TRANSPORTATION PLANNING COMPANION PLAN

December 2016

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE

SWAP
California State Wildlife Action Plan

Photo Credit:

Left:
US 101 in the Mendocino County (Mile 102)
Date: April 2013
Photographer: Adbar via Wiki Commons

Right:
Male Tule Elk at Tule Elk State Reserve, California
Date: 12 February 2008
Photographer: David Jordan via Wiki Commons

Prepared by Blue Earth Consultants, LLC

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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).

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Acronyms and Abbreviations

AFWA	**Association of Fish and Wildlife Agencies**
ARTBA	**American Road & Transportation Builders Association**
BACL	**Bay Area Critical Linkages**
BLM	**Bureau of Land Management**
Blue Earth	**Blue Earth Consultants, LLC**
BMP	**Best Management Practices**
BNSF	**Burlington North and Santa Fe**
CAL FIRE	**California Department of Forestry and Fire Protection**
CALCOG	**California Association of Councils of Governments**
CalSTA	**California State Transportation Agency**
Caltrans	**California Department of Transportation**
CBC	**California Biodiversity Council**
CDFG	**California Department of Fish and Game**
CDFW	**California Department of Fish and Wildlife**
CDPR	**California Department of Parks and Recreation**
CDWR	**California Department of Water Resources**
CEQA	**California Environmental Quality Act**
Ch.	**Chapter**
CMAQ	**Congestion Mitigation and Air Quality Improvement Program**
CNDDB	**California Natural Diversity Database**
CNRA	**California Natural Resources Agency**
CTC	**California Transportation Commission**
CTP	**California Transportation Plan**
DRECP	**Desert Renewable Energy Conservation Plan**
EEM	**Environmental Enhancement and Mitigation**
EIR	**Environmental Impact Report**
FHWA	**Federal Highway Administration**
FLMA	**Federal Land Management Agency**
FLTP	**Federal Lands Transportation Program**
FTA	**Federal Transit Administration**
FTIP	**Federal Transportation Improvement Program**
GHG	**Greenhouse Gas**
HCP	**Habitat Conservation Plan**
IBA	**Important Bird Area**
ILF	**In-lieu Fee**
IPC	**California Invasive Plant Council**
ITIP	**Interregional Transportation Improvement Program**
KEA	**Key Ecological Attribute**
LCC	**Landscape Conservation Cooperative**
MAP-21	**Moving Ahead for Progress in the 21st Century**

MOU	**Memorandum of Understanding**
MPO	**Metropolitan Planning Organization**
NCCP	**Natural Community Conservation Plan**
NCHRP	**National Cooperative Highway Research Program**
NEPA	**National Environmental Policy Act**
NGO	**Non-governmental Organization**
NOAA	**National Oceanic and Atmospheric Administration**
NPDES	**National Pollutant Discharge Elimination Program**
NPS	**National Park Service**
O&M	**Operation and Maintenance**
PPIC	**Public Policy Institute of California**
RAMP	**Regional Advance Mitigation Planning**
RCD	**Resource Conservation District**
RHNA	**Regional Housing Needs Assessment**
RTIP	**Regional Transportation Improvement Program**
RTP	**Regional Transportation Plan**
RTPA	**Regional Transportation Improvement Planning Agency**
SAMI	**Statewide Advance Mitigation Initiative**
SB	**Senate Bill**
SCAG	**Southern California Association of Governments**
SCS	**Sustainable Communities Strategy**
SGC	**Strategic Growth Council**
SGCN	**Species of Greatest Conservation Need**
SHOPP	**State Highway Operation and Protection Program**
SHRP2	**Strategic Highway Research Program 2**
STIP	**State Transportation Improvement Program**
SWAP	**State Wildlife Action Plan**
SWG	**State and Tribal Wildlife Grants**
TIP	**Transportation Improvement Program**
TMDL	**Total Maximum Daily Load**
TNC	**The Nature Conservancy**
UP	**Union Pacific**
USC	**U.S. Code**
USDOT	**U.S. Department of Transportation**
USACE	**U.S. Army Corps of Engineers**
USEPA	**U.S. Environmental Protection Agency**
USFS	**U.S. Forest Service**
USFWS	**U.S. Fish & Wildlife Service**
UTC	**University Transportation Center**
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 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.[1]

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 C).

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

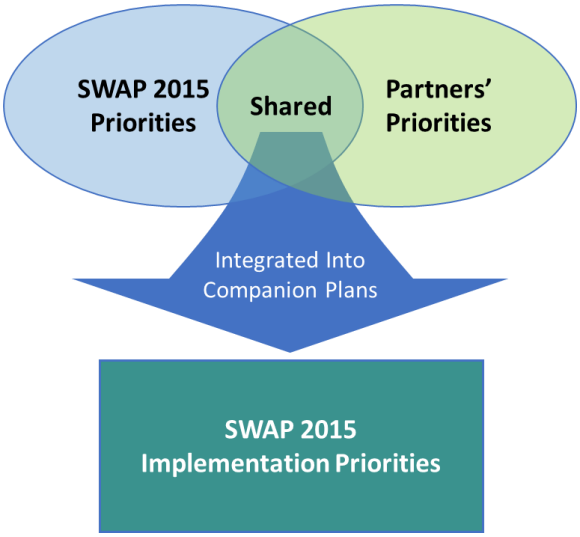
Companion Plan Purpose and Sector Selection

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.

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. Fish and 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).

Figure 1: Aligning SWAP 2015 and Partner Priorities



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 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.

[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 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. Transportation Planning Sector

The current federal surface transportation authorization bill, *Moving Ahead for Progress in the 21st Century* (MAP-21), creates a streamlined, performance-based, multimodal program to address the many challenges facing the U.S. transportation system through authorizations at federal, state, and local jurisdiction levels (U.S. Department of Transportation [USDOT] 2012). MAP-21 seeks to improve safety, maintain infrastructure condition, reduce traffic congestion, improve efficiency of the system and freight movement, protect the environment, and reduce delays in project delivery across all federal, state, and local jurisdictions. MAP-21 builds on and refines many of the highway, transit, bike, and pedestrian programs and policies and seeks to guide transportation investments in order to:

- strengthen America's highways;
- establish a performance-based program;
- create jobs and support economic growth;
- streamline the federal highway transportation program; and
- accelerate project delivery and promote innovation.

In MAP-21, metropolitan and statewide transportation planning processes are continually enhanced to incorporate performance goals, measures, and targets into the process of identifying needed transportation improvements and selecting projects. Under MAP-21, applicable federal and state resource agencies coordinate on the effects of transportation projects in compliance with regulatory processes at federal, state, and local levels. Relevant sections of MAP-21 related to the SWAP 2015 efforts are:

- Metropolitan Planning Sections 1105, 1201 (23 U.S. Code [USC] 104, 134)—describes funding for long-range transportation planning and performance-based planning;
- Statewide Non-Metropolitan Planning Organization (MPO) Transportation Planning Sections 1202, 52005 (23 USC 135, 505);

- Federal Lands Transportation Program (FLTP) Sections 1119 (23 USC 20, 203)—planning on federal lands with separate federal lands access program; and
- Accelerating Project Delivery Section 1305 (23 USC 139)—efficient environmental review through:
    - Section 1310 – Planning and National Environmental Policy Act (NEPA) Linkages; and
    - Section 1311 – Programmatic Mitigation Plans.

2.1 Transportation Improvements in California

California is the most populous U.S. state, with more than 39 million people in 2015 (U.S. Census Bureau 2015). The population is estimated to reach 50 million people by mid-century (PPIC 2015). Along with the projected continuation in population growth and associated need for more transportation infrastructure, there is a greater potential for impact on the state's natural resources and wildlife habitat. The California Department of Transportation (Caltrans) directly manages more than 50,000 lane miles of state and federal highways and over 12,000 highway bridges, permits more than 400 public airports, and operates three of the top five Amtrak intercity rail services (Caltrans 2015a). The state's transportation planning sector therefore will need to be well equipped to manage this growth while giving priority to wildlife conservation planning. At this time, there are numerous opportunities for the transportation planning sector to collaborate and incorporate natural and wildlife resource conservation in project planning:

- engaging in natural community conservation planning (NCCP);
- implementing low-impact development projects that limit impacts on large habitat areas and species;
- developing and implementing best management practices (BMPs) for water quality and roadways;
- replacing culverts and retrofitting bridges to allow fish passage and wildlife movement;
- describing transportation development stressors on wildlife and habitats (e.g., species composition changes and incidental losses [road kills]);
- prioritizing large habitat preservation and locating future construction along existing transportation corridors;
- avoiding habitat/population fragmentation and invasive species expansion; and
- analyzing completed transportation projects that have reduced wildlife resource impacts for lessons learned (California Department of Fish and Game [CDFG], 2005).

The California State Transportation Agency (CalSTA) and the California Transportation Commission (CTC) have anticipated the need to integrate conservation into their long range transportation planning. The CalSTA is designating $14 billion of the region's $60 billion in discretionary funds to be focused on enhancing the "livability" of the region, including ecological and farmland conservation areas (CalSTA 2014). The CTC is incorporating an environmental stewardship goal in its statewide transportation needs assessments to further wildlife conservation in the transportation planning process (CTC 2011).

In California, regional and local transportation planning is primarily conducted by MPOs in urbanized areas and Regional Transportation Planning Agencies (RTPAs) in rural areas. Both types of agencies are responsible for developing transportation planning documents at the multi-county or county-wide level (California Association of Councils of Governments [CALCOG] 2009), and planning documents often include strategies to minimize environmental impacts. MPOs and RTPAs prepare long-range transportation plans usually referred to as Regional Transportation Plans (RTPs) and other planning documents to support RTP development. For example, the RTP of the Southern California Association of Governments (SCAG) includes developing mitigation measures to reduce environmental impacts related to transportation planning activities and identifying sensitive environmental resources through region-scale maps (SCAG 2012). Caltrans prepares and updates the California Transportation Plan (CTP) every five years. The CTP 2040, updated in 2016, acts as an umbrella for all the Caltrans modal plans (e.g., rail, freight, etc.) and provides a long-range policy framework to meet future mobility needs and reduce greenhouse gas (GHG) emissions. The CTP also defines goals, performance-based policies, and strategies to achieve a collective vision for California's transportation system.

2.2 Transportation Funding Programs and Authorizations

Both state and federal laws have transportation improvement programs (TIPs), which reflect the selection of projects to be undertaken with currently available revenues (Caltrans 2014). Congress authorizes the federal government to spend its transportation revenue on programs that support public policy interests for a given amount of time—typically five to six years. An authorization sets the maximum amount of funding that can be appropriated to programs each fiscal year. Each year, Congress reviews appropriation bills to allocate funding for all federal agencies, departments, and programs primarily to the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). This action provides the legal authority for federal agencies to spend money during the upcoming fiscal year on administered programs. The federal government can only allocate up to the maximum amount identified in the authorization for the upcoming year.

Similar to federal programming, the California Legislature dictates how state revenues are spent on the transportation network. The Legislature appropriates state funding for specific purposes each year. The State Transportation Improvement Program (STIP) funds new construction projects that add capacity to the transportation network. The STIP consists of two components, Caltrans' Interregional Transportation Improvement Program (ITIP) and regional transportation planning agencies' Regional Transportation Improvement Program (RTIP).

Under current law, most of the federal funding for maintenance, operation, and repair of the existing highway system goes to Caltrans via the State Highways Operations and Protection Program (SHOPP). The SHOPP provides funds for pavement rehabilitation, operation, and safety improvements on state highways and bridges.

Caltrans oversees more than $1 billion in federal and state funding annually to over 600 cities, counties, and regional agencies through the Local Assistance Program. The program provides recipients with the opportunity to improve their transportation infrastructure or provide additional transportation services.

California's transportation network receives funding from federal, state, local governments, and private investments (see Table 1). Federal, state, and local revenues are collected through user fees, property access charges, and subsidies. Regional and local governments provide approximately 49% in transportation funding, whereas the state provides 27% and federal government provides 24%. The transportation network received approximately $27 billion for fiscal year 2013–14 (Caltrans 2014).

Table 1: Transportation Funding Sources in California

User Fees	Property Related Charges	Subsidies
• Federal and state gas taxes • Federal and state diesel taxes • Vehicle weight fees • Tolls • Public transit fare	• Property taxes • Benefits assessment districts • Developer fees	• Sales taxes • General funds provided by federal, state, and local governments • Externalized costs

2.3 Transportation Development and Conservation Planning in California: Example Efforts

There are opportunities to integrate conservation planning and priorities into transportation planning cycles and processes—such as City and County General Plans, RTPs and sustainable community strategies (SCS), integrated regional watershed management planning, and Forest Land Management Plans—by providing input into the plans and by looking for opportunities to streamline permitting processes, such as participation in the design and implementation of NCCPs/Habitat Conservation Plans (HCPs). Such planning efforts can integrate the high-level conservation priorities outlined in the SWAP 2015, which may also overlap with various land and resource management plan updates more locally, and can also acknowledge transportation-related pressures and adopt avoidance, minimization, and mitigation strategies described in SWAP 2015. As regional plans are updated, current resource data and mitigation strategies related to transportation pressures could be incorporated into plan updates. By engaging in early evaluation of regional planning efforts, transportation partners can identify effective mitigation opportunities to avoid natural resource impacts.

Many state transportation partners have already incorporated measures that would help conserve California's natural and wildlife resources in their programs and plans. Based on SWAP 2005 recommendations, the state developed policies and incentives to better integrate wildlife conservation early in transportation planning (CDFG 2005). Examples of recommended activities include retrofitting transportation systems and corridors to better accommodate wildlife, and considering wildlife needs more effectively in existing transportation development (CDFG 2005).

Goal Six of the CTP 2040 provides strategies that direct environmental stewardship through planning for environmental sustainability while also incorporating environmental considerations early in transportation planning and development to preserve natural resources. SWAP 2015 provides ecoregional and watershed-level analysis of priority habitats, stresses, and pressures, as well as

strategies for conservation of species at risk. Referring to SWAP 2015 as a first step in the planning process could help fulfill the intent of CTP Goal 6.

CDFW and Caltrans collaborations are examples of the state's ongoing effort to meet compatible goals through conservation and restoration partnerships. One notable example of successful collaboration between these two partners, as well as key stakeholders, is the development of a tool for conservation and transportation planning through the California Essential Habitat Connectivity Project, which identifies key movement and migration routes for wildlife and key transportation corridors. It also helps sustain the state's natural heritage by incorporating natural resource conservation considerations into transportation planning (Caltrans and CDFG 2010).

The Statewide Advanced Mitigation Initiative (SAMI) is a Caltrans and CDFW joint initiative involving key stakeholders that includes several state and federal regulatory resource agencies. This initiative focuses on long-term transportation planning to identify impacts on wildlife and other natural resources and opportunities for advanced mitigation in lieu of project-by-project mitigation. Specifically, this project includes development of a statewide habitat connectivity map, assessments of biological values of connectivity areas, and strategy analysis plans (Caltrans and CDFG 2010). By continuing this collaboration, Caltrans, CDFW, and other partners can continue to work together to protect and conserve the state's natural and wildlife resources. This can be accomplished by identifying steps and opportunities to integrate wildlife priorities into transportation development at all stages, including system planning, environmental review, construction, and operations.

2.4 Transportation Development and Associated Facilities

Transportation sector development includes surface transport on roadways and dedicated railroad tracks and any associated facilities such as culverts and drainage systems, at-grade crossings, bridges, weigh stations, lighting and signage, and maintenance stations. This includes but is not limited to highways, secondary roads, bridges and causeways, and fencing associated with roads and railroads.

Secondary roads through federally managed lands that are not part of the Federal Land Management Agency (FLMA) public transportation access system may be developed and managed via a separate Resource Management Plan. For example, the U.S. Forest Service (USFS) follows a travel management process to provide a sustainable system of public motor vehicle use on national forestlands. This process identifies roads, trails, and areas where motor vehicle use is allowed along with standards for maintenance and also identifies unauthorized roads, trails, and areas where continued motorized use is not allowed. Forest Land Management Plans provide desired conditions and project-level guidance for managing and protecting aquatic and riparian resources including wildlife, fish, and plant resources that apply to roads and trails.

Text Box 4: Examples of Collaborative Conservation Efforts

There are numerous collaborative conservation management efforts found in California. Below we share two such examples related to transportation planning. The partners addressed in each description are indicated in **bold**.

- *Regional Habitat Connectivity Mapping:* A regional landscape connectivity analysis is presently underway between **Caltrans, the University of California, Davis** and a large, diverse stakeholder group on the California Central Coast. The work titled 'Regional Wildlife Corridor and Habitat Connectivity Plan' was conducted for Caltrans' Central Coast District (D5), which spans from Santa Barbara County to Santa Cruz County. Several key stakeholders participated in this regional habitat connectivity mapping effort, including various city and county planning entities as well as MPOs, RTPAs, non-governmental organizations (NGOs), land trusts, Resource Conservation Districts (RCDs), regulatory permitting agencies, natural resource agencies, and land managers. Multiple planning efforts that operate at various scales in the region serve as a foundation for this project. Examples include: Land Trust of Santa Cruz County's Conservation Blueprint, the Bay Area Critical Linkages (BACL) (Penrod et al. 2013), The Nature Conservancy's (TNC) ecoregional priorities, and the Audubon Society's Important Bird Areas (IBA) (The Audubon Society 2015). Since the effort began, subsequent networking and partnerships for data collection and sharing have been created and continue to develop. This project captures the essence of incorporating local and regional land use planning with conservation planning to consider cross-jurisdiction conservation and mitigation needs.
- *Mitigating the Impacts of Transportation Projects:* In 2010, **CDFW, Caltrans,** the **U.S. Army Corps of Engineers (USACE),** the **U.S. Environmental Protection Agency (USEPA),** the **USFWS**, and **NOAA Fisheries** signed a Memorandum of Understanding (MOU) to coordinate the review and implementation of mitigation projects developed under the SAMI. SAMI projects aim to mitigate the impacts of transportation projects occurring at the landscape scale. Under SAMI, mitigation actions can include mitigation banks, conservation banks, and other mitigation and conservation measures. By ensuring a coordinated and collaborative approach to aid the review of mitigation projects, SAMI helps offset impacts associated with **Caltrans'** transportation projects and facilitates the rapid implementation of mitigation and conservation actions (Caltrans 2010).

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 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, and 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 key ecological attributes, or to reduce the negative impacts from the stresses and pressures (CDFW 2015).

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 2 below lists the 29 standard pressures addressed under SWAP 2015.

Table 2: 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[1]	• 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, Ch. 1.5.4)

4.1 Strategy Categories across Sectors

SWAP 2015 outlines 11 categories of conservation strategies (Table 3) 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 regional strategies, grouped in various categories, are meant to work synergistically to achieve the statewide goals and priorities.

Table 3: 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, Ch. 4.2)

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 transportation planning sector are described in Section 5.2 below.

5. Transportation Planning Priority Pressures and Strategy Categories

Transportation systems such as roads and railways are a pressure to wildlife resources statewide. Through state, regional, county, and local transportation planning efforts, stresses such as habitat fragmentation, changes in ecosystem processes, and changes in runoff and river flow could be reduced through the identification and implementation of conservation actions. Transportation systems include other modes of travel such as freight, rail, regional transit, bike and pedestrian and other forms of active transportation, ports and shipping, and planning for airport access. Multimodal integration is often considered when planning for these transportation systems.

Although key challenges exist, focusing conservation actions on these seemingly negative pressures create opportunities to improve ecological health for many regions of the state by working together to address such things as data collection and analysis, identification of priority corridors and wildlife design structures, environmental stewardship with early coordination practices, and more informed and coordinated integrated regional planning with the applicable local partners.

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

Roads and Railroads - As outlined in SWAP, the following were identified as the primary stressors related to transportation improvement projects including roads and railroads and other associated

facilities (e.g. bridges, culverts, at-grade crossings, signage, maintenance yards and stations among others) that may influence various SWAP conservation targets and KEAs (CDFW 2015):

- Habitat fragmentation;
- Changes in sediment and erosion deposition regime;
- Changes in soil characteristics from pollutants;
- Ecosystem changes such as spatial distribution of habitat types, community structure or composition, successional processes and ecosystem development, and habitat fragmentation;
- Changes in hydrology and water characteristics due to changes in pollutants, groundwater tables, runoff and flow, water levels, and hydroperiod; and
- Changes in disturbance regime due to changes in fire regimes.

5.2 Priority Strategy Categories

The top four strategy categories selected for this sector are the following (in alphabetical order): data collection and analysis, direct management, partner engagement,[2] and management planning. These categories are described below.

Data Collection and Analysis – Data collection and analysis is the utilization of robust data and thorough analysis to facilitate more effective implementation of conservation strategies under other categories. Example strategies include: providing assistance with regulatory permit compliance tracking via data collection; making data readily available, accessible, and packaged in compatible formats for use in local analysis and consideration in state and regional transportation planning processes; and gathering baseline data and research through long-term monitoring.

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 of habitats. Example strategies include: identifying high priority corridors and wildlife design structures; practicing environmental stewardship with early coordination; and incorporating interregional ecological strategies, such as wildlife movement and delivery of ecosystem services into planning efforts.

Partner Engagement – Partner engagement is the process for engaging and developing collaboration among state and federal agencies, local and regional governments, 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: coordinating with state and federal regulatory agencies early in the planning and project design phases; participating in integrated planning efforts including NCCPs and HCPs; advancing mitigation planning efforts like SAMI and RAMP; and providing local land use plans.

[2] Initially discussed in transportation planning development team meetings as "Land Acquisition, Easement, and Lease," the development team revised the strategy to "Partner Engagement" during companion plan review process.

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 and implementing transportation-specific BMPs and green infrastructure solutions, and advancing mitigation strategies that help enhance or support ecosystem conditions, functions, and processes.

Text Box 5: Additional Pressures and Strategies for Future Consideration

Pressures

- Bird strikes at airports
- Light rail/interregional rail
- Secondary roads on publically managed lands (e.g., logging roads)

Strategies

- Practice environmental stewardship through early coordination during transportation planning and through project development (e.g., Caltrans CTP 2040).
- Incorporate transportation needs into natural community transportation plans (e.g., NCCPs and SWAP 2015).
- Improve BMPs and incorporate them into transportation projects to reduce the stresses of water run-off and pollutants.
- Identify opportunities for coordinating with or participating in NCCPs, HCPs, and other conservation planning efforts.
- Design structures that reduce stressors (e.g., erosion and sedimentation) impacting water bodies.
- Identify high priority wildlife corridors, design wildlife crossing/passage structures, and incorporate their implementation into transportation projects.

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. Conservation activities considered most relevant to each prioritized strategy category (as described in Section 5.2) are summarized in Table 4. Potential partners and financial resources for implementing these conservation activities are listed in the Appendix D and E. Together, Table 4 and Appendix D and E summarize the key findings for this sector.

Alignment Opportunities and Potential Resources

Table 4 highlights conservation activities identified by development team members that are, will, or might be implemented in the next 5–10 years for each priority strategy category described in Section 5.2. These conservation activities are listed along with potential partners and financial resources. While the identified example conservation activities could apply across many spatial scales and jurisdictions,

the Table highlights the most relevant scale of implementation agreed upon by the team.[3] The information in Table 4 is not comprehensive, nor does it indicate a willingness and/or commitment on behalf of these organizations or entities to partner, fund, or provide support for the strategy implementation.

As described previously, transportation development was identified as having the following stressors linked to various conservation targets and KEAs:

- Habitat fragmentation;
- Changes in sediment, erosion deposition regime;
- Changes in soil characteristics from pollutants;
- Ecosystem changes such as spatial distribution of habitat types; community structure or composition; successional processes and ecosystem development; and habitat fragmentation;
- Changes in hydrology and water characteristics due to changes in pollutants, groundwater tables, runoff and flow, water levels and hydroperiod; and
- Changes in disturbance regime due to changes in fire regimes.

It is important to note that the stressors above are also linked to other pressures, not only roads and railroads. As previously discussed in Section 5.2, the categories of priority conservation strategies identified for the transportation planning sector are:

- Data Collection and Analysis, the utilization of robust data and thorough analysis to facilitate or inform more efficient implementation of conservation strategies under other categories;
- Direct Management, the participation in and implementation of activities that support stewardship and habitats and natural processes to maintain, enhance, and restore species population and ecological functions/conditions;
- Partner Engagement, the process for engaging and developing collaboration among state and federal agencies, Tribes and tribal communities, NGOs, private landowners, and other partners to achieve shared conservation objectives and enhance coordination across jurisdictions and areas of interest; and
- Management Planning, the development of management plans or processes for species, habitats, and natural processes and conditions that will lead to the implementation of more effective conservation strategies.

The conservation activities outlined in the table below identify key activities that, if implemented during various transportation development processes (e.g., planning, project delivery/ environmental review/design, construction, operation and maintenance of transportation facilities), could reduce the pressures related to transportation development and ultimately have a positive effect on SWAP 2015 conservation targets and KEAs.

[3] **Statewide** indicates actions occurring across the state. **Regional** indicates efforts that occur at a smaller than statewide scale and across more than one locality or site. **Local/Site-specific** indicates activities occurring at a specific location (e.g., city or park unit) or site (e.g., Morro Bay Estuary or Mojave Desert).

Table 4: Collaboration Opportunities by Strategy Category

Data Collection and Analysis

Potential Conservation Activities

During Transportation Planning:

- Compile existing data and plans into refined maps that identify areas of conservation and restoration action in order to inform design concepts
- Overlay transportation development plans and asset management needs
- Collaborate on the identification of essential fish and wildlife corridors and incorporate into long range plans to inform design concepts to guide mitigation strategies and options
- Explore innovative green infrastructure concepts and options to address pressures
- Share data and collaborate on landscape level priorities
- Include climate data to inform planning decisions

During Environmental Review of Projects and Plans:

- Conduct and document through technical studies impacts to natural resources, including identified wildlife movement corridors and fish passage, and determine need for mitigation
- Integrate study results and data, and analyze spatial distribution to develop mitigation strategies that address stressors
- Share data and coordinate with agency partners

During Project Construction:

- Provide monitoring reports associated with tracking mitigation success criteria
- Submit California Natural Diversity Database (CNDDB) records to CDFW when listed species are found during construction

***During Project Operation and Maintenance (O&M)*:**

- Collect data to allow for performance measure tracking to improve asset management
- Integrate O&M environmental monitoring data collection and results into planning to inform transportation decisions

Direct Management

Example Conservation Activities

During Transportation Planning:

- Engage and provide input to land use plans
- Establish and develop co-management partnerships, and use partnerships with land managers to manage conserved lands
- Where transportation facilities are adjacent to conserved lands, establish joint partnerships with land managers to manage invasive species on conserved lands
- Establish partnerships to develop and implement advance mitigation planning
- Focus on environmental stewardship through early coordination with State and Federal regulatory agencies
- Provide education to partners and community on impacts from operations and maintenance activities within railroad right-of-ways
- Include climate data to inform planning decisions

During Environmental Review of Projects and Plans:[4]

- State/show how HCPs or similar plans identify some mitigation actions that could be incorporated into projects consistent with those prescribed in other HCPs or similar documents
- Assess project-level impacts and obtain permits
- Consider species and stormwater BMPs and other requirements from various regulatory permits during project-level California Environmental Quality Act (CEQA)/NEPA reviews and promote consistency (e.g. National Pollutant Discharge Elimination System [NPDES] permit)

During Project Construction

- Identify environmentally sensitive areas to be avoided during construction and grading activities
- Incorporate specific permit requirements including species and habitat mitigation measures
- Implement stormwater management contract requirements during construction

During Operations and Maintenance:

- Manage invasive species
- Conduct long-term monitoring and collect data on efficacy of installed fish and wildlife passage structures
- Comply with long-term NPDES permit conditions, total maximum daily load (TMDL), and water discharge requirements

Priority Strategy: Partner Engagement

Example Conservation Activities

During Transportation Planning:

- Engage and provide input to transportation and land use plans
- Establish and develop co-management partnerships, use partnerships with land managers to manage conserved lands
- Where transportation facilities are adjacent to conserved lands, establish joint partnerships with land managers to manage invasive species on conserved lands.
- Establish partnerships to develop and implement advance mitigation planning
- Focus on environmental stewardship through early coordination with State and Federal regulatory agencies
- Help put prime agriculture land lying fallow into production (land that would otherwise be low-hanging fruit for development)
- Provide education to partners and community on impacts from operations and maintenance activities within railroad right-of-ways
- Provide incentives for transportation agencies that are consistent with statewide transportation goals and policies in regional planning
- Support compact infill and redevelopment in existing underutilized urban areas so communities have no need to sprawl into greenfield or agriculture lands
- Include climate data to inform planning decisions

During Environmental Review of Projects and Plans:

- Communicate and coordinate mitigation needs including mitigation costs with project development team
- Coordinate with natural resource agencies on avoidance, minimization, and mitigation strategies

[4] Note: regional transportation agencies often cannot or will not comment on non-transportation related impacts of a project environmental impact report (EIR). Staff may not have expertise in non-transportation-related areas and such comments may be politically sensitive (e.g., it may impact short term economic opportunity for a community).

During Project Construction and Operations and Maintenance:

- Conduct environmental awareness training for operations and maintenance staff and management
- Conduct environmental awareness training for design teams, construction management firms, and construction contractors for projects

Management Planning

Example Conservation Activities

During Transportation Planning:

- Develop a voluntary, but consistent scorecard or application of performance measures to see how well draft and final plans compare to other regions and to identify best practices for possible incorporation into future plans
- Consider climate change best-available science and analysis into management plans for species and habitats
- Participate and coordinate with integrated regional planning efforts (NCCPs/HCPs)
- Support development of statewide maps, data sets, and online resources depicting important natural resource areas with planned and programmed transportation facilities to allow for early integration as a planning tool
- Promote consistency of project features with regional conservation needs
- Compile existing data and plans into refined maps that identify areas of conservation and restoration action in order to inform design concepts;
- Identify areas fragmented by roads or railroads that are essential fish and wildlife corridors and inform design concepts to guide mitigation strategies and options
- Consider innovative green infrastructure concepts and options to address pressures
- Share data and collaborate on landscape level priorities

During Environmental Review of Projects and Plans:

- Assess project-level impacts and obtain permits
- Consider species and stormwater BMPs and other requirements from various regulatory permits during project-level CEQA/NEPA reviews and promote consistency (e.g., NPDES permit)

During Project Construction and Operations and Maintenance:

- Fulfill permit requirements and submit mitigation monitoring plan reporting
- Integrate O&M environmental monitoring data collection and results into planning to inform transportation decisions

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.

Data Collection and Analysis

- Effectiveness indicators and protocol identified and designed to collect data on and monitor effectiveness of integration of SWAP 2015 and companion plan goals into relevant documents (e.g., transportation plans, General Plans, management plans) and to evaluate the number of transportation partners participating in integrated regional planning efforts (e.g., NCCPs/HCPs, RAMP).
- Specific tools and programs are identified that help local and regional agencies contribute meaningfully to the health of natural and wildlife systems.
- A standardized list of natural resource data developed as an option for resource agencies to incorporate into long-range transportation, system planning documents, and Regional Transportation Plan updates.

Direct Management

- Compliance required with NPDES permitting requirements to reduce pollutants in stormwater discharges to the maximum extent practicable during project planning, construction, maintenance, and operation activities, including TMDLs to reduce pollutant input to impaired water bodies.
- SWAP 2015 and companion plans applied as tools to guide transportation development activities and processes that could support conservation planning efforts and strategies.

Partner Engagement

- Integrated regional planning efforts (e.g., efforts focused on RAMP and SWAP 2015 goals) and tools developed and implemented to inform transportation planning decisions and relevant information provided to planners/partners over the next 5-10 years.
- RAMP resource assessment methodologies tested and shared to inform programmatic mitigation plans or advance mitigation investments and help meet regional conservation goals and strategies.

Management Planning

- New management planning partnership mechanisms identified and implemented.
- Issues and questions related to funding of conservation projects identified and addressed.
- State and federal processes for managed lands and roads aligned and assessment framework for management tools focused on roads and railroads refined and available to all partners.
- *See 1st bullet under Partner Engagement.*

9. Next Steps

The key next steps identified to ensure successful implementation of the companion plan over the next five years are: partnership and collaboration, communication and outreach, and monitoring and evaluation. Suggested activities relevant to these steps are found below. Additional next steps to consider as a secondary priority are also listed below.

Partnership and Collaboration

- In coordination with CDFW, identify minimum data set criteria for integrated planning mapping tools, and refine impact assessment methodologies for transportation partners to utilize integrated regional planning efforts (e.g., RAMP).
- Continue partner collaboration and communication regarding SWAP 2015 and companion plans, update plans every few years, and promote ongoing collaboration and goal/strategy alignment (e.g., between Caltrans and CDFW) to develop tools to help implement SWAP 2015 and companion plans.
- Use existing tools, plans, and reports (e.g., the California Essential Habitat Connectivity Project report, RTPs and their updates, and CTP 2040) to align and implement the responsibilities of partners outlined in Chapters 6 and 7 of SWAP 2015, and strengthen implementation of and support for projects that help avoid environmental impacts.
- Support and increase coordination with existing organizations that can help implement integrated regional planning efforts (e.g., the SGC) to increase coordination on integrated regional planning at the executive level.

Communication and Outreach

- Identify opportunities to increase awareness of and educate managers/planners about SWAP 2015 and companion plans and highlight relevant sector-specific information.

- Ensure that recommendations of SWAP 2015 and companion plans can be scaled up and generalized, as well as scaled down and translated to the local level for guiding local conservation actions.

Monitoring and Evaluation

- Link monitoring and evaluation protocol for companion plans to SWAP 2015 Chapter 8. In addition, link Chapter 8 monitoring conservation strategies with performance indicators and protocol to collect data to assess implementation.
- Develop a standard set of environmental resource data and information to include in long-range transportation plan updates.

Additional Next Steps

Promote alignment of this companion plan with the *2015 California's Five-Year Infrastructure Plan* and its principles on agency partnership and shared needs and goals (State of California, 2015).

10. Acknowledgements

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Appendices

Appendix A: References

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Appendix C: Transportation Planning Companion Plan Development Team

Affiliation	Participant
BNSF Railway	Don Maddy
California Department of Fish and Wildlife - Habitat Conservation Planning Branch	Brenda Johnson Jennifer Garrison Monica Parisi
California Department of Transportation	Amy Bailey Amy Golden Marilee Mortenson
Glenn County Planning and Public Works Agency	Mardy Thomas
ICLEI - Local Governments for Sustainability	Saharnaz Mirzazad
San Diego Association of Governments	Keith Greer
Science and Collaboration for Connected Wildlands	Kristeen Penrod
Shasta Regional Transportation Agency	Dan Wayne
Southern California Association of Governments	Huasha Liu Kristen Pawling
Union Pacific - Northern California, Western Region	Lisa Lawson Stark Scott Moore

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 opportunity added by CDFW after the team discussions; therefore it was not addressed by the sector team.

Potential Partners	Alignment Strategy			
	Data Collection and Analysis	Direct Management	Partner Engagement	Management Planning
CA Air Resources Control Board	✓		✓	
CA Department of Fish and Wildlife (CDFW) • **CA Essential Habitat Connectivity Project** • **Biogeographic Data Branch**	✓	✓	✓	✓
CA Department of Forestry and Fire Protection (CAL FIRE)		✓	✓	✓
CA Department of Transportation (Caltrans) • **Planning staff** • **Maintenance Crew** • **Traffic Operations (during O&M)**	✓	✓	✓	✓
CA Division of Technology	✓		✓	✓
CA Invasive Plant Council (IPC)	✓	✓	✓	
City and County Governments	✓	✓	✓	✓
Construction Contractors/Managers		✓	✓	✓
County Transportation Commissions (CTC)	✓	✓	✓	✓
Delta Stewardship Council	✓	✓	✓	✓
Federal Highway Administration (FHWA)	✓		✓	✓
GreenInfo Network	✓	✓	✓	✓
In-Lieu Fee (ILF) Program Implementers	✓		✓	
Land Management Agencies (Federal) • **U.S. Forest Service (USFS)** • **U.S. Bureau of Land Management (BLM)** • **National Park Service (NPS)**	✓	✓	✓	✓
Land Managers (State) • **CA Department of Parks and Recreation (State Parks)**	✓	✓	✓	✓
Landowners	✓	✓	✓	✓
Land Trusts	✓	✓	✓	✓
Metropolitan Planning Organizations (MPOs)	✓	✓	✓	✓
Mitigation and Conservation bankers	✓	✓	✓	✓
Natural Resource and Regulatory Agencies	✓		✓	✓

Potential Partners	Alignment Strategy			
	Data Collection and Analysis	Direct Management	Partner Engagement	Management Planning
National Park Service	✓	✓	✓	✓
NGOs and Citizen Science Groups	✓	✓	✓	✓
Private Transportation Entities	✓	✓	✓	✓
Regional Transportation Planning Authorities	✓	✓	✓	✓
Resource Conservation Districts (RCD)	✓	✓	✓	✓
State and Federal Regulatory Agencies	✓	✓	✓	✓
State Conservancies • San Gabriel Mountains Regional Conservancy • Sierra Nevada Conservancy • Coastal Conservancy • Tahoe Conservancy • San Francisco Bay Area Conservancy • Delta Conservancy • Farmland Conservancy • Baldwin Hills Conservancy • San Joaquin River Conservancy • Sacramento-San Joaquin Delta Conservancy • Santa Monica Mountains Conservancy • San Diego River Conservancy • Santa Ana River Conservancy	✓	✓	✓	✓
Railroads • Burlington North and Santa Fe (BNSF) • Union Pacific (UP)	✓	✓	✓	✓
Strategic Growth Council (SGC)	✓		✓	✓
Universities and University Transportation Centers (UTC) • Mineta National Transit Research Consortium • UC Transportation Center • UC Center of Economic Competiveness in Transportation • Metrans Transportation Center • National Center for Sustainable Transportation	✓		✓	✓
U.S. Bureau of Land Management		✓	✓	✓
U.S. Forest Service	✓	✓	✓	✓

Appendix E: Potential Financial Resources

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)*	Alignment Strategy			
	Data Collection and Analysis	Direct Management	Partner Engagement	Management Planning
CA Department of Transportation (Caltrans) • **Planning grants** • **Environmental Enhancement and Mitigation (EEM) funds** • **Operations and Pavement Protection Annual Allocation**	✓	✓	✓	✓
CAL FIRE – urban forestry programs		✓		
City and County Governments				
Climate Solutions University		✓	✓	✓
Federal Highway Administration (FHWA) • **MAP-21 Surface Transportation Program**	✓	✓		
Federal Transportation Administration	✓	✓	✓	
General Fund	✓		✓	✓
GHG Reduction Fund (through CA Air Resources Board's Cap-and-Trade program)	✓	✓		
Local sales tax measures				✓
Metropolitan Planning Organizations (MPOs)	✓	✓	✓	✓
National Research programs (e.g. Transportation Research Board, National Cooperative Highway Research Program [NCHRP], Strategic Highway Research Program 2 [SHRP2])	✓	✓		✓
NGOs and Citizen Science Groups				
Private Transportation Entities				
Proposition 84 planning grants for regional planning			✓	
Regional Transportation Planning Authorities	✓	✓	✓	✓
Regional Park Districts				✓
Resource Conservation Districts (RCD)				
State and federal funds for regional projects (e.g., gas tax, discretionary funds)	✓	✓		
State Highway Account	✓	✓	✓	
State Planning and Research grants		✓	✓	
Strategic Growth Council (SGC) • **High Speed Rail Authority**	✓	✓	✓	

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)*	Alignment Strategy			
	Data Collection and Analysis	Direct Management	Partner Engagement	Management Planning
The Nature Conservancy – Green Growth Initiative	✓			
U.S. Department of Transportation • **Congestion Mitigation and Air Quality Improvement Program (CMAQ)**	✓		✓	
Universities and University Transportation Centers (UTC)	✓			

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**
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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.

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

driver: a synonym for factor.

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.

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.

evaluation: an assessment of a project or program in relation to its own previously stated goals and objectives.

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.

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.

preservation: generally, the nonuse of natural resources. Compare with conservation.

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.

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.

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).

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