINO COUNTY TRANSPORTATION AUTHORITY (SBCTA) NOTICE OF AVAILABILITY OF DRAFT SAN BERNARDINO COUNTY REGIONAL CONSERVATION INVESTMENT STRATEGY (RCIS).

Dear SBCTA and California Department of Fish and Wildlife:

Thank you for allowing the San Bernardino County Department of Public Works the opportunity to comment on the above-referenced project. **We received this request on June 15, 2023** and pursuant to our review, the following comment is provided.

Permits/Operations Support Division (Johnny Gayman, Chief. (909) 387-7995):

1. The proposed Project is located adjacent to a San Bernardino County Flood Control District (SBCFCD) facility and/or road right-of-way. Be advised that any encroachments on the SBCFCD's road right-of-way or facilities including, but not limited to, grading, fence removal and replacement, access for construction purposes or new drainage connections to the SBCFCD facilities will require a permit from the SBCFCD. Also, any SBCFCD facilities built by the Army Corps of Engineers (ACOE) will require the SBCFCD to obtain approval (408-Permit) from the ACOE. The necessity for any, or all of these permits, and any impacts associated with them, should be addressed in the Initial Study prior to adoption and certification. If you have any questions regarding this process, please contact the FCD Permit Section at (909) 387-1863.

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BOARD OF SUPERVISORS

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Fifth District

Leonard X. Hernandez
Chief Executive Officer

2. The proposed Project is located within the County Maintained Road System (CMRS) and requires permits for encroachment, excavation, or construction, depending on the nature of the work. If you have any questions regarding this process, please contact the FCD Permit Section at (909) 387-1863.

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Comments from Department of Public Works – July 2023

These comments have incorporated comments previously made in 2019 on the first draft.

Section/Page #	Comment
1.6/1-14	Discusses MCA’s (Mitigation Credit Agreements) that may be developed between CDFW and one or more persons or entities implementing one more conservation actions or habitat enhancement actions. Is this something SBCFCD can avail itself of?
2-24	Lists “San Bernardino County Flood Control District Lands: These lands include fee-owned parcels and easements held by the San Bernardino County Flood Control District (SBCFCD).” We would like it noted in this location that these lands are not available for conservation under the RCIS
2-32	Table 2-3 states “The SBCFCD manages fee-owned lands and easement lands throughout the SBC RCIS Area including portions of the Santa Ana River Watershed according to the Santa Ana Watershed Stormwater Resource Plan. Lands managed by SBCFCD are described in Section 2.5 and used in the conservation analysis in Section 3.2.” District lands are designated for public safety, i.e., the protection of life and property and are not available for conservation outside of the needs of the District for mitigation as required for permitting. Implies the District’s land may be available for conservation under the RCIS.
2-45	“Water diversion, stormwater conveyances, and groundwater extraction can alter naturally occurring hydrologic processes that could reduce abundance of non-native riparian species ” Should be native riparian species, reducing non-natives is a good thing.
3-1	The RCIS characterizes itself as “As a voluntary and non-binding document decoupled from regulatory permitting processes” numerous times; however, for SBCFCD this is not the case; CDFW approving this and permits couples this with permits.
3-7	Figure 3-1(page3-7) The legend shows overlapping habitat linkages with 4 colors, no description of the colors in the text as to what they are for. What differentiates one color from the next? You have to infer that the mountain area and foothills are important and those are red but nothing else is really described. Also, the RCIS map demonstrates the county is mostly linkages or when this is the case it just means open space and less developed.
3-21	Under Transitional Scrub, Chaparral, and woodland, no coastal sage scrub is listed by name. Since it is an important and protected habitat type, we would think it would be spelled out as it greatly impacts species from the focal species tables and acreage tables 3-2A and 3-2B.
	Earlier in the document, riparian and wetland areas of the RCIS were attributed mainly to areas of flowing waters, channels, basins and other areas likely to be of FCD concern. The conservation target on the table for this time of land is 90% . We

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	would like assurances that this document will not be used by CDFW to try to mandate conservation numbers.
3-35	“Other land designations used in the conservation analysis included SBCFCD lands. Military and tribal lands were excluded from the conservation analysis as these lands have separate resource management programs and were not the focus of the conservation objectives or conservation actions under the SBC RCIS”. We would argue SBCFCD lands are permitted activities and have to oblige by permit conditions which include protecting sensitive species and resources while maintaining Public Safety with the control of waters and associated uplands. There is some conservation value here and should not be excluded as implied by 3-43 below.
3-43	“..., and San Bernardino County Flood Control lands), the analysis did not evaluate the specific conservation and management status or needs for each individual public land unit within these designations.”
3-53	<p>Page 131 – Objective TSCW-1.2: Implement targeted conservation actions to increase or improve protection and/or management in the 128,668 acres of public land designations not considered conserved that support TSCW habitats in the following conservation priority areas:</p> <ul style="list-style-type: none"> • BLM ACECs (Granite Mountain Corridor ACEC, Juniper Flats ACEC) • USFS National Forests (San Bernardino National Forest) • Other BLM lands • Other state lands • Other local government lands and open space and parks (Crafton Hills, Jurupa Hills, Glen Helen Regional Park, Mojave River Forks Regional Park) • SBCFCD lands <p>District lands are designated for public safety, i.e., the protection of life and property and are not available for conservation outside of the needs of the District for mitigation as required for permitting.</p> <p>Implies the District's land may be available for conservation under the RCIS.</p>
3-56	“not all specific actions listed under each Conservation Action ID must be implemented and the intent is for specific actions to be selected based on the site-specific or project-specific needs.” This is a key statement and should be emphasized more when reading Table 3-7. Also, many of the actions in this table could require take permits, MOUs, and other permits and should be stated here that coordination with various agencies should be undertaken in order to ensure the implementation of any of these recommendations may bring unknown liability to the proponent without consultation. On page 3-55 they talk a bit about partner engagement and precursor actions but need to give more detail in our opinion based on the number of actors that might be subject to this agreement. Partner engagement with the landowner (SCBCFCD) in regard to cajon woolly star as mentioned above did not happen.

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3-94	<p>“RW-CA7-14: Develop and implement best management practices to prevent or minimize adverse impacts to the California red-legged frog from in-stream and stream bank activities associated with flood control actions.” This targets activities of SBCFD specifically.</p>
3-141	<p>“4 IMPLEMENTATION FRAMEWORK Following CDFW approval of the SBC RCIS, it will be available for use by public agencies, the development community, environmental groups, other interested entities, and the public to inform the implementation of conservation and mitigation actions in the RCIS Area.”</p> <p>District lands are designated for public safety i.e., the protection of life and property and are not available for conservation outside of the needs of the District for mitigation as required for permitting. Implies the District's land may be available for conservation under the RCIS.</p>
4-2	<p>“4.3 Mitigation Credit Agreement Development MCAs may be developed by any public or private entity within the RCIS Area that identifies the types and numbers of credits proposed to be created by implementing one or more conservation actions.”</p> <p>Concerned the entities may try to include District lands in the development of an MCA (mitigation credit agreement). CDFW has approved use of District lands without District consent for mitigation in the past (Cajon woolly star) and we are concerned that the District would become victim to this practice under this RCIS.</p> <p>We are concerned a bit about SBC RCIS Implementation team adding costs to an already expensive process considering we would have a ton of work to comply with ourselves or who do they hire to do the work? Report writing? Communication with CDFW? Etcetera. Mitigation bank might be a better way to invest money if available as it’s more of a one-time investment without the headaches.</p>
4-1	<p>“If MCAs are to be developed under the SBC RCIS, an SBC RCIS Implementation Team will be formed by SBCOG, the County, and/or other public entity MCA sponsor.” How big is this team going to be, who's paying for it, and they are implementing, mapping, and doing everything to comply with program in western desert, mountains, and valley.</p>
4-2	<p>We are concerned a bit about SBC RCIS Implementation team adding costs to an already expensive process considering we would have a ton of work to comply ourselves. Who would be hired to do the work? Report writing? Communication with CDFW? Etcetera. Mitigation bank might be a better way to invest money if available as it’s more of a one-time investment without the headaches. Might this be applicable to tracking mitigation credits for SBCFCD without having to actually do a mitigation ‘bank’. This warrants further exploration. It’s important to note this report is supposed</p>

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	to inform future decision-making processes and grouping effort into a direction that will conserve environmental resources. The highest ranked habitats are within District owned properties, or have easements for, or have to react to, during emergencies. Namely Santa Ana river and Tribes, Mojave River, Lytle, Cajon
4-3	Mitigation Credit Agreement Development: Might be cheaper way of going since we could be involved in more of the decision-making process and spending decisions.
5-1	List of Preparers. While SBCFCD is discussed quite heavily in the document, it is interesting to note that no representative from SBCFCD is listed as a preparer of the document. This is concerning as to whether or not SBCFCD's mission and needs have been adequately represented as a separate legal entity from SBC.
SUMMARY	<p>We would recommend further clarification as to the role of SBCFCD property and its non-availability for outside parties' use for conservation, and further explore the availability of MCAs to the District only on its lands.</p> <p>It's important to note this report is supposed to inform future decision-making processes and grouping effort into a direction that will conserve environmental resources.</p>

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We respectfully request to be included on the circulation list for all project notices, public reviews, or public hearings. In closing, I would like to thank you again for allowing the San Bernardino County Department of Public Works the opportunity to comment on the above-referenced project. Should you have any questions or need additional clarification, please contact the individuals who provided the specific comment, as listed above.

Sincerely,

Nancy Sansonetti

Nancy J. Sansonetti, AICP
 Supervising Planner
 Environmental Management Division

Response to San Bernardino County Department of Public Works Comment Letter-Nancy J. Sansonetti- dated July 31, 2023

Response to SBC DPW Comment 1

The comment is an introductory comment that the project is located adjacent to a San Bernardino County Flood Control District (SBCFCD) facility or right-of-way and does not make any specific comments regarding the SBC RCIS.

Response to SBC DPW Comment 2

The comment is an introductory comment that the project is located within the County Maintained Road System (CMRS) and does not make any specific comments regarding the SBC RCIS.

Response to SBC DPW Comment 3

Comment pertains to Mitigation Credit Agreements (MCAs). The SBCFCD could create MCAs under the approved SBC RCIS and could also purchase credits within MCAs created by other entities. No changes to the document were made in response to this comment.

Response to SBC DPW Comment 4

With regard to SBCFCD lands, the comment suggests that the SBC RCIS be revised to state that these lands are not available for conservation under the SBC RCIS. SBC RCIS has been revised to state that the primary functions of SBCFCD lands are to provide flood protection for public safety, water conservation, and construction of storm protection facilities (pp 2-24). Note also that the SBC RCIS is intended to identify conservation and mitigation opportunities for all entities, including San Bernardino County Department of Public Works. Additionally in response to this comment, the SBC RCIS has been revised to state that: SBCFCD lands are not available for conservation outside the needs of SBCFCD for mitigation as required for permitting.

Response to SBC DPW Comment 5

Comment pertains to the description of SBCFCD lands in SBC RCIS Table 2-3. The table has been revised to be consistent with the Response to SBC DPW Comment 4. Additionally in response to this comment, the SBC RCIS has been revised to state that: SBCFCD lands are not available for conservation outside the needs of SBCFCD for mitigation as required for permitting (pp 2-32).

Response to SBC DPW Comment 6

Comment on a typo related to native/non-native species. SBC RCIS has been revised to address this comment (pp 2-45).

Response to SBC DPW Comment 7

Comment contends that CDFW approval of the SBC RCIS will couple it with permits sought in the future by SBCFCD. The SBC RCIS was developed consistent with the CDFW RCIS Guidelines and California Fish and Game Code, and SBC RCIS Section 1.3 (Intended Uses) specifically states that CDFW “shall not reject biologically appropriate and adequate compensatory mitigation proposed by a project proponent on the basis that the compensatory mitigation is not a action or habitat enhancement identified in a regional conservation investment strategy”, that and RCIS “shall not affect the authority or discretion of any public agency and shall not be binding upon public agencies other than parties to a mitigation credit agreement. Nothing in this chapter increases or decreases the authority or jurisdiction of the [CDFW] regarding any land use, species, habitat, area, resource, plan, process, or corridor. Regional conservation investment strategies are intended to provide scientific information for the consideration of public agencies. Nothing in this chapter or any other provision of law requires any public agency, other than a public agency that is party to a mitigation credit agreement, to adopt, implement, or otherwise adhere to a regional conservation investment strategy”, and that “a project proponent seeking to provide

compensatory mitigation pursuant to [FGC] Section 1602, 2080.1, 2081, or 2835 or the California Environmental Quality Act to undertake conservation actions or habitat enhancement actions identified in a regional conservation investment strategy; implement, contribute to, fund, or otherwise comply with the actions described in a regional conservation investment strategy; require or otherwise compel a project proponent to enter into a mitigation credit agreement; or use or purchase mitigation credits established pursuant to this chapter to satisfy the compensatory mitigation requirements.”

Response to SBC DPW Comment 8

Comment requests clarity on the meaning of the overlapping habitat linkages shown on SBC RCIS Figure 3-1. In response to this comment, Figure 3-1 has been revised to describe better the overlapping linkages shown, as well as provide reference names and data sources on the map. SBC RCIS Section 3.1.1 has also been augmented with additional descriptions.

Response to SBC DPW Comment 9

It is acknowledged that coastal sage scrub is an important habitat type in the region. For the purposes of simplifying and organizing the SBC RCIS, coastal scrub has been aggregated into the Transitional Scrub, Chaparral, and Woodland habitat group, as noted in the comment. Table 3-2a and Table 3-2b provide acreage for coastal scrub vegetation types, and Figure 3-2 provides mapping of the coastal scrub vegetation community (see SBC RCIS Section 3.1.2). Additionally, Focal Species associated with coastal scrub communities are described.

Response to SBC DPW Comment 10

The comment pertains to the conservation target of 90% assigned to the Riparian and Wetland habitat group and seeks assurance that CDFW will not mandate these conservation numbers. The conservation target referenced in this comment is from an early version of the document and was not included in the Public Draft SBC RCIS and is not included in the Final SBC RCIS. As stated throughout the SBC RCIS, it is a nonbinding and voluntary program developed consistent with the CDFW RCIS Guidelines. Additionally, see Response to SBC DPW Comment 7 that the SBC RCIS will not affect the discretion of SBC DPW. Additionally, the RCIS does not identify conservation targets but instead provides a conservation inventory of conserved and non-conserved lands.

Response to SBC DPW Comment 11

It is acknowledged that there is conservation value on SBCFCD lands, but the comment misinterprets the statement that these lands were excluded from the analysis. SBCFCD lands were included in the conservation analysis, and where there were no known formal conservation easements on SBCFCD lands, they were described as public land designations not considered conserved for the purpose of analysis. This approach was taken because, as noted in Response to SBC DPW Comment 4, the primary functions of SBCFCD lands are to provide flood protection for public safety, water conservation, and construction of storm protection facilities. Additionally in response to this comment, the SBC RCIS has been revised to state that: SBCFCD lands are not available for conservation outside the needs of SBCFCD for mitigation as required for permitting (pp 3-35).

Response to SBC DPW Comment 12

The comment provides only quoted text from the SBC RCIS and it is unclear the intent of the comment. No response or change to the document has been made based on this comment. The comment may be related to SBC DPW Comment 11. See Response to SBC DPW Comment 11.

Response to SBC DPW Comment 13

The Comment again clarifies that SBCFCD lands are designated for public safety and the protection of life and property. See Response to SBC DPW Comment 4; SBC RCIS has been revised to state that the primary functions of SBCFCD lands are to provide flood protection for public safety, water conservation, and construction of storm protection facilities. Note also that the SBC RCIS is intended to identify

conservation and mitigation opportunities for all entities, including SBC DPW.

Response to SBC DPW Comment 14

Comment pertains to the SBC RCIS text that “not all specific actions listed under each Action ID must be implemented and the intent is for specific actions to be selected based on the site- specific or project-specific needs”, and it is acknowledged that this is a key statement. It is also acknowledged that the actions in Table 3-7 of SBC RCIS Section 3.4.1 could require permits, MOUs, and coordination with various agencies in order to be undertaken. Additionally, as stated throughout the SBC RCIS, it is a nonbinding and voluntary program developed consistent with the CDFW RCIS Guidelines.

Response to SBC DPW Comment 15

As stated throughout the SBC RCIS, it is a nonbinding and voluntary program developed consistent with the CDFW RCIS Guidelines, and the Guidelines reference incorporation of relevant USFWS Recovery Plans for Focal Species. With regard to actions for the California red-legged frog, the actions identified in Table 3-7 for this species come directly from the USFWS 2002 Recovery Plan for the California Red-Legged Frog (*Rana aurora draytonii*); therefore, they are not intended to target any one entity but provide options for actions for this species for those that choose to implement actions.

Response to SBC DPW Comment 16

The Comment again clarifies that SBCFCD lands are designated for public safety and the protection of life and property. See Response to SBC DPW Comment 4; SBC RCIS has been revised to state that the primary functions of SBCFCD lands are to provide flood protection for public safety, water conservation, and construction of storm protection facilities. Note also that the SBC RCIS is intended to identify conservation and mitigation opportunities for all entities, including SBC DPW.

Response to SBC DPW Comment 17

The comment pertains to potential MCA development on SBCFCD lands. The SBC RCIS does not create MCAs. If the SBC RCIS is approved, MCAs on public lands may only be created with written, signed approval from the public landowner, as specified in the CDFW MCA Guidelines. With regard to the SBC RCIS Implementation Team, the implementation team may be formed if an MCA is developed in the future under an approved RCIS, and the costs of the associated implementation actions would need to be considered. Nothing in the SBC RCIS changes or modifies the use of existing or future development of mitigation/conservation banks. Additionally in response to this comment, the SBC RCIS has been revised to state that: MCA development must also include written signoff from the public agency landowner approving use of those lands for the MCA (SBC RCIS page 4-2).

Response to SBC DPW Comment 18

The comment pertains to the potential development of the SBC RCIS Implementation Team. See Response to SBC DPW Comment 17. The implementation tasks described for the SBC RCIS Implementation Team may be implemented if an MCA is developed in the future under an RCIS approved, as specified in the CDFW RCIS Guidelines.

Response to SBC DPW Comment 19

The comment pertains to the potential development of the SBC RCIS Implementation Team. See Response to SBC DPW Comment 17 and Response to SCB DPW Comment 18.

Response to SBC DPW Comment 20

No specific comment is provided here on the SBC RCIS; however, the statement relates to the use of mitigation/conservation banks instead of MCAs. See Response to SBC DPW Comment 17, Response to SCB DPW Comment 18, and Response to SCB DPW Comment 19.

Response to SBC DPW Comment 21

The comment pertains to the list of preparers for the SBC RCIS. As noted in the introduction to this section, the SBC RCIS is the product of a collaborative, multiyear effort involving numerous agencies, stakeholders from a range of interests, and individuals of the public, and only key contributors are specifically listed. The County staff, including SBC DPW, were part of the Environment Element Group, which is listed as a key contributor.

Response to SBC DPW Comment 22

The comment summarizes the comment letter, focusing on SBCFCD lands in the SBC RCIS. See Response to SBC DPW Comment 4, Response to SBC DPW Comment 13, and Response to SBC DPW Comment 16.

SC Wildlands (SCW) Comment Letter dated August 4, 2023

Comment letter commences on the next page.

August 4, 2023

CDFW: rcis@wildlife.ca.gov

San Bernardino County Transportation Authority: jlee@gosbcta.com



Subject: Comments on Draft San Bernardino County RCIS

The Draft SB RCIS lacks measurable goals and objectives for covered species and habitat types, does not provide context on the relationship of the SB RCIS and overlapping and adjacent NCCPs (including how the plans related in terms of covered species, linkages, and protected areas), and does not sufficiently identify or describe conservation priority areas or the linkages between them needed to sustain covered species and habitats.

1

The SB RCIS lacks context. Virtually all of the maps in the entire plan only depict the thematic data within the RCIS boundary. While the GIS data must be clipped to the RCIS boundary to generate needed statistics, acreages and tables to describe the results of the analysis, all of the maps should include the thematic data beyond the RCIS boundary to provide context.

2

The SB RCIS does not thoroughly consider its relation to adjacent conservation plans, such as the Western Riverside and Coachella Valley MSHCPs, or even overlapping NCCP/HCPs like the DRECP or the Apple Valley MSCP. There is a map of the RCIS that shows the general boundaries MSCPs and HCPs but the DRECP wasn't included even though it overlaps the majority of the RCIS planning area. Considering that the SB RCIS shares many of the same covered species with these plans, the RCIS should identify the overlapping focal species and try to connect to those plan areas for the benefit of those covered species. In addition, other land designations in the DRECP, such as Special Resource Management Areas, should be included in the land designation public land analysis.

3

The SC RCIS doesn't include a reserve design, with no **measurable** goals or objectives or conservation priority clearly identified or mapped. Priority conservation areas are described in overly broad terms, as general regional locations, e.g., "Chino Hills" or "Morongo Basin," or even "National Forests." More detail, preferably maps of priority conservation areas are needed, as well as identification of priority actions within priority areas, including steps to reduce fragmentation, to restore connectivity, and to protect key species populations.

4

5

Section 3.2.2 Analysis Results provides an exorbitant number of acreages and statistics for each region and 50+ page table of conservation actions but the RCIS does not include any maps of "specific conservation priority areas" as stated in Section 3.3:

The conservation objectives related to public lands reference specific conservation priority areas on public lands and provide measurable metrics (i.e., acreage of public lands) based on the public lands component of the conservation analysis (Section 3.2.2). The conservation objectives related to private lands reference specific conservation priority areas on private lands and provide measurable metrics (i.e., acreage of private lands) based on the private lands component of the conservation analysis (Section 3.2.2).

6

I presumed that Figure 3-4A and 3-4B, which depict areas of moderate to high habitat value in the RCIS Area were perhaps the conservation priority areas but the RCIS clearly states, these maps are not intended to represent a reserve design or influence where conservation should occur. These areas largely overlap with designated ACECs.

7

Nevertheless, Figures 3-4A&B don't capture landscape linkages wide enough to support viable populations of the selected focal species. Maintaining and restoring landscape level connectivity is essential to day-to-day movements of individuals seeking food and water, shelter or mates; dispersal of offspring to new home areas; seasonal migration; recolonization of unoccupied habitat after a local population goes extinct; and for species to shift their range in response to global climate change. Enhancing connectivity and linking natural landscapes has been identified as the single most important adaptation strategy to conserve biodiversity during climate change (Heller and Zavaleta 2009).

8

One of the primary goals for the Desert Tortoise Linkages identified in the DRECP (Goal DETO2) is to "Maintain functional linkages between Tortoise Conservation Areas (TCA) to provide for long-term genetic exchange, demographic stability, and population viability within Tortoise Conservation Areas". Emphasize inclusion of high value contiguous habitats pursuant to Nussear et al. (2001) and avoidance of disturbance in habitat with high desert tortoise habitat potential. All desert tortoise linkages should be included as Conservation Priority Areas in the RCIS. The analyses conducted by USFWS (Averill-Murray et al. 2013) indicate that the Ord-Rodman to Joshua Tree Linkage is relatively permeable to tortoise movement and this entire area is identified as highly suitable in the desert tortoise Maxent model (Nussear et al.2009). The distance between the Ord-Rodman TCA and the Intact Desert Tortoise Habitat in the Old Woman Springs Wildlife Linkage ACEC is roughly 7 miles, fully within the movement capability of an individual tortoise. Sazaki et al. (1995) estimated dispersal distance for pre-breeding male tortoises to be between 6.21-9.32 miles. The desert tortoise linkages provide live-in and move-through habitat for this species and are intended to provide connectivity between the TCAs to maintain the viability of the entire population.

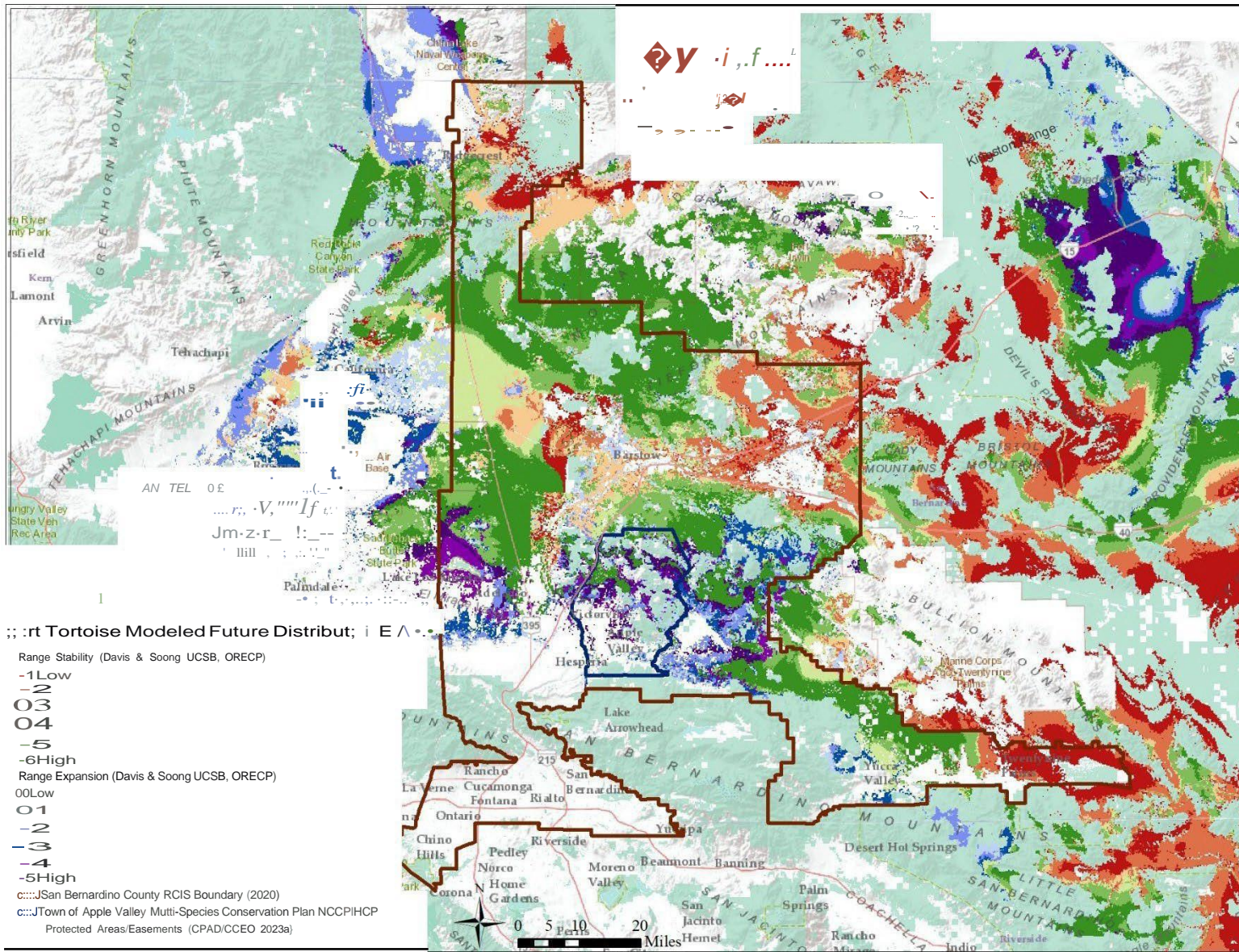
9

The Western Mojave Recovery Unit and the associated linkages may be especially important to allow the tortoise to adapt to climate change. Davis and Soong developed desert tortoise modeled future distribution for the DRECP, which identified areas within desert tortoise existing habitat that is expected to remain stable, as well as projecting areas for range expansion (Figure 1). All areas of medium to high stability and project areas for range expansion of the desert tortoise should be included as Conservation Priority Areas.

10

The Desert Bighorn Sheep Mountain Habitat (CDFW 2013) identifies historic, current, and potential core habitat, while the Intermountain Habitat represents the intermountain, lower slope, valley bottom habitat used by desert bighorn sheep to move between mountain habitat (Figure 2). Bighorn sheep mountain habitat and intermountain habitat largely overlap with the Desert Linkage Network (Penrod et al. 2012). CDFW mapped an intermountain connection between San Bernardino National Forest (SBNF) and Ord-Rodman that has a minimum width of roughly 7.8 miles. While the Granite Mountain Wildlife Linkage ACEC overlaps this bighorn sheep intermountain connection and the San Bernardino-Granite Linkage (Penrod et al. 2005), the ACEC is much narrower and should be buffered as conservation priority areas in the RCIS. The

11



;; :rt Tortoise Modeled Future Distrib; i E \ . .

Range Stability (Davis & Soong UCSB, ORECP)

-1 Low

-2

03

04

-5

-6 High

Range Expansion (Davis & Soong UCSB, ORECP)

00 Low

01

-2

-3

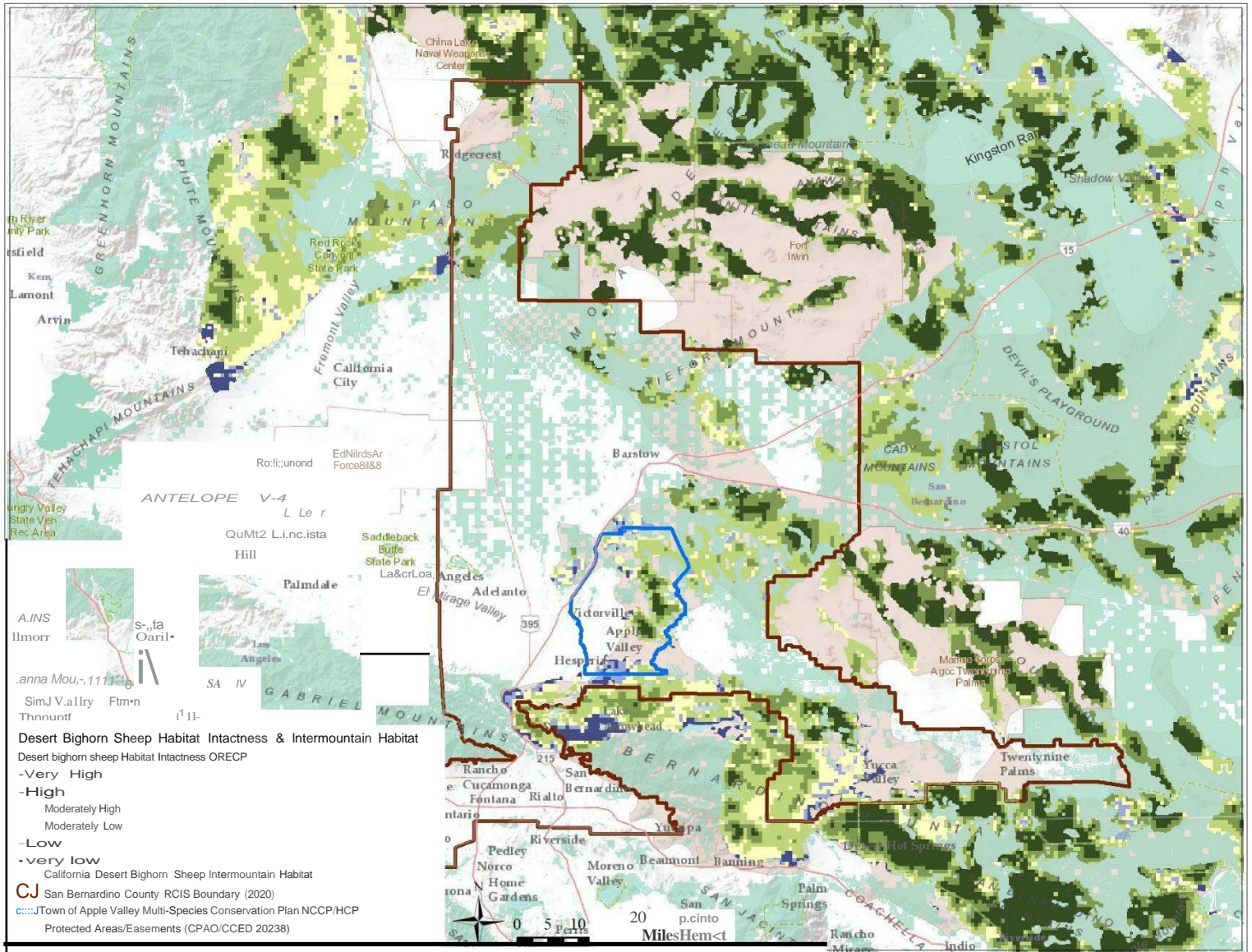
-4

-5 High

c:::JSan Bernardino County RCIS Boundary (2020)

c:::JTown of Apple Valley Multi-Species Conservation Plan NCCPIHCP

Protected Areas/Easements (CPAD/CCEO 2023a)



Desert Bighorn Sheep Habitat Intactness & Intermountain Habitat
 Desert bighorn sheep Habitat Intactness ORECP
 -Very High
 -High
 Moderately High
 Moderately Low
 -Low
 -very low
 California Desert Bighorn Sheep Intermountain Habitat
 San Bernardino County RCIS Boundary (2020)
 Town of Apple Valley Multi-Species Conservation Plan NCCP/HCP
 Protected Areas/Easements (CPAO/CCED 2023B)

Relevance and Importance Criteria for this ACEC states, “the area is critical for bighorn sheep, golden eagles, desert tortoise and prairie falcons and several other species. Additionally, numerous rare and sensitive plants have major populations here, making the area regionally important”. In addition, the Twentynine Palms Newberry Rodman-San Bernardino Connection will be especially important to the Cushenberry Herd of bighorn sheep in a warming climate for access to water resources (e.g., seeps, springs, riparian habitats).

11
Cont.

Plant and animal distributions are predicted to shift (generally northwards or upwards in elevation in California) due to global warming (Field et al. 1999). Full shifts in vegetation communities are expected as a result of climate change (Notaro et al. 2012). The RCIS spans diverse landscapes of the Mojave Desert and the San Bernardino Mountains. The northern slopes and foothills of the San Bernardino Mountains contain many springs and seeps, several riparian drainages, and the headwaters of the Mojave River. Thus, linkages must be sufficiently wide to cover an ecologically meaningful range of elevations as well as a diversity of microhabitats that allow species to colonize new areas. Riparian systems will be especially important to allow species to respond and adapt to climate change because they provide connectivity between habitats and across elevational zones (Seavy et al. 2009).

12

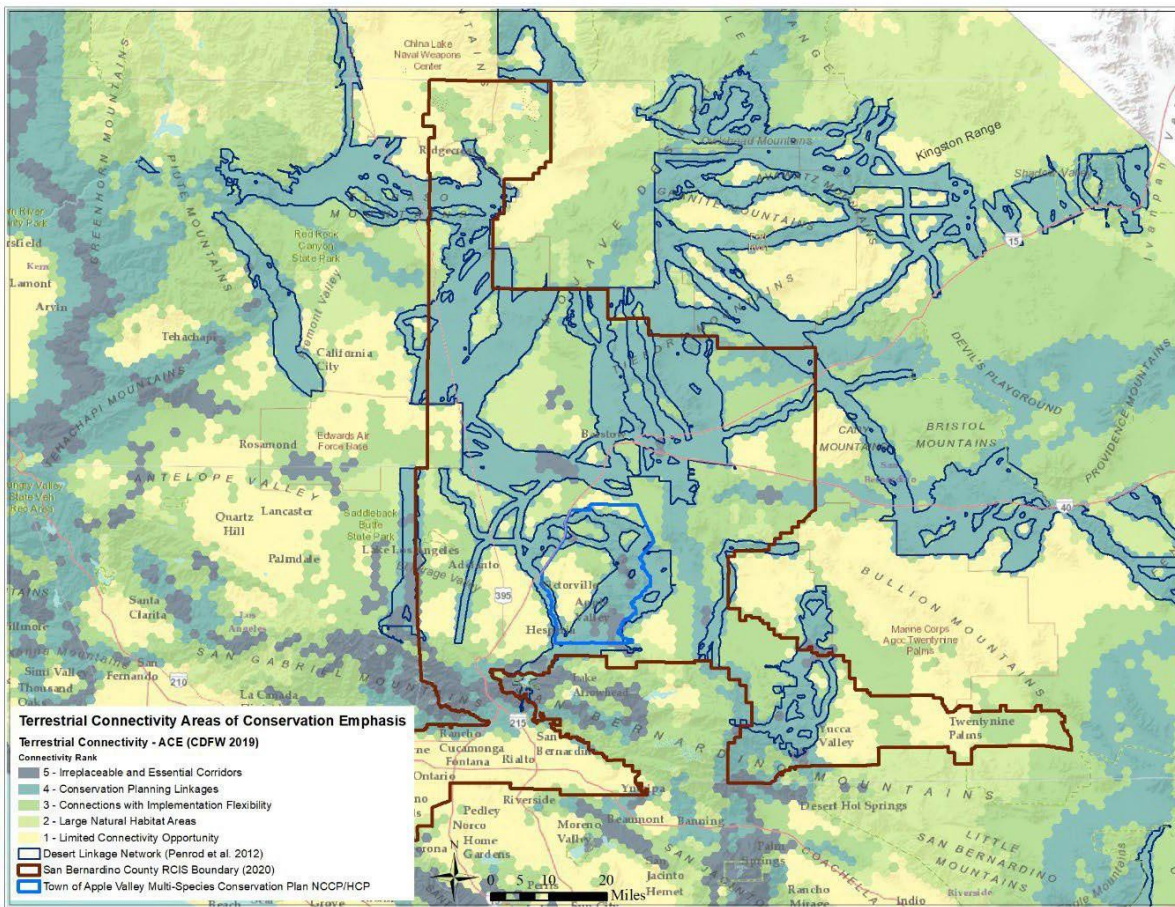
While the Mojave River is identified as one of the hottest areas in the Focal Species Habitat Heat Map in Figure 3-3, for much of its length, virtually all of the uplands outside of the San Bernardino Flood Control Lands are not included in Figures 3-4A&B as Moderate to High Habitat Value based on the analysis conducted for the RCIS. However, several analyses conducted for the DRECP (2016) did identify high value habitat in the uplands along the river. The Mojave River flows from the South Coast Ecoregion through much of the Mojave Ecoregion. It is one of three major rivers in the desert and the only one that traverses from the West to the East Mojave, covering a distance of roughly 80 miles - it is a key wildlife movement corridor. The Mojave River is also essential habitat for several listed and sensitive species with portions of the river designated as critical habitat for southwestern willow flycatcher. According to the USFWS (1986), over 200 species of migratory birds have been recorded in the Mojave River, near the Mojave River Forks Dam Water Conservation Project. These hundreds of migratory bird species use the Mojave River, Deep Creek, mountain lakes, riparian drainages and seeps and springs throughout desert facing slopes of the San Bernardino and San Gabriel Ranges. All natural upland habitats along the Mojave River should be included in the conservation priority areas to ensure wildlife have access to this essential resource, which will be even more indispensable with climate change. In addition, the westernmost strand of the Desert Linkage Network (Penrod et al. 2012) that follows the Mojave River for a distance and then arcs to the east toward Newberry Rodman is the corridor with high interspersion of land facets which is expected support species movements during periods of climate instability.

13

The Desert Linkage Network (Penrod et al. 2012) was developed in part based on the habitat and movement requirements of 44 different focal species that are sensitive to habitat loss and fragmentation. These focal species were selected to represent a diversity of ecological interactions and are intended to serve as an umbrella for all native species and ecological processes of interest in the region. These 44 focal species capture a diversity of movement needs and ecological requirements and include area-sensitive species, barrier-sensitive species, less

14

mobile species or corridor-dwellers, habitat specialists, and ecological indicator species. In addition to linkages designed for focal species, the Desert Linkage Network (Penrod et al. 2012) was also designed to be robust to climate change. As climate changes the focal species' distributions and the land cover map is likely to change; indeed it is likely that many land cover types (vegetation communities) will cease to exist as the plant species that define today's vegetation communities shift their geographic ranges in idiosyncratic ways (Hunter et al. 1988). We used the land facet approach (Brost and Beier 2010) to design climate-robust linkages. A land facet linkage consists of a corridor for each land facet, plus a corridor for high diversity of land facets. Each land facet corridor is intended to support occupancy and between-block movement by species associated with that land facet in periods of climate quasi-equilibrium. The high-diversity corridor is intended to support short distance shifts (e.g. from low to high elevation), species turnover, and other ecological processes relying on interaction between species and environments. The focal species linkages and land facet linkages were combined and then refined (e.g., adding riparian connections, removing redundant strands) to delineate the final Desert Linkage Network. The Desert Linkage Network (Penrod et al. 2012) has been integrated into the Terrestrial Connectivity Areas of Conservation Emphasis (CDFW 2019) and all data generated by that effort is available on BIOS.



14
Cont.

The plan relies on past regional connectivity studies and has no specific fine scale connectivity modelling prepared for the plan area or proposed covered species. It seems logical to, along with

15

more clearly identifying priority conservation areas, that the plan also needs to identify fine-scale linkages between priority conservation areas, where applicable. The RCIS should also highlight the importance of remediating barriers to wildlife movement and prioritize linkage conservation.

15
Cont.

Thank you for the opportunity to provide comments on the DRAFT SB RCIS.

Respectfully Submitted,
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Response to SC Wildlands (SCW) Comment Letter dated August 4, 2023

Response to SCW Comment 1

This comment lists the following alleged omissions: measurable goals and objectives for covered species and habitat types, context on the relationship with overlapping and adjacent NCCPs, and sufficient descriptions of conservation priority areas or the linkages between them. With regard to measurable objectives, the SBC RCIS was developed consistent with the California Fish and Game Code and the CDFW RCIS Guidelines California Fish and Game Code Section 1852(c)(9) specifies that an RCIS include “a description of the general amounts and types of habitat that, if preserved or restored and permanently protected, could achieve the conservation goals and objectives,” and the SBC RCIS states that “implementation of any amount of the SBC RCIS actions identified in SBC RCIS Section 3.4.1 would contribute toward meeting these conservation goals and objectives.” CDFW RCIS Guidelines state that the objectives shall be specific and measurable. SBC RCIS Section 3.2 provides a conservation inventory that identifies the acreage of unprotected lands on public and private lands by habitat group. SBC RCIS Section 3.3 provide conservation objectives that are specific and measurable by providing an estimated number of acres by habitat group and specific conservation priority areas in each objective where the actions should be focused on public lands and private lands in the RCIS area. With regard to context on the relationship with overlapping and adjacent NCCPs, SBC RCIS Section 2.6, Other Resource Conservation and Management Plans and Programs, describes the HCPs and NCCP in and around the RCIS Area, including Figure 2-7, Habitat Conservation Planning in the Region. Additionally consistent with the CDFW RCIS Guidelines, Section 3.5.1 provides a detailed description of approved HCPs in the SBC RCIS area. With regard to the descriptions of conservation priority areas and linkages between them, SBC RCIS describes the Focal Species, vegetation communities, and habitat linkages in Section 3.1 and SBC RCIS Section 3.3 describes the specific conservation priority areas for each of the habitat groups in the conservation objectives. Additionally, SBC RCIS Section 3.4.2 describes the areas of moderate to high habitat value areas to be used as guidance for prioritizing locations for actions.

Response to SCW Comment 2

This comment suggests the exhibits in the 2023 public review draft RCIS “lack context” by stopping at the RCIS Area boundary. The SBC RCIS was developed consistent with CDFW RCIS Guidelines and provides planning context within the RCIS area and surrounding region throughout the document. SBC RCIS Section 2, Landscape Context and Setting, provides regional context related to ecoregion; climate; geomorphology, topography, and soils; hydrology, land ownership, designations, and jurisdiction, resource conservation and management plans and programs, land uses and reasonably foreseeable development, and regional pressures and stressors. SBC RCIS Section 3.1, Conservation Elements describes and maps habitat linkages, including linkages within and outside the RCIS area, vegetation communities, and Focal Species. The Focal Species summaries in SBC RCIS Appendix C, describes each Focal Species including mapping and occurrences and species range within and surrounding the RCIS area. Additionally, Appendix F, Countywide Habitat Preservation/Conservation Framework Study, provide planning context for the entire county, which was developed prior to and supported SBC RCIS development.

Response to SCW Comment 3

This comment suggests the RCIS exhibits lack the boundaries of the Desert Renewable Energy Conservation Plan (DRECP). It also suggests that focal species shared by the RCIS and overlapping Habitat Conservation Plans/Natural Community Conservation Plans be identified and “try to connect” the RCIS to those plans. The author also requests land designations from the DRECP (e.g., Special Resource Management Areas) be included in the RCIS land designation public land analysis. The CDFW RCIS Guidelines specify that RCISs include a description of HCPs and NCCPs in and adjacent to the RCIS area, which is provided in SBC RCIS Section 2.6, and include a description of consistency with approved HCPs and NCCPs in the RCIS area, which is provided in SBC RCIS Section 3.5.1.

Additionally, the DRECP is described in SBC RCIS Section 2.6 and land use plan designations made under the DRECP (e.g., BLM National Conservation Lands and Areas of Critical Environmental Concern) are described and mapped in SBC RCIS Section 2.5. The DRECP is a BLM Land Use Plan Amendment addressing only BLM lands, and is not an HCP or NCCP; therefore, it was not included because it is not a required RCIS component.

Response to SCW Comment 4

This comment states the RCIS lacks a “reserve design with no measurable goals or objectives.” Consistent with CDFW RCIS Guidelines, the SBC RCIS is a voluntary and nonregulatory planning document that is not intended to provide a reserve design that are typically associated with regulatory permitting vehicles like an HCP or NCCP. SBC RCIS Section 3.4.2 does identify areas of moderate to high habitat value for use in guiding and prioritizing voluntary action implementation. With regard to measurable objectives, the SBC RCIS was developed consistent with the California Fish and Game Code, which calls for a description of the general amounts and types of habitat if conserved could achieve the conservation objectives, and the CDFW RCIS Guidelines, which states that the objectives shall be specific and measurable. SBC RCIS Section 3.2 provides a conservation inventory that identifies the acreage of unprotected lands on public and private lands by habitat group. SBC RCIS Section 3.3 provide conservation objectives that are specific and measurable by providing an estimated number of acres by habitat group and specific conservation priority areas in each objective where the actions should be focused on public lands and private lands in the RCIS area. California Fish and Game Code Section 1852(c)(9) specifies that an RCIS include “a description of the general amounts and types of habitat that, if preserved or restored and permanently protected, could achieve the conservation goals and objectives,” and the SBC RCIS states that “implementation of any amount of the SBC RCIS actions identified in SBC RCIS Section 3.4.1 would contribute toward meeting these conservation goals and objectives.” CDFW RCIS Guidelines state that the objectives shall be specific and measurable.

Response to SCW Comment 5

This comment states the RCIS lacks conservation priority areas that are “clearly identified or mapped” instead of being described in “overly broad terms.” The author requests “steps to reduce fragmentation, restore connectivity, and protect key species populations” within priority conservation areas. Consistent with the CDFW RCIS Guidelines, the SBC RCIS provides guidance for prioritizing actions, including identifying conservation priority areas in the SBC RCIS Section 3.3 Conservation Goals and Objectives and in the mapping of moderate to high habitat value areas provided in SBC RCIS Section 3.4.2. The actions identified in SBC RCIS Section 3.4.1 could be implemented in these conservation priority areas to contribute towards meeting the conservation goals and objectives. As a landscape-scale planning document that is voluntary and non-binding, it would not be appropriate to provide greater resolution or parcel-specific details on conservation priorities.

Response to SCW Comment 6

This comment contends that the SBC RCIS Section 3.2.2 provides exorbitant acreages and that SBC RCIS Table 3-7, RCIS Actions Summary, does not provide any mapping of the specific conservation areas. See Response to SCW Comment 5. SBC RCIS Section 3.3 Conservation Goals and Objectives names specific conservation priority areas on public and private lands for each habitat group. The SBC RCIS is a voluntary and nonbinding planning document that is intended to guide where conservation and mitigation actions could occur and it would not be appropriate to provide greater resolution or parcel-specific details on conservation priorities.

Response to SCW Comment 7

This comment asserts that SBC RCIS Figures 3-4A and 3-4B were perhaps intended to depict conservation priority areas and overlap with Areas of Critical Environmental Concern (ACEC), but that the document states that these maps are not intended to represent a reserve design or influence where actions should occur. It is acknowledged that the mapping of moderate to high habitat value areas in

these figures overlap in many locations of the desert region with BLM ACECs and that the mapping includes many of the conservation priority areas described in the SBC RCIS Section 3.3 conservation goals and objectives. As a voluntary and nonbinding planning document, the SBC RCIS provides information to guide where actions could be implemented to achieve the greatest conservation outcomes, but it cannot dictate or require where such actions would occur.

Response to SCW Comment 8

This comment argues that Figures 3-4A and 3-4B show landscape linkages that are not wide enough, citing a study (Heller and Zavaleta, 2009) that states “enhancing connectivity and linking natural landscapes has been identified as the single most important adaptation strategy to conserve biodiversity during climate change.” Consistent with the CDFW RCIS Guidelines, the mapping of areas of moderate to high habitat value provided in these figures is based on existing, published data to guide prioritization and implementation of actions. It is acknowledged that maintaining and restoring landscape level connectivity and wildlife movement is important for conserving biodiversity, and RCIS actions do not need to occur exclusively in these areas and may be implemented in less prioritized areas that may still provide benefits to species.

Response to SCW Comment 9

This comment requests that “all desert tortoise linkages [from the DRECP, Goal DETO2] should be included as conservation priority areas in the RCIS” and cites several studies that emphasize the presence and importance of desert tortoise movement (i.e., Averill-Murrall et al. 2013, Nussear et al. 2009, and Sazaki et al. 1995). The SBC RCIS acknowledges the importance of the desert tortoise linkages throughout the document, including specific reference to desert tortoise critical habitat units, tortoise conservation areas, and linkages between them as conservation priority areas under Objective DS-1.3 and connecting blocks of desert tortoise habitat under Action DS-CA5.

Additionally, the mapping of areas of moderate to high habitat value for the desert region, as described in SBC RCIS Section 3.4.2, is based on the California Desert Biological Conservation Framework map developed by the California Energy Commission, CDFW, BLM, and USFWS, which included the desert tortoise important areas including linkages.

Response to SCW Comment 10

This comment refers to an attached figure (Figure 1) and requests the areas identified as “medium to high stability and project areas for range expansion of the desert tortoise” from the DRECP be included in the RCIS as Conservation Priority Areas. It is acknowledged the importance of refugia for species to provide climate change resiliency in areas with low exposure that would remain relatively stable over time. The SBC RCIS identifies these refugia in the description of other important landscape features in Section 3.1.1, and SBC Table 3-7 identifies areas of moderate to high climate change resiliency and refugia as a factor to consider in identifying locations for implementing actions.

Additionally, SBC RCIS Appendix E, San Bernardino County RCIS Climate Change Vulnerability Assessment includes mapping from CDFW on terrestrial climate change resilience rank and vegetation climate exposure refugia. Priority areas are not a limiting boundary for RCIS implementation, and other areas may be determined to be important and actions in other areas can be implemented under the RCIS.

Response to SCW Comment 11

This comment refers to an attached figure (Figure 2) to argue the Granite Mountain Wildlife Linkage Area of Critical Environmental Concern (ACEC) in the RCIS should be a wider Conservation Priority Area in the RCIS because it overlaps with a known desert bighorn sheep intermountain connection with a minimum width of 7.8 miles between San Bernardino National Forest and Ord-Rodman. Lastly, this comment asserts a connection will become important for a certain herd of bighorn sheep to reach water as the climate warms; “...the 29 Palms Newberry Rodman-San Bernardino Connection will be especially important to the Cushenberry Herd of bighorn sheep in a warming climate for access to water resources...” SBC RCIS Figure 3-1, Habitat Linkages, includes mapping of the desert habitat linkages

referenced in this comment, and SBC RCIS Objective DS-1.3 specifically references the mountain and intermountain habitats, particularly areas that support perennial and seasonal water sources, for desert bighorn sheep as conservation priority areas. Additionally, the mapping of areas of moderate to high habitat value for the desert region, as described in SBC RCIS Section 3.4.2, is based on the California Desert Biological Conservation Framework map developed by the California Energy Commission, CDFW, BLM, and USFWS, which included the desert bighorn sheep important areas. Priority areas are not a limiting boundary for RCIS implementation, and other areas may be determined to be important and actions in other areas can be implemented under the RCIS.

Response to SCW Comment 12

This comment requests that linkages in the RCIS be sufficiently wide to accommodate predicted shifts as the climate warms in plant and animal ranges, and to recognize riparian systems as linkages that cross elevational zones. It is acknowledged the importance of linkages to refugia for species to provide climate change resiliency in areas with low exposure that would remain relatively stable over time. The SBC RCIS identifies elevational gradients and refugia in the description of other important landscape features in Section 3.1.1, and SBC Table 3-7 identifies areas of moderate to high climate change resiliency and refugia as a factor to consider in identifying locations for implementing actions. Additionally, SBC RCIS Appendix E, San Bernardino County RCIS Climate Change Vulnerability Assessment includes mapping from CDFW on terrestrial climate change resilience rank and vegetation climate exposure refugia.

Response to SCW Comment 13

This comment relates to the habitat value of the Mojave River, including adjacent upland habitats, and contends that “all natural upland habitats along the Mojave River should be included in the conservation priority areas.” As the comment notes, SBC RCIS Figure 3-1 shows the Mojave River corridor as an important habitat linkage area, SBC RCIS Figure 3-3 illustrates the importance of the Mojave River corridor as habitat for multiple Focal Species, and SBC RCIS Figure 3-4A and Figure 3-4B show the Mojave River corridor as moderate to high habitat value. Additionally, SBC RCIS Objective RW-1.2 and Objective RW-1.3 identify the Mojave River and its tributaries as conservation priority areas. Additionally, Action RW-CA6 is to enhance wildlife movement and habitat connectivity by implementing actions that improve wildlife access to and through riparian and wetland areas; therefore, the Mojave River corridor is considered addressed in the document and no change was made in response to this comment.

Response to SCW Comment 14

This comment describes the Desert Linkage Network and that the data is available on BIOS. No specific comment on the SBC RCIS is provided. The Desert Linkage Network is specifically used and references in the description of habitat connectivity and wildlife movement in SBC RCIS Section 3.1.1 and is used in Figure 3-1.

Response to SCW Comment 15

This comment reiterates the requests to, provide more detail on priority conservation areas, identify fine-scale linkages between priority conservation areas, and prioritize linkage conservation. It also requests the RCIS to highlight the importance of removing barriers to wildlife movement. Consistent with CDFW RCIS Guidelines, the SBC RCIS was developed using existing, publicly available information and data. As described in previous responses, the SBC RCIS describes conservation priority areas and mapping resources are provided to guide potential implementation of actions. SBC RCIS Table 3-7 includes DS-CA4 to enhance wildlife movement and habitat connectivity by implementing actions that improve wildlife access across/around barriers to movement.

The Nature Conservancy (TNC) Comment Letter dated August 4, 2023

Comment letter commences on the next page.



Protecting nature. Preserving life.

August 4, 2023

California Department of Fish and Wildlife
Habitat Conservation Planning Branch
ATTENTION: San Bernardino County RCIS Comments
P.O. Box 944209
Sacramento, CA 94244-2090
CDFW: rcis@wildlife.ca.gov
San Bernardino County Transportation Authority (SBCTA): jlee@gosbcta.com

Dear RCIS Program and Mr. Lee:

On behalf of The Nature Conservancy (TNC), I want to thank you for the opportunity to provide comments on the draft San Bernardino County Regional Conservation Investment Strategy (RCIS). As a science-based organization that has worked for decades in the region to deliver solutions that conserve the fragile biodiversity and unique and extraordinary habitats benefitting both people and nature, we appreciate the effort and commitment of SBCTA and the Department to the RCIS.

We strongly support adoption of an RCIS for the region. The science-based San Bernardino County RCIS is a foundational document for the region, covering a vast area representing three ecoregions, and over 50 focal species in the region, including listed and sensitive species such as the western Joshua tree and desert tortoise. The region's habitats, plants and animals deliver multiple conservation values and benefits to communities, such as cleaning our air and water, providing recreational opportunities that fuel our regional economies and support our mental and physical health, and supporting climate resilience.

The San Bernardino County RCIS can guide voluntary, non-binding conservation actions. In addition to facilitating ecosystem protection, the approved RCIS will also enable development of Mitigation Credit Agreements, creating credits used by project proponents to streamline and accelerate infrastructure and development projects. Other benefits of an approved San Bernardino RCIS include: expediting implementation of the Western Joshua Tree Conservation Act; incentivizing early and robust conservation actions aligned with the needs of sensitive species and habitats that may help avoid future listings; providing a competitive advantage to entities applying for conservation grant funding; and enabling advance mitigation credits for wildlife connectivity projects consistent with SB 790.

However, there are major deficiencies related to the conservation analysis that need to be corrected for the San Bernardino RCIS to be consistent with the statute and Guidelines, and to ensure that implementation of the RCIS can be tracked and measured over time against the goals. The primary need is to include *measurable* objectives for the conservation strategy, including for habitats, conservation elements, focal and non-focal species. This is required in the RCIS statute and guidelines, for good reasons. Quantifiable goals and targets, and measurable objectives are essential to understand what is necessary to achieve the goals, develop gap

analyses, determine highest leveraged conservation actions, including advance mitigation actions, and to track progress and document success. Such information (quantifiable goals and targets and measurable objectives) was included in an earlier (2022) draft, and we request that the information be included in the approved RCIS.

4
Cont.

Specifically, we recommend:

Adding columns of percentages in Table 3-6 representing the percent of each habitat (public or private) considered conserved as a basis gap analysis. The percentages are included in the texts for each Habitat Group but not in the table, which limits usefulness of the table.

5

Adding back in (2022 Table 3-6) Habitat Group General Conservation Targets as a measure of evaluating conservation gaps. Habitat group conservation targets are essential to understand the conservation needs of habitats and species and to guide conservation strategy. The 2022 draft stated, “Conservation targets were developed based on rarity/status, abundance, distribution of habitat in the RCIS area, and life history for the Focal Species in each habitat group... These conservation targets are not conservation requirements of the SBC RCIS but were used as a relative measure for evaluating the conservation gaps and for developing the conservation objectives.”

6

Adding back in (2022 Table 3-7) the Gap analysis. The conservation targets lead to a basic yet essential gap analysis that shows the amount of additional land *in acres* that would be needed to achieve the targets. The acreage figures represent measurable objectives, as required by the RCIS statute and Guidelines.

7

Without the quantified and measurable conservation targets for each Habitat Group, the RCIS does not contain measurable objectives and related metrics. This information is crucial to understand the region’s conservation context, assist users in prioritizing conservation actions for their specific needs, help guide highly leveraged advance mitigation actions for streamlined permitting, and accelerate implementation of the Western Joshua Tree Conservation Act.

8

To summarize, TNC strongly supports having an approved San Bernardino RCIS in our region to help guide, incentivize and streamline conservation and development planning, investments and implementation. The current draft needs to be improved to be consistent with the statute and the related Guidelines to have measurable objectives with metrics and a gap analysis showing acres needed to reach conservation targets. Thank you again for the opportunity to comment and your commitment to this effort.

9

Sincerely,



Liz O'Donoghue
Director, Sustainable & Resilient Communities
The Nature Conservancy in California

cc: Karen Weiss and Ami Olson, CDFW

Response to The Nature Conservancy (TNC) Comment Letter dated August 4, 2023

Response to TNC Comment 1

This comment describes the work of The Nature Conservancy, its involvement in the RCIS, and appreciation for the opportunity to provide comments and the commitment of SBCTA and CDFW to the RCIS process. No specific comment provided on the SBC RCIS.

Response to TNC Comment 2

This comment gives support for the RCIS and summarizes what it aims to accomplish. SBCTA/SBCOG and the County appreciate TNC's support for the SBC RCIS. No specific comment provided on the SBC RCIS.

Response to TNC Comment 3

This comment lists the benefits of the RCIS and what it hopes to achieve. No specific comment provided on the SBC RCIS.

Response to TNC Comment 4

This comment contends that measurable objectives, which are needed in order for the RCIS to be consistent with statute and guidelines, are lacking from the document and explains why they are valuable to include. The author requests for the “quantifiable goals and targets and measurable objectives” from the 2022 draft RCIS be returned in the approved RCIS. With regard to measurable objectives, the SBC RCIS was developed consistent with the California Fish and Game Code and CDFW RCIS Guidelines. California Fish and Game Code Section 1852(c)(9) specifies that an RCIS include “a description of the general amounts and types of habitat that, if preserved or restored and permanently protected, could achieve the conservation goals and objectives,” and the SBC RCIS states that “implementation of any amount of the SBC RCIS actions identified in SBC RCIS Section 3.4.1 would contribute toward meeting these conservation goals and objectives.” CDFW RCIS Guidelines state that the objectives shall be specific and measurable. SBC RCIS Section 3.2 provides a conservation inventory that identifies the acreage of unprotected lands on public and private lands by habitat group. SBC RCIS Section 3.3 provide conservation objectives that are specific and measurable by providing an estimated number of acres by habitat group and specific conservation priority areas in each objective where the actions should be focused on public lands and private lands in the RCIS area.

Response to TNC Comment 5

This comment recommends the addition of columns in Table 3-6 containing the percentages of habitat considered conserved for the purpose of a basic gap analysis, which are present in the 2023 Public Draft RCIS only within the narrative. The SBC RCIS Conservation Analysis provided in Section 3.2 was conducted consistent with the CDFW RCIS Guidelines that state that a spatial analysis be conducted to identify the “total acreage and percent of the RCIS currently in conservation protection” for each habitat type.

Response to TNC Comment 6

This comment recommends return of Table 3-6 (Habitat Group General Conservation Targets) from the 2022 version of the draft RCIS document to the SBC RCIS. See Response to TNC Comment 5. The SBC RCIS Conservation Analysis provided in Section 3.2 was conducted consistent with the CDFW RCIS Guidelines that state that a spatial analysis be conducted to identify the “total acreage and percent of the RCIS currently in conservation protection” for each habitat type.

Response to TNC Comment 7

This comment recommends return of Table 3-7 (Gap Analysis) from the 2022 version of the draft RCIS document to the SBC RCIS. See Response to TNC Comment 5 and Response to TNC Comment 6. The SBC RCIS Conservation Analysis provided in Section 3.2 was conducted consistent with the CDFW RCIS Guidelines that state that a spatial analysis be conducted to identify the “total acreage and percent of the RCIS currently in conservation protection” for each habitat type. CDFW RCIS Guidelines. California Fish and Game Code Section 1852(c)(9) specifies that an RCIS include “a description of the general amounts and types of habitat that, if preserved or restored and permanently protected, could achieve the conservation goals and objectives,” and the SBC RCIS states that “implementation of any amount of the SBC RCIS actions identified in SBC RCIS Section 3.4.1 would contribute toward meeting these conservation goals and objectives.” CDFW RCIS Guidelines state that the objectives shall be specific and measurable.

Response to TNC Comment 8

This comment reiterates the author’s requests for adding back into the RCIS document from the 2022 draft version quantified and measurable conservation targets (see TNC Comments 6 and 7). See Response to TNC Comment 4, Response to TNC Comment 5, Response to TNC Comment 6, and Response to TNC Comment 7. With regard to measurable objectives, the SBC RCIS was developed consistent with the California Fish and Game Code and CDFW RCIS Guidelines. California Fish and Game Code Section 1852(c)(9) specifies that an RCIS include “a description of the general amounts and types of habitat that, if preserved or restored and permanently protected, could achieve the conservation goals and objectives,” and the SBC RCIS states that “implementation of any amount of the SBC RCIS actions identified in SBC RCIS Section 3.4.1 would contribute toward meeting these conservation goals and objectives.” CDFW RCIS Guidelines state that the objectives shall be specific and measurable. BC RCIS Section 3.2 provides a conservation inventory that identifies the acreage of unprotected lands on public and private lands by habitat group. SBC RCIS Section 3.3 provide conservation objectives that are specific and measurable by providing an estimated number of acres by habitat group and specific conservation priority areas in each objective where the actions should be focused on public lands and private lands in the RCIS area.

Response to TNC Comment 9

This comment conveys TNC support for an approved RCIS but requests changes that would make the document consistent with statute and Guidelines. With regard to measurable objectives, see Response to TNC Comment 4, Response to TNC Comment 5, Response to TNC Comment 6, Response to TNC Comment 7, and Response to TNC Comment 8.

