

**Raw Recommended Conservation Measures Received from Species Specialists
at and Subsequent to Workshops for "m" Goal Wildlife Species**

Evaluation Species	Conservation Measures
Mammals	
Giant Kangaroo Rat <i>Dipodomys ingens</i>	1. Preserve and protect existing populations xeric habitat for desert species. 2. Survey or use existing information to determine if desert species present and habitat will be affected by changes in hydrology: <ol style="list-style-type: none"> a. Acquire and protect existing habitat. b. Restore habitat. c. Avoid critical habitat areas. d. Proper management to achieve goals.
Greater Western Mastiff-bat <i>Eumops perotis californicus</i>	
Nelson's Antelope Squirrel <i>Ammospermophilus nelsoni</i>	1. Preserve and protect existing populations xeric habitat for desert species. 2. Survey or use existing information to determine if desert species present and habitat will be affected by changes in hydrology: <ol style="list-style-type: none"> a. Acquire and protect existing habitat. b. Restore habitat. c. Avoid critical habitat areas. d. Proper management to achieve goals.
Ringtail (from G. Gould) <i>Bassariscus astutus</i>	1. Preserve and protect existing populations and developed riparian forest habitat. 2. Survey or use existing information to determine if evaluation species is present and habitat will be affected by changes in water management: <ol style="list-style-type: none"> a. Acquire and protect existing habitat. b. Restore habitat c. Avoid critical habitat areas d. Conduct proper management to achieve goals. 3. Focus management in areas where well-developed riparian forest now exists and in areas of backwaters and oxbows. 4. Manage restored or enhanced habitats under the ERP to maintain older, structurally diverse riparian forest.

San Joaquin kit fox (L. Briden pers. comm.)
Vulpes macrotis mutica

1. Within 60 days prior to the beginning of construction activities or any project activity likely to impact the San Joaquin kit fox, pre-construction or pre-activity surveys should be conducted by a qualified biologist. Surveys should determine the presence or absence of the kit fox on the project site(s), identify specific uses of the area by kit fox if possible, and assess the potential impacts to the species of the proposed activity. Survey methodologies should follow techniques acceptable to USFWS and CDFG.
2. If avoidance is not possible, limited den destruction may be permitted. Coordination with USFWS and CDFG prior to destruction will be necessary.
3. Activities should be conducted between March 1 and July 31 when kit fox activities are the easiest to detect.
4. Following pre-construction activities and before project activities begin, protective exclusion zones should be established around all known and potential San Joaquin kit fox dens. The size of these zones should be determined on a project-specific basis in consultation with USFWS and CDFG. Construction related and other project activities should be prohibited within these exclusion zones. Only essential vehicle operation on existing roads and simple foot traffic should be permitted.
5. Project-related vehicles should observe a 20 mph speed limit in all project areas, except on county roads and State and Federal highways; this is especially important at night when kit fox are most active. To the extent possible, night time construction should be minimized.
7. All construction pipes, culverts, or similar structures with a diameter of 4 or more inches that are stored at a construction site for any one or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way.
8. All food related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in closed containers only and regularly removed from a construction or other project site.
9. No pets should be permitted on project sites.
10. Use of rodenticides or herbicides in project areas with known kit fox occurrences should be restricted.

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Continued...	<p>6.To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than 2 feet deep should be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals.</p> <p>7.All construction pipes, culverts, or similar structures with a diameter of 4 or more inches that are stored at a construction site for any one or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way.</p> <p>8.All food related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in closed containers only and regularly removed from a construction or other project site.</p> <p>9. No pets should be permitted on project sites.</p> <p>10.Use of rodenticides or herbicides in project areas with known kit fox occurrences should be restricted.</p>
Birds	
Aleutian Canada Goose (L. Briden pers. Comm.) <i>Branta canadensis leucopareia</i>	1. Provide 25,000 to 35,000 acres of foraging and roosting habitat; foraging habitats include pasture, harvested grain and bean fields, and sprouting winter wheat fields; roosting habitat includes large ponds, lakes, and off-shore islands.
American Peregrine Falcon <i>Falco peregrinus anatum</i>	<p>1. Avoid disturbance to occupied nesting habitats (primarily watershed program actions). Also include structures (e.g. bridges).</p> <p>2. CALFED actions that would mobilize large quantities of toxic materials need to include an analysis to determine loadings and if harmful loadings could be released, modify actions to reduce loading (general many species).</p>
Bald Eagle <i>Haliaeetus leucocephalus</i>	<p>1. Avoid impacts to active nest sites/trees RE: storage and infrastructure.</p> <p>2. Protect nest sites from potential recreation impacts associated with enlarging existing reservoirs.</p> <p>3. Avoid construction disturbances from __ to __ within __ miles of nest sites.</p> <p>4. Design new reservoirs to optimize suitability of potential nesting habitats.</p>
Black Tern <i>Chlidonias niger</i>	
Black-crowned Night Heron (rookery) <i>Nycticorax nycticorax</i>	
California Brown Pelican <i>Pelecanus occidentalis californicus</i>	

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California Condor <i>Gymnogyps californianus</i>	Coordinate program actions to avoid conflicts with existing and future actions undertaken to recover the condor.
California Gull <i>Larus californicus</i>	
California Least Tern <i>Sterna antillarum browni</i>	<ol style="list-style-type: none"> 1. Monitor Alameda Colony foraging areas to ensure proposed flows do not adversely affect forage quantity or availability (via changes in water quality/turbidity). 2. Continue easements to protect the Pittsburg Colony. 3. Maintain ponds used for breeding if PG&E plant ceases or modifies operation. 4. Protect sites where the population may occupy in the future.
California Yellow Warbler (Warnette pers. Comm.) <i>Dendroica petechia brewsteri</i>	<ol style="list-style-type: none"> 1. Restore riparian concurrent with any actions taken to convert lands to tidal emergent wetlands or tidal perennial aquatic habitat; replace impacted riparian at the rate of 3 to 5 acres for each acre of riparian impacted. 2. Ensure that at least 10 miles and 2,000 acres of Valley/foothill Riparian and Valley/foothill woodland are restored during Stage 1 in the Delta. Riparian should be restored in blocks at least 200 meters in width 3. Ensure that large contiguous blocks of willow-cottonwood riparian at least 200 meters in width and 500 acres in size are restored on the Sacramento River. 4. Time management/restoration activities to avoid nesting and fledgling of young bird species. 5. Manage grazing to ensure recruitment of young riparian deciduous shrubs and to avoid direct impacts to ground-nesting birds. 6. Control star thistle and other weedy non-native species to promote a diverse herb layer.
Cooper's Hawk <i>Accipiter cooperii</i>	
Double-crested Cormorant (rookery) <i>Phalacrocorax auritus</i>	

<p>Golden Eagle <i>Aquila chrysaetos</i></p>	<ol style="list-style-type: none"> 1. Avoid adverse effects to traditional foraging habitats. 2. Avoid active nest sites (storage/watershed management). 3. Restore/enhance sufficient habitat to offset impacts to forage habitat (1:1 to 5:1) in conjunction with compensation measures implemented for other grassland/savanna species. 4. Avoid disturbance to nest sites up to 0.5 mile (standards would be site specific). 5. Recommend measures as for BE.
<p>Grasshopper Sparrow <i>Ammodramus savannarum</i></p>	
<p>Great Blue Heron (rookery) <i>Ardea herodias</i></p>	
<p>Great Egret (rookery) <i>Casmerodius albus</i></p>	
<p>Long-billed Curlew <i>Numenius americanus</i></p>	<ol style="list-style-type: none"> 1. Restore seasonal wetlands, grasslands, upland croplands, and seasonally flooded agriculture concurrent with any actions taken to convert lands to tidal emergent wetlands or tidal perennial aquatic habitat (Warnette pers. Comm.) 2. Ensure that at least 1 to 2 acres of grasslands, upland croplands, and seasonally flooded agriculture managed to provide suitable forage conditions seasonally are restored for each acre of suitable foraging habitat impacted (Warnette pers. Comm.)
<p>Long-eared Owl <i>Asio otus</i></p>	
<p>Mountain Plover <i>Charadrius montanus</i></p>	
<p>Northern Harrier <i>Circus cyaneus</i></p>	<ol style="list-style-type: none"> 1. Restore seasonal wetlands, grasslands, upland croplands, and seasonally flooded agriculture concurrent with any actions taken to convert lands to tidal emergent wetlands or tidal perennial aquatic habitat (Warnette pers. Comm.) 2. Ensure that at least 1 to 2 acres of grasslands, upland croplands, and seasonally flooded agriculture managed to provide suitable forage conditions seasonally are restored for each acre of suitable foraging habitat impacted (Warnette pers. Comm.)

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<p>Northern Spotted Owl (from G. Gould) <i>Strix occidentalis caurina</i></p>	<ol style="list-style-type: none"> 1. Preserve and protect existing populations and maintain forest habitat with high canopy closure and greater amounts of vertical structural diversity. 2. Survey or use existing information to determine if evaluation species is present and habitat will be affected by changes in water management: <ol style="list-style-type: none"> a. Acquire and protect existing habitat. b. Restore habitat c. Avoid critical habitat areas d. Conduct proper management to achieve goals. 3. Focus management to develop and maintain large-tree component and high canopy closure.
<p>Osprey (from G. Gould) <i>Pandion haliaetus</i></p>	<ol style="list-style-type: none"> 1. Preserve and protect existing populations and developed riparian forest habitat. 2. Survey or use existing information to determine if evaluation species is present and habitat will be affected by changes in water management: <ol style="list-style-type: none"> a. Acquire and protect existing habitat. b. Restore habitat c. Avoid critical habitat areas d. Conduct proper management to achieve goals. 3. Focus management to develop large-tree component in to provide nesting habitat. 4. Consider the feeding ecology of ospreys and prey abundance and availability whenever designing projects which will modify stream/river channel contours

<p>Short Eared Owl <i>Asio flammeus</i></p>	<ol style="list-style-type: none"> 1. Maintain hydrology supporting occupied nesting/roosting habitat. 2. Survey suitable habitats to determine those that may be affected by program actions to determine if SE owl is present and compensate affected habitat at ration of __ to __ . 3. Avoid occupied nesting habitat areas. 4. Restore perennial grasslands adjacent to occupied nesting habitats to provide suitable foraging habitat and habitat area suitable for the natural expansion of populations. 5. Inventory to determine the status of the SEO within the ERP focus area. 6. Manage ER enhanced agricultural lands to maintain or increase prey populations. <ol style="list-style-type: none"> 1. Restore seasonal wetlands, grasslands, upland croplands, and seasonally flooded agriculture concurrent with any actions taken to convert lands to tidal emergent wetlands or tidal perennial aquatic habitat (Warnette pers. Comm.) 2. Ensure that at least 1 to 2 acres of grasslands, upland croplands, and seasonally flooded agriculture managed to provide suitable forage conditions seasonally are restored for each acre of suitable foraging habitat impacted (Warnette pers. Comm.)
<p>Snowy Egret(rookery) (L. Briden pers. Comm.) <i>Egretta thula</i></p>	<ol style="list-style-type: none"> 1. Create 5 new rookery sites that have a minimum of 5 breeding pairs using the site.
<p>Swainson's Hawk (from F. Warnette) <i>Buteo swainsoni</i></p>	<ol style="list-style-type: none"> 1. Double the current population of breeding pairs in the Central Valley by 2020. 2. Restore riparian in combination with seasonal wetlands, grasslands, upland croplands, and seasonally flooded agriculture concurrent with any actions taken to convert lands to tidal emergent wetlands or tidal perennial aquatic habitat. 3. Ensure that at least 10 miles and 2,000 acres of Valley/foothill Riparian and Valley/foothill woodland are restored during Stage 1 in the Delta. 4. Ensure that at least 2 acres of grasslands, upland croplands, and seasonally flooded agriculture managed to provide suitable forage conditions seasonally are restored for each acre of suitable foraging habitat impacted by any CALFED program within 10 miles of a known nest site.
<p>Tricolored Blackbird <i>Agelaius tricolor</i></p>	<ol style="list-style-type: none"> 1. Restore seasonal wetlands, grasslands, upland croplands, and seasonally flooded agriculture concurrent with any actions taken to convert lands to tidal emergent wetlands or tidal perennial aquatic habitat (Warnette pers. Comm.) 2. Ensure that at least 1 to 2 acres of grasslands, upland croplands, and seasonally flooded agriculture managed to provide suitable forage conditions seasonally are restored for each acre of suitable foraging habitat impacted (Warnette pers. Comm.)

<p>Western Burrowing Owl <i>Athene cunicularia hypugea</i></p>	<ol style="list-style-type: none"> 1. Preserve and protect existing populations and habitat for grassland species. 2. Survey or use existing information to determine if evaluation species present and habitat will be affected by changes in water management (include agricultural lands): <ol style="list-style-type: none"> a. Acquire and protect existing habitat. b. Restore habitat. c. Avoid critical habitat areas. d. Proper management to achieve goals. 3. Manage restored or enhanced habitats under the ERP to maintain desirable rodent populations and minimize potential impacts associated with rodent control. <ol style="list-style-type: none"> 1. Restore seasonal wetlands, grasslands, upland croplands, and seasonally flooded agriculture concurrent with any actions taken to convert lands to tidal emergent wetlands or tidal perennial aquatic habitat (Warnette pers. Comm.) 2. Ensure that at least 1 to 2 acres of grasslands, upland croplands, and seasonally flooded agriculture managed to provide suitable forage conditions seasonally are restored for each acre of suitable foraging habitat impacted (Warnette pers. Comm.)
<p>Western Snowy Plover <i>Charadrius alexandrinus nivosus</i></p>	<ol style="list-style-type: none"> 1. Survey suitable documented nesting areas before implementation of actions that could affect nesting habitat. 2. Avoid impacts to occupied habitat. 3. Avoid implementing actions from March-July (Ron J. to confirm).

<p>Western Yellow-billed Cuckoo (Warnette pers. Comm.) <i>Coccyzus americanus occidentalis</i></p>	<ol style="list-style-type: none"> 1. Restore riparian concurrent with any actions taken to convert lands to tidal emergent wetlands or tidal perennial aquatic habitat; replace impacted riparian at the rate of 3 to 5 acres for each acre of riparian impacted. 2. Ensure that at least 10 miles and 2,000 acres of Valley/foothill Riparian and Valley/foothill woodland are restored during Stage 1 in the Delta. Riparian should be restored in blocks at least 200 meters in width 3. Ensure that large contiguous blocks of willow-cottonwood riparian at least 200 meters in width and 500 acres in size are restored on the Sacramento River. 4. The focus of restoration efforts should occur along the Sacramento River from Red Bluff to Colusa. 5. Restoration of habitat requires patches be a minimum of 50-100 acres, with a minimum width of 100 meters per pair. Optimal habitat for a pair would be 180 acres or more, and wider than 600 meters. Adjacent to suitable habitat should be upland refugia habitats for foraging in wet years. 6. Restore and manage riparian forests to promote structural diversity and volume of the understory to increase the value of existing/ongoing habitat and restoration projects. 7. Control the use of herbicides and pesticides in adjacent orchards. <p>Avoid groupings of cattle, associated facilities, and human habitation near high-priority riparian nest site during the breeding season. These land uses provide foraging areas for cowbirds.</p> <p>Develop brown-headed cowbird control measures.</p> <p>Use a groundcover in orchards and vineyards to discourage foraging by brown-headed cowbirds and increase productivity. If this vegetation is to be managed, avoid mowing through the nesting season or mow to 6 inches or less to discourage nesting.</p>
<p>Continued..</p>	<ol style="list-style-type: none"> 8. Avoid groupings of cattle, associated facilities, and human habitation near high-priority riparian nest site during the breeding season. These land uses provide foraging areas for cowbirds. 9. Develop brown-headed cowbird control measures. 10. Use a groundcover in orchards and vineyards to discourage foraging by brown-headed cowbirds and increase productivity. If this vegetation is to be managed, avoid mowing through the nesting season or mow to 6 inches or less to discourage nesting.

White-faced Bie
Plegadis chini