

Elk Creek Beaver Dam Analogue (BDA) and Wetland Habitat Enhancement Project (Project ID: 1730194) 2023

Introduction:

Smith River Alliance (SRA/Grantee) will implement the Elk Creek Beaver Dam Analogue (BDA) and Wetland Habitat Enhancement Project. The project will enhance off-channel habitat by installing a series of beaver dam analogue (BDA) structures and restore riparian habitat by installing native plants and cattle exclusion fencing. The BDAs will be placed in a hydraulically suitable location along the mainstem of Elk Creek where the relatively small channel size will facilitate constructability and multi-thread planform can accommodate fish passage along multiple flow paths.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement(s) will follow techniques in the *California Salmonid Stream Habitat Restoration Manual*.

Does the project involve the construction of beaver analogs?

Yes ☒ or No ☐

Is the project located in a tidally influenced [California coastal zone](#)?

Yes ☒ or No ☐

Objectives:

The Elk Creek Beaver Dam Analogue (BDA) and Wetland Habitat Enhancement Project will enhance instream and floodplain habitat by installing four pairs of Beaver Dam Analogue (BDA) structures. The eight (8) BDAs will be placed along a historically ditched and straightened section of stream. The Elk Valley at the project site is a 1-mile wide low gradient valley with acres of underutilized off-channel habitat. The project will enhance approximately 300 to 400 linear feet of instream habitat, increase surface flow connection to nearby floodplains and wetlands, provide building sites for beaver to maintain or modify, and address limiting factors for the recovery of Coho Salmon.

Elk Creek is a small urban/wildland watershed (8.26 mi²) with natal Coho Salmon, and coastal cutthroat trout populations. Most of the watershed is very low gradient and has high intrinsic potential for Coho Salmon (NMFS 2014). The Coho Salmon population in Elk Creek contributes to the overall resiliency of SONCC Coho Salmon. By exchanging spawners with neighboring watershed, such as the Smith River and Klamath Rivers, the Elk Creek population plays an important role in the health and resiliency of the SONCC Evolutionarily Significant Unit (ESU) (NMFS 2014).

Project Description:**Location:**

The Elk Creek watershed is located on the coastal plain adjacent to Crescent City and includes the western slope of the Coast Range mountains. The project reach is located on the mainstem of Elk Creek, beginning approximately 1.13 miles upstream from the mouth at the Pacific Ocean. This reach is just upstream from an Oxbow Pond and the confluence with the large south tributary of Elk Creek. Project coordinates are: 41.764176 North, 124.185535 West.

Project Set Up:

Smith River Alliance (SRA) and Stillwater Sciences (SWS) will complete all project coordination and construction oversight tasks. A contractor, selected through a competitive bid process, will install BDA structures, and native plant installation. The landowner and leasee will install riparian fencing.

SRA will lead project management and oversight. SRA will prepare bid solicitation packages and coordinate with contractors hired for project implementation. SRA will support ongoing landowner outreach and engagement. SRA will coordinate with other stakeholders and regulatory agencies to secure all permits necessary to complete the project in compliance with County, State, and Federal regulations. SRA will install willow cuttings along the project reach to increase the amount of forage available for beavers. The SRA project manager will oversee the planting layout and assist with coordinating willow collection and installation. SRA will lead riparian monitoring.

SWS will support pre-construction planning, construction oversight, and post-construction monitoring. SWS will survey habitat enhancement sites to develop as-built plans of the final structure layout. The Project Geologist will oversee all aspects of the project for SWS and lead the construction oversight and topographic surveys. SWS will lead water quality and water level monitoring.

SRA will select an experienced contractor for project construction. This contractor will participate in pre-construction consultation with the project team and support permitting efforts (as needed). The contractor will furnish all materials and equipment needed to construct the BDA structures (i.e., mobilization and access, material collection, post installation and BDA construction, demobilization, etc.). The selected contractor will have sufficient experience implementing restoration projects, required proof of labor compliance, insurance, licenses, required equipment, PPE, and protocols to safely complete the work, following all permit guidelines and the design specifications. A contractor will be selected based on cost, equipment capabilities, skill, and best fit for the scope of work. Once a contractor is selected, SRA will announce awards and execute a subcontract agreement between SRA and the chosen contractor.

The landowner will install the permanent riparian fencing and assist with equipment access and pasture management during construction.

Materials:

The Stillwater Sciences budget includes funding for equipment needed for pre-construction surveys, as-built surveys and project monitoring. The equipment includes: a UAV drone, RTK GNSS Survey Package, Differential GNSS package, water level, and dissolved oxygen loggers, and logger housing for monitoring hydrologic connectivity to the backwater.

The construction contractor will furnish all heavy equipment used during project construction including but not limited hydraulic post pounders, chainsaws, hoes, shovels, hoedads, rock bars.

Smith River Alliance will purchase permanent riparian fencing materials. The landowner will furnish all equipment used for the installation of the livestock exclusion fence. SRA will purchase BDA posts, waders, hand tools, and PPE needed for willow installation.

Tasks:**Task 1: Project Management**

Smith River Alliance (SRA) will provide project management, contract oversight, and administration. Task 1 includes, but is not limited to, contract oversight, scheduling, invoicing, project reporting, and coordination with stakeholders and members of the project team. SRA will coordinate with the project team to oversee and assist as needed throughout the construction and revegetation effort. The project will be completed by a team consisting of the Smith River Alliance (SRA), Stillwater Sciences (SWS), the landowner (Hilligoss) and qualified contractors selected for project construction.

Task 2: Implementation Preparation, Permitting and Environmental Compliance

Environmental Compliance: A qualified botanist will complete a rare plant survey using leveraged funds. The survey will follow Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities (California Department of Fish and Game 2009). Methods and results will be compiled into a report. The report will include copies of CNDDDB forms and maps of documented special status plant populations, if applicable. USFWS will complete a cultural resources inventory needed to support Section 106 consultation for the project site.

SRA will prepare bid solicitation documents and review bids with support from SWS. A qualified contractor will be selected based on SRA's contractor selection policy. The selected contractor will provide insurance and bonding, and licensing needed for the project. SRA, SWS, the selected contractor, and the landowner will hold a pre-construction meeting. SRA will work to secure project materials and coordinate pre-implementation site inspections.

Task 3: Construction

SRA and SWS will oversee project implementation. SWS will provide staking and check water surface and structure elevations. The landowner will mow and maintain an

existing access path to the work site. The contractor will transport materials to the site by ATV and trailer, and/or carry in materials as needed. Project construction will be timed for low flow conditions to limit the disturbance to wetlands and streams.

The selected construction contractor will install 8 BDAs. Each BDA will use approximately 18 posts spaced 18 to 30-inches apart. At each feature two rows of 7 foot long posts will be embedded 1/4 to 1/3 of their length into the stream bed. Willow and other branch material will be collected onsite and tightly woven between and through the structures to create channel-spanning structures with a constant crest elevation. The upstream end of the BDA will be packed with a mixture of woody debris and fill material to form a pond upstream of the feature. The contractor will be responsible for mobilization and demobilization and will furnish all tools and equipment needed for BDA installation.

SRA will install willow cuttings along a 500 foot stretch of stream. Cuttings will be 3 to 4-feet long and a ½ to 1-inch thick. Willow cuttings will be collected on-site, outside of the nesting bird season, and no more than 1/3 of any willow plant will be harvested annually. Willows will be installed using hand tools. At least ½ of the willow cutting will be embedded in the stream bank and planting sites will be targeted to bank elevations where the cuttings can be in contact with the water table.

SRA will purchase 2,000 feet of fencing materials for a fence that will extend along the riparian corridor and connect into existing fence lines. The fence will be installed following NRCS standard techniques and will utilize a wildlife friendly design. The landowner will install and maintain the riparian fence. The landowner will provide all tools and equipment needed for fence installation and will agree to maintain the fence for a period of 10 years.

Task 4: Monitoring and Maintenance

The physical response to restoration will be monitored for a period of 2 years after construction. SRA will establish photo monitoring points every 200 feet along the project reach prior to construction. Post-implementation photos will be taken immediately after construction is complete as well as during the winter (high flow) and summer (low flow) for two years following construction to evaluate project effectiveness. SWS will set up two water level and water quality monitoring stations at the downstream and upstream ends of the project site. The monitoring stations will measure continuous dissolved oxygen, stage, and temperature to evaluate changes in habitat conditions. Data will be downloaded and post-processed by SWS. SWS will summarize the findings and SRA will prepare annual monitoring reports. SWS will prepare an as-built survey of the final project features. SRA will prepare a project completion memo. A summary of physical and photo monitoring will be summarized in annual monitoring reports prepared by March 15 each year.

Deliverables:

Task 1: Project Management

Quarterly invoices and progress reports

Annual Report
Copies of Executed Subcontracts
Final Invoice

Task 2: Implementation Preparation, Permitting and Environmental Compliance
CNDDDB Forms (If applicable)
USFWS Section 106 Summary of Findings
Bid package and Contractor Selection Documents

Task 3: Construction
Field logs
Project letter of record

Task 4: Monitoring and Maintenance
As-built Plans
Final reports for permits
Annual monitoring reports
Final report of performance post construction

Timelines:

Task 1: Project Management
4/1/2024 to 4/1/2027

Task 2: Implementation Preparation, Permitting and Environmental Compliance
4/1/2024 to 9/1/2024

Task 3: Construction
9/1/2024 to 11/1/2024

Task 4: Monitoring and Maintenance
11/1/2024 to 4/1/2027

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the United States Army Corp of Engineers (USACE) Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife (CDFW).

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. All equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the CDFW Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

All habitat improvements will follow techniques described in the *California Salmonids Stream Habitat Restoration Manual*, Volume I and Volume II.

The Grantee shall notify the CDFW a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.

Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and National Marine Fisheries Service (NMFS) Biological Opinion.

All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the NMFS, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW personnel on a form provided by CDFW.

The bridge (culvert) design and installation will meet flow carrying capacity required for a 100-year flood event as identified by specifications determined by National Oceanic and Atmospheric Administration (NOAA) Fisheries and the CDFW, for adult and juvenile salmonid fish passage. The project will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and criteria for fish passage as described in Volume II, Part IX, of the *California Salmonid Stream Habitat Restoration Manual*. The engineered plans for the bridge (culvert) installation shall be

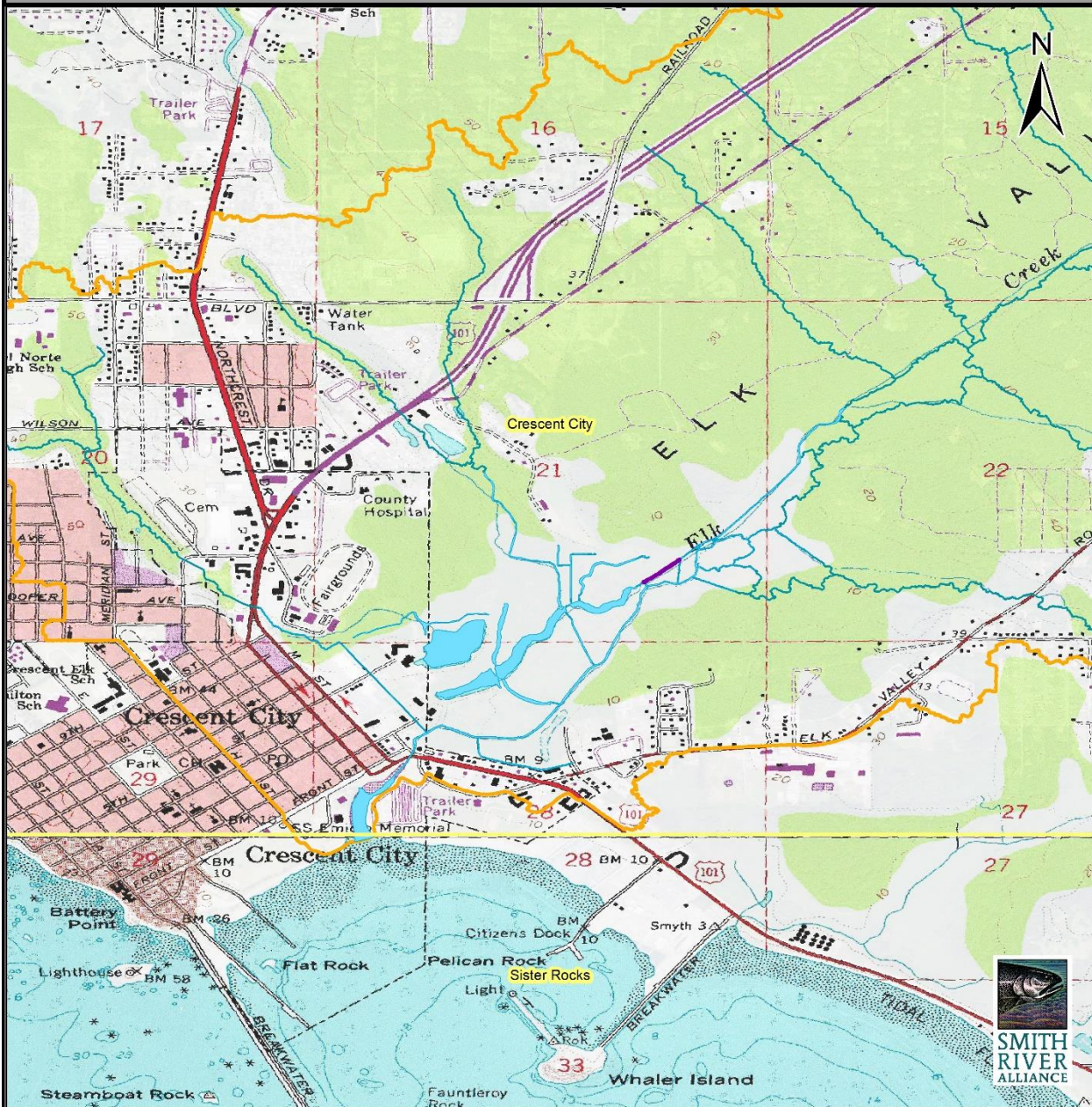
visually reviewed and authorized by NOAA Fisheries or CDFW engineers prior to commencement of work.

The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Personnel.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Elk Creek Beaver Dam Analogue (BDA) and Wetland Habitat Enhancement Project



Project Location Topographic Map

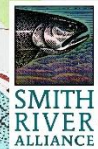
-  Project Reach
-  Elk Creek
-  Watershed Boundary
-  USGS Quads

Map Sources:
USGS: Quads, Topo
Stillwater Sciences:
Streams, Watershed

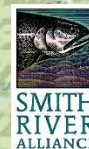
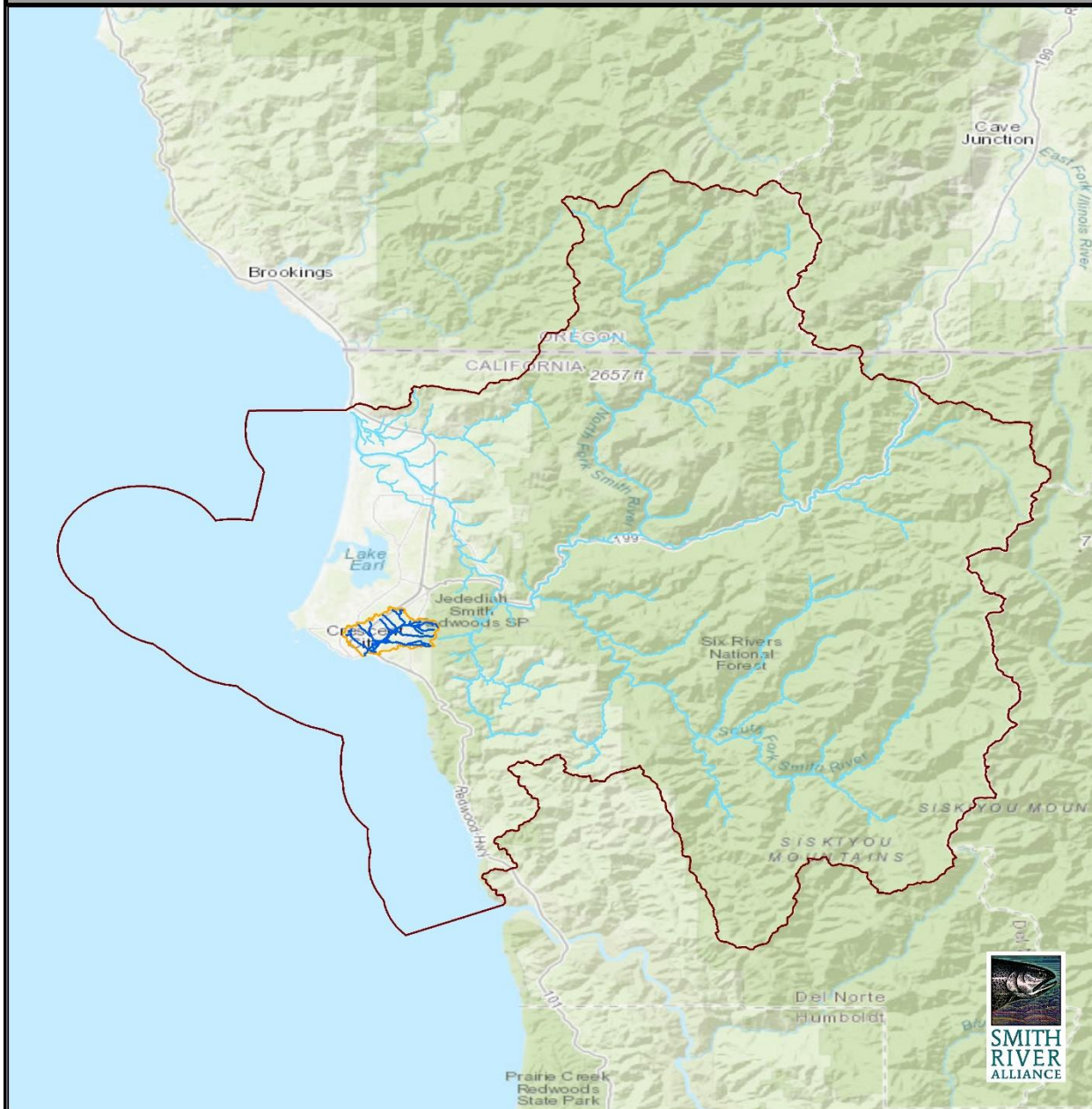
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Map Location

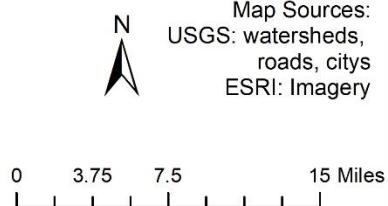


Elk Creek BDA and Wetland Enhancement Project

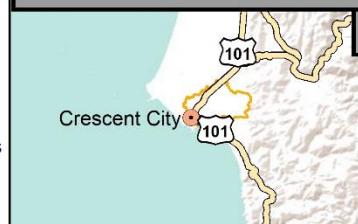


Watershed Map

-  Elk Creek Watershed Boundary
-  Smith River HUC 8
-  Smith River
-  Elk Creek



Map Location



CDFW RAREFIND

Query Summary:

Quad IS (Crescent City (4112472) OR Hiouchi (4112471) OR Gasquet (4112378) OR Sister Rocks (4112462) OR Childs Hill (4112461) OR Cant Hook Mtn. (4112368) OR Smith River (4112482) OR High Divide (4112481) OR High Plateau Mtn. (4112388))

CNDDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Other Status	Habitats
Abronia umbellata var. breviflora	pink sand-verbena	Dicots	PDNYC010N4	61	4	None	None	G4G5T2	S2	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Coastal dunes
Ancotrema voyanum	hooded lancetooth	Mollusks	IMGAS36130	173	1	None	None	G1G2	S1S2	null	null	Oldgrowth, Riparian forest, Talus slope
Anthoxanthum nitens ssp. nitens	vanilla-grass	Monocots	PMPOA35041	6	2	None	None	G5T5	S2	2B.3	null	Meadow & seep, Wetland
Arabis aculeolata	Waldo rockcress	Dicots	PDBRA06010	8	1	None	None	G4	S2	2B.2	SB_BerrySB-Berry Seed Bank	Broadleaved upland forest, Lower montane coniferous forest, Ultramafic, Upper montane coniferous forest
Arabis mcdonaldiana	McDonald's rockcress	Dicots	PDBRA06150	27	16	Endangered	Endangered	G3	S3	1B.1	SB_BerrySB-Berry Seed Bank, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Lower montane coniferous forest, Ultramafic, Upper montane coniferous forest
Arboremus pomo	Sonoma tree vole	Mammals	AMAFF23030	222	3	None	None	G3	S3	null	CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened	North coast coniferous forest, Oldgrowth, Redwood
Ardea alba	great egret	Birds	ABNGA04040	43	1	None	None	G5	S4	null	CDF_S-Sensitive, IUCN_LC-Least Concern	Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland
Ardea herodias	great blue heron	Birds	ABNGA04010	156	6	None	None	G5	S4	null	CDF_S-Sensitive, IUCN_LC-Least Concern	Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland
Ascaphus truei	Pacific tailed frog	Amphibians	AAABA01010	491	38	None	None	G4	S3S4	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Aquatic, Klamath/North coast flowing waters, Lower montane coniferous forest, North coast coniferous forest, Redwood, Riparian forest
Asplenium trichomanes ssp. trichomanes	maidenhair spleenwort	Ferns	PPASP021K2	1	1	None	None	G5T5	S1	2B.1	null	Lower montane coniferous forest
Atractelmis wawona	Wawona riffle beetle	Insects	IICOL58010	80	3	None	None	G3	S1S2	null	null	Aquatic
Boechera koehleri	Koehler's stipitate rockcress	Dicots	PDBRA060Z0	29	11	None	None	G3G4	S3	1B.3	USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Ultramafic
Bombus caliginosus	obscure bumble bee	Insects	IIHYM24380	181	6	None	None	G2G3	S1S2	null	IUCN_VU-Vulnerable	null
Bombus occidentalis	western bumble bee	Insects	IIHYM24252	306	2	None	Candidate Endangered	G3	S1	null	IUCN_VU-Vulnerable, USFS_S-Sensitive	null

Brachyramphus marmoratus	marbled murrelet	Birds	ABNNN06010	110	10	Threatened	Endangered	G3	S2	null	CDF_S-Sensitive, IUCN_EN-Endangered	Lower montane coniferous forest, Oldgrowth, Redwood
Branta hutchinsii leucopareia	cackling (=Aleutian Canada) goose	Birds	ABNJB05035	19	2	Delisted	None	G5T3	S3	null	CDFW_WL-Watch List	Artificial standing waters, Sacramento/San Joaquin standing waters, Valley & foothill grassland
Calamagrostis crassiglumis	Thurber's reed grass	Monocots	PMPOA17070	15	3	None	None	G3Q	S2	2B.1	null	Coastal scrub, Freshwater marsh, Marsh & swamp, Wetland
Calicium adpersum	spiral-spored gilded-head pin lichen	Lichens	NLT0005640	1	1	None	None	G3G4	S1	2B.2	USFS_S-Sensitive	Lower montane coniferous forest, North coast coniferous forest
Calystegia atriplicifolia ssp. buttensis	Butte County morning-glory	Dicots	PDCON04012	121	3	None	None	G5T3	S3	4.2	null	Chaparral, Lower montane coniferous forest, Valley & foothill grassland
Cardamine angulata	seaside bittercress	Dicots	PDBRA0K010	38	6	None	None	G4G5	S3	2B.1	null	Lower montane coniferous forest, North coast coniferous forest, Wetland
Cardamine nuttallii var. gemmata	yellow-tubered toothwort	Dicots	PDBRA0K0R3	17	17	None	None	G5T3Q	S2	3.3	null	Lower montane coniferous forest, North coast coniferous forest, Ultramafic
Carex arcta	northern clustered sedge	Monocots	PMCYP030X0	13	1	None	None	G5	S1	2B.2	IUCN_LC-Least Concern	Bog & fen, North coast coniferous forest, Wetland
Carex lenticularis var. limnophila	lagoon sedge	Monocots	PMCYP037A7	4	1	None	None	G5T5	S1	2B.2	null	Bog & fen, Marsh & swamp, North coast coniferous forest
Carex leptalea	bristle-stalked sedge	Monocots	PMCYP037E0	8	1	None	None	G5	S1	2B.2	IUCN_LC-Least Concern	Bog & fen, Freshwater marsh, Marsh & swamp, Meadow & seep, Wetland
Carex lyngbyei	Lyngbye's sedge	Monocots	PMCYP037Y0	37	2	None	None	G5	S3	2B.2	IUCN_LC-Least Concern	Marsh & swamp, Wetland
Carex praticola	northern meadow sedge	Monocots	PMCYP03B20	14	1	None	None	G5	S2	2B.2	null	Meadow & seep, Wetland
Carex serpenticola	serpentine sedge	Monocots	PMCYP03KM0	17	14	None	None	G4	S3	2B.3	null	Meadow & seep, Ultramafic, Wetland
Carex viridula ssp. viridula	green yellow sedge	Monocots	PMCYP03EM5	8	3	None	None	G5T5	S2	2B.3	null	Bog & fen, Marsh & swamp, North coast coniferous forest, Wetland
Cascadia nuttallii	Nuttall's saxifrage	Dicots	PDSAX0U160	2	2	None	None	G4?	S1	2B.1	null	North coast coniferous forest
Castilleja elata	Siskiyou paintbrush	Dicots	PDSCR0D213	36	28	None	None	G3	S2S3	2B.2	null	Bog & fen, Lower montane coniferous forest, Ultramafic, Wetland
Castilleja litoralis	Oregon coast paintbrush	Dicots	PDSCR0D012	44	5	None	None	G3	S3	2B.2	null	Coastal bluff scrub, Coastal dunes, Coastal scrub
Cerorhinca monocerata	rhinoceros auklet	Birds	ABNNN11010	10	2	None	None	G5	S3	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	null

Charadrius nivosus nivosus	western snowy plover	Birds	ABNNB03031	138	2	Threatened	None	G3T3	S3	null	CDFW_SSC- Species of Special Concern	Great Basin standing waters, Sand shore, Wetland
Circus hudsonius	northern harrier	Birds	ABNKC11011	54	3	None	None	G5	S3	null	CDFW_SSC- Species of Special Concern, IUCN_LC- Least Concern, USFWS_BCC-Birds of Conservation Concern	Coastal scrub, Great Basin grassland, Marsh & swamp, Riparian scrub, Valley & foothill grassland, Wetland
Coastal Brackish Marsh	Coastal Brackish Marsh	Marsh	CTT52200CA	30	1	None	None	G2	S2.1	null	null	Marsh & swamp, Wetland
Coastal and Valley Freshwater Marsh	Coastal and Valley Freshwater Marsh	Marsh	CTT52410CA	60	1	None	None	G3	S2.1	null	null	Marsh & swamp, Wetland
Cochlearia groenlandica	Greenland cochlearia	Dicots	PDBRA0S020	1	1	None	None	G4	S1	2B.3	null	Coastal bluff scrub
Coenonympha tullia yontockett	Yontockett satyr	Insects	IILEPN6035	1	1	None	None	G5T1T2	S1S2	null	null	Coastal dunes
Coptis laciniata	Oregon goldthread	Dicots	PDRAN0A020	122	6	None	None	G4?	S3?	4.2	null	Meadow & seep, North coast coniferous forest, Wetland
Coturnicops noveboracensis	yellow rail	Birds	ABNME01010	45	1	None	None	G4	S2	null	CDFW_SSC- Species of Special Concern, IUCN_LC- Least Concern, USFS_S-Sensitive, USFWS_BCC-Birds of Conservation Concern	Freshwater marsh, Meadow & seep
Cypseloides niger	black swift	Birds	ABNUA01010	46	1	None	None	G4	S3	null	CDFW_SSC- Species of Special Concern, IUCN_VU- Vulnerable, USFWS_BCC-Birds of Conservation Concern	null
Darlingtonia Seep	Darlingtonia Seep	Marsh	CTT51120CA	70	2	None	None	G4	S3.2	null	null	Bog & fen, Wetland
Downingia willamettensis	Cascade downingia	Dicots	PDCAM060E0	8	1	None	None	G4	S2	2B.2	null	Cismontane woodland, Valley & foothill grassland, Vernal pool
Egretta thula	snowy egret	Birds	ABNGA06030	20	1	None	None	G5	S4	null	IUCN_LC-Least Concern	Marsh & swamp, Meadow & seep, Riparian forest, Riparian woodland, Wetland
Elanus leucurus	white-tailed kite	Birds	ABNKC06010	184	1	None	None	G5	S3S4	null	BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern	Cismontane woodland, Marsh & swamp, Riparian woodland, Valley & foothill grassland, Wetland
Empetrum nigrum	black crowberry	Dicots	PDEMP03020	4	3	None	None	G5	S1?	2B.2	null	Coastal bluff scrub, Coastal prairie
Empidonax traillii brewsteri	little willow flycatcher	Birds	ABPAE33041	2	1	None	Endangered	G5T3T4	S3	null	null	Meadow & seep, Riparian woodland
Emys marmorata	western pond turtle	Reptiles	ARAAD02030	1477	3	None	None	G3G4	S3	null	BLM_S-Sensitive, CDFW_SSC- Species of Special Concern, IUCN_VU- Vulnerable, USFS_S-Sensitive	Aquatic, Artificial flowing waters, Klamath/North coast flowing waters, Klamath/North coast standing waters, Marsh & swamp, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin

												standing waters, South coast flowing waters, South coast standing waters, Wetland
Erethizon dorsatum	North American porcupine	Mammals	AMAFJ01010	523	39	None	None	G5	S3	null	IUCN_LC-Least Concern	Broadleaved upland forest, Cismontane woodland, Closed-cone coniferous forest, Lower montane coniferous forest, North coast coniferous forest, Upper montane coniferous forest
Eriogonum nudum var. paralinum	Del Norte buckwheat	Dicots	PDPGN08498	4	3	None	None	G5T2	S1	2B.2	null	Coastal bluff scrub, Coastal prairie
Eriogonum pendulum	Waldo wild buckwheat	Dicots	PDPGN084Q0	28	27	None	None	G4	S2S3	2B.2	null	Lower montane coniferous forest, Ultramafic, Upper montane coniferous forest
Erysimum concinnum	bluff wallflower	Dicots	PDBRA160E3	30	6	None	None	G3	S2	1B.2	BLM_S-Sensitive	Coastal bluff scrub, Coastal dunes, Coastal prairie
Erythronium hendersonii	Henderson's fawn lily	Monocots	PMLIL0U070	7	1	None	None	G4	S2	2B.3	USFS_S-Sensitive	Lower montane coniferous forest
Erythronium howellii	Howell's fawn lily	Monocots	PMLIL0U080	11	6	None	None	G3G4	S2	1B.3	null	Lower montane coniferous forest, North coast coniferous forest
Erythronium oregonum	giant fawn lily	Monocots	PMLIL0U0C0	37	4	None	None	G5	S2	2B.2	SB_UCSC-UC Santa Cruz	Cismontane woodland, Meadow & seep, Ultramafic
Erythronium revolutum	coast fawn lily	Monocots	PMLIL0U0F0	172	5	None	None	G4G5	S3	2B.2	SB_UCSC-UC Santa Cruz	Bog & fen, Broadleaved upland forest, North coast coniferous forest, Wetland
Eucyclogobius newberryi	tidewater goby	Fish	AFCQN04010	127	2	Endangered	None	G3	S3	null	AFS_EN-Endangered, IUCN_NT-Near Threatened	Aquatic, Klamath/North coast flowing waters, Sacramento/San Joaquin flowing waters, South coast flowing waters
Eumetopias jubatus	Steller sea lion	Mammals	AMAJC03010	38	1	Delisted	None	G3	S2	null	IUCN_NT-Near Threatened, MMC_SSC-Species of Special Concern	Marine intertidal & splash zone communities, Protected deepwater coastal communities, Rock shore
Fissidens pauperculus	minute pocket moss	Bryophytes	NBMUS2W0U0	22	1	None	None	G3?	S2	1B.2	USFS_S-Sensitive	North coast coniferous forest, Redwood
Fratercula cirrhata	tufted puffin	Birds	ABNNN12010	17	2	None	None	G5	S1S2	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Protected deepwater coastal communities
Gentiana setigera	Mendocino gentian	Dicots	PDGEN060S0	11	9	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Lower montane coniferous forest, Meadow & seep, Ultramafic, Wetland
Gilia capitata ssp. pacifica	Pacific gilia	Dicots	PDPLM040B6	91	15	None	None	G5T3	S2	1B.2	SB_CalBG/RSABG-California/Rancho	Chaparral, Coastal bluff

											Santa Ana Botanic Garden	scrub, Coastal prairie, Valley & foothill grassland
<i>Gilia millefoliata</i>	dark-eyed gilia	Dicots	PDPLM04130	54	12	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Coastal dunes
<i>Haliaeetus leucocephalus</i>	bald eagle	Birds	ABNKC10010	332	1	Delisted	Endangered	G5	S3	null	BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern, USFS_S-Sensitive	Lower montane coniferous forest, Oldgrowth
<i>Hesperevax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	Dicots	PDASTE5011	72	6	None	None	G4T3	S3	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Coastal bluff scrub, Coastal dunes, Coastal prairie
<i>Hydrobates furcatus</i>	fork-tailed storm-petrel	Birds	ABNDC04010	8	3	None	None	G5	S1	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Protected deepwater coastal communities
<i>Juga chacei</i>	Chace juga	Mollusks	IMGASK4180	11	10	None	None	G1	S1	null	USFS_S-Sensitive	Aquatic, Klamath/North coast flowing waters
<i>Kopsiopsis hookeri</i>	small groundcone	Dicots	PDORO01010	21	5	None	None	G4?	S1S2	2B.3	null	North coast coniferous forest
<i>Lanx alta</i>	highcap lanx	Mollusks	IMGASL7010	13	2	None	None	G2G3	S3	null	null	Aquatic
<i>Lasionycteris noctivagans</i>	silver-haired bat	Mammals	AMACC02010	139	2	None	None	G3G4	S3S4	null	IUCN_LC-Least Concern	Lower montane coniferous forest, Oldgrowth, Riparian forest
<i>Lasthenia californica</i> ssp. <i>macrantha</i>	perennial goldfields	Dicots	PDAST5L0C5	59	1	None	None	G3T2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Coastal bluff scrub, Coastal dunes, Coastal scrub
<i>Lathyrus japonicus</i>	seaside pea	Dicots	PDFAB250C0	24	8	None	None	G5	S2	2B.1	IUCN_LC-Least Concern	Coastal dunes
<i>Lathyrus palustris</i>	marsh pea	Dicots	PDFAB250P0	13	5	None	None	G5	S2	2B.2	null	Bog & fen, Coastal prairie, Coastal scrub, Lower montane coniferous forest, Marsh & swamp, North coast coniferous forest, Wetland
<i>Lewisia oppositifolia</i>	opposite-leaved lewisia	Dicots	PDPOR040B0	14	10	None	None	G3	S2	2B.2	USFS_S-Sensitive	Lower montane coniferous forest, Ultramafic
<i>Lilium occidentale</i>	western lily	Monocots	PMLIL1A0G0	16	7	Endangered	Endangered	G1G2	S1	1B.1	SB_BerrySB-Berry Seed Bank	Bog & fen, Coastal bluff scrub, Coastal prairie, Coastal scrub, Freshwater marsh, Marsh & swamp, North coast coniferous forest, Wetland
<i>Limnephilus atercus</i>	Fort Dick limnephilus caddisfly	Insects	IITRI15020	2	1	None	None	G3G4	S1S2	null	null	Aquatic, Klamath/North coast flowing waters, Klamath/North coast standing waters
<i>Lomatium martindalei</i>	Coast Range lomatium	Dicots	PDAP11B140	9	2	None	None	G5	S2	2B.3	null	Coastal bluff scrub, Lower montane coniferous forest, Meadow & seep, Ultramafic
<i>Lysimachia europaea</i>	arctic starflower	Dicots	PDPRI0A020	4	4	None	None	G5	S1	2B.2	null	Bog & fen, Meadow & seep,

												Wetland
Margaritifera falcata	western pearlshell	Mollusks	IMBIV27020	78	1	None	None	G4G5	S1S2	null	IUCN_NT-Near Threatened	Aquatic
Martes caurina humboldtensis	Humboldt marten	Mammals	AMAJF01012	44	3	Threatened	Endangered	G4G5T1	S1	null	CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	North coast coniferous forest, Oldgrowth, Redwood
Mitellastra caulescens	leafy-stemmed mitrewort	Dicots	PDSAX0N020	21	2	None	None	G5	S4	4.2	null	Broadleaved upland forest, Lower montane coniferous forest, Meadow & seep, North coast coniferous forest
Monadenia fidelis pronotis	rocky coast Pacific sideband	Mollusks	IMGASC7032	1	1	None	None	G4G5T1	S1	null	IUCN_DD-Data Deficient	Coastal bluff scrub
Moneses uniflora	woodnymph	Dicots	PDPYR02010	7	1	None	None	G5	S2	2B.2	null	Broadleaved upland forest, North coast coniferous forest
Monotropa uniflora	ghost-pipe	Dicots	PDMON03030	115	69	None	None	G5	S2	2B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Broadleaved upland forest, North coast coniferous forest
Montia howellii	Howell's montia	Dicots	PDPOR05070	123	1	None	None	G3G4	S2	2B.2	null	Meadow & seep, North coast coniferous forest, Vernal pool, Wetland
Myotis evotis	long-eared myotis	Mammals	AMACC01070	139	2	None	None	G5	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern	null
Myotis thysanodes	fringed myotis	Mammals	AMACC01090	86	1	None	None	G4	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern, USFS_S-Sensitive	null
Myotis yumanensis	Yuma myotis	Mammals	AMACC01020	265	3	None	None	G5	S4	null	BLM_S-Sensitive, IUCN_LC-Least Concern	Lower montane coniferous forest, Riparian forest, Riparian woodland, Upper montane coniferous forest
Nannopterum auritum	double-crested cormorant	Birds	ABNFD01020	39	3	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Riparian forest, Riparian scrub, Riparian woodland
Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	Marsh	CTT52110CA	53	1	None	None	G3	S3.2	null	null	Marsh & swamp, Wetland
Nycticorax nycticorax	black-crowned night heron	Birds	ABNGA11010	37	1	None	None	G5	S4	null	IUCN_LC-Least Concern	Marsh & swamp, Riparian forest, Riparian woodland, Wetland
Oenothera wolfii	Wolf's evening-primrose	Dicots	PDONA0C1K0	29	13	None	None	G2	S1	1B.1	SB_BerrySB-Berry Seed Bank	Coastal bluff scrub, Coastal dunes, Coastal prairie
Oncorhynchus clarkii clarkii	coast cutthroat trout	Fish	AFCHA0208A	45	9	None	None	G5T4	S3	null	AFS_VU-Vulnerable, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Aquatic, Klamath/North coast flowing waters
Packera bolanderi var. bolanderi	seacoast ragwort	Dicots	PDAST8H0H1	72	20	None	None	G4T4	S2S3	2B.2	null	Coastal scrub, North coast coniferous forest
Packera hesperia	western ragwort	Dicots	PDAST8H1L0	4	4	None	None	G3	S1	2B.2	USFS_S-Sensitive	Meadow & seep, Ultramafic, Upper montane coniferous forest
Pandion haliaetus	osprey	Birds	ABNKC01010	504	2	None	None	G5	S4	null	CDF_S-Sensitive, CDFW_WL-Watch List, IUCN_LC-Least Concern	Riparian forest
Pekania pennanti	Fisher	Mammals	AMAJF01020	555	1	None	None	G5	S2S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special	North coast coniferous forest,

											Concern, IUCN_LC-Least Concern, USFS_S-Sensitive	Oldgrowth, Riparian forest
Phacelia argentea	sand dune phacelia	Dicots	PDHYD0C070	16	16	Proposed Threatened	None	G2	S1	1B.1	SB_BerrySB-Berry Seed Bank	Coastal dunes
Pinguicula macroceras	horned butterwort	Dicots	PDLNT01040	26	19	None	None	G4	S2	2B.2	IUCN_LC-Least Concern, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCSC-UC Santa Cruz	Bog & fen, Ultramafic, Wetland
Piperia candida	white-flowered rein orchid	Monocots	PMORC1X050	222	7	None	None	G3?	S3	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Broadleaved upland forest, Lower montane coniferous forest, North coast coniferous forest, Ultramafic
Plethodon elongatus	Del Norte salamander	Amphibians	AAAAD12050	151	22	None	None	G4	S3	null	CDFW_WL-Watch List, IUCN_NT-Near Threatened	Oldgrowth
Polemonium carneum	Oregon polemonium	Dicots	PDPLM0E050	16	3	None	None	G3G4	S2	2B.2	null	Coastal prairie, Coastal scrub, Lower montane coniferous forest
Polites mardon	mardon skipper	Insects	IIILEP66030	2	2	None	None	G2	S1	null	USFS_S-Sensitive	North coast coniferous forest
Pomatiopsis chacei	marsh walker	Mollusks	IMGASJ9030	6	2	None	None	G1	S2	null	null	null
Potamogeton foliosus ssp. fibrillosus	fibrous pondweed	Monocots	PMPOT030B1	1	1	None	None	G5T2T4	S1S2	2B.3	null	Marsh & swamp, Wetland
Prosartes parvifolia	Siskiyou bells	Monocots	PMLIL0R014	14	3	None	None	G2	S2	1B.2	SB_UCSC-UC Santa Cruz, USFS_S-Sensitive	Lower montane coniferous forest, Upper montane coniferous forest
Pyrrocoma racemosa var. congesta	Del Norte pyrrocoma	Dicots	PDASTDT0F4	13	12	None	None	G5T4	S2	2B.3	null	Chaparral, Lower montane coniferous forest, Ultramafic, Wetland
Ramalina thrausta	angel's hair lichen	Lichens	NLLEC3S340	21	10	None	None	G5?	S2S3	2B.1	null	North coast coniferous forest
Rana aurora	northern red-legged frog	Amphibians	AAABH01021	292	54	None	None	G4	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive	Klamath/North coast flowing waters, Riparian forest, Riparian woodland
Rana boylei pop. 1	foothill yellow-legged frog - north coast DPS	Amphibians	AAABH01051	1608	30	None	None	G3T4	S4	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Aquatic, Klamath/North coast flowing waters, Riparian forest, Riparian scrub, Riparian woodland
Rhyacotriton variegatus	southern torrent salamander	Amphibians	AAAAJ01020	416	40	None	None	G3?	S2S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive	Lower montane coniferous forest, Oldgrowth, Redwood, Riparian forest
Rhynchospora alba	white beaked-rush	Monocots	PMCYP0N010	17	1	None	None	G5	S2	2B.2	IUCN_LC-Least Concern	Bog & fen, Marsh & swamp, Meadow & seep, Wetland
Riparia riparia	bank swallow	Birds	ABPAU08010	299	4	None	Threatened	G5	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern	Riparian scrub, Riparian woodland
Romanzoffia tracyi	Tracy's romanzoffia	Dicots	PDHYD0E030	9	3	None	None	G4	S2	2B.3	null	Coastal bluff scrub, Coastal scrub
Rosa gymnocarpa var. serpentina	Gasquet rose	Dicots	PDROS1J1V1	7	1	None	None	G5T3T4	S2	1B.3	SB_BerrySB-Berry Seed Bank, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Ultramafic

Sabulina howellii	Howell's sandwort	Dicots	PDCAR0G0F0	24	21	None	None	G4	S3	1B.3	null	Chaparral, Lower montane coniferous forest, Ultramafic
Sagittaria sanfordii	Sanford's arrowhead	Monocots	PMALI040Q0	143	1	None	None	G3	S3	1B.2	BLM_S-Sensitive	Marsh & swamp, Wetland
Sanguisorba officinalis	great burnet	Dicots	PDROS1L060	22	14	None	None	G5?	S2	2B.2	null	Bog & fen, Broadleaved upland forest, Marsh & swamp, Meadow & seep, North coast coniferous forest, Riparian forest, Ultramafic, Wetland
Scaphinotus behrensi	Behrens' snail-eating beetle	Insects	IICOL4L070	4	1	None	None	G2G4	S2S4	null	null	North coast coniferous forest
Sedum patens	Smith River stonecrop	Dicots	PDCRA0A250	6	6	None	None	G2	S2	1B.2	null	Lower montane coniferous forest, Talus slope, Ultramafic
Sidalcea malachroides	maple-leaved checkerbloom	Dicots	PDMAL110E0	136	2	None	None	G3	S3	4.2	null	Broadleaved upland forest, Coastal prairie, Coastal scrub, North coast coniferous forest, Riparian forest
Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	Dicots	PDMAL110F9	60	5	None	None	G5T2	S2	1B.2	SB_UCSC-UC Santa Cruz	Coastal bluff scrub, Coastal prairie, North coast coniferous forest
Sidalcea oregana ssp. eximia	coast checkerbloom	Dicots	PDMAL110K9	19	4	None	None	G5T1	S1	1B.2	null	Lower montane coniferous forest, Meadow & seep, North coast coniferous forest, Wetland
Silene hookeri	Hooker's catchfly	Dicots	PDCAR0U2M0	31	4	None	None	G4	S2	2B.2	null	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Silene scouleri ssp. scouleri	Scouler's catchfly	Dicots	PDCAR0U1MC	23	1	None	None	G5T4T5	S2S3	2B.2	null	Coastal bluff scrub, Coastal prairie, Valley & foothill grassland
Silene serpentinicola	serpentine catchfly	Dicots	PDCAR0U2B0	55	54	None	None	G3	S3	1B.2	SB_UCSC-UC Santa Cruz, USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Ultramafic
Speyeria zerene hippolyta	Oregon silverspot butterfly	Insects	IILEPJ6087	3	3	Threatened	None	G5T1	S1	null	null	Coastal dunes
Streptanthus howellii	Howell's jewelflower	Dicots	PDBRA2G0N0	28	27	None	None	G2G3	S2	1B.2	USFS_S-Sensitive	Lower montane coniferous forest, Ultramafic
Sulcaria spiralifera	twisted horsehair lichen	Lichens	NLT0042560	18	3	None	None	G3G4	S2	1B.2	BLM_S-Sensitive	Coastal dunes, North coast coniferous forest
Thaleichthys pacificus	eulachon	Fish	AFCHB04010	10	1	Threatened	None	G5	S1	null	IUCN_LC-Least Concern	Aquatic, Klamath/North coast flowing waters
Usnea longissima	Methuselah's beard lichen	Lichens	NLLEC5P420	206	9	None	None	G4	S4	4.2	BLM_S-Sensitive	Broadleaved upland forest, North coast coniferous forest, Oldgrowth, Redwood

Vaccinium scoparium	little-leaved huckleberry	Dicots	PDERI180Y0	27	3	None	None	G5	S3	2B.2	null	Subalpine coniferous forest
Viola langsdorffii	Langsdorf's violet	Dicots	PDVIO04100	2	2	None	None	G4	S1	2B.1	null	Bog & fen, Wetland
Viola palustris	alpine marsh violet	Dicots	PDVIO041G0	10	5	None	None	G5	S1S2	2B.2	null	Bog & fen, Coastal scrub, Wetland
Viola primulifolia ssp. occidentalis	western white bog violet	Dicots	PDVIO040Y2	19	17	None	None	G5T2	S2	1B.2	USFS_S-Sensitive	Bog & fen, Marsh & swamp, Ultramafic, Wetland