

**Table 2. Summary of Proposed Covered Species Habitat Conservation Provided and Mitigation**

**Note to Reviewers:** This table presents draft proposed SAIC recommendations for covered species habitat conservation targets. Targets are identified for Conservation Zones within the Planning Area and Suisun Marsh within which habitat conservation could occur to achieve species objectives. As stated in the BDCP Planning Agreement (2006), the Steering Committee recognizes that it may be necessary or appropriate to wholly or partially implement conservation measures outside of the initial Planning Area (as it is defined in the Planning Agreement) to advance the goals and objectives of the BDCP, including in the Suisun Marsh, Suisun Bay, and areas upstream of the Delta. As such, terrestrial resource conservation measures could be implemented in coordination with other regional conservation plans in locations where the intended species objectives may be achieved. As the Steering Committee finalizes conservation measures, the BDCP Plan Area will evolve to reflect those decisions. Ultimately, the BDCP Plan Area will reflect the full extent of conservation actions. Table acreage values above 10 are rounded to the nearest 10 acres.

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
San Joaquin kit fox								<p><b>Summary of Conservation Provided:</b> Conservation of kit fox will be provided through preservation of its grassland breeding, foraging, and dispersal habitat. A primary stressor on the kit fox is loss and fragmentation of its grassland habitat through urban and agricultural expansion (see Appendix A, <i>Covered Species Accounts</i>) and preservation of this habitat type is considered to be the most effective approach to its conservation. Preservation of breeding habitat is focused on preserving the largest remaining contiguous patches of unreserved breeding habitat, which are located in Conservation Zone 8 south of Highway 4 (see Appendix A, <i>Covered Species Accounts</i>). Conservation Zone 8 supports 75 percent of kit fox breeding habitat in the Planning Area. Breeding habitat in other Conservation Zones occurs in small fragmented patches that likely support minimal habitat function for the species (see habitat model in Appendix A, <i>Covered Species Accounts</i>). Habitat will be located such that it links to the approximate 620 acres of existing preserved habitat in Conservation Zone 8 and maintains movement corridors linking to adjoining kit fox habitats within and adjacent to the Planning Area. Declines in prey abundance associated with ground squirrel poisoning programs have been identified as a stressor contributing to reduced kit fox abundance (see habitat model in Appendix A, <i>Covered Species Accounts</i>). Consequently, preserved grassland will be managed to increase the abundance of San Joaquin kit fox mammalian prey species (e.g., ground squirrels).</p> <p>Following preservation of mitigation and conservation habitat, approximately 42 percent of kit fox grassland habitat in Conservation Zone 8 will be preserved. The proposed habitat conservation actions are expected to maintain sufficient habitat area to sustain the existing Planning Area population and to maintain connectivity with occupied core populations adjacent to the Planning Area that are covered under adjacent and overlapping HCP/NCCPs.</p> <p>[e.g., add specificity of where might go within ECCC Plan] Kit fox habitat within the Planning Area is located on the margin of its range and as such is not considered to support core habitat area for the species. Consequently, to increase the level of conservation benefits provided to kit fox relative to benefits that would be provided by implementing the conservation actions within the Planning Area, the kit fox conservation actions may be implemented within core kit fox habitat areas that are located outside of the Planning Area consistent with conservation plans for those locations.</p> <p><b>Mitigation Component of Conservation:</b> Mitigation for impacts on San Joaquin kit fox habitat is provided as a component of conservation. The extent of habitat mitigation is determined using the USFWS standard guideline 3:1 habitat replacement ratio. [put in acres of impact and acres of mitigation] For each acre of kit fox grassland breeding habitat affected, 3 acres of grassland breeding habitat will be preserved. Affected foraging and dispersal habitat is comprised of cultivated lands that are adjacent to Clifton Court Forebay. Affected cultivated lands are on the valley floor that are adjacent to and generally east of uncultivated grasslands. While kit fox are occasionally known to travel through cultivated habitats, there is</p>

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								no indication that the affected habitat area is either occupied or is accessible for kit fox use. The cultivated lands are also not transitional to other potentially occupied habitats on the valley floor. Therefore, the removal of cultivated lands in the vicinity of uncultivated grasslands (as defined in the BDCP San Joaquin kit fox habitat model) is unlikely to affect the species and therefore the 1,000 acres of preservation/enhancement will also mitigate for this impact
<i>Breeding, foraging, and dispersal habitat</i>	190	0	190	1,000 CZ: 8	0	560 CZ: 8	0	
<i>Foraging and dispersal habitat</i>	670	0	670	0	0	0	0	
Riparian woodrat	0	0	0	0	100 CZ: 7	0	0	<p><b>Summary of Conservation Provided:</b> Riparian woodrat is not known to inhabit the Planning Area (see Appendix A, <i>Covered Species Accounts</i>). Its habitat is comprised of patches of dense shrubby riparian vegetation, patches of which are expected to be restored as a component of BDCP actions to restore 5,000 acres of riparian habitat. These restoration actions could increase the likelihood for the riparian woodrat to reoccupy Planning Area habitats. Should the riparian woodrat occurrences be located within the Planning Area, BDCP will restore and manage 100 acres of riparian habitat that support the elements of this species habitat located within and adjacent to occupied habitat. Habitat would be restored in patches of at least 25 acres, which is believed to exceed the minimum habitat patch size requirements for the species. The extent of existing known occupied habitat is approximately 250 acres (see Appendix A, <i>Covered Species Accounts</i>) and restoration of 100 acres additional habitat located adjacent to newly occupied habitat areas is expected to conserve the species by substantially increasing the extent of available habitat.</p> <p><b>Mitigation Component of Conservation:</b> BDCP actions are not expected to affect riparian woodrat habitat or individuals, therefore, no mitigation is required.</p>
Salt marsh harvest mouse								<p><b>Summary of Conservation Provided:</b> The salt marsh harvest mouse within the scope of BDCP conservation actions is only present in Suisun Marsh, which is encompassed by Conservation Zone 11. Conservation of salt marsh harvest mouse will be provided through restoration and management of brackish tidal marsh plain habitats that historically supported salt marsh harvest mouse habitat in Suisun Marsh and associated preserved upland refugia habitats. Much of the existing salt marsh harvest mouse habitat is supported by suitable patches of habitat within non-tidal managed wetlands that the mouse has adapted to following reclamation of historically Suisun Bay tidal marshes. Restored marsh plain habitats will be designed to the extent practicable within site constraints to provide the full range of tidal to upland environmental gradients that were associated with historical Suisun Bay tidal marsh conditions. This approach is expected to result in restoration of patches of mouse habitat within a mosaic of larger marsh plain habitats. The proposed restoration of tidal marsh plain in Suisun Marsh is consistent with and helps achieve the salt marsh harvest mouse objectives of the draft tidal marsh ecosystems recovery plan (USFWS 2010) and objectives of the Suisun Marsh Restoration Plan (under development).</p> <p>Habitat will be restored in a manner that minimizes temporary effects of habitat loss on the species that is expected between the time that restoration actions are initiated and restored tidal marsh plain develops as mouse habitat. Direct removal of existing tidal marsh plain habitat will be minimized consistent with achieving overall habitat restoration objectives, although some existing tidal marsh is expected to be desiccated or inundated as a result of changes in the existing tidal range following breaching of dikes. It is anticipated that following completion of all tidal habitat restoration in Suisun Marsh, tidal marsh plain</p>

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								<p>habitat will be restored in larger patches than the existing patches of habitat that are currently fragmented by dikes, roads, unsuitable habitat areas, and other infrastructure. Non-native predators (e.g., feral cats) are believed to be an important stressor on this species. Design and management of restored habitat will include control of non-native predators to help maintain the species abundance (e.g., through direct removal of predators or through design of restored habitats that minimize access of predators into occupied habitats). Restored habitat will also be monitored to assess the status of the species and will be adaptively managed to ensure high habitat function for the mouse is maintained over time. It is expected that restoration actions will substantially improve habitat conditions for salt marsh harvest mouse in combination with predator control actions and a reduction in habitat fragmentation associated with restoration activities will further improve habitat conditions.</p> <p>Following full implementation of BDCP actions, the extent of salt marsh harvest mouse habitat is expected to be increased between 13 and 23 percent from current conditions. This increase in habitat extent in combination with implementation of mouse-specific management actions is expected to sustain the existing population and provide for future expansion of its abundance and distribution.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on salt marsh harvest mouse habitat result from restoration of tidal habitat that removes its non-tidal managed wetland primarily through inundation of habitat patches that are below sea level and tidal marsh habitat that may be desiccated as a result of restoration-induced changes in tidal range. This is no standard mitigation ratio to address habitat impacts on salt marsh harvest mouse. Habitat replacement ratios typically range between 1:1 and 3:1, and are generally designed to address permanent losses of habitat. Because impacts associated with BDCP are a result of actions designed to restore the natural tidal marsh conditions and functions that historically supported the mouse, mitigation will be provided by restoring one acre of tidal marsh plain for each acre of habitat removed.</p>
<i>Wetland habitat</i>	2,260	0	2,260	0	3,680-4,830 CZ: 11	0	2,260 CZ: 11	
<i>Upland habitat</i>	670	0	670	350-700 CZ: 11	350-700 CZ: 11	350-700 CZ: 11	0	
Riparian brush rabbit	0	0	0	0	100 CZ: 7	0	0	<p><b>Summary of Conservation Provided:</b> Conservation of riparian brush rabbit will be provided through restoration of 100 acres of riparian habitat that supports brush rabbit habitat elements within its historical range along Old River, Middle River, and/or the San Joaquin River in Conservation Zone 7. Habitat would be restored in patches of at least 25 acres, which is believed to exceed the minimum habitat patch size requirements for the species. Restored habitat will be located such that linkages to currently occupied habitat are provided. In addition to the species limited distribution and abundance, flooding and predation are primary stressors on this species. The restored riparian brush rabbit habitat will be designed to incorporate flood refugia habitat and will be designed and managed to control predation. The extent of existing known occupied habitat is approximately 270 acres (see Appendix A, <i>Covered Species Accounts</i>) and restoration of 100 acres additional habitat located adjacent to occupied habitat areas is expected to conserve the species by substantially increasing the extent of available habitat. A portion of the remaining 4,900 acres of BDCP restored riparian habitat is expected to also support riparian brush habitat over the term of the BDCP. In addition, the restored habitat will serve to accommodate the future expansion of the existing population or provide habitat for future introductions of the species. The proposed restoration and management of riparian brush rabbit habitat are expected to sustain the existing population and provide for</p>

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								future expansion of its abundance and distribution within the Planning Area. <b>Mitigation Component of Conservation:</b> BDCP actions are not expected to affect riparian brush rabbit habitat or individuals, therefore, no mitigation is required.
Townsend's western big-eared bat								<p><b>Summary of Conservation Provided:</b> Presence of Townsend's big-eared bat has not been documented in the Planning Area or Suisun Marsh, but is known to occur in Central Valley locations near the Planning Area and presumably could be present in the Planning Area and Suisun Marsh (see Appendix A, <i>Covered Species Accounts</i>). Conservation of Townsend's western big-eared bat is focused on restoration of its roosting and primary foraging habitats that are comprised of woody riparian vegetation. Restored riparian habitats are anticipated to be located primarily within Conservation Zones 1, 4, 7, and/or 11. Conservation is focused on restoration of roosting and primary foraging habitat because these habitats have been substantially reduced from historical conditions within the Central Valley and its secondary foraging habitats are comprised of all other land cover types present in the Planning Area and Suisun Marsh. Secondary foraging habitats (e.g., cultivated lands) will be preserved through actions to provide conservation for other covered species (e.g., preservation of Swainson's hawk foraging habitat) and restoration of tidal marsh plain, subtidal aquatic, non-tidal marsh, and riparian habitats. The production of flying insects and, consequently the function of restored habitats as bat foraging habitat is expected to be greater in restored habitats than affected cultivated land foraging habitats. Restored habitats will provide a diversity microhabitats conducive to flying insect production habitats that will favor insect production relative to the homogenous microhabitat conditions associated with cultivated lands that are subject to routine application of pesticides. Additionally, preserved and restored habitats will be monitored to assess occupancy by the species and managed to minimize human disturbances that could affect roosting bats.</p> <p>Restoration of riparian habitat will increase the extent of roosting and primary foraging within the Planning Area and Suisun Marsh by approximately 28 percent. The substantial increase in this species core habitat in combination with preservation and enhancement of its secondary foraging habitats is expected to sustain the existing abundance and distribution of Townsend's big-eared bat and provide for the future growth of its population.</p> <p><b>Mitigation Component of Conservation:</b> Habitat mitigation guidelines have not been established for this species. Mitigation for roosting and primary foraging habitat will be provided through restoration of 1 acre of habitat for each acre of affected habitat. All Planning Area land cover types, including BDCP restored habitats, support Townsend's western big-eared bat foraging habitat and thus no net loss of foraging habitat is expected. Secondary foraging habitat is abundant and not likely limiting the species abundance and distribution. Consequently, temporary removal of secondary foraging habitat is unlikely to affect the species and, therefore, no mitigation is proposed.</p>
<i>Roosting and primary foraging habitat</i>	780	0	780	0	5,000 CZ: Any CZ	0	960 CZ: Any CZ	
<i>Primary foraging habitat</i>	170	1	170	0		0		
<i>Secondary foraging habitat</i>	0	69,839	69,839	0	0	0	0	
Suisun shrew	440	0	440	0	3,670-4,820	0	440	<b>Summary of Conservation Provided:</b> The Suisun shrew within the scope of BDCP conservation actions is only present in Suisun Marsh, which is encompassed by Conservation Zone 11. Conservation of Suisun

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					CZ: 11		CZ: 11	<p>shrew will be provided through restoration and management of brackish tidal marsh plain habitats that support its habitat in Suisun Marsh and associated preserved upland refugia habitats. Restored marsh plain habitats will be designed to the extent practicable within site constraints to provide the full range of tidal to upland environmental gradients that were associated with historical Suisun Bay tidal marsh conditions. This approach is expected to result in restoration of patches of shrew habitat within a mosaic of larger marsh plain habitats. Restored tidal marsh plain will also include preservation and enhancement of adjacent uplands in sufficient quantity and width to function as flood refugia habitat during high water events. This upland habitat will be designed and managed to minimize exposure to predation during flood events. The proposed restoration of tidal marsh plain in Suisun Marsh is consistent with and helps achieve the Suisun shrew objectives of the draft tidal marsh ecosystems recovery plan (USFWS 2010) and objectives of the Suisun Marsh Restoration Plan (under development).</p> <p>Conservation of Suisun shrew will be provided through restoration and management of brackish tidal marsh plain and associated preserved upland refugia habitats as described for mitigation habitat. Restoration of tidal marsh in Suisun Marsh is consistent with and helps achieve the Suisun shrew objectives of the draft tidal marsh ecosystems recovery plan (USFWS 2010).</p> <p>Habitat will be restored in a manner that minimizes temporary effects of habitat loss on the species that is expected between the time that restoration actions are initiated and restored tidal marsh plain develops as shrew habitat. Direct removal of existing tidal marsh plain habitat will be minimized consistent with achieving overall habitat restoration objectives, although some existing tidal marsh is expected to be desiccated or inundated as a result of changes in the existing tidal range following breaching of dikes. It is anticipated that following completion of all tidal habitat restoration in Suisun Marsh, tidal marsh plain habitat will be restored in larger patches than the existing patches of habitat that are currently fragmented by dikes, roads, unsuitable habitat areas, and other infrastructure. Restored habitat will also be monitored to assess the status of the species and will be adaptively managed to ensure high habitat function for the shrew is maintained over time. Following full implementation of BDCP actions, the extent of Suisun shrew habitat is expected to be increased between 36 and 49 percent from current conditions. This increase in habitat extent in combination with implementation of shrew-specific management actions is expected to sustain the existing population and provide for future expansion of its abundance and distribution.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on Suisun shrew habitat result from restoration of tidal habitat that desiccates its tidal marsh plain habitat primarily through restoration-induced changes in tidal range. This is no standard mitigation ratio to address habitat impacts on Suisun shrew. Because impacts associated with BDCP are a result of actions designed to restore the natural tidal marsh conditions and functions that historically supported the shrew, mitigation will be provided by restoring one acre of tidal marsh plain for each acre of habitat removed.</p>
Tricolored blackbird								<p><b>Summary of Conservation Provided:</b> Conservation of tricolored blackbird is directed at substantially increasing the extent of its tidal and non-tidal emergent marsh nesting habitat in conjunction with preservation of nearby foraging habitats. Restoration of brackish and freshwater tidal marsh plain habitats are expected to support large patches of emergent vegetation suitable for nesting. Because tidal nesting habitat will be restored in large contiguous patches, restored nesting habitat is expected to provide higher nesting habitat functions than existing affected habitats, which are generally fragmented and subject to disturbance during the breeding season. The proposed restoration of up to approximately 27,000 acres of tidal marsh plain is expected to increase the available extent of nesting habitat in the Planning Area and Suisun Marsh several fold. Foraging habitats preserved within a few miles of nesting habitat will provide</p>

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								<p>food resources necessary for successful rearing and fledging of young and all preserved foraging habitats will support wintering birds. The proposed preservation of foraging habitat will increase the extent of currently preserved habitat from 24 to approximately 29 percent within the Planning Area and Suisun Marsh. Because the Planning Area and Suisun Marsh recently have only supported a small number of nesting colonies (recent surveys of the Planning Area located two nesting colonies; see Appendix A, <i>Covered Species Accounts</i>) and is currently a major wintering area, the proposed restoration of nesting habitat and preservation of foraging habitats are expected to be sufficient to sustain the existing breeding and wintering population and provide for future expansion of tricolored blackbird abundance and distribution.</p> <p><b>Mitigation Component of Conservation:</b> All but 11 acres of tricolored blackbird emergent marsh breeding habitat will be affected by restoration of tidal habitats. This analysis assumes that restoration of tidal habitat will remove all currently suitable habitat, although the actual extent of habitat that will be removed is undetermined and it is likely that some portion of the existing suitable tricolored blackbird breeding habitat will be retained. Nesting habitat mitigation will be provided through restoration of tidal marsh plain that will support patches of emergent vegetation suitable for nesting. Implementation of BDCP actions will also avoid removal of active nesting colonies. There are no standard habitat mitigation guidelines for impacts on tricolored blackbird habitat. Mitigation for impacts on nesting habitat will be provided by restoring 0.5 acre of nesting habitat for each acre of affected habitat. This mitigation habitat replacement ratio is considered appropriate because, based on the paucity of known nesting colonies in the Planning Area and Suisun Marsh, much of the affected nesting habitat is unoccupied and its removal is not expected to affect the species. Because the primary factors limiting tricolored blackbird abundance and distribution appear to be the availability of high functioning nesting habitat free from disturbance and not foraging habitat (see Appendix A, <i>Covered Species Accounts</i>), impacts on foraging habitat will be mitigated through preservation of 0.5 acre of foraging habitat or each affected acre. Impacts on non-agricultural foraging habitat will be mitigated through preservation of grassland, alkali seasonal wetland, and vernal pool complex habitat, and impacts on agricultural foraging habitats will be mitigated through preservation of cultivated lands or natural foraging habitats. Preserved habitat will be located within at least 8 miles of suitable nesting habitats, the maximum distance birds are known to forage from nesting habitat (see Appendix A, <i>Covered Species Accounts</i>), to provide forage in support of nesting birds.</p>
<i>Nesting habitat</i>	4,120	0	4,120	0	17,370-26,870 CZ 1, 2, 4, 7, 11	0	4,120 CZ 1, 2, 4, 7, 11	
<i>Foraging habitat: non-agriculture</i>	5,540	2	5,540	8,700 CZ1,2, or 4	0	2770 CZ1,2, or 4	0	
<i>Foraging habitat: agriculture</i>	17,040	1,630	18,670	16,620-32,640 CZ 1-9	0	9,340 CZ 1-9	0	
Suisun song sparrow	4,680	0	4,680	0	3,680-4,830 CZ:11	0	2,340 CZ 11	<p><b>Summary of Conservation Provided:</b> Opportunities for the conservation of Suisun song sparrow are limited to Suisun Marsh (i.e., Conservation Zone 11) because the species is endemic to marshes surrounding Suisun Bay. Conservation of Suisun song sparrow will be provided through restoration and management of brackish tidal marsh plain habitats that historically supported Suisun song sparrow habitat</p>

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								<p>in Suisun Marsh. Much of the existing Suisun song sparrow habitat is supported by suitable patches of habitat within non-tidal managed wetlands that the sparrow has adapted to following reclamation of historically Suisun Bay tidal marshes. Restored marsh plain habitats will be designed to the extent practicable within site constraints to provide the full range of tidal to upland environmental gradients that were associated with historical Suisun Bay tidal marsh conditions. This approach is expected to result in restoration of patches of sparrow habitat within a mosaic of larger marsh plain habitats. Restored habitat will be designed to include channel habitat edges that support high functioning Suisun song sparrow nesting habitat, including establishing tidal marsh habitats dominated by <i>Salicornia</i>, <i>Spartina</i>, and <i>Grindelia</i>. The proposed restoration of tidal marsh plain in Suisun Marsh is consistent with and helps achieve the Suisun song sparrow objectives of the draft tidal marsh ecosystems recovery plan (USFWS 2010) and objectives of the Suisun Marsh Restoration Plan (under development).</p> <p>Habitat will be restored in a manner that minimizes temporary effects of habitat loss on the species that is expected between the time that restoration actions are initiated and restored tidal marsh plain develops as mouse habitat. Direct removal of existing tidal marsh plain habitat will be minimized consistent with achieving overall habitat restoration objectives, although some existing tidal marsh plain is expected to be desiccated or inundated as a result of changes in the existing tidal range following breaching of dikes. It is anticipated that following completion of all tidal habitat restoration in Suisun Marsh, tidal marsh plain habitat will be restored in larger patches than the existing patches of habitat that are currently fragmented by dikes, roads, unsuitable habitat areas, and other infrastructure. Non-native predators (e.g., feral cats) are believed to be an important stressor on this species. Design and management of restored habitat will include control of non-native predators to help maintain the species abundance (e.g., through direct removal of predators or through design of restored habitats that minimize access of predators into occupied habitats). Restored habitat will also be monitored to assess the status of the species and will be adaptively managed to ensure high habitat function for the mouse is maintained over time. Non-native predators (e.g., feral cats) are believed to be an important stressor on this species. Design and management of restored habitat will include control of non-native predators to help maintain the species abundance (e.g., through direct removal of predators or through design of restored habitats that minimize access of predators into occupied habitats). Although restoration of tidal marsh is estimated to result in a net loss of up to a 1,000 acres to a net gain of 150 acres, it is expected that restoration actions will substantially improve habitat conditions for Suisun song sparrow and enhance breeding populations relative current habitat conditions for the species. In addition, predator control activities, reduction in pesticide use, and a reduction in habitat fragmentation associated with restoration activities will further improve habitat conditions. Monitoring will provide data on baseline populations, local effects of restoration activities, and post-restoration distribution and abundance of Suisun song sparrow.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on Suisun song sparrow habitat result from restoration of tidal habitat that removes its non-tidal managed wetland primarily through inundation of habitat patches that are below sea level and tidal marsh habitat that may be desiccated as a result of restoration-induced changes in tidal range. Impact calculations were based on vegetation type and association; however, Suisun song sparrows most frequently are found along relatively narrow corridors associated with stream channels which are not included in the species' habitat model; consequently, impacts based on modeled habitat likely substantially over estimate impacts relative to impacts on its actual habitat, which occurs in patches within the modeled habitat. Song sparrow habitat will be mitigated in the same general locations as affected habitat and will reestablish its historical tidal Suisun Marsh habitat conditions. There are no standard habitat mitigation guidelines for impacts on Suisun song sparrow habitat. Each acre of affected habitat will be replaced with 0.5 acre of restored habitat that is expected to support substantially higher habitat function for the song sparrow than the affected habitat, much of which is not managed as song</p>

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								sparrow habitat. This mitigation habitat replacement ratio is considered appropriate because the restoration of habitat elements necessary to support Suisun song sparrow are expected to keep pace with removal of existing habitat, a substantial amount of the total impact acreage is unlikely to be occupied or suitable for Suisun song sparrow, and overall habitat conditions are expected to improve from the current conditions.
Yellow-breasted chat								<p><b>Summary of Conservation Provided:</b> Conservation of yellow-breasted chat is directed at increasing the extent of primary and secondary riparian nesting and migratory habitats to ensure that the existing abundance of chat in the Planning Area is sustained and sufficient riparian habitat is maintained to support potential future increases in its abundance and distribution. Primary habitat includes a significant shrub layer that is typically found within chat breeding territories. Secondary habitat is riparian habitat with a less developed shrub layer. At least 3,000 of the 5,000 acres of BDCP restored riparian habitat will include a midstory layer that supports primary nesting and migratory habitat; secondary nesting and migratory habitat will be supported by any remaining restored riparian habitat. It is anticipated that much of the restored riparian habitat will be restored in large wide patches that will minimize the potential for cowbird nest parasitism which is believed to be a stressor on the species (see Appendix A, <i>Covered Species Accounts</i>). The proposed restoration of yellow-breasted chat riparian habitat will increase the extent of available habitat in the Planning Area by approximately 30 percent and, following BDCP implementation, approximately 37 percent of its habitat will be under preservation. This substantial increase in available managed habitat is expected to sustain the existing Planning Area populations and providing the basis for future increases in its abundance and distribution.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on yellow-breasted chat result from BDCP actions that remove yellow-breasted chat riparian habitats. Few chats have been detected in the Planning Area (see Appendix A, <i>Covered Species Accounts</i>), and thus the majority of suitable riparian habitat is believed to be unoccupied by this species. The available information indicates that the species occurs in low densities in the Planning Area; however, complete surveys of the Planning Area have not been conducted. There is no standard replacement ratio for losses of yellow-breasted chat habitat. However, chat-specific mitigation is generally not required for unoccupied habitat. Because removal of most of its riparian habitat is likely not occupied, mitigation will be provided by restoring and managing 1 acre of primary habitat for each acre of affected primary habitat.</p>
<i>Primary nesting and migratory habitat [includes former Suisun Marsh category]</i>	310	0	310	0	≥3,000CZ: Any CZ	0	310	
<i>Secondary nesting and migratory habitat</i>	460	1	460	0	≤2,000 CZ: Any CZ	0	0	
Western burrowing owl								<p><b>Summary of Conservation Provided:</b> Conservation of western burrowing owl is directed at maintaining a suitable habitat landscape across the Planning Area and Suisun Marsh and adjacent lands through strategic acquisition and management of grassland and agricultural preserves. Conservation will focus on preservation of grasslands that support moderate to high habitat value and that are connected to burrowing owl habitats adjacent to the Planning Area to preclude further fragmentation of important habitats. The distribution of high and moderate value habitat in the Planning Area is consistent with the distribution of burrowing owl occurrences. Few burrowing owls have been documented from low value habitat areas. At</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								<p>least 2,000 acres of moderate value habitat are anticipated to be conserved through preservation of Swainson's hawk and white-tailed kite foraging habitats that provide a moderate level of function for burrowing owl. Conserved habitat will be located within or near to known occupied habitat and will be managed to increase the availability of nesting burrows and prey species. Habitat will be preserved in large patches that are connected to existing habitat areas and will be managed in conjunction with preserved mitigation habitats. An estimated 54 percent of the high value, 32 percent of the moderate value, and 16 percent of the low value habitat is currently preserved. Through preservation of an additional 8,000 acres of currently unpreserved high value grassland habitat, a total of 66 percent of the high value burrowing owl habitat in the Planning Area will be under preserved status. Through preservation of additional acres of unpreserved moderate value habitat, it is expected that up to 48 percent of the moderate value habitat in the Planning Area will be under preserved status. Sufficient low value habitat, primarily agricultural lands, are expected to persist in the Planning Area over time to support occasional occurrences of burrowing owls in the central and south Delta and thus there is no target for replacement or conservation of low value habitat for burrowing owls. Implementation of the proposed conservation actions are expected to sustain existing burrowing owl populations within and adjacent to the Planning Area and to provide sufficient habitat area to allow for future population growth.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on western burrowing owl result from BDCP actions that remove burrowing owl nesting and foraging habitat. BDCP actions are estimated to permanently affect 21,575 acres of western burrowing owl habitat, which consists of grasslands, managed wetlands, and cultivated lands. The value of foraging cover types is highly variable, particularly in agricultural landscapes. Standard DFG burrowing owl mitigation is assessed on the presence of occupied breeding or wintering burrows. However, because the entire Planning Area has not been sufficiently surveyed for the presence of burrowing owls, mitigation is proposed on the basis of habitat value. Mitigation for effects on high value grassland habitat will be provided by preserving 1 acre of grassland habitat for each acre of affected habitat and 0.5 acre of grassland or pastureland habitat will be preserved for each acre of affected moderate value habitat (i.e., primarily pasturelands). Mitigation for low value cultivated lands is not proposed because they are likely to be largely unoccupied and it is expected that the proposed habitat mitigation will substantially exceed actual impacts.</p>
<i>High-value habitat</i>	3,430	2	3,430	8,000 CZ: 1, 8, and 11	0	3,430 CZ 1, 2, 4, 7, 8, 9	0	
<i>Moderate-value habitat</i>	3,780	20	3,800	>3,900 CZ: Any CZ	0	1,900CZ: Any CZ	0	
<i>Low-value habitat</i>	14,370	1,620	15,990	0	0	0	0	
Greater sandhill crane								<p><b>Summary of Conservation Provided:</b> Conservation of greater sandhill crane is directed at preserving and restoring wintering habitat sufficient to sustain the wintering population into the future and provide for future growth of the population. At least 2,000 acres of preserved Swainson's hawk and white-tailed kite foraging habitat that also supports high functioning greater sandhill crane foraging habitat will be located within the Primary Winter Use Area. Greater sandhill crane winter roosting habitats are limited within the Planning Area and roosting cranes are intolerant of disturbances and readily will abandon roosts if disturbed. Lack of suitable and dependable roosting habitat limits the ability of cranes to use foraging</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								<p>habitats. To address this species' requirement, at least 2 roost sites of at least 160 acres each in proximity to preserved foraging habitats will be created to ensure the future availability of sufficient wintering habitat (preserved and non-preserved) to support the portion of the Central Valley population that winters in the Planning Area. Roost sites will be located in areas that are not subject to disturbances and will be designed to minimize the accessibility of roost sites to predators.</p> <p>Preserved agricultural habitats would be managed to provide high quality foraging habitat and to minimize human disturbances during the crane wintering period. Preserved foraging habitat patches would be at least 160 acres in size to minimize the potential effects of human-associated visual and noise disturbances adjacent to preserved foraging habitat on crane foraging behaviors. Approximately 88 percent of foraging habitat within the primary use area is located below sea level and potentially subject to future loss with levee failures. Consequently, at least 1,000 acres of the preserved wintering habitat will be located at elevations above sea level. Additionally, at least an estimated 5,000 acres of crane foraging habitat in the secondary use zone will be preserved to provide foraging habitat for Swainson's hawk and white-tailed kite. Although preservation of habitat in the secondary zone will not likely benefit the species at this time, maintaining these habitats will ensure alternate wintering areas are available for the crane should catastrophic loss of primary zone habitats result from levee failures and will ensure the availability of foraging habitat in support of any future population growth. Following implementation of BDCP actions, at least 42 percent of primary use zone habitats will be preserved. Preservation and management of existing foraging habitats and restoration and management of roost sites are expected to ensure that the existing abundance of wintering cranes in the Planning Area are maintained and are expected to provide sufficient wintering habitat to accommodate potential future expansions in the population.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on greater sandhill crane result from BDCP actions that remove greater sandhill crane wintering habitat in the Primary Winter Use Area. Habitat located in the Secondary Winter Use Area is only occasionally used by a few individuals among the entire Delta population which concentrates in the Primary Winter Use Area. Consequently, mitigation is not proposed removal of foraging habitats in the Secondary Winter Use Area because they are largely unoccupied and impacts on foraging habitat are not expected to impact or alter the behaviors of greater sandhill crane. BDCP actions are estimated to permanently affect 3,915 acres of greater sandhill crane foraging habitat, which consists of grasslands, managed wetlands, and cultivated lands. The value of foraging cover types is highly variable, particularly in agricultural landscapes. To address this variability, the relative value of each cover type was estimated to more accurately reflect use of the landscape, the distribution of the species, and to develop appropriate conservation strategies. Foraging cover types were classified into four ranking categories based on documented use and estimated relative value, from 0.1 to 1.0. Acres of each type were converted to habitat units by multiplying the actual acres by the value ranking. Based on this method, the total habitat units of impacted foraging habitat is 2,846. There are no standard guidelines for mitigating loss of greater sandhill crane wintering habitat. To fully mitigate effects on greater sandhill crane wintering habitat, impacts on greater sandhill crane foraging habitat value will be mitigated by preserving foraging habitat that replaces the affected foraging habitat value. To mitigate the loss of habitat functions, it is anticipated that foraging habitat with per acre foraging habitat functions of 1.0 to 0.5 will be preserved. Based on this approach, 2,846 and 5,692 acres of foraging habitat will be annually preserved. Preserved foraging habitat may be comprised of grassland, managed wetland, and cultivated lands that are located within the primary use area. If it is desirable to preserve lands that support lesser per acre foraging habitat value for greater sandhill crane to achieve other covered habitat species objectives, additional lands may be required to achieve mitigation.</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
Primary use area	3,920	815	4,730	>4,850 CZ: 3, 4, and/or 5	320	2,850-5,700 CZ: CZ: 3, 4, and/or 5	0	
Secondary use area	276	338	614	0	0	0	0	
California black rail	5,160	0	5,160	0	16,970-26,470 CZ: 1, 4, 5, 7, and 11	0	5,160 CZ: 1, 4, 5, 7, and/or 11	<p><b>Summary of Conservation Provided:</b> Conservation of California black rail is directed at restoring tidal marsh conditions that historically supported rail habitats in the Planning Area and Suisun Marsh. Within the Planning Area, existing habitats are limited primarily to small and isolated remnant patches of emergent vegetation along Delta channels. Because opportunities for conserving species habitats along existing tidal channels is limited by levees, conservation will be provided through restoration of large tracts of brackish and freshwater tidal marsh plain throughout the Planning Area and Suisun Marsh where such restoration is practicable. Restored marsh plain habitats will be designed to the extent practicable within site constraints to provide the full range of tidal to upland environmental gradients that were associated with historical Suisun Bay tidal marsh conditions. This approach is expected to result in restoration of patches of rail habitat within a mosaic of larger marsh plain habitats. The proposed restoration of tidal marsh plain in Suisun Marsh is consistent with and helps achieve the salt marsh harvest mouse objectives of the draft tidal marsh ecosystems recovery plan (USFWS 2010) and objectives of the Suisun Marsh Restoration Plan (under development).</p> <p>Habitat will be restored in a manner that minimizes temporary effects of habitat loss on the species that is expected between the time that restoration actions are initiated and restored tidal marsh plain develops as rail habitat. Direct removal of existing tidal marsh plain habitat will be minimized consistent with achieving overall habitat restoration objectives, although some existing tidal marsh is expected to be desiccated or inundated as a result of changes in the existing tidal range following breaching of dikes. It is anticipated that following completion of all tidal habitat restoration in Suisun Marsh, tidal marsh plain habitat will be restored in larger patches than the existing patches of habitat that are currently fragmented by dikes, roads, unsuitable habitat areas, and other infrastructure. Non-native predators (e.g., feral cats) are believed to be an important stressor on this species. Design and management of restored habitat will include control of non-native predators to help maintain the species abundance (e.g., through direct removal of predators or through design of restored habitats that minimize access of predators into occupied habitats). Restored habitat will also be monitored to assess the status of the species and will be adaptively managed to ensure high habitat function for the mouse is maintained over time. It is expected that restoration actions will substantially improve habitat conditions for California black rail and enhance breeding populations.</p> <p>Following full implementation of BDCP actions, the extent of California black rail habitat is expected to be increased between 35 and 63 percent from current conditions. This increase in habitat extent in combination with implementation of rail-specific management actions is expected to sustain the existing population and provide for future expansion of its abundance and distribution.</p> <p><b>Mitigation Component of Conservation:</b> All but 6 acres of the impacted California black rail marsh habitat will be affected by restoration of tidal habitat. The extent of rail habitat is based on the distribution of vegetation types and associations; however, it is not based on other habitat elements, particularly water depth that is essential to rail occupancy. Consequently, impacts based on modeled habitat likely substantially over estimate impacts relative to impacts on its actual habitat, which occurs as patches within the modeled habitat. There are no standard habitat mitigation guidelines for impacts on black rail habitat. Mitigation for projects affecting black rail habitat typically provide 1 to 4 acres of habitat for each affected</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								acre of habitat. Because impacts result from restoration of the natural marsh conditions that historically supported the species and, as such, are expected to support habitat patches of higher function than habitat patches that would be affected, mitigation is provided by restoring and managing 1 acre of tidal marsh plain habitat for each acre of impacted habitat.
California clapper rail	400	0	400	0	3,680-4,830 CZ: 11	0	400 CZ: 11	<p><b>Summary of Conservation Provided:</b> Conservation of California clapper rail will be provided through restoration and management of brackish tidal marsh plain habitats that historically supported salt marsh harvest mouse habitat in Suisun Marsh and associated preserved upland refugia habitats. Restored marsh plain habitats will be designed to the extent practicable within site constraints to provide the full range of tidal to upland environmental gradients that were associated with historical Suisun Bay tidal marsh conditions. This approach is expected to result in restoration of patches of rail habitat within a mosaic of larger marsh plain habitats. The proposed restoration of tidal marsh plain in Suisun Marsh is consistent with and helps achieve the California clapper rail objectives of the draft tidal marsh ecosystems recovery plan (USFWS 2010) and objectives of the Suisun Marsh Restoration Plan (under development).</p> <p>Habitat will be restored in a manner that minimizes temporary effects of habitat loss on the species that is expected between the time that restoration actions are initiated and restored tidal marsh plain develops as mouse habitat. Direct removal of existing tidal marsh plain habitat will be minimized consistent with achieving overall habitat restoration objectives, although some existing tidal marsh is expected to be desiccated or inundated as a result of changes in the existing tidal range following breaching of dikes. It is anticipated that following completion of all tidal habitat restoration in Suisun Marsh, tidal marsh plain habitat will be restored in larger patches than the existing patches of habitat that are currently fragmented by dikes, roads, unsuitable habitat areas, and other infrastructure. Non-native predators (e.g., feral cats) are believed to be an important stressor on this species. Design and management of restored habitat will include control of non-native predators to help maintain the species abundance (e.g., through direct removal of predators or through design of restored habitats that minimize access of predators into occupied habitats). Restored habitat will also be monitored to assess the status of the species and will be adaptively managed to ensure high habitat function for the rail is maintained over time. It is expected that restoration actions will substantially improve habitat conditions for California clapper rail in combination with predator control actions and a reduction in habitat fragmentation associated with restoration activities will further improve habitat conditions.</p> <p>Following full implementation of BDCP actions, the extent of California clapper rail habitat is expected to be increased between 12 and 17 percent from current conditions. This increase in habitat extent in combination with implementation of rail-specific management actions is expected to sustain the existing population and provide for future expansion of its abundance and distribution.</p> <p><b>Mitigation Component of Conservation:</b> California clapper rail marsh habitat will only be affected by BDCP tidal habitat restoration actions in Suisun Marsh. The extent of rail habitat is based on the distribution of vegetation types and associations; however, it is not based on other habitat elements, particularly proximity to tide channels that supports preferred nesting habitat. Consequently, impacts based on modeled habitat likely over estimate impacts relative to impacts on its actual habitat, which occurs as patches within the modeled habitat.</p> <p>There are no standard habitat mitigation guidelines for impacts on clapper rail habitat. Mitigation for projects affecting clapper rail habitat typically provide 1 to 4 acres of habitat for each affected acre of habitat. Because impacts result from restoration of large contiguous patches of natural marsh that historically supported the species and, as such, are expected to support habitat patches of higher function than habitat patches that would be affected, mitigation is provided by restoring and managing 1 acre of</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								restored tidal marsh plain for each acre of impacted habitat.
White-tailed kite								<p><b>Summary of Conservation Provided:</b> Conservation of white-tailed kite is directed at maintaining a suitable nesting and foraging landscape across the Planning Area and Suisun Marsh and adjacent lands through strategic acquisition and management of grassland, seasonal wetland, and agricultural preserves and restoring riparian nesting habitat, much of which will be located near preserved foraging habitats. At least █ percent of preserved foraging habitat will be located at elevations above sea level to ensure that foraging habitat is maintained for white-tailed kites should potential future Delta levee failures result in inundating substantial foraging habitat area. It is anticipated that all of the restored riparian habitat will be located within foraging flight distance to preserved foraging habitat, thus increasing the functions of both types of habitat for the species. Furthermore, patches of nesting habitat located within lands preserved for other purposes will also be maintained and all preserved habitats supporting active nest sites will be managed to minimize human disturbances to during the breeding season.</p> <p>Preserved grasslands and agricultural lands will be managed to provide high value white-tailed kite foraging habitat. Conservation will occur in cooperation and in conjunction with neighboring and overlapping HCP/NCCPs to ensure that conservation actions occur where they most benefit the regional white-tailed kite population and where they are compatible with conservation of other agricultural and riparian-associated species. It is also expected that ongoing agricultural land uses within and adjacent to the Planning Area will also continue to support foraging habitat for white-tailed kite nesting and wintering in the Planning Area. The proposed conservation is expected to sustain the existing population of white-tailed kites and provide for future increases in its abundance and distribution within and adjacent to the Planning Area.</p> <p>An estimated 25 percent of white-tailed kite foraging habitat within the Planning Area is currently preserved on state and federal wildlife refuges, other state-owned lands, and mitigation banks and is expected to remain suitable white-tailed kite foraging habitat. Following implementation of BDCP actions, an estimated 27 and 32 percent of the total available foraging habitat will be preserved and the extent of nesting habitat will be increased by approximately 25 percent.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on white-tailed kite result from BDCP actions that remove white-tailed kite nesting and foraging habitat. BDCP actions are estimated to permanently affect 36,071 acres of white-tailed kite foraging habitat, which consists of grasslands, managed wetlands, and cultivated lands. The value of foraging cover types is highly variable, particularly in agricultural landscapes. To address this variability, the relative value of each cover type was estimated to more accurately reflect use of the landscape, the distribution of the species, and to develop appropriate conservation strategies. Foraging cover types were classified into four ranking categories based on documented use and estimated relative value, from 0.1 to 1.0. Acres of each type were converted to habitat units by multiplying the actual acres by the value ranking. Based on this method, the total habitat units of impacted foraging habitat is 23,642. There are no standard guidelines for mitigating loss of white-tailed kite foraging habitat; however, mitigation is generally not recommended if the species has not been detected. While a substantial portion of the Planning Area has been surveyed for this species in the last several years, including 2009 DWR surveys, portions have not been surveyed. Although survey data is incomplete, the available data indicates that white-tailed kite nests in substantially smaller densities than Swainson's hawk (331 nesting Swainson's hawk territories have been located in the Planning Area compared to the 20 known kite nest sites). Because densities are low, it is likely that much of the affected foraging habitat is unoccupied and, therefore, would not affect the species. Consequently, impacts on foraging habitat value for the white-tailed kite will be mitigated by preserving habitat that supports 50</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								percent of the impacted foraging habitat value. Based on this approach, 11,821 and 23,642 acres of foraging habitat will be annually preserved. Preserved foraging habitat may be comprised of grassland, managed wetland, and cultivated lands that are located within Conservation Zones 1-9 and/or 11. If it is desirable to preserve lands that support lesser per acre foraging habitat value for white-tailed kite to achieve other covered habitat species objectives, additional lands may be required to achieve mitigation.  Approximately 580 acres of white-tailed kite nesting habitat could be impacted primarily as a result of tidal habitat restoration. This assessment assumes that all existing riparian habitat will be removed within the potential footprint of restored tidal marshes. The actual impact is expected to be less because restored tidal habitats will be designed to retain riparian habitat where possible. For the reasons described for impacts on foraging habitat, much of the affected nesting habitat are likely unoccupied and thus removal unoccupied nesting habitat would not affect the kite. Consequently, mitigation for nesting habitat impacts will be provided by restoring 0.5 acre of riparian habitat that supports suitable nesting trees for each acre of habitat removed. Riparian nesting habitat will be restored in conjunction with restored tidal and floodplain habitats and enhanced channel margin habitats. It is anticipated that this restoration will occur in Conservation Zones 1-7 and 11. Mitigation habitats will be managed to minimize human disturbances to active nest sites during the breeding season.
<i>Breeding habitat</i>	580	0	580	0	4,000 CZ: Any CZ	0	290 CZ: Any CZ	
<i>Foraging habitat</i>	36,070	1,720	37,790	22,020-40,040 CZ: Any CZ	0	11,820 to 23,640 CZ: Any CZ	0	
Swainson's hawk								<b>Summary of Conservation Provided:</b> Conservation of Swainson's hawk is directed at restoring high functioning nesting habitat that is maintained and managed in conjunction with preserved foraging habitats such that a suitable nesting and foraging landscape across the Planning Area sufficient to sustain the Planning Area's Swainson's hawk nesting and wintering populations. Nesting Swainson's hawks are widely distributed throughout the Planning Area and surrounding lands. Breeding densities are high in some areas, particularly the north, east, and south Delta, and less so in the Central Delta and south Yolo Bypass. The majority of the land within the Planning Area is considered suitable Swainson's hawk foraging habitat, although actual value varies depending on annual and seasonal crop patterns and practices. Of the 314 nesting records since 2000, at least 220 of these are considered independent and are potentially active in any given year <sup>1</sup> . The Swainson's hawk forages widely during the breeding season, but forages only in those habitats that are suitable annually or seasonally. For example, areas planted to corn, one of the most abundant crop types in the Central Delta, are used minimally due to the lack of prey accessibility. Thus, only some portion of the total affected acres are used by foraging Swainson's hawks in any given year.  At least █ percent of preserved foraging habitat will be located at elevations above sea level to ensure that foraging habitat is maintained for Swainson's hawks should potential future Delta levee failures result in

<sup>1</sup>The total of 314 nesting records may include some nesting territories counted more than once due to different surveys and survey years and the use of alternative nesting locations by individual nesting pairs. To account for this, each reported nesting site was examined for independence. The minimum of 220 nesting territories potentially active in any given year was derived from 97 sites reported during 2009 DWR surveys of the Central Delta, 56 sites reported from 2007 and 2008 surveys conducted by Estep in Yolo and Sacramento Counties, and an additional 67 sites reported in CNDDDB since 2000, most of which were from surveys conducted for the Solano County HCP or from DWR surveys in the South Delta.

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
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								<p>inundating substantial foraging habitat area. It is anticipated that all of the restored riparian habitat will be located within foraging flight distance to preserved foraging habitat, thus increasing the functions of both types of habitat for the species. Furthermore, patches of nesting habitat located within lands preserved for other purposes will also be maintained and all preserved habitats supporting active nest sites will be managed to minimize human disturbances to during the breeding season.</p> <p>Preserved grasslands and agricultural lands will be managed to provide high value Swainson's hawk foraging habitat. Conservation will occur in cooperation and in conjunction with neighboring and overlapping HCP/NCCPs to ensure that conservation actions are implemented where they most benefit the regional Swainson's hawk population and where they are compatible with conservation of other agricultural and riparian-associated species. It is also expected that ongoing agricultural land uses within and adjacent to the Planning Area will also continue to support foraging habitat for Swainson's hawks nesting and wintering in the Planning Area.</p> <p>An estimated 22 percent of Swainson's hawk foraging habitat within the Planning Area is currently preserved on state and federal wildlife refuges, other state-owned lands, and mitigation banks and is expected to remain suitable Swainson's hawk foraging habitat. Following implementation of BDCP actions, between 26 and 29 percent of the total available foraging habitat and the extent of nesting habitat will be increased by approximately 35 percent. The proposed conservation is expected to sustain the existing population of Swainson's hawk and provide for future increases in its abundance and distribution within and adjacent to the Planning Area.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on Swainson's hawk result from BDCP actions that remove Swainson's hawk nesting and foraging habitat. BDCP actions are estimated to permanently affect 30,952 acres of Swainson's hawk foraging habitat, which consists of grasslands, managed wetlands, and cultivated lands. The value of foraging cover types is highly variable, particularly in agricultural landscapes. To address this variability, the relative value of each cover type was estimated to more accurately reflect use of the landscape, the distribution of the species, and to develop appropriate conservation strategies. Foraging cover types were classified into four ranking categories based on documented use and estimated relative value, from 0.1 to 1.0. Acres of each type were converted to habitat units by multiplying the actual acres by the value ranking. Based on this method, the total habitat units of impacted foraging habitat is 18,022. DFG typically requires the preservation of 1 acre of foraging habitat for each acre of foraging habitat removed. To mitigate the loss of habitat functions, it is anticipated that foraging habitat with per acre foraging habitat functions of 1.0 to 0.5 will be preserved. Based on this approach, 18,022 to 36,044 acres of foraging habitat will be annually preserved. Preserved foraging habitat may be comprised of grassland, managed wetland, and cultivated lands that are located within foraging flight distances of occupied nesting habitat within Conservation Zones 1-9 and/or 11. If it is desirable to preserve lands that support lesser per acre foraging habitat value for Swainson's hawk to achieve other covered habitat species objectives, additional lands may be required to achieve mitigation.</p> <p>Approximately 420 acres of Swainson's hawk nesting habitat could be impacted primarily as a result of tidal habitat restoration. This assessment assumes that all existing riparian habitat will be removed within the potential footprint of restored tidal marshes. The actual impact is expected to be less because restored tidal habitats will be designed to retain riparian habitat where possible. Mitigation for nesting habitat impacts will be provided by restoring 1 acre of riparian habitat that supports suitable nesting trees for each acre of habitat removed. Riparian nesting habitat will be restored in conjunction with restored tidal and floodplain habitats and enhanced channel margin habitats. It is anticipated that this restoration will occur in Conservation Zones 1-7 and 11.</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
<i>Foraging habitat</i>	29,240	1,720	30,960	20,020 to 36,040 CZ 1-9, and/or 11	0	20,020 to 36,040 CZ 1-9, and/or 11	0	
<i>Nesting habitat</i>	420	0	420	0	4,000 CZ: Any CZ	0	420 CZ: Any CZ	
Giant garter snake								<p><b>Summary of Conservation Provided:</b> Conservation of giant garter snake habitat will be provided through conservation of habitats within and without the Primary Habitat Zone (see Appendix A, <i>Covered Species Accounts</i>). Conservation within the the Primary Habitat Zone are targeted at preserving, enhancing, and restoring habitat that is known or likely occupied by giant garter snake. Conservation provided outside of the Primary Habitat Zone will preserve and restore habitat in locations that appear to be unoccupied or that do not include viable extant breeding populations based on historical and recent survey efforts, but do include areas that generally meet habitat suitability requirements for giant garter snake. Conservation actions include:</p> <ul style="list-style-type: none"> <li>▪ preservation of rice land or wetland habitats of equivalent function in the Primary Habitat Zone in Conservation Zone 2;</li> <li>▪ preservation of giant garter snake non-rice agricultural and grassland habitats in the Primary Habitat Zone in Conservation Zones 1, 2, 4, 5 and/or 6;</li> <li>▪ preservation of agricultural habitats outside of the Primary Habitat Zone;</li> <li>▪ restoration of freshwater tidal marsh plain habitats in Conservation Zones 1, 4, and 7 within and without the Primary Habitat Zone; and</li> <li>▪ preservation and restoration of non-tidal wetland and agricultural habitats within and adjacent to habitats occupied by the Caldoni Marsh/White Slough and Yolo/Willow Slough populations in the Primary Habitat Zone.</li> </ul> <p>Preserved agricultural and grassland habitats will be managed to enhance habitat conditions for giant garter snake and to minimize potential adverse effects of agricultural operations on giant garter snake in occupied habitat areas (e.g., timing maintenance of agricultural ditches that support aquatic and movement habitat to periods the snake is not present). Restoration of freshwater tidal marsh plain communities is expected to support patches of giant garter snake habitat where the tidal range is less than █ inches. Preservation and restoration of habitat outside of the Primary Habitat Zone is likely unoccupied at this time, but will provide habitat that could be occupied in the future should existing populations expand.</p> <p>The Caldoni Marsh/White Slough and Yolo/Willow Slough subpopulations support the highest densities of giant garter snakes in the Planning Area and habitat preservation, enhancement, and restoration actions for these populations are directed at securing habitats supporting these populations from potential threats (e.g., change in land uses), expanding and enhancing these habitat areas to allow for increases in their abundance and distribution, and to help to meet USFWS recovery goals for these designated subpopulations. The Caldoni Marsh/White Slough subpopulation is centered within the White Slough Wildlife Area and is comprised of approximately 830 acres, of which approximately 50 acres if comprised of core giant garter snake wetland habitat. The Yolo/Willow Slough subpopulation includes unpreserved habitat areas and habitat preserved within the Yolo Wildlife Area. Proposed conservation for these subpopulations includes preservation of at least 1,000 acres of additional unpreserved habitat in each of</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								<p>these habitat areas to help ensure the continued existence of these populations. In addition, restoration of 400 acres of non-tidal marsh (comprised of a mix of non-tidal perennial aquatic and non-tidal permanent emergent community) distributed between the two subpopulation habitat areas will substantially increase connectivity among existing occupied habitat areas and provide the basis for future expansion of their distribution and abundance. Preservation and management of upland and agricultural habitat areas adjacent to core wetland habitats will also preserve occupied habitat areas from potential impacts associated with adjacent land uses. If site-specific planning to design the subpopulation preserves indicates that the extent of the proposed preservation is not necessary to sustain and expand these populations, some of the proposed preservation and restoration may be directed towards securing populations adjacent to the Planning Area (e.g., the Badger Creek population) consistent with achieving objectives of adjacent conservation plans.</p> <p>Restoration of tidal habitats, particularly in potentially occupied habitat areas in Conservation Zones 2 and 4 will also increase the extent of suitable giant garter snake breeding and foraging habitat in locations where tidal ranges do not exceed 10 inches (Hansen pers. com.). Meeting the tidal marsh restoration objectives is expected to substantially increase aquatic and associated upland habitat for giant garter snake throughout the Planning Area and preservation of cultivated habitats in Zones 2 and 4 to meet conservation objectives for Swainson's hawk and greater sandhill crane are expected to provide opportunities for enhancing north-south movement corridors for the Yolo/Willow Slough subpopulation within the Yolo Bypass and for Caldoni Marsh/White Slough subpopulation between Stone Lakes National Wildlife Refuge and the Caldoni Marsh/White Slough area. Within the Yolo Bypass, preservation of the existing extent of rice lands that could be affected by proposed Fremont Weir operations or restoration of wetlands that replace any lost habitat functions of rice lands will sustain the abundance and distribution of snakes that are known to inhabit cultivated portions of the Bypass. Preservation of cultivated habitats will also preserve and enhance upland aestivation habitat for giant garter snake within its Primary Habitat Area.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on giant garter snake result from BDCP actions that remove giant garter snake habitat within its Primary Habitat Zone. For the reasons described above, mitigation for impacts on habitat outside of the Primary Habitat Zone is not proposed because affected habitats are likely unoccupied and thus giant garter snake would not likely be impacted by BDCP actions. BDCP actions are not expected to result in direct removal of habitat occupied by the Yolo/Willow Slough subpopulation and may remove up to an estimated 35 acres of aquatic (includes habitat associated with agricultural water conveyance infrastructure) and 545 acres of upland habitat (primarily agricultural).</p> <p>Mitigation for permanent and temporary losses of GGS habitat will be achieved by applying the standard USFWS compensation formula as specified in the USFWS guidelines (U.S. Fish and Wildlife Service 1999) provide for:</p> <ul style="list-style-type: none"> <li>▪ preservation of one acre of aquatic habitat and at least 2 acres of upland habitat adjacent to the preserved aquatic habitat for every acre of aquatic habitat removed, and</li> <li>▪ preservation of one acre of upland habitat in addition to the upland habitat preserved as a result of lost aquatic habitat for every acre of upland habitat removed.</li> </ul> <p>Preserved mitigation habitat will be located within the Primary Habitat Zone in Conservation Zones 1, 2, and 4. Preserved habitat will be comprised of known or potentially occupied habitat or connected to known occupied or potentially occupied habitat areas such that functional habitat corridors that provide for movement of giant garter snakes to and from the preserved habitat are provided. Impacts on habitat supporting the Caldoni Marsh/White Slough subpopulation will be mitigated through preservation of agricultural and upland habitat and restoration of wetlands within the range of the subpopulation.</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								<p>Preserved aquatic habitat will be provided through preservation of water conveyance ditches within preserved cultivated lands and restoration of tidal marsh in locations with tidal ranges that are suitable for snake occupancy. Preserved upland habitat will be comprised of upland agricultural habitats and transitional uplands that will be preserved in conjunction with restoration of tidal habitats. Preserved upland mitigation habitats will be managed to maintain or improve vegetative cover and aestivation habitat conditions for the snake.</p> <p>Impacts on habitat supporting the Caldoni Marsh/White Slough subpopulation will be mitigated through preservation of agricultural and upland habitat and restoration of wetlands within the range of the subpopulation.</p>
<i>Primary Zone: Aquatic breeding, foraging and movement</i>	300	0	300	≥6,900 CZ: 1, 2, 4, and/or 5	400 CZ: 2 and 4	300 CZ 1, 2, 4, and/or 5	0	
<i>Primary Zone; Upland aestivation and movement</i>	6,420	80	6,500	7,100 CZ 1, 2, 4, and/or 5	0	7,100 CZ 1, 2, 4, and/or 5	0	
<i>Primary and Secondary Zone: Aquatic breeding, foraging</i>	Not applicable.	Not applicable.	Not applicable.	Not applicable.	13,290-21,640 CZ: 1, 4, 5, 7, and 11	0	0	
Western pond turtle								<p><b>Summary of Conservation Provided:</b> Conservation of western pond turtle will be provided through restoring and preserving its aquatic and upland nesting and overwintering habitats to sustain the existing Planning Area and Suisun Marsh populations and provide for future increases in their abundance and distribution. Aquatic habitat will be provide through restoration of tidal marsh plain and adjacent shallow subtidal habitats that are expected to support extensive patches of habitat and 400 acres of non-tidal marsh that will be located in occupied giant garter snake habitat areas. Restoration of pond turtle aquatic habitat is expected to increase the extent of this habitat type in the Planning Area and Suisun Marsh by up to 64 percent relative to current conditions. Upland nesting and overwintering habitat will be provided through a combination of preserving grassland habitats and restoring riparian habitat. A substantial amount of restored riparian habitat is expected to be restored adjacent to restored tidal marsh plain and subtidal aquatic habitat, thus ensuring proximity of nesting and overwintering habitat to its aquatic habitat. Preservation of cultivated habitats to achieve habitat conservation targets for other covered species (e.g., preservation of Swainson’s hawk foraging habitat) will also preserve western pond turtle dispersal habitat, which is ubiquitous within the Planning Area and Suisun Marsh (see Appendix A, <i>Covered Species Accounts</i>).</p> <p><b>Mitigation Component of Conservation:</b> BDCP actions are expected to affect western pond turtle aquatic breeding, dispersal, and upland nesting and overwintering habitat. All but approximately 20 acres of the affected aquatic habitat is impacted as a result of tidal habitat restoration. In the absence of standard guidelines for mitigating impacts on western pond turtle habitat, mitigation will be provided through preserving or restoring 1 acre of aquatic, upland nesting and overwintering, and dispersal habitat for each</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								<p>acre of each affected habitat type. Impacts on dispersal habitat result only from the development footprint of new conveyance facilities; restored tidal and other habitats that impact upland dispersal habitats also function as dispersal corridors and, therefore, there will be no net loss of dispersal habitat from habitat restoration actions. Impacts on aquatic habitat will be mitigated through restoration of tidal marsh plain and adjacent shallow subtidal habitat components of restored tidal habitats. Impacts on upland nesting and overwintering habitat will be mitigated through a combination of preserving grassland habitat and restoring riparian habitats that function as nesting and over wintering habitat. Dispersal habitat will be mitigated through preservation of grassland and cultivated habitats near habitats that are affected by construction of conveyance facilities.</p>
<i>Aquatic habitat</i>	5,010	1	5,010	0	48,990-51,780 CZ: 1, 2, 4, 5, 7,and 11	0	5,010 CZ: 1, 2, 4, 5, 7,and 11	
<i>Dispersal habitat</i>	2,070	1,930	4,000	4,000	0	4,000	0	
<i>Upland nesting and overwintering</i>	4,220	2	4,230	≥5,230 CZ: Any CZ	5,000 CZ: Any CZ	2,230 CZ: Any CZ	2,000 CZ: Any CZ	
California red-legged frog								<p><b>Summary of Conservation Provided:</b> Conservation of California red-legged frog is focused on preserving its intact riparian and upland cover and dispersal habitat linking to its aquatic breeding habitat within the Planning Area and to occupied habitat areas adjacent to the Planning Area in Conservation Zone 8 south of Highway 4. Approximately 3,830 acres of upland cover and dispersal habitat is present in Conservation Zone 8 of which approximately 620 acres are currently preserved (16 percent). The proposed preservation of grassland habitat would be located such that it encompasses stream corridors that support breeding habitat. The preserved habitat will be managed to increase the abundance of squirrel burrows to increase the availability of aestivation sites and to increase the habitat function of any riparian habitat adjacent to the preserved stream channel. Following BDCP implementation, approximately 42 percent of habitat in Conservation Zone 8 that links to occupied habitat outside of the Planning Area would be preserved. It is expected that the proposed conservation will preclude potential future fragmentation of the highest functioning frog habitat in the Planning Area and will maintain habitat area to sustain the existing population and to maintain connectivity with occupied core populations adjacent to the Planning Area.</p> <p>California red-legged frog habitat within the Planning Area is located on the margin of its range and as such is not considered to support core habitat area for the species. Consequently, to increase the level of conservation benefits provided to California red-legged frog relative to benefits that would be provided by implementing the conservation actions within the Planning Area, the red-legged frog conservation actions may be implemented within core red-legged frog habitat areas that are located outside of the Planning Area consistent with conservation plans for those locations.</p> <p><b>Mitigation Component of Conservation:</b> Mitigation for impacts on California red-legged frog habitat is provided as a component of conservation. California red-legged frog habitat will only be impacted by construction of conveyance facilities near Clifton Court Forebay. Standard guidelines for mitigating impacts on red-legged frog habitat have not been developed. To mitigate the effects on stream aquatic habitat, affected stream aquatic habitat (1 acre) will be mitigated through preservation of at least 0.5 mile of stream in Conservation Zone 8, including 25 feet of adjacent riparian/upland habitat extending from</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								<p>each side of stream channel banks (3 acres total), that is connected to watersheds occupied by the frog. Upland cover and dispersal habitat will be mitigated through preservation of 200 acres of grassland habitat connected to the preserved aquatic habitat. Preserved habitat will be located such that it provides connectivity to occupied habitats adjacent to the Planning Area. Affected dispersal habitat is comprised of cultivated lands that are adjacent to Clifton Court Forebay. Affected cultivated lands are on the valley floor adjacent to and generally east of uncultivated grasslands. While red-legged frogs are occasionally known to travel through cultivated habitats, there is no indication that this area is either occupied or is accessible for red-legged frog use. The cultivated lands are also not transitional to other potentially occupied habitats on the valley floor. Therefore, the removal of cultivated lands in the vicinity of uncultivated grasslands (as defined in the California red-legged frog habitat model) is unlikely to affect the species and thus no mitigation for this impact is proposed. While red-legged frogs are occasionally known to travel through cultivated habitats, there is no indication that this area is either occupied or is accessible for red-legged frog use. The cultivated lands are also not transitional to other potentially occupied habitats on the valley floor. Therefore, the removal of cultivated lands in the vicinity of uncultivated grasslands (as defined in the California red-legged frog habitat model) is unlikely to affect the species and thus no mitigation for this impact is proposed.</p>
<i>Aquatic habitat</i>	1	0	1	3		3	0	
<i>Upland cover and dispersal habitat</i>	190	0	190	1,000 (including encompassed stream aquatic habitat) CZ: 8	0	200 CZ: 8	0	
<i>Dispersal habitat</i>	670	0	670	0	0	0	0	
Western spadefoot toad								<p><b>Summary of Conservation Provided:</b> Vernal pool complex terrain supporting spadefoot toad vernal pool breeding habitat is present in Conservation Zones 1, 2, 4, 8, 9, and 11 along the upper elevation margins of the Delta. Opportunities for large scale conservation of spadefoot toad breeding habitat within the Planning Area, however, are located only in Conservation Zones 1, 8, and 11. Vernal pool complex terrain in Conservation Zones 2 and 4 is almost entirely under preserved status (99 percent) and vernal pool complex terrain in Conservation Zone 9 (approximately 120 acres) is located in the vicinity of Discovery Bay and is largely fragmented by development and cultivated lands. Conservation of breeding habitat will be provided through preservation and restoration of vernal pool terrain that supports western spadefoot toad habitat. Habitat will be preserved and restored in the largest possible patch sizes and management of preserved and restored vernal pool complex terrain (e.g., livestock grazing) will be designed to enhance habitat functions for tiger salamander and other associated covered vernal pool-associated species.</p> <p>Restored vernal pool complex terrain will be designed to provide high breeding habitat function for western spadefoot toad and will be restored in these same Conservation Zones on sites that historically supported fully functioning vernal pool habitats. At least 50 acres of habitat (for mitigation or conservation) will be preserved in Conservation Zone 8 and 50 acres in Conservation Zone 11. Management of preserved vernal pool complex terrain (e.g., livestock grazing) will be designed to enhance western spadefoot breeding habitat functions. Habitat will preserved in conjunction with preserved</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								<p>grassland and alkali seasonal wetlands that will also be preserved in these Conservation Zones.</p> <p>Western spadefoot upland terrestrial cover and aestivation habitat will be preserved in Conservation Zones 1, 8, and 11. Upland habitat will be comprised of grassland and alkali seasonal wetland that encompasses preserved aquatic breeding habitats and that is within or connected to potentially occupied western spadefoot toad habitat. Connections to potentially occupied habitat will be of sufficient width to provide for the movement of spadefoot to and from occupied habitat areas. Preserved grassland habitats will be managed to provide appropriate vegetative conditions to facilitate spadefoot movement and reduce predation exposure and to maintain or increase the abundance of ground squirrels and other fossorial species to improve the availability of suitable aestivation sites. The proposed preservation, enhancement, and restoration of spadefoot breeding and upland habitats within or connected to occupied habitats is expected to sustain spadefoot populations within the Planning Area and Suisun Marsh and provide for the increase in abundance and distribution of spadefoot within and near the Planning Area and Suisun Marsh. Following completion of conservation actions, approximately 69 percent of western spadefoot vernal pool complex breeding habitat and 74 percent of its upland habitat will be preserved within the Planning Area.</p> <p>Western spadefoot toad habitat within the Planning Area and Suisun Marsh is located on the margin of its range and as such is not considered to support core habitat area for the species. Consequently, to increase the level of conservation benefits provided to Western spadefoot toad relative to benefits that would be provided by implementing the conservation actions within the Planning Area, the Western spadefoot toad conservation actions may be implemented within core Western spadefoot toad habitat areas that are located outside of the Planning Area consistent with conservation plans for those locations.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on western spadefoot toad result from BDCP actions that remove spadefoot toad habitat. Mitigation for impacts on vernal pool complex habitats, which supports spadefoot toad breeding habitat, will be achieved by applying USFWS biological opinion mitigation guidelines recommending preservation of 3 acres of existing habitat and restoration of 2 acres of vernal pool habitat. Preserved and restored habitats will be located within western spadefoot habitats (occurrence data for this species is insufficient to direct mitigation to known occupied habitats).</p> <p>Mitigation for impacts on terrestrial habitat will be provided by preservation of grassland habitat that is within or connected to western spadefoot habitat. Terrestrial habitat affected by conveyance construction in the east Delta (188 acres) is highly fragmented and not believed to be occupied by the species (see Appendix A, <i>Covered Species Accounts</i>); consequently mitigation habitat will be preserved in or near large contiguous and connected tracts of habitat in Conservation Zones 1, 8, and/or 11 to ensure maximum benefit to the species.</p>
<i>Aquatic breeding habitat</i>	50	0	50	300 CZ: 1, 8, and 11	200 CZ: 1, 8, and/or 11	150 CZ: 1, 8, and 11	100 CZ: 1, 8, and/or 11	
<i>Terrestrial cover and aestivation habitat</i>	470	0	470	8,400 CZ: 1, 8, and 11	0	470 CZ: 1, 8, and 11	0	

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
California tiger salamander								<p><b>Summary of Conservation Provided:</b> Vernal pool complex terrain supporting tiger salamander vernal pool breeding habitat is present in Conservation Zones 1, 2, 4, 8, 9, and 11 along the upper elevation margins of the Delta. Opportunities for large scale conservation of tiger salamander breeding habitat within the Planning Area, however, are located only in Conservation Zones 1, 8, and 11. Vernal pool complex terrain in Conservation Zones 2 and 4 is almost entirely under preserved status (99 percent) and vernal pool complex terrain in Conservation Zone 9 (approximately 120 acres) is located in the vicinity of Discovery Bay and is largely fragmented by development and cultivated lands. Conservation of breeding habitat will be provided through preservation and restoration of vernal pool terrain that supports tiger salamander habitat. Habitat will be preserved and restored in the largest possible patch sizes and management of preserved and restored vernal pool complex terrain (e.g., livestock grazing) will be designed to enhance habitat functions for tiger salamander and other associated covered vernal pool-associated species.</p> <p>Restored vernal pool complex terrain will be designed to provide high breeding habitat function for tiger salamander and will be restored in these same Conservation Zones on sites that historically supported fully functioning vernal pool habitats. At least 50 acres of habitat will be preserved in Conservation Zone 8 and 50 acres in Conservation Zone 11. Management of preserved vernal pool complex terrain (e.g., livestock grazing) will be designed to enhance tiger salamander breeding habitat functions. Habitat will be preserved in conjunction with preserved grassland and alkali seasonal wetlands that will also be preserved in these Conservation Zones.</p> <p>Tiger salamander upland terrestrial cover and aestivation habitat will be preserved in Conservation Zones 1, 8, and 11. Upland habitat will be comprised of grassland and alkali seasonal wetland that encompasses preserved aquatic breeding habitats and that is within or connected to occupied tiger salamander habitat. Connections to occupied habitat will be of sufficient width to provide for the movement of salamanders to and from occupied habitat areas. Preserved grassland habitats will be managed to provide appropriate vegetative conditions to facilitate salamander movement and reduce predation exposure and to maintain or increase the abundance of ground squirrels and other fossorial species to improve the availability of suitable aestivation sites. The proposed preservation, enhancement, and restoration of tiger salamander breeding and upland habitats within or connected to occupied habitats is expected to sustain tiger salamander populations within the Planning Area and provide for the increase in abundance and distribution of salamanders within and near the Planning Area. Following completion of conservation actions, approximately 69 percent of tiger salamander vernal pool complex breeding habitat and 74 percent of its upland habitat will be preserved within the Planning Area.</p> <p>California tiger salamander habitat within the Planning Area and Suisun Marsh is located on the margin of its range and as such is not considered to support core habitat area for the species. Consequently, to increase the level of conservation benefits provided to California tiger salamander relative to benefits that would be provided by implementing the conservation actions within the Planning Area, the tiger salamander conservation actions may be implemented within core tiger salamander habitat areas that are located outside of the Planning Area consistent with conservation plans for those locations.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on California tiger salamander result from BDCP actions that remove tiger salamander habitat. Mitigation for impacts on vernal pool complex habitats that support vernal pools will be achieved by applying USFWS biological opinion mitigation guidelines recommending preservation of 3 acres of existing habitat and restoration of 2 acres of vernal pool habitat. Preserved and restored habitats will be located within or adjacent to occupied tiger salamander habitats. Mitigation for impacts on terrestrial habitat will be provided by preservation of grassland habitat that is</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								within or connected to occupied tiger salamander habitat. Terrestrial habitat affected by conveyance construction in the east Delta (188 acres) is not believed to be occupied by the species (see Appendix A, <i>Covered Species Accounts</i> ); consequently mitigation habitat will be preserved in or near known occupied habitats in Conservation Zones 1, 8, and/or 11 to ensure maximum benefit to the species.
<i>Aquatic breeding habitat</i>	50	0	50	300 CZ: 1, 8, and 11	200 CZ: 1, 8, and/or 11	150 CZ: 1, 8, and 11	100	
<i>Terrestrial cover and aestivation habitat</i>	470	0	470	8,400 CZ: 1, 8, and 11	0	470 CZ: 1, 8, and 11	0	
Valley elderberry longhorn beetle								<p><b>Summary of Conservation Provided:</b> Conservation of valley elderberry longhorn beetle will be provided through restoration of 5,000 acres of riparian habitat distributed in among Conservation Zones 1, 4, 7, and/or 11. Plantings of elderberry shrubs, including shrubs translocated as mitigation, will be incorporated into the design of restored riparian habitat. Beetle riparian habitat will be provided in large patches that will be managed to control the establishment of undesirable non-native vegetation that can affect the health of the beetle's host elderberry plant. Restoration of 5,000 acres of riparian habitat that supports elderberry shrubs will increase the extent of the beetle's riparian vegetation habitat by 29 percent relative to existing conditions and is expected to be sufficient to sustain populations in the Planning Area and provide for increasing the distribution and abundance of the species. Numeric targets for preservation of existing habitat are not established; however, elderberry shrubs that are present within BDCP preserved habitat areas will be preserved and maintained.</p> <p><b>Mitigation Component of Conservation:</b> As elderberry shrubs are encountered during preconstruction surveys, mitigation for losses of elderberry shrubs will follow standard USFWS guidelines. The guidelines require planting elderberry seedlings and associated riparian species, and possible translocation of elderberry shrubs on a preserved mitigation site. There is otherwise no habitat-based mitigation proposed for valley elderberry longhorn beetle. Mitigation requirements will be incorporated into the design of BDCP restored riparian habitat.</p>
<i>Riparian vegetation</i>	800	1	800	0	5,000 CZ: Any CZ	0	Incorporated into conserved habitat.	
<i>Non-riparian channels and grasslands</i>	390	1	390	0	0	0	Incorporated into conserved habitat.	
Vernal pool shrimp species ( <i>Conservancy fairy shrimp, longhorn fairy shrimp, vernal pool fairy shrimp,</i>	50	0	50	300 CZ: 1, 8, and 11	200 CZ: 1, 8, and/or 11	150 CZ: 1, 8, and 11	100 CZ: 1, 8, and/or 11	<p><b>Summary of Conservation Provided:</b> Vernal pool complex terrain supporting vernal pool shrimp habitat is present in Conservation Zones 1, 2, 4, 8, 9, and 11 along the upper elevation margins of the Delta. Opportunities for large scale conservation of vernal pool shrimp species within the Planning Area, however, are located only in Conservation Zones 1, 8, and 11. Vernal pool complex terrain in</p>

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	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
<i>mid valley fairy shrimp</i>								<p>Conservation Zones 2 and 4 is almost entirely under preserved status (99 percent) and vernal pool complex terrain in Conservation Zone 9 (approximately 120 acres) is located in the vicinity of Discovery Bay and is largely fragmented by development and cultivated lands. Conservation of habitat will be provided through preservation and restoration of vernal pool terrain that supports vernal pool shrimp species and will be preserved and managed in conjunction with preserved grassland and alkali seasonal wetlands that will also be preserved in these conservation zones. Habitat will be preserved and restored in the largest possible patch sizes and management of preserved and restored vernal pool complex terrain (e.g., livestock grazing) will be designed to enhance habitat functions for vernal pool shrimp species and other associated covered vernal pool-associated species.</p> <p>The proposed preservation and restoration of vernal pool complex terrain, in conjunction with existing preserved habitat, is expected to sustain shrimp populations within the Planning Area and increase the distribution and abundance of covered vernal pool shrimp species. Following completion of conservation actions, approximately 69 percent of vernal pool shrimp species vernal pool complex habitat will be preserved.</p> <p>Vernal pool shrimp habitat within the Planning Area and Suisun March is located on the margin of Central Valley vernal pool terrain and as such is not considered to support core habitat area for these species. Consequently, to increase the level of conservation benefits provided to vernal pool shrimp species relative to benefits that would be provided by implementing the conservation actions within the Planning Area, the vernal pool shrimp species conservation actions may be implemented within core vernal pool shrimp species habitat areas that are located outside of the Planning Area consistent with conservation plans for those locations.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on vernal pool shrimp species result from BDCP actions that remove vernal pool shrimp species habitat. Mitigation for impacts on vernal pool complex habitats that support vernal pools will be achieved by applying USFWS biological opinion mitigation guidelines recommending preservation of 3 acres of existing habitat and restoration of 2 acres of vernal pool habitat.</p>
Vernal pool plant species ( <i>Alkali milk-vetch, San Joaquin spearscale Boggs Lake hedge-hyssop, Heckard's peppergrass, and legenera</i> )	100	0	100	300 CZ: 1, 8, and 11  Preserve at least 3 alkali milkvetch and 2 Heckard's peppergrass unprotected occurrences CZ: 1, 8, and 11	200 CZ: 1, 8, and/or 11	300 CZ: 1, 8, and 11	200 CZ: 1, 8, and/or 11	<p>Vernal pool complex terrain supporting vernal pool plant species habitat is present in Conservation Zones 1, 2, 4, 8, 9, and 11 along the upper elevation margins of the Delta. Opportunities for large scale conservation of vernal pool plant species within the Planning Area, however, are located only in Conservation Zones 1, 8, and 11. Vernal pool complex terrain in Conservation Zones 2 and 4 is almost entirely under preserved status (99 percent) and vernal pool complex terrain in Conservation Zone 9 (approximately 120 acres) is located in the vicinity of Discovery Bay and is largely fragmented by development and cultivated lands.</p> <p>Conservation of vernal pool plant species will be directed at preserving known unprotected occurrences and managing preserved vernal pool complex to improve habitat conditions for these species. At least 3 known occurrences of alkali milkvetch and 2 occurrences of Heckard's peppergrass that are currently unprotected will be preserved (representing 43 percent and 67 percent, respectively, of unprotected occurrences in the Planning Area and Suisun Marsh). Known occurrences of the remaining vernal pool species are currently under protected status; presence of currently unknown occurrences of vernal pool plant species will be a criterion for selecting vernal pool complexes for preservation. Conservation of habitat will be achieved through the preservation and restoration of vernal pool terrain that supports vernal pool plant species and will be preserved and managed in conjunction with preserved grassland and alkali seasonal wetlands that will also be preserved in these conservation zones. Habitat will be preserved and restored in the largest possible patch sizes and management of preserved and restored vernal pool complex</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								<p>terrain (e.g., control of non-native invasive species) will be designed to enhance habitat functions for vernal pool plant species and other associated covered vernal pool-associated species. The proposed preservation and restoration of vernal pool complex terrain, in conjunction with existing preserved habitat, is expected to sustain vernal pool plant species populations within the Planning Area and increase the distribution and abundance of covered vernal pool plant species.</p> <p>The Planning Area and Suisun Marsh are located on the margins of vernal pool complex distribution in the Central Valley and generally contain fragmented and degraded vernal pool terrain and as such do not contain habitat occupied by robust populations of vernal pool plant species. Consequently, to increase the level of conservation benefits provided to vernal pool plant species relative to benefits that would be provided by implementing the conservation actions within the Planning Area, the vernal pool plant species conservation actions may be implemented within more central vernal pool plant species habitat areas that are located outside of the Planning Area when consistent with conservation plans for those locations.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on vernal pool plant species may result from BDCP actions that remove vernal pool plant species habitat. Mitigation for impacts on vernal pool complex habitat that supports vernal pool plant species will be achieved by applying the USFWS biological opinion mitigation guidelines for vernal pool shrimp species that recommends the preservation of 3 acres of existing habitat and the restoration of 2 acres of vernal pool habitat for each acre affected.</p>
Heartscale and brittlescale	10	0	10	150 CZ: 1, 8, and/or 11	0	50 CZ: 1, 8, and/or 11	0	<p><b>Summary of Conservation Provided:</b> Conservation of heartscale and brittlescale will be directed at preserving currently unpreserved heartscale and brittlescale habitat that supports the known elements (e.g., soils, hydrology) of their habitat. Priority will be given to preserving habitat that support species occurrences or are within the watersheds that support known occurrences. Preserved habitat will be managed in conjunction with other preserve lands that will complement its wetland habitat functions and will be managed to improve habitat conditions for these species (e.g., control of non-native plant species). Preserving and enhancing heartscale and brittlescale habitat is expected to help maintain and potentially increase these species distributions and abundances.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on heartscale and brittlescale may result from BDCP actions to restore tidal habitats that remove heartscale and brittlescale habitat. No guidelines are established for mitigating impacts on these species habitats. To mitigate effects on these species, 5 acres of alkali heartscale and brittlescale habitat will be preserved for every acre of affected habitat.</p>
Slough thistle	0	0	0	0	≥1,000 CZ: 7	0	0	<p><b>Summary of Conservation Provided:</b> Conservation of slough thistle will be directed towards restoring its floodplain wetland habitat along the San Joaquin River. At least 1,000 acres of floodplain habitat will be restored that will be designed and managed to support patches of suitable habitat (e.g., soils, flood disturbance regime). If appropriate, this species may be translocated to establish new occurrences within restored habitat. Reestablishing patterns of flood flows to floodplain historically occupied by this species is expected to allow for increases in the species distribution and abundance.</p> <p><b>Mitigation Component of Conservation:</b> BDCP actions are not expected to affect slough thistle habitat or individuals, therefore, no mitigation is required.</p>
Suisun thistle and soft bird's-beak	120	0	120	0	3,680-4,830 CZ: 11	0	360 CZ: 11	<p><b>Summary of Conservation Provided:</b> Conservation of Suisun thistle and soft bird's-beak will be directed at restoring large tracts of their historical Suisun Marsh habitats such that the range of ecological gradients that support the species habitat over time are provided. Restoration of tidal brackish marsh in Suisun Marsh is consistent with and helps achieve the Suisun thistle and soft bird's-beak objectives of the draft tidal marsh ecosystems recovery plan (USFWS 2010). Habitat will be restored in a manner that</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								<p>minimizes effects of habitat loss on the species that is expected between the time that restoration actions are initiated and restored tidal marsh plain develops as Suisun thistle and soft bird's-beak habitat. Restoration actions will increase the extent of tidal marsh plain that support patches of suitable habitat for these species by over 500 percent and, as such, is expected to provide for the future expansion of the distributions and abundances of these species. Restored habitats will be established in large patches that will be designed to capture the full range of gradients that were associated with historical Delta and Suisun Marsh tidal brackish habitats to ensure that habitat conditions suitable for these species are established. Restored habitats will also be managed to minimize known species stressors, including trampling livestock grazing practices and invasive non-native plant species.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on Suisun thistle and soft bird's-beak may result from BDCP actions to restore tidal habitats. Physical removal or disturbance to individual plants will be avoided. Impacts on habitat and on any plants present in affected habitat could result from changes in hydrologic and/water quality conditions (e.g., desiccation, inundation, and change in local salinity gradients) that result from changes in tidal range associated with restoring tidal habitat. To the extent possible, tidal habitat restoration projects will be designed to avoid these types of indirect effects on known occurrences. Impacts on habitat will be mitigated by restoring 3 acres of tidal marsh habitat for every acre of affected habitat.</p>
Delta button celery	30	0	30	≥1,350 CZ: 7 and 8	0	50 CZ: 8	0	<p><b>Summary of Conservation Provided:</b> Conservation of delta button celery will be directed at preserving currently unpreserved alkali habitats that support the known elements (e.g., soils, hydrology) of its habitat and restoring floodplain habitat along the San Joaquin River. At least 300 acres of existing unpreserved habitat will be preserved in Conservation Zone 8. Priority will be given to preserving habitat that support occurrences or are connected to occupied habitats. At least 1,000 acres of floodplain habitat will be restored that will be designed and managed to support patches of suitable habitat (e.g., soils, flood disturbance regime). If appropriate, this species may be translocated to establish new occurrences within restored habitat. Preserving remaining occupied habitat areas and reestablishing patterns of flood flows to floodplain historically occupied by this species is expected to sustain the species within the Planning Area and provide for increases in the species distribution and abundance.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on delta button celery habitat result only from construction of conveyance facilities. No guidelines are established for mitigating impacts on these species habitats. Mitigation will be provided through preservation of 2 acres of habitat for every acre of affected habitat in Conservation Zone 8 where impacts will occur.</p>
Carquinez goldenbush	40	0	40	300 CZ: 1 and/or 11	0	130 CZ: 1 and/or 11	0	<p><b>Summary of Conservation Provided:</b> Conservation of Carquinez goldenbush will be directed at preserving currently unpreserved habitat that supports the known elements (e.g., soils, hydrology) of its habitat. Priority will be given to preserving habitat that supports occurrences or are connected to occupied habitat. At least 1 known occurrence that is currently unprotected will be preserved (representing 50 percent of unprotected occurrences in the Planning Area and Suisun Marsh). If desirable and consistent with adjacent conservation plans, unpreserved occupied habitat may be preserved adjacent to the Planning Area and Suisun Marsh area. Preserved habitat will be incorporated within larger patches of preserved grassland and vernal pool complex habitats that will complement its wetland habitat functions and will be managed to improve habitat conditions for these species (e.g., control of invasive non-native plant species). Carquinez goldenbush is found only in a very limited geographical range and the population sizes of each occurrence are very small. It is not known why the abundance and distribution of Carquinez goldenbush is so limited. The preservation of Carquinez goldenbush habitat is expected to help maintain and provide the basis for potentially increasing the distribution and abundance Carquinez goldenbush in</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								<p>the Plan and Suisun Marsh areas. Following implementation of BDCP actions, approximately 70 percent of the species habitat will be preserved in the Planning Area and Suisun Marsh.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on Carquinez goldenbush may result only from BDCP actions to restore tidal habitats. Physical removal or disturbance to individual plants will be avoided to the extent possible. No guidelines are established for mitigating impacts on these species habitats. Impacts on habitat will be mitigated by preserving 3 acres of habitat or each acre of existing habitat.</p>
Delta tule pea and Suisun Marsh aster	550	0	550	0	16,970-26,470 CZ: 1, 4, 5, 7, and 11	0	550 CZ: 1, 4, 5, 7, and 11	<p><b>Summary of Conservation Provided:</b> Conservation of delta tule pea and Suisun Marsh aster will be directed at restoring large tracts of their historical Delta and Suisun Marsh habitats such that the range of ecological gradients that support species habitat over time are provided. Restoration of tidal marsh in Suisun Marsh is consistent with and helps achieve the delta tule pea objectives of the draft tidal marsh ecosystems recovery plan (USFWS 2010). Restoration will increase the extent of tidal marsh plain that support patches of suitable habitat for these species by over 500 percent and, as such, is expected to provide for the future expansion of these species abundance and distribution. These species also inhabit the intertidal zone of Delta channel margins. Consequently, these species are also expected to benefit from restoration of channel margin and floodplain habitats that enhance or restore their intertidal channel margin habitats. Restored habitats will be established in large patches that will be designed to capture the full range of gradients that were associated with historical Delta and Suisun Marsh tidal habitats to ensure that habitat conditions suitable for these species are established. Restored habitats will also be managed to minimize known species stressors, including establishment of non-native plant species and use of herbicides.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on delta tule pea and Suisun Marsh aster may result primarily from BDCP actions to restore tidal habitats. Physical removal or disturbance to individual plants will be avoided to the extent possible. Impacts on habitat and any plants present in impacted habitat could result from changes in hydrologic and/water quality conditions (e.g., desiccation, inundation, and change in local salinity gradients) that result from changes in tidal range associated with restoring tidal habitat. To the extent possible, tidal habitat restoration projects will be designed to avoid these types of indirect effects on known occurrences. Impacts on habitat will be mitigated by restoring 1 acre of tidal marsh habitat for every acre of affected habitat</p>
Mason's lilaepsis and delta mudwort	80	0	80	0	16,980-26,560 CZ: 1, 4, 5, 7, and 11)	0	80 CZ: 1, 4, 5, 7, and 11)	<p><b>Summary of Conservation Provided:</b> Conservation of Mason's lilaepsis and delta mudwort will be directed at restoring large tracts of their historical Delta and Suisun Marsh habitats such that the range of ecological gradients that support species habitat over time are provided. Conserved habitat will be managed in conjunction with and as described for restored mitigation habitats. Restoration will increase the extent of tidal marsh plain that support patches of suitable habitat for these species by over 500 percent and, as such, is expected to provide for the future expansion of these species abundance and distribution. These species also inhabit the intertidal zone of Delta channel margins. Consequently, these species are also expected to benefit from restoration of channel margin and floodplain habitats that enhance or restore their intertidal channel margin habitats. Restored habitats will be established in large patches that will be designed to capture the full range of gradients that were associated with historical Delta and Suisun Marsh tidal habitats to ensure that habitat conditions suitable for these species are established. Restored habitats will also be managed to minimize known species stressors, including the establishment of non-native plant species and along shore recreational activities.</p> <p><b>Mitigation Component of Conservation:</b> Impacts on Mason's lilaepsis and delta mudwort may result from BDCP actions to restore tidal habitats. Physical removal or disturbance to individual plants will be avoided to the extent possible. Impacts on habitat and any plants present in impacted habitat could result</p>

Covered species	Habitat Impacts <sup>1</sup> (acres <sup>2</sup> )			Conservation Provided by Conservation Zone (CZ)		Mitigation Component of Conservation(CZ) <sup>3</sup>		Rationale
	Permanent	Temporary	Total	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	Preservation/ Enhancement (acres <sup>2</sup> )	Restoration (acres <sup>2</sup> )	
								from changes in hydrologic and/water quality conditions (e.g., desiccation, inundation, and change in local salinity gradients) that result from changes in tidal range associated with restoring tidal habitat. To the extent possible, tidal habitat restoration projects will be designed to avoid these types of indirect effects on known occurrences. Impacts on habitat will be mitigated by restoring 1 acre of tidal marsh habitat for every acre of affected habitat.
Caper-fruited tropicarpum	0	0	0	≥100 CZ: 8	0	0	0	<p><b>Summary of Conservation Provided:</b> Conservation of caper-fruited tropidocarpum will be directed at preserving and enhancing at least 50 percent of its remaining unpreserved grassland habitats in Conservation Zone 8. All caper-fruited tropidocarpum occurrences have apparently been extirpated in the Planning Area although the species may be present as a persistent seed bank. Preserved habitat will be contiguous with and managed in conjunction with other preserved habitats in Conservation Zone 8. Preserved habitat will be monitored to determine if plants germinate in future years and any located occurrences will be preserved and managed to encourage expansion of the such occurrences. The abundance and distribution of caper-fruited tropidocarpum in California is extremely limited. The reasons for its limited abundance and distribution are not known. The preservation of caper-fruited tropidocarpum habitat is expected to help maintain and provide the basis for potentially increasing the distribution and abundance caper-fruited tropidocarpum in the Planning Area. Based on the level of BDCP habitat effects, the proposed preservation of caper-fruited tropidocarpum habitat is expected to provide for the conservation of caper-fruited tropidocarpum.</p> <p><b>Mitigation Component of Conservation:</b> BDCP actions are not expected to affect caper-fruited tropidocarpum habitat or individuals, therefore, no mitigation is required.</p>

<sup>1</sup>Initial estimate prior to the full BDCP effects analysis.

<sup>2</sup>Values above 10 are rounded to the nearest 10 acres; total column may not add correctly due to rounding.

<sup>3</sup>Mitigation proposal from SAIC. Actual approach and ratios for mitigation may be revised.