DRAFT MARINE RESOURCES COMPANION PLAN

Fall 2015

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE

SWAP
California State Wildlife Action Plan

Photo Credit:

Left:
Moss Beach shoreline from the Fitzgerald Marine Reserve
Date: 19 May 2007
Photographer: Robert E. Nylund via Wiki Commons

Right:
Playful California sea lions in the kelp forest off San Miguel Island, California, Channel Islands NMS
Date: 27 September 2010
Photographer: Claire Fackler via NOAA/NOS/NMS/CINMS; National Marine Sanctuaries Media Library

Prepared by Blue Earth Consultants, LLC

October 30, 2015

Disclaimer:

While 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, California Department of Fish and Wildlife leadership team and staff, California Fish and Game Commission, cooperating State, Federal, and local government agencies and organizations, California Tribes and tribal governments, and partners (such as non-governmental organizations, academic, research institutions, and citizen scientists).

Table of Contents

Acronyms and Abbreviations

AB	**Assembly Bill**
AFWA	**Association of Fish and Wildlife Agencies**
ASBS	**Areas of Special Biological Significance**
BLM	**Bureau of Land Management**
Blue Earth	**Blue Earth Consultants, LLC**
BOEM	**Bureau of Ocean Energy Management**
CARI	**California Aquatic Resources Inventory**
CBC	**California Biodiversity Council**
CCC	**California Coastal Commission**
CCNM	**California Coastal National Monument**
CDFG	**California Department of Fish and Game**
CDFW/the Department	**California Department of Fish and Wildlife**
CEQA	**California Environmental Quality Act**
Ch.	**Chapter**
CNRA	**California Natural Resources Agency**
CRAM	**CA Rapid Assessment Method**
DOI	**U.S. Department of Interior**
DRECP	**Desert Renewable Energy Conservation Plan**
DWR	**California Department of Water Resources**
EPIC	**Environmental Protection Information Center**
FGC	**California Fish and Game Commission**
HCP	**Habitat Conservation Plan**
IRWMP	**Integrated Regional Water Management Plan**
KEA	**Key Ecological Attribute**
LCC	**Landscape Conservation Cooperative**
LiMPETS	**Long-term Monitoring Program and Experiential Training for Students**
MARINe	**Multi-Agency Rocky Intertidal Network**
MCU	**Marine Conservation Units**
MLMA	**Marine Life Management Act**
MLPA	**Marine Life Protection Act**
MPA	**Marine Protected Areas**
MSLT	**MPA Statewide Leadership Team**
NCCP	**Natural Community Conservation Planning**
NEPA	**National Environmental Policy Act**
NFWF	**National Fish and Wildlife Foundation**
NGO	**Non-governmental Organization**
NMFS	**National Marine Fisheries Service**
NMS	**National Marine Sanctuary**
NOAA	**National Oceanic and Atmospheric Administration**
NPS	**National Park Service**

NRCS	**Natural Resources Conservation Service**
NRDC	**Natural Resources Defense Council**
NSF	**National Science Foundation**
OPC	**California Ocean Protection Council**
Open Standards	**Open Standards for the Practice of Conservation**
OSPR	**Office of Spill Prevention and Response**
PISCO	**Partnership for Interdisciplinary Studies of Coastal Oceans**
RAMP	**Regional Advance Mitigation Planning**
RCCA	**Reef Check California**
RCD	**Resource Conservation District**
RLF	**Resources Legacy Fund**
RMP	**Resources Management Plan**
ROV	**Remote-Operated Vehicle**
RPB	**Regional Planning Body**
SCC	**California State Coastal Conservancy**
SCCWRP	**Southern California Coastal Water Research Project**
SCWRP	**Southern CA Wetland Recovery Project**
SFEI	**San Francisco Estuary Institute**
SGCN	**Species of Greatest Conservation Need**
SLC	**California State Lands Commission**
SLR	**Sea Level Rise**
SMRMA	**State Marine Recreational Management Areas**
State Parks	**California Department of Parks and Recreation**
SWAP	**State Wildlife Action Plan**
SWG	**State and Tribal Wildlife Grants**
SWRCB	**State Water Resources Control Board**
TNC	**The Nature Conservancy**
USACE	**U.S. Army Corps of Engineers**
USEPA	**U.S. Environmental Protection Agency**
USFWS	**U.S. Fish & Wildlife Service**
USGS	**U.S. Geological Survey**
WCB	**Wildlife Conservation Board**
WRAMP	**State Wetland and Riparian Area Monitoring Plan**

1. Introduction

The California State Wildlife Action Plan 2015 Update (SWAP 2015) provides a vision and a framework for conserving California's diverse natural heritage. SWAP 2015 also recognizes the need and calls for developing a collaborative framework to manage ecosystems sustainably across the State in balance with human uses of the 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 began preparation of sector-specific companion plans. 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 partnership and by mutually managing and conserving the State's natural and cultural resources. Text box 2 highlights important definitions to SWAP 2015 and the companion plan process (CDFW, 2015a; Chapter [Ch.] 1.5.4).

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) defined by the 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 in matched with approximately $19 million in State government support for the 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) on 10/1/2015. The update allows CDFW to expand and improve the recommended conservation activities addressed in the original plan by integrating new knowledge acquired since 2005.[1]

[1] For more information see: CDFW, "California State Wildlife Action Plan (SWAP)," 2015, 27 Oct. 2015.

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)**:* Aspects of a target's biology or ecology that, if present, define a healthy target and, if missing or altered, would lead to the 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.

***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.

***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, 2015a; Ch. 1.5.4)

1.1 SWAP 2015 Statewide Goals

SWAP 2015 has three statewide conservation goals with 12 sub-goals, under which individual regional goals are organized (CDFW, 2015a; Ch. 4.1). These statewide goals set the context for the companion plans and SWAP 2015 implementation.

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, which affects 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 (Text Box 3) were created collaboratively with partners and will be instrumental in implementing SWAP 2015 (See Appendix D for a list of partners that informed development of this companion plan).

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

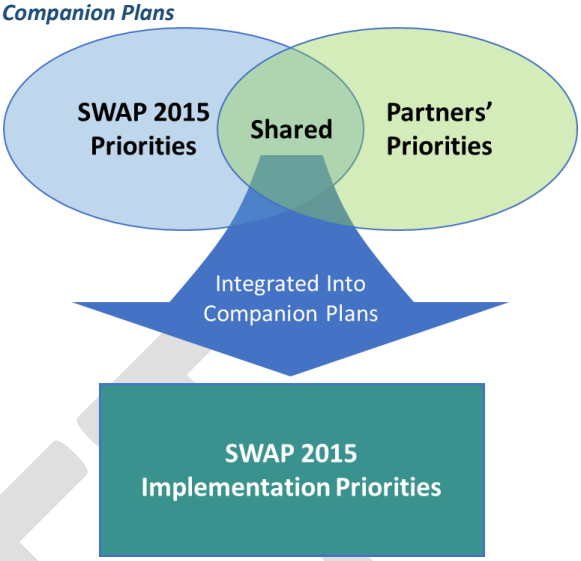
Companion Plan Purpose and Sector Selection

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, priorities for SWAP 2015 have come together in the companion plan and will be elevated as high implementation priorities for SWAP 2015.

The companion plans respond to feedback from many sources, including CDFW staff and partners who support 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 also fulfill the strong suggestion from the Association of Fish & Wildlife Agencies (AFWA) and the National Fish, Wildlife, and Plants Climate Adaptation Strategy[1] to incorporate increased partner engagement as a best practice in wildlife conservation planning. This effort also directly helps CDFW comply with recently added provisions to the Fish and Game Code under Assembly Bill (AB) 2402, specifically under Section 703.5(b), 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" (California Fish and Game Code, 2015).

Figure 1: Alignment of SWAP 2015 and Partner Priorities in Companion Plans



CDFW selected sector categories based on the needs for the Department as well as the themes and subjects identified in other existing plans including the California Climate Adaptation Strategy,[2] 2014 update to the Safeguarding California: Reducing Climate Risk,[3] The President's Climate Action Plan,[4] and the National Fish, Wildlife, and Plants Climate Adaptation Strategy.[5]

Because each companion plan focused on teamwork during its development phase, they inherently help set a stage for implementing SWAP 2015 through future collaborations. Together, SWAP 2015 and associated companion plans describe the context and strategic direction of integrated planning and management efforts that will help sustain California's ecosystems.

Companion Plan Development

The SWAP 2015 companion plan **management team** (see Appendix C for a list of members), comprised of CDFW staff with support from Blue Earth staff, provided general direction to the **development team** (see Appendix D for a list of members). Blue Earth facilitated sector-specific discussions among the

[1] For more information, see: USFWS and National Oceanic Atmospheric Administration (NOAA), "National Fish, Wildlife, and Plants Adaptation Strategy," 2012. Web. 27 Oct. 2015. http://www.wildlifeadaptationstrategy.gov/.
[2] For more information, see: California Natural Resources Agency (CNRA), "Climate Adaptation Strategy," 2009. Web. 27 Oct. 2015. http://resources.ca.gov/docs/climate/Statewide_Adaptation_Strategy.pdf.
[3] For more information, see: CNRA, "Safeguarding California: Reducing Climate Risk – Update," 2014. Web. 27 Oct. 2015. http://resources.ca.gov/docs/climate/Final_Safeguarding_CA_Plan_July_31_2014.pdf.
[4] For more information, see: Executive Office of the President, "The President's Climate Action Plan," 2013. Web. 27 Oct. 2015. https://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf.
[5] For more information, see: USFWS and NOAA, "National Fish, Wildlife, and Plants Adaptation Strategy," 2012.

CDFW staff and development team members, who represented a cross section of sector interests and mandates. Team members were selected based on their positive response to outreach efforts by CDFW to seek participation and representation from public and private partners heavily involved in the conservation and management of the State's natural resources.[6]

Beginning in early 2015, a series of four planning and collaboration meetings were held for each sector. The meetings consisted of an initial kickoff session with participation from all sectors followed by three sector-specific meetings. During these meetings, development team 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 collaboration opportunities and joint priorities or overlaps among SWAP 2015 and partners' strategies and actions. Blue Earth and CDFW organized the feedback from the facilitated development team discussions into nine companion plan documents. In addition, the management team led a review process between CDFW and development team partners, along with a subsequent public review phase for the nine companion plan documents.

Companion Plan Content

Each companion plan addresses:

- SWAP 2015 priorities - statewide goals and strategies;
- companion plan overview - approach, purpose, development process, and content;
- description of the sector;
- common themes across the sectors;
- common priority pressures and strategies across the sectors;
- SWAP 2015 components that best align with the priorities of the participants' organizations under each sector;
- collaboration opportunities identified for joint priorities under each sector – alignment opportunity and potential resources by jurisdiction, locality, and strategy;
- considerations for evaluating future collaboration efforts and desired outcomes/outputs; and
- next steps relevant to the sector.

2. Marine Resources Sector

2.1 Marine Resources in California

The Marine Province, defined for the first time under SWAP 2015, stretches along California's entire coastline of approximately 1,100 miles and extends offshore to the three-mile territorial limit (CDFW, 2015a; Ch. 5.7.1). The large array of ecosystems and habitats in California's marine environment contains a high level of plant and animal diversity and abundance. Because of the productivity of its marine ecosystems, California's ocean economy revenues are among the top five in the nation (National

[6] Disclaimer: Although the management team sought to engage a broad range of partners in the development team process, CDFW recognizes that there are many other partners that will play important roles in implementing SWAP 2015 and companion plan.

Ocean Economics Program, 2014). As such, many Californians are dependent on a healthy marine environment for their livelihoods, including continuity of traditional cultural heritage (in terms of consumptive and non-consumptive uses). Examples of consumptive and non-consumptive uses include fishing, shellfish and other types of aquaculture, wildlife viewing, and ocean recreation. The coast's natural beauty and many economic opportunities support residents and attract visitors. In 2010, more than 80 percent of the State's 37.35 million residents lived in coastal watershed counties compared to a national average of 52 percent of residents living in coastal watershed counties (National Oceanic and Atmospheric Administration [NOAA], 2013).

The marine resources sector is critical for implementing SWAP 2015.[7,8] The global significance and biological biodiversity of the Marine Province necessitate careful consideration of management actions for marine fauna and flora across the Pacific Ocean (California Department of Fish and Game [CDFG], 2005). In addition, vulnerability to climate change impacts including sea level rise, coastal erosion, ocean acidification and hypoxia, and sea surface temperature changes will have potentially significant impacts on the Marine Province ecosystems and the species that rely on them.

This unique province includes ridges, submarine canyons, and kelp forests that are home to a diverse array of plants and animals. Typically, no wider than five miles, California's shallow continental shelf is narrow compared to the Atlantic and Gulf coasts (Johnson & Sandell, 2014). The California Current brings colder northern waters southward along the shore as far as Baja California, while the Southern California Countercurrent flows into the Santa Barbara Channel. These currents and other minor currents drive nutrient cycling and delivery and disperse larval marine invertebrates along the coastline and among marine ecosystems (Gaines et al., 2003; Gaines et al., 2010). Seasonal changes in wind direction commonly create seasonal patterns for these currents, and climate change impacts may affect these historic patterns significantly. Northwesterly winds help trigger upwelling of cold, nutrient-rich water from the depths, leading to high primary productivity (e.g., phytoplankton density and abundance or kelp forests) that attract foraging marine life. When these northwesterly winds abate each fall, a surface current, known as the Davidson Current, develops and flows north of Point Conception. Over-laying these annual patterns are climate cycles of both short-term and long-term fluctuations in frequency, intensity, and duration. Other sources of variability appear in atmospheric pressure (e.g., El

[7] CDFW defines California's State waters as the three-nautical mile maritime limit as shown on NOAA navigational charts. For more information, see: NOAA, "Approved Maritime Limits for California," 2005. Web. 20 Oct. 2015. http://www.nauticalcharts.noaa.gov/csdl/boundarymetadata_CA.html.

[8] These are ocean waters within 3-nautical miles of the most seaward driving features at mean lower low water along the California coastline, coastline of islands, offshore rocks, and within three-nautical miles from a line that extends between selected points across the mouth of coastal bays (primarily Monterey Bay). For more information, see: FindLaw, "United States v. State of California 332 U.S. 19 (1947)," 2015. Web. 22 Jul. 2015. http://caselaw.findlaw.com/us-supreme-court/332/19.html#t1.

Niño Southern Oscillation, which includes El Niño and La Niña[9]) and large-scale changes in ocean temperatures, local winds, topography, tidal currents, and discharge from rivers (CDFG, 2008).

The combined 220,000 square miles of the State's Marine Province and Federal waters also contains some of the busiest shipping lanes and ports in the world and multimillion-dollar commercial and recreational fisheries, in addition to supporting coastal tourism. The Marine Province consists of over 124 marine protected areas (MPA) established under the Marine Life Protection Act (MLPA). California's protected areas include MPAs (i.e., State Marine Reserves, State Marine Conservation Areas, and State Marine Parks), State Marine Recreational Management Areas (SMRMAs), Special Closures, Areas of Special Biological Significance Special Closures, and National Marine Sanctuaries (CDFW, 2015a).[10]

The Marine Province, as described in SWAP 2015, is comprised of six conservation targets (an element of biodiversity at a project site) or ecosystems: 1) Embayments, Estuaries, Lagoons; 2) Intertidal Zone; 3) Nearshore Pelagic Zone; 4) Mid-depth Zone; 5) Deep Zone; and 6) Offshore Rocks (CDFW, 2015a; Ch. 5.7.2). However, in SWAP 2015, conservation strategies have only been developed for the Embayments, Estuaries, and Lagoons target at this time (CDFW, 2015a; Ch. 1.3.1). This particular ecosystem was chosen as the first target for development of a conservation strategy because of the availability of recent/current information from other strategic planning processes, the juxtaposition of this target at the land-sea interface, its critical role as a nursery and refuge for countless marine species, its vulnerability to climate change impacts (such as sea level rise and ocean acidification), and the greater need for coordination efforts among multiple partners with jurisdiction over its management. The five additional targets will be addressed in the future. Although SWAP 2015 primarily focuses on Embayments, Estuaries, and Lagoons, for the purposes of this companion plan, all targets were discussed and considered when identifying priority conservation strategies. The Marine Province is divided into four Marine Conservation Units (MCUs): North Coast, North Central Coast, Central Coast, and South Coast. For the purposes of SWAP 2015, the boundary[11] between each MCU uses those defined and used in the MLPA process (Aseltine-Neilson, pers. comm., 2014; CDFG, 2008). Although the conservation strategies for the Marine Province were developed across the province as a whole and are not differentiated by conservation unit, these units provide the spatial foundation for future planning efforts.

[9] For more information regarding oscillation impacts on climate in the California Current region, see: NOAA Fisheries, "Pacific Decadal Oscillation," 2014. Web. 28 Oct. 2015. http://www.nwfsc.noaa.gov/research/divisions/fe/estuarine/oeip/ca-pdo.cfm.

[10] For more information on the definitions for each type of protected area, see: CDFW. "Definitions and Acronyms," 2015. Web. 28 Oct. 2015. http://www.dfg.ca.gov/marine/mpa/defs.asp#mma For more information on California's protected areas by region, see: CDFW, "MPA Outreach Materials," 2014. Web. 28 Oct. 2015. http://www.dfg.ca.gov/marine/mpa/guidebooks.asp.

[11] For more information, see: CDFW, "California's MPA Network, 2014. Web. 28 Oct. 2015. http://www.dfg.ca.gov/marine/mpa/mpa_summary.asp.

2.2 Current Marine Resources Management and Conservation in California

Effectively conserving California's natural and cultural heritage in the context of significant anticipated growth and change is an important goal to achieve for future generations. Many agencies (State and Federal) and organizations focus on conservation of California's natural and wildlife resources. For example, the Bureau of Land Management (BLM), in co-management with CDFW, developed the California Coastal National Monument (CCNM) Resources Management Plan (RMP) to advance collaborative conservation and management of natural resources along the coast (BLM, 2005). Similarly, the California Coastal Commission (CCC), along with other State agencies (CDFW, California Ocean Protection Council [OPC], California State Lands Commission [SLC], and State Water Resources Control Board [SWRCB]), addressed the goal of protecting marine and ocean resources through inter-agency coordination, policy review, and implementing the CCC's 2013-2018 Strategic Plan (CCC, 2013). Another example is the California State Coastal Conservancy's (SCC) efforts in partnership with State, Federal, and local agencies, Tribes, and non-governmental organizations (NGOs) to protect the coast through the development and implementation of projects that restore fish and wildlife habitat and provide access to the coast. The OPC and SLC also have strategic planning documents that identify priorities and outline opportunities to leverage resources and improve collaborations in supporting marine management. In addition, many of the state agencies listed previously represent part of the MPA Statewide Leadership Team that acts as a standing body to help facilitate active and engaged communication among MPA network management partners (Oceanspaces, 2014). By continuing to manage and collaborate on planning in the Marine Province, CDFW and other partners can work together to protect and conserve the State's natural and wildlife resources while providing new opportunities to utilize the Marine Province for its scenic, recreational, and commercial values.

Text Box 4. Collaborative Conservation Effort Examples in the Marine Resources Sector

There are numerous collaborative conservation and management efforts found in California. Below we share three examples related to marine resources in the State. These examples demonstrate existing conservation efforts that aligned with SWAP 2015. The partners addressed in each description are indicated in **bold**.

- *Integrating Marine Management and Defense Planning*: The **U.S. Navy** and **Port of San Diego** partnered with **CDFW** and **USFWS** to update the San Diego Bay Integrated Natural Resource Management Plan (INRMP), which guides the integration of land-use activities on San Diego Bay Naval installations with broader natural resource management and conservation goals. Through this cooperation the 2013 INRMP was aligned with Federal and State conservation priorities for fish and wildlife conservation and management on the installations (e.g., conservation of rare and sensitive wildlife and plants). The INRMP also reflects the goals of a 2006 Memorandum of Understanding signed between the **Department of Defense**, **USFWS**, and **International Association of Fish and Wildlife Agencies** that encourages military installations to implement projects that will ensure conservation of natural resources and sustained military activities (Unified Port of San Diego, 2013).
- *Restoring Estuary Function*: Humboldt County's Salt River Ecosystem Restoration Project is an example of how a local community and partner agencies can collaborate toward mutually beneficial goals. Implementation of the project has resulted in increased hydraulic and estuarine ecosystem function within the Salt River, and reintroduction of tidal flows to Riverside Ranch benefitting upstream sediment reduction efforts. The project has also helped fish (e.g., coastal cutthroat trout, tidewater goby, longfin smelt, Coho salmon) and wildlife species of concern while reducing flooding to nearby agricultural lands and infrastructure. The project is led by the **Humboldt County Resource Conservation District (RCD)** and includes numerous **local**, **State**, and **Federal** partners (e.g., the **City of Ferndale**, **CDFW, SLC**, **NOAA Fisheries**, and **USFWS**) (Humboldt County Resource Conservation District, 2015).
- *Collaborative Monitoring of California's Network of MPAs:* The State has invested $16 million to support baseline monitoring of the statewide MPA network to inform MPA management and broader priorities, such as climate change, water quality, and fisheries management. Federal agency collaboration (e.g., with National Marine Sanctuaries) can also provide strong partnerships and lead to significant funding and support for projects (e.g., seafloor mapping as a part of statewide MPA network baseline data). The **California Ocean Science Trust**, **OPC**, and **CDFW** collaboratively planned and implemented the statewide, scientifically-rigorous MPA monitoring program on a regional basis, as each regional network of MPAs was implemented (CDFW, 2015b). These collective efforts are fostering a statewide understanding of conditions and trends inside and outside of State MPAs.

3. Common Themes across Nine Sectors

Equally important to discussion topics unique to each sector is the common themes considered across all sectors. This section shares overarching themes identified through the development of the nine companion plans within the scope of SWAP 2015. As described below, the top two most commonly discussed topics were: 1) climate change and 2) integrated regional planning.

3.1 Climate Change Related Issues

All sectors highlighted the potential far-reaching effects on California's natural resources induced or exacerbated by climate change as a major issue. The negative impacts to the State's ecosystems described in SWAP 2015 may increase in their magnitude and severity by the compounding effects of climate change (CDFW, 2015a; Ch. 2.5.3). The implications of climate change are likely to be profound and influence many facets of the State's natural resources. Therefore, development teams considered collaboration across sectors related to natural resource management and conservation essential to assist ecosystem adaptation effectively and minimize negative effects from the shifting climate.

The suggested collaborative activities under various sector discussions that relate to climate change include a comprehensive assessment of the State's climate change vulnerability and implementation of appropriate adaptation actions (CDFW, 2015a; Ch. 2.5.3). Detailed activities addressed during the discussions include, but are not limited to: establishing a sustainable habitat reserve system to reduce other habitat threats and increase habitat resilience to climate change; incorporating climate change impacts (e.g., habitat shifts and sea level rise) into the management of watersheds, habitats, and vulnerable species; improving regulation of greenhouse gas emissions; developing comprehensive research guidelines to evaluate climate change effects; and engaging in education and outreach activities to raise awareness of climate change.

3.2 Integrated Regional Planning

California hosts a landscape that is ecologically, socio-economically, and politically intricate. The current status of the State's ecosystems reflects the synergistic interactions among ecological conditions and processes, as well as diverse human activities and conflicting needs and the regulations imposed on those activities.

The concept of integrated regional planning arises from the recognition that addressing only one aspect of such a multi-faceted, dynamic human and natural system would not be sustainable. Integrated regional planning in the context of SWAP 2015, paraphrased from the definition in the California Water Plan, 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 (California Department of Water Resources [DWR], 2014). The expected outcomes of adopting an integrated regional planning approach are to 1) maximize limited resources to provide for increased public well-being, and 2) receive broader support for natural resource conservation beyond the conservation community while systematically improving ecosystem conditions that sustain the ecological integrity of the region.

Integrated regional planning begins with the acceptance of diverse natural resource management priorities associated with the region and the accompanying activities necessary to pursue those interests. Based on this understanding and philosophy, attempts by natural resource management agencies to integrate activities often include negotiations during regional planning processes. Expected efforts under integrated regional planning processes include: planning to reduce conflicts among priorities and activities; minimizing overlapping efforts by aligning similar activities; streamlining and integrating needed processes across the priorities; and collaborating to complement efforts and pursue mutual priorities and interests. As an example, integrated planning could occur by zoning larger planning regions, coordinating multiple needs for the region, and limiting activities within each zone to avoid incompatible activities, or at least reduce unintended negative consequences of isolated but interactive activities. In sum, integrated regional planning requires open-mindedness, transparency, patience, and comprehensive and strategic planning between natural resource management priorities and regional and/or local jurisdictions through coordination.

In developing the companion plans, all sectors considered an integrated regional planning framework as one of the State's top priorities. The needs and tasks related to integrated regional planning and expressed through the discussion among the sector groups were: preparing, approving, and implementing regional- and landscape-level conservation plans; pursuing necessary resources systematically for conservation strategy implementation; coordinating effective partnerships; adapting to emerging issues; and reviewing and revising the plans. Existing efforts recognized for supporting integrated regional planning include Natural Community Conservation Plans (NCCPs), Habitat Conservation Plans (HCPs), Habitat Connectivity Planning for Fish and Wildlife,[12] the Master Plan for Marine Protected Areas, and individual species management plans. SWAP 2015 also addresses those activities and plans.

In addition, SWAP 2015 highlights where partners can potentially integrate SWAP with other agency conservation programs, including the efforts by California Wildlife Conservation Board (WCB), identified and discussed among the companion plan development teams.

4. Commonly Prioritized Pressures and Strategy Categories across Sectors

Below is an overview of pressures and strategy categories considered important across the nine sector teams. SWAP 2015 adopted the Open Standards for the Practice of Conservation[13] process and applied it to each targeted ecosystem to identify strategies that could influence key ecosystem pressures (CDFW, 2015a; Ch. 1.5.4). During development team meetings, CDFW shared lists of those identified pressures and strategy categories that are considered relevant to each sector. Through voting, each development team prioritized the pressures and strategy categories by the importance to the sector. The commonly prioritized pressure and strategy categories described below were identified by synthesizing overarching

[12] For more information, see: CDFW, "Habitat Connectivity Planning for Fish and Wildlife," 2015. Web. 27 Oct. 2015. www.wildlife.ca.gov/Conservation/Planning/Connectivity.

[13] For more information on the Open Standards for the Practice of Conservation, see: Conservation Measure Partnership, "The Open Standards," 2015. Web. 28 Oct. 2015. http://www.conservationmeasures.org/.

discussion themes (for pressures) and by counting the frequency of the prioritization (for strategy categories) across the sectors.

4.1 Pressures across Sectors

A pressure, as defined in SWAP 2015, is "an anthropogenic (human-induced) or natural driver that could result in impacts to the target (i.e., ecosystem) by changing the ecological conditions" (CDFW, 2015a; Ch. 1.5.4, 26). 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 (CDFW, 2015a; Ch. 1.5.4). Table 1 lists the 29 standard pressures addressed under SWAP 2015 (CDFW, 2015a; Ch. 1.5.4).

Table 1. SWAP 2015 Pressures

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

Pressures include the following:

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

(CDFW, 2015a; Ch. 1.5.4)

As described under Section 3.1, the climate change pressure was one of the common themes discussed across the sectors. There were no other standardized pressures listed under Table 1 that were commonly prioritized across all sectors. For more information on pressures prioritized for the marine resources sector, please refer to Section 5.1 below.

4.2 Strategy Categories across Sectors

SWAP 2015 outlines 11 categories of statewide conservation strategies under which regional strategies are organized, similar to the manner in which the regional goals are tiered under the statewide conservation goals (CDFW, 2015a; Ch. 4.2). The statewide and regional strategies are meant to work synergistically to achieve the statewide goals and priorities. Table 2 lists the 11 standardized statewide strategy categories addressed under SWAP 2015 (CDFW, 2015a; Ch. 4.2).

Table 2. SWAP 2015 Conservation Strategy Categories

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

(CDFW, 2015a; Ch. 4.2)

Of these 11 strategies, the three most commonly prioritized strategy categories across the nine sectors were: **Data Collection and Analysis** (78% or 7 sectors prioritized this strategy), **Management Planning** (78% or 7 sectors), and **Partner Engagement** (56% or 5 sectors). The strategy categories identified as most relevant to the marine resources sector are described in Section 5.2 below.

5. Marine Resources Priority Pressures and Strategy Categories

The marine resources sector faces many challenges to conserve and manage California's natural and wildlife resources. Human activities within the Marine Province affect ecosystem structure, function, composition, and services in California. With a large proportion of the State's population residing along California's coast, there are many pressures and impacts to consider and address such as resource extraction, loss of habitat, pollution, invasive species, changing water quality, ocean acidification, and global climate change (CDFG, 2005a). These factors contribute to changes that can have profound impacts on marine ecosystems. The effects of climate change are already being seen in the marine sector, including increases in sea level, changes in upwelling, and range shifts in marine species (Largier et al., 2010). Likewise, ecosystem stresses on freshwater, estuarine, and ocean hydrology and water quality; coastal and ocean dynamics; sediment characteristics; and geophysical disturbance regimes are driving conservation activities needed to support, improve, and enhance the implementation of SWAP 2015. Activities and strategies to address these pressures and stresses may include improving data collection and analysis, strengthening laws and policy, and improving management planning.

During companion plan development meetings held in early 2015, the top pressures and strategies (described below in Section 5.1) were prioritized through ranking and voting by the development teams. The list drew upon efforts undertaken between 2013 and 2014 to identify province- and state-scale pressures and strategies for SWAP 2015 (CDFW, 2015a; Ch. 1.5). Through facilitated discussions, the

development team prioritized pressures and strategies based on member knowledge and involvement in the sector. Below is a list of the prioritized pressures and strategies.

5.1 Priority Pressures

Using the Open Standards for the Practice of Conservation framework, SWAP 2015 Marine Province team identified 20 human-caused pressures for the Marine Province (please see Appendix B for a list of all pressures identified) (CDFW, 2015a; Ch. 1.5.4).[14] From this list, the companion plan development team refined this list to identify the following three pressures as top pressures for the marine resources sector:

Climate change – Climate change can affect ecosystems in a variety of ways, including shifts in precipitation, temperature, rates of coastal erosion, ocean chemistry (e.g., shifts occurring in response to increased concentrations of carbon dioxide in the atmosphere), weather, ocean circulation, and sea level. Climate change may also exacerbate stresses experienced by vulnerable wildlife and habitats, such as habitat loss and fragmentation, timing mismatches of adequate prey availability and breeding seasons, creation of migration barriers, increases in presence and prevalence of invasive species, and hypoxia.

Agriculture and forestry effluents – Agricultural and forestry practices can have a range of direct and indirect ecosystem effects on habitats along or near the land-sea interface, both positive and negative. Examples include providing and/or impacting potential habitat for migratory bird species, impacting water quality from erosion and chemical pollutants such as pesticides, animal hormones, and antibiotics, supporting land management practices, and using or diverting water.

Housing and urban areas; commercial and industrial areas - shoreline development – Economic and population growth, which are drivers of increased development, lead to an increased need for housing, commercial/industrial development, tourism and recreation services, transportation, and other infrastructure. This increase in development creates pressures, such as urban runoff, coastal armoring, and introduction of plastics to the ocean, on the State's land, water, and other natural resources across scales (upland, shoreline, and marine).

5.2 Priority Strategy Categories

Below are the top three strategy categories the development team prioritized in alphabetical order – **Data Collection and Analysis**, **Law and Policy,** and **Management Planning**. The information below is combined into a more comprehensive table shared in Section *6. Collaboration Opportunities and Potential Resources by Strategy Category* (Table 3). The strategy category definitions described below include information from SWAP 2015 with additional insights gathered during the sector development

[14] Before the companion plan development team process, the SWAP 2015 major pressures list was examined and ranked based on severity, scope, and irreversibility in the impact contribution compared to other pressures; therefore, some pressures (e.g., fishing and harvesting aquatic resources) did not make the ranked listed provided for the companion plan process.

team meetings (CDFW, 2015a; Ch. 4.2). The example strategies and conservation activities were prioritized by development team members early in the companion plan process.

Data Collection and Analysis – Data collection and analysis is the collection and utilization of scientifically robust data to develop more effective management strategies and facilitate implementation and enforcement of conservation strategies, polices, and laws under other categories.

- Example strategies include: supporting ecosystem and human use monitoring; compiling data results (e.g., Rocky Intertidal Monitoring Program) for integrated management; integrating data into management/enforcement; and encouraging research that addresses questions that would improve ability to manage this ecosystem.
- Conservation activities include: adapting and using MPA monitoring results as well as other long-term monitoring data (e.g., Partnership for Interdisciplinary Studies [PISCO], Areas of Species Biological Significance [ASBS]) that include metrics for assessing ecosystem conditions and trends (e.g., key attributes and indicators/focal species); working with communities to meet broader data collection and management needs; performing scientific reviews; conducting monitoring that increases our understanding of fisheries, habitat quality, and human uses of MPAs; conducting studies on MPA condition and performance; conducting studies that collect data relevant to fisheries management (e.g., remote-operated vehicle [ROV] studies); acquiring and updating electronic record management systems and corresponding data entry practices for fisheries; and supporting pilot projects to advance data sharing among agencies.

Law and Policy – Law and policy is the development, revision, guidance, implementation, and enforcement of laws, regulations, policy, and voluntary standards to improve conservation stewardship of species and habitats.

- Example strategies include: developing and implementing policies, practices, and permitting guidelines that minimize impacts (e.g., human, environment) on the shoreline and wetlands, particularly those within MPAs; and full implementation of the Marine Life Management Act (MLMA), MLPA, and National Ocean Policy Implementation Plan (West Coast), as well as other conservation-oriented marine resource management laws and policies.
- Conservation activities include: coordinating permitting analysis and communication across agencies; developing policy guidance for key marine resource management laws; working on a statewide MPA signage program to improve compliance; increasing marine enforcement capacity (e.g., updating records management and case tracking systems); and reviewing existing marine resource management laws and evaluating whether they are supporting conservation objectives effectively.

Management Planning – Management planning is the development of management plans or processes for species, habitats, and natural processes/conditions that will lead to implementation of more effective conservation strategies.

- Example strategies include: coordinating with relevant local, regional, State, and Federal agencies on shoreline and water quality management planning; and improving management approaches for fostering the sustainability and resilience of marine and coastal ecosystems.
- Conservation activities include: continuing and expanding coordination and collaboration among agencies and organizations around MPA management (e.g., West Coast Regional Planning Body); updating the MLPA and MLMA Master Plans; coordinating planning and management activities with the MPA Statewide Leadership Team; advancing MLMA implementation for key State fisheries; managing water quality, flows, and flood risks in estuaries and wetlands to reduce impacts on wildlife; implementing SLR adaptations for coastal wetlands and other coastal communities; developing restoration plans in estuaries and wetlands; and providing comments on management plans.

Text Box 5. Identified Pressures and Strategies for Future Consideration

SWAP 2015 describes the 29 major pressures (Table 1) on the State's ecosystems (CDFW, 2015a; Ch. 2.5.2). The list below provides additional pressures and strategies the development team identified as important for this sector that should be considered during future SWAP updates. These pressures and strategies were not highlighted as top priorities for the marine resources sector under the main SWAP 2015. Some of these pressures and strategies apply to ecosystems beyond the embayments, estuaries, and lagoons ecosystem considered in SWAP 2015 and were identified in the full assessment of pressures (see Appendix E for a list of all pressures identified).

Pressures

- *Note: All additional pressures identified by the development team fall into one or more of the 29 major pressures in SWAP 2015.*

Strategies

- Develop and implement monitoring plans for wildlife and ecosystem conservation
- Enforcement of regulations and fines for malfeasance.
- Increase partnership and collaboration with partners from multiple sectors (e.g., government, NGO, and public).
- Strengthen monitoring and inspection protocols for hull fouling and ballast water organisms; including possible regulations.

[1]Note: Some additional pressures identified by development teams may already be addressed in SWAP 2015.

6. Collaboration Opportunities for Joint Priorities

This section describes the potential alignment opportunities for SWAP 2015 with existing plans and strategies from other sector agencies and organizations that development team members have identified. Section 6.1 introduces the four categories that are used to organize such opportunities; they are based on jurisdiction and locality of plans and strategies. Following Section 6.1, collaboration opportunities and resources identified by each strategy category are shared in Table 3, *Collaboration Opportunities and Potential Resources by Strategy Category.* For a more extensive list of plans, strategies, and documents identified through the companion plan development process, please see Appendix B.[15] SWAP 2015 integration with other partners' programs is an integral part of balancing the needs of wildlife with the needs of society and is explored in SWAP 2015 (CDFW, 2015a; Ch. 7.1.2).

6.1 Alignment Opportunities by Jurisdiction and Locality

Below describes four categories of locality and jurisdiction broadly where potential alignment opportunities typically fit: Federal, State, Regional and Multi-partner, and Non-governmental. These categories are based on jurisdiction and locality of the management and conservation efforts. Example opportunities for each category are also provided here.

Federal

Plans identified at this scale typically draw upon national guidance reflecting the goals and strategies of Federal agencies and organizations. For example, the BLM has several types of conservation and management plans such as the *California Coastal National Monument Resource Management Plan*.[16] Similarly, the four national marine sanctuaries off the California coast have management plans that were developed with extensive public and State input to address relevant threats to marine resources and enhance protections. In addition, the U.S. Navy's *Integrated Natural Resources Management Plans* provide for the collaborative management of natural resources on military lands and waters, while the National Ocean Council's *National Ocean Policy Implementation Plan* describes specific actions Federal agencies will take to address key ocean challenges. Although these plans guide Federal agency interventions, they also play a key role in how these agencies engage in collaboration with states and other partners.

State

Plans identified at this scale reflect numerous State agency priorities, strategies, and conservation actions of California. These plans and strategies guide decision making, resources allocation, and implementation priorities of the State agencies. Examples of key statewide plans and strategies include, but are not limited to, California Natural Resources Agency's (CNRA) *Safeguarding California: Reducing Climate Risk,* CDFW's *Master Plan for Marine Protected Areas*, OPC's *The California Collaborative*

[15] This is not an exhaustive list of sector plans and strategies in alignment with SWAP 2015 goals.
[16] Note: forthcoming plan amendment to add Stornetta unit and the Garcia River estuary.

Approach: Marine Protected Areas Partnership Plan, as well as the SWRCB's *California Ocean Plan* and *Storm Water Strategic Initiative*.

Regional and Multi-partner

Numerous regional and multi-partner entities and plans help guide conservation efforts across the State at small to large regional scales. These plans, like those at the Federal and State scale, describe strategies and activities that align with this companion plan and SWAP 2015. At a regional level, NCCPs and HCPs can be used to inform a wide array of conservation planning efforts. Many of the large-scale, multispecies HCPs and NCCPs are habitat-based plans that encourage future development to occur in already developed areas, while setting up a system of large contiguous protected lands based on a comprehensive landscape-level conservation strategy designed for the planning area. Planning at this scale provides regional protection for plants, animals, and their habitats, while allowing compatible and appropriate economic activity. For example, many of the regional groups based in California developed plans that describe regional conservation interventions such as the Central Coast Wetlands Group's *Using New Methodologies to Assess Bar-built Estuaries along California's Coastline* and Southern California Coastal Water Research Project's (SCCWRP) *Technical Design for a Status & Trends Monitoring Program to Evaluate Extent and Distribution of Aquatic Resources in California.*

Non-governmental

Private landowners and non-governmental organizations also play a key role in wildlife conservation and they have plans that describe their desired future conservation outcomes and management priorities compatible with those of SWAP 2015. For example, California Ocean Science Trust's MPA Monitoring Enterprise developed MPA monitoring plans for the different California coastal regions (such as the *Central Coast MPA Monitoring Plan*). These monitoring plans help guide priorities to inform adaptive management of the regional MPA network. Other example plans include California Ocean Science Trust's *Citizen Science and Ocean Resource Management in California: Guidance for Forming Productive Partnerships* and The Nature Conservancy's (TNC) *A Conservation Assessment of West Coast (USA) Estuaries*.

6.2 Collaboration Opportunities and Potential Resources by Strategy Category[17]

For each prioritized strategy category described in Section 5 above, Table 3 below shares example conservation activities that are, will, or might be implemented in the next 5-10 years. These conservation activities are listed adjacent to example potential partners and financial resources that development team members identified. Although the table below shares examples of potential activities where partnerships could occur at different spatial scales (statewide, regional, and local/site-specific),

[17] Disclaimer: Please note this is not an exhaustive list of potential partners and financial resources. The organizations listed in Table 3 were identified through this companion plan process, but their identification here does not indicate agreement to partner and/or provide financial resources for the conservation activities.

other activities addressing priority strategies should be considered as this is not a comprehensive list.[18] Similarly, while the identified example conservation activities could apply across many spatial scales and jurisdictions, the current table highlights the most relevant scale of implementation. As described earlier in this document, Table 3 does not indicate a willingness and/or commitment on behalf of these organizations or entities to partner, fund, or provide support for the strategy implementation.

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

Table 3. Collaboration Opportunities and Potential Resources by Strategy Category

Example Conservation Activities	Example Potential Partners	Example Potential Financial Resources
Priority Strategy: Data Collection and Analysis		
Statewide • Modernize techniques for data collection (e.g., electronic data and enforcement records management systems) • Implement long-term MPA monitoring statewide ***Regional*** • Collect and organize baseline and ephemeral data in the marine region • Collect data on invasive species for regulations updates on hull fouling and ballast water • Conduct MPA monitoring that uses the MPA monitoring framework by implementing regional MPA monitoring plans • Work with science and marine community to develop/report monitoring broadly to meet data management needs and climate initiatives ***Local/Site-specific*** • Assess wetlands using the CA Rapid Assessment Method (CRAM) • Collect data through wetland restoration projects • Conduct marine resource assessments and make recommendations • Conduct monitoring on areas/species such as rocky intertidal, marine birds, marine mammals, eelgrass, longfin smelt, and sea turtles (e.g., via ROV, scuba) • Develop new indices for monitoring and evaluation • Distribute publications to local communities and partners about MPA regulations, resources, and monitoring results • Have managers identify and prioritize their information needs based on SWAP 2015 goals • Improve fish passage through use of estuary enhancement data • Increase tidal zone monitoring and data collection	***Federal*** • BLM • Bureau of Ocean Energy Management (BOEM) (e.g., Multi-Agency Rocky Intertidal Network [MARINe]) • National Park Service (NPS) • Natural Resources Conservation Service (NRCS) • NOAA National Estuarine Research Reserves System • NOAA National Marine Fisheries Service (NMFS) • NOAA Office of National Marine Sanctuaries (NMS) (e.g., Cordell Bank, Greater Farallones, Monterey Bay, and Channel Islands, Golden Gate, Point Reyes, Redwood Beach Combers, Long-term Monitoring Program and Experiential Training for Students [LiMPETS]) • Seabird Protection Network • U.S. Army Corps of Engineers (USACE) • U.S. Department of Interior (DOI) • U.S. Environmental Protection Agency (USEPA) • USFWS • U.S. Geological Survey (USGS) • U.S. Navy • USEPA National Estuary Program ***State*** • CA Department of Parks and Recreation (State Parks) • CA Sea Grant • CA Water Quality Monitoring Council • CCC • CDFW • CNRA • MPA Statewide Leadership Team (MSLT) • OPC • SCC	***Federal*** • NOAA • National Science Foundation (NSF) • USEPA • USFWS ***State*** • CA Sea Grant • CDFW • MPA Statewide Leadership Team • OPC • SCC • SWRCB (e.g., ASBS Grant Program) • WCB ***Local/County*** • RCDs • SCCWRP ***Non-governmental*** • Cabrillo Marine Aquarium • Fish Habitat Partnerships • Philanthropic Foundations • PISCO • San Francisco Estuary Institute (SFEI) • TNC

Example Conservation Activities	Example Potential Partners	Example Potential Financial Resources
• Map wetlands using standard statewide protocols (e.g., CA Aquatic Resources Inventory [CARI]) • Stipulate that monitoring is consistent with the State's Wetland and Riparian Area Monitoring Plan (WRAMP), as appropriate	• SCCWRP • SLC • Southern CA Wetland Recovery Project (SCWRP) • SWRCB • UC Santa Cruz ***Tribes*** • CA Coastal Tribes (e.g., Santa Ynez Band of Chumash Mission Indians, Wiyot Tribe) ***Local/County*** • RCDs (e.g., Humboldt County) • County Parks (e.g., San Mateo, Sonoma Coastal Parks) ***NGO/Foundation*** • Audubon California • Beach Ecology Coalition • CA Ocean Science Trust • Central Coast Wetlands Group • Humboldt Fish Action Council • LA Waterkeeper • Laguna Ocean Foundation • LightHawk • Moss Landing Marine Lab • MPA Collaborative Implementation Project • MPA Watch • Smithsonian Institute – Environmental Research Center • The Bay Foundation • Grunion Greeters, Karen Martin, Pepperdine University	
Priority Strategy: Law and Policy		
Statewide • Coordinate permitting analysis and communication processes among coastal agencies • Ensure effective enforcement by Fish and Wildlife wardens • Evaluate if laws are supporting conservation objectives effectively • Identify areas that need additional policy guidance • Integrate SLR under existing policies to allow for wetland migration	***Federal*** • NMFS • NOAA Office of NMS (e.g., Greater Farallones [Climate Change Forum], Monterey Bay, Channel Islands, and Cordell Bank) • Seabird Protection Network • U.S. Navy • USACE • USFWS • USGS	***State*** • MPA Statewide Leadership Team • OPC • State General Fund and Agency budgets ***Non-governmental*** • Philanthropic Foundations

Example Conservation Activities	Example Potential Partners	Example Potential Financial Resources
• Monitor and enforce compliance with ballast water regulations and hull biofouling prevention programs • Protect coastal resources through agency policy review and updated guidance • Provide input on marine resources of concern and analyze how concerns can elevate/highlight/protect resources under Local Coastal Plans/Coastal Act • Regulate development (e.g. shoreline armoring, housing, docks, roads) in coastal zone under Coastal Act (e.g., limit increase in erosion rates from coastal armoring) • Support investment in marine law enforcement capacity • Track MPA enforcement and violations cases statewide • Work with prosecutors to identify needed changes in relevant code sections to support stronger enforcement of existing marine/ coastal resource protection laws ***Regional*** • Work with communities to encourage greater compliance with MPA regulations ***Local/Site-specific*** • Develop viable list of marine restoration options (e.g., eelgrass, native oyster, and salt marsh restoration, land purchases for habitat restoration to accommodate sea level rise) that would directly benefit MPAs and marine resources in general. • Improve public understanding of buffers and seasonal island closures to increase compliance to protect seabirds, marine mammals, and other marine resources	***State*** • CCC • CDFW • FGC • MSLT • OPC • SCC • SLC • State Parks • SWRCB ***NGO/Foundation*** • Audubon California • CA Coastkeeper Alliance • Center for Ocean Solutions • Heal the Bay • Monterey Bay Aquarium • MPA Collaborative Implementation Project • Natural Resources Defense Council (NRDC) • Ocean Conservancy • Point Blue Conservation Science • Trustee Councils • West Coast Governors Alliance for Ocean Health • Wildcoast	
Priority Strategy: Management Planning		
Statewide • Convene working groups among State natural resource managers and Federal partners to increase communication and collaboration • Develop a statewide outreach and education plan on ecosystem services provided by embayments, estuaries, and lagoons (e.g., citizen science guide)	***Federal*** • BLM • DOI (e.g., MARINe) • NMFS • NOAA Office of NMS (e.g., Greater Farallones, Monterey Bay, Channel Islands, and Cordell Bank) • NPS • USACE • USFWS	***State*** • Agency Budgets • CCC (e.g., Education Program, Coastal License Plate fund) • MPA Statewide Leadership Team • OPC • SCC

Example Conservation Activities	Example Potential Partners	Example Potential Financial Resources
• Enhance the multi-agency coastal project review process to harmonize coastal management (e.g., modeled after SCWRP's work plan project evaluation) • Improve coordination and collaboration on MLPA involvement • Work with partners to develop statewide MPA enforcement, compliance, and permitting plan ***Regional*** • Create documents, materials, and processes to increase inter-agency and cross-sector collaboration on protection measures to identify habitat pressures and stresses • Determine method to conduct resource valuation of ecosystem services • Develop implementable restoration plans in estuaries and wetlands • Develop SLR adaptations for coastal wetlands ***Local/Site-specific*** • Balance water reuse to benefit key species • Develop new storm water programs and manage flow to reduce pollutants entering marine waters • Develop site-specific plans for coastal lagoons and key species • Identify needs and gaps for management planning • Consider wildlife needs in management of water and floods in estuaries/wetlands • Provide input to assessments and planning processes • Restore juvenile fish rearing habitat • Set goals on habitat distribution and SLR resiliency • Support Community MPA Collaboratives to ensure local expertise informs management decisions	• USGS ***State*** • CA Coastal Sediment Management Workgroup • CCC • CDFW • FGC • OPC • SCC • SLC • State Parks • SWRCB ***NGO/Foundation*** • Bolsa Chica Lowlands Restoration Project • CA Ocean Science Trust • Central Coast Wetland Group • Humboldt Bay Initiative (Climate Change Group) • Humboldt State University • Moss Landing Marine Lab • SCWRP Wetland Managers Group • West Coast Regional Planning Body (RPB)	• SWRCB ***Non-governmental*** • Philanthropic Foundations

6.3 Potential Financial Resources for Joint Implementation

The list below provides additional potential financial resources identified for implementing the sector conservation activities addressed under SWAP 2015 and the companion plans. This list is similar to the third column of Table 3, but the funding could be applied to more than one strategy category considered under the sector discussion.

Development team participants suggested a range of potential funding sources; however, this information is intended to serve as a starting point for outreach and potential engagement and does not represent a comprehensive list of all potential funding sources.

Federal Funding Programs

- BLM
    - Annual Congressional Appropriations for the California National Monument
    - Competitive Grant Program for inventory, monitoring, and research
- NOAA Coastal and Estuarine Land Conservation Program
- NOAA Estuary Restoration Act
- Saltonstall-Kennedy Grant Program
- USACE
- USEPA Supplemental Environmental Project Settlement Funds
- U.S. Navy Cooperative Research Agreements

State Funding Programs

- CCC
    - Whale Tail Grants Program
    - Permit/violation fees
- CDFW (*refer to CDFW on funding sources*)
    - CA Cap-and-Trade Program
    - CA Sea Otter Fund (tax check-off)
    - Proposition 1
    - State Fish Restoration Grants Program
- Delta Stewardship Program
- OPC
    - Proposition 1 and 84
- SCC
    - Environmental License Plate Fund
    - Habitat Conservation Fund
    - Permit/violation fees
- SLC
    - Kapiloff Land Bank Fund
    - Tidelands Revenues
- SWRCB – IRWMP

Non-governmental Funding Programs

- Fish Habitat Partnerships
- National Fish and Wildlife Foundation (NFWF)
- Philanthropic Foundations

7. Evaluating Future Collaboration Efforts

Implementation of SWAP and its nine companion plans is a complex undertaking. The first section below describes the desired outcomes and outputs of the marine resources companion plan implementation identified through the development team discussions. A desired outcome is an improved (and intended) future state of a conservation factor due to implementation of actions or strategies (CDFW, 2015a; Ch. 11). Through the companion plan process, the management team defined a desired output as a deliverable that can be measured by the activities and processes that will contribute to accomplishing the desired outcomes and goals. The list of desired outcomes and outputs in the sub-section below is followed by a high-level description emphasizing the importance of adaptive management to SWAP 2015 and the companion plans, and how their implementation effectiveness would be evaluated by applying the adaptive process addressed under the main document.

7.1 Desired Outcomes and Outputs

Participants were asked what the sector's top desired outcomes and outputs are in the next 5-10 years, based on the development team discussions, their knowledge of the sector, and within the context of SWAP 2015. The identified outcomes and outputs for each strategy category, not listed in order of priority, are provided below.

Data Collection and Analysis

- Partnerships and coordination developed for aligning strategies, and conservation actions for data collection and analysis articulated in plans and strategies.
- Continued and new activities to track the progress towards outcomes and goals of SWAP 2015 and SWAP 2015 companion plans (e.g., through MPA monitoring) and data synthesized, in a usable format, to inform the understanding of SWAP implementation progress, ocean health, and needs for adaptive management. Progress on implementation shared with partners and the public.
- Climate change impact assessments and data inform decisions on habitat conservation, protection, and acquisition (e.g., identify wetland areas facing sea level rise impacts to understand viability for protection, conservation, and acquisition).
- Statewide information management systems or a repository created that allows agencies, decision-makers, and the public to access coastal and ocean data including information for management, law enforcement, and policy decision-making (e.g., California Environmental Quality Act/ National Environmental Policy Act [CEQA/NEPA] and tracking of law enforcement actions and cases).

Law and Policy

- Increased availability of information (e.g., from CDFW and partners) to guide project review, permitting processes and laws, and policy related to ocean and coastal habitats including MPAs.
- CDFW, in collaboration with partners, identifies thresholds of significance as guidance to public agencies for potentially incorporating thresholds in permitting and impact evaluation processes.
- CDFW and partners provide data that informs recommendations for changes to permitting law and policy related to MPA resource impacts.
- Expanded State involvement in the West Coast Regional Planning Body.
- See the 4th bullet under *Data Collection and Analysis.*

Management Planning

- Broader engagement of scientific community in project cycle including planning, development, and implementation.
- Regional and sub-regional partners identified and engaged. Key players for developing and implementing coherent and consistent marine management planning and implementation and existing regional monitoring efforts also identified.
- Increased tribal participation at initial phase of project scoping and throughout planning and implementation of projects.

7.2 Evaluating Implementation Efforts

SWAP 2015 sets a stage for adaptive management, including implementation evaluation, by developing the plan based on the Open Standards for the Practices of Conservation (CDFW, 2015a; Ch. 1.5.4). SWAP 2015 implementation will be monitored over time in concert with other conservation activities conducted by CDFW and its partners. SWAP 2015 recognizes three types of monitoring (CDFW, 2015a; Ch. 8.3):

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 (i.e., adaptive management)
3. Effect monitoring, which addresses if and how the target conditions are being influenced by strategy implementation

Monitoring the SWAP and companion plan implementation and evaluating the monitoring results are critical steps for CDFW and partners to demonstrate and account for the overall progress and success achieved by SWAP 2015. By incorporating lessons learned through monitoring and evaluation into future actions, CDFW and its partners have opportunities to improve performance on coordination and collaboration and to adapt emerging needs that were not considered during the time of the plan

development into future actions. Similarly, monitoring and the evaluation results could help inform stakeholders, including decision-makers, partners, and funders, about the status of the plan implementation, as well as where to best deploy resources to achieve desired outcomes and outputs effectively.

SWAP 2015 developed performance measures for each strategy category (CDFW, 2015a; Ch. 8.3). These measures are critical in helping guide the Department and partners in assessing the effects and effectiveness of SWAP 2015 and the companion plans, as well as the level of the companion plan's contribution to the conservation of California's ecosystem.

8. Next Steps

During the third and final companion plan development team meeting, participants were asked to identify key next steps to ensure successful implementation of the companion plan, ideally within the next one to five years. The feedback fell into three primary categories which were used to organize the information: Partnership and Collaboration; Human and Financial Resources; and Monitoring, Evaluation, and Adaptive Management. Suggestions outside of these categories are listed under "Additional Next Steps."

Partnership and Collaboration

- Engage and define roles and plan of action for existing and potential partners to identify tangible and mutually beneficial opportunities to implement SWAP 2015 and companion plans.
- Seek opportunities to prioritize conservation actions by region, and build upon partnerships with organizations engaged in natural resource management plan implementation.
- By strategy, identify specific partners and working groups interested in supporting (through financial or human resources) conservation actions relevant to SWAP 2015 and companion plans (e.g., ongoing partnership meetings with interested partners).
- Develop collaborative pilot projects focused on addressing sector strategies, identified pressures, and desired outcomes described in SWAP 2015 and companion plans.

Human and Financial Resources

- Request additional funding from the State (or other sources) to support CDFW's implementation and adaptation (as necessary) of SWAP 2015 and companion plans, and request additional funding to improve permitting guidance and develop implementation of mitigation practices.
- Seek commitments (e.g., leadership, management) from CDFW and relevant partners to support implementation and integration of SWAP 2015 and companion plans including increasing staff capacity and expertise (e.g., increase CDFW's Office of Spill Prevention and Response [OSPR] capacity and expertise to rapidly respond in the event of contaminant spills in or near marine environments), and seek support for acquisition and upgrades to data management systems.
- Build upon the information shared in the companion plan to develop a table or short document that identifies key resources (human and financial) available for implementation of SWAP 2015 and companion plan priorities.

Monitoring, Evaluation, and Adaptive Management:

- Continue support for data collection, analysis, translation, and aggregation of data for decision-making.
- Seek resources to develop and implement a monitoring and evaluation protocol that tracks progress towards achieving SWAP 2015, companion plan goals, and desired outcomes.
- Adopt common metrics and protocols to measure metrics statewide, sub-regionally, and locally and among user groups and institutions.

Additional Next Steps

- Develop and share more detailed information describing and linking priority pressures, strategies, and conservation activities at multiple scales of intervention (State, regional, and local).
- Develop a timeline and work plan for implementation of the prioritized SWAP 2015 and companion plan conservation actions.
- Seek ways to link companion plans together to enhance integrated regional planning and implementation (e.g., link to MPA Statewide Leadership Team work plan).
- Build upon the initial work focused on embayments, estuaries, and lagoons to develop more specific SWAP strategies and conservation activities for other target ecosystems (refer to SWAP Chapter 1 under Vision on working landscapes).

9. Closing

This companion plan was developed in collaboration with many partners who deserve special recognition for their time and commitment (please see Appendix D for a list of development team members). As an initial step towards building a collaborative approach for implementation of SWAP 2015 and the nine sector-focused companion plans, CDFW will develop a work plan that describes actions to implement the plans and address the next steps identified.

Appendices

Appendix A: List of Potential Partners and Coordination Bodies

Disclaimer: Please note this is not an exhaustive list of potential partners. The organizations listed in here were identified through this companion plan process, but their identification here does not indicate agreement to partner and/or provide financial resources for the conservation activities. Furthermore, the strategy categories checked off for each organization were completed to the best knowledge of the development team members; some organizations' efforts were unknown (blank cells).

Potential Partners/Coordination Bodies	Data Collection and Analysis	Law and Policy	Management Planning
Audubon CA	✓	✓	✓
Beach Ecology Coalition	✓		
Bolsa Chica Lowlands Restoration Project			✓
Bureau of Land Management (BLM)	✓		✓
Bureau of Ocean Energy Management (BOEM)	✓	✓	
CA Coastal Commission (CCC)	✓	✓	✓
CA Coastal Sediment Management Workgroup	✓		✓
CA Coastkeeper Alliance and Individual Keepers	✓	✓	
CA Department of Fish and Wildlife (CDFW)	✓	✓	✓
CA Fish and Game Commission (FGC)	✓	✓	✓
CA Landscape Conservation Cooperative (LCC)	✓		✓
CA Marine Sanctuary Foundation	✓		
CA Natural Resources Agency (CNRA)	✓	✓	✓
CA Ocean Protection Council (OPC)	✓	✓	✓
CA Ocean Science Trust	✓		✓
CA Sea Grant	✓		
CA State Coastal Conservancy (SCC)	✓	✓	✓
CA State Lands Commission (SLC)			✓
CA Department of Parks and Recreation (State Parks)	✓	✓	✓
CA Tribes and Tribal Communities	✓	✓	✓
CA Water Quality Monitoring Council	✓		
Center for Ocean Solutions		✓	
Central Coast Wetlands Group	✓		✓
Conservation Biology Institute	✓		✓
County Parks	✓		
Elkhorn Slough Foundation	✓		
Environmental Defense Center	✓	✓	✓
Fish Habitat Partnerships	✓		
Friends of the Eel River	✓		

Potential Partners/Coordination Bodies	Data Collection and Analysis	Law and Policy	Management Planning
Golden Gate Salmon Association		✓	✓
Greater Farallones National Marine Sanctuary (NMS) Climate Change Forum		✓	
Heal the Bay	✓	✓	
Humboldt Bay Initiative	✓		✓
Humboldt Bay Climate Change Group			✓
Humboldt Fish Action Council	✓		
Humboldt State University	✓		
LA Waterkeeper	✓	✓	
Laguna Ocean Foundation	✓		
LightHawk	✓		
Mattole Restoration Council	✓		
Mattole Salmon Group	✓		
Monterey Bay Aquarium		✓	
Morro Bay National Estuary Program	✓		✓
Moss Landing Marine Lab	✓		✓
MPA Collaborative Implementation Project	✓	✓	✓
MPA Statewide Leadership Team (MSLT)	✓	✓	✓
MPA Watch	✓		✓
Multi-Agency Rocky Intertidal Network (MARINe)	✓		
National Estuarine Research Reserves System	✓		
National Oceanic and Atmospheric Administration (NOAA) • National Marine Fisheries Service (NMFS) • National Estuarine Research Reserves System • Office of National Marine Sanctuaries (NMS)	✓	✓	✓
National Park Service (NPS)	✓		✓
Natural Resources Conservation Service (NRCS)	✓		
Natural Resources Defense Council (NRDC)		✓	
Non-governmental Organizations (NGOs)	✓	✓	✓
North Pacific Landscape Conservation Cooperative (LCC)	✓		✓
Northcoast Environmental Center		✓	✓
Ocean Conservancy		✓	
Pacific Birds Habitat Joint Venture	✓	✓	✓
Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO)	✓		
Point Blue Conservation Science	✓	✓	
Reef Check CA (RCCA)	✓		

Potential Partners/Coordination Bodies	Data Collection and Analysis	Law and Policy	Management Planning
Resource Conservation Districts (RCDs) • Humboldt County RCD • Napa County RCD • Other RCDs	✓		✓
Resources Legacy Fund (RLF)	✓	✓	✓
Salmonid Restoration Federation	✓		
San Francisco Bay Joint Venture	✓	✓	✓
San Francisco Bay National Estuarine Research Reserve	✓		
San Francisco Estuary Partnership	✓		✓
Southern California Wetlands Recovery Project (SCWRP) - Wetland Managers Group	✓		✓
Sea Ranch Stewardship Task Force			
Seabird Protection Network	✓	✓	
Smithsonian Institute – Environmental Research Center	✓		
Sonoran Join Venture for Bird Conservation	✓	✓	✓
Southern CA Coastal Water Research Project (SCCWRP)	✓		
State Water Resources Control Board (SWRCB)	✓	✓	✓
Stewards of the Coast and Redwoods			
Surfrider Foundation		✓	
The Bay Foundation	✓		
The Bay Institute	✓		
Tomales Bay Watershed Council			✓
Trustee Councils		✓	
University of CA and CA State University Marine Labs/Programs	✓		
University of CA, Santa Cruz	✓		
U.S. Army Corps of Engineers (USACE)	✓	✓	✓
U.S. Department of Defense • U.S. Air Force • U.S. Navy	✓	✓	✓
U.S. Environmental Protection Agency (USEPA) – • National Estuary Program	✓		
U.S. Fish and Wildlife (USFWS) • Office of Law Enforcement	✓	✓	✓
U.S. Geological Survey (USGS)	✓	✓	✓
United Anglers		✓	
West Coast Estuaries Initiatives	✓		✓
West Coast Governors Alliance for Ocean Health		✓	

Potential Partners/Coordination Bodies	Data Collection and Analysis	Law and Policy	Management Planning
West Coast Regional Planning Body (RPB)			✓
West Marin Environmental Action Committee	✓	✓	✓
Wildcoast	✓	✓	

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

Allison, Gary W., Steven D. Gaines, Jane Lubchenco, and Hugh P. Possingham. "Ensuring Persistence of Marine Reserves: Catastrophies Require Adopting an Insurance Factor." *Ecological Applications* 13.1 (2003): S8-S24. Ecological Society of America. Print. http://espace.library.uq.edu.au/view/UQ:8716/UQ8716OA.pdf.

Boehm, Alexandria, Mark Jacobson, Michael O'Donnell, Martha Sutula, W. Waldo Wakefield, Stephen Weisberg, and Elizabeth Whiteman. "Ocean Acidification Science Needs for Natural Resource Managers of the North American West Coast." *Oceanography Oceanog* 25.2 (2015): 170-81. Print. http://dx.doi.org/10.5670/oceanog.2015.40.

Bureau of Land Management (BLM). *California Coastal National Monument Resource Management Plan.* 2005. Print. http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/pdfs/pa_pdfs/coastalmonument_pdfs/ccnm_rmp.Par.49cee191.File.dat/RMP_Printable.pdf.

California Biodiversity Council (CBC). *Strengthening Agency Alignment for Natural Resource Conservation*. 2013. Print. http://ucanr.edu/sites/CBC/files/204079.pdf.

California Coastal Commission (CCC). *Strategic Plan 2013-2018*. 2013. Print. http://www.coastal.ca.gov/strategicplan/CCC_Final_StrategicPlan_2013-2018.pdf.

California Department of Fish and Game. *California's Living Marine Resources: A Status Report*. 2001. Print. https://www.dfg.ca.gov/marine/status/status2001.asp. (Updates available at http://www.dfg.ca.gov/marine/status/index.asp.

---. *Elk River Wildlife Area Management Plan*. 1993. DOC.

---. *Lower Eel River Basin Assessment*. 2010. Print. http://coastalwatersheds.ca.gov/LinkClick.aspx?fileticket=IqyBZ%2bNXqhg%3d&tabid=669&mid=1186.

---. Master Plan for Marine Protected Areas. 2008. Print. http://www.dfg.ca.gov/marine/mpa/masterplan.asp.

---. *Redwood Creek Basin Assessment*. 2006. Print. http://coastalwatersheds.ca.gov/LinkClick.aspx?fileticket=RdpZadEj%2fRg%3d&tabid=195&mid=512.

---. *Regional Profile Central Coast Study Region*. 2005. Print. http://www.dfg.ca.gov/marine/pdfs/rpccsr_091905.pdf.

---. *Regional Profile North Central Coast Study Region*. 2007. Print. http://www.dfg.ca.gov/marine/pdfs/nccprofile/profile.pdf.

---. *Regional Profile North Coast Study Region*. 2010. Print. http://www.dfg.ca.gov/marine/pdfs/rpnc0410/profile.pdf.

---. *Regional Profile South Coast Study Region*. 2009. Print. http://www.dfg.ca.gov/marine/pdfs/rpsc/body_part1.pdf.

---. *Salt River Watershed Assessment*. 2005. Print. http://coastalwatersheds.ca.gov/Portals/1/Watersheds/NorthCoast/SaltRiver/docs/SRWA_ExecSummary_FINAL.pdf.

California Department of Fish and Wildlife (CDFW). "Fishing and Hunting Regulations." 2015. Web. 24 Apr. 2015. https://www.wildlife.ca.gov/regulations.

---. *Draft Recommendations for Considering Water Quality and Marine Protected Areas in the MLPA South Coast Study Region.* CA MLPA Master Plan Science Advisory Team. 2009. Print. http://www.dfg.ca.gov/mlpa/pdfs/agenda_060409g1.pdf.

---. *Fay Slough Wildlife Area Land Management Plan DRAFT.* 2013.

---. *Leviathan Mine Natural Resource Damage Assessment Plan. Natural Resource Damage Assessment (NRDA) and Restoration.* 2003. Print. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=17524&inline=true.

California Department of Water Resources (DWR). *Various Basin Plans*. Regional Water Quality Monitoring Boards. Various dates. Print. http://www.waterplan.water.ca.gov/waterquality/basin_plan.cfm.

California Environmental Associates. *California Current Ecosystem Assessments.* 2012. Print. http://www.ceaconsulting.com/work/case_studies.aspx?v=1&c=1&cs=42.

California Natural Resources Agency (CRNA). *Safeguarding California: Reducing Climate Risk*. 2014. Print. http://resources.ca.gov/docs/climate/Final_Safeguarding_CA_Plan_Jul_31_2014.pdf.

California Ocean Protection Council (OPC). *The California Collaborative Approach: Marine Protected Areas Partnership Plan*. 2014. Print. http://www.opc.ca.gov/webmaster/ftp/pdf/docs/mpa/APPROVED_FINAL_MPA_Partnership_Plan_12022014.pdf.

California Ocean Science Trust. *Central Coast MPA Monitoring Plan*. 2014. Print. http://oceanspaces.org/sites/default/files/regions/files/central_coast_monitoring_plan_final_october2014.pdf.

---. *Citizen Science and Ocean Resource Management in California: Guidance for Forming Productive Partnerships, CA, USA*. 2014. Print. http://oceanspaces.org/sites/default/files/ccsi_guidance.pdf.

---. *North Central Coast MPA Monitoring Plan*. 2010. Print. http://oceanspaces.org/sites/default/files/regions/files/ncc_monitoring_plan_and_appendices.pdf.

---. *Putting the Pieces Together: Designing Expert Judgment Processes for Natural Resource Decision-Making.* 2013. Print. http://www.oceansciencetrust.org/wp-content/uploads/2015/07/PuttingThePiecesTogether-FINAL.pdf.

---. *South Coast MPA Monitoring Plan*. 2011. Print. http://oceanspaces.org/sites/default/files/regions/files/sc_mpa_monitoring_plan_full.pdf.

California State Coastal Conservancy (SCC). *Strategic Plan 2013-2018*. 2013. Print. http://scc.ca.gov/files/2013/03/SCC-Strategic-Plan-2013-18.pdf.

California State Water Resources Control Board (SWRCB). *California Ocean Plan.* 2012. Print. http://www.swrcb.ca.gov/water_issues/programs/ocean/docs/cop2012.pdf.

---. *Storm Water Strategic Initiative.* 2014. Print. http://www.swrcb.ca.gov/water_issues/programs/stormwater/docs/strategy_initiative/swsi_cncptppr_6092014.pdf.

California Wetland Monitoring Workgroup. *California Strategic Plan for Wetlands and Riparian Protection and Restoration Draft.* 2010. Print. http://www.mywaterquality.ca.gov/monitoring_council/wetland_workgroup/docs/2010/cwmw_strat.pdf.

---. *California Wetland Monitoring Workgroup Tenets of a State Wetland and Riparian Monitoring Program (WRAMP).* 2010. Print. http://www.mywaterquality.ca.gov/monitoring_council/wetland_workgroup/docs/2010/tenetsprogram.pdf.

Cannata, Steve. *Ocean Ranch Unit Estuary Restoration Feasibility Study*. 2014. DOC.

Cannata, Steve. *Recommendations: Eel River Estuary*. DOC.

Central Coast Wetlands Group. *Using New Methodologies to Assess Bar-built Estuaries along California's Coastline.* 2013. Print. https://ccwg.mlml.calstate.edu/sites/default/files/documents/BBE_Assessment_report.pdf.

Duncan, Benét E., K.D. Higgason, T.H. Suchanek, J. Largier, J. Stachowicz, S. Allen, S. Bograd, R. Breen, H. Gellerman, T. Hill, J. Jahncke, R. Johnson, S. Lonhart, S. Morgan, J. Roletto, F. Wilkerson. *Ocean Climate Indicators: A Monitoring Inventory and Plan for Tracking Climate Change in the North-central California Coast and Ocean Region.* Report of a Working Group of the Gulf of the Farallones National Marine Sanctuary Advisory Council. Marine Sanctuaries Conservation Series ONMS-14-09. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD. 81pp. 2014. Print. http://sanctuaries.noaa.gov/science/conservation/pdfs/indicators14.pdf.

EcoAtlas. "Statewide Map Projects Summaries." San Francisco Estuary Institute, 2015. Web. 23 Apr. 2015. http://ecoatlas.org/.

Gleason Mary G., Sarah Newkirk, Matthew S. Merrifield, Jeanette Howard, Robin Cox, Megan Webb, Jennifer Koepcke, Brian Stranko, Bethany Taylor, Michael W. Beck, Roger Fuller, Paul Dye, Dick Vander Schaaf, and Jena Carter. *A Conservation Assessment of West Coast (USA) Estuaries*. The Nature Conservancy. 2011. Print. http://hdl.handle.net/1957/28058.

Halpern, Benjamin S., Carrie V. Kappel, Kimberly A. Selkoe, Fiorenza Micheli, Colin M. Ebert, Caitlin Kontgis, Caitlin M. Crain, Rebecca G. Martone, Christine Shearer, and Sarah J. Teck. "Mapping Cumulative Human Impacts to California Current Marine Ecosystems." *Conservation Letters* 2.3 (2009): 138-148. Print. http://onlinelibrary.wiley.com/doi/10.1111/j.1755-263X.2009.00058.x/full.

Hughes, Brent B., Matthew D. Levey, Jennifer Ann Brown, Monique C. Fountain, Aaron B. Carlisle, Steven Y. Litvin, Correigh M. Greene, Walter N. Heady, and Mary Gayle Gleason. *Nursery Functions of U.S. West Coast Estuaries: The State of Knowledge for Juveniles of Focal Invertebrate and Fish Species*. The Nature Conservancy. 2014. Print. http://www.pacificfishhabitat.org/media/pmepsokreport/tnc_ca_fishnurseries_lowres.pdf.

Hutto, Sara, Kelley Higgason, Jessi Kershner, Whitney Reynier, and Darrell Gregg. 2015. *Climate Change Vulnerability Assessment for the North-central California Coast and Ocean*. Marine Sanctuaries Conservation Series ONMS-15-02. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD. 473 pp. http://sanctuaries.noaa.gov/science/conservation/pdfs/vulnerability-assessment-gfnms.pdf.

Jaques, Deborah. *Lake Earl Western Grebe Annual Monitoring Report 2011.* 2011. Pacific Eco Logic. Print. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=45720.

Kaplan, Isaac C., Iris A. Gray, and Phillip S. Levin. "Cumulative Impacts of Fisheries in the California Current." *Fish and Fisheries* (2012): 1-13. Print. ftp://ftp.pcouncil.org/pub/Briefing%20Books/BB_CDs/BB_CD_1113/ECOSYSTEM_WORKSHOP_MTLS_ELECTRONIC_ONLY/Kaplan%20et%20al.%202012%20%28Cumulative%20impacts%20of%20fisheries%20in%20the%20California%20Current%29.pdf.

Largier, John, Brian Cheng, and Kelley Higgason, editors. *Climate Change Impacts: Gulf of the Farallones and Cordell Bank National Marine Sanctuaries. Report of a Joint Working Group of the Gulf of the Farallones and Cordell Bank National Marine Sanctuaries Advisory Councils*. 2010. Print. http://farallones.noaa.gov/manage/climate/pdf/climate_report.pdf.

MPA Collaborative Implementation Project. "The Collaborative Implementation Project Provides Structure for Addressing Local Ocean Management Needs." 2015. Web. 23 Apr. 2015. http://mpacollaborative.org/aboutus.html.

Multi-Agency Rocky Intertidal Network (MARINe). *Coastal Biodiversity Survey Protocol.* 2011. Print. http://www.eeb.ucsc.edu/pacificrockyintertidal/biodiversityprotocol.pdf.

National Ocean Council. *National Ocean Policy Implementation Plan*. 2013. Print. https://www.whitehouse.gov/sites/default/files/national_ocean_policy_implementation_plan.pdf.

National Oceanic and Atmospheric Administration (NOAA). "Agriculture and Rural Lands Plan." Oct. 1999. Monterey Bay National Marine Sanctuary. Web. 21 Jul 2015. http://montereybay.noaa.gov/resourcepro/ag.html.

---. "Beach Closure and Microbial Contamination Action Plan." 2008. Monterey Bay National Marine Sanctuary. Web. 21 Jul 2015. http://montereybay.noaa.gov/resourcepro/beach_plan.html.

---. *Coastal Armoring Action Plan*. 2008. Monterey Bay National Marine Sanctuary. Print. http://montereybay.noaa.gov/resourcepro/resmanissues/pdf/101508armoring_plan.pdf.

---. *Desalination Feasibility Study for the Monterey Bay Region*. 2006. Monterey Bay National Marine Sanctuary. Print. http://montereybay.noaa.gov/resourcepro/resmanissues/pdf/110806desal_final.pdf.

---. *Evaluation of Erosion Mitigation Alternatives*. May 2012. Monterey Bay National Marine Sanctuary. Print. http://montereybay.noaa.gov/research/techreports/esapwa2012.pdf.

---. *Guidelines for Desalination Plants in the Monterey Bay National Marine Sanctuary*. 2010. Monterey Bay National Marine Sanctuary. Print. http://montereybay.noaa.gov/resourcepro/resmanissues/pdf/050610desal.pdf.

---. "Management Plan WQPP Action Plan III: Marinas and Boating." 2008. Monterey Bay National Marine Sanctuary. Web. 21 Jul. 2015. http://montereybay.noaa.gov/resourcepro/marinas.html.

---. "Monterey Bay Sanctuary Citizen Watershed Monitoring Network." 1997. Monterey Bay National Marine Sanctuary. Web. 21 Jul. 2015. http://montereybay.noaa.gov/monitoringnetwork/welcome.html.

---. *Monterey Bay Sea Level Rise Vulnerability Assessment*. June 2014. Monterey Bay National Marine Sanctuary. Print. http://montereybay.noaa.gov/resourcepro/resmanissues/pdf/140616erosion-vuln_tech-methods.pdf.

---. *National Marine Sanctuaries of the West Coast Ocean Acidification Action Plan*. 2011. National Marine Sanctuary Program. Print. http://sanctuaries.noaa.gov/about/pdfs/wc_onms_plan.pdf.

---. "Regional Monitoring Action Plan II." 2012. Monterey Bay National Marine Sanctuary. Web. 21 Jul. 2015. http://montereybay.noaa.gov/resourcepro/monitoring.html.

---. "Wetlands and Riparian Corridors Action Plan." Monterey Bay National Marine Sanctuary. Web. 21 Jul. 2015. http://montereybay.noaa.gov/resourcepro/wetlands_plan.html.

---. “WQPP Action Plan I: Implementing Solutions to Urban Runoff.” 2009. Monterey Bay National Marine Sanctuary. Web. 21 Jul. 2015. http://montereybay.noaa.gov/resourcepro/urban.html.

NOAA Fisheries and U.S. Fish & Wildlife Service (USFWS). *Programmatic Biological Opinion on the U.S. Environmental Protection Agency’s Issuance and Implementation of the Final Regulations.* 2014. Print. http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/upload/Final-316b-Biological-Opinion-and-Appendices-May-19-2014.pdf.

National Park Service (NPS). *Final General Management Plan/Wilderness Study/Environmental Impact Statement*. 2005. Channel Islands National Park. Print. http://parkplanning.nps.gov/document.cfm?parkID=292&projectID=11063&documentID=65517 .

---. *Kelp Forest Monitoring Handbook Volume 1: Sampling Protocol*. 1997. Channel Islands National Park. Print. http://science.nature.nps.gov/im/units/medn/assets/docs/protocols/chis_kelp-handbook1.pdf.

---. *Redwood State and National Parks General Plan/General Management Plan*. 2000. Print. http://www.parks.ca.gov/pages/21299/files/GMP.pdf.

Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO). “Subtidal Monitoring Protocols.” 2009. Web. 09 Jul. 2015. http://www.piscoweb.org/research/science-by-discipline/ecosystem-monitoring/kelp-forest-monitoring/subtidal-sampling-protoco#FishSurve.

Southern California Coastal Water Research Project (SCCWRP). *Technical Design for a Status & Trends Monitoring Program to Evaluate Extent and Distribution of Aquatic Resources in California.* 2012. Print. http://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/706_StatusTrendsMonitorAqResources.pdf.

Sullivan, Robert M. *Avian Monitoring, Resource Assessment, and Management Implications of the McDaniel Slough Restoration Project for the Mad River Slough Wildlife Area.* California Department of Fish & Wildlife. 2015. PDF.

Sullivan, Robert M. *Back to the Future: Programmatic Sea Level Rise Vulnerability Assessment with Recommendation’s for Fay Slough, Mad River Slough, and Elk River Slough Wildlife Areas.* California Department of Fish & Wildlife. 2013. PDF.

Sullivan, Robert M. *Crescent City Marsh Wildlife Area Land Management Plan Draft.* California Department of Fish & Wildlife. DOC.

Sullivan, Robert M. *Mad River Slough Wildlife Area Land Management Plan Draft.* California Department of Fish & Wildlife. 2014. DOC.

Sullivan, Robert M. *Wildlife Area Maps.* California Department of Fish & Wildlife. 2012. PDF.

Teck, Sarah J., Benjamin S. Halpern, Carrie V. Kappel, Fiorenza Micheli, Kimberly A. Selkoe, Caitlin M. Crain, Rebecca Martone. "Using Expert Judgement to Estimate Marine Ecosystem Vulnerability

in the California Current." *Ecological Applications* 20.5 (2010): 1402-1416. Ecological Society of America. Print. http://www.ewi.tudelft.nl/fileadmin/Faculteit/EWI/Over_de_faculteit/Afdelingen/Applied_Mathematics/Risico_en_Beslissings_Analyse/Papers/Using_expert_judgment_to_estimate_marine_ecosystem_-_California_Current.pdf.

U.S. Air Force. *Integrated Natural Resources Management Plan Draft.* 2006. Print. http://www.keesler.af.mil/shared/media/document/AFD-061107-019.pdf.

U.S. Coast Guard and U.S. EPA. *Area Contingency Planning Handbook.* 2013. Print. http://www.epa.gov/oem/docs/oil/frp/EPA_ACP_Handbook.pdf.

U.S. Fish & Wildlife Service (USFWS). *Castle Rock National Wildlife Refuge – Information Synthesis.* 2007. Print. http://www.fws.gov/uploadedFiles/Region_8/NWRS/Zone_1/Humboldt_Bay_Complex/Humboldt_Bay/Sections/Documents/Castle%20Rock%20Final%20Report.pdf.

---. *Don Edwards San Francisco Bay National Wildlife Refuge – Comprehensive Conservation Plan.* 2011. Print. http://www.fws.gov/cno/refuges/DonEdwards/DonEdwards.cfm.

---. *Farallon National Wildlife Refuge – Final Comprehensive Conservation Plan and Environmental Assessment.* 2009. Print. http://www.fws.gov/cno/docs/FNWR_CCP_FINAL.pdf.

---. *Seabird Conservation Plan - Pacific Region.* 2005. Print. http://www.fws.gov/pacific/migratorybirds/PDF/Seabird%20Conservation%20Plan%20Complete.pdf.

U.S. Navy. *Integrated Natural Resources Management Plan.* 2012. Print. http://www.denix.osd.mil/nr/upload/inrmps-2.pdf.

Weigand, James F. *Northern California Climate-Smart Vulnerability Assessment* - editorial review. 16 Apr. 2015. DOC.

Appendix C: CDFW Companion Plan Management Team

Name	Title
Armand Gonzales	**SWAP 2015 Project Lead**
Junko Hoshi	**SWAP 2015 Assistant Project Lead**
Kurt Malchow	**SWAP 2015 Companion Plan Development Lead**

Appendix D: Marine Companion Plan Development Team Members and Affiliations

Affiliation	Participant
California Coastal Commission	Jonna Engle
California Department of Fish and Wildlife	Steve Cannata
California Department of Fish and Wildlife - Marine Region	Debbie Aseltine-Neilson
California Department of Fish and Wildlife - Office of Spill Prevention and Response	Holly Gellerman
California Department of Parks and Recreation	Laurie Archambault
California Natural Resources Agency - Ocean Protection Council	Cyndi Dawson
California Ocean Science Trust	Benét Duncan
California State Lands Commission	Jason Ramos Jennifer DeLeon Nicole Russell
California Water Resources Control Board	Maria de la Paz Carpio-Obeso
David and Lucile Packard Foundation	Heather Ludemann
Elkhorn Slough National Estuarine Research Reserve	Kerstin Wasson
National Oceanic and Atmospheric Administration - National Marine Sanctuaries - West Coast Region	Lisa Wooninck
Resources Legacy Fund	Jocelyn Herbert
Southern California Coastal Water Research Project	Eric Stein
The Nature Conservancy	Michael Bell Tom Dempsey
U.S. Bureau of Land Management	James Weigand
U.S. Fish and Wildlife Service - Land Conservation Cooperatives	Rebecca Fris
U.S. Navy – Southwest Region	Walt Wilson

Appendix E: Potential Pressures Affecting Embayments, Estuaries, and Lagoons Identified in SWAP 2015

Pressure	Definition
Agricultural and Forestry Effluents	Includes runoff from crop and rangelands, dairies and stockyards. Generally high in sediments, nutrients, and pollutants, medium in pathogens. Primarily through watershed inputs.
Airborne Pollutants	Includes particulates, pollutants, pathogens, etc. deposited from the air.
Climate Change	Human generated greenhouse gas (e.g., carbon dioxide, methane) emissions that contribute to climate change, such as released from vehicle exhausts and industrial emissions; includes ocean acidification and hypoxia, sea level rise, and increased storm surge.
Dams and Water Management/Use	Diversion of watershed and groundwater inputs, including for agriculture and urban use; altered inputs due to dams and levees; controlled inputs (dikes and weirs).
Fishing, Harvesting, and Collecting Aquatic Resources	Extraction of marine species and associated indirect impacts; includes scientific collecting.
Garbage and Solid Waste	Includes plastics, discarded food items, household items, etc.
Housing and Urban Areas; Commercial and Industrial Areas - Shoreline Development	Current and potential commercial and residential development, as well as agricultural development (e.g., grape production); may create artificial structures.
Industrial and Military Effluents- Hazardous Spills	Oil, gasoline, solvents, etc.
Industrial and Military Effluents, Household Sewage and Urban Wastewater- Point Discharges	Includes discharges from industry, power plants, sewage plants, aquariums and aquaculture facilities; generally medium in sediments and nutrients, high in pollutants and pathogens.
Invasive Plants/Animals	Non-native species directly, either intentionally or unintentionally, brought into the system, rather than movement of species into the system from adjacent areas (e.g., moving in from Mexican waters).
Logging and Wood Harvesting	Removal of timber resulting in erosion, sedimentation, and deposition of particulates into waterways.
Marine and Freshwater Aquaculture	Kelp and other algae, invertebrates, fish pens and aquaculture operations in fresh and marine waters.
Other Ecosystem Modifications - Modification of Mouth/Channels	Dredging, widening mouth, armoring channels.
Other Ecosystem Modifications - Ocean/Estuary Water Diversion/Control	Jetties, breakwaters at mouth of embayments, estuaries, and inlets; intake pipes for power plants, aquariums, aquaculture facilities, etc.; levee, dikes, and weirs for controlling water flow within estuary (water discharged from power plants and other facilities covered under "Industrial and military effluents - Point Discharges").
Other Ecosystem Modifications- Artificial Structures	Artificial structures currently in place along the shoreline (floating and submerged), including pier pilings, as well as potential for new artificial structures.
Parasites/Pathogens/Diseases	Pathogens introduced from outside (e.g., from feces of native and non-native species) or developing/growing within system.
Recreational Activities	Primarily disturbance of sensitive habitats or species; includes vessel use.
Shipping Lanes - Ballast Water	Water released from vessel storage tanks as they enter coastal waters.

Appendix F: Glossary

Most terms in this section originate from the glossary in the Conservation Measures Partnership's (CMP) Open Standards for the Practice of Conservation (Version 2.0). These definitions are based on current usage by many CMP members, other conservation organizations, and planners in other disciplines. Some terms have been added or refined to clarify how CDFW uses them.

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

adaptive management: the incorporation of a formal learning process into conservation action. Specifically, it is the integration of project design, management, and monitoring, to provide a framework to systematically test assumptions, promote learning, and supply timely information for management decisions.

aquatic: growing, living in, or frequenting fresh water, usually open water; compare with wetland.

bay: a body of water connected to an ocean or lake, formed by an indentation of the shoreline.

biodiversity: the full array of living things in a habitat, whether that be a local environment or the whole planet.

conceptual model: a diagram that represents relationships between key factors that are believed to impact or lead to one or more conservation targets. A good model should link the conservation targets to pressures, opportunities, stakeholders, and intervention points (factors – pressures, opportunities, or targets – in a conceptual model where a team can develop strategies that will influence those factors). It should also indicate which factors are most important to monitor.

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

conservation strategy: designed to achieve desired outcomes for the conservation targets, called goals. In the most general sense, the overall goal of SWAP 2015 is to enhance ecosystems. Therefore, the conservation strategies are meant to work toward the ultimate goal of enhancing ecosystems.

contributing factor: a behind the scene socio-economic factor that contributes to produce pressures.

critical pressure: direct pressure that have been prioritized as being the most important to address.

direct pressure: primarily human actions that immediately degrade one or more conservation targets. For example, "logging" or "fishing." They can also be natural phenomena altered by human activities (e.g., increase in extreme storm events due to climate change). Typically tied to one or more stakeholders. Sometimes referred to as a "pressure" or "source of stress." Compare with indirect pressure.

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

disturbance regime: the characteristic pattern of natural- or human-caused events that disrupts the current physical and biological conditions of an area, such as floods, fires, storms, and human activity.

driver: a synonym for factor.

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

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

endangered species: any species, including subspecies or qualifying distinct population segment, which is in danger of extinction throughout all or a significant portion of its range.

estuary: an area in which salt water from the ocean mixes with flowing fresh water, usually at the wide mouth of a river.

exotic species: a species of plant or animal introduced from another country or geographic region outside its natural range; non-native.

factor: a generic term for an element of a conceptual model including direct and indirect pressures, opportunities, and associated stakeholders. It is often advantageous to use this generic term since many factors – for example tourism – could be both a threat and an opportunity.

fauna: refers to all of the animal taxa in a given area.

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

flora: refers to all of the plant taxa in a given area.

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.

habitat quality: the capacity of a habitat to support a species.

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

indicator: a measurable entity related to a specific information need such as the status of a target/factor, change in a threat, or progress toward an objective. A good indicator meets the criteria of being: measurable, precise, consistent, and sensitive.

indirect pressure: a factor identified in an analysis of the project situation that is a driver of direct pressure. Often an entry point for conservation actions. For example, "logging policies" or "demand for fish." sometimes called a root cause or underlying cause. Compare with direct pressure.

information need: something that a project team and/or other people must know about a project. The basis for designing a monitoring plan.

introduced: refers to any species intentionally or accidentally transported and released into an environment outside its native range.

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

invertebrate: an animal without an internal skeleton. Examples are insects, spiders, clams, shrimp, and snails.

key ecological attribute (KEA): aspects of a target's biology or ecology that, if present, define a healthy target and, if missing or altered, would lead to the outright loss or extreme degradation of the target over time.

lagoon: a shallow body of water separated from a larger body of water by barrier islands or reefs.

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.

macrogroup: the fifth level in the National Vegetation Classification natural vegetation hierarchy, in which each vegetation unit is defined by a group of plant communities with a common set of growth forms and many diagnostic plant taxa, including many character taxa of the dominant growth forms, preferentially sharing a broadly similar geographic region and regional climate, and disturbance.

method: a specific technique used to collect data to measure an indicator. A good method should meet the criteria of accurate, reliable, cost-effective, feasible, and appropriate.

migrate; migratory: referring to animals that travel seasonally. Migrations may be local or over long distances.

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).

monitoring plan: the plan for monitoring a project. It includes information needs, indicators, and methods, spatial scale and locations, timeframe, and roles and responsibilities for collecting data.

native: naturally occurring in a specified geographic region.

non-native species: see exotic species.

nonpoint: pollution whose source cannot be ascertained, including runoff from storm water and agricultural, range, and forestry operations, as well as dust and air pollution that contaminate waterbodies.

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

opportunity: a factor identified in an analysis of the project situation that potentially has a positive effect on one or more targets, either directly or indirectly. Often an entry point for conservation actions. For example, "demand for sustainably harvested timber." In some senses, the opposite of a threat.

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

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

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

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

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.

province: a regional unit defined under SWAP 2015 that is made out of several nearby conservation units.

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

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

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

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.

scope: the broad geographic or thematic focus of a program or project. The State of California will serve as the broad geographic or thematic scope for the program which consists of a group of projects, which together aim to achieve a common broad vision.

sensitive species: plant and animal species for which population viability is a concern.

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.

strategic plan: the overall plan for a project. A complete strategic plan includes descriptions of a project's scope, vision, and targets; an analysis of project situation, an action plan, a monitoring plan, and an operational plan.

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).

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

taxon: the name that is applied to a group in biological classification, for example, species, subspecies, variety, or evolutionarily significant unit (ESU). The plural is taxa.

threat: see pressure.

viable: able to persist over time; self-sustaining.

vision: a description of the desired state or ultimate condition that a project is working to achieve. A complete vision can include a description of the biodiversity of the site and/or a map of the project area as well as a summary vision statement.

vision statement: a brief summary of the project's vision. A good vision statement meets the criteria of being relatively general, visionary, and brief.

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

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

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

References

Aseltine-Neilson, Debbie. Personal Communication. 2014.

Bureau of Land Management (BLM). *California Coastal National Monument Resource Management Plan. 2005*. Print. http://www.blm.gov/style/medialib/blm/ca/pdf/pdfs/pa_pdfs/coastalmonument_pdfs/ccnm_rmp.Par.49cee191.File.dat/RMP_Printable.pdf.

California Coastal Commission (CCC). *Strategic Plan 2013-2018*. 2013. Print. http://www.coastal.ca.gov/strategicplan/CCC_Final_StrategicPlan_2013-2018.pdf.

California Department of Fish & Game (CDFG). *California Marine Life Protection Act – Master Plan for Marine Protected Areas*. 2008. Print. https://www.dfg.ca.gov/marine/pdfs/revisedmp0108.pdf.

---. *California's Wildlife Action Plan*. 2005. Print. http://www.dfg.ca.gov/SWAP/2005/docs/SWAP-2005.pdf.

California Department of Fish and Wildlife (CDFW). *State Wildlife Grants*. 2014. XLS.

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

---. "California's Marine Protected Area (MPA) Network." 2015b. Web. 24 Mar. 2015. http://www.dfg.ca.gov/marine/mpa/mpa_summary.asp.

---. "MPA Research and Monitoring Activities." 2015c. Web. 28 Jul. 2015. http://www.dfg.ca.gov/marine/mpa/monitoring.asp.

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

California Fish and Game Code. Assembly Bill 2402. 2015 (enacted). Print. http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201120120AB2402.

FindLaw. "United States v. State of California 332 U.S. 19 (1947)." 2015. Web. 22 July 2015. http://caselaw.findlaw.com/us-supreme-court/332/19.html#t1.

Gaines, S., B. Gaylord, and J. Largier. 2003. Avoiding Current Oversights in Marine Reserve Design. *Ecological Applications* 13:32–46.

Gaines, S., S. Lester, C. Grorud-Colvert, C. Costello, and R. Pollnac. 2010. Evolving Science of Marine Reserves: New Developments and Emerging Research Frontiers. *Proceedings of the National Academy of Sciences* 107(43):18251-18255.

Humboldt County Resource Conservation District. “Salt River Ecosystem Restoration Project.” 2015. Web. 28 Jul. 2015. http://humboldtrcd.org/index_files/salt_river_ecosystem_restoration_project.htm.

Johnson, M. L., and J. Sandell. 2014. *Advances in Marine Biology: Marine Managed Areas and Fisheries*. London: Elsevier.

Largier, J.L., B.S. Cheng, and K.D. Higgason, editors. 2010. *Climate Change Impacts: Gulf of the Farallones and Cordell Bank National Marine Sanctuaries*. Report of a Joint Working Group of the Gulf of the Farallones and Cordell Bank National Marine Sanctuaries Advisory Councils. 121pp. http://farallones.noaa.gov/manage/climate/pdf/climate_report.pdf.

National Ocean Economics Program (NOEP). *State of the U.S. Ocean and Coastal Economies*. 2014. Print. http://oceaneconomics.org/Download/.

National Oceanic and Atmospheric Administration (NOAA). *National Coastal Population Report: Population Trends from 1970 to 202*0. 2013. Print. http://stateofthecoast.noaa.gov/features/coastal-population-report.pdf.

OceanSpaces. “MPA Monitoring.” 2015. Web. 28 Jul. 2015. http://oceanspaces.org/monitoring.

---. “MPA Statewide Leadership Team.” 2014. Web. 29 Oct. 2015. http://oceanspaces.org/organization/mpa-statewide-leadership-team.

Unified Port of San Diego. *San Diego Bay Integrated Natural Resource Management Plan*. 2013. Print. 24 Aug. 2015. https://www.portofsandiego.org/environment/clean-water/doc_download/5730-inrmp-september-2013.html.