

1                   **REVISED SAIC TERRESTRIAL SPECIES GOALS AND**  
2                   **OBJECTIVES**  
3                   **Revised Working Draft**

4  
5                   **Introduction**

6  
7 This handout presents revisions to the draft biological goals and objectives for the  
8 proposed terrestrial and wetland covered species presented to the Steering Committee on  
9 April 24, 2009, including the addition of goals and objectives for the additional covered  
10 species approved at the April 4, 2009 Steering Committee meeting. Problem statements  
11 for each of the species have been added following the goal for each covered species.  
12 Proposed revisions to the April 24 objective statements are shown in track changes.  
13 Goals and objectives for the additional covered species are shown in red font.

14 As identified in the BDCP Overview dated January 12, 2009 and other planning  
15 documents, the BDCP Steering Committee anticipates that implementation of BDCP  
16 proposed covered activities and conservation measures will affect certain terrestrial  
17 species and their habitats, and that the BDCP Conservation Strategy will therefore need  
18 to address these unavoidable effects. At the direction of the Steering Committee, SAIC  
19 has been pursuing the following approach for terrestrial species:

- 20                   a. identify the terrestrial species or habitats that may be affected by the proposed  
21 BDCP;<sup>1</sup>
- 22                   b. identify the biological goals and objectives that may be appropriate for these  
23 affected terrestrial species;
- 24                   c. develop (through the Terrestrial Resources Subgroup) draft conservation  
25 measures that may be appropriate to implement for these species and their habitats  
26 to meet the relevant goals and objectives;
- 27                   d. explore the manner in which these conservation measures may relate to the  
28 conservation measures and programs in other existing or planned HCP/NCCPs in  
29 these same geographic areas to provide enhanced benefits to natural communities  
30 and species and to support further discussions of enhanced coordination with  
31 those other plans and programs.

32  
33 The revised biological goals and objectives presented below are intended to be crafted  
34 such that implementation of conservation measures that will achieve the objectives will  
35 provide for coverage of all the terrestrial covered species under the Natural Community  
36 Conservation Planning Act (NCCPA). Coverage is anticipated to be primarily provided  
37 through conservation of sufficient covered species habitats through proposed BDCP  
38 physical habitat restoration actions, undertaken in conjunction with the conservation

---

<sup>1</sup> Proposed covered species would be removed from the covered species list if the impact assessment indicates one or more of the proposed covered species would not be affected by BDCP actions.

1 actions under approved and planned HCP/NCCPs that intersect the BDCP Planning Area  
2 and Suisun Marsh. If it develops that the BDCP terrestrial conservation measures may  
3 not be suited to the conservation standards under the NCCPA for particular terrestrial  
4 species that will be affected by the plan, the BDCP plan participants may seek incidental  
5 take authorizations for those species under the California Endangered Species Act.

6  
7 The approach to conservation is anticipated to be primarily through preservation,  
8 enhancement, and restoration of covered terrestrial species habitats. Therefore, the  
9 anticipated metric for achieving terrestrial covered species objectives will be the extent of  
10 each species habitat (described in acres) that is demonstrably preserved, enhanced, or  
11 restored, as described in the conservation measures themselves.

## 12 13 14 **Natural Community Goals and Objectives**

15  
16 **Goal NACO1:** Protect, enhance, and restore natural communities to provide habitat and  
17 ecosystem functions to increase the natural production (reproduction, growth, and  
18 survival), abundance, and distribution of native Delta species.

19  
20 **Problem Statement:** *Habitat essential for the spawning, incubation, rearing, and*  
21 *foraging of native fishes has been degraded around the Bay Delta, and this has restricted*  
22 *species distribution, life history diversity, and growth of covered fish species. Increasing*  
23 *aquatic habitats and preserving, enhancing, and restoring terrestrial habitats that*  
24 *support the aquatic environment is expected to increase the distribution, life history*  
25 *diversity and growth of covered fish species populations. Substantial reduction in the*  
26 *extent, distribution, and condition of historical wetland and upland habitats supporting*  
27 *native wildlife and plants in the Bay Delta has also reduced the distribution and*  
28 *abundance of these native species. Preserving, enhancing, and restoring native habitats*  
29 *and agricultural habitats that now support native wildlife is expected to increase the*  
30 *abundance and distribution of native wildlife and plant species, improve connectivity*  
31 *among habitat areas within and adjacent to the Planning Area, and improve genetic*  
32 *interchange among species' populations.*

33  
34 **Covered species benefiting:** *All BDCP covered species are expected to benefit from*  
35 *achievement of the natural community biological objectives.*

36  
37 **Objective NACO1.1:** Increase hydrologic connectivity of Delta waterways with  
38 existing and historical floodplains to support habitat and food production for  
39 associated native species.

40  
41 *[Note: metrics, targets, and monitoring for this objective would be the same as*  
42 *those provided for in the relevant conservation measures (e.g., frequency,*  
43 *duration, and extent of Yolo Bypass inundation)]*  
44

1           **Objective NACO1.2:** Increase the extent and spatial distribution of tidal marsh  
2           within the Planning Area and Suisun Marsh to support habitat and food  
3           production for associated native species.  
4

5           *[Note: metrics, targets, and monitoring for this objective would be the same as*  
6           *those provided for in the relevant conservation measures (e.g., extent and location*  
7           *of restored habitat)]*  
8

9           **Objective NACO1.3:** Increase the extent and spatial distribution of riparian  
10          forest and scrub within the Planning Area to support habitat and food production  
11          for associated native species and increase connectivity among native habitats  
12          within and adjacent to the Planning Area.  
13

14          *[Note: metrics, targets, and monitoring for this objective would be the the same*  
15          *as those provided for in the relevant conservation measures (e.g., extent and*  
16          *location of restored habitat)]*  
17

18          **Objective NACO1.4:** Preserve ~~agricultural pasture lands and~~ lands, ~~including that~~  
19          ~~are farmed for~~ rice, alfalfa, ~~and~~ ~~field row~~ crops, ~~and other irrigated croplands~~ -in  
20          and adjacent to the Planning Area that are managed to support habitat for native  
21          species.  
22

23          *[Note: metrics, targets, and monitoring for this objective would be the the same*  
24          *as those provided for in the relevant conservation measures (e.g., extent and*  
25          *location of preserved ag lands)]*  
26

27          **Objective NACO1.5:** Preserve grassland communities in and adjacent to the  
28          Planning Area that support habitat for associated native species.  
29

30          *[Note: metrics, targets, and monitoring for this objective would be the the same*  
31          *as those provided for in the relevant conservation measures (e.g., extent and*  
32          *location of protected habitat)]*  
33

34          **Objective NACO1.6:** Preserve natural seasonal wetlands, including vernal pool,  
35          ~~vernal pool complex, alkaline/saline seasonal wetland, and alkaline sink scrub~~  
36          ~~habitats~~s and their ~~micro~~-watersheds, and managed wetlands in and adjacent to  
37          the Planning Area that support habitat for associated native species.  
38

39          *[Note: metrics, targets, and monitoring for this objective would be the same as*  
40          *those provided for in the relevant conservation measures (e.g., extent and location*  
41          *of protected habitat)]*  
42

43          **Objective NACO1.7:** Preserve non-tidal perennial aquatic and associated non-  
44          tidal perennial permanent emergent marsh communities in and adjacent to the  
45          Planning Area that support -habitat for associated native species.  
46

1            *[Note: metrics, targets, and monitoring for this objective would be the same as*  
2            *those provided for in the relevant conservation measures (e.g., extent and location*  
3            *of protected habitat)]*  
4

## 6            **Terrestrial and Wetland Covered Species Goals and Objectives**

### 8            **San Joaquin Kit Fox**

10          **Goal SJKF1:** Provide sufficient habitat to support the abundance and distribution of San  
11          Joaquin kit fox populations in the Planning Area to contribute to its conservation.

13          **Problem Statement:** *San Joaquin kit fox distribution is limited to the southwestern*  
14          *perimeter of the Planning Area and individuals and habitat could be affected by BDCP*  
15          *actions. Maintaining sufficient habitat to support the fox within the Planning Area is*  
16          *expected to maintain its abundance, distribution, and connectivity to adjacent habitat*  
17          *areas.*

19          The following natural community objective also contributes towards achieving this goal:  
20          NACO1.5.

22                  **Objective SJKF1.1:** Maintain or increase the extent of San Joaquin kit fox  
23                  habitat within the Planning Area.

### 26          **Riparian Brush Rabbit**

28          **Goal RIBR1:** Preserve and protect the abundance and distribution of riparian brush  
29          rabbit and increase the extent of its habitat to contribute to conservation of its populations  
30          in the Planning Area.<sup>2</sup>

32          **Problem Statement:** *Riparian brush rabbit is currently known only from two locations,*  
33          *one of which is in the Planning Area. Reduction and fragmentation of its habitat are*  
34          *hypothesized to have contributed to reduction in species abundance and distribution.*  
35          *The two remaining known occupied habitat area are also susceptible to flooding that*  
36          *could substantially reduce or extirpate the populations. Avoiding impacts on individuals*  
37          *and occupied habitats and increasing the extent of brush rabbit habitat is expected to*  
38          *help maintain the existing populations, and increasing the extent of available habitat will*  
39          *provide opportunities for the establishment of additional occupied habitat areas, thus*  
40          *reducing the potential for extinction.*

---

<sup>2</sup> The phrase *Protect and preserve the abundance and distribution* refers to protecting and preserving the abundance and distribution of riparian brush rabbit only in the context of BDCP actions and not from actions implemented by non-BDCP entities.

1  
2 The following ecosystem and natural community objectives also contribute towards  
3 achieving this goal: ECSY5.1 and NACO1.3.

4  
5 **Objective RIBR1.1:** Increase the extent of riparian brush rabbit habitat near  
6 occupied habitats within the Planning Area.

7  
8 **Objective RIBR1.2:** Avoid mortality of riparian brush rabbit and removal or  
9 degradation of occupied habitat associated with implementation of covered  
10 activities and conservation measures.<sup>3</sup>

### 11 12 13 **Riparian Woodrat**

14  
15 **Goal RIWO1:** Preserve and protect the abundance and distribution of riparian woodrat  
16 and increase the extent of its habitat to contribute to conservation of its populations in the  
17 Planning Area.<sup>4</sup>

18  
19 **Problem Statement:** *Riparian woodrat is not known to inhabit the Planning Area, but  
20 may be present or could be present in future years if adjacent populations colonize  
21 Planning Area habitats. Reduction and fragmentation of woodrat habitat is hypothesized  
22 to have contributed to reduction in species abundance and distribution. Occupied  
23 habitats are limited to a few riparian habitat areas along the San Joaquin and Stanislaus  
24 Rivers upstream of the Planning Area. Avoiding impacts on individuals and occupied  
25 habitats and increasing the extent of riparian woodrat habitat is expected to help  
26 maintain the existing populations, and increasing the extent of available habitat will  
27 provide opportunities for the establishment of additional occupied habitat areas, thus  
28 reducing the potential for extinction.*

29  
30  
31 The following ecosystem and natural community objectives also contribute towards  
32 achieving this goal: ECSY5.1 and NACO1.3.

33  
34 **Objective RIWO1.1:** Increase the extent of riparian woodrat habitat near  
35 occupied habitats within the Planning Area.  
36

---

<sup>3</sup> The riparian brush rabbit is extremely rare and is known to occupy only two small habitat areas, one of which is in the Planning Area.

<sup>4</sup> The phrase *Protect and preserve the abundance and distribution* refers to protecting and preserving the abundance and distribution of riparian woodrat only in the context of BDCP actions and not from actions implemented by non-BDCP entities.

1           **Objective RIWO1.2:** Avoid mortality of riparian woodrat and removal or  
2           degradation of occupied habitat associated with implementation of covered  
3           activities and conservation measures.<sup>5</sup>  
4  
5

## 6           **Salt Marsh Harvest Mouse**

7

8           **Goal SMHM1:** Preserve and protect the abundance and distribution of salt marsh  
9           harvest mouse and provide sufficient habitat to support the abundance and distribution of  
10          its populations in Suisun Marsh and the Planning Area to contribute to its conservation in  
11          these areas.<sup>6</sup>  
12

13          **Problem Statement:** *Reduction and fragmentation of salt marsh harvest mouse habitat*  
14          *and alteration of hydrological conditions supporting habitat is hypothesized to have*  
15          *contributed to reduction in species abundance and distribution. Avoiding impacts on*  
16          *individuals and increasing the extent of tidal marsh that supports mouse habitat is*  
17          *expected to help maintain and increase the species distribution and abundance.*  
18          *Restoration of tidal marsh in the west Delta would be expected to maintain or increase*  
19          *mouse habitat availability in future years with conversion of freshwater marsh in the west*  
20          *Delta to brackish tidal marsh with sea level rise.*  
21

22          The following ecosystem and natural community objectives also contribute towards  
23          achieving this goal: ECSY5.1 and NACO1.2.  
24

25                 **Objective SMHM1.1:** Increase the extent of tidal salt marsh harvest mouse  
26                 habitat within Suisun Marsh.  
27

28                 **Objective SMHM1.2:** Restore tidal marsh in portions of the Planning Area that  
29                 may support salt marsh harvest mouse habitat in future years with sea level rise.  
30

31                 **Objective SMHM1.3:** Avoid mortality of salt marsh harvest mouse associated  
32                 with implementation of covered activities and conservation measures<sup>7</sup>.  
33

## 34           **Townsend's Big-Eared Bat**

35           **Goal TBEB1:** Provide sufficient habitat to support the abundance and distribution of  
36           Townsend's big-eared bat populations in the Planning Area to contribute to its  
37           conservation.

---

<sup>5</sup> The riparian woodrat is considered to be extremely rare.

<sup>6</sup> The phrase *Protect and preserve the abundance and distribution* refers to protecting and preserving the abundance and distribution of salt marsh harvest mouse only in the context of BDCP actions and not from actions implemented by non-BDCP entities.

<sup>7</sup> The salt marsh harvest mouse is a designated fully protected species under the California Fish and Code § 4700. Take as defined in California Fish and Game Code §86 of fully protected species is prohibited. Conservation measures to achieve this objective would avoid take of the species in accordance with California Fish and Game Code § 4700.

1  
2 **Problem Statement:** *The Townsend's big-eared bat is not known to occupy the Planning*  
3 *Area, which does not support natural roosting habitat (e.g., caves, mines) for this*  
4 *species. Possible man-made roosting sites include old large barns and other buildings*  
5 *with the appropriate structure and interior space to support maternity roosts or*  
6 *hibernaculae. Bridges may also provide limited roosting habitat for this species. While*  
7 *no occupied roost sites have been detected, the species likely occurs at least incidentally*  
8 *in the Planning Area to forage, particularly along riparian corridors, or during seasonal*  
9 *movements. Disturbance to occupied roosts is hypothesized to have contributed to*  
10 *reduction in species population and distribution. Identification and seasonal avoidance*  
11 *of occupied man-made roost sites (buildings and bridges) is expected to reduce potential*  
12 *direct impacts on this species. Increasing the extent of riparian habitats is expected to*  
13 *help maintain and increase the species distribution and abundance in the Planning Area.*

14  
15 The following ecosystem and natural community objectives also contribute towards  
16 achieving this goal: ECSY5.1 and NACO1.3.

17  
18 **Objective TBEB1.1:** Increase the extent of riparian vegetation that  
19 supports Townsend's big-eared habitat within the Planning Area.

20  
21  
22 **Suisun Shrew**

23  
24 **Goal SUSH1:** Provide sufficient habitat to support the abundance and distribution of  
25 Suisun shrew populations in Suisun Marsh and the Planning Area to contribute to the  
26 conservation of the Suisun shrew in these areas.

27  
28 **Problem Statement:** *Reduction and fragmentation of Suisun shrew habitat and*  
29 *alteration of hydrological conditions supporting habitat is hypothesized to have*  
30 *contributed to reduction in species abundance and distribution. Avoiding impacts on*  
31 *individuals and increasing the extent of tidal marsh that supports shrew habitat is*  
32 *expected to help maintain and increase the species distribution and abundance.*  
33 *Restoration of tidal marsh in the west Delta would be expected to maintain or increase*  
34 *shrew habitat availability in future years with conversion of freshwater marsh in the west*  
35 *Delta to brackish tidal marsh with sea level rise.*

36  
37 The following ecosystem and natural community objectives also contribute towards  
38 achieving this goal: ECSY5.1 and NACO1.2.

39 **Objective SUSH1.1:** Increase the extent of tidal Suisun shrew habitat within  
40 Suisun Marsh.

41  
42 **Objective SUSH1.2:** Restore tidal marsh in portions of the Planning Area that  
43 may support Suisun shrew habitat in future years with sea level rise.

## 1 **Tricolored Blackbird**

2  
3 **Goal TRBB1:** Provide sufficient habitat to support the abundance and distribution of  
4 tricolored blackbird in the Planning Area and Suisun Marsh to contribute to its  
5 conservation in these areas.

6  
7 **Problem Statement:** *Reduction and degradation of tricolored blackbird habitat and*  
8 *alteration of hydrological conditions supporting habitat, excessive levels of predation,*  
9 *and human disturbance of nesting colonies are hypothesized to have contributed to*  
10 *reduction in species abundance and distribution. Increasing the extent of tidal marsh*  
11 *and increasing the extent of protected grasslands and agricultural lands that supports*  
12 *tricolored blackbird habitat is expected to help maintain and increase the species*  
13 *distribution and abundance.*

14  
15 The following ecosystem and natural community objectives also contribute towards  
16 achieving this goal: NACO1.2-1.6.

17  
18 **Objective TRBB1.1:** Increase the extent of tricolored blackbird nesting habitat  
19 within the Planning Area and Suisun..

20  
21 **Objective TRBB1.2:** Maintain or increase the extent of protected tricolored  
22 blackbird foraging and nesting habitat within the Planning Area and Suisun  
23 Marsh.

## 24 25 26 **Suisun Song Sparrow**

27  
28 **Goal SSSP1:** Provide sufficient habitat to support the abundance and distribution of  
29 Suisun song sparrow in the Planning Area and Suisun Marsh to contribute to its  
30 conservation.

31  
32 **Problem Statement:** *Reduction and fragmentation of Suisun song sparrow habitat and*  
33 *alteration of hydrological conditions supporting habitat is hypothesized to have*  
34 *contributed to reduction in species abundance and distribution. Increasing the extent of*  
35 *tidal marsh that supports sparrow habitat is expected to help maintain and increase the*  
36 *species distribution and abundance. Restoration of tidal marsh in the west Delta would*  
37 *be expected to maintain or increase sparrow habitat availability in future years with*  
38 *conversion of freshwater marsh in the west Delta to brackish tidal marsh with sea level*  
39 *rise.*

40  
41 The following ecosystem and natural community objectives also contribute towards  
42 achieving this goal: ECSY5.1 and NACO1.2.

43  
44 **Objective SSSP 1.1:** Increase the extent of tidal marsh that supports Suisun song  
45 sparrow habitat within Suisun Marsh.

**Objective SSSP 1.2:** Restore tidal marsh in portions of the Planning Area that may support Suisun song sparrow habitat in future years with sea level rise.

## Yellow-breasted Chat

**Goal YBCH1:** Provide sufficient habitat to support the abundance and distribution of yellow-breasted chat in the Planning Area to contribute to its conservation.

The following ecosystem and natural community objectives also contribute towards achieving this goal: ECSY5.1 and NACO1.3.

**Problem Statement:** *Reduction and fragmentation of riparian forest and scrub and nest parasitism is hypothesized to have contributed to reduction in species abundance and distribution. Increasing the extent of riparian forest and scrub that supports chat habitat is expected to help maintain and increase the species distribution and abundance. Restoration of riparian forest and scrub in large patches that minimize edge would also be expected to reduce the susceptibility of the chat to cowbird nest parasitism.*

**Objective YBCH1.1:** Increase the extent of yellow-breasted chat nesting habitat within the Planning Area.

## Western Burrowing Owl

**Goal BUOW1:** Provide sufficient habitat to support the abundance and distribution of western burrowing owl in the Planning Area and Suisun Marsh to contribute to its conservation in these areas.

**Problem Statement:** *Reduction and fragmentation of native western burrowing owl habitats and reduction in prey availability are hypothesized to have contributed to a reduction in species abundance and distribution. Preserving and restoring grassland and agricultural lands that support western burrowing owl in the Planning Area is expected to help maintain and increase its distribution and abundance.*

The following natural community objectives also contribute towards achieving this goal: NACO1.4-1.5.

**Objective BUOW1.1:** Maintain or increase the extent of protected western burrowing owl foraging and breeding habitat within the Planning Area and Suisun Marsh.

## Swainson's Hawk

**Goal SWHA1:** Provide sufficient habitat to support the abundance and distribution of Swainson's hawk in the Planning Area to contribute to its conservation.

**Problem Statement:** *Reduction and fragmentation of native Swainson's hawk nesting and foraging habitats and reduction in prey availability are hypothesized to have contributed to reduction in species abundance and distribution. Increasing the extent of riparian forest that supports Swainson's hawk nesting habitat and maintaining sufficient foraging habitat to support Swainson's hawk in the Planning Area is expected to help maintain and increase the species distribution and abundance.*

The following ecosystem and natural community objectives also contribute towards achieving this goal: ECSY5.1 and NACO1.3-1.5.

**Objective SWHA1.1:** Increase the extent of Swainson's hawk nesting habitat within the Planning Area that is located within  miles of Swainson's hawk foraging habitat.

**Objective SWHA1.2:** Maintain or increase the extent of protected Swainson's hawk foraging habitat within the Planning Area.

## White-Tailed Kite

**Goal WTKI1:** Provide sufficient habitat to support the abundance and distribution of Swainson's hawk in the Planning Area to contribute to its conservation.

**Problem Statement:** *Reduction and fragmentation of native white-tailed kite nesting and foraging habitats and reduction in prey availability are hypothesized to have contributed to reduction in species abundance and distribution. Increasing the extent of riparian forest that supports white-tailed kite nesting habitat and maintaining sufficient foraging habitat to support Swainson's hawk in the Planning Area is expected to help maintain and increase the species distribution and abundance.*

The following ecosystem and natural community objectives also contribute towards achieving this goal: ECSY5.1 and NACO1.3-1.5.

**Objective WTKI1.1:** Increase the extent of white-tailed kite nesting habitat within the Planning Area that is located within  miles of white-tailed kite foraging habitat.

**Objective WTKI1.2:** Maintain or increase the extent of protected white-tailed kite foraging habitat within the Planning Area.

1           **Objective WTKI1.3:** Avoid mortality of white-tailed kite associated with  
2           implementation of covered activities and conservation measures<sup>8</sup>.

3  
4  
5           **Greater Sandhill Crane**

6  
7           **Goal SACR1:** Preserve and protect the abundance and distribution of greater sandhill  
8           crane and provide sufficient habitat to support the abundance and distribution of greater  
9           sandhill cranes that winter within the Planning Area to contribute to its conservation.<sup>9</sup>

10  
11           **Problem Statement:** *The area and quality of wintering greater sandhill crane habitat*  
12           *available to support the abundance of cranes that overwinter in the Planning Area are*  
13           *hypothesized to be important factors that govern the degree of overwinter mortality, the*  
14           *successful return of breeding pairs and juveniles to summer breeding ranges, and*  
15           *subsequent breeding success. Maintaining sufficient crane foraging and roosting*  
16           *habitats to support successful overwintering of the crane population is expected to*  
17           *contribute to maintenance and growth of the Central Valley population of greater*  
18           *sandhill cranes.*

19  
20           The following natural community objectives also contribute towards achieving this goal:  
21           NACO1.4-1.6.

22  
23           **Objective SACR1.1:** Maintain or increase the extent of protected greater sandhill  
24           crane roosting habitat within the Planning Area.

25  
26           **Objective SACR1.2:** Maintain or increase the extent of protected greater sandhill  
27           crane foraging habitat within the Planning Area.

28  
29           **Objective SACR1.3:** Avoid mortality of greater sandhill crane associated with  
30           implementation of covered activities and conservation measures<sup>10</sup>.

31  
32  

---

<sup>8</sup> The white-tailed kite is a designated fully protected species under the California Fish and Code § 4700. Take as defined in California Fish and Game Code §86 of fully protected species is prohibited. Conservation measures to achieve this objective would avoid take of the species in accordance with California Fish and Game Code § 4700.

<sup>9</sup> The phrase *Protect and preserve the abundance and distribution* refers to protecting and preserving the abundance and distribution of greater sandhill crane only in the context of BDCP actions and not from actions implemented by non-BDCP entities.

<sup>10</sup> The greater sandhill crane is a designated fully protected species under the California Fish and Code § 4700. Take as defined in California Fish and Game Code §86 of fully protected species is prohibited. Conservation measures to achieve this objective would avoid take of the species in accordance with California Fish and Game Code § 4700.

## 1 California Black Rail

2  
3 **Goal BLRA1:** Preserve and protect the abundance and distribution of California black  
4 rail and provide sufficient habitat to support the abundance and distribution of its  
5 populations in Suisun Marsh and the Planning Area to contribute to its conservation in  
6 these areas.

7  
8 **Problem Statement:** *Reduction and fragmentation of California black rail habitat and*  
9 *alteration of hydrological conditions supporting habitat is hypothesized to have*  
10 *contributed to reduction in species abundance and distribution. Avoiding impacts on*  
11 *individuals and increasing the extent of tidal marsh that supports rail habitat is expected*  
12 *to help maintain and increase the species distribution and abundance.*

13  
14 The following ecosystem and natural community objectives also contribute towards  
15 achieving this goal: ECSY5.1 NACO1.2, and NACO1.7.

16  
17 **Objective BLRA1.1:** Increase the extent of tidal California black rail habitat  
18 within the Planning Area and Suisun Marsh.

19  
20 **Objective BLRA 1.2:** Avoid mortality of California black rail associated with  
21 implementation of covered activities and conservation measures<sup>11</sup>.

## 22 23 24 California Clapper Rail

25  
26 **Goal CLRA1:** Preserve and protect the abundance and distribution of California clapper  
27 rail and provide sufficient habitat to support the abundance and distribution of its  
28 populations in Suisun Marsh and the Planning Area to contribute to its conservation in  
29 these areas.<sup>12</sup>

30 **Problem Statement:** *Reduction and fragmentation of California clapper rail habitat and*  
31 *alteration of hydrological conditions supporting habitat is hypothesized to have*  
32 *contributed to reduction in species abundance and distribution. Predation by non-native*  
33 *predators (e.g., red fox, feral cats) is also hypothesized to have reduced population*  
34 *growth. Avoiding impacts on individuals, increasing the extent of tidal marsh that*  
35 *supports rail habitat, and reducing effects of non-native predation is expected to help*  
36 *maintain and increase the species distribution and abundance. Restoration of tidal*  
37 *marsh in the west Delta would be expected to maintain or increase rail habitat*

---

<sup>11</sup> The California black rail is a designated fully protected species under the California Fish and Code § 4700. Take as defined in California Fish and Game Code §86 of fully protected species is prohibited. Conservation measures to achieve this objective would avoid take of the species in accordance with California Fish and Game Code § 4700.

<sup>12</sup> The phrase *Protect and preserve the abundance and distribution* refers to protecting and preserving the abundance and distribution of California clapper rail only in the context of BDCP actions and not from actions implemented by non-BDCP entities.

1 *availability in future years with conversion of freshwater marsh in the west Delta to*  
2 *brackish tidal marsh with sea level rise.*

3  
4 The following ecosystem and natural community objectives also contribute towards  
5 achieving this goal: ECSY5.1 and NACO1.2.

6  
7 **Objective CLRA1.1:** Increase the extent of tidal California clapper rail habitat  
8 within Suisun Marsh.

9  
10 **Objective CLRA1.2:** Restore tidal marsh in portions of the Planning Area that  
11 may support California clapper rail habitat in future years with sea level rise.

12  
13 **Objective CLRA1.3:** Reduce mortality attributable to non-native predation on  
14 California clapper rail within preserved BDCP California clapper rail habitats.

15  
16 **Objective CLRA1.34:** Avoid mortality of California clapper rail associated with  
17 implementation of covered activities and conservation measures<sup>13</sup>.

## 18 19 20 **Giant Garter Snake**

21  
22 **Goal GIGS1:** Provide sufficient habitat to support the abundance and distribution of  
23 giant garter snake populations in the Planning Area to contribute to its conservation.

24  
25 ***Problem Statement:*** *Loss and fragmentation of wetland habitats that historically*  
26 *supported giant garter snake is hypothesized to be the primary cause for reductions in the*  
27 *abundance and distribution of giant garter snake. Restoration of agricultural lands in*  
28 *the Planning Area that currently support limited giant garter snake habitat to tidal marsh*  
29 *is expected to help maintain and provide the basis for potentially increasing the*  
30 *distribution and abundance of giant garter snake in the Planning Area.*

31  
32 The following ecosystem and natural community objectives also contribute towards  
33 achieving this goal: ECSY5.1, NACO1.2 and NACO1.7.

34  
35 **Objective GIGS1.1:** Increase the extent of tidal giant garter snake habitat within  
36 the Planning Area.

37  
38 **Objective GIGS1.2:** Maintain or increase the extent of protected non-tidal giant  
39 garter snake habitat within the Planning Area and Suisun Marsh.

40  

---

<sup>13</sup> The California clapper rail is a designated fully protected species under the California Fish and Code § 4700. Take as defined in California Fish and Game Code §86 of fully protected species is prohibited. Conservation measures to achieve this objective would avoid take of the species in accordance with California Fish and Game Code § 4700.

1  
2 **Western Pond Turtle**

3  
4 **Goal WPTU1:** Provide sufficient habitat to support the abundance and distribution of  
5 giant garter snake populations in the Planning Area to contribute to its conservation.

6  
7 **Problem Statement:** *Loss and fragmentation of wetland and upland habitats that*  
8 *historically supported western pond turtle (foraging, breeding, and hibernation habitat)*  
9 *is hypothesized to be the primary cause for reductions in the abundance and distribution*  
10 *of western pond turtle. Restoration of agricultural lands in the Planning Area that*  
11 *currently support limited western pond turtle habitat to tidal marsh, including*  
12 *transitional upland habitats, is expected to help maintain and provide the basis for*  
13 *potentially increasing the distribution and abundance of western pond turtle in the*  
14 *Planning Area.*

15  
16 The following ecosystem and natural community objectives also contribute towards  
17 achieving this goal: ECSY5.1, NACO1.2 and NACO1.7.

18  
19 **Objective WPTU1.1:** Increase the extent of tidal marsh that supports western  
20 pond turtle habitat within the Planning Area.

21  
22 **Objective WPTU1.2:** Maintain or increase the extent of protected non-tidal  
23 marsh that supports western pond turtle habitat within the Planning Area.

24  
25  
26 **Western Spadefoot Toad**

27  
28 **Goal SPTO1:** Provide sufficient habitat to support the abundance and distribution of  
29 western spadefoot toad in the Planning Area and Suisun Marsh to contribute to its  
30 conservation in these areas.

31  
32 **Problem Statement:** *Loss, degradation, and fragmentation of wetland and upland*  
33 *habitats that historically supported western spadefoot toad (foraging, breeding, and*  
34 *hibernation habitat) is hypothesized to be the primary cause for reductions in the*  
35 *abundance and distribution of western spadefoot toad. Preservation and restoration of*  
36 *seasonal wetlands and grasslands is expected to help maintain and provide the basis for*  
37 *potentially increasing the distribution and abundance of western spadefoot toad in the*  
38 *Planning Area and Suisun Marsh.*

39  
40 The following natural community objectives also contribute towards achieving this goal:  
41 NACO1.5-1.7.

42  
43 **Objective SPTO1.1:** Maintain or increase the extent of protected western  
44 spadefoot toad breeding and upland habitats within the Planning Area and Suisun  
45 Marsh.

1  
2  
3 **California Red-Legged Frog**  
4

5 **Goal RLF1:** Provide sufficient habitat to support the abundance and distribution of  
6 California red-legged frog in the Planning Area contribute to its conservation.

7  
8 **Problem Statement:** *Loss, degradation, and fragmentation of wetland, riparian, and*  
9 *upland habitats that historically supported California red-legged frog (foraging,*  
10 *breeding, and hibernation habitat) and introduction of non-native predators/competitors*  
11 *(e.g., bullfrog) is hypothesized to be the primary cause for reductions in the abundance*  
12 *and distribution of California red-legged frog. California red-legged frog populations*  
13 *are limited to the southwestern perimeter of the Planning Area. Preservation and*  
14 *restoration of seasonal wetlands and grasslands within this area is expected to help*  
15 *maintain the distribution and abundance of California red-legged frog in the Planning*  
16 *Area.*

17  
18 The following natural community objectives also contribute towards achieving this goal:  
19 NACO1.5 and NACO1.7.

20  
21 **Objective RLF1.1:** Maintain or increase the extent of protected California red-  
22 legged frog breeding and upland habitats within the Planning Area.

23  
24 **Objective RLF1.2:** Reduce mortality attributable to non-native predation on  
25 California red-legged frog within preserved BDCP California red-legged frog  
26 habitats.

27  
28  
29 **California Tiger Salamander**  
30

31 **Goal TISA1:** Provide sufficient habitat to support the abundance and distribution of  
32 California tiger salamander in the Planning Area contribute to its conservation.

33  
34 **Problem Statement:** *Loss, degradation, and fragmentation of seasonal wetland and*  
35 *upland habitats that historically supported California tiger salamander (foraging,*  
36 *breeding, and hibernation habitat) and introduction of non-native predators/competitors*  
37 *(e.g., bullfrog) is hypothesized to be the primary cause for reductions in the abundance*  
38 *and distribution of California tiger salamander. Preservation and restoration of*  
39 *seasonal wetlands and grasslands is expected to help maintain and provide the basis for*  
40 *potentially increasing the distribution and abundance of tiger salamander in the*  
41 *Planning Area.*

42  
43  
44 The following natural community objectives also contribute towards achieving this goal:  
45 NACO1.5-1.7.

**Objective TISA 1.1:** Maintain or increase the extent of protected California tiger salamander breeding and upland habitats within the Planning Area.

## Valley Elderberry Longhorn Beetle

**Goal VELB1:** Provide sufficient habitat to support the abundance and distribution of valley elderberry longhorn beetle in the Planning Area to contribute to its conservation.

**Problem Statement:** Loss and fragmentation of native riparian and savanna communities that historically supported the valley elderberry longhorn beetle's host plant, the elderberry, is hypothesized to be the primary cause for reductions in the abundance and distribution of the beetle. Establishment of elderberry shrub as a component of restoration of riparian habitats within the Planning Area is expected to help maintain and provide the basis for potentially increasing the distribution and abundance of valley elderberry longhorn beetle in the Planning Area.

The following ecosystem and natural community objectives also contribute towards achieving this goal: ECSY5.1 and NACO1.3.

**Objective VELB1.1:** Increase the extent of valley elderberry longhorn beetle habitat within the Planning Area.

## Fairy Shrimp (Vernal Pool Fairy Shrimp, Vernal Pool Tadpole Shrimp, Conservancy Fairy Shrimp, ~~and~~ Longhorn Fairy Shrimp, and Mid Valley Fairy Shrimp)

**Goal FASH1:** Provide sufficient vernal pool, vernal pool complex, alkaline/saline seasonal wetland, and alkaline sink scrub habitats to support the abundance and distribution of vernal pool fairy shrimp, vernal pool tadpole shrimp, conservancy fairy shrimp, ~~and~~ longhorn fairy shrimp, and mid valley fairy shrimp populations in the Planning Area to contribute to their conservation.

**Problem Statement:** Loss and degradation of vernal pool, vernal pool complex, alkaline/saline seasonal wetland, and alkaline sink scrub habitats and their watersheds that historically supported fairy shrimp is hypothesized to be the primary cause for reductions in the abundance and distribution of fairy shrimp. Preservation and restoration of vernal pool, vernal pool complex, alkaline/saline seasonal wetland, and alkaline sink scrub habitats and their watersheds is expected to help maintain and provide the basis for potentially increasing the distribution and abundance of fairy shrimp in the Planning Area.

1 The following natural community objective also contributes towards achieving this goal:  
2 NACO1.6.

3  
4 **Objective VPFS1.1:** Maintain or increase the extent of protected vernal pool,  
5 vernal pool complex, alkaline/saline seasonal wetland, and alkaline sink  
6 scrub~~vernal pool~~ habitats that support habitats for vernal pool fairy shrimp, vernal  
7 pool tadpole shrimp, conservancy fairy shrimp, ~~and~~ longhorn fairy shrimp, and  
8 mid valley fairy shrimp within the Planning Area.

## 10 | **Alkali milk-vetch**

11  
12  
13 **Goal ALMV 1:** Provide sufficient vernal pool, vernal pool complex~~swale~~, alkaline/saline  
14 seasonal wetland~~i meadow~~, and alkali sink scrub habitats to support the abundance and  
15 distribution of alkali milk-vetch in the Planning Area and Suisun Marsh to contribute to  
16 its conservation in these areas.

17  
18 **Problem Statement:** *Loss and degradation of vernal pool, vernal pool complex,*  
19 *alkaline/saline seasonal wetland, and alkaline sink scrub habitats and their watersheds*  
20 *that historically supported alkali milk-vetch is hypothesized to be the primary cause for*  
21 *reductions in the abundance and distribution of alkali milk-vetch. Preservation and*  
22 *restoration of vernal pool, vernal pool complex, alkaline/saline seasonal wetland, and*  
23 *alkaline sink scrub habitats and their watersheds is expected to help maintain and*  
24 *provide the basis for potentially increasing the distribution and abundance of alkali milk-*  
25 *vetch in the Planning Area.*

26  
27 The following natural community objective also contributes towards achieving this goal:  
28 NACO1.6.

29  
30 **Objective ALMV1.1:** Maintain or increase the extent of protected vernal pool,  
31 vernal pool complex~~swale~~, alkaline/saline seasonal wetland~~i meadow~~, and alkali sink  
32 scrub habitats that supports alkali milk-vetch habitat within the Planning Area and  
33 Suisun Marsh area.

## 34 35 36 37 **Heartscale**

38  
39 **Goal HEAR1:** Provide sufficient alkaline/saline seasonal wetland, alkaline sink scrub,  
40 and grassland habitats to support the abundance and distribution of heartscale in the  
41 Planning Area and Suisun Marsh to contribute to its conservation in these areas.

42  
43 **Problem Statement:** *Loss and degradation of alkaline/saline seasonal wetland, alkaline*  
44 *sink scrub, and grassland habitats and their watersheds that historically supported*  
45 *heartscale is hypothesized to be the primary cause for reductions in the abundance and*

1 *distribution of heartscale. Preservation and restoration of alkaline/saline seasonal*  
2 *wetland, and alkaline sink scrub habitats and their watersheds is expected to help*  
3 *maintain and provide the basis for potentially increasing the distribution and abundance*  
4 *of heartscale in the Planning Area.*

5  
6 The following natural community objectives also contribute towards achieving this goal:  
7 NACO1.5-1.6.

8  
9 **Objective HEAR1.1:** Maintain or increase the extent of protected alkaline/saline  
10 seasonal wetland, alkaline sink scrub, and grassland habitats that support  
11 heartscale habitat within the Planning Area and Suisun Marsh.

## 12 13 14 **Brittlescale**

15  
16 **Goal BRIT1:** Provide sufficient vernal pool, alkaline/saline seasonal wetland, alkaline  
17 sink scrub, and grassland habitats to support the abundance and distribution of brittlescale  
18 in the Planning Area and Suisun Marsh to contribute to its conservation in these areas.

19  
20 **Problem Statement:** *Loss and degradation of vernal pool, alkaline/saline seasonal*  
21 *wetland, alkaline sink scrub, and grassland habitats and their watersheds that*  
22 *historically supported brittlescale is hypothesized to be the primary cause for reductions*  
23 *in the abundance and distribution of brittlescale. Preservation and restoration of*  
24 *alkaline/saline seasonal wetland, and alkaline sink scrub habitats and their watersheds is*  
25 *expected to help maintain and provide the basis for potentially increasing the distribution*  
26 *and abundance of brittlescale in the Planning Area.*

27  
28 The following natural community objectives also contribute towards achieving this goal:  
29 NACO1.5-1.6.

30  
31 **Objective BRIT1.1:** Maintain or increase the extent of protected vernal pool,  
32 alkaline/saline seasonal wetland, alkaline sink scrub, and grassland habitats that  
33 support brittlescale habitat within the Planning Area and Suisun Marsh.

## 34 35 36 **San Joaquin Spearscale**

37  
38 **Goal SJSP1:** Provide sufficient vernal pool, alkaline/saline seasonal wetland-meadow, and  
39 alkaline sink scrub, and brackish tidal marsh habitats to support the abundance and  
40 distribution of San Joaquin spearscale in the Planning Area and Suisun Marsh to  
41 contribute to its conservation in these areas.

42  
43 **Problem Statement:** *Loss and degradation of vernal pool, alkaline/saline seasonal*  
44 *wetland, alkaline sink scrub habitats and their watersheds that historically supported San*  
45 *Joaquin spearscale is hypothesized to be the primary cause for reductions in the*

1 *abundance and distribution of San Joaquin spearscale. Preservation and restoration of*  
2 *alkaline/saline seasonal wetland, and alkaline sink scrub habitats and their watersheds is*  
3 *expected to help maintain and provide the basis for potentially increasing the distribution*  
4 *and abundance of San Joaquin spearscale in the Planning Area.*

5  
6 | The following ~~ecosystem and~~ natural community objectives also contribute towards  
7 achieving this goal: NACO1.3.

8  
9 **Objective SJSP1.1:** Maintain or increase the extent of protected vernal pool,  
10 ~~alkaline/saline seasonal wetland, and alkaline sink scrub~~ ~~alkali meadow, alkali sink,~~  
11 ~~and brackish tidal marsh~~ habitats that supports San Joaquin spearscale habitat within  
12 the Planning Area and Suisun Marsh.

## 13 14 15 **Lesser Saltscale**

16  
17 **Goal LESA1:** Provide sufficient vernal pool , alkaline/saline seasonal wetland, alkaline  
18 sink scrub, and grassland habitats to support the abundance and distribution of lesser  
19 saltscale in the Planning Area and Suisun Marsh to contribute to its conservation in these  
20 areas.

21  
22 **Problem Statement:** *Loss and degradation of vernal pool, alkaline/saline seasonal*  
23 *wetland, alkaline sink scrub, and grassland habitats and their watersheds that*  
24 *historically supported lesser saltscale is hypothesized to be the primary cause for*  
25 *reductions in the abundance and distribution of lesser saltscale. Preservation and*  
26 *restoration of alkaline/saline seasonal wetland, and alkaline sink scrub habitats and their*  
27 *watersheds is expected to help maintain and provide the basis for potentially increasing*  
28 *the distribution and abundance of lesser saltscale in the Planning Area.*

29  
30 The following natural community objectives also contribute towards achieving this goal:  
31 NACO1.5-1.6.

32  
33 **Objective BRIT1.1:** Maintain or increase the extent of protected vernal pool,  
34 alkaline/saline seasonal wetland, and alkaline sink scrub, and grassland habitats  
35 that support lesser saltscale habitat within the Planning Area and Suisun Marsh.

## 36 37 38 **Slough Thistle**

39  
40 **Goal SLTH1:** Provide sufficient fresh tidal marsh and channel habitats to support the  
41 abundance and distribution of slough thistle in the Planning Area to contribute to its  
42 conservation.

1 **Problem Statement:** *Loss of natural flooding regimes on the San Joaquin River and*  
2 *intensive agriculture are hypothesized to be cause for reductions in the abundance and*  
3 *distribution of Slough thistle. Preservation and restoration of flood plain habitat is*  
4 *expected to help maintain and provide the basis for potentially increasing the distribution*  
5 *and abundance Slough thistle in the project area.*

6  
7 The following ecosystem and natural community objectives also contribute towards  
8 achieving this goal: ECSY5.1 and NACO1.2.

9  
10 **Objective SLTH1.1** Increase the extent of slough thistle habitat within the  
11 Planning Area.

## 12 13 14 **Suisun Thistle**

15  
16 **Goal SUTH1:** Provide sufficient habitat to support the abundance and distribution of  
17 Suisun thistle in Suisun Marsh and the Planning Area to contribute to its conservation in  
18 these areas.

19  
20 **Problem Statement:** *Loss and degradation of some component of brackish tidal marsh*  
21 *habitat is hypothesized to be cause for reductions in the abundance and distribution of*  
22 *Suisun thistle. Preservation and restoration of tidal brackish marsh is expected to help*  
23 *maintain and provide the basis for potentially increasing the distribution and abundance*  
24 *Suisun thistle in the Suisun Marsh.*

25  
26 The following ecosystem and natural community objectives also contribute towards  
27 achieving this goal: ECSY15.1 and NACO1.2 and 1.6.

28  
29 **Objective SUTH1.1:** Increase the extent of tidal habitats that support Suisun  
30 thistle in Suisun Marsh.

31  
32 **Objective SUTH1.2:** Restore tidal marsh in portions of the Planning Area that  
33 may support Suisun thistle habitat in future years with sea level rise.

## 34 35 36 37 38 39 **Soft Bird's-Beak**

40  
41 **Goal SOBB1:** Preserve and protect the abundance and distribution of soft bird's-beak  
42 and provide sufficient brackish tidal marsh habitat to support the abundance and

1 distribution of soft bird's-beak in the Planning Area and Suisun Marsh to contribute to its  
2 conservation in these areas.<sup>14</sup>

3  
4 **Problem Statement:** *The loss and degradation of high salt marsh and brackish tidal*  
5 *marsh habitats is the primary cause for reductions in the abundance and distribution of*  
6 *soft bird's-beak. Preservation and restoration of tidal brackish marsh and tidal fresh*  
7 *marsh is expected to help maintain and provide the basis for potentially increasing the*  
8 *distribution and abundance soft bird's-beak in the Planning Area and Suisun Marsh.*

9  
10 The following ecosystem and natural community objectives also contribute towards  
11 achieving this goal: ECSY5.1 and NACO1.2.

12  
13 **Objective SOBB1.1:** Increase the extent of brackish tidal marsh habitats that  
14 could support soft bird's-beak habitat in Suisun Marsh.

15  
16 **Objective SOBB1.2:** Restore tidal marsh in portions of the Planning Area that  
17 may support soft bird's-beak habitat in future years with sea level rise.

18  
19 **Objective SOBB1.23:** Avoid take of soft bird's beak associated with  
20 implementation of covered activities and conservation measures.<sup>15</sup>

## 21 22 23 **Delta Button-Celery**

24  
25 **Goal DEBC1:** Provide sufficient seasonal floodplain and alkaline sink scrub habitat to  
26 support the abundance and distribution of Delta button-celery in the Planning Area to  
27 contribute to its conservation.

28  
29 **Problem Statement:** *Loss of natural flooding regimes on the San Joaquin River,*  
30 *conversion of alkaline sink scrub habitat to agriculture, and intensive agriculture are*  
31 *hypothesized to be cause for reductions in the abundance and distribution of Delta*  
32 *button-celery. Preservation and restoration of flood plain and alkaline sink scrub habitat*  
33 *is expected to help maintain and provide the basis for potentially increasing the*  
34 *distribution and abundance Delta button-celery in the project area.*

35  
36 The following natural community objective also contributes towards achieving this goal:  
37 NACO1.1.

38  

---

<sup>14</sup> The phrase *Protect and preserve the abundance and distribution* refers to protecting and preserving the abundance and distribution of soft bird's-beak only in the context of BDCP actions and not from actions implemented by non-BDCP entities.

<sup>15</sup> Soft bird's beak distribution is very limited and only known from 11 occurrences, with over 90 percent of the plants located in Suisun Marsh. To date, efforts to reestablish occurrences have not been shown to be successful.

1           **Objective DEBC1.1:** Maintain or increase the extent of protected seasonal  
2 floodplain and alkaline sink scrub habitats that support habitat for Delta button-  
3 celery within the Planning Area.  
4

5  
6           **Boggs Lake Hedge-Hyssop**

7  
8           **Goal BLHH1:** Provide sufficient vernal pool and natural seasonal wetland habitats to  
9 support the abundance and distribution of Boggs Lake hedge-hyssop in the Planning Area  
10 to contribute to its conservation.  
11

12           ***Problem Statement:** Loss and degradation of vernal pool and natural seasonal wetland*  
13 *habitats and their watersheds that historically supported Boggs Lake hedge-hyssop is*  
14 *hypothesized to be the primary cause for reductions in the abundance and distribution of*  
15 *Boggs Lake hedge-hyssop. Preservation and restoration of vernal pool, vernal pool*  
16 *complex, alkaline/saline seasonal wetland, and alkaline sink scrub habitats and their*  
17 *watersheds is expected to help maintain and provide the basis for potentially increasing*  
18 *the distribution and abundance Boggs Lake hedge-hyssop in the Planning Area.*  
19

20           The following natural community objectives also contribute towards achieving this goal:  
21 NACO1.6-1.7.  
22

23           **Objective BLHH1.1:** Maintain or increase the extent of protected vernal pool  
24 and natural season wetland habitats that support Boggs Lake hedge-hyssop habitat  
25 within the Planning Area.  
26

27  
28           **Carquinez Goldenbush**

29  
30           **Goal CAGO1:** Provide sufficient habitat to support the abundance and distribution of  
31 Carquinez goldenbush in the Planning Area and Suisun Marsh to contribute to its  
32 conservation in these areas.  
33

34           The following ecosystem and natural community objectives also contribute towards  
35 achieving this goal: NACO1.2.  
36

37           ***Problem Statement:** It is not known why the abundance and distribution of Carquinez*  
38 *goldenbush is so limited.*  
39

40           **Objective CAGO1.1:** Maintain or increase the extent of protected alkaline and  
41 saline soil habitats that support Carquinez goldenbush habitat within the Planning  
42 Area and Suisun Marsh.  
43

1 **Delta Tule Pea**

2  
3 **Goal DETP1:** Provide sufficient habitat to support the abundance and distribution of  
4 Delta tule pea in the Planning Area and Suisun Marsh to contribute to its conservation in  
5 these areas.

6  
7 **Problem Statement:** *Loss and degradation of tidal fresh marsh and tidal brackish*  
8 *marsh habitat that historically supported Delta tule pea is hypothesized to be the primary*  
9 *cause for reductions in the abundance and distribution of Delta tule pea. Preservation*  
10 *and restoration of fresh tidal marsh, brackish tidal marsh, and channel bank habitat is*  
11 *expected to help maintain and provide the basis for potentially increasing the distribution*  
12 *and abundance of Delta tule pea in the Planning Area and Suisun Marsh.*

13  
14 The following ecosystem and natural community objectives also contribute towards  
15 achieving this goal: ECSY5.1 and NACO1.2.

16  
17 **Objective DETP1.1:** Increase the extent of Delta tule pea habitat within the  
18 Planning Area and Suisun Marsh.

19  
20  
21 **Legenere**

22  
23 **Goal LELHLEGE1:** Provide sufficient vernal pool, ~~and vernal swale~~ alkaline/saline  
24 seasonal wetland, and alkaline sink scrub habitats to support the abundance and distribution  
25 of legenere in the Planning Area to contribute to its conservation in these areas.

26  
27 **Problem Statement:** *Loss and degradation of vernal pool, vernal pool complex,*  
28 *alkaline/saline seasonal wetland, and alkaline sink scrub habitats and their watersheds*  
29 *that historically supported legenere is hypothesized to be the primary cause for*  
30 *reductions in the abundance and distribution of legenere. Preservation and restoration*  
31 *of vernal pool, vernal pool complex, alkaline/saline seasonal wetland, and alkaline sink*  
32 *scrub habitats and their watersheds is expected to help maintain and provide the basis*  
33 *for potentially increasing the distribution and abundance of legenere in the Planning*  
34 *Area.*

35  
36 The following natural community objective also contributes towards achieving this goal:  
37 NACO1.6.

38  
39 **Objective LELHLEGE1.1:** Maintain or increase the extent of protected vernal  
40 pool, alkaline/saline seasonal wetland, and alkaline sink scrub~~and vernal swale~~  
41 habitats that supports legenere habitat within the Planning Area.

42  
43  
44 **Heckard's Peppergrass**

1 | **Goal HEPE 1:** Provide sufficient vernal pool, vernal swale, alkaline/saline seasonal  
2 | wetland, and alkaline sink scrub~~alkali meadow, and alkali sink~~ habitats to support the  
3 | abundance and distribution of Heckard's peppergrass in the Planning Area to contribute to  
4 | its conservation in these areas.

5 |  
6 | **Problem Statement:** *Loss and degradation of vernal pool, vernal pool complex,*  
7 | *alkaline/saline seasonal wetland, and alkaline sink scrub habitats and their watersheds*  
8 | *that historically supported Heckard's peppergrass is hypothesized to be the primary cause*  
9 | *for reductions in the abundance and distribution of Heckard's peppergrass. Preservation*  
10 | *and restoration of vernal pool, vernal pool complex, alkaline/saline seasonal wetland,*  
11 | *and alkaline sink scrub habitats and their watersheds is expected to help maintain and*  
12 | *provide the basis for potentially increasing the distribution and abundance of Heckard's*  
13 | *peppergrass in the Planning Area.*

14 |  
15 | The following natural community objective also contributes towards achieving this goal:  
16 | NACO1.6.

17 |  
18 | **Objective HEPE1.1:** Maintain or increase the extent of protected vernal pool,  
19 | vernal swale, alkali meadow, and alkali sink habitats that support Heckard's  
20 | peppergrass habitat within the Planning Area.

## 21 |

## 22 |

## 23 | **Delta Mudwort**

24 |  
25 | **Goal DEMW1:** Provide sufficient habitat to support the abundance and distribution of  
26 | Delta mudwort in the Planning Area to contribute to its conservation in these areas.

27 |  
28 | **Problem Statement:** *Loss and degradation of mud bank habitat and the hydrology and*  
29 | *disturbance factors that created mud bank habitat that historically supported Delta*  
30 | *mudwort is hypothesized to be the primary cause for reductions in the abundance and*  
31 | *distribution of mudwort. Preservation and restoration of fresh tidal marsh and channel*  
32 | *bank habitat is expected to help maintain and provide the basis for potentially increasing*  
33 | *the distribution and abundance of mudwort in the Planning Area.*

34 |  
35 | The following ecosystem and natural community objectives also contribute towards  
36 | achieving this goal: ECSY5.1 and NACO1.2.

37 |  
38 | **Objective DEMW1.1:** Increase the extent of delta mudwort habitat within the  
39 | Planning Area ~~and Suisun Marsh.~~

## 40 |

## 41 |

## 42 | **Mason's Lilaepsis**

## 43 |

1 **Goal MALI1:** Provide sufficient habitat to support the abundance and distribution of  
2 Mason's lilaepsis in the Planning Area and Suisun Marsh to contribute to its  
3 conservation in these areas.

4  
5 **Problem Statement:** *Loss and degradation of mud bank habitat and the hydrology and*  
6 *disturbance factors that created mud bank habitat that historically supported Mason's*  
7 *lilaepsis is hypothesized to be the primary cause for reductions in the abundance and*  
8 *distribution of Mason's lilaepsis. Preservation and restoration of fresh tidal marsh,*  
9 *brackish tidal marsh, and channel bank habitat is expected to help maintain and provide*  
10 *the basis for potentially increasing the distribution and abundance of Mason's lilaepsis*  
11 *in the Planning Area and Suisun Marsh.*

12  
13 The following ecosystem and natural community objectives also contribute towards  
14 achieving this goal: ECSY5.1 and NACO1.2.

15  
16 **Objective MALI1.1:** Increase the extent of Mason's lilaepsis habitat within the  
17 Planning Area and Suisun Marsh.

## 18 19 20 **Suisun Marsh Aster**

21  
22 **Goal SUMA1:** Provide sufficient habitat to support the abundance and distribution of  
23 Suisun Marsh aster in the Planning Area and Suisun Marsh to contribute to its  
24 conservation in these areas.

25  
26 **Problem Statement:** *Loss and degradation of riparian, tidal fresh marsh, and tidal*  
27 *brackish marsh habitat that historically supported Suisun Marsh aster is hypothesized to*  
28 *be the primary cause for reductions in the abundance and distribution of Suisun Marsh*  
29 *aster. Preservation and restoration of fresh tidal marsh, brackish tidal marsh, and*  
30 *channel bank habitat is expected to help maintain and provide the basis for potentially*  
31 *increasing the distribution and abundance of Suisun Marsh aster in the Planning Area*  
32 *and Suisun Marsh.*

33  
34 The following ecosystem and natural community objectives also contribute towards  
35 achieving this goal: ECSY5.1 and NACO1.2.

36  
37 **Objective SUMA1.1** Increase the extent of Suisun Marsh aster habitat within the  
38 Planning Area and Suisun Marsh.

## 39 40 **Caper-Fruited Tropicarpum**

41  
42 **Goal CAFT1:** Maintain occurrences of caper-fruited tropidocarpum that become  
43 established on lands managed by BDCP.

1 ***Problem Statement:*** *It is not known why the abundance and distribution of caper-fruited*  
2 *tropidocarpum is so limited.*

3  
4  
5  
6  
7  
8  
9

**Objective CAFT1.1:** Protect occurrences of caper-fruited tropidocarpum if they  
establish from potentially existing seed banks in areas disturbed by BDCP  
actions.<sup>16</sup>

DRAFT

---

<sup>16</sup> Caper-fruited tropidocarpum historically occurred in the vicinity of Clifton Court Forebay, but is now considered to be extirpated from the Planning Area. This species has a long-lived seed bank that could be present in the area of the Forebay. BDCP action-related ground disturbances in this area could activate seed germination and result in reestablishment of one or more occurrences.