

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
Goal 11. Maintain or increase the extent of bald eagle habitat to maintain overwintering population of bald eagles in the Plan area.		
Goal 13. Maintain or increase American peregrine falcon habitat to maintain the abundance of American peregrine falcons overwintering in the Plan area.		
<p>Objective 11.1. Protect and restore valley foothill riparian, fresh emergent and seasonal wetland, vernal pool grassland complex and winter-flooded agriculture (i.e., rice) to provide suitable overwintering habitat as part of the Reserve System within the Plan area.</p>	<p>Conservation Action. Acquire or obtain easements on valley foothill riparian, fresh emergent and seasonal wetland, vernal pool grassland complex, and winter-flooded agriculture (i.e., rice).</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management for bald eagle and American peregrine falcon.</p>
<p>Objective 11.2. Protect wooded habitats, particularly those with mature trees, adjacent to foraging habitat to provide perching, roosting, and potential nesting habitat for bald eagles.</p>		<p>Monitor status and trends of bald eagle and American peregrine falcon in target areas on the Reserve System.</p>
<p>Objective 11.3. Enhance foraging, perching, and roosting habitat for bald eagle and American peregrine falcon within the Reserve System.</p>	<p>Conservation Action (vernal pool grassland complex). Restore vernal pool topography (e.g., reconstruct the characteristic depth from the overlying soil surface to the impermeable layer beneath) using techniques such as mechanical recontouring, excavating, grading, and compacting soils.</p>	<p>Compliance monitoring to ensure no net loss of wetlands. Assess the suitability of sites for restoration of vernal pools.</p> <p>Monitor and evaluate success of restoration by comparing restored sites to reference sites, success criteria, and ecological indicators.</p>
	<p>Conservation Action (vernal pool grassland complex). Restore water quality by diverting polluted runoff away from vernal pools and managing grazing intensity, timing and duration.</p>	<p>Monitor indicators of water quality in targeted watersheds and compare to baseline values to assess efficacy of management actions.</p>
	<p>Conservation Action (vernal pool grassland complex). Use grazing, controlled burning in combination with grazing (where feasible, and if studies indicate beneficial application), and mowing to control non-native, invasive vegetation.</p>	<p>Monitor the effects of grazing, burning, and mowing on reducing cover of nonnative, invasive plants and increasing the diversity and biomass of covered plants and diversity of other native plants.</p>

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		Conduct directed study to evaluate the effects of controlled burns on the cover and species diversity of native and nonnative species and hydroperiod in vernal pools.
	Conservation Action (vernal pool grassland complex). Minimize rodent control measures to enhance populations of ground squirrels.	Monitor population-level response of ground squirrels to removal or minimization of control measures.
	Conservation Action (wetland and pond). Install fencing, where ecologically appropriate, to reduce grazing pressure and exclude feral pigs on portions of wetlands and ponds.	Monitor the effectiveness of exclusion methods and conduct pre- and post-exclusion monitoring to assess the effects of livestock and feral pig exclusion on community function and covered species.
	Conservation Action (wetland and pond). Remove vegetation to provide open water habitat for northwestern pond turtle, California red-legged frog, and waterfowl (prey species for bald eagle and American peregrine falcon) using methods that minimize negative impacts to covered and other native species. Techniques may include limited grazing, hand, and mechanical removal.	Monitor the effectiveness of vegetation removal methods, and the response of covered and other native species (e.g., native species diversity) to removal of invasive species.
	Conservation Action (agricultural land). When flooding fields in winter, vary water depth across fields to provide a diversity of flooded habitats for wildlife and maintain flood waters through winter/early spring, if feasible.	Monitor the use of flooded fields by wildlife to assess the effects of flooding depth, timing, and agricultural land-use on habitat quality for target species.
	Conservation Action (agricultural land). Apply herbicides, pesticides, and chemical fertilizers minimally and cautiously.	Monitor for adverse effects of herbicide, pesticide, and chemical fertilizers on covered species.

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Biological Goals and Objectives	Conservation Measures	Monitoring Actions
Goal 12. Maintain or increase the extent of Swainson's hawk habitat to maintain and potentially increase the abundance of nesting Swainson's hawks in the Plan area.		
<p>Objective 12.1. Protect natural communities and agricultural habitats that provide foraging habitat for Swainson's hawk in large, contiguous reserves (> 900 acres) within 10 miles of nesting habitat. Suitable foraging habitat will be acquired to replace foraging habitat taken by covered activities at a ratio of 1:1 (see Chapter 6, Species Condition 3, Condition to Minimize Impacts on Swainson's Hawk).</p>	<p>Conservation Action. Acquire or obtain easements on vernal pool grassland complex, annual grassland, pasture, valley oak woodland, oak woodland savanna, valley foothill riparian, wetlands, and agricultural land (i.e., alfalfa, irrigated pasture, and row crop) in the Valley.</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management.</p>
<p>Objective 12.2. Protect natural and semi-natural communities that provide nesting habitat for Swainson's hawk.</p>		<p>Monitor status and trends of Swainson's hawk in target areas on the Reserve System.</p>
<p>Objective 12.3. Enhance Swainson's hawk foraging habitat within the Reserve System</p>	<p>Conservation Action (vernal pool grassland complex). Minimize rodent control measures to enhance populations of ground squirrels.</p> <p>Conservation Action (vernal pool grassland complex). Use grazing, controlled burning in combination with grazing (where feasible, and if studies indicate beneficial application), and mowing to control non-native, invasive vegetation in grasslands and savanna.</p> <p>Conservation Action (agricultural land). Prepare agricultural management plans for reserves that will include agricultural uses to allow specified agricultural practices to continue along with specified enhancements to protect covered</p>	<p>Monitor population-level response of ground squirrels to removal or minimization of control measures.</p> <p>Monitor the effects of grazing, burning, and mowing on reducing cover of nonnative, invasive plants and increasing the diversity and biomass of covered plants and diversity of other native plants.</p> <p>Conduct directed study to evaluate the effects of controlled burns on the cover and species diversity of native and nonnative species in vernal pool grassland complexes.</p> <p>Compliance monitoring and annual reports.</p>

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Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	<p>and other native species.</p> <p>Conservation Action (agricultural land). Preserve and restore patches of natural vegetation, including native trees and shrubs.</p> <p>Conservation Action (agricultural land). Apply herbicides, pesticides, and chemical fertilizers minimally and cautiously.</p>	<p>Monitor the ecological conditions of remnant patches of habitat and compare with indicators of ecological health.</p> <p>Monitor for adverse effects of herbicide, pesticide, and chemical fertilizers on covered species.</p>
<p>Objective 12.4. Restore Swainson’s hawk nesting habitat.</p>	<p>Conservation Action (oak woodland). Plant saplings and seeds and protect seedlings from browsing with shelters or other protective devices in valley oak woodland in the Valley.</p>	<p>Monitor the survivorship of planted saplings and seeds and relative effectiveness of plant and seedling protective measures.</p> <p>Monitor and evaluate success of restoration by comparing restored sites to reference sites, success criteria, and ecological indicators.</p>
	<p>Conservation Action (riverine and riparian). Restore riparian vegetation by planting and/or seeding understory and overstory riparian vegetation in the riparian zone to reduce erosion, create structural diversity, provide cover, moderate water temperature, and re-connect riparian corridors.</p>	<p>Monitor the survivorship of plantings and relative effectiveness of planting and seedling methods and protective measures.</p> <p>Monitor and evaluate success of restoration by comparing restored sites to reference sites, success criteria, and ecological indicators.</p>
	<p>Conservation Action. Plant small stands of trees, where ecologically appropriate, to provide nest trees distributed within suitable foraging habitat. Planting of nest trees may be for mitigation for take of nest trees (see Species Condition 3, Swainson’s Hawk, Chapter 6).</p>	<p>Monitor the survivorship of plantings and relative effectiveness of planting and seedling methods and protective measures.</p>

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Goal 14. Maintain or increase the extent of California black rail habitat to maintain and potentially increase the distribution and abundance of California black rail in the Plan area.		
<p>Objective 14.1. Protect fresh emergent wetlands between 100 – 1,150 feet elevation of at least 1.0 acre in size within an upland complex of grasslands or oak savanna to provide suitable nesting habitat for California black rail within the Reserve System. Acquire at least as much California black rail habitat that is taken.</p>	<p>Conservation Action. Acquire or obtain easements on fresh emergent wetlands of at least 1.0 acre and suitable for California black rail in the Foothills.</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management for California black rail.</p> <p>Monitor status and trends of California black rail in target areas on the Reserve System.</p>
<p>Objective 14.2. Enhance and maintain fresh emergent wetlands to provide suitable habitat for California black rail.</p>	<p>Conservation Action. Provide and maintain consistent supply of water to provide suitable hydrological conditions in wetlands managed to provide habitat for California black rail within the Reserve System. If water sources are removed or altered (i.e., leak in irrigation canal that provided water is fixed), negotiate with appropriate water district to purchase enough water maintain suitable hydrological conditions or mitigate for take of wetlands.</p>	<p>Monitor water level to ensure that suitable water depth is available in wetlands managed to provide habitat for California black rail.</p>
<p>Objective 14.3. Restore and/or create fresh emergent wetlands in foothills between 200 – 1,150 feet elevation of at least 1.0 acre in size within an upland complex of grasslands or open oak savanna to provide suitable nesting habitat to facilitate the expansion of the California black rail metapopulation within the Reserve System and to ensure no net loss of wetland.</p>	<p>Conservation Action (wetland and pond). Install fencing, where ecologically appropriate, to reduce grazing pressure and exclude feral pigs on portions of wetlands and ponds.</p> <p>Conservation Action (wetland and pond). Plant and/or seed native vegetation appropriate to the site.</p> <p>Conservation Action (wetland and pond). Remove invasive non-native vegetation using methods that minimize negative impacts to covered and other native species. Techniques may include limited grazing, hand, and mechanical</p>	<p>Monitor the effectiveness of exclusion methods and conduct pre- and post-exclusion monitoring to assess the effects of livestock and feral pig exclusion on community function and California black rail.</p> <p>Monitor the survivorship of plantings and relative effectiveness of plant and seedling methods and protective measures.</p> <p>Monitor the effectiveness of invasive species control methods, and the response of California black rail and other native species (e.g., cover of native vegetation) to removal of invasive</p>

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Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	<p>removal.</p> <p>Conservation Action (wetland and pond). Remove or reduce point and non-point sources of pollution on the Reserve System and divert point and non-point sources of pollution away from wetlands and ponds. Examples of techniques include using filter and buffer strips and following wellhead protection procedures.</p>	<p>species.</p> <p>Monitor indicators of success criteria to evaluate success of pollution reduction projects in improving water quality, community function, and habitat for covered species.</p>
Goal 15. Maintain or increase the extent of bank swallow nesting and foraging habitat within the Plan area.		
<p>Objective 15.1. Protect riverine, valley foothill riparian and adjacent uplands to protect bank nesting and foraging habitat.</p>	<p>Conservation Action. Acquire or obtain conservation easements on riverine and riparian habitat. Suitable nesting habitat for bank swallow is limited in the Plan area – target suitable habitat for acquisition or conservation easement if it becomes available.</p> <p>Conservation Action. Apply project-level avoidance of the stream zone (General Condition 3, Chapter 3) to avoid and minimize impacts to nesting habitat in banks on stream systems throughout the Plan area.</p> <p>Conservation Action. Acquire valley foothill riparian and adjacent upland habitats in the Bear River watershed to protect foraging habitat.</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management for bank swallow.</p> <p>Monitor status and trends of bank swallow in target areas on the Reserve System.</p>
<p>Objective 15.2. Enhance nesting and foraging habitat for bank swallows within the Reserve System.</p>	<p>Conservation Action (riverine and riparian). Remove channelization features such as rip-rap, dikes, and levees.</p> <p>Conservation Action (riverine and riparian). Exclude or limit livestock access to target stream and riparian sections using exclusion fencing, off-channel water sources, and limited grazing intensity and duration.</p>	<p>Conduct pre- and post-treatment monitoring of community function (performance of ecological processes); habitat composition, structure and pattern; and connectivity as part of a targeted study.</p> <p>Monitor the effectiveness of livestock exclusion methods and conduct pre- and post-exclusion monitoring to document the effects of livestock exclusion on native riparian vegetation.</p>

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Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	<p>Conservation Action (agricultural land). Plant cover strips, hedgerows, and shelterbeds along field margins, ditches, canals, and roads to encourage use by beneficial insects and wildlife.</p>	<p>Monitor the establishment of planted/seeded vegetation for cover strips, hedgerows, and shelterbeds.</p>
	<p>Conservation Action (agricultural land). Apply herbicides, pesticides, and chemical fertilizers minimally and cautiously.</p>	<p>Monitor for adverse effects of herbicide, pesticide, and chemical fertilizers on covered species.</p>
<p>Goal 16. Maintain or increase the extent of burrowing owl habitat in the Plan area to support overwintering burrowing owls and promote the expansion of a breeding population of burrowing owls into the Plan area.</p>		
<p>Objective 16.1. Protect vernal pool grassland complex, annual grassland, valley oak woodland, oak woodland savanna, and agricultural lands in production suitable for use by burrowing owl (i.e., alfalfa, rice, row crops, and irrigated pasture) in the Valley.</p>	<p>Conservation Action. Acquire or obtain conservation easements on vernal pool grassland complexes, annual grassland, valley oak woodland, and agricultural lands in production suitable for use by burrowing owl (i.e., alfalfa, rice, row crops, and irrigated pasture) in the Valley.</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management for western burrowing owl.</p> <p>Monitor status and trends of western burrowing owl in target areas on the Reserve System.</p>
<p>Objective 16.2. Enhance and restore western burrowing owl habitats within the Reserve System.</p>	<p>Conservation Action (vernal pool grassland complex). Use grazing, controlled burning (where feasible, and if studies indicate beneficial application), mowing, and other methods to maintain a short-grass vegetation structure in areas managed for western burrowing owl.</p> <p>Conservation Action (vernal pool grassland complex). Minimize rodent control measures to enhance populations of ground squirrels.</p> <p>Conservation Action. In otherwise suitable habitat but where ground squirrels are not present,</p>	<p>Monitor the effects of grazing, burning, and mowing on reducing cover of nonnative, invasive plants, and increasing the diversity and biomass of covered plants and diversity of other native plants.</p> <p>Conduct directed study to evaluate the effects of controlled burns on the cover and species diversity of native and nonnative species in vernal pool grassland complexes.</p> <p>Monitor population-level response of ground squirrels to removal or minimization of control measures.</p> <p>Monitor the condition of artificial burrows and maintain, when necessary.</p>

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	artificial burrows may be installed to create breeding and over-wintering habitat. The use of artificial burrows to encourage will be used as a temporary measure while measures to restore ground squirrel populations are developed and implemented.	Monitor the use of artificial burrows by western burrowing owl.
	Conservation Action (agricultural land). Plant cover strips, hedgerows, and shelterbeds along field margins, ditches, canals, and roads to encourage use by beneficial insects and wildlife.	Monitor the establishment of planted/seeded vegetation for cover strips, hedgerows, and shelterbeds.
	Conservation Action (agricultural land). Apply herbicides, pesticides, and chemical fertilizers minimally and cautiously.	Monitor for adverse effects of herbicide, pesticide, and chemical fertilizers on covered species.
Goal 17. Maintain or increase the extent of Cooper's hawk habitat within the Plan area.		
Objective 17.1. Protect valley foothill riparian, oak woodlands and savanna that provide suitable breeding and foraging habitat for Cooper's hawk as part of the Reserve System.	Conservation Action. Acquire or obtain conservation easements on valley foothill riparian, oak woodland, and oak woodland savanna.	Compliance monitoring and annual reports. Assess quality of habitat of acquired land and prioritize for management for Cooper's hawk. Monitor status and trends of Cooper's hawk in target areas on the Reserve System.
Objective 17.2. Enhance and restore habitats for Cooper's hawk within the Reserve System.	Conservation Action (oak woodland). Plant saplings and seeds and protect seedlings from browsing with shelters or other protective devices.	Monitor the survivorship of planted saplings and seeds, the relative effectiveness of plant and seedling protective measures, and the effectiveness other measures to enhance establishment (e.g., control of nonnative competitors). Monitor and evaluate success of restoration by comparing restored sites to reference sites, success criteria, and ecological indicators.

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	<p>Conservation Action (riverine and riparian). Restore riparian vegetation by planting and/or seeding understory and overstory riparian vegetation in the riparian zone to reduce erosion, create structural diversity, provide cover, moderate water temperature, and re-connect riparian corridors.</p>	<p>Monitor the survivorship of plantings and relative effectiveness of planting and seedling methods and protective measures.</p> <p>Monitor and evaluate success of restoration by comparing restored sites to reference sites, success criteria, and ecological indicators.</p>
	<p>Conservation Action (oak woodland and riparian). Remove and control the cover, biomass, and distribution of invasive plants using methods such as hand removal, mowing, mechanical removal, spot-burning, tarping, and selective use of herbicides.</p>	<p>Monitor the effectiveness of control methods in reducing cover of nonnative, invasive plants and improving regeneration of oaks and other native plants.</p>
<p>Goal 18. Maintain or increase the extent of Loggerhead shrike habitat within the Plan area.</p>		
<p>Objective 18.1. Protect the diversity of land-cover types that provide habitat for loggerhead shrike as part of the Reserve System. These include grasslands with scattered shrubs and trees, shrubby or open woodlands with a fair amount of grass cover, and edges of riparian woodland.</p>	<p>Conservation Action. Acquire or obtain conservation easement on grasslands and valley foothill riparian.</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management for loggerhead shrike.</p> <p>Monitor status and trends of loggerhead shrike in target areas on the Reserve System.</p>
<p>Objective 18.2. Enhance and restore habitats for loggerhead shrike within the Reserve System.</p>	<p>Conservation Action. Plant saplings and seeds of native shrub and tree species at low densities in open habitats (or fence-rows and along borders of riparian habitat) to provide low-growing, thorny shrubs and trees for perching, nesting, and impaling prey.</p> <p>Conservation Action (vernal pool grassland complex). Use grazing, controlled burning in combination with grazing (where feasible, and if studies indicate beneficial application), and mowing to control non-native, invasive vegetation</p>	<p>Monitor the survivorship of planted saplings and seeds, and maintain and replant, when necessary.</p> <p>Monitor the effects of grazing, burning, and mowing on reducing cover of nonnative, invasive plants, and increasing the diversity and biomass of covered plants and diversity of other</p>

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		<p>native plants.</p> <p>Conduct directed study to evaluate the effects of controlled burns on the cover and species diversity of native and nonnative species in vernal pool grassland complexes.</p>
	<p>Conservation Action (vernal pool grassland complex). Minimize rodent control measures to enhance populations of ground squirrels.</p>	<p>Monitor population-level response of ground squirrels to removal or minimization of control measures.</p>
	<p>Conservation Action (agricultural land). Preserve and restore patches of natural vegetation, including native trees and shrubs on reserves used for agriculture.</p>	<p>Monitor the ecological conditions of remnant patches of habitat and compare with indicators of ecological health.</p>
	<p>Conservation Action (agricultural land). Establish vegetated buffer zones around aquatic habitats to reduce runoff and disturbance to aquatic habitats and to provide habitat for covered species and native wildlife.</p>	<p>Monitor the establishment of vegetation in buffer zones.</p>
	<p>Conservation Action (agricultural land). Plant cover strips, hedgerows, and shelterbeds along field margins, ditches, canals, and roads to encourage use by beneficial insects and wildlife.</p>	<p>Monitor the establishment of planted/seeded vegetation for cover strips, hedgerows, and shelterbeds.</p>
	<p>Conservation Action (agricultural land). Apply herbicides, pesticides, and chemical fertilizers minimally and cautiously.</p>	<p>Monitor for adverse effects of herbicide, pesticide, and chemical fertilizers on covered species.</p>
<p>Goal 19. Maintain or increase the extent of northern harrier habitat within the Plan area.</p>		
<p>Objective 19.1. Protect vernal pool grassland complex, annual grassland, wetlands, valley foothill riparian (northern harrier will occasionally breed in riparian woodland), and suitable agricultural land (e.g., alfalfa, row crop, rice, irrigated pasture) as part of the Reserve System.</p>	<p>Conservation Action. Acquire or obtain easements on vernal pool grassland complex, annual grassland, and suitable agricultural land.</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management for northern harrier.</p> <p>Monitor status and trends of northern harrier in target areas on the Reserve</p>

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<p>Objective 19.2. Enhance northern harrier breeding and foraging habitats within the Reserve System.</p>	<p>Conservation Action. Install fencing, where ecologically appropriate, to protect nests from being trampled by livestock, reduce grazing pressure, and exclude feral pigs on portions of wetlands or protect by removing livestock from nest sites during the nesting season (March 15 – July 31).</p>	<p>System. Monitor the effectiveness of exclusion methods in protecting northern harrier nests.</p>
	<p>Conservation Action. Protect nest sites from vegetation management activities (e.g., mowing, hand removal) by limiting these activities at and around nest sites during the nesting season.</p>	<p>Compliance monitoring.</p>
	<p>Conservation Action. To protect nests from flooding, the PCA will avoid raising water levels in wetlands, where managed, during the nesting season.</p>	<p>Monitor water level to ensure that water management will not flood nests.</p>
<p>Objective 19.3. Restore and/or create fresh emergent and seasonal wetland breeding habitat within a landscape matrix of suitable foraging habitat.</p>	<p>Conservation Action (wetland and pond). Plant and/or seed native vegetation appropriate to the site to enhance nesting habitat.</p>	<p>Monitor the survivorship of plantings and relative effectiveness of plant and seedling methods and protective measures.</p>
	<p>Conservation Action (wetland and pond). Remove invasive non-native vegetation from nesting habitat to maintain suitable habitat structure using methods that minimize negative impacts to covered and other native species. Techniques may include limited grazing, hand, and mechanical removal.</p>	<p>Monitor the effectiveness of invasive species control methods in maintaining and enhancing nesting habitat for northern harrier and the response of northern harrier to removal of invasive species (e.g., how does vegetation management effect habitat use by northern harrier).</p>
<p>Goal 20. Maintain or increase the extent of habitat for overwintering ferruginous hawks within the Plan area.</p>		
<p>Objective 20.1. Protect large tracts of annual grassland, vernal pool grassland complex, and pasture suitable for overwintering ferruginous hawks within the Reserve System.</p>	<p>Conservation Action. Acquire or obtain easements on vernal pool grassland complex, annual grassland, and pasture.</p>	<p>Compliance monitoring and annual reports. Assess quality of habitat of acquired land and prioritize for management for ferruginous hawk.</p>

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Objective 20.2. Enhance foraging habitat for overwintering ferruginous hawks.	Conservation Action (vernal pool grassland complex). Use grazing, controlled burning in combination with grazing (where feasible, and if studies indicate beneficial application), and mowing to control non-native, invasive vegetation	<p>Monitor status and trends of ferruginous hawk in target areas on the Reserve System</p> <p>Monitor the effects of grazing, burning, and mowing on reducing cover of nonnative, invasive plants, and increasing the diversity and biomass of covered plants and diversity of other native plants.</p> <p>Conduct directed study to evaluate the effects of controlled burns on the cover and species diversity of native and nonnative species in vernal pool grassland complexes.</p>
	Conservation Action (vernal pool grassland complex). Enhance remnant populations of native grasses and enhance native forb diversity using techniques such as managing non-native, invasive vegetation and seeding with appropriate native species.	Monitor the success of seeding efforts in promoting native grasses and forbs. Examples of indicators include indices of species diversity and relative cover of native species. Monitor response of target species (especially covered species) to seeding.
	Conservation Action. Minimize rodent control measures to enhance populations of ground squirrels.	Monitor population-level response of ground squirrels to removal or minimization of control measures.
Goal 21. Maintain or increase the extent of breeding and migratory stopover habitat for yellow warblers and yellow-breasted chats in the Plan area.		
Objective 21.1. Protect large patches of contiguous valley foothill riparian woodlands and surrounding upland oak woodlands to buffer nesting sites from predators and brood parasites (in the Foothills, as grasslands and other non-forested habitats are adjacent to riparian habitats in the Valley) to support migratory stopover and breeding habitat for yellow warbler and yellow-breasted chat as	Conservation Action. Acquire or obtain easements on suitable valley foothill riparian and adjacent woodlands (in the Foothills).	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management for yellow warbler and yellow-breasted chat.</p> <p>Monitor status and trends of yellow warbler and yellow-breasted chat in</p>

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part of the Reserve System.		target areas on the Reserve System.
Objective 21.2. Enhance and restore valley foothill riparian to improve breeding and migratory stopover habitat for yellow warbler and yellow-breasted chat.	Conservation Action (riverine and riparian). Restore riparian vegetation by planting and/or seeding understory and overstory riparian vegetation in the riparian zone to reduce erosion, create structural diversity, provide cover, moderate water temperature, and re-connect riparian corridors.	Monitor the survivorship of plantings and relative effectiveness of planting and seedling methods and protective measures.
	Conservation Action (riverine and riparian). Remove and control the cover, biomass, and distribution of invasive plants using methods such as hand removal, mowing, mechanical removal, spot-burning, tarping, and selective use of herbicides.	Monitor and evaluate success of restoration by comparing restored sites to reference sites, success criteria, and ecological indicators.
	Conservation Action (riverine and riparian). Exclude or limit livestock access to target stream and riparian sections using exclusion fencing, off-channel water sources, and limited grazing intensity and duration.	Monitor the effectiveness of livestock exclusion methods and conduct pre- and post-exclusion monitoring to document the effects of livestock exclusion on native riparian vegetation.
Goal 22. Maintain or increase the extent of Modesto song sparrow habitat within the Plan area.		
Objective 22.1. Protect large patches of contiguous valley foothill riparian woodlands and surrounding upland oak woodlands to buffer nesting sites from predators and brood parasites (in the Foothills, as grasslands and other non-forested habitats are adjacent to riparian habitats in the Valley), valley oak woodlands, and wetlands to support habitat for Modesto song sparrow as part of the Reserve System.	Conservation Action. Acquire or obtain easements on valley foothill riparian and adjacent woodlands (in the Foothills), valley oak woodlands, and wetlands.	Compliance monitoring and annual reports. Assess quality of habitat of acquired land and prioritize for management for Modesto song sparrow. Monitor status and trends of Modesto song sparrow in target areas on the Reserve System.

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<p>Objective 22.2. Enhance, restore, and create (for wetland) valley foothill riparian, fresh emergent wetland, and valley oak woodland habitats to support Modesto song sparrow.</p>	<p>Conservation Action (riverine and riparian). Restore riparian vegetation by planting and/or seeding understory and overstory riparian vegetation in the riparian zone to reduce erosion, create structural diversity, provide cover, moderate water temperature, and re-connect riparian corridors.</p>	<p>Monitor the survivorship of plantings and relative effectiveness of planting and seedling methods and protective measures.</p> <p>Monitor and evaluate success of restoration by comparing restored sites to reference sites, success criteria, and ecological indicators.</p>
	<p>Conservation Action (wetland and pond). Plant and/or seed native vegetation appropriate to the site.</p>	<p>Monitor the survivorship of plantings and relative effectiveness of plant and seedling methods and protective measures.</p>
	<p>Conservation Action (riverine and riparian and wetland and pond). Remove and control the cover, biomass, and distribution of invasive plants using methods such as hand removal, mowing, mechanical removal, spot-burning, tarping, and selective use of herbicides.</p>	<p>Monitor the effectiveness of invasive species control methods, and the response of native species (e.g., native species diversity) to removal of invasive species.</p>
	<p>Conservation Action (riverine and riparian). Exclude or limit livestock access to target stream and riparian sections using exclusion fencing, off-channel water sources, and limited grazing intensity and duration.</p>	<p>Monitor the effectiveness of livestock exclusion methods and conduct pre- and post-exclusion monitoring to document the effects of livestock exclusion on native riparian vegetation.</p>
	<p>Conservation Action (wetland and pond). Install fencing, where ecologically appropriate, to reduce grazing pressure and exclude feral pigs on portions of wetlands and ponds.</p>	<p>Monitor the effectiveness of exclusion methods and conduct pre- and post-exclusion monitoring to assess the effects of livestock and feral pig exclusion on community function and covered species.</p>
	<p>Conservation Action (agricultural land). Preserve and restore patches of natural vegetation, including native trees and shrubs.</p>	<p>Monitor the ecological conditions of remnant patches of habitat and compare with indicators of ecological health.</p>

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	<p>Conservation Action (agricultural land). Establish vegetated buffer zones around aquatic habitats to reduce runoff and disturbance to aquatic habitats and to provide habitat for covered species (e.g., Modesto song sparrow) and native wildlife.</p>	<p>Monitor the establishment of vegetation in buffer zones.</p>
	<p>Conservation Action (agricultural land). Plant cover strips, hedgerows, and shelterbeds along field margins, ditches, canals, and roads to encourage use by beneficial insects and wildlife.</p>	<p>Monitor the establishment of planted/seeded vegetation for cover strips, hedgerows, and shelterbeds.</p>
<p>Goal 23. Maintain or increase the extent of grasshopper sparrow habitat in the Plan area to facilitate the expansion of a breeding population into the Plan area.</p>		
<p>Objective 23.1. Protect large tracts of grassland, vernal pool grassland complex, and pasture land with scattered trees and shrubs for perches.</p>	<p>Conservation Action. Acquire or obtain easements on vernal pool grassland complex, annual grassland, pasture, and irrigated pasture.</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management for grasshopper sparrow.</p> <p>Monitor status and trends of grasshopper sparrow in target areas on the Reserve System.</p>
<p>Objective 23.2. Enhance and restore grassland habitats in the Reserve System to facilitate the expansion of breeding pairs of grasshopper sparrows into the Reserve System.</p>	<p>Conservation Action (vernal pool grassland complex). Use grazing, controlled burning (where feasible, and if studies indicate beneficial application), and mowing to control non-native, invasive vegetation and to maintain short to middle-height vegetation suitable for grasshopper sparrow. Management actions will be scheduled to minimize impacts to nesting grasshopper sparrows, where feasible (nesting season is from March 1 – July 31).</p>	<p>Monitor the effects of grazing, burning, and mowing on vegetation structure (e.g., height), reducing cover of nonnative, invasive plants and increasing the diversity and biomass of covered plants and diversity of other native plants.</p> <p>Conduct directed study to evaluate the effects of controlled burns on the cover and species diversity of native and nonnative species in vernal pool grassland complexes.</p>
	<p>Conservation Action (vernal pool grassland complex). Enhance remnant populations of</p>	<p>Monitor the success of seeding efforts in promoting native grasses and forbs.</p>

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	<p>native grasses and enhance native forb diversity using techniques such as managing non-native, invasive vegetation and seeding with appropriate native species.</p>	<p>Examples of indicators include indices of species diversity and relative cover of native species. Monitor response of target species (especially covered species) to seeding.</p>
	<p>Conservation Action (oak woodland). Apply prescribed burning, grazing, and mowing, where appropriate and feasible, to manage invasive plants and fuel load in the understory/grasslands of oak woodland savanna. (Applies to grasshopper sparrow where trees are sparse and there is abundant open grassland).</p>	<p>Monitor vegetation before and after prescribed burning, grazing, and mowing to assess the effects of these actions on community attributes, covered species, and fuel load.</p>
	<p>Conservation Action (agricultural land). Delay the harvesting of hay and grain crops until as late as possible to increase the reproductive success of ground nesting birds that nest in agricultural fields.</p>	<p>Monitor the use of hay fields by grasshopper sparrow other native species to determine appropriate time to begin harvest to minimizing impacts to birds nesting in agricultural fields.</p>
	<p>Conservation Action (agricultural land). Plant winter cover crops, where appropriate, to provide food and cover for native birds. (Grasshopper sparrow overwinters in the Plan area in low numbers).</p>	<p>Monitor the use of winter cover crops by wildlife.</p>
<p>Goal 24. Maintain or increase the extent of tricolored blackbird habitat within the Plan area to maintain and potentially increase the abundance and distribution of breeding tricolored blackbirds within the Plan area.</p>		
<p>Objective 24.1. Protect at least five tricolored blackbird breeding sites that support, recently supported, or could support (once restored) tricolored blackbird colonies. Breeding habitat will be at least two acres and within 1,600 feet of open water.</p>	<p>Conservation Action. Acquire or obtain easements on at least five tricolored blackbird breeding sites that support or recently supported tricolored blackbird colonies, or habitat that provides suitable habitat for tricolored blackbird (e.g., > 2 acres and within 1,600 feet of open water). Land-cover types that will be protected within the Reserve System that will provide breeding habitat for tricolored blackbird include fresh emergent and seasonal wetlands, and grassland that support large patches of blackberry.</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management for tricolored blackbird.</p> <p>Monitor status and trends of tricolored blackbird in target areas on the Reserve System</p>

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	<p>Conservation Action. For active breeding sites that cannot be acquired within the Reserve System, the PCA may offer financial incentives to private landowners to protect and enhance suitable breeding habitat pond and wetland habitat.</p>	<p>Compliance monitoring and annual reports.</p>
<p>Objective 24.2. Protect at least 200 acres of suitable foraging habitat for tricolored blackbird within three miles of protected and occupied breeding sites as part of the Reserve System.</p>	<p>Conservation Action. Acquire or obtain easements on suitable foraging habitat for tricolored habitat. Land-cover types that will be protected within the Reserve System within three miles of protected suitable breeding habitat that supports suitable foraging habitat include: vernal pool grassland complex, annual grassland, oak woodland savanna, valley foothill riparian, and agricultural land with alfalfa, irrigated pasture, rice, and row crops.</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management for tricolored blackbird.</p> <p>Monitor status and trends of tricolored blackbird in target areas on the Reserve System</p>
<p>Objective 24.3. Enhance, restore, and/or create wetland habitat suitable for breeding tricolored blackbird colonies.</p>	<p>Conservation Action (wetland and pond). Plant and/or seed native vegetation appropriate to the site.</p> <p>Conservation Action (wetland and pond). Remove invasive non-native vegetation using methods that minimize negative impacts to covered and other native species. Techniques may include limited grazing, hand, and mechanical removal. Removal activities will be timed to avoid impacting nesting tricolored blackbirds. This measure will help enhance and restore nesting habitat in wetlands and ponds.</p> <p>Conservation Action (wetland and pond). Install fencing, where ecologically appropriate, to reduce grazing pressure and exclude feral pigs on portions of wetlands and ponds.</p> <p>Conservation Action (riverine and riparian). Remove and control the cover, biomass, and</p>	<p>Monitor the survivorship of plantings and relative effectiveness of plant and seedling methods and protective measures.</p> <p>Monitor the effectiveness of invasive species control methods, and the response of covered species and other native species (e.g., native species diversity and cover of native vegetation) to removal of invasive species.</p> <p>Monitor the effectiveness of exclusion methods and conduct pre- and post-exclusion monitoring to assess the effects of livestock and feral pig exclusion on community function and covered species.</p> <p>Monitor the effectiveness of invasive species control methods, and the</p>

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	<p>distribution of invasive plants using methods such as hand removal, mowing, mechanical removal, spot-burning, tarping, and selective use of herbicides. Stands of Himalayan blackberry that support or recently supported tricolored blackbird nesting colonies will not be removed unless the colony site has been abandoned for at least three breeding seasons.</p> <p>Conservation Action (vernal pool grassland complex). Use grazing, controlled burning in combination with grazing (where feasible, and if studies indicate beneficial application), and mowing to control non-native, invasive vegetation. Stands of Himalayan blackberry that support or recently supported tricolored blackbird nesting colonies will not be removed unless the colony site has been abandoned for at least three breeding seasons.</p> <p>Conservation Action. Use non-lethal predator management techniques (e.g., flushing of black-crowned night heron colonies) if monitoring data indicates high levels of nest predation of tricolored blackbirds by black-crowned night herons.</p>	<p>response of native species (e.g., native species diversity) to removal of invasive species.</p> <p>Monitor the effects of grazing, burning, and mowing on reducing cover of nonnative, invasive plants, and increasing the diversity and biomass of covered plants and diversity of other native plants.</p> <p>Conduct directed study to evaluate the effects of controlled burns on the cover and species diversity of native and nonnative species in vernal pool grassland complexes.</p> <p>Monitor the response of predators to non-lethal predator management techniques.</p>
<p>Objective 24.4. Enhance and restore suitable foraging habitat within three miles of protected, occupied, and potentially occupied breeding sites within the Reserve System.</p>	<p>Conservation Action. Use grazing, controlled burning in combination with grazing (where feasible, and if studies indicate beneficial application), and mowing to control non-native, invasive vegetation and to maintain vegetation structure suitable for foraging tricolored blackbirds (e.g., low-growing).</p>	<p>Monitor the effects of grazing, burning, and mowing on reducing cover of nonnative, invasive plants, and increasing the diversity and biomass of covered plants and diversity of other native plants.</p> <p>Conduct directed study to evaluate the effects of controlled burns on the cover and species diversity of native and nonnative species in vernal pool grassland complexes.</p>

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	<p>Conservation Action (agricultural land). Preserve and restore patches of natural vegetation, including native trees and shrubs.</p>	<p>Monitor the ecological conditions of remnant patches of habitat and compare with indicators of ecological health.</p>
	<p>Conservation Action (agricultural land). Delay the harvesting of hay and grain crops until as late as possible to increase the reproductive success of ground nesting (or low-nesting) birds that nest in agricultural fields.</p>	<p>Monitor the use of hay and grain crops by tricolored blackbird and other native species to determine appropriate time to begin harvest to minimizing impacts to birds nesting in agricultural fields.</p>
	<p>Conservation Action (agricultural land). Establish vegetated buffer zones around aquatic habitats to reduce runoff and disturbance to aquatic habitats and to provide habitat for covered species (e.g., Modesto song sparrow) and native wildlife.</p>	<p>Monitor the establishment of vegetation in buffer zones.</p>
	<p>Conservation Action (agricultural land). Plant cover strips, hedgerows, and shelterbeds along field margins, ditches, canals, and roads to encourage use by beneficial insects and wildlife.</p>	<p>Monitor the establishment of planted/seeded vegetation for cover strips, hedgerows, and shelterbeds.</p>
	<p>Conservation Action (agricultural land). Plant winter cover crops, where appropriate, to provide food and cover for native birds.</p>	<p>Monitor the use of winter cover crops by wildlife.</p>
	<p>Conservation Action (agricultural land). Apply herbicides, pesticides, and chemical fertilizers minimally and cautiously.</p>	<p>Monitor for adverse effects of herbicide, pesticide, and chemical fertilizers on covered species.</p>
<p>Goal 25. Maintain or increase the extent of vernal pool complexes to maintain or facilitate the expansion of the populations and distributions of Conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp in the Plan area.</p>		
<p>Goal 26. Maintain or increase the extent of vernal pool complexes to maintain or facilitate the expansion of the populations and distributions of Bogg's Lake hedge hyssop, dwarf downingia, legenere, Ahart's dwarf rush, and Red Bluff dwarf rush in the Plan area.</p>		

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
<p>Objective 25.1. Acquire at least as much vernal pool grassland complex and annual grassland as is taken and protect as part of the Reserve System to support hydrological and ecosystem function, representative biodiversity, and covered species within the Reserve System.</p>	<p>Conservation Action. Acquire or obtain easements on vernal pool grassland complexes and other seasonal wetlands.</p>	<p>Compliance monitoring and annual reports.</p>
<p>Objective 25.2. Acquire a minimum of 10,000 acres of vernal pool grassland complex and protect as part of the Reserve System. The hydrological and ecosystem function of vernal pools will be protected by protecting contiguous tracts of grasslands and other upland habitats surrounding vernal pool complexes.</p>	<p>Conservation Action. Acquire or obtain easements on vernal pool grassland complexes and other seasonal wetlands.</p>	<p>Assess quality of habitat of acquired land and prioritize for management for vernal pool invertebrates and plants.</p> <p>Monitor status and trends of Conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, Bogg’s Lake hedge hyssop, dwarf downingia, legenere, Ahart’s dwarf rush, and Red Bluff dwarf rush in target areas on the Reserve System.</p>
<p>Objective 25.3. Restore vernal pool wetted area and other wetland to ensure no net loss of vernal pool wetted area and other wetlands and protect as part of the Reserve System</p>	<p>Conservation Actions. Same as the vernal pool grassland complex community-level conservation actions listed in Table 5-1.</p>	<p>Compliance monitoring to ensure no net loss of wetlands. Assess the suitability of sites for restoration of vernal pools.</p> <p>Monitor and evaluate success of restoration by comparing restored sites to reference sites, success criteria, and ecological indicators.</p> <p>Monitor the establishment, status, and trends of covered vernal pool species in restored vernal pools.</p>

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
<p>Objective 25.4. Enhance all vernal pools, vernal pool grassland complexes, and surrounding uplands (e.g., primarily grassland) by promoting regeneration and recruitment of representative native species, controlling invasive, non-native species, and promoting hydrological and other natural processes to support native biodiversity and populations of covered species</p>	<p>Conservation Actions. Same as the vernal pool grassland complex community-level conservation actions listed in Table 5-1.</p>	<p>Conduct effectiveness monitoring to monitor the response of target covered vernal pool species to vernal pool enhancement actions.</p> <p>Conduct targeted studies to resolve critical uncertainties about threats and management issues (i.e., directed studies) (e.g., determine whether legenere is self-pollinated or pollinated by animals; if pollinated by animals populations may be pollen-limited), to improve management techniques (i.e., pilot projects), and to develop and refine protocol to monitor the status and trends of covered species (i.e., methods testing).</p>
<p>Goal 27. Maintain or increase the extent of western spadefoot toad habitat within the Plan area.</p>		
<p>Objective 27.1. Acquire at least as much vernal pool grassland complex and annual grassland as is taken and protect as part of the Reserve System to protect habitat suitable for breeding and foraging, providing cover during dormancy, and facilitating movement between populations and between terrestrial and wetland breeding habitats. Wetland breeding habitat should be surrounded by upland habitat that extends at least 1,200 feet from the wetland habitat to provide suitable amounts of upland habitat.</p>	<p>Conservation Action. Acquire or obtain easements on vernal pool grassland complexes and other seasonal wetlands.</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management for western spadefoot toad.</p>
<p>Objective 27.2. Acquire a minimum of</p>	<p>Conservation Action. Acquire or obtain</p>	<p>Monitor status and trends of western</p>

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
<p>10,000 acres of vernal pool grassland complex and protect as part of the Reserve System. The hydrological and ecosystem function of vernal pools will be protected by protecting contiguous tracts of grasslands and other upland habitats surrounding vernal pool complexes.</p>	<p>easements on vernal pool grassland complexes and other seasonal wetlands.</p>	<p>spadefoot toad in target areas on the Reserve System.</p>
<p>Objective 27.3. Restore vernal pool wetted area and other wetland to ensure no net loss of vernal pool wetted area and other wetlands and protect as part of the Reserve System</p>	<p>Conservation Actions. Same as the vernal pool grassland complex community-level conservation actions listed in Table 5-1.</p>	<p>Compliance monitoring to ensure no net loss of wetlands. Assess the suitability of sites for restoration of vernal pools.</p> <p>Monitor and evaluate success of restoration by comparing restored sites to reference sites, success criteria, and ecological indicators.</p> <p>Monitor the establishment, status, and trends of western spadefoot toad in restored vernal pools.</p>
<p>Objective 27.4. Enhance all vernal pools, vernal pool grassland complexes, and surrounding uplands (e.g., primarily grassland) by promoting regeneration and recruitment of representative native species, controlling invasive, non-native species, and promoting hydrological and other natural processes to support native biodiversity and populations of covered species</p>	<p>Conservation Actions. Same as the vernal pool grassland complex community-level conservation actions listed in Table 5-1.</p>	<p>Conduct effectiveness monitoring to monitor the response of western spadefoot toad to vernal pool enhancement actions.</p> <p>Conduct targeted studies to resolve critical uncertainties about threats and management issues (i.e., directed studies) (e.g., -----), and to develop and refine protocol to monitor the status and trends of western spadefoot toad (i.e., methods testing).</p> <p>Monitor the incidence of disease in the Plan area, and specifically, the incidence of disease in western spadefoot toad on the Reserve System, and throughout the Plan area (where feasible).</p>
	<p>Conservation Action. Develop and adopt guidelines, with assistance from the Wildlife Agencies, to minimize the risk of spreading infectious diseases such as chytridiomycosis (caused by <i>Batrachochytrium dendrobatidis</i>, a chytrid fungus that kills amphibians) that affect</p>	

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
<p>Objective 27.1. Protect other wetland (e.g., valley foothill riparian, fresh emergent wetland) and surrounding upland habitat suitable for breeding and foraging, providing cover during dormancy, and facilitating movement between populations and between terrestrial and wetland breeding habitats within the Reserve System. Wetland breeding habitat should be surrounded by upland habitat that extends at least 1,200 feet from the wetland habitat to provide suitable amounts of upland habitat.</p>	<p>amphibians, within the Reserve System.</p> <p>Conservation Action. Acquire or obtain easements on valley foothill riparian, fresh emergent wetland, and surrounding uplands.</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management.</p> <p>Monitor status and trends of western spadefoot toad in target areas on the Reserve System.</p>
<p>Goal 28. Maintain or increase the extent of valley elderberry longhorn beetle habitat within the Plan area.</p>		
<p>Objective 28.1. Protect valley foothill riparian and valley oak woodland that have large stands of elderberry shrubs that support valley elderberry longhorn beetles.</p>	<p>Conservation Action. Acquire or obtain easements on valley oak woodland and valley oak woodland.</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management for valley elderberry longhorn beetle.</p> <p>Monitor status and trends of valley elderberry longhorn beetle in target areas on the Reserve System</p>
<p>Objective 28.2. Enhance and restore habitat suitable for valley elderberry longhorn beetle.</p>	<p>Conservation Action. Control populations of invasive Argentine ants by using bait stations, integrated pest management and the use of re-vegetation and erosion materials that do not contain Argentine ants. Careful application of irrigation to limit the amount of moist habitat available for Argentine ants should be employed.</p>	<p>Monitor valley elderberry longhorn beetle habitat for presence and relative abundance of Argentine ants to assess potential threats to valley elderberry longhorn beetle and the effectiveness of control efforts.</p>
	<p>Conservation Action. Minimize the use of pesticides and herbicides within 100 feet of elderberry plants.</p>	<p>Compliance monitoring and annual reports.</p>

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	<p>Conservation Action (riverine and riparian). Restore valley foothill riparian habitat and suitable stands of valley oak with host elderberry plants by planting cuttings or seedlings from local sources and by transplanting mature elderberry occupied by valley elderberry longhorn beetle from local sites. Plantings should occur adjacent to existing stands of riparian woodland, or restored stands to avoid creating small, isolated elderberry patches.</p>	<p>Monitor the survivorship of elderberry plants.</p> <p>Monitor the status and trends of valley elderberry longhorn beetle on restored sites to determine if valley elderberry longhorn beetle are establishing and maintaining populations on restored sites.</p>
	<p>Conservation Action (riverine and riparian). Restore riparian vegetation by planting and/or seeding understory and overstory riparian vegetation in the riparian zone to reduce erosion, create structural diversity, provide cover, moderate water temperature, and re-connect riparian corridors.</p>	<p>Monitor the survivorship of planted riparian vegetation.</p>
	<p>Conservation Action (riverine and riparian). Remove and control the cover, biomass, and distribution of invasive plants using methods such as hand removal, limited grazing, mowing, mechanical removal, spot-burning, tarping, and selective use of herbicides.</p>	<p>Monitor the effectiveness of invasive species control methods, and the response of native species (e.g., native species diversity) to removal of invasive species</p>
	<p>Conservation Action (riverine and riparian). Exclude or limit livestock access to target stream and riparian sections using exclusion fencing, off-channel water sources, and limited grazing intensity and duration.</p>	<p>Monitor the effectiveness of livestock exclusion methods and conduct pre- and post-exclusion monitoring to document the effects of livestock exclusion on native riparian vegetation (including elderberry).</p>
<p>Objective 28.3. Reintroduce and/or introduce population(s) of valley elderberry longhorn beetle to restore viable populations of valley elderberry longhorn beetle within the Reserve System.</p>	<p>Conservation Action. Transplant mature elderberry occupied by valley elderberry longhorn beetle from local sites. Plantings should occur adjacent to existing stands of riparian woodland, or restored stands to avoid creating small, isolated elderberry patches.</p>	<p>Monitor the status and trends of valley elderberry longhorn beetle on restored and reintroduction sites to determine if valley elderberry longhorn beetle are establishing and maintaining populations on such sites.</p>
<p>Goal 29. Protect or increase habitat for giant garter</p>	<p>snake to facilitate the expansion of a population of giant garter snake into the Plan area.</p>	
<p>Objective 29.1. Protect aquatic and adjacent</p>	<p>Conservation Action. Acquire or obtain</p>	<p>Compliance monitoring and annual</p>

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
upland habitat suitable for giant garter snake during both the active season and dormant season.	easements on fresh emergent wetland, agricultural land in flooded-rice production, low-gradient streams, and adjacent upland and riparian land-cover that provides suitable habitat (or suitable with enhancement and/or restoration) in the Valley.	reports. Assess quality of habitat of acquired land and prioritize for management for giant garter snake. Monitor status and trends giant garter snake in target areas on the Reserve System.
Objective 29.2. Enhance wetlands and adjacent uplands to provide suitable foraging habitat and vegetation for coverage (e.g., from predators) and basking within the Reserve System.	Conservation Action (wetland and pond). Manage water levels in target wetlands to provide aquatic habitat for giant garter snake during their active season (e.g., flooded from early spring – mid fall).	Monitor water levels to ensure that suitable water depths are available in ricelands and target wetlands for giant garter snake at the appropriate time of year.
	Conservation Action (wetland and pond). Plant and/or seed native vegetation appropriate to the site (e.g., <i>Typha</i> spp. and <i>Scirpus</i> spp.) to increase vegetation cover in wetland habitats.	Monitor the survivorship of plantings and relative effectiveness of plant and seedling methods and protective measures.
	Conservation Action (wetland and pond). Re-vegetate adjacent upland habitat adjacent to wetlands and ricelands with grassy banks (using native vegetation appropriate to the site) and maintain openings to waterside vegetation for basking.	Monitor the establishment of restored/enhanced vegetation on adjacent uplands and the “openness” of basking sites.
	Conservation Action (wetland and pond). Install woody debris around the perimeter and in submerged banks of wetlands managed for giant garter snake to create basking habitat and cover.	Survey wetlands and ponds to identify areas where addition of woody debris and other structural features will potentially enhance habitat. Monitor the use of installed structures by giant garter snake and other wildlife.
	Conservation Action (wetland and pond). Remove invasive non-native vegetation using methods that minimize negative impacts to covered and other native species. Techniques may include limited grazing, hand, and mechanical removal.	Monitor the effectiveness of vegetation removal methods, and the response of covered and other native species (e.g., native species diversity) to removal of invasive species.

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	<p>Conservation Action (wetland and pond). Eradicate or reduce non-native predators (e.g., bullfrogs, invasive fish, feral cats) within the Reserve System by manipulating habitat (e.g., periodic draining of ponds), trapping, hand capturing, electroshocking, or other control methods.</p>	<p>Monitor the effectiveness of invasive animal control methods, and the response of covered and other native species (e.g., native species diversity) to removal of invasive species.</p>
	<p>Conservation Action. Minimize rodent control measures on the Reserve System to enhance populations of ground squirrels (ground squirrels create burrows used by giant garter snake).</p>	<p>Monitor population-level response of ground squirrels to removal or minimization of control measures.</p>
<p>Objective 29.3. Manage ricelands, canals, and irrigation ditches on the Reserve System to provide aquatic and upland habitat suitable for giant garter snake.</p>	<p>Conservation Action (agricultural land). Maintain the provision of adequate water to ricelands to provide suitable aquatic habitat during the giant garter snake's active season.</p>	<p>Monitor water levels to ensure that suitable water depths are available for giant garter snake and other target species at the appropriate time of year.</p>
	<p>Conservation Action (agricultural land). Plant and/or seed native vegetation appropriate to the site (e.g., <i>Typha</i> spp. and <i>Scirpus</i> spp.) to increase vegetation cover along the edges of lands used for flooded rice production.</p>	<p>Monitor the survivorship of plantings and relative effectiveness of plant and seedling methods and protective measures.</p>
	<p>Conservation Action (agricultural land). Re-vegetate adjacent upland habitat adjacent to ricelands with grassy banks (using native vegetation appropriate to the site) and maintain openings to waterside vegetation for basking for giant garter snake.</p>	<p>Monitor the establishment of restored/enhanced vegetation on adjacent uplands and the "openness" of basking sites.</p>
	<p>Conservation Action (agricultural land). Establish vegetated buffer zones around aquatic habitats to reduce runoff and disturbance to aquatic habitats and to provide habitat for covered species and native wildlife.</p>	<p>Monitor the establishment of vegetation in buffer zones.</p>
	<p>Conservation Action (agricultural land). Plant cover strips, hedgerows, and shelterbeds along field margins, ditches, canals, and roads to encourage use by beneficial insects and wildlife.</p>	<p>Monitor the establishment of planted/seeded vegetation for cover strips, hedgerows, and shelterbeds.</p>

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	Conservation Action (agricultural land). Apply herbicides, pesticides, and chemical fertilizers minimally and cautiously.	Monitor for adverse effects of herbicide, pesticide, and chemical fertilizers on covered species.
Objective 29.4. Restore and/or create wetland and associated upland habitat to facilitate the expansion of giant garter snake populations into the Reserve System.	Conservation Action (wetland and pond). Manage water levels in restored/created wetlands managed for giant garter snake to provide aquatic habitat for giant garter snake during their active season (e.g., flooded from early spring – mid fall).	Monitor water levels to ensure that suitable water depths are available in restored/created wetlands for giant garter snake at the appropriate time of year.
	Conservation Action (wetland and pond). Plant and/or seed native vegetation appropriate to the site (e.g., <i>Typha</i> spp. and <i>Scirpus</i> spp.) to increase vegetation cover restored/created wetlands.	Monitor the survivorship of plantings and relative effectiveness of plant and seedling methods and protective measures.
	Conservation Action (wetland and pond). Remove invasive non-native vegetation at restored/created wetlands using methods that minimize negative impacts to covered and other native species. Techniques may include limited grazing, hand, and mechanical removal.	Monitor the effectiveness of invasive species control methods, and the response of covered species and other native species (e.g., native species diversity) to removal of invasive species.
Objective 29.5. Encourage private land owners to conserve and manage potentially suitable habitat on agricultural land to help promote the recovery and long-term conservation of giant garter snake.	Conservation Action (agricultural land). Provide outreach, education, and assistance to private farmers interested in enhancing their agricultural land to benefit covered species, wildlife, and ecosystem function.	Compliance monitoring and annual reports.
Goal 30. Maintain or increase the availability and quality of habitat for Central Valley steelhead – distinct population segment and Central Valley fall/late fall-run Chinook salmon to improve the reproductive success and survival of all life stages of these fish in the Plan area.		
Objective 30.1. Protect stream reaches along the Bear River (downstream of Camp Far West Reservoir), Coon Creek, Doty Ravine, and Auburn Ravine to protect hydrological and ecological processes and spawning and rearing habitat for covered fish.	Conservation Action. Acquire or obtain easements on stream reaches and/or adjacent riparian habitat along the Bear River (downstream of Camp Far West Reservoir), Coon Creek, Doty Ravine, and Auburn Ravine.	Compliance monitoring and annual reports. Assess quality of habitat of acquired land and prioritize for management for covered fish.

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
<p>Objective 30.2. Protect valley foothill riparian habitat within the Reserve System to promote ecosystem function within riparian and riverine habitats and to provide rearing and spawning habitat for covered fish.</p>		<p>Monitor status and trends of covered fish in target areas on the Reserve System.</p>
<p>Objective 30.3. Enhance and restore riverine habitats in stream systems occupied by covered fish to improve spawning and rearing habitats for Central Valley steelhead and Central Valley fall/late fall-run Chinook salmon within the Reserve System.</p>	<p>Conservation Actions. Same as the riverine and riparian community-level conservation actions listed in Table 5-1.</p>	<p>Same as the riverine and riparian community-level monitoring actions listed in Table 5-1.</p>
<p>Objective 30.4. Enhance and restore riparian habitats to improve spawning and rearing habitat for Central Valley steelhead and Central Valley fall/late fall-run Chinook salmon within the Reserve System.</p>	<p>Conservation Actions. Same as the riverine and riparian community-level conservation actions listed in Table 5-1.</p>	<p>Same as the riverine and riparian community-level monitoring actions listed in Table 5-1.</p>
<p>Goal 31. Maintain or increase the extent of foothill yellow-legged frog habitat to facilitate the expansion of a foothill yellow-legged frog population into the Plan area.</p>		
<p>Objective 31.1. Protect riverine habitats and adjacent valley foothill riparian and upland oak woodland habitats to protect breeding, foraging, and movement corridors for foothill yellow-legged frog as part of the Reserve System.</p>	<p>Conservation Action. Acquire or obtain easements on riverine and riparian habitat on the Bear River, Coon Creek and upper tributaries, Auburn Ravine, Pleasant Grove Creek, and Dry Creek (within the Reserve Acquisition Area).</p> <p>Conservation Action. Acquire or obtain easements on upland habitats (e.g., oak woodland, grassland) adjacent to riverine and riparian habitat to protect upland movement corridors.</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management.</p> <p>Monitor status and trends of foothill yellow-legged frog in target areas on the Reserve System.</p>
<p>Objective 31.2. Enhance and restore riverine and riparian habitats for foothill</p>	<p>Conservation Action (riverine and riparian). Remove channelization features such as rip-rap,</p>	<p>Conduct pre- and post-treatment monitoring of community function</p>

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
yellow-legged frog within the Reserve System.	dikes, and levees.	(performance of ecological processes); habitat composition, structure and pattern; and connectivity as part of a targeted study.
	Conservation Action (riverine and riparian). Install large woody debris and other in-stream structural elements such as rocks and boulders to increase channel complexity.	Conduct pre- and post-treatment monitoring of community function (performance of ecological processes); habitat composition, structure and pattern, and use of habitat features by covered and other species.
	Conservation Action (riverine and riparian). Clean and replenish gravel beds that have been degraded by accumulation of fine sediment and/or displacement of spawning gravel, when feasible and necessary.	Conduct pre- and post-treatment monitoring of sediment levels and use of treated area by foothill yellow-legged frog. Response of foothill yellow-legged frog may be measured by the numbers or presence of adults and/or egg masses.
	Conservation Action (riverine and riparian). Exclude or limit livestock access to target stream and riparian sections using exclusion fencing, off-channel water sources, and limited grazing intensity and duration.	Monitor the effectiveness of livestock exclusion methods and conduct pre- and post-exclusion monitoring to document the effects of livestock exclusion on native riparian vegetation.
	Conservation Action (riverine and riparian). Reduce suspension of sediment by hardening stream crossings for livestock.	Monitor use of crossings by livestock to ensure livestock are crossing over intended areas.
	Conservation Action (riverine and riparian). Remove and control invasive, non-native animals (e.g., bullfrog, carp) using methods such as trapping and electrofishing.	Monitor populations of targeted invasive animals before and after control efforts; monitor response of covered species and other native species to removal/control efforts.
	Conservation Action (riverine and riparian). Remove and control the cover, biomass, and distribution of invasive plants using methods such as hand removal, limited grazing, mowing, mechanical removal, spot-burning, tarping, and selective use of herbicides.	Monitor the effectiveness of invasive species control methods, and the response of covered (e.g., foothill yellow-legged frog) and native species (e.g., native species diversity) to removal of invasive species.

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	<p>Conservation Action (riverine and riparian). Restore riparian vegetation by planting and/or seeding understory and overstory riparian vegetation in the riparian zone to reduce erosion, create structural diversity, provide cover, moderate water temperature, and re-connect riparian corridors.</p> <hr/> <p>Conservation Action. Develop and adopt guidelines, with assistance from the Wildlife Agencies, to minimize the risk of spreading infectious diseases such as chytridiomycosis (caused by <i>Batrachochytrium dendrobatidis</i>, a chytrid fungus that kills amphibians) that affect amphibians, within the Reserve System.</p>	<p>Monitor the survivorship of plantings and relative effectiveness of plant and seedling methods and protective measures.</p> <p>Assess the response (e.g., in numbers or presence of adults and/or egg masses) of foothill yellow-legged frog to the restoration of riparian vegetation.</p> <hr/> <p>Monitor the incidence of disease in the Plan area, and specifically, the incidence of disease in foothill yellow-legged frog on the Reserve System, and throughout the Plan area (where feasible).</p>
<p>Goal 32. Maintain or increase the extent of California red-legged frog habitat to facilitate the expansion of a California red-legged frog population into the Plan area.</p>		
<p>Goal 33. Maintain or increase the extent of northwestern pond turtle habitats to potentially increase the abundance and distribution of northwestern pond turtle in the Plan area.</p>		
<p>Objective 32.1. Protect aquatic breeding and non-breeding habitats, as well as upland habitats that provide habitat for dispersal, cover, aestivation, nesting (for northwestern pond turtle) and foraging for California red-legged frog and northwestern pond turtle.</p>	<p>Conservation Action. Acquire or obtain easements on ponds, wetlands, riverine, and valley foothill riparian land-cover types in the suitable (or suitable with enhancement and/or restoration) for California red-legged frog and northwestern pond turtle.</p> <hr/> <p>Conservation Action. Acquire or obtain easements on upland habitats (e.g., oak woodland, grassland) adjacent to protected aquatic habitat suitable for California red-legged frog and northwestern pond turtle. Prioritization will be given to protecting large, contiguous patches of upland habitat surrounding aquatic habitat (of at least 0.5-mile radius around aquatic habitat). Upland habitat should support patches of</p>	<p>Compliance monitoring and annual reports.</p> <p>Assess quality of habitat of acquired land and prioritize for management.</p> <p>Monitor status and trends of California red-legged frog and northwestern pond turtle in target areas on the Reserve System.</p>

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	open, sunny nesting sites (slopes < 25°) and north-facing, well vegetated sites for refuge and overwinter habitat for northwestern pond turtle.	
<p>Objective 32.2. Enhance, restore, and possibly create wetlands and ponds and adjacent upland habitats to provide aquatic habitats suitable for California red-legged frog and northwestern pond turtle.</p>	<p>Conservation Action (wetland and pond). Plant and/or seed native vegetation appropriate to the site.</p>	<p>Monitor the survivorship of plantings and relative effectiveness of plant and seedling methods and protective measures. Assess the response of California red-legged frog and northwestern pond turtle to replanting efforts</p>
	<p>Conservation Action (wetland and pond). Install fencing, where ecologically appropriate, to reduce grazing pressure and exclude feral pigs on portions of wetlands and ponds.</p>	<p>Monitor the effectiveness of exclusion methods and conduct pre- and post-exclusion monitoring to assess the effects of livestock and feral pig exclusion on community function and covered species (e.g., California red-legged frog and northwestern pond turtle).</p>
	<p>Conservation Action (riverine and riparian). Monitor the effectiveness of livestock exclusion methods and conduct pre- and post-exclusion monitoring to assess the effects of livestock exclusion on native riparian vegetation.</p>	<p>Exclude or limit livestock access to target stream and riparian sections using exclusion fencing, off-channel water sources, and limited grazing intensity and duration.</p>
	<p>Conservation Action (wetland and pond). Install woody debris around the perimeter and in submerged banks of ponds and wetlands to create basking habitat and cover for native juvenile amphibians and reptiles.</p>	<p>Survey wetlands and ponds to identify areas where addition of woody debris and other structural features will potentially enhance habitat for California red-legged frog and northwestern pond turtle.</p>
	<p>Conservation Action (wetland and pond). Remove vegetation to provide open water habitat for northwestern pond turtle, California red-legged frog, and waterfowl using methods that minimize negative impacts to covered and other native</p>	<p>Monitor the use of installed structures by covered species and other wildlife. Monitor the effectiveness of vegetation removal methods, and the response of covered and other native species (e.g., native species diversity) to removal of invasive species.</p>

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	species. Techniques may include limited grazing, hand, and mechanical removal.	
	Conservation Action (wetland and pond). Remove invasive non-native vegetation using methods that minimize negative impacts to covered and other native species. Techniques may include limited grazing, hand, and mechanical removal.	Monitor the effectiveness of invasive species control methods, and the response of covered species and other native species (e.g., native species diversity) to removal of invasive species.
	Conservation Action (wetland and pond). Eradicate or reduce non-native predators (e.g., bullfrogs, invasive fish, feral cats) within the Reserve System by manipulating habitat (e.g., periodic draining of ponds), trapping, hand capturing, electroshocking, or other control methods.	Monitor the effectiveness of invasive animal control methods, and the response of covered and other native species (e.g., native species diversity) to removal of invasive species.
	Conservation Action (wetland and pond). Remove or reduce point and non-point sources of pollution on the Reserve System and divert point and non-point sources of pollution away from wetlands and ponds. Examples of techniques include using filter and buffer strips and following wellhead protection procedures.	Monitor indicators of success criteria to evaluate success of pollution reduction projects in improving water quality, community function, and habitat for covered species.
	Conservation Action. Develop and adopt guidelines, with assistance from the Wildlife Agencies, to minimize the risk of spreading infectious diseases such as chytridiomycosis (caused by <i>Batrachochytrium dendrobatidis</i> , a chytrid fungus that kills amphibians) that affect amphibians, within the Reserve System.	Monitor the incidence of disease in the Plan area, and specifically, the incidence of disease in foothill yellow-legged frog on the Reserve System, and throughout the Plan area (where feasible).
	Conservation Action. Identify potential dispersal corridors on the Reserve System and remove barriers to dispersal (e.g., fences), when feasible.	Monitor the suitability of potential dispersal corridors for dispersal by California red-legged frog and northwestern pond turtle.
	Conservation Action. Minimize rodent control measures to enhance populations of ground squirrels (to enhance the availability of burrows for	Monitor population-level response of ground squirrels to removal or minimization of control measures.

Table 5-5. Species-level Goals, Objectives, and Conservation Actions

Biological Goals and Objectives	Conservation Measures	Monitoring Actions
	<p>California red-legged frog seeking shelter).</p> <hr/> <p>Conservation Action. Manage ground-level vegetation on uplands surrounding suitable aquatic habitat to maintain vegetation at low height (e.g., with grazing before the nesting season [May-July]) to provide nesting habitat for northwestern pond turtle.</p>	<p>Monitor the suitability of upland habitats surrounding aquatic habitats for terrestrial habitat uses (e.g., dispersal, egg laying [for northwestern pond turtle], aestivation).</p>

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