

Appendix D Conservation Strategies for All Macrogroups in California, Freshwater Aquatic Species Assemblages, Marine Ecosystems, and Anadromous Fishes

Table D-1 Terrestrial Conservation Strategies				
USNVC Macrogroup	Common Name	Conservation Strategies		CWHR Classification
California Forest and Woodland	California Foothill and Valley Forests and Woodlands	<p>Partner Engagement</p> <ul style="list-style-type: none"> Establish partnerships to enhance conservation opportunities. Establish partnership: develop partnerships with agencies and organizations to enhance opportunities (currently BLM, RCDs, UCD, Audubon, Blue Ridge Berryessa Partnership). <p>Direct Management</p> <ul style="list-style-type: none"> Conduct ecologically sound controlled burns on CDFW lands. Conduct demonstration management, including providing public demonstrations of successful BMPs and scientifically documenting environmental change from implementation of BMPs. <p>Economic Incentives</p> <ul style="list-style-type: none"> Provide economic incentives for improved resource management. Provide economic incentives to landowners for managing grazing at to maintain appropriate levels of residual dry matter. 	<p>Land Acquisition/Easement/Lease</p> <ul style="list-style-type: none"> Protect land through conservation easements. Purchase and provide long-term conservation of land. <p>Outreach and Education</p> <ul style="list-style-type: none"> Conduct demonstration management of successful BMPs. Provide education and outreach, including introduce landowners and leasee to BMPs for grazing; inform public of incentive programs available to them; educate recreation focused landowners on wildlife-BMP's; and keep CDFW staff current on relevant science (e.g., on restoration techniques, science). Provide outreach and education for the conservation of natural resources. 	<ul style="list-style-type: none"> Blue Oak Woodland Blue-Oak-Foothill Pine Closed-Cone Pine-Cypress Coastal Oak Woodland Juniper Montane Hardwood Valley Oak Woodland
Californian–Vancouverian Montane and Foothill Forest	North Coastal Mixed Evergreen and Montane Conifer Forests	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Conduct research regarding effective target management. Conduct research (data management) to identify areas with restoration potential to allow prioritization for protection and restoration. Work with other agencies doing restoration in sagebrush steppe habitat throughout the region. Map vegetation following standard protocol and fill information gaps into what has already been mapped. Prioritize for restoration areas of encroachment that have not crossed over to juniper woodland. <p>Management Planning</p> <ul style="list-style-type: none"> Develop management plans and improve existing fire management plans. <p>Land Acquisition/Easement/Lease</p> <ul style="list-style-type: none"> Protect land through acquisition and conservation easements, including increasing the amount of key conifer areas protected through purchase or conservation easement. Key conifer areas include old-growth forest, watercourse zones, and nest sites. 	<p>Law and Policy</p> <ul style="list-style-type: none"> Advocate for laws and policies that protect and enhance natural resources. Advocate for laws and policies; coordinate with agencies to allow fires to burn when possible. Engage in decision-making process to achieve shared objectives and broader coordination across overlapping area; cooperate with federal agencies and private landowners on where controlled burns and forest thinning would be most beneficial to wildlife. <p>Outreach and Education</p> <ul style="list-style-type: none"> Provide outreach and education for the conservation of natural resources. 	<ul style="list-style-type: none"> Douglas-Fir Eastside Pine Jeffrey Pine Klamath Mixed Conifer Montane Hardwood Montane Hardwood-Conifer Ponderosa Pine Sierran Mixed Conifer White Fir
Rocky Mountain Subalpine and High Montane Conifer Forest	Subalpine Aspen Forests and Pine Woodlands	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Conduct comprehensive ecological assessment (research) and evaluate climate effects on aspen meadows. Conduct comprehensive ecological assessment (research) on target, particularly aspen meadows. Gather and analyze data regarding aspen meadows and wildlife. Gather and analyze data on subalpine aspen forest and pine woodlands (mature conifer forest). <p>Partner Engagement</p> <ul style="list-style-type: none"> Partner for joint advocacy by establishing partnership for privately managed lands and decision-making processes with other public and private entities. Partner for joint advocacy with public and private sectors. 	<p>Direct Management</p> <ul style="list-style-type: none"> Implement habitat restoration and enhancement of aspen meadows. <p>Environmental Review</p> <ul style="list-style-type: none"> Conduct environmental review, maintain devotion of staff to environmental review of CEQA projects, and enhance staffing levels to commit to environmental review of NEPA projects on federal lands. <p>Law and Policy</p> <ul style="list-style-type: none"> Advocate for laws and policies that protect natural resources. <p>Outreach and Education</p> <ul style="list-style-type: none"> Provide outreach and education for the conservation of natural resources. 	<ul style="list-style-type: none"> Aspen Lodgepole Pine Subalpine Conifer
Vancouverian Rainforest	Pacific Northwest Conifer Forests	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Conduct research (data management) on conifer forest ecosystems and response to fire. <p>Partner Engagement</p> <ul style="list-style-type: none"> Partner with NRCS, TNC, and others for joint advocacy. <p>Management Planning</p> <ul style="list-style-type: none"> Advocate for wildlife friendly fire management. Develop management plans for the conservation of natural resources. Provide input on project planning and decision making process, by leading or participating in land use planning for rural, urban, or agricultural lands (e.g. provide input on local land use plans), developing county-wide zoning plans, and participating in workgroup regarding low impact development siting. 	<p>Direct Management</p> <ul style="list-style-type: none"> Manage invasive species. <p>Outreach and Education</p> <ul style="list-style-type: none"> Provide outreach and education. <p>Training and Technical Assistance</p> <ul style="list-style-type: none"> Provide training on invasive species management. 	<ul style="list-style-type: none"> Redwood

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USNVC Macrogroup	Common Name	Conservation Strategies		CWHR Classification
Vancouverian Subalpine Forest	Pacific Northwest Subalpine Forest	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Collect data on climate-related impacts to species and habitats in the red fir/subalpine zone, to better predict future distribution and viability and inform land acquisition and other strategies. ● Collect data to evaluate effects of fuels treatments in the red fir zone, and whether treatments can partly offset climate-related increases in fire severity in the red fir zone. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Establish partnership to co-monitor target vegetation on state and federally managed lands. <p>Management Planning</p> <ul style="list-style-type: none"> ● Develop or update management plans to integrate the effects of climate change. <p>Direct Management</p> <ul style="list-style-type: none"> ● Implement fuels treatments in red fir, if determined to be effective (see "Data Collection and Analysis"). 	<p>Economic Incentives</p> <ul style="list-style-type: none"> ● Develop economic incentives to reduce greenhouse gas emissions within California. <p>Environmental Review</p> <ul style="list-style-type: none"> ● Review projects for potential increases in greenhouse gas emissions; require mitigation as needed. <p>Land Use Planning</p> <ul style="list-style-type: none"> ● Provide input on local land use plans regarding the conservation of natural resources. ● Provide input on local land use plans to incorporate climate change; provide local assistance grant funds for participation in general plan updates favoring natural resource conservation and climate change. <p>Training and Technical Assistance</p> <ul style="list-style-type: none"> ● Provide science based application and tools. Provide science-based applications and tools for climate change and natural resources management. 	<ul style="list-style-type: none"> ● Red Fir ● Subalpine Conifer
Intermountain Basins Pinyon-Juniper Woodland	Great Basin Pinyon-Juniper Woodland	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Conduct research climate change. ● Research impacts of climate change on pinyon-juniper woodland viability and distribution. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Maintain partnerships through the Bi-state Action Plan, BLM, USFS, NPS, and USGS to help coordinate data collection and implement a management plan. 	<p>Direct Management</p> <ul style="list-style-type: none"> ● Identify highest priority areas for restoration and rehabilitation to lower or eliminate fire risk; conduct controlled burns and managed thinning in areas of post-settlement (1860) pinyon-juniper and juniper expansion or old growth stands with high canopy cover and fire risk; protect old growth juniper and pinyon-juniper; and continue implementation of Bi-state Action Plan. ● Identify highest priority areas for restoration and rehabilitation to protect from annual grass or weed invasion. 	<ul style="list-style-type: none"> ● Juniper ● Pinyon-Juniper
Vancouverian Flooded and Swamp Forest (formerly Western Cordilleran montane-Boreal Riparian Scrub and Forest)	North Coastal and Montane Riparian Forest and Woodland	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Conduct comprehensive ecological assessment (research) and evaluate climate effects on aspen meadows. ● Gathering and analyze data regarding aspen meadows and wildlife. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Coordination with RCDs and flood control agencies, counties and cities. ● Develop Riparian and Wetlands Task Force. ● Partner for joint advocacy by establishing partnership for privately managed lands and decision-making processes with other public and private entities. <p>Direct Management</p> <ul style="list-style-type: none"> ● Develop buffers. ● Habitat restoration and enhancement. ● Implement habitat restoration and enhancement of aspen meadows. ● Improve implementation of grazing best management practices (BMPs). 	<p>Environmental Review</p> <ul style="list-style-type: none"> ● Conduct environmental review, maintain devotion of staff to environmental review of CEQA projects, and enhance staffing levels to commit to environmental review of NEPA projects on federal lands. <p>Land Acquisition/Easement/Lease</p> <ul style="list-style-type: none"> ● Implement Santa Rosa Plain Conservation Strategy and Draft Santa Rosa Plain Recovery Plan. Utilize potential and existing conservation lands, including banks, mitigation sites and other public and private lands to develop and implement conservation actions and management plans for SGCN that inhabit grassland habitats, vernal pools and associated habitats on the Santa Rosa Plain. <p>Law and Policy</p> <ul style="list-style-type: none"> ● Advocate for laws and policies that protect natural resources. ● Develop CDFW Riparian Conservation Policy. <p>Outreach and Education</p> <ul style="list-style-type: none"> ● Provide outreach and education for the conservation of natural resources. 	<ul style="list-style-type: none"> ● Montane Riparian
Western North American Montane-Subalpine Wet Shrubland and Wet Meadow (formerly Western Cordilleran Montane-Boreal Wet Meadow)	Mountain Riparian Scrub and Wet Meadow (strategies from Wet Mountain Meadow apply to this macrogroup)	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Conduct comprehensive ecological assessment (research) and evaluate climate effects on aspen meadows. ● Gathering and analyze data regarding aspen meadows and wildlife. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Partner for joint advocacy by establishing partnership for privately managed lands and decision-making processes with other public and private entities. <p>Direct Management</p> <ul style="list-style-type: none"> ● Implement habitat restoration and enhancement of aspen meadows. 	<p>Environmental Review</p> <ul style="list-style-type: none"> ● Conduct environmental review, maintain devotion of staff to environmental review of CEQA projects, and enhance staffing levels to commit to environmental review of NEPA projects on federal lands. <p>Law and Policy</p> <ul style="list-style-type: none"> ● Advocate for laws and policies. <p>Outreach and Education</p> <ul style="list-style-type: none"> ● Provide outreach and education. 	<ul style="list-style-type: none"> ● Montane Riparian ● Wet Meadow

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Warm Southwest Riparian Forest (formerly Southwestern North American Riparian, Flooded and Swamp Forest)	American Southwest Riparian Forest and Woodland	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Conduct research focused on informing the development of BMPs for invasive species, grazing, and water flow. Gather and analyze data to establish baseline inventory of SGCN distribution, habitats, and pressures. Identify critical or sensitive riparian habitats in areas that may require special protections. <p>Partner Engagement</p> <ul style="list-style-type: none"> Coordinate with RCDs and flood control agencies, counties, and cities. Develop Riparian and Wetlands Task Force. Establish co-management partnership to conserve target habitat. <p>Management Planning</p> <ul style="list-style-type: none"> Develop and implement HCPs (Central Valley Flood Protection Plan, South Sacramento HCP, San Joaquin County Multi-Species Habitat Conservation and Open Space Plan, Bay Delta Conservation Plan, Yolo, Solano, Butte, and Yuba-Sutter HCPs). Engage in local planning to encourage the use of bio (soft)-engineering for flood control, retention of functional floodplains, and deterrence and capture of waste and pollution. Improve implementation of grazing BMPs. Provide input on local planning ("Leading or participating in land use planning for rural, urban, or agricultural lands: e.g. Provide input on local land use plans; Develop county-wide zoning plans; Participate in workgroup regarding low impact development siting"). <p>Direct Management</p> <ul style="list-style-type: none"> Develop buffers along major rivers and streams. Develop grazing BMPs. Develop riparian buffers along major rivers and streams. Habitat restoration and enhancement. Improve road maintenance on county and state roads to reduce sediment impacts to stream habitats. Manage barriers to water movement, with focus on improving stream water volume, groundwater levels, vegetation age-class heterogeneity, channel pattern, and seasonal flow variation. Manage dams and other barriers to allow for fish passage. Manage invasive species, with focus on reducing the extent of invasive species (particularly Arundo and tamarisk) and improving structural diversity of native vegetation. Manage invasive species. Manage invasive species: control invasive and problematic vegetation, control invasive mammals (feral horse and burro), and prevent degradation of riparian habitat and springs from feral horses and burros. Manage water flows. 	<p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> Acquire and conserve high-functioning riparian areas that have the greatest ecological potential (e.g., Santa Clara, San Luis Rey, and Ventura River watersheds, followed by larger impaired systems and those that support SGCN), and functioning riparian habitat on private property. Acquire property and/or easements, including protection of land or water real property or rights through conservation easement. Acquire water rights focused on improving in-stream flow for fish and riparian habitat. Acquire water rights. Acquire, conserve and manage habitat for SGCN that inhabit riparian forest and woodland habitats by finalizing draft conservation plans and implementing completed Natural Community Conservation Plans, Habitat Conservation Plans, and Conservation Strategies and other opportunities. Acquisition and easements. Acquisition of riparian areas. Implement Santa Rosa Plain Conservation Strategy and Draft Santa Rosa Plain Recovery Plan. Utilize potential and existing conservation lands, including banks, mitigation sites and other public and private lands to develop and implement conservation actions and management plans for SGCN that inhabit grassland habitats, vernal pools and associated habitats on the Santa Rosa Plain. <p>Land Use Planning</p> <ul style="list-style-type: none"> Engage in decision-making process; share information and agency priorities. <p>Law and Policy</p> <ul style="list-style-type: none"> Advocate for effective enforcement laws to reduce impacts of waste and disturbance on significant riparian areas. Develop CDFW Riparian Conservation Policy. Improve effective law enforcement focused on: complying with water rights and Section 1600 agreements, eliminating illegal water diversions, and increasing Law Enforcement Division (LED) staffing levels. <p>Outreach and Education</p> <ul style="list-style-type: none"> Implement education and outreach to the public and local agencies regarding the value of riparian habitat, development of riparian buffers along major rivers and streams, and reducing encroachment of crops into riparian buffers. Provide outreach and education for the conservation of natural resources. Provide outreach and education focused on improving vegetation structural diversity, reducing infestations of invasive species (for plants, specifically Arundo and tamarisk), and protecting functioning riparian habitat on private property. 	<ul style="list-style-type: none"> Palm Oasis Valley-Foothill Riparian
California Chaparral	Chaparral	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Collect and analyze data regarding the target. <p>Partner Engagement</p> <ul style="list-style-type: none"> Engage conservation partners, including state and federal agencies, tribal governments, the non-governmental organization community, and other partners to achieve shared objectives and broader coordination across overlapping areas. Establish partnership to co-monitoring species/habitats on federally managed lands. Establish decision-making processes with other public and private entities to determine or implement strategies. Convene an advisory committee to assist with implementation of strategies. 	<p>Management Planning</p> <ul style="list-style-type: none"> Work with partners on the development of large landscape conservation planning. Develop or update management plans to integrate the effects of climate change. Development of management plans for species, habitats and natural processes. Develop a management plan for SGCN or its habitat. Reintroduction, relocation, or stocking of native animals or plants to an area where they can better adapt. Translocate/breed in captivity a SGCN to establish new populations in suitable habitat. Restore SGCN to historically occupied habitats. <p>Direct Management</p> <ul style="list-style-type: none"> Conduct direct resource management. <p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> Protect land through acquisition, easement, or lease. 	<ul style="list-style-type: none"> Chamise-Redshanks Mixed Chaparral

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California Coastal Scrub	Coastal Sage Scrub	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Collect biological and ecological data to address key information gaps on SGCN, habitats, and pressures. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Establish and engage in partner relationships. <p>Management Planning</p> <ul style="list-style-type: none"> ● Develop and implement management plans. <p>Direct Management</p> <ul style="list-style-type: none"> ● Conduct direct resource management. <p>Environmental Review</p> <ul style="list-style-type: none"> ● Implement environmental review, with focus on the following: non-conservation oriented policies; projects and plans to help ensure impacts to wildlife are minimized and benefits maximized; infrastructure development projects to ensure they are designed and sited to avoid impacts on species and habitat; state highway plans; forest management plans; and plans for transmission corridor siting. 	<p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> ● Designate conservation areas with emphasis on sites or landscapes that have unique and important value to wildlife. ● Protect priority habitats through fee title acquisition, permanent conservation easement, or other means; purchase land in a corridor connecting two protected areas to provide connectivity of habitat. <p>Land Use Planning</p> <ul style="list-style-type: none"> ● Provide input to land use planning decisions. <p>Law and Policy</p> <ul style="list-style-type: none"> ● Develop or influence law and policy that addresses vehicle emissions, timber harvest cumulative impacts, critical habitat, and marine species with ranges that overlap jurisdictional boundaries. 	<ul style="list-style-type: none"> ● Coastal Scrub
California Annual and Perennial Grassland	California Grassland and Flowerfields	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Gather and analyze data to establish baseline inventory of SGCN distribution. ● Identify and conduct research on high-priority study questions for grassland habitat/conservation areas; conduct research to inform coordination with Caltrans and county transportation agencies on wildlife-friendly transportation corridors; implement and fund monitoring and research components of completed and draft NCCPs, HCPs, and Conservation Strategies. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Coordinate with Caltrans and county transportation agencies to use information on high-priority wildlife corridors in the design of wildlife-friendly transportation corridors. ● Coordinate with fire agencies to develop and implement fire management BMPs in grassland habitats. ● Partner for joint advocacy for the conservation of natural resources. <p>Management Planning</p> <ul style="list-style-type: none"> ● Coordinate with USFWS and other agencies to assist local jurisdictions with conservation of grasslands (e.g., via the natural communities conservation plan/habitat conservation plan process) in light of increasing extent of vineyard development in grasslands. 	<p>Direct Management</p> <ul style="list-style-type: none"> ● Manage invasive species, with focus on controlling or eradicating them in grassland habitats in the Central California Coast Ecoregion. ● Reduce extent and spread of invasive species, with emphasis on ecosystem function for SGCN. <p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> ● Acquire and conserve high-value grassland habitats. ● Acquire, conserve, and manage habitat for SGCN that inhabit grassland habitats by finalizing draft conservation plans and implementing completed NCCPs, HCPs, and Conservation Strategies and other opportunities. <p>Land Use Planning</p> <ul style="list-style-type: none"> ● Develop statewide strategies on renewable energy development location siting; identify renewable energy development zones and obtain their approval by the Renewable Energy Action Team. ● Provide input on project planning and decision making process; ensure that city and county planning departments consider the conservation of grassland and vernal pool habitat. 	<ul style="list-style-type: none"> ● Annual Grassland ● Perennial Grassland
Western North American Temperate Grassland and Meadow	Western Upland Grasslands	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Baseline data collection and analysis on effect of natural fire on grasslands. ● Conduct comprehensive ecological assessment (research) and evaluate climate effects on aspen meadows. ● Gathering and analyze data regarding aspen meadows and wildlife. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Partner for joint advocacy by establishing partnership for privately managed lands and decision-making processes with other public and private entities. <p>Direct Management</p> <ul style="list-style-type: none"> ● Implement habitat restoration and enhancement of aspen meadows. ● Manage grazing. ● Manage invasive species. <p>Economic Incentives</p> <ul style="list-style-type: none"> ● Provide economic incentives by providing restoration grants, collaborating with federal agencies to identify opportunities to implement joint conservation actions, develop a habitat conservation plan or voluntary local program, or implement candidate conservation agreement to protect candidate species that are vulnerable. 	<p>Environmental Review</p> <ul style="list-style-type: none"> ● Conduct environmental review, maintain devotion of staff to environmental review of CEQA projects, and enhance staffing levels to commit to environmental review of NEPA projects on federal lands. <p>Land Acquisition/Easement/Lease</p> <ul style="list-style-type: none"> ● Protect and restore land through acquisitions or conservation easements. <p>Land Use Planning</p> <ul style="list-style-type: none"> ● Provide input on local planning regarding the conservation of natural resources. <p>Law and Policy</p> <ul style="list-style-type: none"> ● Advocate for laws and policies that protect natural resources. ● Advocate for laws and policies by influencing land use policies and coordinating with federal agencies to reduce grassland conversion. <p>Outreach and Education</p> <ul style="list-style-type: none"> ● Provide outreach and education for the conservation of natural resources. 	<ul style="list-style-type: none"> ● Annual Grassland ● Perennial Grassland

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Western Cordilleran Montane Shrubland and Grassland	Montane Upland Deciduous Scrub	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Conduct comprehensive ecological assessment (research). Gather and analyze data about aspen meadows and wildlife. <p>Partner Engagement</p> <ul style="list-style-type: none"> Partner for joint advocacy with public and private sectors. Establish partnership for privately managed lands. Establish decision making processes with other public and private entities to determine or implement strategies. Creating and maintaining partnerships will ensure the coordinated development of conservation strategies or actions to reduce climate-related stresses to species and habitats. <p>Direct Management</p> <ul style="list-style-type: none"> Implement habitat restoration and enhancement for aspen meadows. 	<p>Environmental Review</p> <ul style="list-style-type: none"> Conduct environmental review. Maintain devotion of staff to environmental review of CEQA projects. Enhance staffing levels to commit to environmental review of NEPA projects on federal lands. <p>Law and Policy</p> <ul style="list-style-type: none"> Advocate for laws and policies that protect natural resources. <p>Outreach and Education</p> <ul style="list-style-type: none"> Provide outreach and education for the conservation of natural resources. 	<ul style="list-style-type: none"> Montane Chaparral
Vancouverian Lowland Grassland and Shrubland	North Coast Deciduous Scrub and Terrace Prairie	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Collect biological and ecological data to address key information gaps on SGCN, habitats, and pressures. <p>Partner Engagement</p> <ul style="list-style-type: none"> Establish and engage in partner relationships. <p>Management Planning</p> <ul style="list-style-type: none"> Develop and implement management plans. <p>Direct Management</p> <ul style="list-style-type: none"> Conduct direct resource management. <p>Environmental Review</p> <ul style="list-style-type: none"> Implement environmental review, with focus on the following: non-conservation oriented policies; projects and plans to help ensure impacts to wildlife are minimized and benefits maximized; infrastructure development projects to ensure they are designed and sited to avoid impacts on species and habitat; state highway plans; forest management plans; and plans for transmission corridor siting. 	<p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> Designate conservation areas with emphasis on sites or landscapes that have unique and important value to wildlife. Protect priority habitats through fee title acquisition, permanent conservation easement, or other means; purchase land in a corridor connecting two protected areas to provide connectivity of habitat. <p>Land Use Planning</p> <ul style="list-style-type: none"> Provide input to land use planning decisions. <p>Law and Policy</p> <ul style="list-style-type: none"> Develop or influence law and policy that addresses vehicle emissions, timber harvest cumulative impacts, critical habitat, and marine species with ranges that overlap jurisdictional boundaries. 	<ul style="list-style-type: none"> Coastal Scrub Perennial Grassland
Warm Interior Chaparral	Desert Transition Chaparral	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Collect and analyze data regarding the target. <p>Partner Engagement</p> <ul style="list-style-type: none"> Engage conservation partners, including state and federal agencies, tribal governments, the non-governmental organization community, and other partners to achieve shared objectives and broader coordination across overlapping areas. Establish partnership to co-monitoring species/habitats on federally managed lands. Establish decision-making processes with other public and private entities to determine or implement strategies. Convene an advisory committee to assist with implementation of strategies. 	<p>Management Planning</p> <ul style="list-style-type: none"> Work with partners on the development of large landscape conservation planning. Develop or update management plans to integrate the effects of climate change. Development of management plans for species, habitats and natural processes. Develop a management plan for SGCN or its habitat. Reintroduction, relocation, or stocking of native animals or plants to an area where they can better adapt. Translocate/breed in captivity a SGCN to establish new populations in suitable habitat. Restore SGCN to historically occupied habitats. <p>Direct Management</p> <ul style="list-style-type: none"> Conduct direct resource management. <p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> Protect land through acquisition, easement, or lease. 	<ul style="list-style-type: none"> Chamise-Redshanks Chaparral Mixed Chaparral
Cool Interior Chaparral (formerly Western North American Cool/Montane Sclerophyllous Evergreen Scrub)	Montane Chaparral	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Collect and analyze data regarding the target. <p>Partner Engagement</p> <ul style="list-style-type: none"> Engage conservation partners, including state and federal agencies, tribal governments, the non-governmental organization community, and other partners to achieve shared objectives and broader coordination across overlapping areas. Establish partnership to co-monitoring species/habitats on federally managed lands. Establish decision-making processes with other public and private entities to determine or implement strategies. Convene an advisory committee to assist with implementation of strategies. 	<p>Management Planning</p> <ul style="list-style-type: none"> Work with partners on the development of large landscape conservation planning. Develop or update management plans to integrate the effects of climate change. Development of management plans for species, habitats and natural processes. Develop a management plan for SGCN or its habitat. Reintroduction, relocation, or stocking of native animals or plants to an area where they can better adapt. Translocate/breed in captivity a SGCN to establish new populations in suitable habitat. Restore SGCN to historically occupied habitats. <p>Direct Management</p> <ul style="list-style-type: none"> Conduct direct resource management. <p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> Protect land through acquisition, easement, or lease. 	<ul style="list-style-type: none"> Montane Chaparral

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USNVC Macrogroup	Common Name	Conservation Strategies		CWHR Classification
Vancouverian Coastal Dune and Bluff	Coastal Dune and Bluff Scrub	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Collect biological and ecological data to address key information gaps on SGCN, habitats, and pressures. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Establish and engage in partner relationships. <p>Management Planning</p> <ul style="list-style-type: none"> ● Develop and implement management plans. <p>Direct Management</p> <ul style="list-style-type: none"> ● Conduct direct resource management. <p>Environmental Review</p> <ul style="list-style-type: none"> ● Implement environmental review, with focus on the following: non-conservation oriented policies; projects and plans to help ensure impacts to wildlife are minimized and benefits maximized; infrastructure development projects to ensure they are designed and sited to avoid impacts on species and habitat; state highway plans; forest management plans; and plans for transmission corridor siting. 	<p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> ● Designate conservation areas with emphasis on sites or landscapes that have unique and important value to wildlife. ● Protect priority habitats through fee title acquisition, permanent conservation easement, or other means; purchase land in a corridor connecting two protected areas to provide connectivity of habitat. <p>Land Use Planning</p> <ul style="list-style-type: none"> ● Provide input to land use planning decisions. <p>Law and Policy</p> <ul style="list-style-type: none"> ● Develop or influence law and policy that addresses vehicle emissions, timber harvest cumulative impacts, critical habitat, and marine species with ranges that overlap jurisdictional boundaries. 	<ul style="list-style-type: none"> ● Coastal Scrub
Western North American Montane/Boreal Peatland	Fen (Peatlands)	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Conduct comprehensive ecological assessment (research) and evaluate climate effects on aspen meadows. ● Gather and analyze data on wet meadows and wildlife: establish baseline inventory of wet meadows and research ecosystem services of wet meadows (e.g., carbon sequestration). ● Gather and analyze data regarding aspen meadows and wildlife. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Partner for joint advocacy by establishing partnership for privately managed lands and decision-making processes with other public and private entities. <p>Management Planning</p> <ul style="list-style-type: none"> ● Implement grazing practices that benefit meadow ecosystems (conduct managed grazing). ● Provide input on grazing management plans. <p>Direct Management</p> <ul style="list-style-type: none"> ● Enhance habitat: improve water quality and temperature, coordinate water storage and timing of release to improve meadow hydrology, improve surface water recharge, reduce erosion and bank cutting, restore meadow hydrology, and improve resiliency of meadows to flood events. ● Implement habitat restoration and enhancement of aspen meadows. ● Manage invasive species. ● Restore meadows impacted by roads and railroads: reduce sediment from existing and abandoned roads from entering meadows, restore hydrology altered by legacy roads and railroads, develop BMPs for road maintenance, and reduce the overall presence of roads and railroads in meadows (new and existing). 	<p>Environmental Review</p> <ul style="list-style-type: none"> ● Conduct environmental review, maintain devotion of staff to environmental review of CEQA projects, and enhance staffing levels to commit to environmental review of NEPA projects on federal lands. <p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> ● Protect land through acquisition and conservation easements, with emphasis on restoring and protecting degraded wet meadow habitat and conserving high-quality wet meadow. <p>Law and Policy</p> <ul style="list-style-type: none"> ● Advocate for laws and policies that protect natural resources. <p>Outreach and Education</p> <ul style="list-style-type: none"> ● Provide education and outreach to broad resource users on multiple-use policy and educate the public on the beneficial use of fire. ● Provide outreach and education for the conservation of natural resources. 	<ul style="list-style-type: none"> ● Fresh Emergent Wetland ● Wet Meadow
Western North American Freshwater Marsh	Freshwater Marsh	<p>Management Planning</p> <ul style="list-style-type: none"> ● Develop management plans. <p>Economic Incentives</p> <ul style="list-style-type: none"> ● Provide economic incentives for improved resource management. <p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> ● Purchase land and conservation easements. 	<p>Law and Policy</p> <ul style="list-style-type: none"> ● Advocate for laws and policies. <p>Outreach and Education</p> <ul style="list-style-type: none"> ● Provide outreach and education. 	<ul style="list-style-type: none"> ● Fresh Emergent Wetland
Western North America Vernal Pool	Vernal Pools <i>(strategies from Central Coast Province California Grasslands and Flowerfields apply to this macrogroup)</i>	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Identify and conduct research on high-priority study questions for grassland habitat/conservation areas; conduct research to inform coordination with Caltrans and county transportation agencies on wildlife-friendly transportation corridors; implement and fund monitoring and research components of completed and draft NCCPs, HCPs, and Conservation Strategies. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Coordinate with Caltrans and county transportation agencies to use information on high-priority wildlife corridors in the design of wildlife-friendly transportation corridors. ● Coordinate with fire agencies to develop and implement fire management BMPs in grassland habitats. <p>Direct Management</p> <ul style="list-style-type: none"> ● Manage invasive species, with focus on controlling or eradicating them in grassland habitats in the Central California Coast Ecoregion. 	<p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> ● Acquire, conserve, and manage habitat for SGCN that inhabit grassland habitats by finalizing draft conservation plans and implementing completed NCCPs, HCPs, and Conservation Strategies and other opportunities. <p>Land Use Planning</p> <ul style="list-style-type: none"> ● Develop statewide strategies on renewable energy development location siting; identify renewable energy development zones and obtain their approval by the Renewable Energy Action Team. ● Provide input on project planning and decision making process; ensure that city and county planning departments consider the conservation of grassland and vernal pool habitat. 	<ul style="list-style-type: none"> ● Annual Grassland ● Fresh Emergent Wetland

Table D-1 Terrestrial Conservation Strategies				
USNVC Macrogroup	Common Name	Conservation Strategies		CWHR Classification
Western North America Wet Meadow and Low Shrub Carr	Wet Mountain Meadow	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Conduct comprehensive ecological assessment (research) and evaluate climate effects on aspen meadows. Gathering and analyze data regarding aspen meadows and wildlife. <p>Partner Engagement</p> <ul style="list-style-type: none"> Partner for joint advocacy by establishing partnership for privately managed lands and decision-making processes with other public and private entities. <p>Direct Management</p> <ul style="list-style-type: none"> Implement habitat restoration and enhancement of aspen meadows. 	<p>Environmental Review</p> <ul style="list-style-type: none"> Conduct environmental review, maintain devotion of staff to environmental review of CEQA projects, and enhance staffing levels to commit to environmental review of NEPA projects on federal lands. <p>Law and Policy</p> <ul style="list-style-type: none"> Advocate for laws and policies that protect natural resources. <p>Outreach and Education</p> <ul style="list-style-type: none"> Provide outreach and education for the conservation of natural resources. 	<ul style="list-style-type: none"> Wet Meadow
North American Pacific Coastal Salt Marsh	Salt Marsh	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Conduct research regarding effective salt marsh management. <p>Partner Engagement</p> <ul style="list-style-type: none"> Partner for joint advocacy. <p>Management Planning</p> <ul style="list-style-type: none"> Implement integrated resource management. <p>Direct Management</p> <ul style="list-style-type: none"> Control invasive species. <p>Economic Incentives</p> <ul style="list-style-type: none"> Provide economic incentives for improved resource management. 	<p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> Protect and restore land acquired through fee title or conservation easement, with focus on the following: acquire, protect, enhance, or restore salt marsh habitat; support the Delta Conservancy to establish restoration priorities; increase connectivity among salt marsh habitats; and enhance working landscapes to benefit fish and wildlife. <p>Law and Policy</p> <ul style="list-style-type: none"> Advocate for laws and policies, with focus on the following: influence land use policies to reduce impacts on salt marsh habitat; streamline permit process for restoration; enhance law enforcement capacity for protection of restoration sites; and develop programmatic permits. <p>Outreach and Education</p> <ul style="list-style-type: none"> Implement education and outreach focused on educating local agencies and the public on the biological values of Bay Delta habitats and existing threats affecting fish and wildlife, and promoting effective and coordinated conservation strategies for the Bay Delta. 	<ul style="list-style-type: none"> Saline Emergent Wetland
Warm Semi-Desert/Mediterranean Alkali-Saline Wetland	Salt Marsh Meadows <i>(strategies developed for Salt Marsh apply to this macrogroup)</i>	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Conduct research. <p>Partner Engagement</p> <ul style="list-style-type: none"> Partner for joint advocacy. <p>Management Planning</p> <ul style="list-style-type: none"> Implement integrated resource management. <p>Direct Management</p> <ul style="list-style-type: none"> Control invasive species. <p>Economic Incentives</p> <ul style="list-style-type: none"> Provide economic incentives. 	<p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> Protect and restore land acquired through fee title or conservation easement, with focus on the following: acquire, protect, enhance, or restore salt marsh habitat; support the Delta Conservancy to establish restoration priorities; increase connectivity among salt marsh habitats; and enhance working landscapes to benefit fish and wildlife. <p>Law and Policy</p> <ul style="list-style-type: none"> Advocate for laws and policies, with focus on the following: influence land use policies to reduce impacts on salt marsh habitat; streamline permit process for restoration; enhance law enforcement capacity for protection of restoration sites; and develop programmatic permits. <p>Outreach and Education</p> <ul style="list-style-type: none"> Implement education and outreach focused on educating local agencies and the public on the biological values of Bay Delta habitats and existing threats affecting fish and wildlife, and promoting effective and coordinated conservation strategies for the Bay Delta. 	<ul style="list-style-type: none"> Alkali Desert Scrub Saline Emergent Wetland
Mojavean-Sonoran Desert Scrub	Mojave and Sonoran Desert Scrub	<p>Partner Engagement</p> <ul style="list-style-type: none"> Establish co-management partnership. Partner for joint advocacy; increase political awareness for conservation of desert scrub in the Sonoran Desert ecoregion, secure additional funding through grants or legislation, and advocate for development consistent with strategy. <p>Management Planning</p> <ul style="list-style-type: none"> Develop HCP, NCCP, and management plans, with emphasis on minimizing impacts of housing and urban growth. <p>Land Acquisition/Easement/Lease</p> <ul style="list-style-type: none"> Conserve lands to maintain long-term viability of SGCN. 	<p>Land Use Planning</p> <ul style="list-style-type: none"> Provide input on project planning and decision making process; conserve stream habitats and flows through participation in the planning and decision making process. <p>Outreach and Education</p> <ul style="list-style-type: none"> Partner for joint advocacy; increase political awareness for conservation of desert scrub in the Sonoran Desert ecoregion, secure additional funding through grants or legislation, and advocate for development consistent with strategy. <p>Training and Technical Assistance</p> <ul style="list-style-type: none"> Provide training to agency staff on renewable energy issues, including technology, relevant research, ecological impacts, and conservation strategies. 	<ul style="list-style-type: none"> Desert Scrub Desert Succulent Scrub Joshua Tree

Table D-1 Terrestrial Conservation Strategies				
USNVC Macrogroup	Common Name	Conservation Strategies		CWHR Classification
North American Warm-Desert Xero-Riparian Macrogroup (formerly Madrean Warm Semi-Desert Wash Woodland/Scrub)	Desert Wash Woodland and Scrub	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Gather biological data and conduct research on SGCN and response to disturbance. <p>Partner Engagement</p> <ul style="list-style-type: none"> Partner for joint advocacy, with focus on conservation of SGCNs that use railroad right-of-ways (ROW), and development of BMPs for ROW maintenance activities. 	<p>Land Use Planning</p> <ul style="list-style-type: none"> Develop BMPs for roads and railroads. <p>Outreach and Education</p> <ul style="list-style-type: none"> Provide education, including to BLM and USFWS on impacts from operations and maintenance activities within railroad right-of-ways. 	<ul style="list-style-type: none"> Desert Scrub Desert Wash
Great Basin Saltbush Scrub Macrogroup (formerly Western North American Cool Semi-Desert Shrubland, Shrub-Steppe)	Shadscale-Saltbush Scrub	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Gather and analyze data, particularly on the distribution of invasive species and their impacts on shadscale-saltbush scrub. Gather data and conduct research to better understand alkali desert scrub ecology (e.g., population size, distribution, habitat relationships), threats, and climate change effects; collect and analyze baseline assessment information for alkali desert scrub. <p>Partner Engagement</p> <ul style="list-style-type: none"> Establish and develop co-management partnerships; use partnerships with desert land managers to manage invasive species on conserved lands; and integrate climate change considerations into management plans for species and habitats. Establish joint partnerships with desert land managers, particularly to manage invasive species on conserved lands. Partner for joint advocacy; increase political awareness for conservation of alkali desert scrub in the Mojave ecoregion through education and outreach; secure additional funding through grants or legislation; and ensure renewable energy development is consistent with DRECP conservation strategies. 	<p>Management Planning</p> <ul style="list-style-type: none"> Develop and implement management plans to guide maintaining or restoring connectivity for alkali desert scrub and SGCN. <p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> Protect high-quality alkali desert scrub habitat through acquisition and easements. <p>Outreach and Education</p> <ul style="list-style-type: none"> Develop and implement an outreach program on the impacts of invasive species. Provide outreach and education on resource conservation practices. <p>Training and Technical Assistance</p> <ul style="list-style-type: none"> Provide training on invasive species control and management. 	<ul style="list-style-type: none"> Alkali Desert Scrub Desert Scrub Desert Wash
Cool Semi-Desert Wash and Disturbance Scrub	High Desert Wash and "Rangeland" Scrub	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Monitor and map invasive species, and study fire and climate-related effects on target habitats. <p>Partner Engagement</p> <ul style="list-style-type: none"> Maintain and enhance partnerships, particularly with NPS; form a collaborative group for data collection and research, especially with BLM. 	<p>Management Planning</p> <ul style="list-style-type: none"> Comment on and amend plans. <p>Direct Management</p> <ul style="list-style-type: none"> Restore and protect priority areas: identify highest priority areas for restoration, rehabilitation, and protection from fire, invasive species, or wild burros. 	<ul style="list-style-type: none"> Bitterbrush Low Sage Sagebrush
Western North America Tall Sage Shrubland and Steppe	Big Sagebrush Scrub	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Conduct research (data management) on restoration to inform prioritization of potential restoration areas. Prioritize and coordinate sage grouse research efforts with landowners and land managers; monitor pinyon juniper and cheatgrass invasions. <p>Partner Engagement</p> <ul style="list-style-type: none"> Establish partnerships, coordinate efforts, and identify and combine funding sources with other agency funding, for protecting, restoring, and enhancing sagebrush habitat. Implement management partnership/coordination. <p>Management Planning</p> <ul style="list-style-type: none"> Provide input on grazing management plans, including review and comment on CEQA and NEPA documents for grazing management plans to help slow or reverse habitat degradation because of the negative impacts of certain grazing practices. <p>Direct Management</p> <ul style="list-style-type: none"> Conduct controlled burns for fire/fuel reduction and habitat management in conifer/sagebrush areas (like those encroached by pinyon-juniper). Implement habitat restoration and enhancement. Implement resource management to promote healthy sagebrush ecosystems, through controlled burns (where appropriate and not in conflict with sage-grouse conservation), control of invasive species, and removal of pinyon-juniper. Manage invasive species. 	<p>Economic Incentives</p> <ul style="list-style-type: none"> Obtain funding for resource management. Provide economic incentives for improved resource management. Provide economic incentives and purchase leases, acquisitions, or conservation easements on important sage grouse habitat with various funding sources. <p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> Protect land through acquisition and easements; identify for protection high-quality sagebrush habitat within the Desert Creek/Fales, Bodie, and Long Valley population management units. <p>Law and Policy</p> <ul style="list-style-type: none"> Develop BMPs for improved resource conservation. <p>Outreach and Education</p> <ul style="list-style-type: none"> Advocate for wildlife friendly fire management. Provide education and outreach for the ranching public and CDFW staff; educate staff on rangeland science; and educate ranching public on the need and status of BMPs. 	<ul style="list-style-type: none"> Sagebrush

Table D-1 Terrestrial Conservation Strategies				
USNVC Macrogroup	Common Name	Conservation Strategies		CWHR Classification
Western North America Dwarf Sage Shrubland and Steppe	Great Basin Dwarf Sagebrush Scrub	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Conduct research (data management) on restoration to inform prioritization of potential restoration areas. <p>Partner Engagement</p> <ul style="list-style-type: none"> Implement management partnership/coordination. <p>Management Planning</p> <ul style="list-style-type: none"> Provide input on grazing management plans, including review and comment on CEQA and NEPA documents for grazing management plans to help slow or reverse habitat degradation because of the negative impacts of certain grazing practices. <p>Direct Management</p> <ul style="list-style-type: none"> Conduct controlled burns for fire/fuel reduction and habitat management in conifer/sagebrush areas (like those encroached by pinyon-juniper). Implement habitat restoration and enhancement. Manage invasive species. 	<p>Economic Incentives</p> <ul style="list-style-type: none"> Obtain funding for resource management. Provide economic incentives for improved resource management. <p>Law and Policy</p> <ul style="list-style-type: none"> Develop BMPs for improved resource management. <p>Outreach and Education</p> <ul style="list-style-type: none"> Advocate for wildlife friendly fire management. Provide education and outreach for the ranching public and CDFW staff; educate staff on rangeland science; and educate ranching public on the need and status of BMPs. 	<ul style="list-style-type: none"> Low Sage
Inter-Mountain Dry Shrubland and Grassland	Great Basin Upland Scrub	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Conduct research (data management) on restoration to inform prioritization of potential restoration areas. Monitor and map invasive species, and study fire and climate-related effects on target habitats. <p>Partner Engagement</p> <ul style="list-style-type: none"> Implement management partnership/coordination. Maintain and enhance partnerships, particularly with NPS; form a collaborative group for data collection and research, especially with BLM. <p>Management Planning</p> <ul style="list-style-type: none"> Comment on and amend plans. Provide input on grazing management plans, including review and comment on CEQA and NEPA documents for grazing management plans to help slow or reverse habitat degradation because of the negative impacts of certain grazing practices. 	<p>Direct Management</p> <ul style="list-style-type: none"> Conduct controlled burns for fire/fuel reduction and habitat management in conifer/sagebrush areas (like those encroached by pinyon-juniper). Implement habitat restoration and enhancement. Manage invasive species. Restore and protect priority areas: identify highest priority areas for restoration, rehabilitation, and protection from fire, invasive species, or wild burros. <p>Economic Incentives</p> <ul style="list-style-type: none"> Provide economic incentives for improved resource management. Obtain funding for improved resource management. <p>Law and Policy</p> <ul style="list-style-type: none"> Develop BMPs for improved resource management. <p>Outreach and Education</p> <ul style="list-style-type: none"> Advocate for wildlife friendly fire management. Provide education and outreach for the ranching public and CDFW staff; educate staff on rangeland science; and educate ranching public on the need and status of BMPs. 	<ul style="list-style-type: none"> Bitterbrush Low Sage Sagebrush
Vancouverian Alpine Scrub, Forb Meadow, and Grassland and Rocky Mountain Alpine Scrub, Forb Meadow, and Grassland	Alpine Vegetation	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Gather more information on alpine habitat requirements and impacts of climate change on the plant community and its KEAs, specifically in the North Coast and Klamath Province. Gather more information on alpine vegetation habitat, particularly on the physical and biological variables affected by climate change. <p>Partner Engagement</p> <ul style="list-style-type: none"> Establish partnerships to co-monitor alpine vegetation habitat on state and federal lands. Establish partnerships to co-monitor target on state and federally managed lands, to establish decision-making processes with other public and private entities to determine or implement strategies, convene an advisory committee to assist with implementation of strategies and engage university students in research. <p>Management Planning</p> <ul style="list-style-type: none"> Develop or update management plans to integrate the effects of climate change. Manage grazing and invasive species, and remove trails, including: restrict grazing and pack animal use of subalpine and alpine meadows on public lands; remove trail and campground use away from subalpine and alpine meadows; treat and remove invasive species. 	<p>Direct Management</p> <ul style="list-style-type: none"> Manage grazing and invasive species by removing trails, restricting grazing and pack animal use of subalpine and alpine meadows on public lands, removing campground use away from subalpine and alpine meadows, and removing invasive species. Restore subalpine and alpine meadows, including restoration or enhancement of degraded habitats, monitoring populations, fencing for protection and removing barriers to species movement. <p>Economic Incentives</p> <ul style="list-style-type: none"> Develop economic incentives to reduce greenhouse gas emissions within California. <p>Outreach and Education</p> <ul style="list-style-type: none"> Engage urban citizens on climate change; expand conservation education programs (e.g., in grade schools) to include climate change. Engage urban citizens, educate grade school children on climate change, and expand conservation education programs to include climate change and solutions to reduce impacts such as reducing greenhouse gas emissions. <p>Training and Technical Assistance</p> <ul style="list-style-type: none"> Provide training on science based applications and tools. Provide science-based applications and tools for climate change and natural resources management. 	<ul style="list-style-type: none"> Alpine Dwarf-Shrub

Table D-1 Terrestrial Conservation Strategies				
USNVC Macrogroup	Common Name	Conservation Strategies		CWHR Classification
Temperate Pacific Intertidal Shore	Brackish (Estuarine) Submerged Aquatic Vegetation <i>(strategies from Marine target "Embayments, Estuaries, and Lagoons" apply to this macrogroup)</i>	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Encourage research that addresses questions that would improve ability to manage this target. Improve Marine Province's management of resources that are vulnerable to climate change and ocean acidification. Improve understanding of distribution of important pathogens. Support target monitoring, compile results, and integrate data into management. Work with partners to identify effects on the target of increased anthropogenic greenhouse gases and to develop and implement responses to these effects. <p>Partner Engagement</p> <ul style="list-style-type: none"> Encourage protection of lands that reduce runoff (buffers like greenways and gulches). Encourage research that addresses questions that would improve ability to manage this target. Improve education and outreach activities. Improve engagement in decision-making process. Improve implementation of non-structural and structural best management practices (BMPs). Improve rapid response capabilities to events that degrade target. Work with partners to identify effects on the target of increased anthropogenic greenhouse gases and to develop and implement responses to these effects. <p>Management Planning</p> <ul style="list-style-type: none"> Coordinate with local and state relevant agencies on shoreline and water quality management planning. Implement CDFW Aquatic Invasive Species Management Plan. Improve engagement in decision-making process. Improve implementation of estuary, lagoon mouth and channel modifications. Improve implementation of non-structural and structural BMPs. Improve Marine Province's management of resources that are vulnerable to climate change and ocean acidification. Improve practices to reduce human error. <p>Direct Management</p> <ul style="list-style-type: none"> Encourage research that addresses questions that would improve ability to manage this target. Improve implementation of estuary, lagoon mouth and channel modifications. Improve management approaches for fostering the sustainability and resilience of the target. Improve rapid response capabilities to events that degrade target. Support target monitoring, compile results, and integrate data into management. Work with partners to identify effects on the target of increased anthropogenic greenhouse gases and to develop and implement responses to these effects. 	<p>Economic Incentives</p> <ul style="list-style-type: none"> Support policies and practices that minimize impacts on shoreline and wetlands. <p>Environmental Review</p> <ul style="list-style-type: none"> Coordinate with local and state relevant agencies on shoreline and water quality management planning. Improve engagement in decision-making process. Improve implementation of non-structural and structural best management practices (BMPs). Improve practices to reduce human error. Streamline permit processes that address control and eradication of invasive species. <p>Land Acquisition/Easement/Lease</p> <ul style="list-style-type: none"> Encourage protection of lands that reduce runoff (buffers like greenways and gulches). <p>Land Use Planning</p> <ul style="list-style-type: none"> Encourage protection of lands that reduce runoff (buffers like greenways and gulches). Improve engagement in decision-making process. Improve implementation of non-structural and structural best management practices (BMPs). <p>Law and Policy</p> <ul style="list-style-type: none"> Streamline permit processes that address control and eradication of invasive species. Support development, implementation, and enforcement of effective regulations. Support policies and practices that minimize impacts on shoreline and wetlands. <p>Outreach and Education</p> <ul style="list-style-type: none"> Improve education and outreach activities. Improve practices to reduce human error. Improve rapid response capabilities to events that degrade target. <p>Training and Technical Assistance</p> <ul style="list-style-type: none"> Increase training. 	<ul style="list-style-type: none"> Estuarine
Western North American Freshwater Aquatic Vegetation	Freshwater Aquatic Vegetation	Strategies to be developed after SWAP 2015 completion		<ul style="list-style-type: none"> Lacustrine Riverine

Table D-1 Terrestrial Conservation Strategies				
USNVC Macrogroup	Common Name	Conservation Strategies		CWHR Classification
California Cliff, Scree, and Other Rock Vegetation	California Foothill and Coastal Rock Outcrop Vegetation	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Collect and analyze data regarding the target. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Engage conservation partners, including state and federal agencies, tribal governments, the NGO community, and other partners to achieve shared objectives and broader coordination across overlapping areas. Establish partnership to co-monitoring species/habitats on federally managed lands. Establish decision-making processes with other public and private entities to determine or implement strategies. Convene an advisory committee to assist with implementation of strategies. 	<p>Management Planning</p> <ul style="list-style-type: none"> ● Work with partners on the development of large landscape conservation planning. Develop or update management plans to integrate the effects of climate change. Development of management plans for species, habitats and natural processes. Develop a management plan for SGCN or its habitat. Reintroduction, relocation, or stocking of native animals or plants to an area where they can better adapt. Translocate/breed in captivity a SGCN to establish new populations in suitable habitat. Restore SGCN to historically occupied habitats. <p>Direct Management</p> <ul style="list-style-type: none"> ● Conduct direct resource management. <p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> ● Protect land through acquisition, easement, or lease. 	● Barren
Vancouverian Cliff, Scree, and Other Rock Vegetation	Northwest Coast Cliff and Outcrop	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Collect biological and ecological data to address key information gaps on SGCN, habitats, and pressures. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Establish and engage in partner relationships. <p>Management Planning</p> <ul style="list-style-type: none"> ● Develop and implement management plans. <p>Direct Management</p> <ul style="list-style-type: none"> ● Conduct direct resource management. <p>Environmental Review</p> <ul style="list-style-type: none"> ● Implement environmental review, with focus on the following: non-conservation oriented policies; projects and plans to help ensure impacts to wildlife are minimized and benefits maximized; infrastructure development projects to ensure they are designed and sited to avoid impacts on species and habitat; state highway plans; forest management plans; and plans for transmission corridor siting. 	<p>Land Acquisition/ Easement/ Lease</p> <ul style="list-style-type: none"> ● Designate conservation areas with emphasis on sites or landscapes that have unique and important value to wildlife. ● Protect priority habitats through fee title acquisition, permanent conservation easement, or other means; purchase land in a corridor connecting two protected areas to provide connectivity of habitat. <p>Land Use Planning</p> <ul style="list-style-type: none"> ● Provide input to land use planning decisions. <p>Law and Policy</p> <ul style="list-style-type: none"> ● Develop or influence law and policy that addresses vehicle emissions, timber harvest cumulative impacts, critical habitat, and marine species with ranges that overlap jurisdictional boundaries. 	● Barren
North American Warm Semi-Desert Cliff, Scree, and Other Rock Vegetation	Sparsely Vegetated Desert Dune	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Collect data on plant community and SGCN status within ecoregion through range-wide surveys, climate change studies, and monitoring invasive species population trends. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Maintain partnership presence in the planning process of HCPs to ensure the conservation of this target. <p>Management Planning</p> <ul style="list-style-type: none"> ● Support the development and implementation of ongoing/existing management plans. 	<p>Direct Management</p> <ul style="list-style-type: none"> ● Support implementation of existing HCPs to protect, restore, or enhance those areas of target habitat that are prioritized for such or have been degraded by invasive species or OHV. Enhance enforcement of existing HCPs, including illegal OHV use. Existing HCPs include Imperial Sand Dunes RAMP, Heber Dunes SVRA General Plan, Lower Colorado River MSCP, San Diego East County MSCP, Coachella Valley MSHCP, IID, and the DRECP. <p>Land Use Planning</p> <ul style="list-style-type: none"> ● Continue to provide input on local land use plans. 	● Barren

Table D-2 Freshwater Aquatic Conservation Strategies	
Aquatic Targets	Conservation Strategies
Anthropogenically Created Aquatic Features	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Collect data on the distribution of invasive species and impacts to the target habitat, species utilization of anthropogenic waterways, and the distribution of temporary aquatic habitats associated with roads and railroads to inform management. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Establish co-management partnerships and cooperative management plans with land management agencies, water agencies, private landowners, regional land trusts, environmental organizations, railroads, and transportation agencies. <p>Direct Management</p> <ul style="list-style-type: none"> ● Manage invasive species to expand range of aquatic/semi-aquatic SGCNs.
Carson River Native Fish Assemblage	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Conduct research on SGCNs; study the distribution and abundance of mountain whitefish and mountain sucker in the Carson River Basin, and the susceptibility of the Carson River Basin to invasive species. <p>Management Planning</p> <ul style="list-style-type: none"> ● Develop basin management plans. <p>Direct Management</p> <ul style="list-style-type: none"> ● Enhance habitat; improve water quality and temperature consistent with the Basin Plan, and coordinate water storage and timing of release between CDFW and water agencies to benefit fish habitat and water users. ● Manage dams and other barriers to fish passage. ● Reintroduce Lahontan cutthroat trout and Paiute cutthroat trout to their historic ranges. ● Restore native species; manage invasive species and restore/maintain native fish populations in target streams.
Cienegas	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Gather and analyze data on impacts of water management and water use, renewable energy projects, groundwater use for farming and livestock, and invasive species on native species within cienegas. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Establish and develop co-management partnerships. <p>Direct Management</p> <ul style="list-style-type: none"> ● Manage water use, particularly groundwater withdrawals. ● Translocate or reintroduce native aquatic SGCN and establish genetically viable populations.
Clear Lake Native Fish Assemblage	<p>Partner Engagement</p> <ul style="list-style-type: none"> ● Establish collaborative partnerships. <p>Direct Management</p> <ul style="list-style-type: none"> ● Control damage to creeks from off-highway vehicle use. ● Develop BMPs for increased spring/summer flows for improved lake and fish health, improved fish passage, and water diversions. ● Manage invasive species. <p>Economic Incentives</p> <ul style="list-style-type: none"> ● Provide economic incentives for improved resource management.
Coastal Lagoons	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Conduct baseline surveys for SCGN/habitat and pressures in at least 50% of coastal lagoons within the ecoregion. <p>Direct Management</p> <ul style="list-style-type: none"> ● Develop an interagency direct management plan for coastal lagoons. ● Manage dams and other barriers to improve fish passage and stream ecosystem function. <p>Land Acquisition, Easement, Lease</p> <ul style="list-style-type: none"> ● Protect riparian areas by acquiring land adjacent to lagoons, and reduce water diversion from the critical lagoons and tributary streams during late spring to summer.

Table D-2 Freshwater Aquatic Conservation Strategies	
Aquatic Targets	Conservation Strategies
Eagle Lake Native Fish Assemblage	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Prepare groundwater assessment. <p>Partner Engagement</p> <ul style="list-style-type: none"> ● Engage in decision-making process. <p>Management Planning</p> <ul style="list-style-type: none"> ● Develop BMPs for water management and conservation in the Pine Creek watershed. Coordinate with USFS to create enhanced wetlands and multi-use management (wildlife, livestock, and fish) policy. Managed water could better be used for fish as there are alternative water sources for wildlife and livestock in the Pine Creek watershed. ● Promote domestic water efficiency and conservation through reducing water use by increased efficiency from residence and businesses. <p>Direct Management</p> <ul style="list-style-type: none"> ● Encourage use of alternative water sources (wells), water conservation practices, and reduce the impacts of water loss at water treatment sites. ● Implement the Eagle Lake Rainbow Trout Conservation Strategy, which was developed amongst the USFWS, USFS, and CDFW. ● Improve road maintenance to reduce sediment from roads entering streams. ● Manage dams and other barriers by installing control structures (gate or gate valve) to allow more bypass flows and fish passage. ● Manage grazing. ● Manage invasive species. <p>Outreach and Education</p> <ul style="list-style-type: none"> ● Provide education and outreach by educating the public on the development, status and need for BMPs and about invasive species. <p>Economic Incentives</p> <ul style="list-style-type: none"> ● Provide economic incentives for grazing on public lands to follow BMPs. <p>Law and Policy</p> <ul style="list-style-type: none"> ● Develop grazing BMPs for managed grazing, including barriers to sensitive areas, fencing timing, and grazing rotations.
Goose Lake Native Fish Assemblage	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Design and implement inventory and assessment of fish populations and fish habitat. <p>Direct Management</p> <ul style="list-style-type: none"> ● Manage dams and other barriers. ● Manage invasive species. ● Reduce livestock access to natural water features with wells and alternative water sources. ● Reduce livestock access to water (wells). <p>Law and Policy</p> <ul style="list-style-type: none"> ● Develop grazing BMPs and conduct managed grazing. ● Develop grazing BMPs to reduce grazing impacts on stream habitats. <p>Outreach and Education</p> <ul style="list-style-type: none"> ● Implement outreach and education programs to raise public awareness and support for the conservation of natural resources.
Native Aquatic Species Assemblage/Communities	<p>Direct Management</p> <ul style="list-style-type: none"> ● Develop buffers. Develop county stream buffer policy and guidelines in conjunction with ongoing regional efforts to develop riparian buffers; adequate support and clear policy guideline are needed. ● Manage dams and other barriers by reviewing potential cost/benefit of modifying or removing dams that block access to significant amounts of high quality salmonid spawning and rearing habitat and modifying or removing Cape Horn Dam and Scott Dam from the upper Eel River, Dwinell dam on the Shasta River, and dams from upper Klamath River. ● Promote water conservation measures by reducing the amount of land growing water intensive crops, considering less water intensive crops, providing incentives for water conservation, and encouraging public participation in enforcement of wasteful use of water (peer pressure). ● Reduce need for livestock access to streams and riparian corridors by providing and locating water supply to livestock in grazing areas away from streams (use wells and other off channel sources). <p>Land Acquisition/Easement/Lease</p> <ul style="list-style-type: none"> ● Acquire of riparian areas. Protect stream ecosystems by riparian land purchase and conservation easements. <p>Economic Incentives</p> <ul style="list-style-type: none"> ● Provide economic incentives to private landowners to influence responsible stewardship of land/water and specific species and establish good stewardship recognition or payments to landowners practicing sound resource management that benefits stream ecosystems. <p>Law and Policy</p> <ul style="list-style-type: none"> ● Support effective law enforcement by increasing funding for federal and state enforcement resources and increasing public awareness. ● Advocate for laws and policies. Develop, change, influence, and help implement formal legislation, regulations, and voluntary standards. <p>Outreach and Education</p> <ul style="list-style-type: none"> ● Provide outreach and education. Outreach efforts targeted to specific groups, communities, resource users, policy makers, stakeholders and/or the public to improve awareness and change knowledge, attitudes, and behaviors. Outreach includes both formal (classroom) and non-formal education efforts to: (1) landowners to implement land management practices to benefit species; (2) decision makers about impacts on at-risk quality standards for key water bodies and aquatic species).
Native Fish Assemblage	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> ● Collect and analyze data to establish a baseline inventory of SCGN distribution. ● Identify areas that may act as climate refugia. <p>Direct Management</p> <ul style="list-style-type: none"> ● Control invasive species. ● Improve fish passage by working with federal, state, and local agencies to identify and remove key fish barriers to fish movement and sediment flow, and keep priority areas barrier free. ● Protect and restore floodplain function. ● Restore natural flows. ● Translocate species to increase current distribution; specifically, translocate Santa Ana sucker, Santa Ana speckled dace, and UTS into suitable habitat in the Big Tujunga, San Gabriel, and Santa Clara watersheds. <p>Land Acquisition/Easement/Lease</p> <ul style="list-style-type: none"> ● Protect and restore unarmored threespine stickleback (UTS) habitat within the Santa Clara River mainstem, Soledad Canyon, and Bouquet Canyon. <p>Outreach and Education</p> <ul style="list-style-type: none"> ● Implement outreach.

Table D-2 Freshwater Aquatic Conservation Strategies		
Aquatic Targets	Conservation Strategies	
Salt Marsh	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Conduct research. <p>Partner Engagement</p> <ul style="list-style-type: none"> Partner for joint advocacy. <p>Management Planning</p> <ul style="list-style-type: none"> Implement integrated resource management. <p>Direct Management</p> <ul style="list-style-type: none"> Control invasive species. <p>Economic Incentives</p> <ul style="list-style-type: none"> Provide economic incentives. 	<p>Land Acquisition/Easement/Lease</p> <ul style="list-style-type: none"> Protect and restore land acquired through fee title or conservation easement, with focus on the following: acquire, protect, enhance, or restore salt marsh habitat; support the Delta Conservancy to establish restoration priorities; increase connectivity among salt marsh habitats; and enhance working landscapes to benefit fish and wildlife. <p>Law and Policy</p> <ul style="list-style-type: none"> Advocate for laws and policies, with focus on the following: influence land use policies to reduce impacts on salt marsh habitat; streamline permit process for restoration; enhance law enforcement capacity for protection of restoration sites; and develop programmatic permits. <p>Outreach and Education</p> <ul style="list-style-type: none"> Implement education and outreach focused on educating local agencies and the public on the biological values of Bay Delta habitats and existing threats affecting fish and wildlife, and promoting effective and coordinated conservation strategies for the Bay Delta.
San Joaquin Native Fish Assemblage	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Gather and analyze data; establish baseline inventory of SGCN and habitat, and threat distributions. <p>Management Planning</p> <ul style="list-style-type: none"> Provide input on local planning. Engage in local planning to encourage the use of bio(soft) engineering for flood control, retention of functional floodplains, and deterrence and capture of waste and pollution. <p>Direct Management</p> <ul style="list-style-type: none"> Control invasive species: assess, map, and develop control plans for invasive aquatic species. Improve fish passage: assess, prioritize, and remove/modify fish passage barriers. Protect and restore floodplain function; implement and maintain priority floodplain restoration projects. Restore natural flows. 	<p>Law and Policy</p> <ul style="list-style-type: none"> Advocate for effective enforcement of laws related to protection of significant riparian areas. <p>Outreach and Education</p> <ul style="list-style-type: none"> Provide outreach and education for the conservation of natural resources.
South Coast Native Aquatic Herp Assemblage	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Conduct research to identify causal mechanism for Chytrid fungus and prevent its spread in amphibian populations. <p>Direct Management</p> <ul style="list-style-type: none"> Manage flows, dams, and other barriers to best benefit aquatic herps and for fish passage. Manage invasive species to improve conditions for native fish and aquatic herps. Protect and restore habitat, and create riparian buffers adjacent to streams. Reintroduce native species. 	<p>Land Acquisition/Easement/Lease</p> <ul style="list-style-type: none"> Protect land in fee or with conservation easements, with focus on riparian habitats that have the greatest ecological potential such as larger impaired systems and those that support SGCN. <p>Outreach and Education</p> <ul style="list-style-type: none"> Provide outreach and education.
Springs and Spring Brooks	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Study and document impacts of invasive species, renewable energy projects, and dams and water management and use on spring ecosystems and associated species for future management actions. <p>Partner Engagement</p> <ul style="list-style-type: none"> Establish and develop co-management partnerships. <p>Management Planning</p> <ul style="list-style-type: none"> Provide input on local planning decisions. 	<p>Direct Management</p> <ul style="list-style-type: none"> Manage dams and other barriers to control fish passage. Manage invasive species to expand range of native fishes. Translocate or reintroduce native aquatic SGCN and establish genetically viable populations. <p>Land Acquisition/Easement/Lease</p> <ul style="list-style-type: none"> Protect high-quality springs and spring brooks through acquisition/easement/lease. <p>Outreach and Education</p> <ul style="list-style-type: none"> Provide outreach and education, with emphasis on improving public awareness, concern, and participation in resource conservation that leads to improved conditions for native fish.
Upper Kern Native Fish Assemblage	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Conduct research on SGCN; update genetic status for golden trout; refine distribution for hardhead and Kern River rainbow trout. <p>Management Planning</p> <ul style="list-style-type: none"> Develop new or revised management plans for native fish and implement existing Conservation Assessment and Strategy for golden trout. <p>Direct Management</p> <ul style="list-style-type: none"> Reintroduce golden trout to its historic range. Restore and enhance meadow habitat; improve water quality and temperature consistent with the Basin Plan. Restore native species; manage invasive species, and remove non-native trout from target streams. 	<p>Land Acquisition/Easement/Lease</p> <ul style="list-style-type: none"> Purchase land and/or acquire easements. <p>Outreach and Education</p> <ul style="list-style-type: none"> Conduct outreach; inform public of issues related to introduced genetic material, risks of invasive species, and importance of aquatic and riparian habitat restoration. <p>Training and Technical Assistance</p> <ul style="list-style-type: none"> Provide training to staff and managers on non-native genetic issues, invasive species management, and control techniques.
Walker River Native Fish Assemblage	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Collect data on the impacts of diversions, water management, water use, and the distribution of introduced genetic material on the native fish community. <p>Partner Engagement</p> <ul style="list-style-type: none"> Establish and develop co-management partnership to affect change in dams and/or water management and use following interagency agreement. <p>Management Planning</p> <ul style="list-style-type: none"> Develop and implement grazing BMPs. Ensure that planning and decision-making processes support the conservation of stream habitats and flows as a result of CDFW input. Reduce impacts to native fish as a result of roads and railroads and invasive species through development and use of BMPs. 	<p>Direct Management</p> <ul style="list-style-type: none"> Implement direct management activities to restore aquatic habitats and ensure that SGCNs are maintained or enhanced. Manage water for beneficial uses by native aquatic species. Remove introduced brook trout in the context of recovery of listed Lahontan cutthroat trout. Translocate or reintroduce native fish species. <p>Law and Policy</p> <ul style="list-style-type: none"> Implement effective enforcement of laws. <p>Outreach and Education</p> <ul style="list-style-type: none"> Provide outreach and education on native aquatic resource conservation efforts.

Table D-3 Marine Conservation Strategies	
Conservation Targets	Conservation Strategies
Deep Zone (>100m)	Marine strategies to be developed in the future.
Embayments, Estuaries, and Lagoons	<p>Data Collection and Analysis</p> <ul style="list-style-type: none"> Encourage research that addresses questions that would improve ability to manage this target. Improve Marine Province’s management of resources that are vulnerable to climate change and ocean acidification. Improve understanding of distribution of important pathogens. Support target monitoring, compile results, and integrate data into management. Work with partners to identify effects on the target of increased anthropogenic greenhouse gases and to develop and implement responses to these effects. <p>Partner Engagement</p> <ul style="list-style-type: none"> Encourage protection of lands that reduce runoff (buffers like greenways and gulches). Encourage research that addresses questions that would improve ability to manage this target. Improve education and outreach activities. Improve engagement in decision-making process. Improve implementation of non-structural and structural BMPs. Improve rapid response capabilities to events that degrade target. Work with partners to identify effects on the target of increased anthropogenic greenhouse gases and to develop and implement responses to these effects. <p>Management Planning</p> <ul style="list-style-type: none"> Coordinate with local and state relevant agencies on shoreline and water quality management planning. Implement CDFW Aquatic Invasive Species Management Plan. Improve engagement in decision-making process. Improve implementation of estuary, lagoon mouth and channel modifications. Improve implementation of non-structural and structural BMPs. Improve Marine Province’s management of resources that are vulnerable to climate change and ocean acidification. Improve practices to reduce human error. <p>Direct Management</p> <ul style="list-style-type: none"> Encourage research that addresses questions that would improve ability to manage this target. Improve implementation of estuary, lagoon mouth and channel modifications. Improve management approaches for fostering the sustainability and resilience of the target. Improve rapid response capabilities to events that degrade target. Support target monitoring, compile results, and integrate data into management. Work with partners to identify effects on the target of increased anthropogenic greenhouse gases and to develop and implement responses to these effects. <p>Economic Incentives</p> <ul style="list-style-type: none"> Support policies and practices that minimize impacts on shoreline and wetlands. <p>Environmental Review</p> <ul style="list-style-type: none"> Coordinate with local and state relevant agencies on shoreline and water quality management planning. Improve engagement in decision-making process. Improve implementation of non-structural and structural BMPs. Improve practices to reduce human error. Streamline permit processes that address control and eradication of invasive species. <p>Land Acquisition/Easement/Lease</p> <ul style="list-style-type: none"> Encourage protection of lands that reduce runoff (buffers like greenways and gulches). <p>Land Use Planning</p> <ul style="list-style-type: none"> Encourage protection of lands that reduce runoff (buffers like greenways and gulches). Improve engagement in decision-making process. Improve implementation of non-structural and structural BMPs. <p>Law and Policy</p> <ul style="list-style-type: none"> Streamline permit processes that address control and eradication of invasive species. Support development, implementation, and enforcement of effective regulations. Support policies and practices that minimize impacts on shoreline and wetlands. <p>Outreach and Education</p> <ul style="list-style-type: none"> Improve education and outreach activities. Improve practices to reduce human error. Improve rapid response capabilities to events that degrade target. <p>Training and Technical Assistance</p> <ul style="list-style-type: none"> Increase training.
Intertidal Zone	Marine strategies to be developed in the future.
Islands	Marine strategies to be developed in the future.
Mid-Depth Zone (30-100m)	Marine strategies to be developed in the future.
Nearshore Subtidal Zone (0-30m)	Marine strategies to be developed in the future.
Offshore Rocks	Marine strategies to be developed in the future.

Table D-4 Anadromous Fish Conservation Strategies			
Geography	Conservation Target	Conservation Strategy	
Statewide	In-River Spawning and Rearing Habitat	<ul style="list-style-type: none"> Document range and distribution of spawning and rearing habitat. 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"> Develop water management and conservation plans necessary to conserve anadromous fishes. Identify annual flow regimes necessary for migration, rearing, and spawning of each anadromous species. 	<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. Protect key areas necessary to maintain viable populations. 	<ul style="list-style-type: none"> Restore marsh and riparian habitat to improve carrying capacity of anadromous fishes.
North Coast and North Central Coast	California Anadromous Salmonid Stronghold Watersheds	<ul style="list-style-type: none"> Assess ecological and human activities conditions that are allowing for healthy fish populations. Establish collaborative working groups for each Stronghold (Smith, Mattole, and South Fork Eel rivers). 	<ul style="list-style-type: none"> 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"> Establish estuary function and structure that will allow anadromous migration and be responsive to climate change. 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.
	Russian River	<ul style="list-style-type: none"> Develop and implement water management plan to ensure Russian River fisheries and land use are compatible. 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. 	<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).
Klamath-Trinity Rivers Basin	Pacific Lamprey	<ul style="list-style-type: none"> Establish standing committee to implement interstate/intertribal 2012 Pacific lamprey conservation agreement. 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"> 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. 	<ul style="list-style-type: none"> Evaluate wood debris, gravel, and water cycling and transport mechanisms across the basins.
	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. 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"> Determine role of resident populations to recovery and sustainability of anadromous populations. 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.
	Migration Barriers	<ul style="list-style-type: none"> Accelerate planning and remediation of rim dam barriers to key steelhead populations. Modify land use practices (e.g., water use, agriculture, recreation, urban and road development) to minimize effects on migration corridors. 	<ul style="list-style-type: none"> Remediate most downstream barriers to steelhead entering rivers and streams.
	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. 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. 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. 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"> Conduct rim dam re-introduction pilot projects on Yuba and Sacramento rivers and evaluate efficacy of expanding rearing and spawning habitats for recovery. Establish biological production goals for each species, coupled with SMART ecological objectives, prioritized restoration actions, focused biotic and abiotic monitoring, and adaptive management planning framework that are developed and overseen by an established standing 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.