



# AGRICULTURE COMPANION PLAN

December 2016



*Photo Credit:*

*Left:*

*Fields near Greenfield, California*

*Date: 18 April 2008*

*Photographer: BrendelSignature via English Wikipedia*

*Right:*

*Almond Tree Agriculture California*

*Date: 14 July 2004*

*Photographer: Davispigeon0 via Pixabay*

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**

**Acronyms and Abbreviations ..... iii**

**1. Introduction ..... 1**

**1.1 SWAP 2015 Statewide Goals .....2**

**1.2 SWAP 2015 Companion Plans .....2**

**Need for Partnerships.....2**

**Companion Plan Purpose and Sector Selection .....2**

**Companion Plan Development.....3**

**Companion Plan Content .....4**

**2. Agriculture Sector ..... 4**

**2.1 Agriculture in California.....4**

**2.2 Current Agriculture Management and Conservation in California .....5**

**3. Common Themes across Sectors ..... 7**

**3.1 Climate Change-related Issues .....8**

**3.2 Integrated Regional Planning.....8**

**4. Commonly Prioritized Pressures and Strategy Categories across Sectors..... 9**

**Pressures across Sectors .....10**

**4.1 Strategy Categories across Sectors .....11**

**5. Agriculture Priority Pressures and Strategy Categories ..... 11**

**5.1 Priority Pressures .....11**

**5.2 Priority Strategy Categories .....12**

**6. Collaboration Opportunities for Joint Priorities ..... 13**

**Alignment Opportunities and Potential Resources.....14**

**7. Evaluating Implementation Efforts..... 17**

**8. Desired Outcomes ..... 18**

**9. Next Steps ..... 19**

**10. Acknowledgments ..... 20**

**Appendices ..... 21**

**Appendix A: References.....21**

**Appendix B: Plans, Strategies, and Documents Identified by the Development Team .....24**



**Appendix C: Agriculture Companion Plan Development Team Members and Affiliations.....27**

**Appendix D: Potential Partners for Collaboration .....28**

**Appendix E: Potential Financial Resources: .....31**

**Appendix F: Companion Plan Management Team .....33**

**Appendix G: Glossary .....34**

**Text Boxes**

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

**Text Box 2: Definitions Important to SWAP 2015 .....1**

**Text Box 3: Companion Plan Sectors .....2**

**Text Box 4: Examples of Collaborative Conservation Efforts .....6**

**Text Box 5: Additional Pressures and Strategies for Future Consideration.....14**

**Figures**

**Figure 1: Aligning SWAP 2015 and Partner Priorities .....3**

**Tables**

**Table 1: SWAP 2015 Pressures.....10**

**Table 2: SWAP 2015 Conservation Strategy Categories.....11**

**Table 3: Collaboration Opportunities by Strategy Category .....13**



## Acronyms and Abbreviations

<b>AB</b>	<b>Assembly Bill</b>
<b>ACEP</b>	<b>Agricultural Conservation Easement Program</b>
<b>AWMP</b>	<b>Agricultural Water Management Plan</b>
<b>AFWA</b>	<b>Association of Fish and Wildlife Agencies</b>
<b>APHIS</b>	<b>Animal and Plant Health Inspection Service</b>
<b>BMP</b>	<b>Best Management Practice</b>
<b>BLM</b>	<b>U.S. Bureau of Land Management</b>
<b>Blue Earth</b>	<b>Blue Earth Consultants, LLC</b>
<b>CBC</b>	<b>California Biodiversity Council</b>
<b>CDFA</b>	<b>California Department of Food and Agriculture</b>
<b>CDFW</b>	<b>California Department of Fish and Wildlife</b>
<b>CDWR</b>	<b>California Department of Water Resources</b>
<b>CFAITC</b>	<b>California Foundation for Agriculture in the Classroom</b>
<b>Ch.</b>	<b>Chapter</b>
<b>CIG</b>	<b>Conservation Innovation Grants</b>
<b>CNRA</b>	<b>California Natural Resources Agency</b>
<b>CPUC</b>	<b>California Public Utilities Commission</b>
<b>CSP</b>	<b>Conservation Stewardship Program</b>
<b>DRECP</b>	<b>Desert Renewable Energy Conservation Plan</b>
<b>DOD</b>	<b>U.S. Department of Defense</b>
<b>EQIP</b>	<b>Environmental Quality Incentives Program (EQIP)</b>
<b>HCP</b>	<b>Habitat Conservation Plan</b>
<b>KEA</b>	<b>Key Ecological Attribute</b>
<b>LCC</b>	<b>Landscape Conservation Cooperative</b>
<b>NCCP</b>	<b>Natural Community Conservation Planning</b>
<b>NERR</b>	<b>National Estuarine Research Reserve</b>
<b>NGO</b>	<b>Non-Governmental Organization</b>
<b>NOAA</b>	<b>National Oceanic and Atmospheric Administration</b>
<b>NRCS</b>	<b>Natural Resources Conservation Service</b>
<b>NWRC</b>	<b>National Wildlife Research Center</b>
<b>RAMP</b>	<b>Regional Advance Mitigation Planning</b>
<b>RCD</b>	<b>Resource Conservation District</b>
<b>RCPP</b>	<b>Regional Conservation Partnership Program</b>
<b>RUCS</b>	<b>Rural-Urban Connections Strategy</b>
<b>SCAPOSD</b>	<b>Sonoma County Agricultural and Open Space Preservation District</b>
<b>SGC</b>	<b>Strategic Growth Council</b>
<b>SGCN</b>	<b>Species of Greatest Conservation Need</b>
<b>SWAP</b>	<b>State Wildlife Action Plan</b>
<b>SWG</b>	<b>State and Tribal Wildlife Grants</b>



<b>SWRCB</b>	<b>State Water Resources Control Board</b>
<b>TNC</b>	<b>The Nature Conservancy</b>
<b>UCCE</b>	<b>University of California Cooperative Extension</b>
<b>USDA</b>	<b>U.S. Department of Agriculture</b>
<b>USFS</b>	<b>U.S. Forest Service</b>
<b>USFWS</b>	<b>U.S. Fish and Wildlife Service</b>
<b>WCB</b>	<b>Wildlife Conservation Board</b>
<b>WHEP</b>	<b>Waterbird Habitat Enhancement Program</b>



## 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.

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 2012b).

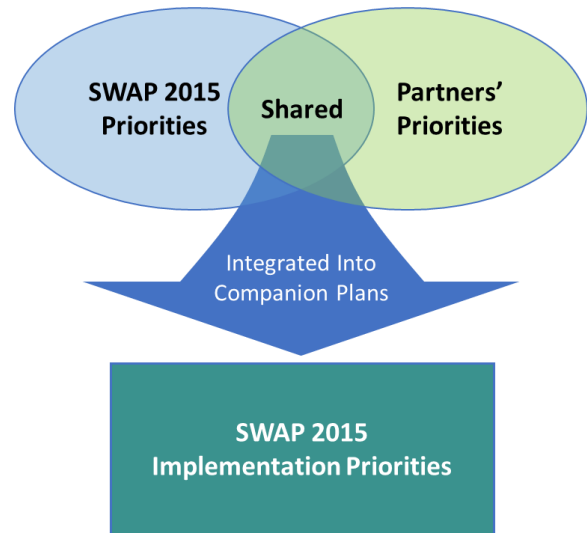
CDFW selected sector categories based on the department’s needs as well as the themes identified in other existing plans, including the 2009 California Climate Adaptation Strategy (California Natural Resources Agency [CNRA] 2009), the 2014 Safeguarding California Plan (CNRA 2014), The President’s Climate Action Plan (Executive Office of the President 2013), 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, consisting 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 from public and private partners with topic expertise and who were heavily involved in natural resource conservation and management (see Appendix C).<sup>1</sup>

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.

Figure 1: Aligning SWAP 2015 and Partner Priorities



<sup>1</sup> 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. Agriculture Sector

### 2.1 *Agriculture in California*

California agriculture includes cultivation/horticulture, silviculture, and animal husbandry. For more than 50 years, California has led the nation in agricultural food production. California produces over 400 agricultural commodities, including fruits, tree nuts, vegetables, milk, horticulture crops, and wine (California Department of Food and Agriculture [CDFA] 2013). The state also leads the nation in the number of organic farms, organic production land, and organic sales. Three-fourths of the state's organic sales are from vegetable, fruit, and nut crops; one-fifth is from livestock; and the remainder comes from field crops, nurseries, and pastures/rangelands (Klonsky and Healy 2013). In addition to the multitude of agricultural and food production resources, California also is the sole national commercial producer of numerous specialty crops: almonds, artichokes, dates, figs, raisins, kiwifruit, olives, clingstone peaches, pistachios, dried plums, pomegranates, sweet rice, ladino clover seed, and walnuts (United States Department of Agriculture [USDA] 2014).

In addition to supporting the residents and communities who depend on the state's agricultural and food production resources, this sector boosts the state's economy through job creation and revenues. California's 77,900 farms and ranches received approximately \$46.4 billion for their crop production in 2013 (CDFA 2013). In the same year, the state's agricultural exports were valued at \$21.24 billion, a 15% increase from 2012 (CDFA 2013). Almonds, dairy, and wine were California's top export crops in 2013 (CDFA 2013). A portion of this revenue stems from California leading the nation in dairy commodities. California has over 1.75 million dairy cows and more than 19 million laying-aged hens, which produce over 5.3 billion eggs annually (USDA 2014). Of the 25.5 million acres of agricultural lands supporting farm operations, more than 60% of the state's farms are less than 50 acres in size. This size class indicates the potential for farm acreage growth in specialty crop operations such as fruits, vegetables, and nursery crops (USDA 2014; California Foundation for Agriculture in the Classroom [CFAITC] 2014).



With this statewide availability of agricultural commodities and resources, many programs and communities encourage people to "eat local." For example, California Farm to Table is an online resource that supplies information on farmers' markets, gardening, restaurants, and cooking with local and California-grown agricultural resources (California Farm to Table 2014). Another example promoting local California agriculture is the "Local Foods Wheel" project. The Local Foods Wheel helps the public identify foods grown in California, as well as which crops are in season throughout the year (The Local Foods Wheel 2015). Furthermore, eating local California-grown food reduces food transport miles and infrastructure usage while increasing awareness of local environmental issues from farmers who derive most or all of their sales from their local communities.

The agricultural sector has a unique similarity to the plant and animal species of concern for management and protection, in that both depend on California's diverse climate, landscape and habitats, but many of these mutually beneficial landscapes are under development pressure for conversion to other land uses. Though several cultivation practices provide ecosystem services for wildlife, including pollinator services, habitat and riparian floodplain protection, lower greenhouse gas levels on farmland compared with urban land, and permeable land and groundwater recharge, some agricultural development efforts can also adversely affect wildlife.

With California's current and future water demands, it is important to consider wildlife impacts when balancing agricultural water uses. For example, in many areas of the state, particularly in the Central Valley, the same water systems that have led to California's agricultural productivity have also created landscape-scale changes in water placement and distribution that have had significant impacts to wildlife (California Department of Water Resources [CDWR] 2010). While the past few decades have seen significant improvements in managing these water resource systems to minimize such impacts, the state still faces risks from declines in species and habitats. Agencies and partner organizations will need to work together to assure this infrastructure functions as best as it can to balance water supply with flood control and recreation, as well as food production and environmental sustainability (CDWR 2014). With the vast agricultural environment and existing and potential future planning and partnering efforts, there are opportunities for organizations in multiple sectors (e.g., wildlife and agricultural sectors) to work together to restore and preserve California's natural and wildlife resources alongside agricultural food production.

## ***2.2 Current Agriculture Management and Conservation in California***

The agriculture sector, with its interactions with natural habitats, has a shared interest with many state partners that focus on the conservation of California's natural and wildlife resources. CDFW, whose mission is to "manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public," often works with partners to host and promote agricultural activities (CDFW 2015). For example, CDFW partnered with CFAITC for the 2015 California Invasive Species Action Week. This effort aimed to combat invasive species and their impacts on the state's natural resources (CDFW 2015).



CDFA’s mission is to “serve the citizens of California by promoting and protecting a safe, healthy food supply, and enhancing local and global agricultural trade, through efficient management, innovation and sound science, with a commitment to environmental stewardship” (CDFA 2015). CDFA engages farmers and ranchers by promoting environmental stewardship through several initiatives, including the Healthy Soils Initiative, the Dairy Digester Research and Development Program, and the State Water Efficiency and Enhancement Program (CDFA 2015b). These are just a few examples of other ecosystem service efforts in the agriculture sector supporting conservation and restoration of California’s natural and wildlife resources.<sup>2</sup>

**Text Box 4: Examples of Collaborative Conservation Efforts**

There are numerous collaborative conservation management efforts found in California. Below we share three such examples from agriculture. The partners addressed in each description are indicated in **bold**.

- *Protecting the Threatened Tricolored Blackbird*: To enhance habitat protection for the threatened tricolored blackbird, the **USDA Natural Resources Conservation Service (NRCS)** partnered with **Audubon California, Western United Dairymen, Dairy Cares, California Farm Bureau Federation, and Sustainable Conservation** to support efforts that will balance the challenges of dairy farmers and the conservation needs of tricolored blackbirds. Due to declines in available habitat, the blackbirds have begun to nest in large colonies of triticale, a crop dairymen grow to feed their cows. Triticale harvest season coincides with blackbird nesting season; thus, harvesting can lead to loss of eggs and nestlings. The \$1.1 million project will use working land programs and wetland easements to protect and increase habitat for this species and educate dairy farmers of actions they can take to protect tricolored blackbird populations in the San Joaquin Valley (USDA 2015b).
- *Designing Solutions for Bird-Friendly Farming*: In 2008, the **NRCS, Audubon California, Point Blue Conservation Science, TNC, California Rice Commission, and rice growers** began collaborating on solutions for simultaneously maintaining rice farms and improving bird habitat. Collaborative research and pilot projects evaluating on-farm management practices led to the establishment of the **NRCS’s Waterbird Habitat Enhancement Program (WHEP)**, which provides funding to enhance habitat on California ricelands. WHEP supports short-term habitat enhancement efforts and offers a low-cost solution for increasing protection. WHEP has resulted in the protection of approximately 100,000 acres of bird habitat. This project exemplifies the ways in which diverse partners can come together to implement meaningful conservation practices while protecting working lands (California Rice 2014).
- *Restoring Habitat in the Yolo Bypass*: The Yolo Bypass Wildlife Area protects approximately 16,700 acres of habitat, including agricultural areas for rice, crops, and ranching that provide wildlife habitat benefits, large-scale flood protection, and income for Wildlife Area operations. Restoration activities, such as removing and/or redesigning agricultural road crossings, help ensure passage for juvenile Chinook salmon. The Management Plan specifically outlines how agricultural lands within the Wildlife Area can be used to improve and expand wildlife habitat and generate income, through practices such as weed control and rice farming. The Yolo Bypass Management Plan was completed in 2008 through collaboration between **CDFW** and the **Yolo Basin Foundation**, as well as extensive public input. Continued collaboration occurs through the Yolo Bypass Working Group, which meets every few months to discuss management and decision-making processes affecting the area. The group includes participants from **state and federal agencies** (e.g., **CDFW, CDWR, USFWS, USDA**), as well as local **landowners and users** (e.g., **farmers and ranchers**) (CDFW 2008).

<sup>2</sup> For more information, see CDFA, “What are Ecosystem Services?” 2012. Web. 27 Oct. 2015. <https://www.cdfa.ca.gov/EnvironmentalStewardship/EcosystemServices.html>.



SWAP 2015 goals include maintaining and increasing native species distribution, abundance, and richness and enhancing ecosystem conditions, functions, and processes (CDFW 2015). In a state like California, where much of the land is privately owned, landscape-scale conservation relies on strong partnerships between private land owners, industry, non-governmental organizations (NGOs), and government agencies. SWAP 2015 supports this approach by highlighting the need to integrate wildlife conservation with working landscapes and environments through partnership efforts such as modifying agricultural land use practices to minimize effects on migration corridors. CDFA and CDFW are partnering on the Voluntary Local Programs, which encourage land owners to voluntarily enhance habitat for listed species such as the California tiger salamander, the tri-color blackbird, Swainson's hawk, and the burrowing owl (CDFW 2012a).

In addition, SWAP 2015 recognizes the economic and ecological values of agricultural lands in the state (CDFW 2015). Agencies are making efforts to preserve areas that mutually serve agricultural and ecosystem benefits. For example, the USDA Animal and Plant Health Inspection Service (APHIS) supports partnerships on natural resource planning and conservation through a number of programs, including the National Wildlife Research Center. One goal in APHIS's Strategic Plan 2015-2019 seeks to "protect forests, urban landscapes, rangelands and other natural resources, as well as private working lands from harmful pests and diseases," with a strong focus on partnership and collaboration (USDA 2015a, p. 8). In addition, California received \$22 million from USDA in 2014 through the Agricultural Conservation Easement Program (ACEP) to protect critical wetland habitats and encourage producers to keep agricultural lands in farming and ranching by working with state partners (CDFA 2014).

NGOs also provide support by helping farmers implement beneficial practices for wildlife. For example, Sustainable Conservation aims to unite farmers to solve the toughest challenges facing land, air, and water and to help California thrive under best management practices (BMPs), such as managing nutrients like organic and synthetic fertilizers more effectively through balanced rates and timing during harvest season (Sustainable Conservation 2015). The Nature Conservancy (TNC) and the California Rice Commission work with rice farmers through the "BirdReturns" program, which provides farmers with incentives for maintaining flooded fields for shorebirds. Over 40 rice farms participated in 2014 and provided nearly 10,000 acres of habitat for shorebirds (TNC 2014). As a final example, CDWR prepared a "Guidebook to Assist Water Suppliers to Prepare a 2015 Agricultural Water Management Plan" that helps agricultural water suppliers understand and more effectively comply with regulations (e.g., the Water Conservation Act, the Agricultural Water Management Planning Act, the Agricultural Water Measurement Regulation, and Executive Order B-29-15) and develop an Agricultural Water Management Plan (AWMP) (CDWR 2015). By continuing to enhance agricultural development, CDFW in partnership with others can work together to protect and conserve the state's current natural and wildlife resources in conjunction with working lands and the agriculture sector.

### **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 sector. 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 2015a).

#### **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 1 below lists the 29 standard pressures addressed under SWAP 2015.

*Table 1: SWAP 2015 Pressures*

<ul style="list-style-type: none"> <li>• Agricultural and forestry effluents</li> <li>• Air-borne pollutants</li> <li>• Annual and perennial non-timber crops</li> <li>• Catastrophic geological events<sup>1</sup></li> <li>• Climate change</li> <li>• Commercial and industrial areas<sup>2</sup></li> <li>• Dams and water management/use</li> <li>• Fire and fire suppression</li> <li>• Fishing and harvesting aquatic resources</li> <li>• Garbage and solid waste</li> <li>• Household sewage and urban waste water<sup>3,4</sup></li> <li>• Housing and urban areas<sup>2</sup></li> <li>• Industrial and military effluents<sup>4,5</sup></li> <li>• Introduced genetic material</li> <li>• Invasive plants/animals</li> </ul>	<ul style="list-style-type: none"> <li>• Livestock, farming, and ranching</li> <li>• Logging and wood harvesting</li> <li>• Marine and freshwater aquaculture</li> <li>• Military activities</li> <li>• Mining and quarrying</li> <li>• Other ecosystem modifications<sup>6</sup></li> <li>• Parasites/pathogens/diseases</li> <li>• Recreational activities</li> <li>• Renewable energy</li> <li>• Roads and railroads</li> <li>• Shipping lanes<sup>7</sup></li> <li>• Tourism and recreation areas</li> <li>• Utility and service lines</li> <li>• Wood and pulp plantations</li> </ul>
<p>Pressures include the following:</p> <p><sup>1</sup> Volcano eruption, earthquake, tsunami, avalanche, landslide, and subsidence</p> <p><sup>2</sup> Shoreline development</p> <p><sup>3</sup> Urban runoff (e.g., landscape watering)</p> <p><sup>4</sup> Point discharges</p> <p><sup>5</sup> Hazardous spills</p> <p><sup>6</sup> Modification of mouth/channels; ocean/estuary water diversion/control; and artificial structures</p> <p><sup>7</sup> Ballast water</p> <p style="text-align: right;">(CDFW 2015)</p>	





## 4.1 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 regional 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 agriculture sector are described in Section 5.2 below.

## 5. Agriculture Priority Pressures and Strategy Categories

As described in SWAP 2015, pressures such as climate change and stresses such as habitat fragmentation can work together to adversely 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

**Invasive plants/animals** – Introduction of invasive species can harm wildlife by disrupting and outcompeting native plant and animal communities for habitats and resources. This includes harmful plants and animals not originally found within the ecosystem(s) in question and directly or indirectly introduced and spread into native habitats by human activities. This includes yellow starthistle, gypsy moth, asian longhorn beetle, light brown apple moth, *Arundo donax* (giant reed), and introduction of species for biocontrol.

**Livestock farming and ranching** – Agricultural practices can have a range of direct and indirect ecosystem impacts, both positive and negative, in horticulture, animal husbandry, and silviculture. The effects of grazing on wildlife vary from beneficial to detrimental, depending upon how grazing is managed, including the seasonality and duration of grazing and the type and number of livestock. These effects also depend on the relative sensitivities of individual wildlife species, because not all species respond the same way to grazing. Well-managed livestock grazing can benefit sensitive plant and animal species, particularly by controlling annual grasses and invasive plants where these have become established, and by removing understory growth to create a fire-resilient landscape. These working lands are an essential part of the solution to conserving the state’s wildlife (SWAP 2015).

## **5.2 Priority Strategy Categories**

The top five strategy categories for this sector are the following (in alphabetical order): data collection and analysis, direct management, economic incentives, land acquisition, easement, and lease, and outreach and education. These categories are described below.

**Data Collection and Analysis** – Data collection and analysis is fundamental to science-driven conservation, that is, the utilization of a wide range of data and analysis to more effectively plan, implement, and adaptively manage conservation actions. Strategies found under this category include designing and implementing monitoring plans and collecting, maintaining, conveying, and presenting data on (for example) species presence or absence, habitat suitability, population viability, in- situ treatments, mapping and measuring growth, range, extent, and distribution.

**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. Example strategies include controlling and managing invasive species, enhancing habitat such as riparian buffers and pollinator habitat, and managing water use (e.g., drain water, off-channel storage) through programs such as the Voluntary Local Program (Fish and Game Code Section 2086).

**Economic Incentives** – Economic incentives are available and deployable resources for private landowners and other stakeholders to implement responsible stewardship and enhancement of landscapes, ecological conditions, and species. Example strategies include developing and providing economic incentives and assurances and seeking funding through grants, cooperating with other agencies seeking opportunities and funding for economic incentives, and streamlining costly permitting processes to encourage compliance and accountability.

**Land Acquisition, Easement, and Lease** – Land acquisition and easements are types of transactions and agreements that help set aside or obtain land or water rights to support conservation of the land, water, or habitat upon which species depend. Example strategies include a focus more on lease and easement as opposed to fee-title acquisition, and include voluntary easements for grasslands and riparian areas, protecting land through water rights acquisitions, and preventing habitat fragmentation and valuing ecosystem services provided through protection of agricultural zoning in critical areas.



**Outreach and Education** – Outreach and education is the involvement of social science to reach out to specific groups, communities, resource users, policymakers, stakeholders, and/or the public with information to improve awareness, knowledge, attitudes, and behaviors regarding natural resource conservation. Example strategies include working with partners to promote water conservation measures to benefit wildlife and developing/implementing an outreach program (e.g., invasive species impacts).

*Table 3: Collaboration Opportunities by Strategy Category*

<p><b><u>Pressures</u></b></p> <ul style="list-style-type: none"> <li>• Crop conversion of agricultural land (e.g., from agriculture to housing, monocultures) and loss of wildlife habitat</li> <li>• Food safety and wildlife conflicts</li> <li>• Habitat fragmentation and urban encroachment</li> <li>• Pesticide use and environmental safety</li> <li>• Sea level rise impacts to coastal and estuarine farms (e.g., losing land and damages to crop soil from salt water intrusion)</li> <li>• Water supply changes as a result of drought</li> </ul> <p><b><u>Strategies</u></b></p> <ul style="list-style-type: none"> <li>• Prevent fragmentation and focus on ecosystem services provided by critical agricultural real estate</li> <li>• Sustain lands with working land values, ecosystem service values, and critical keystone properties</li> <li>• Engage in multi-benefit projects that support sustainable agriculture, flood control, and habitat conservation (e.g., projects that protect and enhance environmental and cultural resources, and support economic growth)</li> <li>• Enhance temporary or annual habitat on productive agricultural land</li> <li>• Share specific actions from SWAP 2015 and companion plan with farmers through existing farmer educational platforms, such as regional University of California Cooperative Extension (UCCE) meetings and RCD and NRCS staff</li> <li>• Develop system to assess risks and inform decision making for protection of low elevation coastal agricultural areas</li> </ul>
---

## 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 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.

### *Text Box 5: Additional Pressures and Strategies for Future Consideration*

Data Collection and Analysis
<b>Potential Conservation Activities</b>
<p><b>Statewide</b></p> <ul style="list-style-type: none"> <li>• Create a monitoring inventory tool so that CDFW may more effectively review required monitoring reports on an annual basis, especially for CDFW permitted conservation banks</li> <li>• Monitor CDFW conservation easements for compliance</li> <li>• Research comparative economic impacts of agriculture versus specific wildlife benefits in California to inform future SWAP updates</li> <li>• Utilize existing data collection efforts to create an integrated data management system</li> </ul> <p><b>Regional</b></p> <ul style="list-style-type: none"> <li>• Look at agricultural trends in context of more wildlife-friendly practices such as planting cover crops</li> <li>• Research food safety and effectiveness of current programs including impact on wildlife (e.g., practice effectiveness of wildlife control/exclusion and outcomes in food safety)</li> <li>• Understand the role of surrounding agricultural lands in supporting wildlife populations on protected lands</li> </ul> <p><b>Local/Site-specific</b></p> <ul style="list-style-type: none"> <li>• Better understand nutrient and irrigation efficiency for priority crops to develop BMPs to enhance wildlife (e.g., saving water for fish)</li> <li>• Collect and collate data about wildlife corridor use (e.g., roadkill, radio tracking, genetics) in and around agricultural areas to ascertain management and other protection measures to ensure or enhance such uses</li> <li>• Conduct long-term research and monitoring of weather and water quality with sustainable metrics</li> <li>• Conduct nutrient analysis on pollution inflows to enhance wildlife (e.g., monitoring water quality for fish)</li> <li>• Continue research into the role of wetlands in the methylation of mercury</li> <li>• Design monitoring tools that could be applied to all North American estuaries (e.g., water quality)</li> <li>• Develop methods to prevent damage to agriculture food production by wildlife, yet minimize impacts to target and non-target wildlife and ecosystems</li> <li>• Evaluate and integrate into BMPs specific conservation objectives through experimentation and then sharing these BMPs through professional development workshops</li> <li>• Examine rice field benefits, including the economic and social benefits to shorebirds and other waterfowl during all seasons, including the critical summer migration period</li> <li>• Focus on adaptive management<sup>3</sup> through spot surveys to enhance wildlife (e.g., soil health, ecosystem services)</li> <li>• Learn more about how treatment wetlands can improve poor water quality found in agricultural drainage</li> <li>• Monitor and work with farmers to research agricultural practices to maximize wildlife benefits</li> <li>• Remove invasive plants through stream maintenance programs</li> </ul>

<sup>3</sup> Adaptive management is process to continually monitor and assess the environment as well as the effect and effectiveness of conservation strategies and to adjust the plan when improvement is needed to achieve the desired outcomes (CDFW 2015c; Ch. 8).

- Research effects of poison bait used for agricultural pest control on wildlife
- Research food safety – risk assessment of pathogen origin from wildlife on leafy greens
- Research salt marsh loss and various abiotic and biotic components (e.g., fish, birds, marine mammals, and invertebrates)
- Study impacts and benefits of livestock on restoring native grasslands
- Work with NRCS or universities to ensure landowner protections and confidentiality when monitoring and where wildlife benefits are included

## Direct Management

### Potential Conservation Activities

#### **Statewide**

- Enhance, support and fund Voluntary Local Program(s) for the protection of wildlife on working lands throughout the State

#### **Regional**

- Develop a flood plain set back strategy for the river systems where encroachment has occurred, to provide wildlife habitat and decreased flood risk for adjacent farmers (i.e. Salinas, Eel, and Sacramento rivers)

#### **Local/Site-specific**

- Catch sediment and tailwater on site
- Conduct controlled burns
- Control invasive species
- Create secondary channels to improve flow and remove overcrowded vegetation from river channels
- Develop buffers and protect/restore floodplain function
- Enhance fish passage habitat
- Foster voluntary conversion of nonproductive farm areas to wildlife habitat
- Implement carbon sequestration practices for improvement in soil organic matter and wildlife benefits
- Implement new and compatible integrated management activities with co-benefits (e.g., food production, ecosystem services, and wildlife)
- Implement rice management techniques to benefit shorebirds and other waterfowl during all seasons, including the critical summer migration period
- Improve habitat with farmers through cooperative agreements
- Increase use of treatment wetlands to clean agricultural drainage water.
- Inform those with CDFW easements about their obligations
- Manage dams and barriers for both agriculture food production and fish and wildlife resources
- Plant vegetation that benefits pollinators
- Restoration of salt marsh near coastal agricultural fields for carbon sequestration
- Utilize effective techniques (e.g., non-lethal tools) to exclude predators from cattle operations
- Utilize vegetative buffer strips to reduce runoff

## Economic Incentives

### Potential Conservation Activities

#### **Statewide**

- Leverage funds with federal funding in the Regional Conservation Partnership Program
- Support programs that provide economic incentives for conservation plans with Farm Bill renewals
- Utilize the NRCS Environmental Quality Incentives Program (EQIP) to fund pastureland and cropland
- Incorporate knowledge of stock pond management for amphibians into NRCS incentive programs



- Support agricultural land conservation planning grants to optimize and inform future local and state investments

**Regional**

- Work with District Attorney offices to increase application of fees collected for Public Resources Code violations to benefit wildlife

**Local/Site-specific**

- Conduct research on value of ecological services (and the economic value) to human activity (agriculture)
- Find new market-based mechanisms, strategies and opportunities on how to best implement multiple benefit practices
- Focus on avoiding, reducing, or sequestering carbon emissions with multi-benefit outcomes in land acquisitions and easements
- Fund research on micro-irrigation and BMPs
- Incentivize farmers to implement practices for wildlife friendly farming
- Invest in improving water efficiency
- Provide economic incentives for on-farm ecosystem services for carbon sequestration
- Sell credits for carbon sequestration
- Use regulatory flexibility for projects to benefit wildlife
- Utilize cap and trade programs, especially to reduce tilling/type conversion of rangelands

**Land Acquisition, Easement, and Lease**

**Potential Conservation Activities**

**Regional**

- Expand agricultural easement programs
- Develop CAPPs and LAE's for buffer lands and channel setbacks

**Local/Site-specific**

- Prioritize easements and leases over acquisition, unless it is a targeted acquisition
- Protect agricultural compatibility and wildlife type functions
- Provide incentives to reduce steep slope farming practices in highly erodible soils

**Outreach and Education**

**Potential Conservation Activities**

**Statewide**

- Inform food buyers, auditors, contractors, and farmers to practice co-management practices related to food safety under the Federal Food Safety Modernization Act (e.g., ensure buyers are setting standards that are aligned with state wildlife and water quality regulations)

**Regional**

- Create programs in all counties to enhance wildlife education and outreach (e.g., AgKnowledge)
- Engage community leaders in leadership programs (e.g., Monterey County AgKnowledge)
- Support outreach to RCDs
- Use social media and television to reach more of California's public about the interactions between agriculture and wildlife benefits and challenges

**Local/Site-specific**

- Create an online newsletter that lists education and outreach opportunities
- Distribute information to growers

- Encourage farmers to engage in agricultural activities and voluntarily enhance and maintain habitat for wildlife (e.g., Voluntary Local Programs)
- Encourage growers to use better advanced technology systems to increase sustainable practices
- Promote water quality report cards and water quality workshops
- Provide input to management plans
- Provide outreach on conservation planning and practice implementation through social media and press releases
- Recognize any positive impact farming and growing (and associated irrigation systems) have had on the natural landscape
- Reward wildlife friendly farming practices with product labeling
- Show proactive efforts on farm adaptive management through outreach methods (e.g., website)
- Undertake outreach efforts on sustainable groundwater management to enhance wildlife resources
- Work with Pesticide Applicators Permit system to improve understanding of wildlife impacts

## 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***

- Demonstrated improvements in areas such as water quality, regional scaling implementation, and food safety, resulting from research into and implementation of BMPs.
- Reduced impacts of rodent control and pesticide treatment on wildlife populations achieved through targeted application of BMPs and new enhancements in pesticide development.
- Greater understanding of pathogen origins (e.g., wildlife or domestic) achieved through risk assessments.
- Monitoring implemented to assess effectiveness of pre- and post-invasive species management implementation.
- Monitoring protocol developed to assess the implementation of activities that address SWAP 2015 goals and status of implementation reported.

### ***Direct Management***

- Wildlife values on agricultural lands enhanced to achieve co-benefits (e.g., efforts implemented that enhance value of working agricultural lands such as the California Citrus State Historic Park, Martial Cottle State Park in Santa Clara Valley, and Colonel Allensworth State Park).

### ***Economic Incentives***

- Economic incentives developed that recognize and integrate wildlife benefits from agriculture practices (e.g., stock pond management to provide water for livestock and habitat for red-legged frog).
- Increased actions by local landowners to conserve and protect wildlife habitat (e.g., through Voluntary Local Program).
- Streamlining permitting processes that result in habitat enhancement or restoration.

### ***Land Acquisition, Easement, and Lease***

- Enhanced identification and implementation of effective conservation metrics in land acquisition, easement, and lease by incorporating climate change considerations in selection of land (e.g., rank land that has low elevation and likely susceptible to impacts of sea level rise lower than lands that will have fewer impacts resulting from climate change).

### ***Outreach and Education***

- Effective and proven BMPs that address agricultural stressors are shared with farming communities through workshops and technical assistance support.
- Agricultural sector informed and engaged in achieving multiple climate and carbon sequestration benefits through conserving agriculture land.





## 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; monitoring, evaluation, and adaptive management.

### ***Partnership and Collaboration***

- Build upon existing CBC and SGC efforts that focus on large-scale planning/integrated regional planning for resource management (e.g., DRECP and high speed rail) and build upon and/or engage in partner activities.
- Bolster collaboration between government and non-governmental/private sector partners to implement conservation activities and achieve conservation goals and outcomes including groups such as the WCB and the Association of RCDs.
- Improve consistency with the application of exemptions and encourage better cooperation with the California Environmental Quality Act process.
- Work with the California Farm Bureau Federation to improve effective communication and collaboration between the agriculture industry, government agencies, and NGOs.

### ***Human and Financial Resources:***

- Work with partners to include SWAP 2015 and companion plan priorities in funding opportunities and as part of project evaluation.

### ***Communications and Outreach:***

- Design improved mechanisms for sharing information with agriculture partners and industry organizations (e.g., coordinate efforts with groups such as the NRCS, UCCE, and RCDs to share information with agriculture partners and industry organizations).
- Work with a communications group to identify target audiences, develop audience-specific messaging, and create a strategy to share information with each audience.
- Work with and educate community leaders about SWAP 2015 and this companion plan to identify opportunities for collaboration, and incorporate companion plan information in meetings or trainings with farmers (e.g., continuing education credit courses for certified crop advisors).
- Seek opportunities to educate agriculture partners on BMPs and success stories of wildlife-friendly practices (e.g., Ag Knowledge, Focus Agriculture).
- Develop a scorecard or dashboard to share progress on activities and the companion plan visually when implementing monitoring and evaluation efforts.
- Provide information verbally rather than via paper documentation.

### ***Monitoring and Evaluation:***

- Develop monitoring and evaluation approaches and protocol to assess successful implementation of companion plan.



### ***Additional Next Steps***

- Have professional groups review the companion plan for additional input, and to help develop implementation plans.

## **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 agriculture 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

- California Department of Fish and Wildlife (CDFW). 2008. Yolo Bypass Wildlife Area Land Management Plan. 2008. Web: 27 July 2015.  
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=84924&inline>.
- CDFW. 2012a. DFW Authorizes Voluntary Local Program in Alameda County. CDFW News. Web: 25 August 2015. <https://cdfgnews.wordpress.com/2012/10/10/dfg-authorizes-voluntary-local-program-in-alameda-county/>.
- . 2012b. Assembly Bill 2402. Fish and Game Code Section 703.5.  
[http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201120120AB2402](http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201120120AB2402).
- CDFW. 2014. Habitat Connectivity Planning for Fish and Wildlife. Web: 27 October 2015.  
[www.wildlife.ca.gov/Conservation/Planning/Connectivity](http://www.wildlife.ca.gov/Conservation/Planning/Connectivity).
- CDFW. 2015a. Explore CDFW. Web: 8 June 2015. <https://www.wildlife.ca.gov/Explore>
- . 2015b. CDFW Announces 2015 California Invasive Species Action Week Youth Art Contest. Web: 8 June 2015. <https://cdfgnews.wordpress.com/2015/04/08/cdfw-announces-2015-california-invasive-species-action-week-youth-art-contest/>.
- . 2015c. California State Wildlife Action Plan (SWAP). <https://www.wildlife.ca.gov/SWAP/Final>
- CDFW. 2016. A Climate Change Vulnerability Assessment of California's Terrestrial Vegetation.  
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=116208&inline>.
- California Department of Food and Agriculture (CDFA). CDFA Statistics. 2013. Web: 17 April 2015.  
<http://www.cdfa.ca.gov/Statistics/>
- CDFA. 2014. California gets \$22 million from USDA for Conservation Programs. Planting Seeds – Food & Farming News from CDFA. Web: 10 June 2015.  
<http://plantingseedsblog.cdfa.ca.gov/wordpress/?p=6848>.
- CDFA. 2015a. Mission Statement. Web: 8 June 2015. <http://www.cdfa.ca.gov/CDFA-Mission.html>.
- . 2015b. Environmental Stewardship. Web: 8 June 2015.  
<http://www.cdfa.ca.gov/environmentalstewardship/>.
- California Department of Water Resources (CDWR). 2010. Agriculture Water Use. Web: 29 July 2015.  
<http://www.water.ca.gov/wateruseefficiency/agricultural/>.
- CDWR. 2014. California Water Plan Update 2013. Web: 22 October 2015.  
[http://www.waterplan.water.ca.gov/cwpu2013/final/index.cfm\\_](http://www.waterplan.water.ca.gov/cwpu2013/final/index.cfm_)



- CDWR. 2015. A Guidebook to Assist Agricultural Water Suppliers to Prepare a 2015 Agricultural Water Management Plan.  
<http://www.water.ca.gov/wateruseefficiency/sb7/docs/2015/Approved%20Final%202015%20AWMP%20Guidebook%20June%202015.pdf>.
- California Farm to Table. 2014. About Us. Web: 8 June 2015. <http://www.california-farmtotable.com/about-us/>.
- California Foundation for Agriculture in the Classroom. 2014. California Grows... Web: 17 April 2015. <http://www.cfaitc.org/cagrows/>.
- California Natural Resources Agency (CNRA). 2009. Climate Adaptation Strategy, [http://resources.ca.gov/climate/safeguarding/Statewide\\_Adaptation\\_Strategy.pdf](http://resources.ca.gov/climate/safeguarding/Statewide_Adaptation_Strategy.pdf).
- CNRA. 2014. Safeguarding California Plan. <http://resources.ca.gov/climate/safeguarding>.
- California Rice. 2014. Waterbird Habitat Enhancement Program: Bird-Friendly Farming in California Rice Fields. [http://calrice.org/pdf/waterbirdhabitatbro\\_web.pdf](http://calrice.org/pdf/waterbirdhabitatbro_web.pdf)
- Conservation Measures Partnership. 2013. The Open Standards for the Practice of Conservation – Version 3.0, April 2013. <http://www.conservationmeasures.org/>.
- Executive Office of the President. 2013. The President’s Climate Action Plan, Web: 27 October 2015. <https://www.whitehouse.gov/sites/default/files/image/president27climateactionplan.pdf>
- Intergovernmental Panel on Climate Change (IPCC) . 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](http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf).
- Klonsky, K. and B.D. Healy. 2013. Statistical Review of California’s Organic Agriculture 2009-2012. University of California Agricultural Issues Center. [https://www.cdfa.ca.gov/is/i\\_&c/pdfs/OrganicStatistics2009-2012.pdf](https://www.cdfa.ca.gov/is/i_&c/pdfs/OrganicStatistics2009-2012.pdf).
- Maslin, M. 2014. Climate Change: A Very Short Introduction. 3rd ed. Oxford University.
- Sustainable Conservation. 2015. Our Mission. 2015. Web: 8 June 2015 <http://www.suscon.org/about/mission.php>.
- The Local Foods Wheel. 2015. About Us. Web: 8 June 2015. <http://www.localfoodswheel.com/locavores/>.
- The Nature Conservancy (TNC), California. 2014. Precision Conservation - The Nature Conservancy, California. Web: 17 April 2015. <http://www.conservca.org/our-stories/all/7-spotlight/132-precision-conservation#.VTFxok1FCpp>.



United States Department of Agriculture (USDA). 2014. 2014 State Agriculture Overview. Web: 17 April 2015.

[http://www.nass.usda.gov/Quick\\_Stats/Ag\\_Overview/stateOverview.php?state=CALIFORNIA](http://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=CALIFORNIA).

USDA. 2015a. Safeguarding the Health and Value of American Agriculture Since 1972 - Strategic Plan 2015-2019. Animal and Plant Health Inspection (APHIS).

[http://www.aphis.usda.gov/about\\_aphis/downloads/APHIS\\_Strategic\\_Plan\\_2015.pdf](http://www.aphis.usda.gov/about_aphis/downloads/APHIS_Strategic_Plan_2015.pdf).

---. 2015b. New Partnership Gets Grant to Support Imperiled Tricolored Blackbird. 2015b. Natural Resource Conservation Service (NRCS). Web: 27 July 2015.

<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ca/home/?cid=STELPRDB1268494>.

USDA. 2013. Wildlife Services – Strategic Plan (2013-2017).

[http://www.aphis.usda.gov/wildlife\\_damage/downloads/WS\\_STRATEGIC\\_PLAN\\_updated.pdf](http://www.aphis.usda.gov/wildlife_damage/downloads/WS_STRATEGIC_PLAN_updated.pdf).

U.S. Fish and Wildlife Service (USFWS). 2012. National Fish, Wildlife, and Plants Adaptation Strategy.

Web: 27 October 2015. <http://www.wildlifeadaptationstrategy.gov/>.



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

- California Council of Land Trusts. 2015. California Council of Land Trusts - Conserving California. California Council of Land Trusts RSS. Web: 24 April 2015. <http://www.calandtrusts.org/>.
- California Department of Conservation. 2013. Publications. Web: 24 April 2015. [http://www.conservation.ca.gov/index/Pages/gh\\_publications.aspx](http://www.conservation.ca.gov/index/Pages/gh_publications.aspx).
- California Department of Conservation and Strategic Growth Council (SCGC). 2015. California Sustainable Agricultural Land Conservation Program Grant Guidelines & Request for Grant Applications. [http://www.conservation.ca.gov/dlrp/SALCP/Documents/Sustainable%20Agricultural%20Lands%20Conservation%20Program%20Guidelines\\_final.pdf](http://www.conservation.ca.gov/dlrp/SALCP/Documents/Sustainable%20Agricultural%20Lands%20Conservation%20Program%20Guidelines_final.pdf).
- California Department of Fish and Game (CDFG). 2004. Recovery Strategy for California Coho Salmon. [https://www.dfg.ca.gov/fish/documents/SAL\\_SH/SAL\\_Coho\\_Recovery/ReportToCommission\\_2004/CohoRecoveryStrategy.pdf](https://www.dfg.ca.gov/fish/documents/SAL_SH/SAL_Coho_Recovery/ReportToCommission_2004/CohoRecoveryStrategy.pdf).
- California Department of Food and Agriculture (CDFA). 2014. Pests Programs. 2015. Web: 24 April [http://www.cdfa.ca.gov/plant/pest\\_programs.html](http://www.cdfa.ca.gov/plant/pest_programs.html).
- CDFA. 2015. California Department of Food and Agriculture. Web: 24 April 2015. <http://www.cdfa.ca.gov/>.
- . 2015. Environmental Stewardship - State Water Efficiency and Enhancement Program. Web: 24 April 2015. <http://www.cdfa.ca.gov/EnvironmentalStewardship/WEEP.html>.
- . 2015. Invasive Pests and Diseases. Web: 24 April 2015. <http://www.cdfa.ca.gov/invasives>.
- California Department of Water Resources (CDWR). 2014. Final California Water Plan Update 2013. <http://www.waterplan.water.ca.gov/cwpu2013/final/>.
- California Environmental Protection Agency (CalEPA). 2015. California Environmental Protection Agency Home Page. Web: 24 April 2015. <http://www.calepa.ca.gov/>.
- California Riparian Habitat Conservation Act. 2015. Fish and Game Code Section 1385-1391. Web: 05 August 2015. <http://www.leginfo.ca.gov/cgi-bin/displaycode?section=fgc&group=01001-02000&file=1385-1391>.
- California State Assembly Select Committee on Sea Level Rise and the California Economy. 2014. Sea Level Rise: A Slow-Moving Emergency. <http://sealevelrise.assembly.ca.gov/sites/sealevelrise.assembly.ca.gov/files/Select%20Committee%20Sea-Level%20Rise%20Report.pdf>.
- Central Valley Joint Venture. 2006. Central Valley Joint Venture Implementation Plan. <http://www.centralvalleyjointventure.org/science>.
- Ford, L. D., P. A. VanHoorn, D. R. Rao, N. J. Scott, P. C. Trenham, and J. W. Bartolome. 2013. Managing Rangelands to Benefit California Red-Legged Frogs & California Tiger Salamanders. East Bay Parks. Alameda County Resource Conservation District. Web: 7 Jul. 2015.



[http://www.ebparks.org/Assets/ Nav\\_Categories/Stewardship\\_Resources/Grazing/ManagingRangelandsCRLF-CTS.pdf](http://www.ebparks.org/Assets/Nav_Categories/Stewardship_Resources/Grazing/ManagingRangelandsCRLF-CTS.pdf).

Pew Charitable Trust. 2015. Produce Safety Project. Web: 24 April 2015.

<http://www.pewtrusts.org/en/archived-projects/produce-safety-project>.

PRNewswire-USNewswire. 2015. 2014 Conservation Easement Applications for Agricultural Lands and Wetlands. Web: 24 April 2015. <http://www.prnewswire.com/news-releases/2015-conservation-easement-applications-for-agricultural-lands-and-wetlands-due-may-15-300060993.html>.

Sonoma County Agricultural Preservation and Open Space District. 2015. Sonoma County Agricultural Preservation and Open Space District. Web: 24 April 2015. <http://www.sonomaopenspace.org/>.

Sun Herald. 2013. USA - Rice Farmers Growing Waterfowl, Too. Fondo Latinoamericano Para Arroz De Riego. Web: 24 April 2015. <http://flar.org/en/usa-rice-farmers-growing-waterfowl-too/>.

Sustainable Conservation. 2015. Sustainable Conservation. Web: 23 April 2015. <http://www.suscon.org/>.

The Nature Conservancy (TNC). 2010. Safe and Sustainable: Co-Managing for Food Safety and Ecological Health in California's Central Coast Region. TNC California and the Georgetown University Produce Safety Project. <http://ucfoodsafety.ucdavis.edu/files/198568.pdf>.

TNC. 2015. California: Migratory Birds. Web: 23 April 2015.

<http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/california/howwework/california-migratory-birds.xml>.

Turner, M. 2013. Rice Farmers Provide Landing Strips for Pacific Flyway. Sacramento Business Journal. Web: 24 April 2015. <http://www.bizjournals.com/sacramento/print-edition/2013/01/25/rice-farmer-landing-strip-pacific-flyway.html>.

United States Fish and Wildlife Service (USFWS). 2015. North American Wetland Conservation Act (NAWCA) - Grant Program. Web: 23 April 2015. <http://www.fws.gov/birdhabitat/Grants/NAWCA/index.shtm>.

United States Department of Agriculture (USDA). 2005. Innovative Solutions to Human–Wildlife Conflicts. USDA National Wildlife Research Center - Staff Publications. [http://www.aphis.usda.gov/publications/wildlife\\_damage/2014/rpt\\_nwrc\\_accomps.pdf](http://www.aphis.usda.gov/publications/wildlife_damage/2014/rpt_nwrc_accomps.pdf).

USDA. 2011. Wildlife Services Research Needs Assessment. USDA. National Wildlife Research Center. [http://www.aphis.usda.gov/wildlife\\_damage/nwrc/publications/rna2011/2011%20RNA%201-%20page%20summary.pdf](http://www.aphis.usda.gov/wildlife_damage/nwrc/publications/rna2011/2011%20RNA%201-%20page%20summary.pdf).

USDA. 2013. Seeking Solutions Through Research. USDA National Wildlife Research Center. [http://www.aphis.usda.gov/wildlife\\_damage/informational\\_notebooks/2012/WS\\_NWRC\\_Research\\_combined.pdf](http://www.aphis.usda.gov/wildlife_damage/informational_notebooks/2012/WS_NWRC_Research_combined.pdf).

USDA. 2014. Wildlife Services Strategic Plan (2013-17). USDA Animal and Plant Health Inspection Service Wildlife Services. [http://www.aphis.usda.gov/wildlife\\_damage/downloads/WS\\_STRATEGIC\\_PLAN\\_updated.pdf](http://www.aphis.usda.gov/wildlife_damage/downloads/WS_STRATEGIC_PLAN_updated.pdf).



- USDA. 2015. Agricultural Conservation Easement Program. Natural Resources Conservation Service. Web: 24 April 2015. <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/acep/#>.
- . 2015. Animal and Plant Health Inspection Service - California - Wildlife Services (WS). Web: 24 April 2015. <http://www.aphis.usda.gov/wps/portal/aphis/ourfocus/wildlifedamage>.
- . 2015. Animal and Plant Health Inspection Service - Invasive Species. Web: 24 April 2015. <http://www.aphis.usda.gov/wps/portal/aphis/ourfocus/wildlifedamage>.
- . 2015. New Partnership Gets Grant to Support Imperiled Tricolored Blackbird. Natural Resources Conservation Service (NRCS). Web: 24 April 2015. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/?navtype=SUBNAVIGATION&ss=161006&cid=STELPRDB1268485&navid=105100000000000&position=News&ttype=detail>.
- . 2015. Rice & Birds: Both Benefit from Wildlife Habitat Work. [http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs144p2\\_063882.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_063882.pdf).
- . 2015. Southwestern Willow Flycatcher. USDA-NRCS. Web: 24 April 2015. <http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/?&cid=stelprdb1047041>.
- University of California Cooperative Extension (UCCE). 2012. Balancing Food Safety and Sustainability. Opportunities for Co-management – Managing Animal Movement. <http://ucfoodsafety.ucdavis.edu/files/198484.pdf>.
- UCCE. Agricultural Experiment Station. 2015. University of California Division of Agriculture and Natural Resources. Web: 24 April 2015. <http://ucanr.edu/>.
- . 2015. Balancing Food Safety and Sustainability. Opportunities for Co-management – Vegetated Practices near Streams. <http://ucfoodsafety.ucdavis.edu/files/198485.pdf>.
- . 2015. Co-Management of Food Safety and Sustainability. 2015. Web: 24 April 2015. [http://ucfoodsafety.ucdavis.edu/Preharvest/Co-Management\\_of\\_Food\\_Safety\\_and\\_Sustainability/](http://ucfoodsafety.ucdavis.edu/Preharvest/Co-Management_of_Food_Safety_and_Sustainability/).
- Western Farm Press. 2015. WHEP Program a Win-win for California Rice, Waterbirds. 08 Apr. 2013. Western Farm Press. Web: 24 April 2015. <http://westernfarmpress.com/rice/whep-program-win-win-california-rice-waterbirds>.
- Western Governors' Association. 2014. Sage-Grouse Inventory 2014 Conservation Initiatives. <http://westgov.org/images/dmdocuments/WGA%202013%20Sage%20Grouse%20Inventory%20Feb%2020.pdf>.





*Appendix C: Agriculture Companion Plan Development Team Members and Affiliations*

<b>Affiliation</b>	<b>Participant</b>
<b>Audubon California</b>	Meghan Hertel
<b>California Almond Board</b>	Gabriele Ludwig
<b>California Cattlemen’s Association</b>	Kirk Wilbur
<b>California Department of Conservation</b>	Bruce Gwynne
<b>California Department of Fish and Wildlife</b>	Dave Feliz Tim Hermansen
<b>California Department of Food and Agriculture</b>	Amrith Gunasekara Laura Petro
<b>California Department of Water Resources</b>	Katherine Spanos Michael Perrone
<b>California Rice Commission</b>	Paul Buttner
<b>California Farm Bureau Federation</b>	Noelle Cremers
<b>Rio Farms</b>	Jocelyn Bridson
<b>U.S. Department of Agriculture - Natural Resources Conservation Service</b>	Luana Kiger Tom Hedt Thomas Moore
<b>U.S. Department of Agriculture - National Wildlife Research Center</b>	Larry Clark
<b>U.S. Fish and Wildlife Service</b>	Greg Yarris



## 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	Data Collection and Analysis	Direct Management	Economic Incentives	Land Acquisition, Easement, and Lease	Outreach and Education
Almond Board of CA	✓	✓			✓
American Farmland Trust				✓	
Audubon CA	✓	✓	✓		✓
CA Agricultural Commissioners					
CA Association of Resource Conservation Districts (RCDs)		✓			✓
CA Biodiversity Council	✓				✓
CA Climate and Agriculture Network					
CA County Agricultural Commissioners					
CA Department of Conservation	✓		✓	✓	✓
CA Department of Fish and Wildlife (CDFW)	✓	✓	✓	✓	✓
CA Department of Water Resources (CDWR)	✓	✓	✓	✓	✓
CA Dept. of Food & Agriculture (CDFA) • Healthy Soils Initiative			✓		
CA Farm Bureau Federation					✓
CA Public Utilities Commission (CPUC)				✓	
CA Rangeland Trust					
CA State Conservancies				✓	
CA State Parks		✓			✓
Central Coast Rangeland Coalition		✓			✓
Central Valley Flood Protection Board					
Central Valley Habitat Exchange			✓		
Central Valley Joint Venture	✓	✓			✓
Central Valley Migratory Bird Partnership	✓				
City and County Governments	✓	✓	✓	✓	✓
Desert Managers Group					
Elkhorn Slough National Estuarine Research Reserve (NERR)	✓	✓			✓
Farmland Mapping and Monitoring Program	✓				
Landowners	✓	✓	✓	✓	✓
Landscape Conservation Cooperatives (LCC)					

Potential Partners	Data Collection and Analysis	Direct Management	Economic Incentives	Land Acquisition, Easement, and Lease	Outreach and Education
<ul style="list-style-type: none"> <li>California</li> <li>Desert</li> <li>Northern</li> </ul>					
Monterey County AgKnowledge					✓
National Parks Service					
<b>Natural Resources Conservation Service (NRCS)</b> <ul style="list-style-type: none"> <li>Agricultural Land Easements</li> <li>Agriculture Conservation Easement Program</li> <li>Conservation Technical Assistance Program</li> <li>Environmental Quality Incentives Program (EQIP)</li> <li>Regional Conservation Partnership Program</li> <li>Wetland Reserve Easements</li> </ul>	✓	✓	✓	✓	✓
Pacific Fisheries Management Council					
Point Blue Conservation Science	✓	✓	✓		✓
Rural-Urban Connections Strategy (RUCS) - Federal and State EPA					
Sacramento Area Council of Governments					
Sacramento Cultural and Urban Conservation Strategy					
Society for Range Management – CA Pacific Section	✓				
Sonoma County Agricultural and Open Space Preservation District (SCAPOS)					
State Water Resources Control Board (SWRCB)					
The Nature Conservancy (TNC)	✓	✓	✓	✓	✓
University of CA Cooperative Extension (UCCE)	✓				
<b>University of CA, Davis</b> <ul style="list-style-type: none"> <li>Food Safety Program</li> <li>Rangeland Management Program</li> <li>Small Farm Program</li> </ul>	✓				✓
U.S. Bureau of Land Management (BLM)					
U.S. Bureau of Reclamation		✓			
<b>U.S. Department of Agriculture (USDA)</b> <ul style="list-style-type: none"> <li>Animal and Plant Health Inspection Service (APHIS)</li> <li>Farm Bill</li> </ul>	✓		✓		✓

Potential Partners	Data Collection and Analysis	Direct Management	Economic Incentives	Land Acquisition, Easement, and Lease	Outreach and Education
<ul style="list-style-type: none"> <li>National Wildlife Research Center (NWRC)</li> <li>(See also NRCS above)</li> </ul>					
U.S. Department of Defense (DOD)					
U.S. Fish & Wildlife Service (USFWS)		✓		✓	
U.S. Forest Service (USFS)					
Vertebrate Pest Council					
Western Association of Fish and Wildlife Agencies	✓		✓		✓
Western Governors Association	✓		✓		✓
Western Institute for Food Safety and Security	✓				
Western Regional Partnership					
Wildlife Conservation Board (WCB)				✓	



**Appendix E: Potential Financial Resources:**

Example Potential Financial Resources <i>(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)</i>	Data Collection and Analysis	Direct Management	Economic Incentives	Land Acquisition, Easement, and Lease	Outreach and Education
<b>Almond Board of CA</b>	✓	✓			
<b>Assembly Bill (AB) 32 cap and trade funding</b>			✓	✓	
<b>CA Department of Conservation</b>	✓		✓	✓	✓
<b>CA Department of Fish and Wildlife (CDFW)</b>				✓	
<b>CA Dept. of Food &amp; Agriculture (CDFA)</b> • State Water Efficiency Enhancement Program Grant			✓		
<b>CA Strategic Growth Council</b>	✓				
<b>Mitigation banks or funding opportunities</b>			✓	✓	
<b>Natural Resources Conservation Service (NRCS)</b> • Regional Conservation Partnership Program • Agriculture Conservation Easement Program • Conservation Stewardship Program • Environmental Quality Incentives Program (EQIP) • Farm Bill • Wetland Reserve Easements	✓	✓	✓	✓	✓
<b>Other State funding programs (e.g., Proposition 1, CDFA, CDWR)</b>		✓			
<b>State Conservancies</b>				✓	
<b>U.S. Department of Agriculture (USDA)</b> • Foundation for Food and Agriculture Research	✓				
<b>U.S. Department of Homeland Security</b>	✓				
<b>U.S. Fish &amp; Wildlife Service (USFWS)</b>	✓			✓	
<b>Voluntary local programs</b>		✓			
<b>Wildlife Conservation Board</b>				✓	
<b>Land Conservation (Williamson Act) Program</b>			✓		



**Funding sources available to multiple strategy categories:**

- Natural Resources Conservation Service**
- Conservation Innovation Grants (CIG)
  - Conservation Stewardship Program (CSP)
  - Environmental Quality and Incentive Program (EQIP)
  - Regional Conservation Partnership Program (RCPP)

**CDFA State Water Efficiency and Enhancement Program**

- Department of Conservation**
- Planning strategy grants
  - Agricultural easement related programs
  - On-farm carbon sequestration, ecosystem services, and wildlife co-benefit incentives and technical assistance
  - Watershed grants program



### *Appendix F: Companion Plan Management Team*

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



## 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 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.

*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.

*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.





*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.

*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.

*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.

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

*richness*: a measure of diversity; the total number of plant taxa, animal species, or vegetation types in a given area.

*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).

*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.

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