

List Actions: Indirect

Strategy Category	Resources Affected	Action Type
Action Description		
#4 Protect and secure water		
Provide new direction to water board and staff regarding how climate change will impact resources and in stream requirements.	Riparian Vegetation & Natural Riverbank	Human Resources: Teaching & Tech Assistance
#5 Protect and secure water		
Quantify water needed to support existing and expanded riparian zones, with actual data (quantity and timing of water application - look at the whole hydrologic system)	Riparian Vegetation & Natural Riverbank	Knowledge: Data Collection & Analysis
#7 Protect and secure water		
Consider new policy approaches to getting water to wetlands	Permanent Wetlands, Tricolored Black Bird, Wetland-dependent Reptiles	Direct Action: Law & Policy
#8 Protect and secure water		
Inform decision-making about new and modified infrastructure, water management plans, etc.	Riparian Vegetation & Natural Riverbank	Human Resources: Teaching & Tech Assistance
#12 Protect and secure water		
Hydrogeology research: Sponsor focused research to look at changing ET rates and look at better values associated with water supply (including social justice and recreation value).	Riparian Vegetation & Natural Riverbank	Knowledge: Data Collection & Analysis
#13 Protect and secure water		
Sponsor research into the relationship between water storage and riparian areas in the context of climate change.	Riparian Vegetation & Natural Riverbank	Knowledge: Data Collection & Analysis
#15 Protect and secure water		
Build on existing partnerships for drought management	Permanent Wetlands, Seasonal Wetlands, Tricolored Black Bird, Wetland-dependent Reptiles	Human Resources: Partner Engagement
#17 Protect and secure water		
Change the way water transfers are handled; reduce or cap water transfers out of the CV	Permanent Wetlands, Tricolored Black Bird, Wetland-dependent Reptiles	Direct Action: Law & Policy
#18 Protect and secure water		
Research relative wildlife benefits of different current and	Permanent Wetlands, Seasonal Wetlands,	Knowledge: Data Collection & Analysis

<p>potential wetland flooding and irrigation methods (timing, flood, pivot, drip, methods)</p>	<p>Tricolored Black Bird, Wetland-dependent Reptiles</p>	
<p>#19 Protect and secure water</p>	<p>Permanent Wetlands, Seasonal Wetlands,</p>	
<p>Research and modeling to determine where water is and needs to go to prioritize and coordinate water allocations to wetlands</p>	<p>Tricolored Black Bird, Wetland-dependent Reptiles</p>	<p>Knowledge: Data Collection & Analysis</p>
<p>#26 Protect and secure water</p>	<p>Amphibians, Vernal Pool Crustaceans</p>	
<p>Research impacts of nutrient runoff interaction with increased air temperatures.</p>		<p>Knowledge: Data Collection & Analysis</p>
<p>#27 Protect and secure water</p>	<p>Amphibians, Flooded Croplands,</p>	
<p>Research to evaluate effects of water contaminants on crop yield, water efficiency, and species biology, and identify Alternative Pest Management practices.</p>	<p>Wetland-dependent Reptiles</p>	<p>Knowledge: Data Collection & Analysis</p>
<p>#28 Protect and secure water</p>	<p>Oak Woodlands, Valley Oak</p>	
<p>Manage water withdrawals and groundwater overdraft (i.e. manage the water that's already there)</p>		<p>Direct Action: Law & Policy</p>
<p>#29 Protect and secure water</p>	<p>Riparian Vegetation & Natural Riverbank</p>	
<p>Sponsor research on relationship between surface flow and groundwater flow in a variety of places to inform decision making and identify where critical places are.</p>		<p>Knowledge: Data Collection & Analysis</p>
<p>#30 Protect and secure water</p>	<p>Riparian Vegetation & Natural Riverbank</p>	
<p>Improve understanding of the relationship between groundwater and riparian ecosystems.</p>		<p>Knowledge: Data Collection & Analysis</p>
<p>#36 Protect and secure water</p>	<p>Permanent Wetlands, Seasonal Wetlands,</p>	
<p>Create markets for ecosystem services including groundwater recharge</p>	<p>Tricolored Black Bird, Wetland-dependent Reptiles</p>	<p>Direct Action: Law & Policy</p>
<p>#37 Protect and secure water</p>	<p>Amphibians, Grasslands</p>	
<p>Research the feasibility and efficacy of compost application to locations where agriculture is being converted to grasslands to improve water availability.</p>		<p>Knowledge: Data Collection & Analysis</p>
<p>#39 Protect and secure water</p>	<p>Amphibians, Riparian Vegetation & Natural Riverbank,</p>	
<p>Conduct analysis to integrate groundwater status with surface water status using effective water table monitoring - per SGMA</p>	<p>Stream Channel</p>	<p>Knowledge: Data Collection & Analysis</p>
<p>#41 Protect and secure water</p>	<p>Grasslands</p>	<p>Knowledge: Data</p>

Research additional strategies for dealing with decreased water availability.		Collection & Analysis
#46 Protect and secure water	Amphibians, Permanent Wetlands, Tricolored Black Bird, Wetland-dependent Reptiles	Direct Action: Law & Policy
Regulate groundwater pumping		
#49 Improve Riparian & Riverine Systems	Riparian Vegetation & Natural Riverbank	Direct Action: Law & Policy
Make policy to acquire political and public support to expand the footprint and the mission of the flood system.		
#53 Improve Riparian & Riverine Systems	Riparian Vegetation & Natural Riverbank	Planning & Review: Management Planning
Develop and implement site-specific management plans for existing riparian areas that address function.		
#56 Improve Riparian & Riverine Systems	Stream Channel	Direct Action: Law & Policy
Review/modify Federal Energy Regulatory Commission (FERC) licensing in-stream flow process to achieve more ecologically-appropriate flows		
#64 Improve Riparian & Riverine Systems	Stream Channel	Human Resources: Outreach & Education
Include education about stream channel hardpoints within interagency consultations/Watershed implementation strategy & outreach efforts/JPA establishment		
#65 Improve Riparian & Riverine Systems	Stream Channel	Human Resources: Outreach & Education
Add public outreach access and education to existing and future waterway planning		
#70 Improve Riparian & Riverine Systems	Green Sturgeon, Pacific Lamprey, Permanent Wetlands, Riparian Vegetation & Natural Riverbank, Tricolored Black Bird, Wetland-dependent Reptiles	Direct Action: Law & Policy
Re-evaluate and re-allocate water rights to support appropriate environmental allocations: instream flows and stream temperatures for fish, allocations for wetlands, riparian resources.		
#78 Reduce Non-Climate Stressors	Chaparral & Serpentine Shrublands	Human Resources: Outreach & Education
Increase education/outreach efforts to encourage landowners to retain chaparral and serpentine shrublands.		
#80 Reduce Non-Climate Stressors	Amphibians, California Red- legged Frog, Yellow-legged Frog	Planning & Review: Management Planning
Develop a program to control and monitor amphibian diseases		
#83 Reduce Non-Climate Stressors	Amphibians,	Knowledge: Data

	California Red-legged Frog, Wetland-dependent Reptiles, Yellow-legged Frog	Collection & Analysis
Improve understanding and management of diseases through research		
#84 Reduce Non-Climate Stressors	Amphibians, Breeding Waterbirds & Shorebirds, Wetland-dependent Reptiles	Human Resources: Outreach & Education
Increase awareness and surveillance of bird and reptile diseases		
#88 Reduce Non-Climate Stressors	Amphibians, California Red-legged Frog, Vernal Pool Crustaceans, Yellow-legged Frog	Knowledge: Data Collection & Analysis
Monitor non-native/invasive species presence and absence and impact on habitat.		
#89 Reduce Non-Climate Stressors	Amphibians, Permanent Wetlands, Seasonal Wetlands, Wetland-dependent Reptiles	Planning & Review: Management Planning
Develop and implement invasive plant mgt strategies		
#92 Reduce Non-Climate Stressors	Riparian Birds	Knowledge: Data Collection & Analysis
Investigate the role that pesticides may play in limiting food availability for migratory birds within the context of climate change.		
#93 Reduce Non-Climate Stressors	Amphibians, Riparian Birds	Planning & Review: Management Planning
Investigate possibility of collaborative programs (i.e. safe harbor agreements) that play into the pesticide use relationship		
#95 Reduce Non-Climate Stressors	Amphibians, Salmonids	Human Resources: Partner Engagement
Promote more organic farming		
#97 Reduce Non-Climate Stressors	Amphibians, Bumblebees & Other Insect Pollinators, California Red-legged Frog, Yellow-legged Frog	Knowledge: Data Collection & Analysis
Research impacts of pesticides and herbicides on pollinators and amphibians, including the drift effects of application in the valley and its effect on foothills.		
#98 Reduce Non-Climate Stressors	Amphibians, Bumblebees & Other Insect Pollinators, California Red-legged Frog	Human Resources: Outreach & Education
Communicate with young people/education outreach about pesticides and herbicides		
#99 Reduce Non-Climate Stressors	Amphibians, Yellow-legged Frog	Human Resources: Teaching & Tech Assistance
Promote targeted or reduced use of pesticides		

#100	Reduce Non-Climate Stressors	Amphibians, Bumblebees & Other Insect Pollinators, California Red-legged Frog, Yellow-legged Frog	Direct Action: Law & Policy
	Tighten regulations of pesticide use on ag fields and nursery plants. Change the way central valley aerial pesticide applications are applied.		
#102	Reduce Non-Climate Stressors	Tricolored Black Bird	Planning & Review: Management Planning
	Achieve a functional working group to improve leadership for planning and coordination for the TCBB, Develop an adaptive management plan, Revise conservation plan		
#111	Enhance populations	Tricolored Black Bird	Knowledge: Data Collection & Analysis
	Conduct research to better understand landscape variables and factors influencing tricolored blackbird habitat selection and breeding success.		
#112	Enhance populations	Tricolored Black Bird	Knowledge: Data Collection & Analysis
	Monitor and survey tricolored blackbird at the local and landscape levels		
#113	Enhance populations	Large Wide-ranging Mammals	Planning & Review: Management Planning
	Reintroduce pronghorn antelope and tule elk; develop and implement formal reintroduction plan		
#118	Enhance populations	Riparian Birds	Human Resources: Outreach & Education
	Sponsor additional planning or research - ID phenological patterns. Generate list of key food resources that can be enhanced for both summer and winter riparian birds.		
#119	Enhance populations	Cavity Nesters & Roosters	Knowledge: Data Collection & Analysis
	Research life cycle of bats to identify key habitats and requirements.		
#120	Enhance populations	Bumblebees & Other Insect Pollinators	Knowledge: Data Collection & Analysis
	Research pollinator host species relationship		
#122	Enhance populations	Yellow-legged Frog	Knowledge: Data Collection & Analysis
	Learn from natural conditions where YLF are surviving; ie, streams		
#124	Enhance populations	California Tiger Salamander	Knowledge: Data Collection & Analysis
	Research CTS hybridization threat under climate scenarios in vernal pools versus stock ponds. Develop recommended actions based on research.		
#126	Enhance populations	Chaparral & Serpentine Shrublands	Knowledge: Data Collection & Analysis
	Develop and incorporate genetics management principles that facilitate resilience under future conditions in existing and future plans.		
#127	Enhance populations	Pacific Lamprey	Direct Action: Law &

<p>Change point diversion to NDI and employ screen technology; revisit water rights allocations (see salmon water discussions) to improve in-stream conditions, prevent ammocoetes salvage/entrainment; Screen diversions</p>		<p>Policy</p>
<p>#130 Enhance habitat protection</p>	<p>Large Wide-ranging Mammals</p>	<p>Planning & Review: Management Planning</p>
<p>Convene Stakeholder Group (Charge - draft priorities for managing pronghorn and tule elk regionwide; component - address reintroduction). Support and enhance statewide coordination efforts among various agencies to systematically plan for sustainable populations (esp. elk and antelope)</p>		
<p>#133 Enhance habitat protection</p>	<p>Amphibians, California Tiger Salamander, Vernal Pool Crustaceans, Vernal Pools & Swales</p>	<p>Knowledge: Data Collection & Analysis</p>
<p>Ensure protection for vernal pools that are not inundated or lack a hydroperiod for multiple years. Monitor to ensure non-inundating pools are not experiencing altered hydrology that is preventing a hydroperiod from occurring.</p>		
<p>#134 Enhance habitat protection</p>	<p>Amphibians, California Tiger Salamander</p>	<p>Knowledge: Data Collection & Analysis</p>
<p>Research impacts of climate change on CTS vernal pools (possibly also on CTS pathogens) to prioritize pools with appropriate characteristics for protection or restoration with associated recommended management actions based on the research findings.</p>		
<p>#135 Enhance habitat protection</p>	<p>Amphibians, California Tiger Salamander, Vernal Pool Crustaceans, Vernal Pools & Swales</p>	<p>Planning & Review: Management Planning</p>
<p>Develop BMPs on low impact development and for General plans on key conservation requirements for vernal pools. Focus on encouraging infill development. Education and outreach to local government and local scale conservation programs on the BMPs.</p>		
<p>#136 Enhance habitat protection</p>	<p>Oak Woodlands</p>	<p>Knowledge: Data Collection & Analysis</p>
<p>Promote valuation of oak woodlands by determining economic value of ecosystem services of oak woodlands and leveraging existing regulations like NEPA, etc to include valuation of oak woodlands. Work with current legislation, governor's "5 pillars" , etc. carbon sequestration.</p>		
<p>#137 Enhance habitat protection</p>	<p>Oak Woodlands</p>	<p>Direct Action: Law & Policy</p>
<p>Develop Carbon Banking/Cap & Trade Options for Oak Woodland Restoration</p>		
<p>#145 Enhance habitat protection</p>	<p>San Joaquin Desert</p>	<p>Knowledge: Data Collection & Analysis</p>
<p>Conduct frequent monitoring for early signs of transitions of San Joaquin Desert to undesirable states vulnerable to climate change stressors on long-term scales at fixed, reference sites</p>		
<p>#146 Enhance habitat protection</p>	<p>San Joaquin Desert</p>	<p>Knowledge: Data Collection & Analysis</p>
<p>Develop monitoring standards or early signs of transitions to</p>		

undesirable states vulnerable to climate change stressors that can be applied throughout the ecosystem/region.		
#147 Enhance habitat protection		
Create a working group to develop, evaluate, and recommend alternative management strategies* (*WG Charge - look at future strategies to address unknown climate scenarios b/c this is the most vulnerable habitat. The WG needs to explore if and how to invest in adaptation actions)	Dunes	Planning & Review: Management Planning
#149 Enhance habitat protection		
Research to increase understanding of north-south diversity changes to identify priority geographic areas for protection. Identify locations or populations where genetic/phenotypic diversity is potentially adapted to extreme conditions or to direction of changing conditions.	Amphibians, California Tiger Salamander, Grasslands, Vernal Pool Crustaceans, Vernal Pools & Swales	Knowledge: Data Collection & Analysis
#151 Enhance habitat protection		
Research climate change effects on ground squirrels.	California Tiger Salamander	Knowledge: Data Collection & Analysis
#152 Enhance habitat protection		
Sponsor directed research on migratory patterns, RHJV focal species, etc. to re-evaluate the relationship between habitat and species under future climate change conditions and demonstrate how riparian enhancement in the era of climate change can benefit all bird species.	Riparian Birds	Knowledge: Data Collection & Analysis
#153 Enhance habitat protection		
Identify shifts in ranges in population strongholds for all riparian bird species.	Riparian Birds	Knowledge: Data Collection & Analysis
#156 Enhance habitat protection		
Maintain Williamson Act	Oak Woodlands	Direct Action: Law & Policy
#157 Enhance habitat protection		
Develop payment incentives for oak woodland conservation.	Oak Woodlands	Financial Resources: Economic Incentives
#158 Enhance habitat protection		
Identify the areas with the greatest potential for longevity/persistence in terms of climatic and non-climatic stressors (chaparral & serpentine shrublands)	Chaparral & Serpentine Shrublands	Knowledge: Data Collection & Analysis
#162 Enhance habitat protection		
Produce climate-informed NCCP/HCP, CCPs, State land management plans, transportation plans, general plans, etc.	Amphibians, California Tiger Salamander, Vernal Pool Crustaceans, Vernal Pools & Swales	Planning & Review: Management Planning
#163 Enhance habitat protection		
Develop and implement riparian restoration plan or	Riparian Vegetation & Natural Riverbank	Planning & Review: Management Planning

enhancement plan that identifies desired future conditions and climate conditions - look at hydrology, geomorphology, flooding, buffer zones, etc.		
#179 Increase connectivity		
Improve zoning to promote woodland connectivity	Oak Woodlands	Direct Action: Law & Policy
#182 Increase connectivity		
Establish a Riparian Connectivity Task Force, engagement strategy, and a network to identify refugia/corridors for protection, develop a landscape connectivity plan, and improve riparian connectivity along waterways (rivers and other conveyances) and broaden the footprint.	Dragonflies & Damselflies, Riparian Vegetation & Natural Riverbank	Planning & Review: Management Planning
#192 Enhance/restore existing habitat		
Evaluation of fire risk and utility of fuels management	Riparian Vegetation & Natural Riverbank	Knowledge: Data Collection & Analysis
#195 Enhance/restore existing habitat		
Identify specific areas for implementation of fire regime restoration actions (e.g., fire suppression vs. introducing more fire) into planning and management documents.	Chaparral & Serpentine Shrublands	Planning & Review: Management Planning
#196 Enhance/restore existing habitat		
Increase education/outreach efforts to enhance public understanding of the role of fire on the landscape.	Chaparral & Serpentine Shrublands, Grasslands	Human Resources: Outreach & Education
#207 Enhance/restore existing habitat		
Research or evaluate potential for modification of existing composition to more drought tolerant species	Riparian Vegetation & Natural Riverbank	Knowledge: Data Collection & Analysis
#209 Enhance/restore existing habitat		
Conduct research and assessment to identify which species can and cannot benefit from habitat enhancement methods- correlate species to the practices implemented.	Riparian Birds	Knowledge: Data Collection & Analysis
#212 Enhance/restore existing habitat		
Develop more holistic agropastoral practices	Oak Woodlands	Planning & Review: Management Planning
#214 Enhance/restore existing habitat		
Develop Urban Forest Management Guidelines	Oak Woodlands	Planning & Review: Management Planning
#216 Enhance/restore existing habitat		
Monitor existing oak woodland reforestation sites for planting success.	Oak Woodlands	Knowledge: Data Collection & Analysis
#217 Enhance/restore existing habitat		
Identify locations of potential sites for oak woodland reforestation, monitor existing sites for planting success.	Oak Woodlands	Knowledge: Data Collection & Analysis
#218 Enhance/restore existing habitat		
Influence policy for dead trees and snag retention.	Cavity Nesters & Roosters	Direct Action: Law & Policy
#221 Enhance/restore existing habitat		
	Breeding	Human Resources:

Increase outreach to public about wildlife value of rice cropland (countering apparent waste of water) to help maintain rice cultivation	Waterbirds & Shorebirds, Rice Croplands, Wetland-dependent Reptiles	Outreach & Education
#222 Enhance/restore existing habitat	Breeding Waterbirds & Shorebirds, Flooded Croplands, Rice Croplands	Human Resources: Partner Engagement
Better assist connection of hunters and rice and corn farmers to maintain rice cultivation		
#226 Enhance/restore existing habitat	Permanent Wetlands, Seasonal Wetlands, Tricolored Black Bird, Wetland-dependent Reptiles	Planning & Review: Management Planning
Develop and promote climate-smart wetland design and management techniques to improve existing protected wetland habitat		
#227 Enhance/restore existing habitat	Dunes	Planning & Review: Management Planning
Identify feasibility of importing other sand sources for dunes; identify and protect more drought tolerant localized sites (e.g. sand ridge such as kings county and kern county)		
#229 Enhance/restore existing habitat	Bumblebees & Other Insect Pollinators, California Red-legged Frog	Human Resources: Outreach & Education
Increase availability of wildlife pollinator-friendly plants in nurseries		
#230 Enhance/restore existing habitat	Grasslands	Human Resources: Outreach & Education
Increase public understanding of importance of fire on wildlands.		