

California State Wildlife Action Plan

2015 UPDATE

A Conservation Legacy for Californians





BACKGROUND

Congress created the State and Tribal Wildlife Grants (SWG) program in 2000, recognizing the need to fund programs for the conservation of wildlife diversity. Congress mandated each state and territory to develop a SWAP that provides a comprehensive wildlife conservation strategy to continue receiving federal funds through the SWG program. California's first SWAP was completed by California Department of Fish and Game (now CDFW) and approved by the U.S. Fish and Wildlife Service (USFWS) in 2005. California's SWAP 2005 identified and targeted Species of Greatest Conservation Need (SGCN) and the vital habitats on which they depend. CDFW has received approximately \$37 million in federal support for the state's wildlife conservation activities through the SWG program from 2005 through 2014. The SWG program requires SWAP updates at least every 10 years. CDFW has now prepared SWAP 2015, which is the first comprehensive update of SWAP 2005.

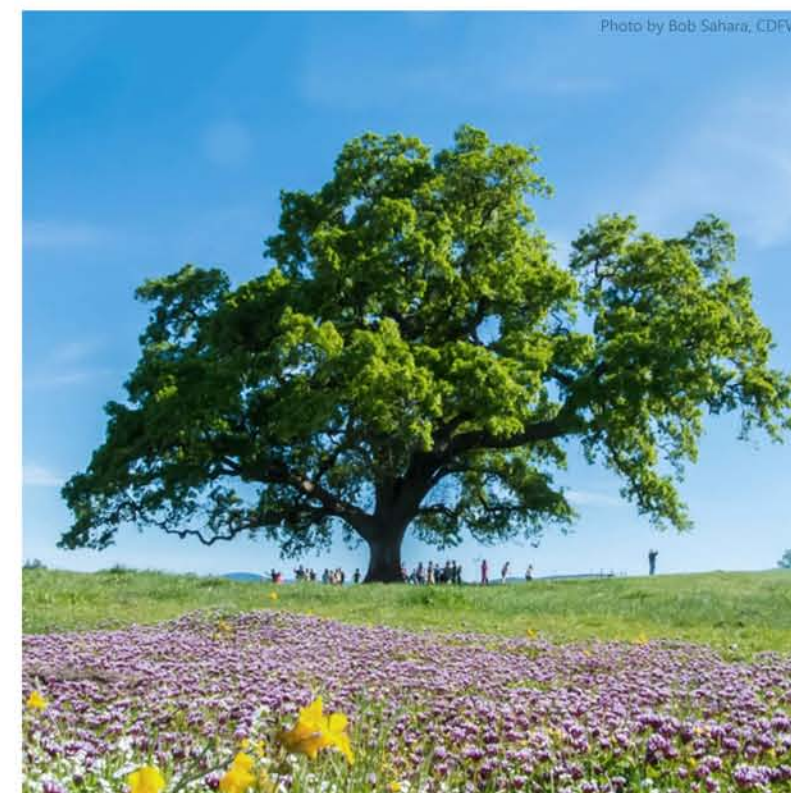
Vision for Wildlife Conservation

California's State Wildlife Action Plan (SWAP) is a comprehensive plan for conserving the state's fish and wildlife and their vital, natural habitats for future generations. The California Department of Fish and Wildlife (CDFW) is using an approach for wildlife conservation that is in harmony with a growing human population and the need for resilience in the face of a changing climate. SWAP 2015 is a flexible, but scientifically grounded plan. Employing an ecosystem approach to conserve and manage diverse habitats and species, SWAP 2015 provides a blueprint for actions necessary to address the highest priorities for conserving California's freshwater aquatic, marine, and terrestrial resources. Its implementation relies on making important and helpful conservation information more accessible to resource managers and the public, and on developing lasting partnerships with a broad array of governments, agencies, organizations, businesses, and residents. CDFW's vision for conserving the state's wildlife is to sustain the floral and faunal biodiversity of California over the next decade and to establish a solid conservation framework for the decades that follow.

Through SWAP 2015, together with diverse partners, CDFW seeks to:

- ▶ Maintain and enhance the integrity of ecosystems by conserving key natural processes and functions, habitat qualities, and sustainable native species population levels, so that California's ecosystems are resilient to shifting environmental conditions resulting from climate change.
- ▶ Promote partnerships with federal, state, and local agencies; tribal governments; and non-governmental organizations with aligned conservation goals to leverage efficient use of funding and other public resources.
- ▶ Inspire greater understanding and recognition of critical needs for conserving wildlife and their habitats by lawmakers, land use planners, private landowners, and others who have influence in developing and implementing conservation actions.
- ▶ Allocate sufficient water and manage water resources to maintain healthy ecosystems and fish and wildlife populations when considering state and regional water supply needs.
- ▶ Provide resources and coordinate efforts with partners to eradicate or control invasive species and to prevent new introductions.

- ▶ Sustain the quality of California's natural resources and biodiversity in harmony with predicted economic growth and human population increases.
- ▶ Continue to prioritize protection of key habitat linkages, sensitive habitats, and specialized habitats for Species of Greatest Conservation Need (SGCN).
- ▶ Integrate wildlife conservation with working landscapes and environments, recognizing both the economic and ecological values of agriculture, rangeland, forestry, and fisheries.
- ▶ Support conservation programs that benefit native species, habitats, and ecosystems through broad-based public funding from federal, state, special district, and local government sources.
- ▶ Educate the public about wildlife conservation issues and inspire a conservation ethic in present and future generations through public outreach.
- ▶ Enhance conservation capacity by clearly articulating conservation purposes, applying adaptive management principles, and effectively using staff and financial resources.



Consideration of Climate Change

Significant climate-related changes to California's environment have been documented in the last decade, including sea level rise, natural community shifts, increased prevalence of invasive species, increased number and intensity of wildfires, and prolonged drought. Climate-induced effects on wildlife, in combination with other pressures, have the potential to greatly diminish vulnerable wildlife populations and habitats and must be considered when developing management strategies. Climate change considerations have been given great weight during development of SWAP 2015, in the following ways:

- ▶ Adopting climate vulnerability as a criterion for selection as an SGCN.
- ▶ Incorporating climate forecast reports when assessing the ecological conditions of conservation targets.
- ▶ Conducting climate change vulnerability analyses for native species and vegetation in California.
- ▶ Identifying how the SWAP conservation strategies align with California's Climate Adaptation Strategy and the National Fish, Wildlife, and Plants Climate Adaptation Strategy, thus achieving important climate adaptation co-benefits through SWAP implementation.

Prioritizing Conservation Targets

The process to provide the SWAP elements required by USFWS and develop multi-species conservation strategies began by broadly categorizing natural resources in California. The categories used in SWAP 2015 are terrestrial, freshwater aquatic, and marine habitats. SWAP 2015 recognizes that within each of these resource categories there would be strategies that apply to specific geographic regions, and others that are more broadly relevant across many regions or possibly statewide. To assess conservation needs at a manageable scale, the state was subdivided for each resource category using established and accepted geographic units. These geographic units are ecoregions for terrestrial resources, hydrologic units for freshwater aquatic resources, and marine conservation units, collectively called conservation units. The conservation units were then grouped together into seven major geographic provinces. This approach facilitated the discussion of ecosystems, natural communities, and species at a scale appropriate for regional conservation planning.



An exception to developing conservation strategies within these geographic units is the analysis of anadromous fishes. Anadromous fish begin life in the fresh water of rivers and streams, migrate to the ocean to grow into adults, and then return to fresh water to spawn. Because the geographic ranges of anadromous fish span many of the provinces developed for SWAP 2015, the conservation strategies for anadromous fishes have been developed separately to capture all the habitats within their ranges.

A conservation target is an element of biodiversity chosen to be the focus of conservation actions. While in concept a target can be a species, habitat, or ecological system, for SWAP 2015 the conservation targets are defined in terms of some natural community, such as vegetation, habitat type, or species assemblage.

To better understand the relative location, extent, and distribution of ecosystems in California, habitat or habitat type was chosen as a surrogate to represent the interactions between the biotic and abiotic characteristics of the system and to then associate species by use of the surrogate. There are many biodiversity elements that were not chosen as a conservation target for 2015 SWAP, but those elements will continue to be analyzed over time.

Ecosystem Approach and Species of Greatest Conservation Need

A multi-species, ecosystem approach has been used as the guiding framework for developing SWAP 2015. An ecosystem approach to conservation involves maintaining and enhancing the ecosystem processes, structure, and conditions recognizing that all components are interrelated in a dynamically changing system. Large-scale landscape approaches are generally the most reliable and preferred method to conserve ecological integrity, including biological diversity. The approach benefits both game and non-game (or harvested and non-harvested) wildlife species, and creates many co-benefits related to both natural values (such as enhanced water quality, soil conservation, or resilience to the effects of climate change) and societal values (such as open space, scenic quality, or outdoor recreation opportunities).

A key element of updating the SWAP is identifying and compiling information on the species of wildlife that are indicative of the state's biological diversity and have the greatest need for conservation. These species are referred to as SGCN. For SWAP 2015, regional teams developed criteria and evaluated species, resulting in a revised SGCN list of invertebrates, amphibians, reptiles, fish, birds, mammals, and plants. Because SWAP 2015 has identified over 1,000 SGCN, a species-based implementation approach is not feasible; however, it is recognized that dividing California into habitat types may present limitations that must be balanced with species-specific efforts when needed to effectively address conservation of species.

SWAP 2015 used three criteria to determine the list of SGCN:

- Species listed as threatened, endangered, or candidates in California under the federal Endangered Species Act or the California Endangered Species Act;
- Species for which there is a conservation concern (generally equivalent to California Species of Special Concern); or
- Species identified by CDFW as being highly vulnerable to climate change.

DEFINITIONS IMPORTANT TO CONSERVATION PLANNING

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.

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 a critical pressure.

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.

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.

STRATEGY

A group of actions with a common focus that work together to reduce pressures, capitalize on opportunities, or restore natural systems.

STRESS

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



Photo by Ascent Environmental, Inc.

Standardized Approach

The focus of SWAP 2015 is on species deemed to be most rare, imperiled, and in need of conservation. Habitat types with high levels of biodiversity and with high counts of rare and endemic species (including declining and at-risk species and SGCN) are prioritized for selection as potential conservation targets. The conservation strategies are developed to reduce pressures, and thus, reduce the stress on the key ecological attributes (KEAs) and improve the ecological viability of the conservation target over time.

By definition, KEAs are attributes for which the future viability of the conservation target most depends. If the KEAs are degraded, then the target is experiencing some type of stress, such as habitat fragmentation, changes in community structure, or changes in fire regime. A stress is caused by a pressure, an anthropogenic (human-induced) or natural driver that results in negative impacts to the target by degrading the ecological condition. Examples of pressures include housing and urban development, invasive plants and animals, excessively frequent or intense fire, and suppression of natural fire frequency.

CDFW regional teams developed at least one conservation project, or set of strategies, directed at each high priority conservation target. While SWAP 2015 succeeds in developing over 60 conservation projects and over 250 individual conservation strategies, an ever growing need for additional conservation planning remains, as more and more stresses are experienced by terrestrial, freshwater aquatic, and marine habitats. The targets that have been chosen and presented in SWAP 2015 represent an initial foundation upon which the future conservation needs and priorities of California's natural resources can be built.

CDFW REGIONAL TEAMS DEVELOPED CONSERVATION STRATEGIES BY:

- Identifying the conservation unit (e.g., ecoregion, hydrologic unit, or marine conservation unit) and the target.
- Identifying SGCN or other important focal species associated with the conservation target.
- Selecting the most important KEAs for each conservation target.
- Identifying stresses for each KEA and ranking the scope and severity of the stress.
- Identifying pressures that cause the stresses and ranking the pressures according to their contribution and irreversibility.
- Developing conservation strategies to reduce the pressures and ranking them on their potential impact and feasibility.
- Compiling the highest ranked strategies for inclusion in SWAP 2015.

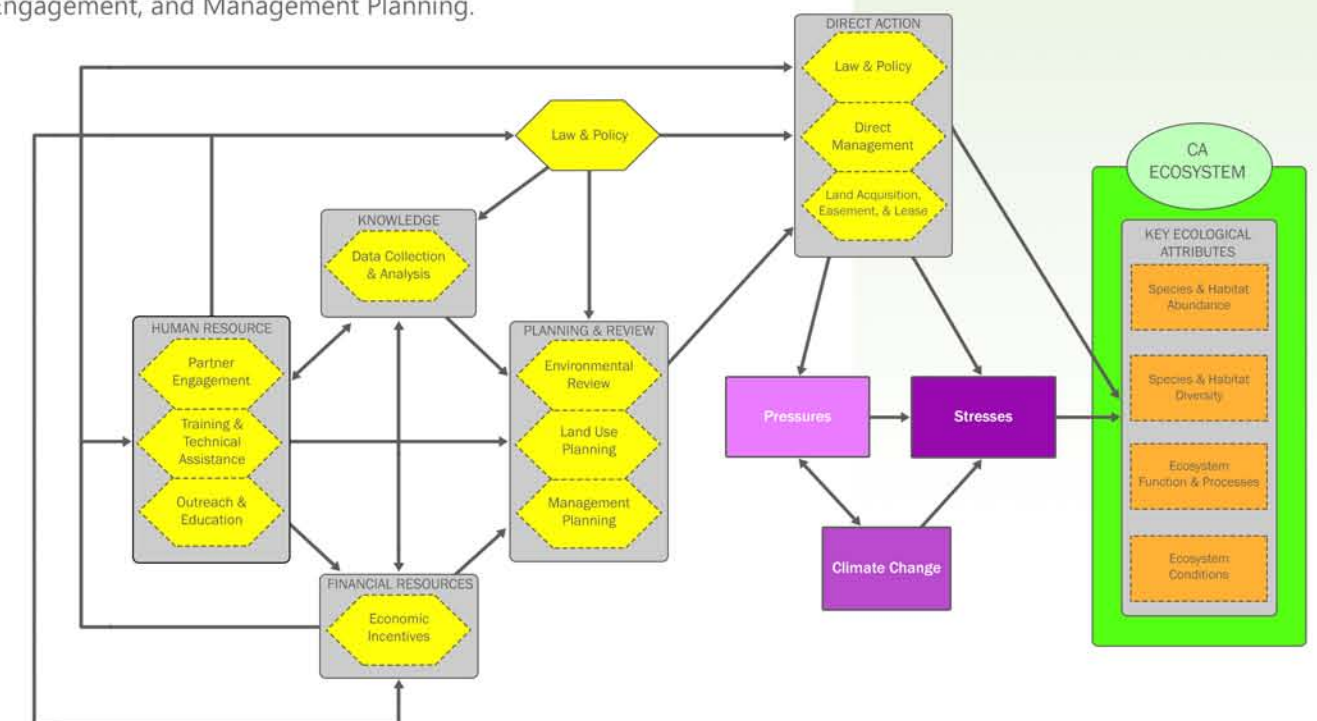
Development of Conservation Strategies

Standardized categories have been developed in SWAP 2015 to organize the specific conservation strategies developed for each of the conservation targets. The categories include strategies that apply across the state. Implementation of these strategies are not limited to CDFW actions or confined to CDFW lands. Forming and facilitating partnerships, alliances, and networks of organizations are vital to implementation of SWAP 2015.

Eleven categories of conservation strategies have been identified that provide overall conservation benefits statewide. These categories contain the strategies to achieve statewide conservation goals. The conservation strategies, including ones in different categories, work together with the ultimate goal of enhancing ecosystems. The strategies work to reduce the pressures and their contributing factors, such as climate change, and alleviate the stresses. In turn, the reduction of stresses results in enhancement or maintenance of the KEAs of the ecosystem. In most cases, multiple categories of conservation strategies need to work together to achieve the desired outcome. Some categories are intended as precursors to other categories. They are aimed at the development and implementation of other conservation strategies. Examples of precursors categories are: Data Collection and Analysis, Partner Engagement, and Management Planning.

CATEGORIES OF CONSERVATION STRATEGIES

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



North Coast and Klamath Province						
Target	Key Ecological Attributes		Pressures		Strategy Categories	
American Southwest Riparian Forest and Woodland North Coastal and Montane Riparian Forest and Woodland	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Successional dynamics 	<ul style="list-style-type: none"> Age class heterogeneity Hydrological regime 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Dams and water management/use Invasive plants/animals 	<ul style="list-style-type: none"> Housing and urban areas Livestock farming and ranching 	<ul style="list-style-type: none"> Partner Engagement Management Planning Direct Management 	<ul style="list-style-type: none"> Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education
Freshwater Marsh	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Successional dynamics 	<ul style="list-style-type: none"> Key species population levels Surface water flow regime 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Housing and urban areas Invasive plants/animals 	<ul style="list-style-type: none"> Livestock farming and ranching Other ecosystem modifications 	<ul style="list-style-type: none"> Management Planning Economic Incentives Land Acquisition/ Easement/ Lease 	<ul style="list-style-type: none"> Law and Policy Outreach and Education
Pacific Northwest Conifer Forests	<ul style="list-style-type: none"> Area and extent of community Successional dynamics Structural diversity 	<ul style="list-style-type: none"> Hydrological regime Soil and sediment deposition regime 	<ul style="list-style-type: none"> Agricultural and forestry effluents Avalanches Fire and fire suppression Introduced genetic material Invasive plants/animals 	<ul style="list-style-type: none"> Livestock farming and ranching Logging and wood harvesting Parasites/pathogens/diseases Roads and railroads Wood and pulp plantations 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning 	<ul style="list-style-type: none"> Direct Management Outreach and Education Training and Technical Assistance
Pacific Northwest Subalpine Forest	<ul style="list-style-type: none"> Area and extent of community Fire regime Successional dynamics 	<ul style="list-style-type: none"> Structural diversity Age class heterogeneity 	<ul style="list-style-type: none"> Climate change Fire and fire suppression 	<ul style="list-style-type: none"> Parasites/pathogens/diseases Recreational activities 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management 	<ul style="list-style-type: none"> Economic Incentives Environmental Review Land Use Planning Training and Technical Assistance
California Foothill and Valley Forests and Woodlands	<ul style="list-style-type: none"> Fire regime Successional dynamics Key species population levels 	<ul style="list-style-type: none"> Native versus non-native diversity Age class heterogeneity Soil and sediment deposition regime 	<ul style="list-style-type: none"> Fire and fire suppression Invasive plants/animals 	<ul style="list-style-type: none"> Livestock farming and ranching Recreational activities 	<ul style="list-style-type: none"> Partner Engagement Direct Management Economic Incentives 	<ul style="list-style-type: none"> Land Acquisition/ Easement/ Lease Outreach and Education
Alpine Vegetation	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems 	<ul style="list-style-type: none"> Diversity 	<ul style="list-style-type: none"> Climate Change Commercial and industrial areas Invasive plants/animals 	<ul style="list-style-type: none"> Livestock farming and ranching Recreational activities 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management 	<ul style="list-style-type: none"> Economic Incentives Outreach and Education Training and Technical Assistance
Fen (Peatlands) North Coastal and Montane Riparian Forest and Woodland Subalpine Aspen Forests and Pine Woodlands Western Upland Grasslands, Wet Mountain Meadow	<ul style="list-style-type: none"> Area and extent of community Fire regime Successional dynamics 	<ul style="list-style-type: none"> Native versus non-native diversity Hydrological regime 	<ul style="list-style-type: none"> Fire and fire suppression Invasive plants/animals 	<ul style="list-style-type: none"> Logging and wood harvesting 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management 	<ul style="list-style-type: none"> Environmental Review Law and Policy Outreach and Education
Subalpine Aspen Forests and Pine Woodlands	<ul style="list-style-type: none"> Area and extent of community Fire regime Connectivity among communities and ecosystems 	<ul style="list-style-type: none"> Successional dynamics Age class heterogeneity Soil and sediment deposition regime 	<ul style="list-style-type: none"> Fire and fire suppression Logging and wood harvesting 	<ul style="list-style-type: none"> Parasites/pathogens/diseases 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management 	<ul style="list-style-type: none"> Environmental Review Law and Policy Outreach and Education
Montane Upland Deciduous Scrub	<ul style="list-style-type: none"> Fire regime Connectivity among communities and ecosystems 	<ul style="list-style-type: none"> Successional dynamics Age class heterogeneity 	<ul style="list-style-type: none"> Housing and urban areas Logging and wood harvesting 	<ul style="list-style-type: none"> Fire and fire suppression 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management 	<ul style="list-style-type: none"> Environmental Review Law and Policy Outreach and Education
Native Aquatic Species Assemblages/Communities	<ul style="list-style-type: none"> Area and extent of community Key species population levels Native versus non-native diversity Soil and sediment deposition regime 	<ul style="list-style-type: none"> Surface water flow regime Water temperatures and chemistry Pollutant concentrations and dynamics 	<ul style="list-style-type: none"> Agricultural and forestry effluents Annual and perennial non-timber crops Dams and water management/use Fire and fire suppression Garbage and solid waste Household sewage and urban waste water Housing and urban areas Fishing and harvesting aquatic resources Livestock farming and ranching 	<ul style="list-style-type: none"> Industrial and military effluents Introduced genetic material Invasive plants/animals Logging and wood harvesting Marine and freshwater aquaculture Mining and quarrying Parasites/pathogens/diseases Renewable energy Roads and railroads 	<ul style="list-style-type: none"> Direct Management Economic Incentives Land Acquisition/ Easement/ Lease 	<ul style="list-style-type: none"> Law and Policy Outreach and Education

Cascades and Modoc Plateau Province					
Target	Key Ecological Attributes		Pressures		Strategy Categories
North Coastal Mixed Evergreen and Montane Forests	<ul style="list-style-type: none">Fire regimeSuccessional dynamicsNative versus non-native diversity	<ul style="list-style-type: none">Age class heterogeneityHydrological regime	<ul style="list-style-type: none">Fire and fire suppressionLivestock farming and ranchingLogging and wood harvesting	<ul style="list-style-type: none">Renewable energyUtility and service lines	<ul style="list-style-type: none">Data Collection and AnalysisManagement PlanningLand Acquisition/ Easement/ LeaseLaw and PolicyOutreach and Education
Western Upland Grasslands	<ul style="list-style-type: none">Area and extent of communityFire regime	<ul style="list-style-type: none">Successional dynamicsNative versus non-native diversity	<ul style="list-style-type: none">Annual and perennial non-timber cropsFire and fire suppressionInvasive plants/animals	<ul style="list-style-type: none">Livestock farming and ranchingLogging and wood harvesting	<ul style="list-style-type: none">Data Collection and AnalysisDirect ManagementEconomic IncentivesLand Acquisition/ Easement/ LeaseLand Use PlanningLaw and Policy
Big Sagebrush Scrub Great Basin Dwarf Sagebrush Scrub Great Basin Upland Scrub	<ul style="list-style-type: none">Area and extent of communityFire regimeSuccessional dynamics	<ul style="list-style-type: none">Native versus non-native diversitySoil and sediment deposition regime	<ul style="list-style-type: none">Annual and perennial non-timber cropsDams and water management/useFire and fire suppressionHousing and urban areasInvasive plants/animals	<ul style="list-style-type: none">Livestock farming and ranchingParasites/pathogens/diseasesRecreational activitiesRenewable energyUtility and service lines	<ul style="list-style-type: none">Data Collection and AnalysisPartner EngagementManagement PlanningDirect ManagementEconomic IncentivesLaw and PolicyOutreach and Education
Great Basin Pinyon-Juniper Woodland	<ul style="list-style-type: none">Fire regimeSuccessional dynamics	<ul style="list-style-type: none">Structural diversityNative versus non-native diversity	<ul style="list-style-type: none">Climate changeFire and fire suppressionInvasive plants/animals	<ul style="list-style-type: none">Livestock farming and ranchingOther ecosystem modifications	<ul style="list-style-type: none">Data Collection and AnalysisPartner EngagementDirect Management
Eagle Lake Native Fish Assemblage	<ul style="list-style-type: none">Area and extent of communityConnectivity among communities and ecosystemsKey species population levelsNative versus non-native diversity	<ul style="list-style-type: none">Hydrological regimeSoil and sediment deposition regimeSurface water flow regimeWater level fluctuations	<ul style="list-style-type: none">Dams and water management/useIntroduced genetic materialInvasive plants/animals	<ul style="list-style-type: none">Livestock farming and ranchingLogging and wood harvestingRoads and railroads	<ul style="list-style-type: none">Data Collection and AnalysisPartner EngagementManagement PlanningDirect ManagementEconomic IncentivesLaw and PolicyOutreach and Education
Goose Lake Native Fish Assemblage	<ul style="list-style-type: none">Area and extent of communityConnectivity among communities and ecosystemsKey species population levelsEndemic diversityNative versus non-native diversityHydrological regime	<ul style="list-style-type: none">Soil and sediment deposition regimeSurface water flow regimeWater temperatures and chemistryWater level fluctuationsNutrient concentration and dynamics	<ul style="list-style-type: none">Dams and water management/useIntroduced genetic materialInvasive plants/animals	<ul style="list-style-type: none">Livestock farming and ranchingLogging and wood harvestingRoads and railroads	<ul style="list-style-type: none">Data Collection and AnalysisDirect ManagementLaw and PolicyOutreach and Education

Bay Delta and Central Coast Province				
Target	Key Ecological Attributes	Pressures		Strategy Categories
American Southwest Riparian Forest and Woodland	<ul style="list-style-type: none">Area and extent of communityConnectivity among communities and ecosystemsNative versus non-native diversityAge class heterogeneityWater level fluctuations	<ul style="list-style-type: none">Annual and perennial non-timber cropsDams and water management/useInvasive plants/animals	<ul style="list-style-type: none">Livestock farming and ranchingRoads and railroads	<ul style="list-style-type: none">Direct ManagementLand Acquisition/ Easement/ LeaseOutreach and Education
California Grassland, Vernal Pools, and Flowerfields	<ul style="list-style-type: none">Area and extent of communitySuccessional dynamicsKey species population levelsNative versus non-native diversitySurface water flow regime	<ul style="list-style-type: none">Annual and perennial non-timber cropsCommercial and industrial areasFire and fire suppressionHousing and urban areas	<ul style="list-style-type: none">Invasive plants/animalsLivestock farming and ranchingRenewable energyRoads and railroads	<ul style="list-style-type: none">Data Collection and AnalysisPartner EngagementDirect ManagementLand Acquisition/ Easement/ LeaseLand Use Planning
Coastal Sage Scrub Northwest Coast Cliff and Outcrop Coastal Dune and Bluff Scrub North Coast Deciduous Scrub and Terrace Prairie	<ul style="list-style-type: none">Area and extent of communityFire regimeConnectivity among communities and ecosystemsStructural diversityNative versus non-native diversitySoil and sediment deposition regime	<ul style="list-style-type: none">Air-borne pollutantsAnnual and perennial non-timber cropsClimate changeCommercial and industrial areasFire and fire suppression	<ul style="list-style-type: none">Housing and urban areasInvasive plants/animalsRoads and railroadsTourism and recreation areas	<ul style="list-style-type: none">Data Collection and AnalysisPartner EngagementManagement PlanningDirect ManagementEnvironmental ReviewLand Acquisition/ Easement/ LeaseLand Use PlanningLaw and Policy
Coastal Lagoons	<ul style="list-style-type: none">Area and extent of communityConnectivity among communities and ecosystemsNative versus non-native diversitySurface water flow regimeNutrient concentrations and dynamics	<ul style="list-style-type: none">Agricultural and forestry effluentsAnnual and perennial non-timber cropsClimate changeCommercial and industrial areasDams and water management/useFire and fire suppressionGarbage and solid wasteHousing and urban areas	<ul style="list-style-type: none">Housing sewage and urban waste waterLivestock farming and ranchingOther ecosystem modificationsRecreational activitiesRoads and railroadsTourism and recreation areasWood and pulp plantations	<ul style="list-style-type: none">Data Collection and AnalysisDirect ManagementLand Acquisition/ Easement/ LeaseLaw and PolicyTraining and Technical Assistance
Salt Marsh	<ul style="list-style-type: none">Area and extent of communitySuccessional dynamicsStructural diversityDiversityNative versus non-native diversitySoil and sediment deposition regimePollutant concentrations and dynamicsWater level fluctuations	<ul style="list-style-type: none">Annual and perennial non-timber cropsCommercial and industrial areasDams and water management/useFishing and harvesting aquatic resourcesHousing and urban areasHunting and collecting of terrestrial animals	<ul style="list-style-type: none">Invasive plants/animalsLivestock farming and ranchingRecreational activitiesRoads and railroadsShipping lanes	<ul style="list-style-type: none">Data Collection and AnalysisPartner EngagementManagement PlanningDirect ManagementEconomic IncentivesLand Acquisition/ Easement/ LeaseLaw and PolicyOutreach and Education

Central Valley and Sierra Nevada Province						
Target	Key Ecological Attributes		Pressures		Strategy Categories	
American Southwest Riparian Forest and Woodland	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Hydrological regime 	<ul style="list-style-type: none"> Soil and sediment deposition regime Surface water flow 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Dams and water management/use Housing and urban areas Invasive plants/animals 	<ul style="list-style-type: none"> Livestock farming and ranching Recreational activities Roads and railroads Utility and service lines 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Direct Management Outreach and Education Land Acquisition/ Easement/ Lease Law and Policy 	
Chaparral Desert Transition Chaparral Montane Chaparral California Foothill and Coastal Rock Outcrop Vegetation	<ul style="list-style-type: none"> Area and extent of community Fire regime Connectivity among communities and ecosystems 	<ul style="list-style-type: none"> Successional dynamics Structural diversity Native versus non-native species 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Climate change Fire and fire suppression 	<ul style="list-style-type: none"> Housing and urban areas Invasive plants/animals Renewable energy 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Land Acquisition/ Easement/ Lease 	
California Foothill and Valley Forests and Woodlands	<ul style="list-style-type: none"> Fire regime Successional dynamics Key species population levels 	<ul style="list-style-type: none"> Native versus non-native species Age class heterogeneity Soil and sediment deposition regime 	<ul style="list-style-type: none"> Fire and fire suppression Invasive plants/animals 	<ul style="list-style-type: none"> Livestock farming and ranching Recreational activities 	<ul style="list-style-type: none"> Direct Management Partner Engagement Economic Incentives 	<ul style="list-style-type: none"> Land Acquisition/ Easement/ Lease Outreach and Education
North Coastal Mixed Evergreen and Montane Conifer Forests	<ul style="list-style-type: none"> Fire regime Successional dynamics Native versus non-native species 	<ul style="list-style-type: none"> Age class heterogeneity Hydrological regime 	<ul style="list-style-type: none"> Fire and fire suppression Livestock farming and ranching Logging and wood harvesting 	<ul style="list-style-type: none"> Renewable energy Utility and service lines 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Land Acquisition/ Easement/ Lease 	<ul style="list-style-type: none"> Law and Policy Outreach and Education
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Fen (Peatlands)	<ul style="list-style-type: none"> Area and extent of community Fire regime Connectivity among communities and ecosystems Key species population levels 	<ul style="list-style-type: none"> Endemic diversity Soil and sediment deposition regime Water level fluctuations 	<ul style="list-style-type: none"> Agricultural and forestry effluents Annual and perennial non-timber crops Dams and water management/use Fire and fire suppression Housing and urban areas Hunting and collection of terrestrial animals Industrial and military effluents Invasive plants/animals 	<ul style="list-style-type: none"> Livestock farming and ranching Logging and wood harvesting Mining and quarrying Parasites/pathogens/diseases Recreational activities Roads and railroads Tourism and recreation areas 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Direct Management Land Acquisition/ Easement/ Lease Outreach and Education 	
Clear Lake Native Fish Assemblage	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Key species population levels Structural diversity Diversity Native versus non-native species 	<ul style="list-style-type: none"> Endemic diversity Soil and sediment deposition regime Surface water flow regime Pollutant concentration and dynamics Nutrient concentrations and dynamics 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Dams and water management/use Invasive plants/animals Mining and quarrying Recreational activities 		<ul style="list-style-type: none"> Partner Engagement Direct Management Economic Incentives 	<ul style="list-style-type: none"> Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education
Goose Lake Native Fish Assemblage	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Key species population levels Native versus non-native species Endemic diversity 	<ul style="list-style-type: none"> Soil and sediment deposition regime Surface water flow regime Water temperature and chemistry Nutrient concentrations and dynamics Water level fluctuations 	<ul style="list-style-type: none"> Dams and water management/use Introduced genetic material Invasive plants/animals 	<ul style="list-style-type: none"> Livestock farming and ranching Logging and wood harvesting Roads and railroads 	<ul style="list-style-type: none"> Direct Management Law and Policy Outreach and Education 	

Central Valley and Sierra Nevada Province (continued)

Target	Key Ecological Attributes		Pressures		Strategy Categories	
Carson River Native Fish Assemblage	<ul style="list-style-type: none"> Area and extent of community Fire regime Native versus non-native species Age class heterogeneity 	<ul style="list-style-type: none"> Soil and sediment deposition regime Surface water flow regime Pollutant concentration and dynamics 	<ul style="list-style-type: none"> Dams and water management/use Fishing and harvesting aquatic resources Housing and urban areas 	<ul style="list-style-type: none"> Introduced genetic material Invasive plants/animals 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Direct Management Land Acquisition/ Easement/ Lease 	<ul style="list-style-type: none"> Law and Policy Outreach and Education Training and Technical Assistance
Walker River Native Fish Assemblage	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Hydrological regime 	<ul style="list-style-type: none"> Soil and sediment deposition regime Surface water flow regime Water quality 	<ul style="list-style-type: none"> Dams and water management/use Introduced genetic material Invasive plants/animals 	<ul style="list-style-type: none"> Livestock farming and ranching Roads and railroads 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Law and Policy Outreach and Education 	
San Joaquin Native Fish Assemblage	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity 	<ul style="list-style-type: none"> Surface water flow regime Water temperature and chemistry 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Dams and water management/use Household sewage and urban waste water Housing and urban development 	<ul style="list-style-type: none"> Invasive plants/animals Marine and freshwater aquaculture Recreational activities 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Direct Management 	<ul style="list-style-type: none"> Law and Policy Outreach and Education
Upper Kern River Native Fish Assemblage	<ul style="list-style-type: none"> Area and extent of community Fire regime Native versus non-native species 	<ul style="list-style-type: none"> Age class heterogeneity Soil and sediment deposition regime Surface water flow regime 	<ul style="list-style-type: none"> Housing and urban areas Introduced genetic material 	<ul style="list-style-type: none"> Invasive plants/animals Livestock farming and ranching 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Direct Management Land Acquisition/ Easement/ Lease Outreach and Education Training and Technical Assistance 	

South Coast Province

Target	Key Ecological Attributes		Pressures		Strategy Categories	
California Grassland and Flowerfields	<ul style="list-style-type: none"> Area and extent of community Fire regime Connectivity among communities and ecosystems Successional dynamics Key species population levels 	<ul style="list-style-type: none"> Endemic diversity Native versus non-native diversity Soil and sediment deposition regimes Nutrient concentrations and dynamics 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Climate change Fire and fire suppression Housing and urban areas 	<ul style="list-style-type: none"> Invasive plants/animals Livestock farming and ranching Recreational activities 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Land Acquisition/ Easement/ Lease 	
American Southwest Riparian Forest and Woodland	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Key species population levels Structural diversity 	<ul style="list-style-type: none"> Native versus non-native diversity Hydrological regime Surface water flow regime Water level fluctuations 	<ul style="list-style-type: none"> Avalanches/landslide Dams and water management/use Fire and fire suppression Garbage and solid waste Household sewage and urban waste water Housing and urban areas 	<ul style="list-style-type: none"> Invasive plants/animals Livestock farming and ranching Mining and quarrying Recreational activities Roads and railroads Tourism and recreation areas 	<ul style="list-style-type: none"> Data Collection and Analysis Management Planning Direct Management Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education 	
Native Fish Assemblage	<ul style="list-style-type: none"> Connectivity among communities and ecosystems Native versus non-native diversity Age class heterogeneity 	<ul style="list-style-type: none"> Diversity Surface water flow regime Water level fluctuations 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Climate change Dams and water management/use Household sewage and urban waste water 	<ul style="list-style-type: none"> Housing and urban areas Invasive plants/animals Mining and quarrying Recreational activities 	<ul style="list-style-type: none"> Data Collection and Analysis Direct Management Land Acquisition/ Easement/ Lease Outreach and Education 	
South Coast Native Aquatic Herp Assemblage	<ul style="list-style-type: none"> Area and extent of community Native versus non-native diversity 	<ul style="list-style-type: none"> Age class heterogeneity Surface water flow regime 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Climate change Housing and urban areas Invasive plants/animals 	<ul style="list-style-type: none"> Other ecosystem modifications Parasites/pathogens/diseases Recreational activities Roads and railroads 	<ul style="list-style-type: none"> Data Collection and Analysis Direct Management Land Acquisition/ Easement/ Lease Outreach and Education 	

Deserts Province							
Target	Key Ecological Attributes		Pressures			Strategy Categories	
Big Sagebrush Scrub	<ul style="list-style-type: none"> Area and extent of community Fire regime 	<ul style="list-style-type: none"> Native versus non-native diversity Age class heterogeneity 	<ul style="list-style-type: none"> Fire and fire suppression Housing and urban areas 	<ul style="list-style-type: none"> Invasive plants/animals Parasites/pathogens/diseases 		<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management 	<ul style="list-style-type: none"> Economic Incentives Land Acquisition/ Easement/ Lease
Great Basin Pinyon-Juniper Woodland	<ul style="list-style-type: none"> Fire regime Successional dynamics 	<ul style="list-style-type: none"> Structural diversity Native versus non-native diversity 	<ul style="list-style-type: none"> Climate change Fire and fire suppression 	<ul style="list-style-type: none"> Invasive plants/animals Livestock farming and ranching 	<ul style="list-style-type: none"> Other ecosystem modifications 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement 	<ul style="list-style-type: none"> Direct Management
Shadscale-Saltbush Scrub	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Successional dynamics 	<ul style="list-style-type: none"> Endemic diversity Native versus non-native diversity Hydrological regime Soil and sediment deposition regime 	<ul style="list-style-type: none"> Air-borne pollutants Annual and perennial non-timber crops Commercial and industrial areas 	<ul style="list-style-type: none"> Housing and urban areas Industrial and military effluents Invasive plants/animals Military activities 	<ul style="list-style-type: none"> Recreational activities Renewable energy Roads and railroads Utility and service lines 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning 	<ul style="list-style-type: none"> Land Acquisition/ Easement/ Lease Outreach and Education Training and Technical Assistance
Desert Wash Woodland and Scrub	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Key species population levels 	<ul style="list-style-type: none"> Structural diversity Endemic diversity Soil and sediment deposition regime Surface water flow regime 	<ul style="list-style-type: none"> Commercial and industrial areas Dams and water management/use Housing and urban areas Military activities 	<ul style="list-style-type: none"> Mining and quarrying Recreational activities Renewable energy Roads and railroads 	<ul style="list-style-type: none"> Tourism and recreation areas Utility and service lines 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Land Use Planning Outreach and Education 	
Sparsely Vegetated Desert Dune	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems 	<ul style="list-style-type: none"> Native versus non-native diversity Hydrological regime Soil and sediment deposition regime 	<ul style="list-style-type: none"> Climate change Housing and urban areas Invasive plants/animals 	<ul style="list-style-type: none"> Livestock farming and ranching Recreational activities Renewable energy 		<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning 	<ul style="list-style-type: none"> Direct Management Land Use Planning
American Southwest Riparian Forest and Woodland	<ul style="list-style-type: none"> Area and extent of community Native versus non-native diversity 	<ul style="list-style-type: none"> Surface water flow regime 	<ul style="list-style-type: none"> Invasive plants/animals Parasites/pathogens/diseases 			<ul style="list-style-type: none"> Data Collection and Analysis Direct Management 	<ul style="list-style-type: none"> Land Use Planning
High Desert Wash and "Rangeland" Scrub Great Basin Upland Scrub	<ul style="list-style-type: none"> Area and extent of community Successional dynamics 	<ul style="list-style-type: none"> Structural diversity Native versus non-native diversity 	<ul style="list-style-type: none"> Climate change Fire and fire suppression 	<ul style="list-style-type: none"> Invasive plants/animals Livestock farming and ranching 	<ul style="list-style-type: none"> Mining and quarrying Renewable energy 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement 	<ul style="list-style-type: none"> Management Planning Direct Management
Mojave and Sonoran Desert Scrub	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Successional dynamics 	<ul style="list-style-type: none"> Key species population levels Native versus non-native diversity Weather regime 	<ul style="list-style-type: none"> Annual and perennial non-timber crops Housing and urban areas 	<ul style="list-style-type: none"> Invasive plants/animals Renewable energy 	<ul style="list-style-type: none"> Roads and railroads Utility and service lines 	<ul style="list-style-type: none"> Partner Engagement Management Planning Land Acquisition/ Easement/ Lease 	<ul style="list-style-type: none"> Land Use Planning Outreach and Education Training and Technical Assistance
Walker River Native Fish Assemblage	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity 	<ul style="list-style-type: none"> Hydrological regime Soil and sediment deposition regime Surface water flow regime Water quality 	<ul style="list-style-type: none"> Dams and water management/use Introduced genetic material Invasive plants/animals 	<ul style="list-style-type: none"> Livestock farming and ranching Roads and railroads 		<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning 	<ul style="list-style-type: none"> Direct Management Law and Policy Outreach and Education
Cienegas	<ul style="list-style-type: none"> Area and extent of community Fire regime Native versus non-native diversity Hydrological regime 		<ul style="list-style-type: none"> Annual and perennial non-timber crops Dams and water management/use Earthquakes/tsunami 	<ul style="list-style-type: none"> Fire and fire suppression Housing and urban areas Introduced genetic material Invasive plants/animals 	<ul style="list-style-type: none"> Livestock farming and ranching Parasites/pathogens/diseases Renewable energy 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management 	<ul style="list-style-type: none"> Land Acquisition/ Easement/ Lease Outreach and Education
Springs and Spring Brooks	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Successional dynamics Native versus non-native diversity 	<ul style="list-style-type: none"> Hydrological regime Soil and sediment deposition regime Surface water flow regime Water quality 	<ul style="list-style-type: none"> Commercial and industrial areas Dams and water management/use Introduced genetic material Invasive plants/animals 	<ul style="list-style-type: none"> Livestock farming and ranching Marine and freshwater aquaculture Recreational activities 	<ul style="list-style-type: none"> Renewable energy 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning 	<ul style="list-style-type: none"> Direct Management Land Acquisition/ Easement/ Lease Outreach and Education
Anthropogenically Created Aquatic Features	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity 	<ul style="list-style-type: none"> Soil and sediment deposition regime Surface water flow regime Water quality 	<ul style="list-style-type: none"> Agricultural and forestry effluents Dams and water management/use 	<ul style="list-style-type: none"> Invasive plants/animals Marine and freshwater aquaculture 	<ul style="list-style-type: none"> Recreational activities Renewable energy Roads and railroads 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Direct Management 	<ul style="list-style-type: none"> Land Use Planning Law and Policy Outreach and Education

Marine Province

Target*	Key Ecological Attributes		Pressures			Strategy Categories	
Embayments Estuaries Lagoons	<ul style="list-style-type: none"> Area and extent of community Connectivity among communities and ecosystems Key species population levels Structural diversity Diversity 	<ul style="list-style-type: none"> Endemic diversity Native versus non-native diversity Age class heterogeneity Water level fluctuations Water quality Pollutant concentrations and dynamics 	<ul style="list-style-type: none"> Agricultural and forestry effluents Airborne pollutants Climate change Commercial and industrial areas (shoreline development) Dams and water management/use (modification of mouth/channels, ocean/estuary water diversion/control) Fishing and harvesting aquatic resources 	<ul style="list-style-type: none"> Garbage and solid waste Household sewage and urban wastewater (point discharge) Housing and urban areas (shoreline development) Hunting and collecting of terrestrial animals Industrial and military effluents (hazardous spills, point discharge) 	<ul style="list-style-type: none"> Invasive plants/animals Logging and wood harvesting Marine and freshwater aquaculture Other ecosystem modifications (artificial structures, work and other activities) Parasites/pathogens/diseases Recreational activities Shipping lanes (ballast water) 	<ul style="list-style-type: none"> Data Collection and Analysis Partner Engagement Management Planning Direct Management Economic Incentives Environmental Review 	<ul style="list-style-type: none"> Land Acquisition/Easement/ Lease Land Use Planning Law and Policy Outreach and Education Training and Technical Assistance

* Conservation strategies were only developed for the embayments, estuaries, lagoons target. Strategies for other marine conservation targets will be developed in the future.

Anadromous Fish

Geography	Conservation Target	Conservation Strategies		
Statewide	In-river spawning and rearing habitat	<ul style="list-style-type: none"> Document range and distribution of spawning and rearing habitat. 	<ul style="list-style-type: none"> Enhance and protect key spawning and rearing habitat for each specific anadromous species. 	<ul style="list-style-type: none"> Promote restoration actions that focus on ecological processes and climate change resilience.
	River flow	<ul style="list-style-type: none"> Identify annual flow regimes necessary for migration, rearing, and spawning of each anadromous species. 	<ul style="list-style-type: none"> Develop water management and conservation plans necessary to conserve anadromous fishes. 	<ul style="list-style-type: none"> Implement water management and conservation plans.
	Wetland habitat	<ul style="list-style-type: none"> Identify current condition of riparian and marsh habitat associated with anadromous species. 	<ul style="list-style-type: none"> Restore marsh and riparian habitat to improve carrying capacity of anadromous fishes. 	<ul style="list-style-type: none"> Protect key areas necessary to maintain viable populations.
North Coast and North Central Coast	California Anadromous Salmonid Stronghold Watersheds	<ul style="list-style-type: none"> Establish collaborative working groups for each Stronghold (Smith, Mattole, and South Fork Eel rivers). 	<ul style="list-style-type: none"> Assess ecological and human activities conditions that are allowing for healthy fish populations. Establish technical, agency, and financial support to maintain and expand ecological and human conditions supporting strong salmon and steelhead populations. 	
	Coastal estuaries	<ul style="list-style-type: none"> Evaluate current condition and estuarine needs for coho salmon, eulachon, longfin smelt in key estuaries (i.e., Smith, Klamath, and Eel rivers and Humboldt Bay). 	<ul style="list-style-type: none"> Restore and enhance estuary habitat and processes essential for anadromous species. Establish estuary function and structure that will allow anadromous migration and be responsive to climate change. 	
	Russian River	<ul style="list-style-type: none"> Restore and enhance estuary and river habitat necessary to support viable populations of all listed anadromous fishes (i.e., Chinook salmon, coho salmon, steelhead, green sturgeon). 	<ul style="list-style-type: none"> Develop and implement water management plan to ensure Russian River fisheries and land use are compatible. 	<ul style="list-style-type: none"> Expand Warm Springs Hatchery complex to function as a potential regional conservation facility for coho salmon and other listed species in the North-Central Domain.
Klamath-Trinity Rivers Basin	Pacific lamprey	<ul style="list-style-type: none"> Establish standing committee to implement interstate/intertribal 2012 Pacific lamprey conservation agreement. 	<ul style="list-style-type: none"> Implement habitat restoration and monitoring programs. 	<ul style="list-style-type: none"> Secure funding specific for conserving Pacific lamprey in the Klamath/Trinity Rivers Basin.
	Ecological processes	<ul style="list-style-type: none"> Evaluate wood debris, gravel, and water cycling and transport mechanisms across the basins. 	<ul style="list-style-type: none"> Establish agreements and practices to ensure adequate ecological processes are maintained to support sustainable anadromous populations across the basins. Establish monitoring and evaluation programs to track ecological processes and functioning. 	
	Listed and at-risk salmonids	<ul style="list-style-type: none"> Establish standing inter-organizational team to implement federal and state recovery plans, the Trinity River Restoration Plan, and Klamath River Settlement. 	<ul style="list-style-type: none"> Integrate recovery actions with strategic hatchery management (e.g., Iron Gate and Trinity River facilities). 	<ul style="list-style-type: none"> Integrate sustainable river and tribal fisheries with establishing sustainable, natural populations of salmon and steelhead.
South-Central and Southern California Coasts	Steelhead trout populations	<ul style="list-style-type: none"> Establish a robust monitoring program to evaluate steelhead populations, habitat, and ecological processes. 	<ul style="list-style-type: none"> Secure additional funding necessary to pursue essential habitat recovery. 	<ul style="list-style-type: none"> Determine role of resident populations to recovery and sustainability of anadromous populations.
	Migration barriers	<ul style="list-style-type: none"> Remediate most downstream barriers to steelhead entering rivers and streams. 	<ul style="list-style-type: none"> Accelerate planning and remediation of rim dam barriers to key steelhead populations. 	<ul style="list-style-type: none"> Modify land use practices (e.g., water use, agriculture, recreation, urban and road development) to minimize effects on migration corridors.
	Water management	<ul style="list-style-type: none"> In addition to the statewide strategy, identify key streams and locations essential for over-summering juvenile and adult steelhead. 	<ul style="list-style-type: none"> Investigate ability and options to creating water banks for steelhead habitat. 	<ul style="list-style-type: none"> Update CDFW management and conservation plan to integrate modern water management, including drought and climate change parameters.
Central Valley	Pacific lamprey	<ul style="list-style-type: none"> Establish standing committee to implement interstate/intertribal 2012 Pacific lamprey conservation agreement. 	<ul style="list-style-type: none"> Implement habitat restoration and monitoring programs. 	<ul style="list-style-type: none"> Secure funding specific for conserving Pacific lamprey in the Central Valley.
	Sturgeon	<ul style="list-style-type: none"> Establish fisheries management and conservation plans for white and green sturgeon. 	<ul style="list-style-type: none"> Implement habitat restoration and monitoring programs. 	<ul style="list-style-type: none"> Secure funding specific for conserving sturgeon populations and fisheries in the Central Valley.
	Chinook salmon and steelhead	<ul style="list-style-type: none"> Establish biological production goals for each species, coupled with ecological objectives, prioritized restoration actions, focused biotic and abiotic monitoring, and adaptive management planning framework that are developed and overseen by an inter-organizational team to integrate activities of NMFS and CDFW recovery programs, Central Valley Program Improvement Act program, Bay Delta Conservation Plan, San Joaquin River Restoration program, and CDFW fisheries programs to establish sustained salmon and steelhead populations and fisheries. 	<ul style="list-style-type: none"> Revise and integrate hatchery practices of the 6 facilities in the Central Valley to maximize scientific standards, minimize effects of programs on natural spawning populations and river habitat, and promote healthy fisheries populations. Conduct rim dam re-introduction pilot projects on Yuba and Sacramento rivers and evaluate efficacy of expanding rearing and spawning habitats for recovery. 	



Integration and Implementation of SWAP 2015

Implementation of California's SWAP 2015 will involve integrating SWAP features into other resource management programs and plans led by CDFW, developing more detailed SWAP implementation plans, systematically pursuing resources necessary for implementation of conservation strategies, effectively coordinating and collaborating with CDFW partners, and adaptively responding to emerging issues.

Because of California's tremendous biodiversity and the broad spectrum of actions needed to implement conservation strategies across a complex assemblage of resources, land uses (including public access), government activities, and resource-consumptive industries, CDFW determined that a more detailed coordination framework for SWAP 2015 implementation was needed beyond the presentation in SWAP 2015. Called "companion plans," these sector-specific action plans will be instrumental in the implementation of SWAP 2015. CDFW, in partnership with other state and federal agencies and organizations involved in the use, management, and conservation of California's natural resources and cultural heritage, are creating the nine sector-specific plans.

Companion plans will support development of well-coordinated, collaborative, multi-stakeholder efforts that leverage human and financial resources, as well as increase efficiencies for implementation of strategies to achieve goals and objectives described in SWAP 2015. These plans will identify shared priorities of SWAP 2015 and CDFW partners and mutually strengthen the conservation capabilities of CDFW and participating organizations.

"Like winds and sunsets, wild things were taken for granted until progress began to do away with them. Now we face the question whether a still higher 'standard of living' is worth its cost in things natural, wild, and free."

- Aldo Leopold

SECTOR-SPECIFIC COMPANION PLANS

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

Adaptive Management and Monitoring

Natural communities, ecosystems, species population dynamics, and the effects of pressures or conservation actions on the environment are inherently complex. Resource managers often need to take action to conserve species even though scientific information may be incomplete and outcomes of the actions may be uncertain. Adaptive management is essential to implementing effective conservation programs in light of these challenges. Adaptive management of a conservation plan is a process to continually monitor to assess the environment, as well as the effects and effectiveness of conservation strategies, and to adjust the plan when improvement is needed to achieve the desired outcomes. SWAP 2015 has integrated the concept of adaptive management in its preparation and implementation.

For SWAP 2015, CDFW has adopted a framework of effectiveness measures that is consistent with the *Open Standards for the Practice of Conservation* (www.conservationmeasures.org) and that has been proposed by the Association of Fish and Wildlife Agencies (AFWA). This framework establishes a standardized and readily accessible monitoring and evaluation process to inform and guide SWAP implementation. Under the effectiveness measure framework, the information gathered through monitoring and evaluation can be used to identify successful strategies that should be continued and shared, and also to identify less effective ones that should be improved or abandoned. The effectiveness measure framework also provides a mechanism for CDFW to report on the status of SWAP implementation to USFWS, conservation partners, and the public.

SWAP 2015 employs three types of monitoring: (1) status monitoring, which tracks the conditions of species, ecosystems, and other conservation factors (including negative impacts to ecosystems) over 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); and (3) effect monitoring, addressing whether and how the target conditions are being influenced by the implementation of strategies. The effectiveness measure framework promoted by AFWA and adopted for SWAP 2015 brings these three types of monitoring together (1) to attribute changes in ecosystems and species status to the effectiveness of SWAP conservation strategies, and (2) to roll up the results of many different strategies into statewide reports.



CONCLUSION

California's SWAP 2015 establishes a strategic vision of the integrated conservation efforts needed to sustain the tremendous diversity of wildlife resources in the state. Although SWAP 2015 is not a specific work plan for CDFW or any other organization, it is meant to visualize, support, complement, and unite the plans of the multiple conservation and management entities within California. More detailed operation-level plans will be needed to complete many of the strategies identified in SWAP 2015. Such plans should be developed by the appropriate entities whose interest, authority, or responsibility encompass each action and in coordination with the SWAP and its companion plans. Support provided by the SWG program will enable coordination and implementation of many projects identified under SWAP 2015.

SWAP 2015 is an adaptive plan that will continually be updated, revised, and improved, based on the input and deliberations of all those interested in wildlife conservation. Working together, Californians can shape a future with abundant wildlife, outstanding biodiversity, and healthy ecosystems that define the state and provide for the inspiration, recreation, sustenance, and livelihood of its residents and visitors.

"A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise."

- Aldo Leopold

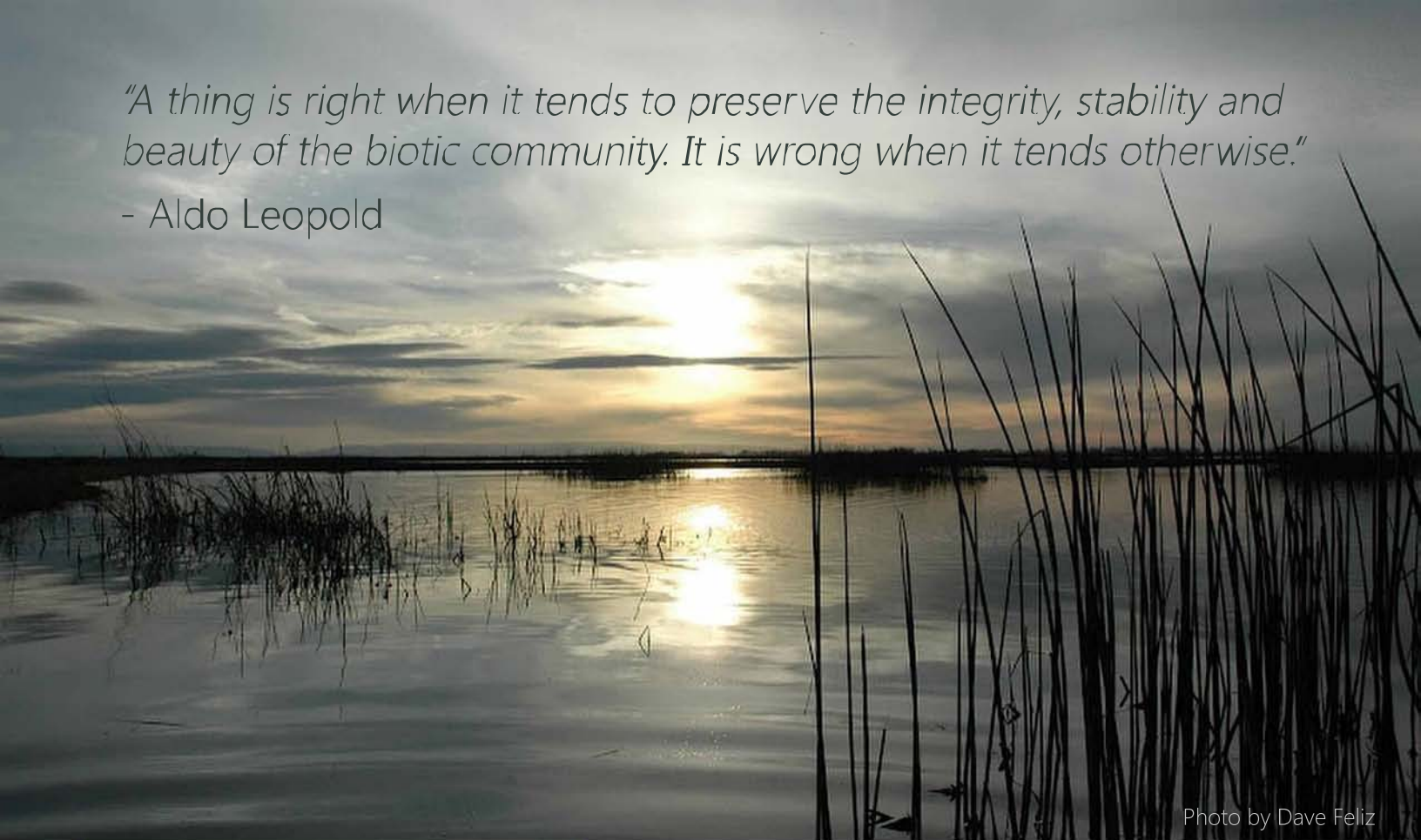


Photo by Dave Feliz



Interested in learning more?

1 Visit the SWAP website: <http://www.dfg.ca.gov/SWAP/>

2 Attend a public meeting:

Sacramento - May 22, 2015, 9-11 am, Resources Building Auditorium, 1416 Ninth St., Sacramento

Oakland - May 28, 2015, 2-4 pm, Joseph P. Bort Metro Center Auditorium, 101 Eighth St., Oakland

San Diego - June 3, 2015, 1:30-3:30 pm, Chula Vista Women's Club Reception Hall, 357 G St., Chula Vista

Los Angeles - June 4, 2015, 2-4 pm, Los Angeles Zoo Witherbee Auditorium, 5333 Zoo Dr., Los Angeles (Does not include zoo admission)

**California Department of Fish and Wildlife
is interested in your input!**

Please provide written comments by emailing
SWAP@wildlife.ca.gov

or by mail addressed to:
State Wildlife Action Plan Update 2015
California Department of Fish and Wildlife
1416 Ninth Street, 12th floor
Sacramento, CA 95814

Please submit comments by July 2, 2015