FORESTS AND RANGELANDS COMPANION PLAN

December 2016

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE

SWAP
California State Wildlife Action Plan

Photo Credit:

Left:
Redwood National Park, California
Date: 24 June 2005
Photographer: Michael Schweppe via flickr

Right:
Cows in Sonoma County, California
Date: 4 October 2011
Photographer: Lynn Betts, USDA Natural Resources Conservation Service

Prepared by Blue Earth Consultants, LLC

December 2016

Disclaimer:

Although we have made every effort to ensure that the information contained in this report accurately reflects SWAP 2015 companion plan development team discussions shared through web-based platforms, e-mails, and phone calls, Blue Earth Consultants, LLC makes no guarantee of the completeness and accuracy of information provided by all project sources. SWAP 2015 and associated companion plans are non-regulatory documents. The information shared is not legally binding nor does it reflect a change in the laws guiding wildlife and ecosystem conservation in the state. In addition, mention of organizations or entities in this report as potential partners does not indicate a willingness and/or commitment on behalf of these organizations or entities to partner, fund, or provide support for implementation of this plan or SWAP 2015.

The consultant team developed companion plans for multiple audiences, both with and without jurisdictional authority for implementing strategies and conservation activities described in SWAP 2015 and associated companion plans. These audiences include but are not limited to the California Department of Fish and Wildlife leadership team and staff; the California Fish and Game Commission; cooperating state, federal, and local government agencies and organizations; California Tribes and tribal governments; and various partners (such as non-governmental organizations, academic research institutions, and citizen scientists).

Table of Contents

Text Boxes

Figures

Tables

Acronyms and Abbreviations

AB	**Assembly Bill**
AFWA	**Association of Fish and Wildlife Agencies**
BLM	**U.S. Bureau of Land Management**
Blue Earth	**Blue Earth Consultants, LLC**
BMP	**Best Management Practices**
CalEPA	**California Environmental Protection Agency**
CAL FIRE	**California Department of Forestry and Fire Protection**
CALPAC-SRM	**California-Pacific Islands Section of the Society for Range Management**
Caltrans	**California Department of Transportation**
CARCD	**California Association of Resource Conservation Districts**
CBC	**California Biodiversity Council**
CCA	**California Cattlemen's Association**
CCLT	**California Council of Land Trusts**
CCRC	**Central Coast Rangeland Coalition**
CDFW	**California Department of Fish and Wildlife**
CDPR	**California Department of Parks and Recreation**
CDWR	**California Department of Water Resources**
CEC	**California Energy Commission**
CFBF	**California Farm Bureau Federation**
CFIP	**California Forest Improvement Program**
Ch.	**Chapter**
CNRA	**California Natural Resources Agency**
CRCC	**California Rangeland Conservation Coalition**
CWGA	**California Wool Growers Association**
DLRP	**Dinkey Landscape Restoration Project**
DRECP	**Desert Renewable Energy Conservation Plan**
EQIP	**Environmental Quality Incentives Program**
GGRF	**Greenhouse Gas Reduction Fund**
GIS	**Geographic Information System**
HCP	**Habitat Conservation Plan**
KEA	**Key Ecological Attribute**
LCC	**Landscape Conservation Cooperatives**
NCBA	**National Cattlemen's Beef Association**
NCCP	**Natural Community Conservation Plan**
NGO	**Non-governmental Organization**
NOAA	**National Oceanic and Atmospheric Administration**
NPS	**National Parks Service**
NRCS	**Natural Resources Conservation Service**
NREL	**National Renewable Energy Laboratory**
QA/QC	**Quality Assurance/Quality Control**

RAMP	**Regional Advance Mitigation Planning**
RCD	**Resource Conservation District**
RMAC	**Range Management Advisory Committee**
SCC	**California State Coastal Conservancy**
SGC	**Strategic Growth Council**
SGCN	**Species of Greatest Conservation Need**
SRA	**State Responsibility Area**
STAC	**State Technical Advisory Committee**
SWAP	**State Wildlife Action Plan**
SWG	**State and Tribal Wildlife Grants**
SWRCB	**State Water Resources Control Board**
TNC	**The Nature Conservancy**
UCCE	**University of California Cooperative Extension Service**
U.S.	**United States**
USDA	**U.S. Department of Agriculture**
USEPA	**U.S. Environmental Protection Agency**
USFS	**U.S. Forest Service**
USFWS	**U.S. Fish & Wildlife Service**
USGS	**U.S. Geological Survey**
WCB	**Wildlife Conservation Board**

1. Introduction

The California State Wildlife Action Plan 2015 Update (SWAP 2015; see Text Box 1) provides a vision and a framework for conserving California's diverse natural heritage. SWAP 2015 also calls for the development of a collaborative framework to sustainably manage ecosystems across the state in balance with human uses of natural resources. To address the need for a collaborative framework, California Department of Fish and Wildlife (CDFW), Blue Earth Consultants, LLC (Blue Earth), and partner agencies and organizations undertook the preparation of companion plans for SWAP 2015. While this document reports on the progress made thus far on collaboration, the intent is to set a stage for achieving the state's conservation priorities through continued partnerships and by mutually managing and conserving the state's natural and cultural resources. Text Box 2 highlights important definitions for SWAP 2015 and the companion plan process.

Text Box 1: What is a State Wildlife Action Plan?

In 2000, Congress enacted the State and Tribal Wildlife Grants (SWG) program to support state programs that broadly benefit wildlife and habitats, but particularly "Species of Greatest Conservation Need" (SGCN) as defined by individual states. Congress mandated each state and territory to develop a SWAP that outlined a comprehensive wildlife conservation strategy to receive federal funds through the SWG program. From 2005 through 2014, CDFW received approximately $37 million through the SWG program, matched with approximately $19 million in state government support for wildlife conservation activities. The SWG program requires SWAP updates at least every 10 years. CDFW prepared and submitted SWAP 2015, the first comprehensive update of the California SWAP 2005, to the U.S. Fish and Wildlife Service (USFWS). The update allows CDFW to expand and improve the recommended conservation activities addressed in the original plan by integrating new knowledge acquired since 2005.

Text Box 2: Definitions Important to SWAP 2015

***Conservation Target**:* An element of biodiversity at a project site, which can be a species, habitat/ecological system, or ecological process on which a project has chosen to focus.

***Goal**:* A formal statement detailing a desired outcome of a conservation project, such as a desired future status of a target. The scope of a goal is to improve or maintain *key ecological attributes* (defined below).

***Key Ecological Attribute (KEA)**:* An aspect of a target's biology or ecology that, if present, defines a healthy target and, if missing or altered, would lead to outright loss or extreme degradation of the target over time.

***Objective**:* A formal statement detailing a desired outcome of a conservation project, such as reducing the negative impacts of a critical *pressure* (defined below). The scope of an objective is broader than that of a goal because it may address positive impacts not related to ecological entities (such as getting better ecological data or developing conservation plans) that would be important for the project. The set of objectives developed for a conservation project are intended, as a whole, to lead to the achievement of a goal or goals, that is, improvements of key ecological attributes.

***Pressure**:* An anthropogenic (human-induced) or natural driver that could result in changing the ecological conditions of the target. Pressures can be positive or negative depending on intensity, timing, and duration. Negative or positive, the influence of a pressure to the target is likely to be significant.

Target: Same as *conservation target* defined above.

***Species of Greatest Conservation Need (SGCN)**:* All state and federally listed and candidate species, species for which there is a conservation concern, or species identified as being vulnerable to climate change as defined in SWAP 2015.

***Strategy**:* A group of actions with a common focus that work together to reduce pressures, capitalize on opportunities, or restore natural systems. A set of strategies identified under a project are intended, as a whole, to achieve goals, objectives, and other key results addressed under the project.

***Stress**:* A degraded ecological condition of a target that resulted directly or indirectly from negative impacts of pressures (e.g., habitat fragmentation).

(CDFW 2015)

1.1 SWAP 2015 Statewide Goals

SWAP 2015 has three statewide conservation goals and 12 sub-goals under which individual regional goals are organized (CDFW 2015). These statewide goals set the context for SWAP 2015 and the companion plans.

Goal 1 - Abundance and Richness: Maintain and increase ecosystem and native species distributions in California while sustaining and enhancing species abundance and richness.

Goal 2 - Enhance Ecosystem Conditions: Maintain and improve ecological conditions vital for sustaining ecosystems in California.

Goal 3 - Enhance Ecosystem Functions and Processes: Maintain and improve ecosystem functions and processes vital for sustaining ecosystems in California.

1.2 SWAP 2015 Companion Plans

Need for Partnerships

The state of California supports tremendous biodiversity. However, the state also has a large and growing human population and faces many challenges, such as climate change, that affect biodiversity and natural resources in general. To balance growing human activities with conservation needs for sustaining the state's ecosystems, collaboratively managing and conserving fragile natural resources is a necessity. As many desirable conservation actions identified under SWAP 2015 are beyond CDFW's jurisdiction, the Department determined that more-detailed coordination plans are needed in line with and beyond the recommendations presented in SWAP 2015. Called "companion plans," these sector-specific plans (see Text Box 3) were created collaboratively with partners and will be instrumental in implementing SWAP 2015. (See Appendix D)

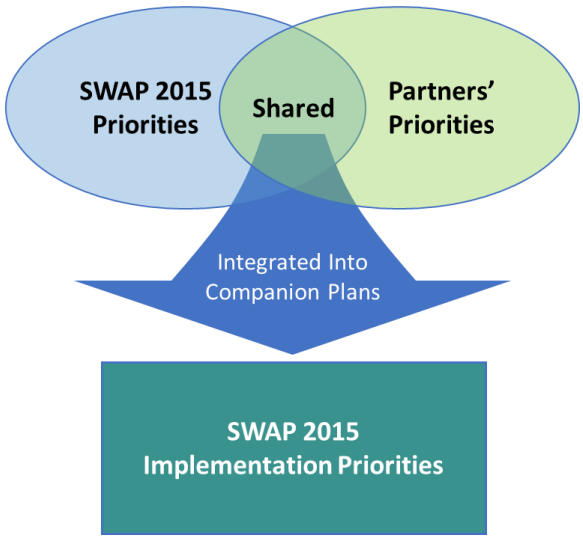
Text Box 3: Companion Plan Sectors

- Agriculture
- Consumptive and Recreational Uses
- Energy Development
- Forests and Rangelands
- Land Use Planning
- Marine Resources
- Transportation Planning
- Tribal Lands
- Water Management

Companion Plan Purpose and Sector Selection

Companion plans present shared priorities identified among SWAP 2015 and partners involved in the companion plan development. Figure 1 illustrates how, through collaboration with partner organizations, shared priorities come together in the companion plans and become elevated as implementation priorities for SWAP 2015.

Figure 1: Aligning SWAP 2015 and Partner Priorities



The companion plans respond to feedback from many sources, including CDFW staff and partners involved in natural resources management and conservation. This includes the California Biodiversity Council (CBC), under which a resolution to promote interagency alignment within the state was signed in 2013. The companion plans are also aligned with the National Fish, Wildlife, and Plants Climate Adaptation Strategy (U. S. Wildlife Service [USFWS] 2012), which emphasizes increased partner engagement as a best practice in climate change adaptation. Developing the companion plans also directly helps CDFW comply with recently enacted legislation, which states that CDFW shall "seek to create, foster, and actively participate in effective partnerships and collaborations with other agencies and stakeholders to achieve shared goals and to better integrate fish and wildlife resource conservation and management with the natural resource management responsibilities of other agencies" (CDFW 2012).

CDFW selected sector categories based on the department's needs as well as the themes identified in other existing plans, including the 2009 California Climate Adaptation Strategy (California Natural Resources Agency [CNRA] 2009), the 2014 Safeguarding California Plan (CNRA 2014), The President's Climate Action Plan (Executive Office of the President, 2015), and the National Fish, Wildlife, and Plants Climate Adaptation Strategy (USFWS 2012).

Companion Plan Development

Because the companion plans focused on teamwork during their development, they inherently help set a stage for implementing SWAP 2015 through future collaborations. Together, SWAP 2015 and the associated companion plans describe the context and strategic direction of integrated planning and management efforts that are crucial for sustaining California's ecosystems. The SWAP 2015 companion plan management team, composed of CDFW and Blue Earth staff, provided general direction to the companion plan development teams to develop each sector plan (see Appendix F). To form sector teams, CDFW sought statewide representation of public and private partners with topic expertise and who were heavily involved in natural resource conservation and management (see Appendix C).[1]

Beginning in early 2015, Blue Earth facilitated a series of four web-based collaboration meetings for each sector. A kickoff meeting provided development teams with an overview of SWAP 2015 and the

[1] Although the management team sought to engage a broad range of partners, CDFW recognizes that there are many other partners who play important roles in conserving and managing natural resources in California who were not involved in developing the companion plans.

companion plan development process, followed by three sector-specific meetings. During these sector meetings, participants discussed their ongoing and potential future efforts that would benefit wildlife and habitat conservation in the state. The development teams and CDFW then identified shared priorities, as well as collaboration opportunities for achieving those mutual interests. Two internal drafts of the companion plans were reviewed by the development teams prior to the public release of the third draft in the fall of 2015. The final nine companion plans were published incorporating responses to public comments.

Companion Plan Content

Each companion plan addresses the following components:

- SWAP 2015 overview
- Companion plans overview—approach, purpose, development process, and content
- Sector overview
- Common themes across sectors
- Common priority pressures and strategies across sectors
- Priority pressures and strategies for the sector
- Potential collaboration activities
- Potential partners and resources
- Evaluating implementation
- Desired outcomes
- Next steps

2. Forests and Rangelands Sector

2.1 Forests and Rangelands in California

Forests and rangelands are extensive ecosystems covering over 80% of California and providing critical habitats and ecosystem services on which wildlife and humans depend (CAL FIRE 2010). A forest, as defined by the Society of American Foresters, is "an ecosystem characterized by a more or less dense and extensive tree cover, often consisting of stands varying in characteristics such as species composition, structure, age class, and associated processes, and commonly including meadows, streams, fish, and wildlife. Forests include industrial forests, nonindustrial private forests, plantations, public forests, protection forests, and urban forests, as well as parks and wilderness" (Society of American Foresters 2011). The largest share of forests in California (about 20 million acres) is classified as non-reserved timberland, and described as "forest land that is capable of producing in excess of 20 cubic feet of wood per acre per year and where harvest is not legally prohibited" (USDA, USFS, and Pacific Northwest Research Station 2008).

Rangeland is defined by Allen and colleagues as "land on which the indigenous vegetation (climax or sub-climax) is predominantly grasses, grass-like plants, forbs, or shrubs that are grazed or have the potential to be grazed, and which is used as a natural ecosystem for the production of grazing livestock and wildlife" (Allen et al. 2011). Overall, around 62% of California's land area consists of rangeland

(University of California 2014). Rangeland includes natural grasslands, savannas, shrublands, deserts, tundras, alpine communities, marshes, and meadows (Society of Range Management 1988). Non-native plants within these rangeland landscapes are managed similarly.

Federal and state government are the main public land owners of large forest and rangeland properties in California (55%), while private land owners control 45%—a distribution that is consistent with most of the western United States (CAL FIRE 2003). As the largest land holder in California, the U.S. Forest Service (USFS) manages 18 national forests and one grassland, for a total of 20.8 million acres. The Bureau of Land Management (BLM), the National Park Service (NPS), and the Department of Defense manage 15.3 million, 7.5 million, and 3.8 million acres respectively (Congressional Research Service 2012).

A variety of other organizations also manage forests and rangelands in California. The California Department of Parks and Recreation (CDPR) manages 279 sites, including parks, recreation areas, open spaces, trails, off-highway vehicle areas, and historic sites (CDPR 2015). A number of agencies, such as CDFW, BLM, and the East Bay Regional Park District, manage large tracts of grasslands, brushlands, and meadows and use livestock grazing as a vegetation management tool to maintain and preserve wildlife habitats and to prevent wildfires (East Bay Regional Parks 2015). Growing numbers of land trusts and other conservation organizations are also engaging in land conservation around the state. The California Rangeland Trust, for example, holds conservation easements on more than 184,000 acres (The California Rangeland Trust 2012).

Quality forests and rangelands and the large unfragmented tracts of these landscapes provide ecosystem services critical for natural and human communities. Well-managed forests and rangelands deliver scenic beauty, support biodiversity, and provide for renewable forest and agricultural products that are economically important, as well as offer significant recreational opportunities (USDA 2007; CAL FIRE 2010). Other benefits provided by the landscape include, but are not limited to, soil conservation, air and water quality improvement, and ecosystem-based water capture and retention and eventual release through meadow, creek, stream, and groundwater systems. Rangelands also provide flood protection and groundwater recharge to watersheds (California Rangeland Conservation Coalition 2015). Forests and rangelands are a key sector for improving resilience to climate change impacts through the many ecosystem services they provide, as well as reducing the long-term severity of climate impacts through carbon sequestration.

Another public benefit from rangelands is power production, chiefly through renewable energy sources. According to the California Energy Commission (CEC), from 2001 through 2013 solar power production projects in rangelands produced over 21,000 megawatts of power (CEC 2014). The National Renewable Energy Laboratory (NREL) estimated that photovoltaic power generation requires approximately eight acres per megawatt generated (NREL 2013). That means that as much as 168,000 acres of land, much of it rangeland, has been converted to this use since 2001. Wind and solar energy production are believed to have negative impacts on a number of wildlife species of concern, and research into these impacts and potential mitigation options is currently under way.

The economic value of forests and rangelands continues to grow. In 2011, California's five leading timber-producing counties generated 742 million board feet of timber at a value of $14.7 billion (USDA 2012). In 2013, 368 grazing operations were authorized by California National Forests for 99,398 cattle, horses, burros, sheep, and goats (USFS 2013). The BLM manages livestock grazing on 155 million acres of public land, or 63% of the 245 million acres of administered public land (BLM 2015). These grazing operations contribute to economic stability for the state, as California's wool industry ranked first in the nation and had 11% of national production (USDA 2015). California's cattle industry ranked fourth nationally and had nearly 6% of the national total (USDA 2015; NCBA 2015). California's cattle industry produces close to $3.6 billion annually in total industry output, and provides over 26,000 jobs (Lawrence and Otto 2001). The working landscapes managed for timber and grazing animals are the primary source of revenue for many rural communities, and even entire counties (CAL FIRE 2010).

Much of the state's forests and rangelands have been affected by disturbances, past uses, and improper management, while facing increasing demands that could exacerbate the negative effects on ecosystems. As many forests and rangelands are degrading and suffering from poor management, there is a pressing need to develop best management practices (BMPs), with consideration of diverse landscape values, to improve overall landscape health. These impacts affect ecosystems statewide due to the extent of forests and rangelands throughout California. Wildfires of certain frequencies and intensities are part of the natural functions of many California ecosystems, where a variety of techniques are used to manage these fires (e.g., active wildfire suppression). In 2015 alone, however, wildfires affected over 893,000 acres, while pests, such as the bark beetle, affected over 29 million trees statewide (National Interagency Fire Center 2015; CAL FIRE 2015).

The 2010 U.S. Environmental Protection Agency's 303(d) list of impaired waterbodies included over 29,978 miles of impaired streams in California's forests and rangelands, which represents about 14% of the total miles of streams and rivers in the state (CAL FIRE 2010). Wildfires can affect these waterbodies by increasing pollution (e.g., ash) and erosion around streams. At least 45% of California's 62 native fish species are considered SGCN, with 28 fish taxa listed as state or federally threatened or endangered, and they too are affected by pollution and erosion in streams caused by wildfires (CAL FIRE 2010). In addition, outdoor recreation on forests and rangelands is increasing, and agencies that provide recreation opportunities are struggling to meet demands for diverse, safe, high-quality recreation opportunities (CAL FIRE 2010). Overall, there are opportunities for organizations to work together to restore and preserve California's natural and wildlife resources.

2.2 Current Forests and Rangelands Management and Conservation in California

Balancing California's sustainable forests and rangelands endeavors with the conservation of natural resources is an important goal for future generations. For effective natural resource conservation, particularly in light of expected future impacts from climate change, livestock producers and foresters would need to adapt their management approaches to maintain viable operations. The 25x'25 America's Energy Future Adaptation Initiative seeks to address these issues through strengthening agricultural and forestry production systems, conservation, ecosystem services, and infrastructure, as well as

implementing conservation practices designed to maintain the productive capacity of the land under climate-related challenges (25x'25 2013).

Rangelands provide multiple ecosystem services, including wildlife habitat, water supply, open space, recreation, and cultural resources. Grazing, one of the earliest uses of public lands when the western U.S. was first settled, continues to be an important use today and competes with other activities more severely than it did in the past (BLM 2015). When a rangeland is properly managed by controlling grazing activities, the landscape can support healthy watersheds nearby. For example, grazing is an important disturbance in vernal pool grasslands; grazed vernal pools have higher native plant diversity, and they hold water longer than ungrazed pools; this favors SGCN like the California tiger salamander (California Rangeland Conservation Coalition 2015).

Many forests and rangelands agencies and organizations in the state programmatically focus on conservation of California's natural and wildlife resources. The California Rangeland Conservation Coalition, for example works to preserve and enhance California's rangelands for species of special concern, while supporting the long-term viability of the ranching industry. An important part of the group's effort focuses on educating the public about the benefits of grazing and ranching on these rangelands (California Rangeland Conservation Coalition 2007). With support from over 100 agricultural organizations, environmental interest groups, and government agencies (state and federal), the Coalition is an example of how stakeholders can work together to address complex natural resource issues through dialogue and collaboration.

Another example of a multi-partner project addressing natural resource planning and conservation is the collaboration of rangeland scientists, ranchers, and land managers who are developing six climate change adaptation scenarios for maintaining viable ranchlands along with their ecosystem services in light of future threats (Byrd et al. 2014). This project aligns with SWAP 2015 priority activities for forests and rangelands such as policy, research, and partnerships with private land owners and agencies, as well as funding development, BMPs, and conservation lands acquisition/easement prioritization. The project results will help prioritize collaborative rangeland conservation strategies. By continuing to manage forests and rangelands development, CDFW in partnership with other state agencies and organizations can work together to protect and conserve California's current natural and wildlife resources while also providing new opportunities to address potential impacts (e.g., energy development growth).

The mission of the USFS and USDA's Open Space Conservation Strategy, which addresses the rapid loss of open space, is "to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations" (USDA 2007). As more people choose to live at rural-urban borders, more open space is lost. Therefore, growth and development needs to be balanced with conservation to sustain natural systems and the overall quality of life for both humans and wildlife (USDA 2007). There is also a need to balance sustainable harvesting with conservation management of ecosystem needs. As an example of sustainable harvesting efforts, CAL FIRE operates eight Demonstration State Forests totaling 71,000 acres, with representation of the most common forest types in the state (CAL FIRE 2014). Demonstration forests offer opportunities for piloting natural resource management techniques, such as experimental timber harvesting techniques, watershed

restoration, cone seed collection, and university research. These forests also provide watershed protection, enhancement, and public recreation opportunities (University of California 2015; CAL FIRE 2014). These are just a few examples of efforts in the forests and rangelands sector to support conservation and restoration of California's natural and wildlife resources.

Text Box 4: Examples of Collaborative Conservation Efforts

There are numerous collaborative conservation management efforts found in California. Below are three such examples related to forests and rangelands. The partners addressed in each description are indicated in **bold**.

- *Collaborating to Restore the Dinkey Landscape:* The Dinkey Landscape Restoration Project (DLRP) began in 2010 under the **USFS** Collaborative Forest Landscape Restoration Program, which encourages collaboration to achieve ecosystem restoration for priority forest landscapes (USFS 2015). The DLRP is working to restore ecosystem processes in over 154,000 acres in the southern Sierra National Forest through a suite of activities, such as fire prescription and watershed improvement (e.g., stream and upland hydrologic function restorative treatments). Implementation of the DLRP is spearheaded by the **Dinkey Collaborative**, a diverse group of public and private partners, including **USFS**, **Sierra Nevada Conservancy, tribal groups,** and many other public and private partners (USFS 2010). The DLRP already has completed many prescribed fire and monitoring activities to manage the forest and to assess the status of multiple critical species within the landscape (e.g., the King River fisher) (USFS 2014).
- *Protecting Working Landscapes:* In May 2015, the **Wildlife Conservation Board (WCB)** approved funding to protect working landscapes through integration of economic, social, and environmental stewardship practices. As an example, the **Pacific Forest Trust** received a $1.6 million grant to place a conservation easement on 3,468 acres of mixed conifer working forest and associated habitats near Montague in Siskiyou County. The **Santa Cruz Resource Conservation District (RCD)** also received $465,000 to promote collaboration among a **private landowner**, **BLM**, **California Conservation Corps**, **State Coastal Conservancy, State Water Resources Control Board (SWRCB)**, and **Land Trust of Santa Cruz County** to restore critical riparian habitat (including 1,300 feet along Soquel Creek) and protect four threatened fish and amphibian species (CDFW 2015b).
- *Partnering to Conserve Rangelands:* In 2008, the **Tejon Ranch Company**, **Audubon California**, **Endangered Habitats League**, **Natural Resources Defense Council**, **Planning and Conservation League**, and **Sierra Club** agreed to permanently preserve 240,000 acres (approximately 90%) of the Tejon Ranch lands (Tejon Conservancy, 2013a). The groups agreed to establish **Tejon Conservancy**, an independent non-profit organization responsible for managing the lands to protect, enhance, and restore the biodiversity of the area (including 60 at-risk species). **Tejon Conservancy** created a Ranch-wide Management Plan to balance land uses (e.g., ranching and hunting) with conservation goals for the land. The initial agreement also ensured public access to the conserved lands, and currently **Tejon Conservancy** and other partners are coordinating with the **CDPR** to create a state park within the conserved lands (Tejon Conservancy, 2013b).

3. Common Themes across Sectors

Equally important to discussion topics unique to each sector are the common themes across all sectors. This section summarizes the two major overarching themes discussed through the course of developing the nine companion plans: climate change and integrated regional planning.

3.1 Climate Change-related Issues

Climate change continues to be one of the major pressures forcing us to examine the relationship between modern society and nature. Describing climate science, however, has been difficult due to its inherent complexity. Because of this and other factors, our society has not been able to fully embrace the seriousness of the implications of climate change. In the most recent analyses, the global average temperature is projected to increase in the range of 0.3–4.8°C (0.5–8.6°F) by 2100, and in California, the increase is projected to be 1.5°C (2.7°F) by 2050 and 2.3–4.8°C (4.1–8.6°F) by 2100 (IPCC 2014; CNRA 2014).

The effects of climate change are already present. Global sea level rise over the past century has exceeded the mean rate of increase during the previous two millennia, and the earth's surface temperature over each of the last three decades has been successively warmer than any previous decade since 1850. The evidence of these observed climate change impacts is manifested the strongest and most comprehensively in natural systems where many species of terrestrial, freshwater and marine organisms have shifted their geographic ranges, migration patterns, abundances, and life cycle activities in response to ongoing climate change (IPCC 2014).

As climate conditions are inextricably linked to the welfare of environments and societies, even the most conservatively projected increase in global mean temperatures would trigger significant changes to socio-economic and ecosystem conditions. Food production, energy and water development, and preparation and response to catastrophic events are examples of human systems that would be negatively affected by climate change. Pressures and stresses to ecosystems identified in SWAP 2015 will also likely increase in magnitude and severity through the compounding effects of climate change (SWAP 2015).

Accordingly, the potential far-reaching effects on California's natural resources induced or exacerbated by climate change were a common concern among sectors. As climate change is likely to influence many facets of natural resources management, both through known and currently unknown processes, cross-sector collaboration was considered critical for ecosystem adaptation while avoiding disasters.

Two key discussion points amongst sectors were to strategically assess the state's climate change vulnerabilities and implement adaptation actions. These actions included, but were not limited to: establishing a well-connected reserve system to increase ecosystem integrity (e.g. habitat resilience and mobility); incorporating climate change related factors (e.g. carbon sequestration, habitat shifts and sea level rise) into natural resource management; improving regulations to reduce greenhouse gas emissions; developing research guidelines to comprehensively evaluate climate change effects; and raising awareness of climate change.

3.2 Integrated Regional Planning

California presents a landscape that is ecologically, socioeconomically, and politically intricate. The current status of the state's ecosystems reflects not only the interactions between biological and abiotic components, but also among ecosystems and diverse human activities that are further controlled by mandates imposed on regulated activities.

The concept of integrated regional planning arises from the realization that addressing only one aspect of a complicated human/nature system is not sustainable. Paraphrased from the definition in the California Water Plan, integrated regional planning is an approach to prepare for effective management, including conservation activities, while concurrently achieving social, environmental, and economic objectives to deliver multiple benefits across the region and jurisdictional boundaries (CDWR 2014). Expected outcomes of adopting an integrated regional planning approach include; maximizing limited resources to meet diverse demands, receiving broader support for natural resource conservation, and sustaining and improving ecosystem conditions, both for intrinsic and resource values.

Integrated regional planning begins with accepting diverse priorities and values articulated by the stakeholders of a region. With this mutual understanding, attempts are made, often through intense negotiations, to integrate various activities associated with multiple interests occurring in the region. Expected tasks under integrated regional planning include: identifying conflicting or redundant activities occurring in a region, minimizing redundant activities by aligning similar efforts, streamlining and integrating needed processes across different priorities, and collaborating and complementing efforts to effectively achieve mutual and/or diverse interests. As an example, integrated regional planning could result in zoning a region and limiting activities within each zone to avoid or reduce incompatible activities occurring in the region, or deferring timing to reduce negative consequences of interactive activities occurring in a region. In sum, integrated regional planning requires trust, open-mindedness, transparency, patience, strategic thinking, and collaboration among partners who seek to use the same or similar resources from different perspectives.

Establishing a framework for integrated regional planning was considered as one of the state's top priorities across sectors. Related topics included: preparing, approving, and implementing regional and landscape-level conservation plans; systematically pursuing necessary resources to implement conservation strategies; coordinating effective partnerships; adapting to emerging issues; and reviewing and revising the plans. Several existing plans were recognized as ongoing integrated regional planning efforts: Natural Community Conservation Plans (NCCPs), Habitat Conservation Plans (HCPs), Habitat Connectivity Planning for Fish and Wildlife (CDFW 2015), the Master Plan for Marine Protected Areas, individual species management plans, and SWAP 2015 and related endeavors, including this companion plan.

SWAP 2015, Chapter 7 describes implementation and integration opportunities, and identifies where partners can engage in cooperative implementation. Such opportunities include programs under various state and federal agencies such as Regional Advance Mitigation Planning (RAMP) by Caltrans and CDWR; California Water Plan, California Water Action Plan, and the Central Valley Flood System Conservation

Strategy by CDWR; Fire and Resource Assessment Program by CALFIRE; and federal programs under regulations such as the Central Valley Project Improvement Act, and the National Forest Management Act (CDFW 2015).

4. Commonly Prioritized Pressures and Strategy Categories across Sectors

SWAP 2015 adopted the Open Standards for the Practice of Conservation (Conservation Measures Partnership 2013), a conservation planning framework, and applied the process to select actions needed to conserve focal ecological components (conservation targets). The process started with examining the status of targets by identifying and evaluating their key ecological attributes, factors influencing their compromised conditions (stresses), and the sources of these stresses (pressures). Based on the situational analysis, conservation strategies (sets of actions) were selected for each target, either to improve the conditions of the key ecological attributes, or to reduce the negative impacts from the stresses and pressures (CDFW 2015).

4.1 Pressures across Sectors

A pressure, as defined in SWAP 2015, is "an anthropogenic (human-induced) or natural driver that could result in impacts to the target (i.e., ecosystem) by changing the ecological conditions". Pressures can have either positive or negative effects depending on their intensity, timing, and duration, but they are all recognized to have strong influences on the well-being of ecosystems. Table 1 below lists the 29 standard pressures addressed under SWAP 2015.

Table 1: SWAP 2015 Pressures

• Agricultural and forestry effluents	• Livestock, farming, and ranching
• Air-borne pollutants	• Logging and wood harvesting
• Annual and perennial non-timber crops	• Marine and freshwater aquaculture
• Catastrophic geological events[1]	• Military activities
• Climate change	• Mining and quarrying
• Commercial and industrial areas[2]	• Other ecosystem modifications[6]
• Dams and water management/use	• Parasites/pathogens/diseases
• Fire and fire suppression	• Recreational activities
• Fishing and harvesting aquatic resources	• Renewable energy
• Garbage and solid waste	• Roads and railroads
• Household sewage and urban waste water [3,4]	• Shipping lanes[7]
• Housing and urban areas[2]	• Tourism and recreation areas
• Industrial and military effluents[4, 5]	• Utility and service lines
• Introduced genetic material	• Wood and pulp plantations
• Invasive plants/animals	

Pressures include the following:

1 Volcano eruption, earthquake, tsunami, avalanche, landslide, and subsidence
2 Shoreline development
3 Urban runoff (e.g., landscape watering)
4 Point discharges
5 Hazardous spills
6 Modification of mouth/channels; ocean/estuary water diversion/control; and artificial structures
7 Ballast water

(CDFW 2015)

4.2 Strategy Categories across Sectors

SWAP 2015 outlines 11 categories of conservation strategies (Table 2) under which regional strategies are organized, similar to the manner in which the regional goals are tiered under the statewide conservation goals (CDFW 2015). These strategies, grouped in various categories, are meant to work synergistically to achieve the statewide goals and priorities.

Table 2: SWAP 2015 Conservation Strategy Categories

• Data Collection and Analysis	• Law and Policy
• Direct Management	• Management Planning
• Economic Incentives	• Partner Engagement
• Environmental Review	• Outreach and Education
• Land Acquisition, Easement, and Lease	• Training and Technical Assistance
• Land Use Planning	(CDFW 2015)

The three most common priority strategy categories across the nine sectors were Data Collection and Analysis (7 sectors prioritized this strategy), Management Planning (7 sectors), and Partner Engagement (5 sectors). The strategy categories identified as most relevant to the forests and rangelands sector are described in Section 5.2 below.

5. Forests and Rangelands Priority Pressures and Strategy Categories

As described in SWAP 2015, pressures such as fire and fire suppression or incompatible farming and ranching practices could affect biodiversity and natural resources in the state. Although challenges exist, these seemingly negative aspects of pressures present opportunities for improving ecological health through collaborative conservation work.

For the purpose of developing companion plans, CDFW went through the pressures and strategy categories that were selected for various conservation targets under SWAP 2015 (CDFW 2015). Those elements considered relevant to each sector were collected from the document and prioritized by importance to the sector. Section 5.1 and 5.2 provide the results of this prioritization, and Text Box 5 lists pressures and strategies considered important but not included in this plan (for future consideration).

5.1 Priority Pressures

Fires and fire suppression – Wildfire risk reduction and fire suppression activities seek to address common ignition sources and reduce their potentially negative effects on wildlife diversity and abundance. Fire risk reduction and suppression activities can have variable effects on wildlife, depending on the specific management actions and environment in which the actions occur (e.g., wildland or urban environments). Examples from the forests and rangelands sector include suppression or increases in fire frequency and/or intensity outside of natural ranges, such as fire suppression to protect homes, fire management, prescribed burning, escaped agricultural and equipment-caused fires, arson, campfires, and fires for hunting. Due to differences in fire intensity and patch sizes, fire can have variable impacts on landscapes. Some fire management efforts are designed to restore ecological function, while others result in threats to communities, life and property, and habitats and recreation value.

Farming and ranching[2] **–** Agricultural and forestry practices can have a range of direct and indirect ecosystem effects, both positive and negative. This can include impacts at different scales from private versus public land use, confined versus free-range management practices, and impacts on site versus offsite lands (direct/indirect). Some examples of positive effects include providing habitat for migratory bird species, minimizing effects on water quality from applications of fertilizer and pesticides, supporting best land management practices, and minimizing excess water use. Examples of potential pressures from the forests and rangelands sector include overcrowding domestic terrestrial animals at one location, allowing domestic or semi-domesticated animals to roam in the wild, and crowding aquatic animals in one location. Specific examples include cattle feed lots, dairy farms, cattle ranching, chicken farms, and herding.

5.2 Priority Strategy Categories

The top four strategy categories selected for this sector are the following: direct management, economic incentives, management planning, and partner engagement, which are described below.

Direct Management – Direct management is the participation in and implementation of activities that support stewardship of habitats and natural processes to maintain, enhance, and restore species population and ecological functions/conditions on public and private lands. Example strategies include enhancing and restoring habitat and managing invasive species.

Economic Incentives – Economic incentives are available and deployable resources for landowners and other stakeholders to implement responsible stewardship, better long-term management of public lands, and enhancement of landscapes, ecological conditions, and species. Example strategies include developing and providing economic incentives and assurances and seeking funding though grants, cooperating with other agencies, and seeking other opportunities as sources for economic incentives.

Management Planning – Management planning is the development of management plans or processes for species, habitats, and natural processes/conditions that will lead to implementation of more effective conservation strategies. Example strategies include developing integrated management plans , identifying highest priority areas, and managing for fire risk.

Partner Engagement – Partner engagement is the process for engaging and developing collaboration among state and federal agencies, tribes and tribal communities, non-governmental organizations (NGOs), private landowners, and other partners to achieve shared conservation objectives and enhance coordination across jurisdictions and areas of interest. Example strategies include establishing and coordinating co-management partnerships.

[2] During development team meeting 1, the team suggested to remove the term “livestock” from the pressure “Livestock farming and ranching”.

Text Box 5: Additional Pressures and Strategies for Future Consideration

Pressures

- Conversion of rangelands/forest infrastructure development
- Energy transportation
- Forest management (e.g., need for sustainable supply)
- Oil shipments

Strategies

- Develop strategies to manage and reduce emissions
- Manage (where applicable) ecosystems to maximize carbon sequestration
- Promote sustainability initiatives in line with SWAP 2015 conservation goals
- Support research initiatives
- Use BMPs on public lands to reduce fire danger (e.g., livestock grazing)

6. Collaboration Opportunities for Joint Priorities

Conservation programs in California are managed by diverse partners, including state and federal agencies, local governments, and NGOs. Because SWAP 2015 is a comprehensive conservation plan, integrating their work into SWAP is crucial for impactful conservation outcomes for the state (SWAP 2015 Chapter 7). While the full array of relevant efforts is too extensive to list here, potential alignment opportunities were identified below. Conservation activities considered most relevant to each prioritized strategy category (as described in Section 5.2) are summarized in Table 3. Potential partners and financial resources for implementing these conservation activities are listed in the Appendix D and E. Together, Table 3 and Appendix D and E summarize the key findings for this sector.

Alignment Opportunities and Potential Resources

Table 3 highlights conservation activities by the strategy categories considered important for collaboration, and which could be implemented over the next 5–10 years. While some activities are applicable across many spatial scales and jurisdictions, they are assigned only to the most relevant scale and jurisdiction. The information in Table 3 is not comprehensive, and does not obligate any organization to fund or provide support for strategy implementation.

Table 3: Collaboration Opportunities by Strategy Category

Direct Management
Potential Conservation Activities
Statewide
• Implement effective habitat and population management monitoring
• Initiate habitat restoration and enhancement
• Participate in Environmental Quality Incentives Program (EQIP) and fuels treatment
• Plan landscape conservation with LCCs (e.g., California, Desert, Great Basin, North Pacific)

Regional

- Coordinate BirdReturns program with regional farmers

Local/Site-specific

- Coordinate constituent units on climate mitigation activities
- Develop rangeland infrastructure to help conserve wildlife (e.g., raising fences, capping pipes, fixing stock ponds)
- Enhance riparian/wetland ranch land
- Purchase/donate ranch land to continue agriculture process and encourage ranchers to work with agencies
- Reduce fuels management fire impacts
- Stabilize fish habitat and banks to help conserve species
- Work with farmers to change flooding regime to help with habitat conservation

Economic Incentives

Potential Conservation Activities

Statewide

- Engage in national policy to help support economic incentives for wildlife conservation
- Identify funding sources for private lands
- Lead payment-to-farmers programs for flooding fields for migratory birds
- Provide pass-through funding to State for fuels reduction work
- Work on carbon sequestration and Climate Action Reserve efforts toward sustainable forestry

Local/Site-specific

- Align work on national forest lands adjacent to private/tribal lands designed to benefit wildlife resources
- Coordinate work on national forest lands in watershed restoration
- Facilitate and implement renewable projects involved with community focused small-scale programs
- Increase land compensations for forest and rangeland owners
- Work on conservation easement to encourage ranchers to maintain good stewardship

Management Planning

Potential Conservation Activities

Statewide

- Address adaptation needs and impacts
- Build robust landscapes for climate change adaptation
- Develop habitat restoration and enhancement initiatives
- Emphasize better management and funding for public lands (e.g., the Blue Ridge Area in Napa County)

Regional

- Focus on sustainability and resilience in forests as well as social/economic contributions
- Identify healthy watershed priorities
- Integrate regional planning using basic principles at different scales
- Maintain geographical information system (GIS) data in monitoring programs at the watershed scale
- Work on developing/facilitating regional and development planning

Local/Site-specific

- Construct grazing leases with criteria for BMPs
- Demonstrate the nine key elements of a watershed-based plan
- Develop management plans (e.g., work with partners on Conservation Activity Plan process)

- Enhance awareness of communities on recognizing wildfire risk and tradeoffs with wildlife needs
- Highlight financial side issues and funding coming from state budget processes to implement projects
- Identify barriers to stewardship with small land owners
- Identify plans that have restoration priorities and connect with funding sources and collaboration groups
- Implement better grazing BMPs
- Integrate adjacent landowner input into forest assessments
- Play active role in local land use plans
- Provide restoration opportunities for young people
- Use prescribed burning to implement better grazing BMPs
- Work with ranchers/ landowners on grazing BMPs and managing invasive species

Partner Engagement

Potential Conservation Activities

Statewide

- Engage in climate change outreach
- Utilize tools developed by other states, fire safe councils, and professional societies

Regional

- Complement efforts undertaken by RCDs
- Coordinate work and regional assessments
- Work on developing and facilitating regional and development planning

Local/Site-specific

- Engage industries in ground work
- Incorporate local and regional talks on design projects
- Incorporate outreach component in assessment plans
- Involve stakeholders in high-level guidance for fire protection plans
- Spread greater conservation message through public meetings and workshops
- Work with other organizations to come up with common indicators to measure conservation activities

7. Evaluating Implementation Efforts

Implementing SWAP 2015 and its nine companion plans is a complex undertaking. This section (and SWAP 2015 Chapter 8) emphasizes the importance of adaptive management based on performance monitoring and evaluation during the implementation stage.

SWAP 2015 sets a stage for adaptive management by developing the plan based on the Open Standards for the Practices of Conservation. SWAP 2015 implementation will be monitored over time in concert with other conservation activities conducted by CDFW and partners. SWAP 2015 recognizes three types of monitoring:

1. status monitoring, which tracks conditions of species, ecosystems, and other conservation factors (including negative impacts to ecosystems) through time;
2. effectiveness monitoring, which determines if conservation strategies are having their intended results and identifies ways to improve actions that are less effective for adaptive management; and
3. effects monitoring, which addresses if and how the target conditions are being influenced by strategy implementation.

Monitoring and evaluating SWAP 2015 implementation are critical steps to demonstrate and account for the overall progress and success achieved by the plan. By incorporating lessons learned through monitoring conservation activities and evaluating for future actions, CDFW and partners have opportunities to improve performance and adapt emerging needs that were not previously considered. For stakeholders including decision-makers, partners, and funders, the resulting data would be useful for not only understanding the status of SWAP 2015 and companion plan implementation, but also to prioritize resource allocations necessary for managing natural resources in the state.

SWAP 2015 developed performance measures for each strategy category (SWAP 2015 Chapter 8). These measures are critical in assessing SWAP 2015 performance and will be used for estimating the plans' overall contributions to natural resource conservation in California.

8. Desired Outcomes

Desired outcomes for this sector over the next 5–10 years, within the context of SWAP 2015, were identified and are provided below. These outcomes are organized by the selected strategy categories described in Section 5.2, and are not listed in order of priority.

Direct Management

- Increased collaboration demonstrated and quantified in achieving SWAP 2015 statewide goals (as shown in Section 1.1).

Economic Incentives

- Adequate funding secured to incentivize implementation of conservation activities (e.g., BMPs, easements, etc.) that support a holistic working landscape approach to forest and rangeland management.
- Williamson Act, as an important and proven conservation tool, reinstated to promote open space conservation.

Management Planning

- Effective agreements and coordination on BMPs achieved across CDFW and partners (e.g., ranchers and landowners) to better manage negative impacts on forests and rangelands in the state.
- More effective and scientifically credible management plans developed for forests and rangelands.
- Communication and outreach systems for local, regional, and state-scale management planning improved through more proactive and collaborative partnerships among various stakeholders before regulations mandate partner engagement.
- Greater focus on economic and ecosystem sustainability and socioeconomic contribution achieved in forests and rangelands management planning.
- Streamlined permitting processes implemented to facilitate habitat restoration and enhancement projects that support implementation of SWAP 2015 goals and strategies.

Partner Engagement

- Information available and accessible to interested stakeholders that highlights SWAP priorities, desired outcomes, and pilot projects for potential partners to enhance and increase collaborative conservation activities, including research and monitoring.
- Multi-partner coalitions and conservancies developed throughout the state to enhance integrated resource assessment, protection, and management at meaningful scales.
- Communication enhanced through engagement of organizations to build public trust in government agencies and inform the broader public about SWAP 2015 and collaboration efforts.

9. Next Steps

The key next steps identified to ensure successful implementation of the companion plan over the next five years are: partnerships and collaboration; human and financial resources; communication and outreach; and monitoring, evaluation, and adaptive management. Suggested activities relevant to these steps are found below. Additional next-steps to consider as a secondary priority are listed under "Additional Next Steps" (below). Pilot projects are considered highly important and desirable, as they help stakeholders better understand the values of collaborative conservation approaches. Recommendations for possible pilot projects are provided at the end of this section.

Partnership and Collaboration

- Engage groups (e.g., via quarterly meetings) identified in this companion plan to assess their willingness to partner.
- Develop working groups or forums, based on partner interest and/or larger planning efforts, to encourage further collaboration and implementation.
- Help agencies and partners integrate the precepts of SWAP into their strategic planning visions, themes, goals, and objectives by periodically having agencies and partners report on progress (e.g., successes, challenges, gaps, needs).
- Develop partnership and collaboration models that can be replicated and are based on a few focused and successful examples (e.g., the multi-partner effort being implemented at the Usal Forest).
- Build upon and leverage existing programs at local, regional, state, and federal scales (e.g., localized efforts in Fresno County on partnership and collaboration).

Human and Financial Resources

- Secure long-term human and financial resources, as well as clear direction and leadership from CDFW, for identifying resources (e.g., legislature support, public notices) that could support project implementation.
- Elevate SWAP 2015 as a state priority and build support for integrating sector priorities into programmatic funding requests and resource allocations, as well as disbursements through grant programs.

Communications and Outreach

- Build an interactive feedback mechanism to highlight and report project implementation success and challenges, as well as optimize the regulatory environment for conservation processes and activities.
- Identify and create opportunities for sharing of SWAP 2015 with regional groups, agencies, and other partners (e.g., RCDs, Bay Area Open Space Council) to understand the partners' ongoing conservation efforts and their needs. Introduce SWAP 2015 to partners, including the companion plans and potential partnership/collaboration opportunities through those plans.

Monitoring, Evaluation, and Adaptive Management

- Monitor plan implementation, report findings, and identify challenges and obstacles that have reduced collaboration. Develop strategies to overcome these challenges and obstacles through partnership among CDFW, decision-makers, and other partners.
- Create a team with partners that advise CDFW in refining plan objectives, developing data quality assurance/quality control (QA/QC) standards, facilitating collection and storage of and access to consistent data, and ensuring that best-available data inform decision-making.

Additional Next Steps

- Develop and implement a pilot project in a landscape-scale setting with multiple partners that helps determine the best process for implementation of SWAP 2015 goals, monitoring effectiveness, and reporting on successes, challenges, and opportunities for improvement.
- Develop a matrix that describes joint priorities and alignments among engaging partners and resources, as well as more detailed strategies based on and expanding the results from the companion plan discussions.
- Identify regional and ecosystem scale plan objectives and conservation activities to enhance the companion plan's regional relevance.
- Develop more detailed work plans that further link the companion plan and SWAP 2015.

Potential Pilot Projects— Pilot projects serve an important next step to demonstrate values and feasibility of collaborative conservation approaches advocated in SWAP 2015 and this companion plan:

- Grazing management trials on private property to enhance habitat and species conditions in collaboration with Tejon Ranch, UC Berkeley, Carrizo Plain National Monument, and landowners supported by NRCS and other funding.
- Greater Sage Grouse habitat restoration with livestock grazing in the Tule Lake National Wildlife Refuge (USFWS) in collaboration with BLM, USFS, local RCDs, and private ranchers.
- USFWS is incorporating livestock grazing on the San Luis Obispo County solar power plant project (in development phase) and mitigation lands for San Joaquin kit fox and giant kangaroo rat to enhance habitat structure for species.

10. Acknowledgements

This companion plan was developed in collaboration with many partners who deserve special recognition for their time and commitment. (Please see Appendix C for a list of forests and rangelands development team members.) CDFW and Blue Earth express our warmest gratitude to those who were involved in the plan's development, as well as to the organizations that generously offered their staff time. As an initial step toward building a collaborative approach for implementing SWAP 2015 and the nine sector-focused companion plans, CDFW will develop an operational plan that describes logistics for moving forward.

Appendices

Appendix A: References

25x'25 America's Energy Future Adaptation Initiative (25x'25). 2013. Agriculture and Forestry in a Changing Climate: Adaptation Recommendations. Print. http://www.nresolutions.com/Adaptation/Agriculture_and_Forestry_in_a_Changing_Climate_-_Adaptation_Recommendations.pdf.

Allen, V. G., C. Batello, E. J. Berretta, J. Hodgson, M. Kothmann, X. Li, J. Mcivor, J. Milne, C. Morris, A. Peeters, and M. Sanderson. 2011. "An International Terminology for Grazing Lands and Grazing Animals." Grass and Forage Science 66.1 (2011): 2-28. Web. 6 Aug. 2015. http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2494.2010.00780.x/full.

Byrd, K., P. Alvarez, L. Flint, and A. Flint. 2014. Future Scenarios of Impacts to Ecosystem Services on California Rangelands. Print. http://pubs.usgs.gov/fs/2014/3019/pdf/fs2014-3019.pdf.

Bureau of Land Management (BLM). 2015. Grazing on Public Lands. Web. 22 Jun 2015. http://www.blm.gov/wo/st/en/prog/grazing.html.

California Department of Fish and Wildlife (CDFW). 2012. Assembly Bill 2402. Fish and Game Code Section 703.5. http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201120120AB2402.

CDFW. 2015a. California State Wildlife Action Plan (SWAP). Print. https://www.wildlife.ca.gov/SWAP/Final.

---. 2015b. Wildlife Conservation Board Funds Environmental Improvement and Acquisition Projects. Web. 27 Jul. 2015. https://cdfgnews.wordpress.com/2015/05/21/wildlife-conservation-board-funds-environmental-improvement-and-acquisition-projects-15/

---. 2015c. Habitat Connectivity Planning for Fish and Wildlife. Web. 27 Oct. 2015. www.wildlife.ca.gov/Conservation/Planning/Connectivity.

CDFW. 2016. A Climate Change Vulnerability Assessment of California's Terrestrial Vegetation. Print. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=116208&inline.

California Department of Food and Agriculture (CDFA). 2013. California Agricultural Production Statistics, 2013. Web. 30 Apr. 2015. http://www.cdfa.ca.gov/Statistics/.

California Department of Forestry and Fire Protection (CAL FIRE). 2003. The Changing California Forest and Range 2003 Assessment – Forest Land Base. Print. http://frap.fire.ca.gov/data/assessment2003/Chapter2_Area/forestlandbase.pdf.

CALFIRE. 2010. California's Forests and Rangelands: 2010 Assessment. http://frap.fire.ca.gov/assessment/2010/document.php.

CALFIRE. 2014. CAL FIRE Demonstration State Forests. http://www.fire.ca.gov/communications/downloads/fact_sheets/StateForests.pdf.

CALFIRE. 2015. Dead Tree Removal Permitting Exemption Extended – CAL FIRE New Release. http://www.fire.ca.gov/communications/downloads/newsreleases/2015/2015_TreeMortality.pdf.

California Department of Water Resources (DWR). 2014. California Water Plan Update 2013. Web. 22 Oct. 2015. http://www.waterplan.water.ca.gov/cwpu2013/final/index.cfm.

California Energy Commission (CEC). 2014. Summary of Renewable Energy Installations – Current and Planned in California. http://www.energy.ca.gov/renewables/tracking_progress/documents/renewable.pdf.

California Natural Resources Agency (CNRA). 2009. California Climate Adaptation Strategy. http://resources.ca.gov/climate/safeguarding/Statewide_Adaptation_Strategy.pdf.California

CNRA. 2014. Safeguarding California Plan. Print. http://resources.ca.gov/climate/safeguarding.

California Department of Parks and Recreation (CDPR). About Us. 2015. Web. 16 Apr. 2015. http://www.parks.ca.gov/?page_id=91.

California Rangeland Conservation Coalition (CRCC). 2007. The California Rangeland Resolution. http://www.carangeland.org/images/10-07_Rangeland_Resolution.pdf.

CRCC. 2014. Working to Keep Ranchers Ranching. http://carangeland.org/wp-content/uploads/2014/06/RANGELAND_COALITION_BROCHURE1.pdf

CRCC. 2015. Benefits of Rangeland. Web. 10 Jun. 2015. http://carangeland.org/our-work/benefits-of-rangeland.

Congressional Research Service. 2012. Federal Land Ownership: Overview and Data. https://fas.org/sgp/crs/misc/R42346.pdf.

Conservation Measures Partnership. 2013. The Open Standards for the Practice of Conservation - Version 3.0, April 2013. http://www.conservationmeasures.org/.

East Bay Regional Park District. 2015. Grazing. Web. 10 Jun. 2015. http://www.ebparks.org/about/stewardship/grazing.

Executive Office of the President, 2013 The President's Climate Action Plan. Web. 27 Oct. 2015. https://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf

Intergovernmental Panel on Climate Change. 2014. Climate Change 2014 Synthesis Report: Approved Summary for Policymakers. http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf.

Maslin, M.. 2014. Climate Change: A Very Short Introduction. 3rd ed. Oxford, University, UK,

National Interagency Fire Center. 2015. National Report of Wildfire Fires and Acres Burned by State. http://www.predictiveservices.nifc.gov/intelligence/2015_Statssumm/fires_acres15.pdf.

National Renewable Energy Laboratory. 2013. Land-Use Requirements for Solar Power Plants in the United States. http://www.nrel.gov/docs/fy13osti/56290.pdf.

Otto, D. and J. D. Lawrence. 2001. Economic Impact of the United States Beef Industry. Iowa State University, Department of Economics. 30 Apr. 2015. http://www.beef.org.

Society of American Foresters. Forest. 2011. Web. 22 Jun. 2015. http://dictionaryofforestry.org/dict/term/forest.

Society of Range Management. 1988. Rangeland. Web. 22 Jun. 2015. https://globalrangelands.org/rangelandswest/glossary/rangeland-rangelands.

Strategic Growth Council (SGC). 2014. California Strategic Growth Council. Web. 23 Jul. 2015. http://sgc.ca.gov/.

The Tejon Conservancy. 2013a. Summary of the Tejon Ranch Conservation and Land Use Agreement. http://www.tejonconservancy.org/index_htm_files/RWA%20Summary.pdf.

---. 2013b. About Us. Web. 27 Jul. 2015. http://www.tejonconservancy.org.

U.S. Department of Agriculture (USDA). . 2012. County Statistical Data-California Agricultural Statistics Review 2011-2012. http://www.cdfa.ca.gov/statistics/pdfs/CoStatData2011-12.pdf.

USDA, USFS, and Pacific Northwest Research Station. 2008. California's Forest Resources, 2001-2005 – Five-Year Forest Inventory and Analysis Report. http://www.fs.fed.us/pnw/publications/gtr763/pnw-gtr763a.pdf.

U.S. Fish and Wildlife Service (USFWS). 2012. National Fish, Wildlife, and Plants Adaptation Strategy. Web 27 Oct. 2015. http://www.wildlifeadaptationstrategy.gov/.

U.S. Forest Service (USFS). 2007. Forest Service Open Space Conservation Strategy - Cooperating Across Boundaries to Sustain Working and Natural Landscapes. http://www.fs.fed.us/openspace/OS_Strategy_final_web.pdf.

USFS. 2010 Dinkey Collaborative Landscape Restoration Strategy. http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5351832.pdf.

USFS. 2014a. Grazing Statistical Summary 2013. http://www.fs.fed.us/rangelands/ftp/docs/GrazingStatisticalSummary2013.pdf.

---. 2014b. CFLRP Annual Report. http://www.fs.fed.us/restoration/documents/cflrp/2014AnnualReports/Dinkey.pdf.

USFS. 2015. Collaborative Forest Landscape Restoration Program (CFLRP) Overview. Web. 27 Jul. 2015. http://www.fs.fed.us/restoration/CFLRP/overview.shtml

University of California. 2015. Forest Research and Outreach. Web. 1 May 2015. http://ucanr.edu/sites/forestry/Publications/.

Appendix B: Plans, Strategies, and Documents Identified by the Development Team

Bureau of Land Management (BLM). 1991. Forest Management H-5000-1.
http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.80448.File.dat/5000-1_Forest_Management_(Public).pdf.

BLM. 1992. Annual Forest Product Sale Plan H-5410-1.
http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.59173.File.dat/H-5410-1%20Annual%20Forest%20Product%20Sale%20Plan.pdf.

---. 1992. Award of Contract H-5450-1.
http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.68639.File.dat/5450_1.pdf.

---. 1992. Conduct of Sale H-5440-1.
http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.66828.File.dat/H-5440-1%20Conduct%20of%20Sale%20(1).pdf.

---. 1992. Contract Modification, Extension H-5470-1.
http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.94852.File.dat/5400_Sales_of_Forest_Products.pdf.

---. 1992. Contract Violation, Suspension, and Cancellation H-5480-1.
http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.94852.File.dat/5400_Sales_of_Forest_Products.pdf.

---. 1992. Sales Administration H-5460-1. 1992.
http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.30548.File.dat/H5460-1%20Sales%20Administration.pdf.

BLM. 1993. Timber Sale Information System H-5400-2.
http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.58125.File.dat/h5400-2.pdf.

BLM. 2000. Grazing Standards and Guidelines - Central California.
http://www.blm.gov/style/medialib//blm/ca/pdf/pdfs/caso_pdfs.Par.84e7fdd8.File.pdf/Central-Grazing.pdf.

---. 2000. Grazing Standards and Guidelines - Northeastern California/Northwestern Nevada.
http://www.blm.gov/style/medialib//blm/ca/pdf/pdfs/caso_pdfs.Par.198b722d.File.pdf/NE_NW-Grazing.pdf.

---. 2000. Grazing Standards and Guidelines - Northwestern California.
http://www.blm.gov/style/medialib//blm/ca/pdf/pdfs/caso_pdfs.Par.b577286f.File.pdf/Northwestern-Grazing1.pdf.

BLM. 2001. BLM Handbook H-4180-1 Rangeland Health Standards. Rep. California: Bureau of Land Management. http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.61484.File.dat/h4180-1.pdf.

BLM. 2003. Headwaters Forest Reserve Management Plan - Chapter 4: Management Goals and Direction. http://www.blm.gov/style/medialib/blm/ca/pdf/arcata/headwaters.Par.4638.File.dat/Headwaters%20Brochure%20(508%20compliant).pdf.

BLM. 2004. Santa Rosa San Jacinto National Monument Resource Management Plan and Final Environmental Impact Statement. http://www.blm.gov/ca/st/en/prog/nlcs/SantaRosa_SanJacintoMtns_NM/management_plan.html.

BLM. 2005. King Range National Conservation Area Resource Management Plan – Chapter 2: Comparison of Alternatives and Proposed RMP. http://www.blm.gov/style/medialib/blm/ca/pdf/pdfs/arcata_pdfs/kingrangefinal.Par.72632259.File.dat/Chapter2.pdf.

BLM. 2006. Ukiah Resource Management Plan. http://www.blm.gov/ca/pdfs/ukiah_pdfs/rmp-eis/UKFO_RMP_FINAL.pdf.

BLM. 2007. BLM Handbook H1742-1 Burned Area Emergency Stabilization and Rehabilitation Handbook. http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.52739.File.dat/h1742-1.pdf.

---. 2007. Southern Diablo Mountain Range and Central Coast of California Resource Management Plan. http://www.blm.gov/ca/pdfs/hollister_pdfs/SouthernDiablo-CenCoastRMP/ROD-August2007/ROD-Complete-8-07.pdf.

BLM. 2008. BLM Handbook H1740-2 Integrated Vegetation Management. http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.59510.File.dat/H-1740-2.pdf.

---. 2008. Cosumnes River Preserve Management Plan. http://www.blm.gov/style/medialib/blm/ca/pdf/folsom/plans.Par.67798.File.dat/CRP_Final_Mgmt_Plan.pdf.

---. 2008. Eagle Lake Resource Management Plan - Record of Decision and Proposed Resource Management Plan and Final Environmental Impact Statement. http://www.blm.gov/ca/st/en/fo/eaglelake/propRMP-FEIS.html.

---. 2008. Eastern San Diego County Resource Management Plan. http://www.blm.gov/style/medialib/blm/ca/pdf/elcentro/planning/2007/fesdrmp.Par.29969.File.dat/ESDC_RMP26ROD.pdf.

---. 2008. Sierra Resource Management Plan. http://www.blm.gov/style/medialib/blm/ca/pdf/folsom/rmp.Par.86036.File.dat/Sierra_ROD_Final_web.pdf.

---. 2008. Surprise Resource Management Plan. Record of Decision and Proposed Resource Management Plan and Final Environmental Impact Statement. http://www.blm.gov/ca/st/en/fo/surprise/propRMP-FEIS.html.

BLM. 2009. Carrizo Plain National Monument Resource Management Plan. http://www.blm.gov/style/medialib/blm/ca/pdf/bakersfield/carrizo.Par.8414.File.dat/CarrizoPlainNationalMonumentApprovedROD.pdf.

BLM. 2010. Interagency Ecological Site Handbook for Rangelands. http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev2_034572.pdf.

---. 2010. Mojave Basin and Range Rapid Ecoregional Assessment. http://www.blm.gov/style/medialib/blm/wo/Communications_Directorate/public_affairs/landscape_approach/documents1.Par.99875.File.dat/MBR_1_ReportBody.pdf.

---. 2010. Sonoran Desert Rapid Ecoregional Assessment. http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/reas/sonoran.html.

BLM. 2011. DRAFT South Coast Resource Management Plan and Environmental Impact Statement. http://www.blm.gov/ca/st/en/fo/palmsprings/Draft_Resource_Management_Plan_and_EIS.html.

BLM. 2012. Bakersfield Resource Management Plan. http://www.blm.gov/style/medialib/blm/ca/pdf/bakersfield/planning/Bakersfield_ARMP_ROD.Par.35153.File.dat/Bakersfield_ROD-ARMP.pdf.

BLM. 2013. Clear Creek Resource Management Plan. http://www.blm.gov/ca/pdfs/hollister_pdfs/Clear_Creek_ROD/ROD-Complete.pdf.

---. 2013. Imperial Sand Dunes Recreation Area Management Plan. http://www.blm.gov/ca/st/en/fo/elcentro/recreation/ohvs/isdra/dunesinfo/docs/isdramp.html.

BLM. 2014. DRAFT Desert Renewable Energy Conservation Plan. http://www.drecp.org/draftdrecp/.

BLM. 2015. DRAFT West Mojave (WEMO) Route Network Project and Plan Amendment. http://www.blm.gov/ca/st/en/fo/cdd/west_mojave__wemo/wmDEIS.html.

California Department of Fish and Wildlife (CDFW) and California Department of Transportation (Caltrans). 2010. California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California.https://www.wildlife.ca.gov/Conservation/Planning/Connectivity/CEHC.

California Department of Forestry and Fire Protection (CAL FIRE). 2010. California's Forests and Rangelands: 2010 Strategy Report. http://frap.fire.ca.gov/data/assessment2010/pdfs/strategyreport7-157final.pdf.

CALFIRE. 2011. California Forest Management Plan. http://www.fire.ca.gov/resource_mgt/downloads/CAForestManagementPlan.pdf.

CALFIRE. 2012. California Fire Hazards Severity Zone Map Update Project. California Department of Forestry and Fire Protection. Web. 11 May 2015. http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones_maps.php.

California Natural Resource Agency (CNRA). 2014. California Water Action Plan. http://resources.ca.gov/docs/california_water_action_plan/Final_California_Water_Action_Plan.pdf.

California State Water Resources Control Board (SWRCB). 2015. Clean Water Act (CWA) §319(h) Non-Point Source (NPS) Grant Program. Web. 11 May 2015. http://www.waterboards.ca.gov/water_issues/programs/nps/grant_program.shtml.

Central Valley Joint Venture. Central Valley Joint Venture Implementation Plan. 2006. Central Valley Joint Venture. Print. http://www.centralvalleyjointventure.org/science.

Green Diamond Resource Company. 2014. California Timberlands Forest Management Plan. https://greendiamond.com/responsible-forestry/california/reports/FMP_FULL_Aug_2014.pdf.

National Cattlemen's Beef Association. 2015. Beef Industry Statistics. Web. 21 Aug 2015. http://www.beefusa.org/beefindustrystatistics.aspx.

Tejon Ranch Conservancy. 2013. Ranch-wide Management Plan - Conservation Activities and Best Management Practices. http://www.tejonconservancy.org/index_htm_files/Vol.%202_RWMP_final.pdf.

The California Rangeland Trust. 2012. Conservation Easement. Web. 23 May 2015. http://www.rangelandtrust.org/conservation/conservation-easement-basics.html.

The Nature Conservancy (TNC). 2012. Solar Energy Development in the Western Mojave Desert: Identifying Areas of Least Environmental Conflict for Siting and a Framework for Compensatory Mitigation of Impacts. http://scienceforconservation.org/dl/TNC_West_Mojave_Assessment_2012.pdf.

United States Department of Agriculture (USDA). 2014. Climate Change Adaptation Plan. http://www.usda.gov/oce/climate_change/adaptation/USDA_Climate_Change_Adaptation_Plan_FULL.pdf.

USDA. 2015. Sheep and Goats. National Agricultural Statistics Service (NASS). http://usda.mannlib.cornell.edu/usda/current/SheeGoat/SheeGoat-01-30-2015.pdf.

---. 2015. State Technical Advisory Committee. Natural Resources Conservation Service (NRCS). Web. 22 Apr. 2015. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ca/technical/?cid=nrcs144p2_064078.

United States Environmental Protection Agency (USEPA). 2008. Handbook for Developing Watershed Plans to Restore and Protect Our Waters. http://water.epa.gov/polwaste/nps/upload/2008_04_18_NPS_watershed_handbook_handbook-2.pdf.

United States Fish and Wildlife Service (USFWS). 2013. Hopper Mountain, Bitter Creek, and Blue Ridge National Wildlife Refuges Final CCP and Environmental Assessment. http://www.fws.gov/uploadedFiles/Region_8/NWRS/Zone_1/Hopper_Mountain_Complex/Hopper_Mountain/Sections/What_We_Do/Conservation/PDFs/Final%20CCP%20HopperMtn_BitterCrk_BlueRdg_NWRs_Sept%202013.pdf.

United States Forest Service (USFS). 2007. Woody Biomass Utilization Desk Guide. http://www.forestsandrangelands.gov/Woody_Biomass/documents/biomass_deskguide.pdf.

USFS. 2010. Future of America's Forest and Rangelands: Forest Service 2010 Resources Planning Act Assessment. http://www.fs.fed.us/research/publications/gtr/gtr_wo87.pdf.

USFS. 2012. Planning Rule Final Directives for National Forest System Land Management Planning. Web. 22 Apr. 2015. http://www.fs.usda.gov/detail/planningrule/home/?cid=stelprd3828310.

---. 2012. Region 5 Ecological Restoration Implementation Plan.http://www.fs.usda.gov/detail/r5/landmanagement/?cid=STELPRDB5409054.

USFS. 2015. Explore Forest Insect and Disease Conditions in the United States using Forest Health Protection Mapping and Reporting Tools. Web. 11 May 2015. http://foresthealth.fs.usda.gov/portal/.

---. 2015. Western Wildland Environmental Threat Assessment Center. Wildfire Risk and Fuel Assessment. Web. 11 May 2015. http://www.fs.fed.us/wwetac/threats/wildfire.html.

Appendix C: Forests and Rangelands Companion Plan Team Members and Affiliations

Affiliation	Participant
California Department of Forestry and Fire Protection	Chris Keithley Rich Walker
California Board of Forestry and Fire Protection - Range Management Advisory Committee	Marc Horney
California Cattlemen's Association	Kirk Wilbur
California Coastal Commission	Laurie Koteen
California Department of Fish and Wildlife	Bill Condon
California Licensed Foresters Association	Gary Rynearson
California Native Plant Society	Greg Suba
California Natural Resources Agency	Russ Henly
California Rangeland Trust	Nancy Schaefer
State Water Resources Control Board - Forestry Activities Program	Nicholas Kunz
Tejon Ranch Conservancy	Michael White
The Nature Conservancy	Dick Cameron
U.S. Bureau of Land Management	Jack Hamby James Weigand
U.S. Department of Agriculture - Natural Resources Conservation Service	Ceci Dale-Cesmat Tom Moore
U.S. Forest Service	Don Yasuda Sarah Sawyer

Appendix D: Potential Partners for Collaboration

Please note that the following table does not provide an exhaustive list of potential partners. The organizations listed here were identified through the sector discussions, but the listing does not imply that they have agreed to partner or to implement SWAP 2015. Also note that the table was completed to the best of the team's knowledge. Where specific organizational efforts or orientations were unknown to the team, corresponding cells were left blank. An asterisk (*) indicates a new important opportunity added by CDFW after the team discussions; therefore it was not addressed by the sector team.

Potential Partners	Direct Management	Economic Incentives	Management Planning	Partner Engagement
American Tree Farm System			✓	✓
Audubon CA			✓	✓
Blue Ridge-Berryessa Partnership				✓
Bureau of Land Management (BLM)	✓		✓	✓
CA Air Resources Board	✓			✓
CA Association of Resource Conservation Districts (CARCD) • **Resource Conservation Districts (RCDs)**		✓	✓	✓
CA Biodiversity Council (CBC)			✓	✓
CA Board of Forestry's Range Management Advisory Committee (RMAC)				✓
CA Cattlemen's Association (CCA)				✓
CA Council of Land Trusts (CCLT)				✓
CA Deer Association				✓
CA Department of Fish and Wildlife (CDFW) • **Invasive Species Program**	✓	✓	✓	✓
CA Department of Forestry and Fire Protection (CAL FIRE)		✓	✓	✓
CA Department of Public Health	✓	✓		✓
CA Department of Water Resources (DWR)	✓			
CA Environmental Protection Agency (CalEPA)	✓			✓
CA Farm Bureau Federation (CFBF)				✓
CA Fire Safe Council				✓
CA Forest Pest Council				✓
CA Invasive Plant Council				✓
CA Licensed Foresters				✓
CA Native Grassland Association				✓
CA Native Plant Society				✓
CA Rangeland Conservation Coalition (CRCC)				✓
CA Rangeland Trust		✓	✓	✓
CA Roundtable on Agriculture and the Environment	✓			✓

Potential Partners	Direct Management	Economic Incentives	Management Planning	Partner Engagement
CA Water Quality Monitoring Council			✓	✓
CA Wool Growers Association (CWGA)				✓
CalRecycle	✓			✓
Central Coast Rangeland Coalition (CCRC)				✓
City and County Governments	✓	✓	✓	✓
Climate Action Reserve		✓		✓
Eel River Forum				✓
FireScape Mendocino				✓
Forest Climate Action Team				✓
Forest Legacy Program		✓		✓
Invasive Species Council of CA				✓
Joint Ventures for Bird Conservation • Central Valley Joint Venture • Pacific Birds Habitat Joint Venture • San Francisco Bay Joint Venture • Sonoran Joint Venture • Intermountain West Joint Venture	✓		✓	✓
Landowners	✓	✓	✓	✓
Landscape Conservation Cooperatives (LCC)	✓		✓	✓
Local Land Trusts		✓		✓
Mayacamas Forum (with Pepperwood Preserve)				✓
National Parks Service (NPS)	✓		✓	✓
Natural Resources Conservation Service (NRCS) • State Technical Advisory Committee (STAC)	✓	✓	✓	✓
Northern Sierra Partnership				✓
Pacific Forest Trust		✓		
Point Blue Conservation Science			✓	✓
Sierra Nevada Conservancy	✓			✓
Sierra Pacific Industry				✓
Society for American Foresters				✓
Society of Range Management – CA-Pacific Section (CALPAC-SRM)				✓
Southern Sierra Partnership				✓
State Water Resources Control Board (SWRCB)		✓		✓
Strategic Growth Council (SGC)			✓	✓
Tejon Ranch Conservancy	✓	✓	✓	✓

Potential Partners	Direct Management	Economic Incentives	Management Planning	Partner Engagement
The Nature Conservancy (TNC)	✓	✓	✓	✓
Timber Regulation and Forest Restoration Program				✓
Tree Mortality Task Force*			✓	✓
U.S. Environmental Protection Agency (USEPA)			✓	✓
U.S. Fish & Wildlife Service (USFWS)	✓	✓	✓	✓
U.S. Forest Service (USFS)	✓	✓	✓	✓
U.S. Geological Survey (USGS)		✓	✓	✓
University of CA, Davis – Weed Research & Information Center				✓
University of California Cooperative Extension (UCCE)		✓	✓	✓
University of California Reserve Program	✓		✓	✓
Water Districts				✓
Western Klamath Restoration Partnership				✓
Wildlife Conservation Board (WCB)				✓
Wood for Salmon Working Group	✓			✓

Appendix E: Potential Financial Resources

Example Potential Financial Resources *(Note: this information is intended to serve as a starting point for outreach and potential engagement, and does not represent a comprehensive list of all the potential funding sources)*	Direct Management	Economic Incentives	Management Planning	Partner Engagement
U.S. Bureau of Land Management (BLM) - National Landscape Conservation System Funds	✓			
CA Department of Fish and Wildlife (CDFW) • Fisheries Restoration Program	✓			
CA Department of Forestry and Fire Protection (CAL FIRE)	✓			
CA Forest Improvement Program (CFIP)	✓			
Greenhouse Gas Reduction Fund (GGRF) and State Responsibility Area (SRA) fees	✓			
Natural Resources Conservation Service (NRCS) – Conservation Stewardship Program • Farm Bill - Environmental Quality Incentives Program (EQIP)	✓	✓		
Proposition 1 Water Bond – potential to be invested in forest restoration activities	✓			
State Water Resources Control Board (SWRCB) – Clean Water Act Section 301 Program and State Revolving Fund	✓	✓		
U.S. Environmental Protection Agency (USEPA) – Clean Water Act Section 319 funds (administered through the SWRCB)			✓	

The following funding sources were identified as relevant to more than one strategy category:
Natural Resources Conservation Service (NRCS) – Conservation Stewardship Program • Farm Bill - Environmental Quality Incentives Program (EQIP)
CA Department of Conservation – sustainable agricultural land conservation program (specifically for rangeland conservation and management practices) funded through the cap and trade program
CA State Coastal Conservancy (SCC) - grants and acquisitions
CAL FIRE - stewardship programs and its Range Management Advisory Committee (RMAC)
CA Department of Fish and Wildlife (CDFW) Fisheries Restoration Program
CA Forest Improvement Program (CFIP)
State Water Resources Control Board (SWRCB) – Clean Water Act Section 319 and State Revolving Fund

Appendix F: Companion Plan Management Team

Name	Title
Armand Gonzales	**SWAP 2015 Project Lead, CDFW**
Junko Hoshi	**SWAP 2015 Assistant Project Lead, CDFW**
Kurt Malchow	**SWAP 2015 Companion Plan Development Lead, CDFW**
Tegan Hoffman	**Project Director and Facilitator, Blue Earth Consultants**
Sarah Eminhizer	**Project Manager and Facilitator, Blue Earth Consultants**
Jennifer Lam	**Associate, Blue Earth Consultants**
Diana Pietri	**Associate, Blue Earth Consultants**

Appendix G: Glossary

The definitions found here are referenced from SWAP 2015, and are mostly adopted from the glossary in the Conservation Measures Partnership's (CMP) Open Standards for the Practice of Conservation (Version 2.0). Some terms have been added or refined to clarify their use by CDFW.

activity: a task needed to implement a strategy, and to achieve the objectives and the desirable outcomes of the strategy.

biodiversity: the full array of living things.

conservation: the use of natural resources in ways such that they may remain viable for future generations. Compare with preservation.

conservation target: an element of biodiversity at a project site, which can be a species, habitat/ecological system, or ecological process on which a project has chosen to focus. All targets at a site should collectively represent the biodiversity of concern at the site.

distribution: the pattern of occurrences for a species or habitat throughout the state; generally more precise than range.

driver: a synonym for factor.

ecosystem function: the operational role of ecosystem components, structure, and processes.

ecosystem health: the degree to which a biological community and its nonliving environmental surroundings function within a normal range of variability; the capacity to maintain ecosystems structures, functions, and capabilities to provide for human need.

ecosystem processes: the flow or cycling of energy, materials, and nutrients through space and time.

ecosystem: a natural unit defined by both its living and non-living components; a balanced system for the exchange of nutrients and energy. Compare with habitat.

fire frequency: a broad measure of the rate of fire occurrence in a particular area.

fire regime: a measure of the general pattern of fire frequency and severity typical to a particular area or type of landscape.

fragmentation: the process by which a contiguous land cover, vegetative community, or habitat is broken into smaller patches within a mosaic of other forms of land use/land cover; e.g., islands of an older forest age class immersed within areas of younger-aged forest, or patches of oak woodlands surrounded by housing development.

geographic information system (GIS): an organized assembly of people, data, techniques, computers, and programs for acquiring, analyzing, storing, retrieving, and displaying spatial information about the real world.

goal: a formal statement detailing a desired outcome of a conservation project, such as a desired future status of a target. The scope of a goal is to improve or maintain key ecological attributes. A good goal meets the criteria of being linked to targets, impact oriented, measurable, time limited, and specific.

habitat: where a given plant or animal species meets its requirements for food, cover, and water in both space and time. May or may not coincide with a single macrogroup, i.e., vegetated condition or aquatic condition. Compare with ecosystem.

impact: the desired future state of a conservation target. A goal is a formal statement of the desired impact.

invasive: an introduced species which spreads rapidly once established and has the potential to cause environmental or economic harm. Not all introduced species are invasive.

landscape: the traits, patterns, and structure of a specific geographic area, including its biological composition, its physical environment, and its anthropogenic or social patterns. An area where interacting ecosystems are grouped and repeated in similar form.

listed: general term used for a taxon protected under the federal Endangered Species Act, the California Endangered Species Act, or the California Native Plant Protection Act.

monitoring: the periodic collection and evaluation of data relative to stated project goals and objectives. Many people often also refer to this process as monitoring and evaluation (abbreviated M&E).

native: naturally occurring in a specified geographic region.

objective: A formal statement detailing a desired outcome of a conservation project, such as reducing a critical pressure. The scope of an objective is broader than that of a goal because it may address positive impacts not related to ecological entities (such as getting better ecological data or developing conservation plans) that would be important for the project. The set of objectives developed for a conservation project are intended, as a whole, to lead to the achievement of a goal or goals, that is, improvements of key ecological attributes. A good objective meets the criteria of being: results oriented, measurable, time limited, specific, and practical. If the project is well conceptualized and designed, realization of a project's objectives should lead to the fulfillment of the project's goals and ultimately its vision. Compare to vision and goal.

outcome: an improved (and intended) future state of a conservation factor due to implementation of actions or strategies. An objective is a formal statement of the desired outcome.

output: a deliverable that can be measured by the activities and processes that will contribute to accomplishing the desired outcomes and goals.

population: the number of individuals of a particular taxon in a defined area.

pressure: an anthropogenic (human-induced) or natural driver that could result in impacts to the target by changing the ecological conditions. Pressures can be positive or negative depending on intensity, timing, and duration. See also direct pressure and indirect pressure.

private land: lands not publicly owned, including private conservancy lands.

program: a group of projects which together aim to achieve a common broad vision. In the interest of simplicity, this document uses the term "project" to represent both projects and programs since these standards of practice are designed to apply equally well to both.

project: a set of actions undertaken by a defined group of practitioners – including managers, researchers, community members, or other stakeholders – to achieve defined goals and objectives. The basic unit of conservation work. Compare with program.

public: lands owned by local, state, or federal government or special districts.

range: the maximum geographic extent of a taxon or habitat; does not imply that suitable conditions exist throughout the defined limits. Compare with distribution.

rangelands: any expanse of land not fertilized, cultivated, or irrigated that is suitable and predominately used for grazing domestic livestock and wildlife.

regime: a regular pattern of occurrence or action.

result: the desired future state of a target or factor. Results include impacts which are linked to targets and outcomes which are linked to threats and opportunities.

riparian: relating to rivers or streams.

Species of Greatest Conservation Need (SGCN): all state and federally listed and candidate species, species for which there is a conservation concern, or species identified as being highly vulnerable to climate change.

stakeholder: any individual, group, or institution that has a vested interest in the natural resources of the project area and/or that potentially will be affected by project activities and have something to gain or lose if conditions change or stay the same. Stakeholders are all those who need to be considered in achieving project goals and whose participation and support are crucial to its success.

strategy: a group of actions with a common focus that work together to reduce pressures, capitalize on opportunities, or restore natural systems. A set of strategies identified under a project is intended, as a whole, to achieve goals, objectives, and other key results addressed under the project.

stress: a degraded ecological condition of a target that resulted directly or indirectly from pressures defined above (e.g., habitat fragmentation).

threatened: one of several special status listing designations of plant and animal taxa. Under the California and federal Endangered Species Acts, threatened refers to a taxon that is likely to become endangered in the foreseeable future. The word threatened is also commonly applied to non-listed taxa in danger of extinction.

watershed: defined here as a stream or river basin and the adjacent hills and peaks which "shed," or drain, water into it.

wetland: a general term referring to the transitional zone between aquatic and upland areas. Some wetlands are flooded or saturated only during certain seasons of the year. Vernal pools are one example of a seasonal wetland.

wildfire: any fire occurring on undeveloped land; the term specifies a fire occurring on a wildland area that does not meet management objectives and thus requires a suppression response. Wildland fire protection agencies use this term generally to indicate a vegetation fire. Wildfire often replaces such terms as forest fire, brush fire, range fire, and grass fire.

wildlands: collective term for public or private lands largely undeveloped and in their natural state.

wildlife: all species of free-ranging animals, including but not limited to mammals, birds, fishes, reptiles, amphibians, and invertebrates.