

3 Conservation Framework and Elements

This section identifies the RCIS conservation elements: the biological communities and species, as well as other aspects of the landscape, for which the RCIS provides an analysis of pressures and stressors (Section 4) and then presents the conservation strategies (Section 5). This section describes the conservation planning framework (Section 3.1), contains background information on the conservation elements, including how they were selected (Section 3.2), identifies the conservation elements (Section 3.2) and then presents the conservation elements (Sections 3.3 through 3.7).

3.1 Conservation Framework

The RCIS conservation strategy was developed through the following conservation planning framework:

1. **Select Conservation Elements (Section 3):** Identify the natural communities, species, and other aspects of the landscape, that the conservation strategy is designed to benefit. Though the RCIS analysis and strategies focused on these 23 conservation elements, they were selected to collectively create a comprehensive and cohesive strategy that would benefit species, communities, and ecosystems throughout the RCIS Area.
2. **Analyze Pressures and Stressors (Section 4):** Evaluate the pressures that create degraded ecological conditions known as stressors for the conservation elements and the natural systems in the RCIS Area overall. The tables in Section 4 identify the threats addressing each of the 23 conservation elements.
3. **Develop Conservation Strategies (Section 5):** Develop goals, objectives, actions, and priorities for each of the conservation elements, to address the pressures and stressors affecting them and otherwise meet their key ecological requirements. These conservation strategies are the heart of the RCIS.
4. **Identify Ecological Connections and Benefits:** To illustrate the benefits of the conservation strategies for additional species, Chapter 5 features a table that identifies focal and non-focal species that are anticipated to benefit from the conservation strategies for each of the conservation elements (Table 5-2). This analysis is designed to help those implementing the strategy to identify the species that will benefit, and design mitigation credit agreements to develop mitigation credits for target species.

Additionally, the conservation strategy tables in Section 5 identify the species that can benefit for each action. To illustrate connections between the strategies for the 23 conservation elements, each strategy features a section, “Other Actions that Benefit this Conservation Element”, that lists the actions in other conservation strategies that will also benefit the conservation element.

3.2 Conservation Element Types and Selection Approach

The RCIS guidelines identify two main types of “conservation elements”, which are the elements of the RCIS that are analyzed and that will benefit from conservation actions and habitat enhancement actions set forth in the RCIS (CDFW 2018):

1. **Focal Species:** Sensitive species; and
2. **Other Conservation Elements:** natural communities, biodiversity, habitat connectivity, ecosystem functions, water resources, and other natural resources.

The RCIS guidelines also allow identification of non-focal species: species associated with a focal species or other conservation elements and that will benefit from conservation actions and habitat enhancement actions set forth in the RCIS. Focal species, other conservation elements, and non-focal species, can all benefit through both conservation investments and mitigation credit agreements.

This RCIS addresses five conservation elements: natural communities, other conservation elements, focal species, non-focal species, and co-benefited species. This section describes the elements, the rationale for their inclusion, and the selection criteria, and relates them to the categories identified in the RCIS Guidelines (CDFW 2018). The sections that follow identify the actual elements.

This RCIS emphasizes **natural communities**: 13 vegetation and other landcover types that were selected to develop a cohesive, landscape-scale conservation strategy to support both rare and common species, biodiversity, and other conservation values. The natural community-based conservation elements, which constitute ‘other conservation elements’ under the RCIS Guidelines (Section 3.2; Table 3-1), are emphasized in this RCIS for the following reasons:

- **Comprehensive and Cohesive:** A strategy developed to conserve natural communities and sustain ecosystem process can conserve a broader suite of native species than strategies based on single-species planning (Groves 2003).
- **Foundational:** Natural communities provide the ecological foundation for conservation of species, which rely on interconnected habitats and sustained ecosystem processes.
- **Resilient:** Addressing ecosystem functions and factors that influence them, including natural disturbances (e.g., flood, fire, etc.) and anthropogenic factors, including climate change, can promote resiliency of populations, communities, and ecosystems.
- **Action Oriented:** Conservation actions for species or suites of species most often target protection, restoration, and enhancement of ecosystems and natural communities; therefore, planning around communities promotes effectiveness of such strategies designed to protect species.
- **Consistent:** This systems-based approach is consistent with a variety of conservation planning approaches including:

- The Conservation Blueprint for Santa Cruz County (Mackenzie et al. 2011), which set goals for habitat protection based on communities;
- The Nature's Value in Santa Cruz County (Schmidt et al., 2015), which assessed ecosystem services provided by natural lands;
- CDFW's Natural Communities Conservation Planning framework, which endeavors to protect habitat within broad landscapes to maintain intact ecosystems (Clark 1994);
- biological resource mitigation approaches, which emphasize habitat connectivity, processes, and redundancy; and
- other state agency mandates including the State and Regional Water Resources Control Boards' protection of waters of the State and wetlands, and the State Coastal Commission's protection of Environmentally Sensitive Habitat Areas.

Three **other conservation elements**, habitat connectivity, working lands, and bat habitat complement the natural communities-based approach to address other important facets within the landscape. Habitat connectivity is essential to goals for communities and species, while working lands (i.e., timber, grazing, and cultivated lands) play an important role in landscape-scale conservation in the region. Bat habitat occurs throughout the RCIS Area, including in all of the natural communities as well as the built-environmental (e.g., barns, bridges, etc.). The pressures and stressors as well as the use of the built environment as habitat result in conservation strategies for bats that are somewhat unique, and as such, are addressed as a separate conservation element.

Recognizing the value of natural community-based, landscape-scale planning for native species conservation, the RCIS also identifies seven **focal species** based on the RCIS guidelines, which require RCISs to identify focal species that include: 1) listed species, 2) wide-ranging species, c) climate-vulnerable species, and d) taxonomic representation (CDFW 2018). To meet these requirements, this RCIS addresses the unique conservation needs of seven focal species which were selected to meet the criteria above. The conservation strategies for focal species were developed to complement and support the strategies developed for community-based and other conservation elements. This approach contrasts with many other RCISs, which generally focus on a longer lists of focal species that have been selected to cover the range of natural communities within the RCIS in order to create a comprehensive and cohesive strategy.

Non-focal species are other species that are listed under the federal Endangered Species Act (ESA), California Endangered Species Act (CESA), and/or are identified as Fully Protected under the California Fish and Game Code Sections 3511, 4700, 5050 and 5515. These 30 species conservation needs are addressed through conservation of natural communities, other conservation elements, and focal species. These species, like focal species, generally require compensatory mitigation when they are impacted during projects including maintenance or infrastructure construction activities.

Table 3-1: Conservation Elements of the Santa Cruz County RCIS Conservation Strategy

Element in this RCIS	RCIS Guidelines Category	Description	Rationale for Inclusion	Selection Criteria
Natural Communities	Other Conservation Elements	13 natural communities or other land cover types	A communities-based approach can provide the basis for a comprehensive and cohesive strategy to conserve the region’s multiple rare species while maintaining common species and supporting essential ecosystems services	<ul style="list-style-type: none"> • Supports disproportionate number of rare species • Identified as a sensitive community • Widespread community (in the RCIS Area) that supports additional rare species, as well as more wide-ranging and common species, and can support ecosystem services
Other Conservation Elements	Other Conservation Elements	Habitat connectivity, working lands, and bat habitat	Other important aspects of the RCIS Area for the maintenance of native biodiversity and rare species	Other non-community and non-species elements of the landscape that are essential to address in developing a comprehensive conservation strategy for the region, and that are unique in their pressures and stressors and thus strategies.
Focal Species	Focal Species	7 special-status species ¹	<ul style="list-style-type: none"> • Provide focused analysis for species to meet the RCIS guidelines • Identify species that can be the subject of conservation investments or MCAs 	<ul style="list-style-type: none"> • State-listed species under CESA (primarily)² • Collectively utilize a range of non-marine aquatic and terrestrial natural community types³ • Collectively represent a range of taxonomic groups (plants, invertebrates, fish, etc.) • Include: <ul style="list-style-type: none"> ○ Climate-vulnerable species ○ Wide-ranging species

Element in this RCIS	RCIS Guidelines Category	Description	Rationale for Inclusion	Selection Criteria
Non-Focal Species	Non-Focal Species	30 state and/or federally listed species ⁴	Identify additional listed species that can be the subject of conservation investments or MCAs during implementation	Listed and/or Fully Protected species that are not focal species, but will benefit from the conservation actions identified for one more communities, other conservation elements, or focal species.
Co-benefited Species	Not addressed in the RCIS guidelines	157 other rare species in the RCIS Area	Identify additional, non-listed species that could be benefit from conservation investments or MCAs during implementation; however, MCA credits for these species cannot be generated	Rare species that are not focal or non-focal species, and that can benefit from the actions listed for one or more communities, focal species, or other conservation elements

¹ This RCIS uses a systems-level approach to conservation that emphasizes natural communities and other conservation elements (Section 3.2)

² Focal species include two species not listed under CESA, in order to provide taxonomic representation.

³ Though the RCIS Area adjoins the coast, marine species and communities were excluded from the RCIS as it is a primarily land-based conservation strategy. Marine species, including southern sea otter, are anticipated to benefit from the RCIS strategies that improve water quality in the near-shore environment.

⁴ Listed as an endangered or threatened under CESA and ESA, or as a candidate under CESA, or Fully Protected under California Fish and Game Code Sections 3511, 4700, 5050 and 5515. Includes de-listed species: species previously listed under ESA but removed from the list.

Other rare species that are not state or federally listed, but may be recognized as sensitive under the California Environmental Quality Act, California Coastal Act, or other state or local regulations, were categorized in this RCIS as **co-benefited species**. These plants and animals will benefit from the conservation strategies, but are not focal species or non-focal species. Compensatory mitigation is generally not required for impacts to these species, except in the coastal zone where such mitigation may be required to comply with Local Coastal Program and the California Coastal Act.

3.3 Natural Communities

This RCIS will address as conservation elements 13 natural communities and other land cover types, which are the foundation of a cohesive and comprehensive conservation strategy. The communities were selected because they feature:

1. sensitive habitat recognized by local, state, and federal regulations (e.g., riparian areas and wetlands);
2. support the RCIS Area's rare species, by including high concentrations of rare species and/or at least one narrowly endemic species, for which the RCIS Area is essential to long-term species' persistence; and/or
3. provide important habitat for common or widespread species, and sustain the region's ecosystem services.

Table 3-2 lists the natural communities included as elements of the RCIS. In some cases, ecologically related communities were combined, such as sandhills and sand parkland, and maritime chaparral and knobcone pine forest, so they will be addressed together as part of a common strategy. Figure 3-1 illustrates the locations of mapped occurrences of these community conservation elements within the landscape.

3.4 Other Conservation Elements

Habitat connectivity, working lands, and bat habitat are facets that were identified as 'other conservation elements' (the official term of these types of conservation elements in the RCIS Program) based on their importance for biological resources conservation in the RCIS Area. Working lands (i.e., timber, grazing, and cultivated lands) play an important role in landscape-scale conservation in the region (Section 2.2.3). Habitat connectivity is essential to goals for communities and species including adaptation to climate change (Section 2.4.6).

Bats play essential roles in natural communities and the maintenance of biodiversity; they control pests, conduct pollination, and facilitate seed dispersal and natural and working lands. Bats occur throughout the RCIS Area, including all of the natural community conservation elements. Because of their unique ecological requirements, including roosting habitat, and different pressures and stressors, habitat for bats was addressed in a single conservation element designed to be applied throughout the natural communities, working lands, and even urban areas in the RCIS Area.

Table 3-2: Natural Communities included in the RCIS and the Criteria Met

Natural Community Elements	RCIS Area		Criteria for Inclusion as Community Elements		
	Acres	% of Total	Sensitive Habitat ¹	Rare Species	Widespread/Ecosystem Services
Terrestrial	189,993	66%			
Grasslands	14,715	5.2%	Coastal Terrace Prairie	Numerous plants and animals incl. Santa Cruz tarplant, San Francisco popcorn flower, Ohlone tiger beetle, golden eagle, Northern harrier, and American badger	Water supply and quality
Maritime Chaparral/Knobcone Pine	14,496 ⁵	5.2%	Northern Maritime Chaparral	Vaginulate grimmia, Monterey spineflower, Schreiber’s manzanita, Ohlone manzanita, Santa Cruz manzanita, Santa Cruz kangaroo rat	
Sandhills/Sand Parkland	5,885	2.1%	Northern Maritime Chaparral, Maritime Coast Range, Ponderosa Pine Forest, Sand Parkland	Numerous incl. Ben Lomond wallflower, Ben Lomond spineflower, silverleaf manzanita, Ben Lomond buckwheat, Mount Hermon June beetle, Zayante band-winged grasshopper, Blainville’s horned lizard, Santa Cruz kangaroo rat	Water supply and quality
Santa Cruz Cypress Forest	209	0.07%	Santa Cruz Cypress Forest	Santa Cruz cypress	
Monterey Pine Forest ²	639	0.22%	Monterey Pine Forest	Monterey pine	
Oak Woodland and Forest	25,381	8.9%	Shreve oak, coast live oak, canyon live oak, black oak, and mixed oak woodlands and forests	slender silver moss, robust spineflower, black salamander, sharp-shinned hawk, Cooper’s hawk, San Francisco dusky-footed woodrat	Water supply and quality

Natural Community Elements	RCIS Area		Criteria for Inclusion as Community Elements		
	Acres	% of Total	Sensitive Habitat ¹	Rare Species	Widespread/Ecosystem Services
Redwood and Douglas-fir Forest	141,667	49.7%	redwood forest and woodland (incl. old-growth and older-second-growth forests)	tear drop moss, minute pocket moss, Methuselah’s beard lichen, Marbled murrelet, Vaux’s swift, and Townsend’s big-eared bat	Water supply and quality
Beach, Dunes, and Rocky Cliffs	588	0.21%	Beaches, Dunes, Rocky Cliffs, Coastal Bluff, Coastal Strand	Numerous plants and animals incl. coast wallflower, Monterey coast paintbrush, globose dune beetle, Northern California legless lizard, western snowy plover, American peregrine falcon, and California brown pelican	Sea-level rise/coastal flood protection
Karst Formations	1,363 ³	0.48% ³		Numerous endemic species incl. Empire cave pseudoscorpion, Dolloff Cave spider, Empire Cave neochthonius, Mackenzie’s cave amphipod, and Santa Cruz teleman spider	Water supply and water quality
Aquatic	5,293	1.9%			
Riparian and Riverine	3,412 ⁴	1.2%	Streams and Riparian Corridors	Numerous riverine species including: steelhead, coho salmon, Pacific lamprey, Monterey roach, resident stickleback, speckled dace, California giant salamander, California red-legged frog, foothill yellow-legged frog, and southwestern pond turtle Numerous riparian species including: yellow warbler, San Francisco dusky-footed woodrat, ring-tailed cat, and western red bat	Water supply, water quality, and flood protection

Natural Community Elements	RCIS Area		Criteria for Inclusion as Community Elements		Widespread/ Ecosystem Services
	Acres	% of Total	Sensitive Habitat ¹	Rare Species	
Bar-Built Estuaries ⁵	307	0.11%	Estuaries and wetlands	Tidewater goby, coho salmon, steelhead, California red-legged frog, southwestern pond turtle, and San Francisco garter snake.	Flood protection
Freshwater Wetlands ⁵	767	0.1%	Freshwater wetlands	American bittern, snowy egret, tricolored blackbird, Monterey ornate shrew,	Water filtration, flood protection
Ponds, Lakes, and Reservoirs	807	0.3%	Waters of the State/U.S.	Numerous species including: California floater clam, California red-legged frog, California tiger salamander, Santa Cruz long-toed salamander, San Francisco garter snake, southwestern pond turtle, osprey, bald eagle,	Water supply and water quality

¹ Lists resources regulated by local, state, and federal regulations protecting the communities including: County of Santa Cruz Sensitive Habitat and Riparian Corridor and Wetlands Protection ordinances; the California Environmental Quality Act; Porter-Cologne Water Quality Control Act; and Clean Water Act (Sections 401 and 404).

² There are a total of 693 acres of mapped Monterey Pine Forest in the RCIS Area; however, only the 639 acres in the Año Nuevo, Waddell, Swanton Bluffs, and Scott Creek watersheds are naturally occurring and thus included in the conservation element.

³ This is the mapped extent of marble outcrops visible on surface and may not represent the entire area of karst formation (Section 5.3.9). The marble outcrop acreage overlaps the other natural communities and was not included in the sum for terrestrial systems.

⁴ This represents the acreage of mapped riparian woodlands as defined in Table 2-8 and does not include the additional riparian habitat associated with streams, including redwood forests.

⁵ Bar-built estuaries includes the open water and adjacent (contiguous) mapped wetlands. Freshwater wetlands includes all other mapped wetlands not near estuaries. Wetlands with an overstory of shrubs and trees cannot be detected through remote sensing used to map vegetation, and thus may be under mapped.

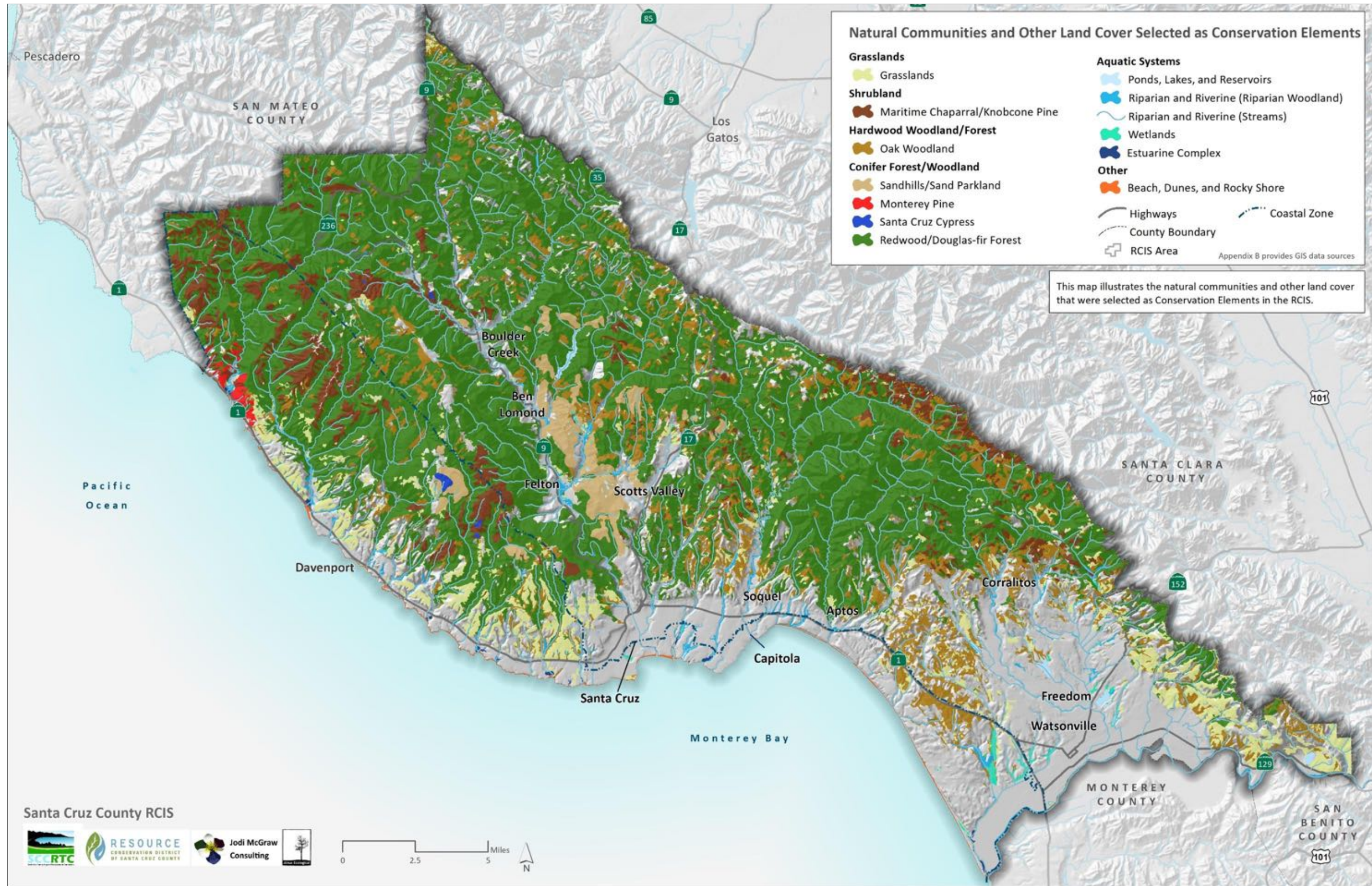


Figure 3-1: Natural Community-Based Conservation Elements

Rock outcroppings, which are important habitat features for a variety of species including bryophytes, lichens, rare plants, and animals such as bats, were addressed as part of the strategies for the various terrestrial communities that they occur within (e.g., maritime chaparral and knobcone pine forest and Santa Cruz cypress forest). This approach recognizes that their protection, management, and other conservation efforts will most oftentimes be applied to the more widespread community (rather than the rock outcroppings themselves).

3.5 Focal Species

This RCIS addresses seven focal species (Table 3-3), which were the subject of focused analysis per the RCIS guidelines (CDFW 2018). As outlined in Section 3.2 and illustrated in Table 3-1, the focal species were selected from the database of 193 rare, non-marine species that was compiled for the RCIS Area (Appendix F), based on the following criteria:

1. **State-listed species:** all but two of the focal species are listed under CESA;
2. **Community Representation:** the focal species collectively utilize from a range of aquatic and terrestrial natural community types;
3. **Taxonomic Representation:** the focal species collectively represent the following groups: plants, invertebrates, fish, amphibians, reptiles, birds, and mammals.
4. **Other RCIS Requirements:** the focal species include climate-vulnerable species and wide-ranging species.

As described in Section 3.2, the focal species in this RCIS were chosen to complement the natural community conservation elements and other conservation elements (Habitat Connectivity, Working Lands, and Bat Habitat) to create a comprehensive and cohesive conservation strategy for the region. In this approach, the 13 natural communities and three other conservation elements provide for conservation of many rare as well as common species and the habitats on which they rely.

Table 3-3: Focal species of this RCIS

Species	Special Status ¹	Primary Community Conservation Element(s) ²	Other Selection Criteria
Santa Cruz tarplant (<i>Holocarpha macradenia</i>)	FT, SE, CRPR 1B.1	Grassland	Plant
Zayante band-winged grasshopper (<i>Trimerotropis infantilis</i>)	FE	Sandhills and Sand Parkland	Invertebrate; climate vulnerable species
coho salmon (<i>Oncorhynchus kisutch</i>)	FE, SE	Bar-Built Estuary; Riparian and Riverine	Fish; climate vulnerable species

Species	Special Status ¹	Primary Community Conservation Element(s) ²	Other Selection Criteria
Santa Cruz long-toed salamander (<i>Ambystoma macrodactylum croceum</i>)	FE, SE, FP	Ponds, Lakes, and Reservoirs; Oak Woodland and Forest	Amphibian; climate vulnerable species
Southwestern pond turtle (<i>Actinemys pallida</i>)	SSC	Riparian and Riverine; Ponds, Lakes and Reservoirs; Grassland	Reptile; climate vulnerable species
marbled murrelet (<i>Brachyramphus marmoratus</i>)	FT, SE	Redwood and Douglas-Fir Forest	Bird
mountain lion (<i>Puma concolor</i>)	SC	Most Communities	Mammal; wide-ranging species

¹ Status Designations

FE: Federally Endangered. In danger of becoming extinct in all or a significant portion of their range

FT: Federally Threatened. Likely to become endangered in the foreseeable future in the absence of special protection

SE: State Endangered. Native California taxa, which are in serious danger of becoming extinct throughout all or a significant portion of their range.

ST: State Threatened. Native California taxa, which although not presently threatened with extinction, likely to become Endangered in the foreseeable future, in the absence of special protection and management efforts.

FP: Fully Protected under the California Fish and Game Code

SC: State Candidate. State Candidate for listing as Endangered, Threatened, or Rare

SSC: Species of Special Concern in California [used for animals only]

CRPR 1B.1: Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California

² Identifies the community conservation element(s) with which the species is most commonly associated. Table 5-2 identifies all of the conservation elements with which each focal and non-focal species is associated.

3.6 Non-Focal Species

The conservation strategies in this RCIS for natural communities, other conservation elements, and focal species are also anticipated to benefit directly and/or indirectly 30 state and/or federally listed species (including de-listed species) in the RCIS Area (Table 3-4), as well as monarch butterfly, which is a candidate for federal listing. Due to the number of rare species within the RCIS Area, non-focal species were identified based upon the following criteria: 1) listed under the ESA, CESA or state Fully Protected statuses; 2) conservation needs will generally be met through actions for natural communities, focal species, or other conservation elements;

and 3) the species typically requires compensatory mitigation for impacts to critical habitat, degradation or loss of occupied habitat, and/or incidental take.

Table 5-2 identifies the RCIS conservation elements (natural communities, focal species, and other conservation elements) with which the non-focal species are associated and their key ecological attributes. Additionally, the conservations strategies for conservation elements list the non-focal (as well as focal) species that will benefit from the overall strategy as well as individual actions. This allows mitigation credits to be generated for non-focal species through implementation of conservation actions with which they are associated.

Table 3-4: Non-focal species of this RCIS

Species	Special Status ¹	Primary Associated Community Conservation Elements ²
Plants		
Ben Lomond spineflower (<i>Chorizanthe pungens</i> var. <i>hartwegiana</i>)	FE, CRPR 1B.1	Sandhills and Sand Parkland
Monterey spineflower (<i>Chorizanthe pungens</i> var. <i>pungens</i>)	FT, CRPR 1B.2	Maritime Chaparral and Knobcone Pine
Scotts Valley spineflower (<i>Chorizanthe robusta</i> var. <i>hartwegii</i>)	FE, CRPR 1B.1	Grassland
robust spineflower (<i>Chorizanthe robusta</i> var. <i>robusta</i>)	FE, CRPR 1B.1	Oak Woodland and Forest; Grassland; Maritime Chaparral and Knobcone Pine
Santa Cruz wallflower (<i>Erysimum teretifolium</i>)	FE, SE, CRPR 1B.1	Sandhills and Sand Parkland
Santa Cruz cypress (<i>Hesperocyparis abramsiana</i> var. <i>abramsiana</i>)	FT, SE, CRPR 1B.2	Santa Cruz Cypress Forest
white-rayed pentachaeta (<i>Pentachaeta bellidiflora</i>)	FE, SE, CRPR 1B.1	Grassland
San Francisco popcornflower (<i>Plagiobothrys diffusus</i>)	SE, CRPR 1B.1	Grassland
Scotts Valley polygonum (<i>Polygonum hickmanii</i>)	FE, SE, CRPR 1B.1	Grassland
Pacific Grove clover (<i>Trifolium polyodon</i>)	SR, CRPR 1B.1	Grassland
Invertebrates		
Monarch butterfly (<i>Danaus plexippus</i>)	FC	Redwood and Douglas-Fir Forest; Monterey Pine Forest

Species	Special Status ¹	Primary Associated Community Conservation Elements ²
western bumble bee (<i>Bombus occidentalis</i>)	SC	Grassland
Ohlone tiger beetle (<i>Cicindela ohlone</i>)	FE	Grassland
Mount Hermon June beetle (<i>Polyphylla barbata</i>)	FE	Sandhills and Sand Parkland
Fish		
Tidewater goby (<i>Eucyclogobius newberryi</i>)	FE, SSC	Bar-Built Estuary; Riparian and Riverine
steelhead – central California coast DPS (<i>Oncorhynchus mykiss irideus</i>)	FT	Bar-Built Estuary; Riparian and Riverine
steelhead – south-central California coast DPS (<i>Oncorhynchus mykiss irideus</i>)	FT	Bar-Built Estuary; Riparian and Riverine
Amphibians		
California tiger salamander (<i>Ambystoma californiense</i>)	FT, ST	Ponds, Lakes, and Reservoirs; Grassland
Foothill yellow-legged frog (<i>Rana boylei</i>)	ST, SSC	Riparian and Riverine
California red-legged frog (<i>Rana draytonii</i>)	FT, SSC	Riparian and Riverine; Ponds, Lakes, and Reservoirs
Reptile		
San Francisco garter snake (<i>Thamnophis sirtalis tetrataenia</i>)	FE, SE, FP	Ponds, Lakes, and Reservoirs; Grassland; Bar-built Estuaries; Riparian and Riverine
Birds		
Tricolored blackbird (<i>Agelaius tricolor</i>)	ST, SSC	Ponds, Lakes, and Reservoirs; Freshwater Wetlands
Golden eagle (<i>Aquila chrysaetos</i>)	FP	Grassland
Swainson’s hawk (<i>Buteo swainsoni</i>)	ST	Working Lands (Cultivated)
Western snowy plover (<i>Charadrius nivosus nivosus</i>)	FT, SSC	Beaches, Dunes, and Rocky Cliffs
White-tailed kite (<i>Elanus leucurus</i>)	FP	Grassland

Species	Special Status ¹	Primary Associated Community Conservation Elements ²
American peregrine falcon (<i>Falco peregrinus anatum</i>)	FD, SD, FP	Beaches, Dunes, and Rocky Cliffs
Bald eagle (<i>Haliaeetus leucocephalus</i>)	FD, SE, FP	Ponds, Lakes, and Reservoirs
California brown pelican (<i>Pelecanus occidentalis californicus</i>)	FD, SD, FP	Beaches, Dunes, and Rocky Cliffs
Mammal		
ringed-tailed cat (<i>Bassariscus astutus</i>)	FP	Riparian and Riverine

¹ Status Designations

FE: Federally Endangered. In danger of becoming extinct in all or a significant portion of their range

FT: Federally Threatened. Likely to become endangered in the foreseeable future in the absence of special protection

FD: Federally Delisted. Previously on the federal Endangered Species Act but removed

FP: Fully Protected under the California Fish and Game Code Sections 3511, 4700, 5050 and 5515

FC: Federal candidate for listing under ESA

SE: State Endangered. Native California taxa, which are in serious danger of becoming extinct throughout all or a significant portion of their range.

ST: State Threatened. Native California taxa, which although not presently threatened with extinction, likely to become Endangered in the foreseeable future, in the absence of special protection and management efforts.

SC: State Candidate. State Candidate for listing as Endangered, Threatened, or Rare

SD: State Delisted. Previously on the California Endangered Species Act but removed

SSC: Species of Special Concern in California [used for animals only]

CRPR 1B.1: Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California

CRPR 1B.2: Plants rare, threatened, or endangered in California and elsewhere; fairly threatened in California

² Identifies the community conservation element(s) with which the species is most commonly associated.

Table 5-2 identifies all of the conservation elements with which each focal and non-focal species is associated.

3.7 Co-Benefited Species

An additional 156 rare species in the RCIS Area, which are not listed under ESA or CESA, are anticipated to also benefit from the conservation strategies developed for natural communities, other conservation elements, and focal species in this RCIS (Table 3-5).

Table 3-5: Co-benefited species anticipated to benefit from the conservation strategies

Species	Special Status ¹	Primary Associated Community and Other Conservation Elements ²
Plants		
Blasdale’s Bent Grass (<i>Agrostis blasdalei</i>)	CRPR 1B.2	Grassland
Bent-flowered fiddleneck (<i>Amsinckia lunaris</i>)	CRPR 1B.2	Grassland
slender silver moss (<i>Anomobryum julaceum</i>)	CRPR 4.2	Oak Woodland and Forest; Redwood and Douglas-Fir Forest
coast rockcress (<i>Arabis blepharophylla</i>)	CRPR 4.3	Grassland
Santa Cruz manzanita (<i>Arctostaphylos andersonii</i>)	CRPR 1B.2	Maritime Chaparral and Knobcone Pine Forest
Schreiber’s manzanita (<i>Arctostaphylos glutinosa</i>)	CRPR 1B.2	Maritime Chaparral and Knobcone Pine Forest
Hooker’s manzanita (<i>Arctostaphylos hookeri</i> ssp. <i>hookeri</i>)	CRPR 1B.2	Maritime Chaparral and Knobcone Pine Forest
Ohlone manzanita (<i>Arctostaphylos ohloneana</i>)	CRPR 1B.1	Maritime Chaparral and Knobcone Pine Forest
sandhills beachwort (<i>Artemisia pycnocephala</i> (sandhills ecotype)		Sandhills and Sand Parkland
Brewer’s calandrinia (<i>Calandrinia breweri</i>)	CRPR 4.2	Maritime Chaparral and Knobcone Pine Forest
pink star-tulip (<i>Calochortus uniflorus</i>)	CRPR 4.2	Grassland
Santa Cruz Mountain pussypaws (<i>Calyptidium parryi</i> var. <i>hesseae</i>)	CRPR 1B.1	Maritime Chaparral and Knobcone Pine Forest
swamp harebell (<i>Campanula californica</i>)	CRPR 1B.2	Freshwater Wetland
Bristly Sedge (<i>Carex comosa</i>)	CRPR 2B.1	Freshwater Wetland
deceiving sedge (<i>Carex saliniformis</i>)	CRPR 1B.2	Freshwater Wetland
johnny-nip (<i>Castilleja ambigua</i> var. <i>ambigua</i>)	CRPR 4.2	Grassland
banded owl’s clover (<i>Castilleja exserta</i> ssp. <i>latifolia</i>)		Grassland; Beaches, Dunes, and Rocky Cliffs

Species	Special Status ¹	Primary Associated Community and Other Conservation Elements ²
Monterey Coast paintbrush (<i>Castilleja latifolia</i>)	CRPR 4.3	Beaches, Dunes, and Rocky Cliffs
Congdon's tarplant (<i>Centromadia parryi</i> ssp. <i>congdonii</i>)	CRPR 1B.1	Grassland
Bolander's water hemlock (<i>Cicuta maculata</i> var. <i>bolanderi</i>)	CRPR 2B.1	Freshwater Wetland
purple godetia (<i>Clarkia purpurea</i> ssp. <i>purpurea</i>)		Grassland
San Francisco collinsia (<i>Collinsia multicolor</i>)	CRPR 1B.2	Oak Woodland and Forest
tear drop moss (<i>Dacryophyllum falcifolium</i>)	CRPR 1B.3	Redwood and Douglas-Fir Forest
Palmer's live forever (<i>Dudleya palmeri</i> (local form))		Sandhills and Sand Parkland
California bottle-brush grass (<i>Elymus californicus</i>)	CRPR 4.3	Oak Woodland and Forest; Riparian and Riverine; Redwood and Douglas-Fir Forest
Watsonville buckwheat (<i>Eriogonum nudum</i> var. <i>alterans</i>)		Grassland
Ben Lomond buckwheat (<i>Eriogonum nudum</i> var. <i>decurrens</i>)	CRPR 1B.1	Sandhills and Sand Parkland
Coast wallflower (<i>Erysimum ammophilum</i>)	CRPR 1B.2	Beaches, Dunes, and Rocky Cliffs
coarse-leaved wallflower (<i>Erysimum franciscanum</i> var. <i>crassifolium</i>)		Beaches, Dunes, and Rocky Cliffs
sandhills poppy (<i>Eschscholzia californica</i> ssp. <i>nov.</i>)		Sandhills and Sand Parkland
minute pocket moss (<i>Fissidens pauperculus</i>)	CRPR 1B.2	Redwood and Douglas-Fir Forest
Gilia longituba (SLV form) (<i>Gilia longituba</i>)		Grassland
Toren's grimmia (<i>Grimmia torenii</i>)	CRPR 1B.3	Karst Formations

Species	Special Status ¹	Primary Associated Community and Other Conservation Elements ²
vaginulate grimmia (<i>Grimmia vaginulata</i>)	CRPR 1B.1	Maritime Chaparral and Knobcone Pine Forest
short-leaved evax (<i>Hesperervax sparsiflora</i> var. <i>brevifolia</i>)	CRPR 1B.2	Beaches, Dunes, and Rocky Cliffs
Point Reyes horkelia (<i>Horkelia marinensis</i>)	CRPR 1B.2	Grassland
harlequin lotus (<i>Hosackia gracilis</i>)	CRPR 4.2	Grassland
coast iris (<i>Iris longipetala</i>)	CRPR 4.2	Grassland; Wetland; Riparian and Riverine
perennial goldfields (<i>Lasthenia californica</i> ssp. <i>macrantha</i>)	CRPR 1B.2	Grasslands
Dylan’s linanthus (<i>Leptosiphon grandiflorus</i> ssp.)		Beaches, Dunes, and Rocky Cliffs; Grasslands
Small-leaved lomatium (<i>Lomatium parvifolium</i>)	CRPR 4.2	Maritime Chaparral and Knobcone Pine Forest
Arcuate bush mallow (<i>Malacothamnus arcuatus</i>)	CRPR 1B.2	Maritime Chaparral and Knobcone Pine Forest
Mt. Diablo cottonweed (<i>Micropus amphibolus</i>)	CRPR 3.2	Grassland; Oak Woodland and Forest
marsh microseris (<i>Microseris paludosa</i>)	CRPR 1B.2	Grassland
elongate copper moss (<i>Mielichhoferia elongata</i>)	CRPR 4.3	
Santa Cruz County monkeyflower (<i>Mimulus rattanii</i> ssp. <i>decurtatus</i>)	CRPR 4.2	Sandhills and Sand Parkland
Scotts Valley sandwort (<i>Minuartia californica</i> ssp. <i>nov.</i>)		Grassland
northern curly-leaved monardella (<i>Monardella sinuata</i> ssp. <i>nigrescens</i>)	CRPR 1B.2	Sandhills and Sand Parkland
woodland woollythreads (<i>Monolopia gracilens</i>)	CRPR 1B.2	Maritime Chaparral and Knobcone Pine Forest
Kellman’s Bristle Moss (<i>Orthotrichum kellmanii</i>)		Maritime Chaparral and Knobcone Pine Forest
Santa Cruz Mountains beardtongue (<i>Penstemon rattanii</i> var. <i>kleei</i>)	CRPR 1B.2	Oak Woodland and Forest; Redwood and Douglas-Fir Forest

Species	Special Status ¹	Primary Associated Community and Other Conservation Elements ²
Gairdner's yampah (<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i>)	CRPR 4.2	Grassland
Bentham's ponderosa pine (<i>Pinus ponderosa</i> ssp. <i>benthamiana</i>)		Sandhills and Sand Parkland
Monterey pine (<i>Pinus radiata</i>)	CRPR 1B.1	Monterey Pine Forest
white-flowered rein orchid (<i>Piperia candida</i>)	CRPR 1B.2	Oak Woodland and Forest; Redwood and Douglas-Fir Forest
Michael's rein orchid (<i>Piperia michaelii</i>)	CRPR 4.2	Oak Woodland and Forest; Redwood and Douglas-Fir Forest
Choris' popcornflower (<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>)	CRPR 1B.2	Maritime Chaparral and Knobcone Pine Forest
Hickman's popcornflower (<i>Plagiobothrys chorisianus</i> var. <i>hickmanii</i>)	CRPR 4.2	Freshwater Wetland
sandhills everlasting (<i>Pseudognaphalium</i> sp. <i>nov.</i>)		Sandhills and Sand Parkland
annual alkali grass (<i>Puccinellia simplex</i>)	CRPR 1B.2	Freshwater Wetland
Lobb's aquatic buttercup (<i>Ranunculus lobbii</i>)	CRPR 4.2	Ponds, Lakes, and Reservoirs; Wetland
California beaked-rush (<i>Rhynchospora californica</i>)	CRPR 1B.1	Freshwater Wetland
Hoffmann's sanicle (<i>Sanicula hoffmannii</i>)	CRPR 4.3	Oak Woodland and Forest; Redwood and Douglas-Fir Forest
Chaparral ragwort (<i>Senecio aphanactis</i>)	CRPR 2B.2	Maritime Chaparral and Knobcone Pine Forest
Maple-leaved checkerbloom (<i>Sidalcea malachroides</i>)	CRPR 4.2	Oak Woodland and Forest
San Francisco campion (<i>Silene verecunda</i> ssp. <i>verecunda</i>)	CRPR 1B.2	Grassland; Maritime Chaparral and Knobcone Pine Forest
Santa Cruz microseris (<i>Stebbinsoseris decipiens</i>)	CRPR 1B.2	Grassland
marsh zigadenus	CRPR 4.2	Grassland

Species	Special Status ¹	Primary Associated Community and Other Conservation Elements ²
<i>(Toxicoscordion fontanum)</i>		
dwarf star lily <i>(Toxicoscordion fremontii var. minor)</i>		Grassland
Santa Cruz clover <i>(Trifolium buckwestiorum)</i>	CRPR 1B.1	Grassland
coast bouquet clover <i>(Trifolium grayi ssp. 3)</i>		Grassland
Scotts Valley bouquet clover <i>(Trifolium grayi ssp. nov. 1)</i>		Grassland
San Lorenzo Valley bouquet clover <i>(Trifolium grayi ssp. nov. 2)</i>		Grassland
Saline clover <i>(Trifolium hydrophilum)</i>	CRPR 1B.2	Freshwater Wetland
Methuselah’s beard lichen <i>(Usnea longissima)</i>	CRPR 4.2	Oak Woodland and Forest; Redwood and Douglas-Fir Forest
Invertebrates		
Opler’s longhorn moth <i>(Adela oplerella)</i>		Grassland
California floater clam <i>(Anodonta californiensis)</i>		Riparian and Riverine; Ponds, Lakes, and Reservoirs
Obscure Bumble Bee <i>(Bombus caliginosus)</i>		Grasslands
Undescribed aquatic cave isopod <i>(Calasellu ssp. nov.)</i>		Karst Caves
sandy beach tiger beetle <i>(Cicindela hirticollis gravida)</i>		Beaches, Dunes, and Rocky Cliffs
undescribed fulgoroid roothopper <i>(Cixius sp. nov.)</i>		Karst Caves
globose dune beetle <i>(Coelus globosus)</i>		Beaches, Dunes, and Rocky Cliffs
Empire Cave pseudoscorpion <i>(Fissilicreagris imperialis)</i>		Karst Caves
sandhills melittid bee <i>(Hesperapis sp. nov.)</i>		Sandhills and Sand Parkland
California fairy shrimp <i>(Linderiella occidentalis)</i>		Ponds, Lakes, and Reservoirs

Species	Special Status ¹	Primary Associated Community and Other Conservation Elements ²
Moestan blister beetle (<i>Lytta moesta</i>)		Grasslands
Dolloff Cave spider (<i>Meta dolloff</i>)		Karst Caves
sandhills metopia (<i>Metopia sp. nov.</i>)		Sandhills and Sand Parkland
Empire Cave neochthonius (<i>Neochthonius imperialis</i>)		Karst Caves
sandhills scorpion (<i>Peroctinous sp. nov.</i>)		Sandhills and Sand Parkland
Antioch sphecid wasp (<i>Philanthus nasalis</i>)		Sandhills and Sand Parkland
Santa Cruz rainbeetle (<i>Pleocoma conjugens</i>)		Sandhills and Sand Parkland
sandhills flesh-fly (<i>Senotaenia sp. nov.</i>)		Sandhills and Sand Parkland
Unsilvered fritillary butterfly (<i>Speyeria adiate adiate</i>)		Oak Woodland and Forest; Redwood and Douglas-Fir Forest
sandhills Jerusalem cricket (<i>Stenopelmatus sp. nov.</i>)		Sandhills and Sand Parkland
sandhills robberfly (<i>Stenopogon sp. nov.</i>)		Sandhills and Sand Parkland
Mackenzie’s cave amphipod (<i>Stygobromus mackenziei</i>)		Karst Caves
California brackishwater snail (<i>Tryonia imitator</i>)		Karst Caves
Santa Cruz teleman spider (<i>Telema sp. nov.</i>)		Karst Caves
Fish		
Sacramento sucker (<i>Catostomus occidentalis</i>)		Riparian and Riverine
Pacific lamprey (<i>Entosphenus tridentatus</i>)	SSC	Riparian and Riverine
resident (threespine) stickleback (<i>Gasterosteus aculeatus</i>)		Riparian and Riverine

Species	Special Status ¹	Primary Associated Community and Other Conservation Elements ²
Monterey hitch (<i>Lavinia exilicauda harengus</i>)	SSC	Riparian and Riverine; Ponds, Lakes, and Reservoirs
Monterey roach (<i>Lavinia symmetricus subditus</i>)	SSC	Riparian and Riverine
speckled dace (<i>Rhinichthys osculus</i>)		Riparian and Riverine
Amphibians		
Santa Cruz black salamander (<i>Aneides niger</i>)	SSC	Grassland; Oak woodland and Forest; Redwood and Douglas-Fir Forest
California giant salamander (<i>Dicamptodon ensatus</i>)	SSC	Riparian and Riverine; Oak Woodland and Forest; Redwood and Douglas-Fir Forest
Rough-skinned newt (<i>Taricha granulosa</i>)		Ponds, Lakes, and Reservoirs; Riparian and Riverine; Grassland; Oak Woodland and Forest; Redwood and Douglas-Fir Forest
Reptiles		
northern California legless lizard (<i>Anniella pulchra</i>)	SSC	Beaches, Dunes, and Rocky Cliffs
California whiptail (<i>Aspidoscelis tigris munda</i>)		Sandhills and Sand Parkland
California nightsnake (<i>Hypsiglena ochrorhynchus nuchalata</i>)		Sandhills and Sand Parkland
California mountain kingsnake (<i>Lampropeltis zonata</i>)		Sandhills and Sand Parkland
Blainville's horned lizard (<i>Phrynosoma blainvillii</i>)	SSC	Sandhills and Sand Parkland
Birds		
Cooper's hawk (<i>Accipiter cooperii</i>)		Oak Woodland and Forest; Redwood and Douglas-Fir Forest
Sharp-shinned hawk (<i>Accipiter striatus</i>)		Oak Woodland and Forest; Redwood and Douglas-Fir Forest
Grasshopper sparrow (<i>Ammodramus savannarum</i>)	SSC	Grassland

Species	Special Status ¹	Primary Associated Community and Other Conservation Elements ²
Great Egret (<i>Ardea alba</i>)		Freshwater Wetland
Great blue heron (<i>Ardea herodias</i>)		Freshwater Wetland; Ponds, Lakes, and Reservoirs
long-eared owl (<i>Asio otus</i>)	SSC	Oak Woodland and Forest; Oak Woodland and Forest; Redwood and Douglas-Fir Forest; Riparian and Riverine
Burrowing owl (<i>Athene cunicularia</i>)	SSC	Grassland
American bittern (<i>Botaurus lentiginosus</i>)		Freshwater Wetland
Ferruginous hawk (<i>Buteo regalis</i>)		Grassland
Vaux's Swift (<i>Chaetura vauxi</i>)	SSC	Redwood and Douglas-Fir Forest
Northern harrier (<i>Circus cyaneus</i>)	SSC	Grassland; Freshwater Wetland
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	SSC	Sandhills and Sand Parkland, Redwood and Douglas-Fir Forest
yellow rail (<i>Coturnicops noveboracensis</i>)	SSC	Freshwater Wetland
black swift (<i>Cypseloides niger</i>)	SSC	Beaches, Dunes, and Rocky Cliffs
Snowy egret (<i>Egretta thula</i>)		Freshwater Wetland
California horned lark (<i>Eremophila alpestris actia</i>)		Grassland
Merlin (<i>Falco columbarius</i>)		Grassland
Prairie falcon (<i>Falco mexicanus</i>)		Grassland
Common Loon (<i>Gavia immer</i>)	SSC	Freshwater Wetland; Ponds, Lakes, and Reservoirs
Saltmarsh common yellowthroat (<i>Geothlypis trichas sinuosa</i>)	SSC	Bar-Built Estuary; Ponds, Lakes, and Reservoirs; Wetland

Species	Special Status ¹	Primary Associated Community and Other Conservation Elements ²
Loggerhead shrike (<i>Lanius ludovicianus</i>)	SSC	Maritime Chaparral and Knobcone Pine Forest
Black-crowned night heron (<i>Nycticorax nycticorax</i>)		Freshwater Wetland; Ponds, Lakes, and Reservoirs
Osprey (<i>Pandion haliaetus</i>)		Ponds, Lakes, and Reservoirs
American White Pelican (<i>Pelecanus erythrorhynchos</i>)	SSC	Freshwater Wetland; Ponds, Lakes, and Reservoirs
Double-crested cormorant (<i>Phalacrocorax auritus</i>)		Freshwater Wetland; Ponds, Lakes, and Reservoirs
White-faced Ibis (<i>Plegadis chihi</i>)		Freshwater Wetland; Ponds, Lakes, and Reservoirs
Purple martin (<i>Progne subis</i>)	SSC	Grasslands; Ponds, Lakes, and Reservoirs
Yellow Warbler (<i>Setophaga petechia</i>)	SSC	Riparian and Riverine
Elegant Tern (<i>Thalasseus elegans</i>)		Bar-Built Estuary; Beaches, Dunes, and Rocky Cliffs
Mammal		
Pallid bat (<i>Antrozous pallidus</i>)	SSC	Bat Habitat ³ ; Oak Woodland and Forest; Redwood and Douglas-Fir Forest; Grassland
Townsend's big-eared bat (<i>Corynorhinus townsendii townsendii</i>)	SSC	Bat Habitat ³ ; Oak Woodland and Forest; Redwood and Douglas-Fir Forest
Santa Cruz kangaroo rat (<i>Dipodomys venustus venustus</i>)		Sandhills and Sand Parkland; Maritime Chaparral and Knobcone Pine Forest
Western mastiff bat (<i>Eumops perotis californicus</i>)	SSC	Bat Habitat; Grassland; Maritime Chaparral and Knobcone Pine Forest
Silver-haired bat (<i>Lasionycteris noctivagans</i>)		Bat Habitat; Oak Woodland and Forest; Redwood and Douglas-Fir Forest
Western red bat (<i>Lasiurus blossevillii</i>)	SSC	Bat Habitat; Riparian and Riverine; Grasslands

Species	Special Status ¹	Primary Associated Community and Other Conservation Elements ²
Hoary bat (<i>Lasiurus cinereus</i>)		Bat Habitat; Oak Woodland and Forest; Redwood and Douglas-Fir Forest
Western small-footed myotis (<i>Myotis ciliolabrum</i>)		Bat Habitat ³
Long-eared myotis (<i>Myotis evotis</i>)		Bat Habitat ³
Fringed myotis (<i>Myotis thysanodes</i>)	SSC	Bat Habitat ³
Long-legged myotis (<i>Myotis volans</i>)		Bat Habitat ³
Yuma myotis (<i>Myotis yumanensis</i>)		Bat Habitat ³
San Francisco dusky-footed woodrat (<i>Neotoma fuscipes annectens</i>)	SSC	Riparian and Riverine; Redwood and Douglas-Fir Forest; Maritime Chaparral and Knobcone Pine Forest; Grassland; Oak Woodland and Forest; Redwood and Douglas-Fir Forest
Monterey ornate shrew (<i>Sorex ornatus salarius</i>)	SSC	Wetland; Riparian and Riverine; Grassland
American badger (<i>Taxidea taxus</i>)	SSC	Grassland

¹ Status Designations

CRPR 1B.1: Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California

CRPR 1B.2: Plants rare, threatened, or endangered in California and elsewhere; fairly threatened in California

CRPR 1B.3: Plants rare, threatened, or endangered in California and elsewhere; not very threatened in California

CRPR 2.1: Plants rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California

CRPR 2.2: Plants rare, threatened, or endangered in California, but more common elsewhere; fairly threatened in California

CRPR 2.3: Plants rare, threatened, or endangered in California, but more common elsewhere; not very threatened in California

CRPR 3.1: Plants about which we need more information; seriously threatened in California

CRPR 3.2: Plants about which we need more information; fairly threatened in California

Species	Special Status ¹	Primary Associated Community and Other Conservation Elements ²
		CRPR 3.3: Plants about which we need more information; not very threatened in California
		CRPR 4.1: Plants of limited distribution; seriously threatened in California
		CRPR 4.2: Plants of limited distribution; fairly threatened in California
		CRPR 4.3: Plants of limited distribution; not very threatened in California
		SSC: Species of Special Concern in California (applies only to animals only)

² Identifies the community conservation element(s) with which the species is most commonly associated. The species may benefit from conservation strategies for these or other conservation elements.

³ Bats utilize a wide range of both aquatic and terrestrial communities, as well as specialized microhabitats including anthropogenic features (e.g., buildings and mines) during their life history. For this reason, Bat Habitat was designated as a separate conservation element in the RCIS. Bat Habitat is listed as the only *Primary Associated Community and Other Conservation Element* for bat species that are habitat generalists.