

DRAFT

**APPENDIX Q4: Conservation and
Recovery Plan Target Species**

Delta Plan Amendments

May 2020

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Summary

The Delta Reform Act of 2009 requires that the Delta Plan include measures that promote conditions conducive to meeting or exceeding the goals in existing species recovery plans and state and federal objectives with respect to doubling salmon populations, re-establishing diverse and biologically appropriate habitats and ecosystem processes, and providing functional corridors for migratory species. Review and synthesis of specific recovery and conservation plans provided a foundation for the development of regional ecosystem restoration targets for the Sacramento-San Joaquin Delta and Suisun Marsh (the Delta). The reviewed plans include:

- CALFED Multi-Species Conservation Strategy (CALFED 2002)
- State Wildlife Action Plan (CDFW 2015)
- Bay Delta Conservation Plan (DWR 2013)
- Central Valley Flood Protection Plan (DWR 2017a, DWR 2017b, DWR 2017c)
- Delta Smelt Resiliency Strategy (CNRA 2016)
- Sacramento Valley Salmon Resiliency Strategy (CNRA 2017)
- San Francisco Estuary and Watershed Science Central Valley Joint Venture Special Edition (DiGaudio et al. 2017, Dybala et al. 2017a, Dybala et al. 2017b, Strum et al. 2017)
- A Delta Transformed: Ecological Functions, Spatial Metrics, and Landscape Changes in the Sacramento-San Joaquin Delta (SFEI-ASC 2014)
- Suisun Marsh Habitat Management, Preservation, and Restoration Plan (Reclamation, USFWS, and California Department of Fish and Game 2013)
- Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California (USFWS 2013)
- Recovery Plan for the Giant Garter Snake (USFWS 2017)

Tables 1 to 7 summarize the plant and wildlife species, respectively, targeted by the recovery and conservation plans which are likely to occur within the Sacramento-San Joaquin Delta. While not a complete list of the species associated with the Sacramento-San Joaquin Delta, these tables present a subset of species that are the subject of heightened conservation concern and focused conservation and recovery planning, as of 2018. Achieving the goals and objectives of the recovery and conservation plans would not only be expected to benefit the specific species included in this analysis, but also to provide ancillary benefits to a broader suite of native species which have similar habitat requirements as these species. Subregional restoration planning analyses

should consider the potential restoration of conditions and habitats for each of these species.

The Delta Plan identifies five priority attributes to guide ecosystem restoration actions in the Sacramento-San Joaquin Delta. Actions are prioritized if they: 1) restore ecological processes, 2) are large scale, 3) increase habitat complexity/diversity, 4) improve habitat connectivity, and 5) that benefit at-risk biological communities and species. Generally, these priorities are inherently interrelated. For example, larger-scale projects can greatly benefit certain at-risk species which are particularly susceptible to edge effects and/or that avoid highly fragmented habitat patches. There is an extensive number of at-risk species present in the Sacramento-San Joaquin Delta—many of which are unique to California—including some limited in distribution to just the Sacramento-San Joaquin Delta itself. Many of these at-risk species occupy specific, disparate habitat niches, so it is important to not focus on only small sets of ecological processes or habitat types, which may end up benefiting only a narrow subset of the at-risk species which rely upon the Sacramento-San Joaquin Delta. Thus, a focus on multiple ecological processes and habitat types, as well as implementation of the other priority attributes in a given restoration project (or within a larger restoration program), is important to promote the re-establishment of the diverse suite of habitat conditions needed to support the broad assemblage of native Sacramento-San Joaquin Delta flora and fauna.

Table 1 includes 35 plants, seven of which have a federal special-status designation and eight that have a state special-status listing. Additionally, all of these plant species have a California Rare Plant Ranking (CRPR) of 1B or 2B, meaning that they are considered rare, threatened, or endangered within California by the California Native Plant Society. Twenty-eight of these plant species are endemic to the California floristic province, indicating the uniqueness and biodiversity contribution that the region provides.

Tables 2 through 7 include 11 invertebrates, 3 amphibians, 4 reptiles, 47 birds, 9 mammals, and 12 fishes. Twenty-five of these fish and wildlife species are listed as threatened or endangered under the federal Endangered Species Act. Fifteen bird species are listed as U.S. Fish and Wildlife Service bird of conservation concern, and 62 have a special status under state regulations (e.g., they are threatened, endangered, candidate, species of special concern, or fully protected). Twenty-eight of these fish and wildlife species are endemic to California.

Figure 1 shows a map of the subregions within the Sacramento-San Joaquin Delta as reported in the table column titled “Regions of the Delta with Documented Occurrence.” These include the Cache Slough-Yolo Bypass Complex, North Delta, East Delta, South Delta, West Delta, and Suisun Marsh. Figure 2 shows a map of the California Floristic Province.

Table 1. Special-Status Plant Species Referenced in Recovery and Conservation Planning Documents for the Delta

Common Name Scientific Name	Federal Listing Status ^a	State Listing Status ^b	CRPR Listing Status ^c	Habitat	Region(s) of the Delta with Documented Occurrence	Endemic to California Floristic Province	Flowering Period	Sources
Ferris' milk-vetch <i>Astragalus tener</i> var. <i>ferrisiae</i>	–	–	1B.1	Vernally mesic meadows and mildly alkaline flats in valley and foothill grassland, usually on dry, heavy clay or adobe soil; 0- to 2,500-foot elevation	Cache Slough-Yolo Complex	Yes	April–May	CALFED 2002
Alkali milk-vetch <i>Astragalus tener</i> var. <i>tener</i>	–	–	1B.2	Alkaline vernal pools and playas, and valley and foothill grassland with alkaline adobe clay soils; 3- to 2,000-foot elevation	Cache Slough-Yolo Complex, Eastern Delta, South Delta, Suisun Marsh, West Delta	Yes	March–June	DWR 2013; SFEI-ASC 2014; Reclamation et al. 2013; CALFED 2002
Heartscale <i>Atriplex cordulata</i>	–	–	1B.2	Sandy, saline, or alkaline flats or scalds, in chenopod scrub, meadows, and valley and foothill grassland (3- to 490-foot elevation)	Cache Slough-Yolo Complex, East Delta, Suisun Marsh, West Delta	Yes	April–October	DWR 2013; SFEI-ASC 2014; Reclamation et al. 2013; CALFED 2002
Brittlescale <i>Atriplex depressa</i>	–	–	1B.2	Alkaline clay soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, or vernal pools; 3- to 1,050-foot elevation	Cache Slough-Yolo Complex, Suisun Marsh, West Delta	Yes	May–October	DWR 2013; SFEI-ASC 2014; Reclamation et al. 2013; CALFED 2002
Big tarplant <i>Blepharizonia plumosa</i>	–	–	1B.1	Valley and foothill grassland; 100- to 1,600-foot elevation	East Delta, South Delta, West Delta	Yes	July–October	CALFED 2002

Table 1. Special-Status Plant Species Referenced in Recovery and Conservation Planning Documents for the Delta (contd.)

Common Name Scientific Name	Federal Listing Status ^a	State Listing Status ^b	CRPR Listing Status ^c	Habitat	Region(s) of the Delta with Documented Occurrence	Endemic to California Floristic Province	Flowering Period	Sources
Bristly sedge <i>Carex comosa</i>	–	–	2B.1	Coastal prairie, marshes and swamps, valley and foothill grassland, on lake margins, and wet places; 0- to 2,100-foot elevation	North Delta, South Delta, West Delta	No	May–September	CALFED 2002
Congdon’s tarplant <i>Centromadia parryi</i> <i>ssp. congdonii</i>	–	–	1B.2	Alkaline, often heavy clay soils in mesic areas within grassland communities with ruderal and native alkali-tolerant plants; 0- to 600-foot elevation	Suisun Marsh, West Delta	Yes	June–November	CALFED 2002
Hispid salty bird's-beak <i>Chloropyron molle</i> <i>ssp. hispidum</i>	–	–	1B.1	Mesic alkaline soils in meadows and seeps, playas, and valley and foothill grassland; 3- to 500-foot elevation	No documented extant CNDDDB occurrences within Delta, but presumed present in Suisun Marsh	Yes	June–September	Reclamation et al. 2013; CALFED 2002
Soft salty bird's-beak <i>Chloropyron molle</i> <i>ssp. molle</i>	E	R	1B.2	Coastal salt marshes and swamps; 0- to 10-foot elevation	Suisun Marsh, West Delta	Yes	July–September	DWR 2013; Reclamation et al. 2013; CALFED 2002
Palmate-bracted salty bird's-beak <i>Chloropyron palmatum</i>	E	E	1B.1	Alkaline soils in chenopod scrub and valley and foothill grassland; 15- to 500-foot elevation	East Delta	Yes	June–August	CALFED 2002
Slough thistle <i>Cirsium crassicaule</i>	–	–	1B.1	Chenopod scrub habitat or along sloughs in marshes, and swamps and riparian scrub habitat; 0- to 300-foot elevation	South Delta	Yes	May–August	DWR 2017; DWR 2013; SFEI-ASC 2014; CALFED 2002

Table 1. Special-Status Plant Species Referenced in Recovery and Conservation Planning Documents for the Delta (contd.)

Common Name Scientific Name	Federal Listing Status ^a	State Listing Status ^b	CRPR Listing Status ^c	Habitat	Region(s) of the Delta with Documented Occurrence	Endemic to California Floristic Province	Flowering Period	Sources
Suisun thistle <i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>	E	–	1B.1	Salt and brackish marshes; 0- to 3-foot elevation	Suisun Marsh	Yes	June–September	DWR 2013; SFEI-ASC 2014; USFWS 2013; Reclamation et al. 2013; CALFED 2002
Recurved larkspur <i>Delphinium recurvatum</i>	–	–	1B.2	Alkaline soils in cismontane woodland and valley and foothill grassland; 10- to 2,500-foot elevation	South Delta, West Delta	Yes	March–June	CALFED 2002
Dwarf downingia <i>Downingia pusilla</i>	–	–	2B.2	Vernally mesic sites in valley and foothill grassland and vernal pools; 3- to 1,500-foot elevation	Cache Slough-Yolo Complex, North Delta, Suisun Marsh	No	March–May	DWR 2013; SFEI-ASC 2014
Delta button-celery <i>Eryngium racemosum</i>	–	E	1B.1	Vernally mesic clay depressions in riparian scrub habitat; 10- to 100-foot elevation	South Delta, West Delta	Yes	June–September	DWR 2017; DWR 2013; SFEI-ASC 2014
Spiny-sepaled button-celery <i>Eryngium spinosepalum</i>	–	–	1B.2	Valley and foothill grassland and vernal pools; 250- to 3,000-foot elevation	West Delta	Yes	April–June	CALFED 2002
Contra Costa wallflower <i>Erysimum capitatum</i> ssp. <i>angustatum</i>	E	E	1B.1	Inland dunes, generally on stabilized dunes of sand and clay near Antioch along the San Joaquin River; 0- to 70-foot elevation	West Delta	Yes	March–July	SFEI-ASC 2014; CALFED 2002
Diamond-petaled California poppy <i>Eschscholzia rhombipetala</i>	–	–	1B.1	Alkaline and clay soils in valley and foothill grassland; 0- to 1,000-foot elevation	West Delta	Yes	March–April	CALFED 2002

Table 1. Special-Status Plant Species Referenced in Recovery and Conservation Planning Documents for the Delta (contd.)

Common Name Scientific Name	Federal Listing Status ^a	State Listing Status ^b	CRPR Listing Status ^c	Habitat	Region(s) of the Delta with Documented Occurrence	Endemic to California Floristic Province	Flowering Period	Sources
San Joaquin spearscale <i>Extriplex joaquinana</i>	–	–	1B.2	Alkaline soils in chenopod scrub, meadows and seeps, playas, and valley and foothill grassland; 3- to 2,750-foot elevation	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	Yes	April–October	DWR 2013; Robinson et al. 2014; CALFED 2002
Bogg’s Lake hedge-hyssop <i>Gratiola heterosepala</i>	–	E	1B.2	Lake margin marshes and swamps and vernal pools in clay soils; 30- to 7,800-foot elevation	West Delta	No	April–August	DWR 2013; Robinson et al. 2014; CALFED 2002
Rose-mallow <i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	–	–	1B.2	Freshwater marshes and swamps; generally found on wetted riverbanks and low peat islands in sloughs; 0- to 100-foot elevation	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, West Delta	Yes	June–September	CALFED 2002
Carquinez goldenbush <i>Isocoma arguta</i>	–	–	1B.1	Grows in alkaline soils on flats and low hills in valley and foothill grassland; often occurs on low benches near drainages and on mounds in swale areas	Cache Slough-Yolo Complex, Suisun Marsh	Yes	August–December	DWR 2013; SFEI-ASC 2014; CALFED 2002
Contra Costa goldfields <i>Lasthenia conjugens</i>	E	–	1B.1	Grows in vernal pools, swales, and other depressions in open grassland and woodland communities, often in alkaline soils	Suisun Marsh, West Delta	Yes	March–June	CALFED 2002

Table 1. Special-Status Plant Species Referenced in Recovery and Conservation Planning Documents for the Delta (contd.)

Common Name Scientific Name	Federal Listing Status ^a	State Listing Status ^b	CRPR Listing Status ^c	Habitat	Region(s) of the Delta with Documented Occurrence	Endemic to California Floristic Province	Flowering Period	Sources
Delta tule pea <i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	–	–	1B.2	Freshwater and brackish marshes at sea level	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	Yes	May–September	DWR 2013; SFEI-ASC 2014; USFWS 2013; Reclamation et al. 2013; CALFED 2002
Legenere <i>Legenere limosa</i>	–	–	1B.1	Bottoms of vernal pools and other wet depressions in grassland communities	Cache Slough-Yolo Complex, North Delta, Suisun Marsh	Yes	April–June	DWR 2013; SFEI-ASC 2014; CALFED 2002
Heckard's peppergrass <i>Lepidium latipes</i> var. <i>heckardii</i>	–	–	1B.2	Alkaline flats and in alkaline grasslands along the edges of vernal pools	Cache Slough-Yolo Complex, North Delta	Yes	March–May	DWR 2013; SFEI-ASC 2014; CALFED 2002
Mason's lilaepsis <i>Lilaeopsis masonii</i>	–	R	1B.1	Freshwater and brackish marshes, riparian scrub, generally found in tidal zones, on depositional soils; 0- to 30-foot elevation	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	Yes	April–November	DWR 2013; SFEI-ASC 2014; Reclamation et al. 2013; CALFED 2002
Delta mudwort <i>Limosella subulata</i>	–	–	2B.1	Riparian scrub, freshwater marsh, brackish marsh, generally on mud banks of the Delta in marshy or scrubby riparian; 0- to 10-foot elevation	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	May–August	DWR 2013; SFEI-ASC 2014; CALFED 2002
Colusa grass <i>Neostapfia colusana</i>	T	E	1B.1	Large vernal pools with adobe clay soils; 15- to 4,000-foot elevation	Cache Slough-Yolo Complex	Yes	May–August	CALFED 2002

Table 1. Special-Status Plant Species Referenced in Recovery and Conservation Planning Documents for the Delta (contd.)

Common Name Scientific Name	Federal Listing Status ^a	State Listing Status ^b	CRPR Listing Status ^c	Habitat	Region(s) of the Delta with Documented Occurrence	Endemic to California Floristic Province	Flowering Period	Sources
Antioch Dunes evening primrose <i>Oenothera deltoides</i> ssp. <i>howellii</i>	E	E	1B.1	Inland dunes, remnant river bluffs, and sand dunes east of Antioch, along river bluffs, and in loose sand; 0- to 100-foot in elevation	West Delta	Yes	March–September	SFEI-ASC 2014; CALFED 2002
Eel-grass pondweed <i>Potamogeton zosteriformis</i>	–	–	2B.2	Marshes and swamps; 0- to 6,000-foot elevation	West Delta	No	June–July	CALFED 2002
Sanford’s arrowhead <i>Sagittaria sanfordii</i>	–	–	1B.2	Assorted shallow freshwater marshes and swamps; 0- to 2,000-foot elevation	Cache Slough-Yolo Complex, East Delta, North Delta	Yes	May–October	CALFED 2002
Marsh skullcap <i>Scutellaria galericulata</i>	–	–	2B.2	Lower montane coniferous forest, meadows and seeps, marshes and swamps, wet places; 0- to 7,000-foot elevation	East Delta, North Delta, South Delta, West Delta	No	June–September	CALFED 2002
Side-flowering skullcap <i>Scutellaria lateriflora</i>	–	–	2B.2	Marshes and swamps, meadows and seeps; 0- to 1,500-foot elevation	East Delta, North Delta	No	July–September	DWR 2013; SFEI-ASC 2014
Suisun Marsh aster <i>Symphotrichum lentum</i>	–	–	1B.2	Marshes and swamps, often along sloughs; 0- to 10-foot elevation	Suisun Marsh	Yes	May–November	DWR 2013; SFEI-ASC 2014; Reclamation et al. 2013; CALFED 2002

Source: California Natural Diversity Database (CNDDB) 2018; California Native Plant Society (CNPS) 2018

Table 1. Special-Status Plant Species Referenced in Recovery and Conservation Planning Documents for the Delta (contd.)

Table Notes:

^a **U.S. Fish and Wildlife Service Federal Listing Categories:**

T = Threatened
 E = Endangered
 – = No status.

^b **California Department of Fish and Game State Listing Categories:**

R = Rare
 E = Endangered
 – = No status

^c **California Rare Plant Rank:**

1A = Presumed extinct
 1B = Plants rare, threatened, or endangered in California and elsewhere
 2A = Plants presumed extirpated in California but common elsewhere
 2B = Plants rare, threatened, or endangered in California, but more common elsewhere

3 = Plants for which more information is needed—a review list
 4 = Plants of limited distribution—a watch list
 CRPR Threat Rank:
 0.1 = Seriously endangered in California (>80 percent of occurrences are threatened and/or in high degree and immediacy of threat)
 0.2 = Fairly endangered in California (20–80 percent of occurrences are threatened)
 0.3 = Not very endangered in California (<20 percent of occurrences are threatened, or no current threats are known)

Table 2. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Invertebrates

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Lange's metalmark butterfly	<i>Apodemia mormo langei</i>	E	–	Stabilized sand dunes along the San Joaquin River; endemic to the Antioch Dunes; host plant is nude buckwheat	West Delta	Yes	SFEI-ASC 2014; CALFED 2002
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	E	–	Vernal pools and swales	Cache Slough-Yolo Complex, Suisun Marsh	Yes	DWR 2013; SFEI-ASC 2014; CALFED 2002
Longhorn fairy shrimp	<i>Branchinecta longiantenna</i>	E	–	Small, shallow vernal pools and swales in alkali soils or rock outcrops	South Delta, West Delta	Yes	DWR 2013; SFEI-ASC 2014; CALFED 2002
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	T	–	Vernal pools and other seasonal wetlands	Cache Slough-Yolo Complex, North Delta, South Delta, Suisun Marsh, West Delta	No	DWR 2013; SFEI-ASC 2014; CALFED 2002
Midvalley fairy shrimp	<i>Branchinecta mesovallensis</i>	–	–	Vernal pools	Cache Slough-Yolo Complex, West Delta	Yes	DWR 2013; CALFED 2002
Monarch butterfly	<i>Danaus plexippus</i>	–	–	Commonly overwinters in eucalyptus groves along the coast	Suisun Marsh ¹	No	CALFED 2002
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T	–	Elderberry shrubs, typically in riparian habitats	North Delta, South Delta, Suisun Marsh	Yes	DWR 2017a; DWR 2017c; DWR 2013; SFEI-ASC 2014; CALFED 2002
Delta green ground beetle	<i>Elaphrus viridis</i>	T	–	Found along the margins of vernal pools within 1.5 meters of the water	Cache Slough-Yolo Complex	Yes	CALFED 2002
Vernal pool tadpole shrimp	<i>Lepidurus packardi</i>	E	–	Vernal pools, swales, and other ephemeral wetlands	Cache Slough-Yolo Complex, North Delta, Suisun Marsh	Yes	DWR 2013; SFEI-ASC 2014; CALFED 2002

Table 2. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Invertebrates (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
California linderiella	<i>Linderiella occidentalis</i>	–	–	Vernal pools, swales, and other ephemeral wetlands	Cache Slough-Yolo Complex, North Delta, Suisun Marsh, West Delta	Yes	DWR 2013; SFEI-ASC 2014
Callippe silverspot butterfly	<i>Speyeria callippe callippe</i>	E	–	Found in native grassland and adjacent habitats, where females lay their eggs on the larval food plant, <i>Viola tricolor</i>	Suisun Marsh	Yes	CALFED 2002

Notes:

¹ Occurrence is based on observation of overwintering Monarchs in eucalyptus trees near the City of Fairfield in 1979. This spotting was considered unusual since this species in California typically overwinters in locations closer to the coast.

^a **Federal Status:**

BCC = U.S. Fish and Wildlife Service bird of conservation concern (no legal status, but may warrant future listing under the federal Endangered Species Act [ESA] without additional conservation efforts)

E = Listed as endangered under the ESA

T = Listed as threatened under the ESA

– = No status.

^b **State Status:**

SSC = California species of special concern

E = Listed as endangered under the California Endangered Species Act (CESA)

T = Listed as threatened under CESA

WL = California Department of Fish and Wildlife watch list (list of species formerly listed as SSC, under ESA or CESA, or as Fully Protected).

– = No status.

^c Species occurrence is based on California Natural Diversity Database (CNDDDB) 2018 records search for special-status species. For those species not tracked by CNDDDB (e.g., nonlisted, potentially common species), the table presents regions of Delta with potentially suitable habitat.

Table 3. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Amphibians

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
California tiger salamander	<i>Ambystoma californiense</i>	T	T, WL	Winter breeding in vernal pools and seasonal wetlands with a minimum 10-week inundation period; in summer, aestivates in grassland habitat, primarily in rodent burrows	Cache Slough-Yolo Complex, East Delta, South Delta, Suisun Marsh, West Delta	Yes	DWR 2013; CDFW 2015; CALFED 2002
California red-legged frog	<i>Rana draytonii</i>	T	SSC	Foothill streams with dense shrubby or emergent riparian vegetation, minimum 11-20 weeks of water for larval development, and upland refugia for aestivation (dormancy)	South Delta, Suisun Marsh, West Delta	No	DWR 2013; SFEI-ASC 2014; CDFW 2015; CALFED 2002
Western spadefoot toad	<i>Spea hammondi</i>	–	SSC	In winter, breeds in vernal pools and seasonal wetlands with a minimum three-week inundation period; in summer, aestivates in grassland habitat, in soil crevices and rodent burrows	No documented extant CNDDB occurrences within Delta, but multiple observations close to South Delta, southwest of Tracy	No	CDFW 2015; CALFED 2002

Table 3. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Amphibians (contd.)

Notes:

^a **Federal Status:**

BCC = U.S. Fish and Wildlife Service bird of conservation concern (no legal status, but may warrant future listing under the federal Endangered Species Act [ESA] without additional conservation efforts)

E = Listed as endangered under the ESA

T = Listed as threatened under the ESA

– = No status.

^b **State Status:**

SSC = California species of special concern

E = Listed as endangered under the California Endangered Species Act (CESA)

T = Listed as threatened under CESA

WL = California Department of Fish and Wildlife watch list (list of species formerly listed as SSC, under ESA or CESA, or as Fully Protected).

– = No status.

^c Species occurrence is based on California Natural Diversity Database (CNDDDB) 2018 records search for special-status species. For those species not tracked by CNDDDB (e.g., nonlisted, potentially common species), the table presents regions of Delta with potentially suitable habitat.

Table 4. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Reptiles

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Western pond turtle	<i>Actinemys marmorata</i>	–	SSC	Forages in ponds, marshes, slow-moving streams, sloughs, and irrigation ditches; nests in nearby uplands with low, sparse vegetation	East Delta; North Delta; South Delta; Suisun Marsh; West Delta	No	DWR 2013; SFEI-ASC 2014; CDFW 2015; CALFED 2002
Silvery legless lizard	<i>Anniella pulchra pulchra</i>	–	SSC	Associated with a variety of vegetation types on sandy soils with accessible moisture, primarily but not exclusively in semi-stabilized dunes	West Delta	Yes	CDFW 2015

Table 4. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Reptiles (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Coast horned lizard	<i>Phrynosoma blainvilli</i>	–	SSC	Variety of open habitats, including chaparral, oak savanna, and grassland; found primarily in areas with sandy, friable soils, scattered shrubs, and abundant ant colonies	No documented extant CNDDDB occurrences within Delta, but multiple observations close to South Delta, west of Tracy	No	CDFW 2015
Giant garter snake	<i>Thamnophis gigas</i>	T	T	Forages in slow-moving streams, sloughs, ponds, marshes, inundated floodplains, rice fields, and irrigation and drainage canals; also requires upland refugia not subject to flooding during the snake's inactive season	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	Yes	DWR 2017a; DWR 2017c; DWR 2013; SFEI-ASC 2014; CDFW 2015; USFWS 2017; CALFED 2002

Table Notes:

^a **Federal Status:**

BCC = U.S. Fish and Wildlife Service bird of conservation concern (no legal status, but may warrant future listing under the federal Endangered Species Act [ESA] without additional conservation efforts)

E = Listed as endangered under the ESA

T = Listed as threatened under the ESA

– = No status.

^b **State Status:**

SSC = California species of special concern

E = Listed as endangered under the California Endangered Species Act (CESA)

T = Listed as threatened under CESA

WL = California Department of Fish and Wildlife watch list (list of species formerly listed as SSC, under ESA or CESA, or as Fully Protected).

– = No status.

^c Species occurrence is based on California Natural Diversity Database (CNDDDB) 2018 records search for special-status species. For those species not tracked by CNDDDB (e.g., nonlisted, potentially common species), the table presents regions of Delta with potentially suitable habitat.

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Tricolored blackbird	<i>Agelaius tricolor</i>	BCC	T	Nests colonially in large, dense stands of freshwater marsh, riparian scrub, and other shrubs and herbs; forages in grasslands and agricultural fields	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CDFW 2015; DWR 2013; CALFED 2002
Grasshopper sparrow	<i>Ammodramus savannarum</i>	–	SSC (nesting)	Nests and forages in dense grasslands; favors a mix of native grasses, forbs, and scattered shrubs	Cache Slough-Yolo Complex, West Delta, South Delta	No	CDFW 2015; DiGaudio et al. 2017; CALFED 2002
Tule greater white-fronted goose	<i>Anser albifrons elgasi</i>	–	SSC (wintering)	Forages primarily in marshes dominated by tules, bulrushes, and cattails; forages to a lesser extent in rice and other grain fields	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta ¹	No	CDFW 2015
Golden eagle	<i>Aquila chrysaetos</i>	BCC	FP, WL	Nests and forages in a variety of open habitats, including grassland, shrubland, and cropland; most common in foothill habitats; rare foothill breeder; nests in cliffs, rock outcrops, and large trees	Cache Lough Complex, Yolo Bypass, West Delta, South Delta, Suisun Marsh	No	CDFW 2015; CALFED 2002

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Great egret	<i>Ardea alba</i>	–	CFGC (rookeries)	Nests colonially in tall trees; forages in freshwater and saline marshes, shallow open water, and occasionally cropland or low, open upland habitats, such as pastures	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CDFW 2015; CALFED 2002
Great blue heron	<i>Ardea herodias</i>	–	CFGC (rookeries)	Nests colonially in tall trees; forages in freshwater and saline marshes, shallow open water, and occasionally cropland or low, open upland habitats, such as pastures	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CDFW 2015; CALFED 2002
Short-eared owl	<i>Asio flammeus</i>	–	SSC (nesting)	Nests on the ground among herbaceous vegetation, such as grasses or cattails; forages in grasslands, agricultural fields, and marshes	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CDFW 2015; CALFED 2002

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Burrowing owl	<i>Athene cunicularia hypugea</i>	BCC	SSC (nesting)	Nests and forages in grasslands, agricultural fields, and low scrub habitats, especially where ground squirrel burrows are present; occasionally inhabits artificial structures and small patches of disturbed habitat	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CDFW 2015; DWR 2013; SFEI-ASC 2014; DiGaudio et al. 2017; CALFED 2002
Swainson's hawk	<i>Buteo swainsoni</i>	BCC	T (nesting)	Nests in isolated trees, open woodlands, and woodland margins; forages in grasslands and agricultural fields	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CDFW 2015; DWR 2013; SFEI-ASC 2014; CALFED 2002
Dunlin	<i>Calidris alpina</i>		–	Mudflats, estuaries, marshes, flooded fields, sandy or gravelly beaches, and shores of lakes, ponds, and sloughs; nests in wet coastal tundra, grass or sedge tundra with pools and bogs	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	Dybala et al. 2017a

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Western sandpiper	<i>Calidris mauri</i>	–	–	Nonbreeding in mudflats, beaches, shores of lakes and ponds, shallow lagoons, artificial salt ponds, and flooded fields, various coastal habitats with flat or gently sloping muddy, sandy, or gravelly shores, less often inland at pond edges, rain pools, wet fields; nests on the ground in a shallow depression, lined with leaves, lichen, and other plant material	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	Dybala et al. 2017a
Least sandpiper	<i>Calidris minutilla</i>	–	–	Nonbreeding in wet meadows, mudflats, flooded fields, shores of pools and lakes, narrow channels, edge of salt marsh, river sandbars, sometimes sandy beaches; nests in mossy or wet grassy tundra, in lush vegetation near pond, occasionally in drier areas with sparse vegetation or scattered bushes	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	Dybala et al. 2017a

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	T, BCC	SSC	Nests and forages on sandy and gravelly beaches along the coast and the shores of inland alkali lakes	Cache Slough-Yolo Complex, West Delta, South Delta, Suisun Marsh	No	CDFW 2015; Dybala et al. 2017a; CALFED 2002
Mountain plover	<i>Charadrius montanus</i>	BCC	SSC (wintering)	Forages in short grasslands and plowed agricultural fields where vegetation is sparse and trees are absent	Cache Slough-Yolo Complex	No	CDFW 2015; CALFED 2002
Killdeer	<i>Charadrius vociferus</i>	–	–	Habitat includes various open areas such as fields, meadows, lawns, pastures, mudflats, and shores of lakes, ponds, rivers, and seacoasts; nests are on the ground in open dry or gravelly situations, sometimes in similar situations on roofs, driveways, etc.	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	Dybala et al. 2017a; Strum et al. 2017
Northern harrier	<i>Circus cyaneus</i>	–	SSC (nesting)	Nests on the ground among herbaceous vegetation, such as grasses or cattails; forages in grasslands, agricultural fields, and marshes	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CDFW 2015; DiGaudio et al. 2017; CALFED 2002

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	T, BCC	E	Nests in valley, foothill, and desert riparian forest with densely foliated deciduous trees and shrubs, especially willows; other associated vegetation includes cottonwood trees, blackberry, nettle, and wild grape	Cache Slough-Yolo Complex, North Delta, South Delta	No	DWR 2017a; DWR 2017c; DWR 2013; SFEI-ASC 2014; Dybala et al. 2017b; CALFED 2002
Yellow warbler	<i>Dendroica petechia</i>	–	SSC (nesting)	Nests and forages in early successional riparian habitats	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CDFW 2015; Dybala et al. 2017b; CALFED 2002
White-tailed kite	<i>Elanus leucurus</i>	–	FP	Forages in ponds, marshes, slow-moving streams, sloughs, and irrigation ditches; nests in nearby uplands with low, sparse vegetation	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	DWR 2013; SFEI-ASC 2014; CDFW 2015; CALFED 2002
California horned lark	<i>Eremophila alpestris actia</i>	–	WL	Nests and forages in open habitats with sparse vegetation, including grasslands and fallow agricultural fields	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	DiGaudio et al. 2017

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
American peregrine falcon	<i>Falco peregrinus anatum</i>	BCC	FP	Forages in a wide variety of habitats, but is most common near water, where shorebirds and waterfowl are abundant	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CDFW 2015; CALFED 2002
Saltmarsh common yellowthroat	<i>Geothlypis trichas sinuosa</i>	BCC	SSC	Primarily brackish marsh with dense and continuous wetland or riparian vegetation down to the water surface; to a lesser degree, also uses woody swamp and freshwater marsh; often found in rush, tall grass, and willow-dominated communities	Suisun Marsh, West Delta	Yes	CDFW 2015; USFWS 2013; Dybala et al. 2017b; Reclamation et al. 2013; CALFED 2002
Lesser sandhill crane	<i>Grus canadensis canadensis</i>	–	SSC (wintering)	Forages primarily in croplands with waste grain; also frequents grasslands and emergent wetlands	Yolo Bypass, North Delta, East Delta, South Delta, West Delta ²	No	CDFW 2015
Greater sandhill crane	<i>Grus canadensis tabida</i>	–	T, FP	Forages primarily in croplands with waste grain; also frequents grasslands and emergent wetlands	Yolo Bypass, North Delta, East Delta, South Delta, West Delta ³	No	DWR 2017a; DWR 2017c; DWR 2013; SFEI-ASC 2014; CDFW 2015; CALFED 2002

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Bald eagle	<i>Haliaeetus leucocephalus leucocephalus</i>	BCC	E, FP	Forages primarily in large inland fish-bearing waters with adjacent large trees or snags, and occasionally in uplands with abundant rabbits, other small mammals, or carrion	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CDFW 2015; CALFED 2002
Black-necked stilt	<i>Himantopus mexicanus</i>	–	–	Shallow salt or fresh water with soft muddy bottom; grassy marshes, wet savanna, mudflats, shallow ponds, flooded fields, borders of salt ponds and mangrove swamp; nests along shallow water of ponds, lakes, swamps, or lagoons	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	Dybala et al. 2017a; Strum et al. 2017
Yellow-breasted chat	<i>Icteria virens</i>	–	SSC	Nests and forages in riparian thickets of willow and other brushy tangles near water and thick understory in riparian woodland	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, West Delta	No	DWR 2013; CDFW 2015; Dybala et al. 2017b; CALFED 2002
Least bittern	<i>Ixobrychus exilis</i>	BCC	SSC (nesting)	Nests and forages in cattail and bulrush marshes	Cache Slough-Yolo Complex, West Delta, East Delta, South Delta	No	CDFW 2015; CALFED 2002

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Loggerhead shrike	<i>Lanius ludovicianus</i>	BCC	SSC (nesting)	Nests in isolated shrubs and trees and woodland edges of open habitats; forages in grasslands, agricultural fields, and low scrub habitats	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CDFW 2015; DiGaudio et al. 2017
California black rail	<i>Laterallus jamaicensis coturniculus</i>	BCC	T, FP	Nests and forages in saline, freshwater, or brackish emergent marshes with gently grading slopes and upland refugia with vegetative cover beyond the high-water line	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	DWR 2017a; DWR 2013; SFEI-ASC 2014; CDFW 2015; USFWS 2013; Reclamation et al. 2013; CALFED 2002
Long-billed dowitcher	<i>Limnodromus scolopaceus</i>	–		Nonbreeding in marshes, shores of ponds and lakes, mudflats and flooded fields, primarily in freshwater situations; nests on the ground in tundra and wet meadows, usually in marshes or grassy areas with scattered shrubs and trees near open fresh water	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	Dybala et al. 2017a

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Song sparrow "Modesto" population	<i>Melospiza melodia</i>	–	SSC	Nests and forages primarily in emergent marsh, riparian scrub, and early successional riparian forest habitats, and infrequently in mature riparian forest and sparsely vegetated ditches and levees	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, West Delta	Yes	Dybala et al. 2017b
Suisun song sparrow	<i>Melospiza melodia maxillaris</i>	BCC	SSC	Nests and forages in brackish water marshes dominated by cattails, tules, and pickleweed	Suisun Marsh, West Delta	Yes	DWR 2013; SFEI-ASC 2014; CDFW 2015; USFWS 2013; Reclamation et al. 2013; CALFED 2002
San Pablo song sparrow	<i>Melospiza melodia samuelis</i>	BCC	SSC	Coastal salt marshes dominated by pickleweed; nests in gumplant bordering slough channels	No documented extant CNDDDB occurrences within Delta, but potential habitat in Suisun Marsh	Yes	CDFW 2015; USFWS 2013; CALFED 2002
Long-billed curlew	<i>Numenius americanus</i>	–		Nests in dry prairies and moist meadows, on ground usually in flat area with short grass, sometimes on more irregular terrain, often near rock or other conspicuous object	Potentially suitable habitat present throughout Delta, including Yolo Bypass and Suisun Marsh	No	Dybala et al. 2017a; CDFW 2015; CALFED 2002

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Whimbrel	<i>Numenius phaeopus</i>	–		Nests in sedge-dwarf shrub tundra, sedge-meadow, hummock-bog, moorlands, and heath-tundra, in depressions; often returns to same nesting area in successive years	Potentially suitable habitat present throughout Delta, including Yolo Bypass and Suisun Marsh	No	Dybala et al. 2017a
Osprey	<i>Pandion haliaetus</i>	–	WL	Forages exclusively in fish-bearing waters; nests in nearby trees or tall, constructed platforms	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CDFW 2015; CALFED 2002
Double-crested cormorant	<i>Phalacrocorax auritus</i>	–	WL	Lakes, ponds, rivers, lagoons, swamps, coastal bays, marine islands, and seacoasts, usually within sight of land; nests on the ground or in trees in freshwater situations, and on coastal cliffs	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CALFED 2002

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Purple martin	<i>Progne subis</i>	–	SSC (nesting)	Nests in tree cavities, bridges, utility poles, lava tubes, and buildings; forages in foothill and low montane oak and riparian woodlands, and less frequently in coniferous forests and open or developed habitats	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CDFW 2015
Ridgway's rail	<i>Rallus longirostris obsoletus</i>	E	E, FP	Nests and forages in dense cordgrass and cattail marshes with vegetated refugia during the highest tides	Suisun Marsh	No	CDFW 2015; USFWS 2013; SFEI-ASC 2014; Reclamation et al. 2013; CALFED 2002
American avocet	<i>Recurvirostra americana</i>	–	–	Lowland marshes, mudflats, ponds, alkaline lakes, and estuaries; usually nests on open flats or areas with scattered tufts of grass on islands or along lakes (especially alkaline) and marshes	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	Dybala et al. 2017a; Strum et al. 2017

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Bank swallow	<i>Riparia riparia</i>	–	T (nesting)	Nests in vertical banks or bluffs, typically adjacent to water, devoid of vegetation, and with friable, eroding soils; forages in a wide variety of habitats	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	CDFW 2015; DWR 2017a; DWR 2017c; Dybala et al. 2017b; CALFED 2002
California least tern	<i>Sterna antillarum browni</i>	E	E, FP	Prefers undisturbed nest sites on open or sparsely vegetated, sandy, or gravelly shores on beaches or near shallow-water estuaries where it often feeds; has reportedly also nested in landfills and on paved areas	Cache Slough-Yolo Complex, Suisun Marsh, West Delta	No	CDFW 2015; SFEI-ASC 2014; Reclamation et al. 2013; CALFED 2002
Lesser yellowlegs	<i>Tringa flavipes</i>	–	–	Nonbreeding in marshes, ponds, wet meadows, lakes, mudflats, and coastal salinas (coastal salt ponds or saline wetlands); nests in muskeg country, to edge of tundra, in marshes and bogs, clearings or burned-over sections of black spruce forest	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	Dybala et al. 2017a

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Greater yellowlegs	<i>Tringa melanoleuca</i>	–	–	Nonbreeding in marshes, ponds, lakes, stream margins, sand and gravel bars, lagoons, salinas (coastal salt ponds or saline wetlands), and coastal mudflats; nests in muskeg country or at other wetlands, on the ground in a slight depression in moss or dry peat, usually near water	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, Suisun Marsh, West Delta	No	Dybala et al. 2017a
Least Bell's vireo	<i>Vireo bellii pusillus</i>	E	E	Nests and roosts in low riparian thickets of willows and shrubs, usually near water but sometimes along dry, intermittent streams; other associated vegetation includes cottonwood trees, blackberry, mulefat, and mesquite (in desert)	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, West Delta	No	DWR 2017a; DWR 2017c; DWR 2013; SFEI-ASC 2014; CDFW 2015; Dybala et al. 2017b; CALFED 2002
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	–	SSC (nesting)	Nests in freshwater emergent wetlands with dense vegetation and deep water, often along borders of lakes or ponds	Cache Slough-Yolo Complex, East Delta, North Delta, South Delta, West Delta	No	CDFW 2015

Table 5. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Birds (contd.)

Notes:

¹ Information based on the following reference: Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

² Species occurrence distribution is based on BDCP Conservation Strategy (DWR 2013) analysis for greater sandhill crane, with the assumption that the two species share the same foraging and roosting habitats within the Delta.

³ Species occurrence distribution is based on BDCP Conservation Strategy (DWR 2013) analysis.

^a **Federal Status:**

BCC = U.S. Fish and Wildlife Service bird of conservation concern (no legal status, but may warrant future listing under the federal Endangered Species Act [ESA] without additional conservation efforts)

E = Listed as endangered under the ESA

T = Listed as threatened under the ESA

– = No status

^b **State Status:**

SSC = California species of special concern

E = Listed as endangered under the California Endangered Species Act (CESA)

T = Listed as threatened under CESA

WL = California Department of Fish and Wildlife watch list (list of species formerly listed as SSC, under ESA or CESA, or as Fully Protected).

– = No status.

^c Species occurrence is based on California Natural Diversity Database (CNDDB) 2018 records search for special-status species. For those species not tracked by CNDDB (e.g., nonlisted, potentially common species), the table presents regions of Delta with potentially suitable habitat.

Table 6. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Mammals

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Pallid bat	<i>Antrozous pallidus</i>	–	SSC	Deserts, grasslands, shrublands, woodlands, and forests; most common in open, dry habitats; roosts in rock crevices, oak hollows, bridges, and buildings	No documented extant CNDDDB occurrences within Delta, but potential habitat in Delta, including West Delta and South Delta	No	CDFW 2015
Western mastiff bat	<i>Eumops perotis californicus</i>	–	SSC	Roosts in trees, rock crevices, and buildings in small colonies of fewer than 100 individuals; forages in a variety of grassland, shrub, and wooded habitats, including riparian and urban areas, although most commonly in open, arid lands	No documented extant CNDDDB occurrences within Delta, but potential habitat in Delta, including West Delta and South Delta	No	CDFW 2015; CALFED 2002
Western red bat	<i>Lasiurus blossevillii</i>	–	SSC	Roosts primarily in tree foliage, occasionally shrubs, in small family groups rather than large colonies as other bats; prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging, including grasslands, shrublands, and open woodlands	North Delta, Suisun Marsh, West Delta	No	CDFW 2015
Riparian woodrat	<i>Neotoma fuscipes riparia</i>	E	SSC	Riparian forest, particularly dense willow thickets with an oak overstory	South Delta	Yes	DWR 2013; SFEI-ASC 2014; DWR 2017c

Table 6. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Mammals (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Salt marsh harvest mouse	<i>Reithrodontomys raviventris</i>	E	E, FP	Saline emergent marshes with low, dense cover of vegetation (especially pickleweed) and higher elevation refugia	Suisun Marsh, West Delta	Yes	DWR 2013; SFEI-ASC 2014; CDFW 2015; USFWS 2013; Reclamation et al. 2013; CALFED 2002
Suisun shrew	<i>Sorex ornatus sinuosus</i>	–	SSC	Marshes bordering Suisun Bay and northern San Pablo Bay	No documented extant CNDDDB occurrences within Delta, but potential habitat in Suisun Marsh	Yes	DWR 2013; SFEI-ASC 2014; CDFW 2015; USFWS 2013; Reclamation et al. 2013; CALFED 2002
Riparian brush rabbit	<i>Sylvilagus bachmani riparius</i>	E	E	Dense thickets of brush associated with riparian habitats	East Delta, South Delta	Yes	DWR 2017a; DWR 2017c; DWR 2013; SFEI-ASC 2014; CALFED 2002
American badger	<i>Taxidea taxus</i>	–	SSC	Drier open shrub, forest, and herbaceous habitats with friable soils	North Delta, South Delta, West Delta	No	CDFW 2015
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E	T	Grasslands and oak savannas with friable soils; home range sizes of 600–1,300 acres	South Delta, West Delta	Yes	DWR 2013; SFEI-ASC 2014; CDFW 2015; CALFED 2002

Notes:

^a **Federal Status:**

BCC = U.S. Fish and Wildlife Service bird of conservation concern (no legal status, but may warrant future listing under the federal Endangered Species Act [ESA] without additional conservation efforts)

E = Listed as endangered under the ESA

T = Listed as threatened under the ESA

– = No status.

^b **State Status:**

SSC = California species of special concern

E = Listed as endangered under the California Endangered Species Act (CESA)

T = Listed as threatened under CESA

WL = California Department of Fish and Wildlife watch list (list of species formerly listed as SSC, under ESA or CESA, or as Fully Protected).

– = No status.

^c Species occurrence is based on California Natural Diversity Database (CNDDDB) 2018 records search for special-status species. For those species not tracked by CNDDDB (e.g., nonlisted, potentially common species), the table presents regions of Delta with potentially suitable habitat.

Table 7. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Fish¹

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Green sturgeon	<i>Acipenser medirostris</i>	T	SSC	Anadromous species, existing in the Sacramento River system, as well as in the Eel, Mad, Klamath, and Smith Rivers in the northwest portion of California	Potentially found throughout Delta waterways	No	DWR 2017a; SFEI-ASC 2014; DWR 2013; CDFW 2015; Reclamation et al. 2013; CALFED 2002
White sturgeon	<i>Acipenser transmontanus</i>	–	SSC	Anadromous species that spawns probably either over deep gravel riffles or in deep holes with swift currents and rock bottoms	Potentially found throughout Delta waterways	No	DWR 2013; SFEI-ASC 2014; CDFW 2015
Sacramento perch	<i>Archoplites interruptus</i>	–	CSC	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley; prefer warm water; aquatic vegetation is essential for young (within native range only)	North Delta, West Delta	Yes ²	CALFED 2002

Table 7. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Fish¹ (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Delta smelt	<i>Hypomesus transpacificus</i>	T	E	Spends most of its life in the Sacramento–San Joaquin Bay-Delta estuary; spawns in shallow, fresh or slightly brackish water upriver from the mixing zone	Potentially found throughout Delta waterways	Yes	DWR 2013; SFEI-ASC 2014; CDFW 2015; CNRA 2016; Reclamation et al. 2013; CALFED 2002
River lamprey	<i>Lampetra ayresii</i>		SSC	Adults need clean, gravelly riffles in permanent streams to spawn successfully; ammocoetes live in silty backwaters and eddies with muddy or sandy substrate into which they burrow	Potentially found throughout Delta waterways	No	DWR 2013; SFEI-ASC 2014; CDFW 2015
Pacific lamprey	<i>Lampetra tridentata</i>	–	–	Adults need clean, gravelly riffles in permanent streams to spawn successfully; ammocoetes live in silty backwaters and eddies with muddy or sandy substrate into which they burrow	Potentially found throughout Delta waterways	No	DWR 2013; SFEI-ASC 2014; CDFW 2015
Central Valley steelhead	<i>Oncorhynchus mykiss</i>	T	–	Anadromous species using riverine, estuarine, and saltwater habitat; migration potentially occurs year-round	Potentially found throughout Delta waterways	Yes	DWR 2017a; DWR 2017c; DWR 2013; SFEI-ASC 2014; CDFW 2015; CNRA 2017; Reclamation et al. 2013; CALFED 2002

Table 7. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Fish¹ (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Central Valley Chinook salmon, fall-/late fall-run	<i>Oncorhynchus tshawytscha</i>	–	SSC	Anadromous species using riverine, estuarine, and saltwater habitat	Potentially found throughout Delta waterways	Yes	DWR 2017a; DWR 2017c; DWR 2013; SFEI-ASC 2014; DWR 2017b; CDFW 2015; CNRA 2017; Reclamation et al. 2013; CALFED 2002
Central Valley spring-run Chinook salmon	<i>Oncorhynchus tshawytscha</i>	T	T	Anadromous species using riverine, estuarine, and saltwater habitat	Potentially found throughout Delta waterways	Yes	DWR 2017a; DWR 2017c; DWR 2013; SFEI-ASC 2014; DWR 2017b; CDFW 2015; CNRA 2017; Reclamation et al. 2013; CALFED 2002
Sacramento River winter-run Chinook salmon	<i>Oncorhynchus tshawytscha</i>	E	E	Anadromous species using riverine, estuarine, and saltwater habitat	Potentially found throughout Delta waterways	Yes	DWR 2017a; DWR 2017c; DWR 2013; SFEI-ASC 2015; DWR 2017b; CDFW 2015; CNRA 2017; Reclamation et al. 2013; CALFED 2002
Sacramento splittail	<i>Pogonichthys macrolepidotus</i>	–	SSC	Splittail spawn in shallow water over flooded vegetated habitat with a detectable water flow; larvae and juveniles remain in riparian or annual vegetation along shallow edges on floodplains	Potentially found throughout Delta waterways	Yes	DWR 2013; SFEI-ASC 2014; CDFW 2015; CALFED 2002

Table 7. Special-Status Wildlife Species Referenced in Recovery and Conservation Planning Documents for the Delta: Fish¹ (contd.)

Common Name	Scientific Name	Federal Legal Status ^a	State Legal Status ^b	Habitat	Region(s) of the Delta with Documented Occurrence ^c	Endemic to California	Sources
Longfin smelt	<i>Spirinchus Thaleichthys</i>	–	T	The longfin smelt is an anadromous species that spawns in the Delta and rears in the brackish areas of the San Francisco Bay and Delta	Potentially found throughout Delta waterways	No	DWR 2013; SFEI-ASC 2014; CDFW 2015; Reclamation et al. 2013; CALFED 2002

Table Notes:

¹ CNDDDB has insufficient information to determine precise distribution of fish species within the Delta and Suisun Marsh.

² Also introduced to other states including Arizona, Colorado, Nebraska, Nevada, Oregon, and Utah.

^a **Federal Status:**

BCC = U.S. Fish and Wildlife Service bird of conservation concern (no legal status, but may warrant future listing under the federal Endangered Species Act [ESA] without additional conservation efforts)

E = Listed as endangered under the ESA

T = Listed as threatened under the ESA

– = No status.

^b **State Status:**

SSC = California species of special concern

E = Listed as endangered under the California Endangered Species Act (CESA)

T = Listed as threatened under CESA

WL = California Department of Fish and Wildlife watch list (list of species formerly listed as SSC, under ESA or CESA, or as Fully Protected).

– = No status.

^c Species occurrence is based on California Natural Diversity Database (CNDDDB) 2018 records search for special-status species. For those species not tracked by CNDDDB (e.g., nonlisted, potentially common species), the table presents regions of Delta with potentially suitable habitat.

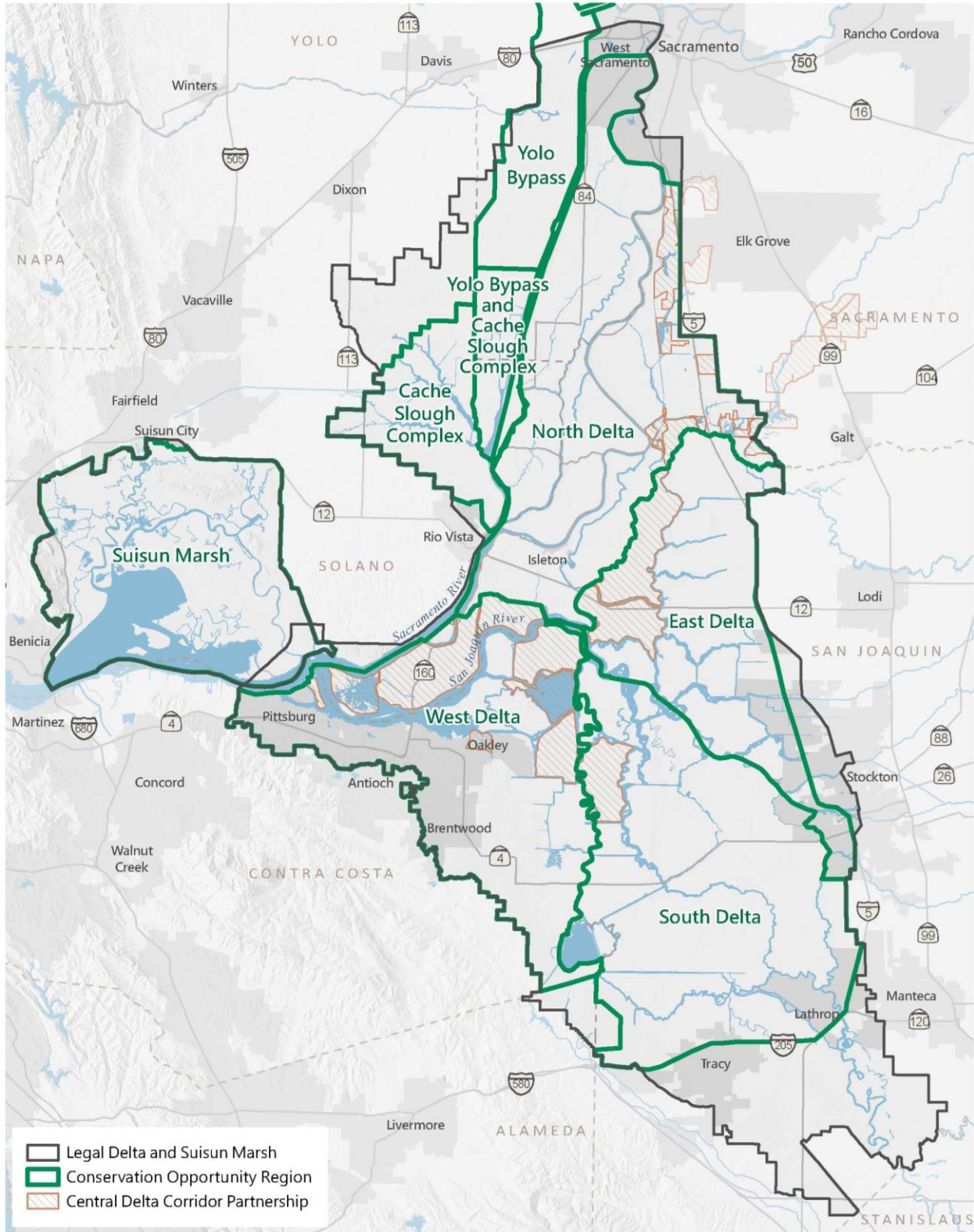


Figure 1. Regions of the Delta with Documented Special-Status Species Occurrence

Figure 1. Regions of the Delta with Documented Special-Status Species Occurrence (contd.)

This map illustrates Conservation Opportunity Regions and Central Delta Corridor Partnership areas in the Delta and Suisun Marsh. Conservation Opportunity Regions include the Suisun Marsh, Cache Slough Complex, Yolo Bypass, North Delta, East Delta, South Delta and West Delta. The Cache Slough and Yolo Bypass Conservation Opportunity Regions overlap at the boundary between Yolo and Solano Counties.

The Central Delta Corridor Partnership areas include Winter Island, Sherman Island, Twitchell Island, Dutch Slough, Webb Tract, and Holland Tract in the Western Delta Conservation Opportunity Region; Bacon Island in the South Delta Region; Bouldin Island and Staten Island in the East Delta Region; and a variety of smaller areas along the eastern boundary of the Delta in the North Delta Region, including McCormack Williamson Tract and the Stone Lakes National Wildlife Refuge.

Alternative formats of this map are available upon request.



Figure 2. California Floristic Province

This map illustrates the extent of the California Floristic Province along the West Coast of the United States, which ranges from southern Oregon to northwestern Mexico, and east to the Sierra Nevada mountains. The Delta and Suisun Marsh are fully within the California Floristic Province.

Alternative formats of this map are available upon request.

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