Suisun Ornate Shrew
["R" species with no Recovery Plan]

DRAFT

Conservation Measures In Addition to ERP Actions	Conservation Measures that Add Specificity to ERP Actions	Conservation Measures that Avoid, Minimize, or Compensate for Potential Adverse Effects
Suisun ornate shrew ***(Sorex ornatus sinuosus)***: Reduce the risk of current and imminent threats to maintaining the current distribution and existing populations of the Suisun ornate shrew and reestablish and maintain viable species' populations throughout its historic range in the portion of the Bay Region within the ERP focus area.		
1. To the extent practicable, control non-native predator populations in occupied habitat areas and salt marshes enhanced and restored under the ERP.	1. The geographic priorities for implementing ERP actions to protect, enhance, and restore saline emergent wetlands and associated habitats for the Suisun ornate shrew should be: 1) western Suisun Marsh, 2) Napa Marshes and eastern Suisun Marsh, and 3) Sonoma Marshes and Highway 37 marshes west of Sonoma creek.	1. Conduct surveys to determine the presence and distribution of Suisun ornate shrews in suitable habitat before implementing Program actions that could result in the loss or degradation of habitat.
2. Conduct research to identify feasible methods for controlling invasive non-native marsh plants and reintroducing Suisun ornate shrews into unoccupied suitable enhanced habitats and restored habitat areas.	2. Coordinate protection, enhancement, and restoration of salt marsh and associated habitats with other federal, state, and regional programs (e.g., the San Francisco Bay Ecosystem Goals Project and USFWS species recovery plans) that could affect management of current and historic habitat use areas to avoid potential conflicts among management objectives and identify opportunities for achieving multiple management objectives.	2. To the extent consistent with Program objectives, avoid implementing Program actions that could result in the degradation or loss of occupied habitat areas.
3. Conduct research to determine use of restored salt marsh habitats by Suisun ornate shrews and the rate at which restored habitats are colonized.	3. Initial species recovery efforts should be directed to locations where there are immediate opportunities for protection, enhancement, or restoration of suitable habitat.	3. Minimize the adverse effects of the artificial stabilization of salinity ranges.

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Conservation Measures In Addition to ERP Actions	Conservation Measures that Add Specificity to ERP Actions	Conservation Measures that Avoid, Minimize, or Compensate for Potential Adverse Effects
4. Conduct research to better determine the ecological requirements of the Suisun ornate shrew for use in designing and managing restored and enhanced habitat areas to benefit the species.	4. To the extent practicable, direct ERP salt marsh enhancement efforts towards existing degraded marshes that are of sufficient size and configuration that are large enough to develop fourth order tidal channels (marshes would likely need to be at least 1,000 acres in size).	4. To the extent consistent with Program objectives, avoid restoring tidal action to diked marshes that are occupied by Suisun ornate shrews until restoration of at least twice as much tidal, high marsh, and wetland to upland transition habitat as would be affected by restoration of tidal exchange has been initiated in the western Suisun marsh. In addition, an equal amount of occupied habitat in the eastern Suisun Marsh as would be affected by restoration of occupied habitat will be maintained as managed marsh to provide suitable species habitat area until newly restored habitat in the western Suisun marsh has developed sufficiently to provide suitable Suisun ornate shrew habitat.
5. Provide interim management of occupied salt marshes to maintain source populations until restored habitats have developed sufficiently to provide suitable habitat.	5. Restore wetland and perennial grassland habitats adjacent to occupied habitats to create a buffer of natural habitat to protect populations from potential adverse affects that could be associated with future changes in land use on nearby lands and to provide habitat suitable for the natural expansion of populations.	
6. Acquire conservation easements to adjust grazing regimes to enhance wetland to upland transition habitat conditions in occupied habitat areas.	6. To the extent practicable, design salt marsh enhancements and restorations to provide low-angle upland slopes at the upper edge of marshes to provide for the establishment of suitable and sufficient wetland to upland transition habitat. To the extent practicable, transition habitat zones should be at least 0.25 mile in width.	
7. Control non-native invasive plants in existing salt marshes where non-native plants have degraded habitat quality and in salt marshes restored under the ERP.	7. Manage enhanced and restored habitat areas to avoid or minimize potential impacts associated with recreational uses on lands acquired or managed under conservation easements for the Suisun ornate shrew. 8. Direct salt marsh habitat enhancements and restorations towards increasing habitat connectivity among existing and restored tidal marshes within the range of the Suisun ornate shrew.	

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Conservation Measures In Addition to ERP Actions	Conservation Measures that Add Specificity to ERP Actions	Conservation Measures that Avoid, Minimize, or Compensate for Potential Adverse Effects
	9. To the extent practicable, design dikes constructed in enhanced and restored saline emergent wetlands to provide optimal wetland to upland transitional habitat.	

Valley Elderberry Longhorn Beetle
["R" species with a Recovery Plan]

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Conservation Measures In Addition to ERP Actions	Conservation Measures that Add Specificity to ERP Actions	Conservation Measures that Avoid, Minimize, or Compensate for Potential Adverse Affects
Valley Elderberry Longhorn Beetle ***(Desmocerus californicus dimorphus)***: Maintain and restore connectivity among riparian habitats occupied by the valley elderberry longhorn beetle and within its historic range along the Sacramento and San Joaquin Rivers and their major tributaries.		
1. Conduct research to determine the distance over which the species can disperse from occupied habitat areas to suitable unoccupied habitat areas.	1. Coordinate protection and restoration of riparian habitats with other federal and state programs (e.g., USFWS recovery plans, the SB1086 program, and the Corps' Sacramento and San Joaquin Basin Comprehensive Study) that could affect management of occupied and historic habitat use areas to avoid potential conflicts among management objectives and identify opportunities for achieving multiple management objectives.	1. Conduct surveys in suitable habitat areas within the species range that could be affected by Program actions to determine the presence and distribution of the valley elderberry longhorn beetle before implementing actions that could result in the loss or degradation of occupied habitat.
	2. Within the species current range, design ERP riparian habitat enhancements and restorations to include suitable riparian edge habitat, including elderberry savanna.	2. Until the valley elderberry longhorn beetle has been recovered, implement the USFWS's guidelines for mitigating project effects on the valley elderberry longhorn beetle to compensate for Program impacts on the species.
	3. Initially direct ERP riparian habitat actions towards enhancement and restoration of habitat areas located near occupied habitat areas to encourage the natural expansion of the species range.	
	4. Include sufficient buffer habitat around suitable restored and enhanced habitat areas within the species' range to reduce potential adverse effects associated with pesticide drift.	
	5. To the extent consistent with Levee System Integrity Program objectives, implement levee maintenance guidelines to protect suitable habitat.	
	6. To the extent consistent with Levee System Integrity Program objectives, design levees to encourage the establishment and long-term maintenance of suitable habitat.	

E—005516

Greater sandhill crane
["r" species with no Recovery Plan]

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Conservation Measures In Addition to ERP Actions	Conservation Measures that Add Specificity to ERP Actions	Conservation Measures that Avoid, Minimize, or Compensate for Potential Adverse Affects
Greater sandhill crane ***(Grus canadensis tabida)***: Achieve recovery objectives identified in the Pacific Flyway Management Plan for the Central Valley population of greater sandhill cranes and AB1280 legislation that are applicable to the CALFED problem area, the Butte Sink, and other species' use areas consistent with CALFED's mission.		
1. Monitor the winter population to determine if protection of core area is adequate to maintain wintering populations and if restored or enhanced habitats are used by cranes.	1. To the extent consistent with Program objectives, 9mplement ERP actions in concert with the species recovery strategies identified in AB1280 and the Pacific Flyway Plan.	1. To the extent practicable, avoid implementing actions near known wintering areas centered around Bract Tract (Staten Island, Taylor, Bouldin Island, Canal Ranch, and area east around Consumnes River) and in the Butte Sink (from Chico in the north to the Sutter Buttes and from Sacramento River to the west to Highway 99) that could adversely affect foraging and roosting habitat and protect these habitat areas from potential future changes in land use or other activities that could result in the loss or degradation of habitat.
	2. Implementation of proposed ERP actions to enhance agricultural habitats should give priority to improving the abundance and availability of upland agricultural forage (e.g., corn and winter wheat) in the core use area centered around Bract Tract.	2. Restore functional habitat use areas (i.e. habitat is used traditionally and consistently for at least 5 years) before any habitat use areas in core area centered on Bract Tract are converted to unsuitable habitat or is degraded as a result of implementing Program actions.
	3. Implementation of proposed ERP actions to restore wetlands should give priority to restoring and managing wetland habitat area within the core use area centered on Bract Tract that would provide suitable roosting habitat.	3. To the extent practicable, implement ERP restoration of suitable crane habitats (i.e., seasonal wetlands, grasslands, upland croplands, and seasonally flooded agriculture) concurrent with ERP actions that would convert suitable existing habitat to unsuitable habitat (e.g., tidal habitats).
	4. Minimize or avoid recreational uses in the core area centered on Bract Tract that could disrupt crane habitat use patterns from October-March.	

Conservation Measures In Addition to ERP Actions	Conservation Measures that Add Specificity to ERP Actions	Conservation Measures that Avoid, Minimize, or Compensate for Potential Adverse Affects
	5. To the extent consistent with Program objectives, enhance at least 10% of agricultural lands to be enhanced under the ERP in the Delta and the Butte Sink to increase forage abundance and availability for cranes. Priority should be given to implementing these habitat improvements within 10 miles of core habitat area centered on Bract Tract.	

Salt marsh harvest mouse
["r" species with a Recovery Plan]

DRAFT

Conservation Measures In Addition to ERP Actions	Conservation Measures that Add Specificity to ERP Actions	Conservation Measures that Avoid, Minimize, or Compensate for Potential Adverse Affects
Salt marsh harvest mouse ***(Reithrodontomys raviventris):*** Reduce the risk of current and imminent threats to maintaining the current distribution and existing populations of the salt marsh harvest mouse and reestablish and maintain viable species' populations throughout its historic range in the portion of the Bay Region within the ERP focus area.		
1. To the extent practicable, control non-native predator populations in occupied habitat areas and salt marshes enhanced and restored under the ERP.	1. The geographic priorities for implementing ERP actions to protect, enhance, and restore saline emergent wetlands and associated habitats for the salt marsh harvest mouse should be: 1) western Suisun Marsh, 2) Gallinas/Ignacio Marshes, Napa Marshes, and eastern Suisun Marsh, 3) Sonoma Marshes, Petaluma Marshes, and Highway 37 marshes west of Sonoma creek, 4) Point Pinole Marshes, 5) Highway 37 marshes east of Sonoma Creek, and 6) the Contra Costa County Shoreline.	1. Conduct surveys to determine the presence and distribution of salt marsh harvest mice in suitable habitat before implementing Program actions that could result in the loss or degradation of habitat.
2. Conduct research to identify feasible methods for controlling invasive non-native marsh plants and reintroducing salt marsh harvest mice into unoccupied suitable enhanced habitats and restored habitat areas.	2. Coordinate protection, enhancement, and restoration of salt marsh and associated habitats with other federal, state, and regional programs (e.g., the San Francisco Bay Ecosystem Goals Project and USFWS species recovery plans) that could affect management of current and historic habitat use areas to avoid potential conflicts among management objectives and identify opportunities for achieving multiple management objectives.	2. To the extent consistent with Program objectives, avoid implementing Program actions that could result in the degradation or loss of occupied habitat areas.

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Conservation Measures In Addition to ERP Actions	Conservation Measures that Add Specificity to ERP Actions	Conservation Measures that Avoid, Minimize, or Compensate for Potential Adverse Affects
3. Control non-native invasive plants in existing salt marshes where non-native plants have degraded habitat quality and in salt marshes restored under the ERP.	3. Restore wetland and perennial grassland habitats adjacent to occupied habitats to create a buffer of natural habitat to protect populations from potential adverse affects that could be associated with future changes in land use on nearby lands and to provide habitat suitable for the natural expansion of populations.	3. Provide interim management of occupied salt marshes to maintain source populations until restored habitats have developed sufficiently to provide suitable habitat.
4. Conduct research to determine use of restored salt marsh habitats by salt marsh harvest mice and the rate at which restored habitats are colonized.	4. Initial species recovery efforts should be directed to locations where there are immediate opportunities for protection, enhancement, or restoration of suitable habitat.	4. Minimize the adverse effects of the artificial stabilization of salinity ranges.
5. Conduct research to better determine the ecological requirements of the salt marsh harvest mouse for use in designing and managing restored and enhanced habitat areas to benefit the species.	5. To the extent practicable, design dikes constructed in enhanced and restored saline emergent wetlands to provide optimal wetland to upland transitional habitat.	5. To the extent practicable, avoid restoring tidal action to diked marshes that are occupied by Salt marsh harvest mouses until restoration of at least twice as much tidal, high marsh, and wetland to upland transition habitat as would be affected by restoration of tidal exchange has been initiated in the western Suisun marsh. In addition, an equal amount of occupied habitat in the eastern Suisun Marsh as would be affected by restoration of occupied habitat will be maintained as managed marsh to provide suitable species habitat area until newly restored habitat in the western Suisun marsh has developed sufficiently to provide suitable salt marsh harvest mouse habitat.
6. Acquire conservation easements to adjust grazing regimes to enhance wetland to upland transition habitat conditions.	6. To the extent practicable, direct ERP salt marsh enhancement efforts towards existing degraded marshes that are of sufficient size and configuration that are large enough to develop fourth order tidal channels (marshes would likely need to be at least 1,000 acres in size).	
7. To the extent consistent with Program objectives, manage lands purchased or acquired under conservation easements that are occupied by the species to maintain or increase their current population levels.	7. To the extent consistent with Program objectives, design salt marsh enhancements and restorations to provide low-angle upland slopes at the upper edge of marshes to provide for the establishment of suitable and sufficient wetland to upland transition habitat. To the extent feasible, transition habitat zones should be at least 0.25 mile in width.	

Conservation Measures In Addition to ERP Actions	Conservation Measures that Add Specificity to ERP Actions	Conservation Measures that Avoid, Minimize, or Compensate for Potential Adverse Affects
	8. Manage enhanced and restored habitat areas to avoid or minimize potential impacts associated with recreational uses on lands acquired or managed under conservation easements on the salt marsh harvest mouse.	
	9. Direct restoration efforts towards restoration of lands adjacent to occupied habitat areas.	
	10. Direct restoration efforts towards improving tidal circulation to diked wetlands that currently sustain partial tidal exchange.	
	11. Direct some habitat enhancements and restorations towards increasing habitat connectivity among existing and restored tidal marshes.	