

Introduction:

The Eel River Watershed Improvement Group (ERWIG) will install 40 large woody debris (LWD) structures, containing 136 pieces of LWD, 32 of which will be key pieces, along 1.1 miles of Butler Creek. The project is necessary because the Hollow Tree Creek watershed is a very important salmonid watershed in the South Fork Eel River Basin, and has been identified as a priority watershed for restoration by the Salmon Habitat Restoration Priorities (SHaRP) team. Butler Creek hosts a large proportion of the spawning coho salmon (*Oncorhynchus kisutch*) in the Hollow Tree Creek watershed and plays an integral role in supporting the coho salmon population in the watershed. Butler Creek also supports steelhead trout (*Oncorhynchus mykiss*) and Chinook salmon (*Oncorhynchus tshawytscha*) and has a high potential for improvement. The South Fork Eel River Watershed Assessment (CDFW, 2014) puts Butler Creek in the Western Subbasin (WS) of the South Fork Eel River watershed. The assessment indicates that the WS has relatively low average percent shelter from LWD, "indicating the need for additional large wood as vital rearing and holding habitat components in all SF Eel River Basin streams". Currently, pools in the project reach are lacking shelter and LWD is in short supply. A survey of the project reach by ERWIG found only 1.1 key pieces per 330 feet, well below a good ranking. This project will bring the project reach to the target metric of over three key pieces per 330 feet, which will give it a rating of very good.

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* Volume I, Part VII (<https://www.wildlife.ca.gov/Grants/FRGP/Guidance>).

Objective(s):

The objective of this project is to construct 40 LWD features along 1.1 miles of Butler Creek. These features will contain 136 pieces of LWD, 32 of which will be key pieces. The addition of these structures will enhance spawning and rearing habitats for juvenile and adult salmonids.

Project Description:

Location:

The project is located along a section of Butler Creek, in Mendocino county, California. Butler Creek is a tributary to Hollow Tree Creek in the South Fork Eel River Watershed. The Butler Creek project reach starts approximately 50 feet upstream from the confluence with Hollow Tree Creek and continues upstream 5,700 feet. Project boundaries are 39.738139° north latitude, -123.707469° west longitude at the downstream end; 39.744038° north latitude, -123.691486° west

longitude at the upstream end; Township 22 North, Range 17 West, and Sections 24 and 25, of the Lincoln Ridge 7.5 Minute U.S. Geological Survey Quadrangle map.

Project Set Up:

ERWIG Staff:

-ERWIG Executive Director: Task 1. Contract oversight and reporting will be conducted by ERWIG Executive Director with assistance from the ERWIG Project Manager.

-ERWIG Project Manager: Tasks 1, 3, 4, 5, 6 and 7. Will assist with contract oversight, invoicing, and reporting. Will manage all aspects of project implementation.

Subcontractors:

-Edwards Excavation & Restoration - Licensed Timber Operator (LTO) and Licensed Equipment Operator (EO): Tasks 3 and 4. Will be responsible for falling trees as the source of LWD. Will also be responsible for placing LWD and boulders according to design plans when equipment access is available.

Boulders will be purchased from the Garberville quarry.

-California Conservation Corps (CCC) Corpsmembers: Task 4. Under supervision of the Conservationist 1 (C1) will anchor the structures according to design and anchoring specifications. CCC Corpsmembers will also move LWD into position using a come along.

-William Rich and Associates: Task 2. Will conduct botanical and archeological surveys and prepare California Environmental Quality Act (CEQA) reports.

-Paleontology survey crew: Task 2. Will conduct paleontological surveys and prepare CEQA report.

-Registered Professional Forester (RPF): Task 4. Will make sure trees chosen for project use are appropriate.

Materials:

All materials will be purchased by ERWIG. Anchoring Hardware: one-inch Rebar, 5/8- inch Wire Rope, 5/8-inch Clamps, Nuts and Plates (Washers), these items are used to anchor logs to live trees, boulders, bedrock and other logs. Power Tools: Portable band saws and wood drills, these items are used to construct the anchoring portion of the structures. Wood drills are used to drill holes in live trees and logs for rebar attachment. Portable band saws are used to cut rebar to length. Portable Generators: Used to power the power tools that are used during the anchoring process. Chain Saw: Used to cut logs to length, trim branches on downed trees and to remove dead trees that are hazards or in the way of construction. Timber bits: used to drill holes in logs and trees, needed for construction. Epoxy glue: Used to glue wire rope mollys into boulders. Misc items: Small items such as chuck keys, allen wrenches, shear pins, hammers and band saw blades, which are used during construction. Socket wrenches and sockets: Used to tighten down nuts on 5/8-inch clamps. Erosion control

materials: Straw, wattles and/or other erosion controls that will help keep sediment from entering watercourses. Permits: Notification of Lake or Streambed Alteration fee will need to be paid for to meet permitting requirements. ERWIG Mileage: Reimbursement for miles driven by ERWIG staff to and from project site in order to manage project. Boulders, logs, and rootwads: Will be used in the construction of the habitat structures in order to provide habitat and will be anchored together. Some of the logs will be donated by the landowner and some will be purchased. Griphoist: Used to move logs into final position after placement by excavator or after falling a live tree. Conifer Trees and Native Plants: Will be used to plant areas disturbed by project activities and areas within the project reach that are lacking canopy cover.

Tasks:

Task 1. Project Management and Administration: Grant oversight including invoicing and reporting will be conducted by ERWIG Executive Director and Project Manager (Staff). Upon final execution of the Grant and prior to receiving a Notice to Proceed, Grantee shall deliver the following items to the California Department of Fish and Wildlife (CDFW) Grant Manager: 1. Request to spend project funds in order to prepare for implementation (e.g., obtain permits, secure subcontracts, purchase supplies, notify of Streambed Alteration Agreement, etc.). Requests shall be sent by email or telephone. 2. Final Landowner Access agreement that will be project specific and meet grant agreement requirements. 3. Subcontractor Agreements. A written copy of the sub agreements shall be submitted to the CDFW Grant Manager. The subcontract shall include specific language which establishes the rights of the auditors of the State to examine the records of the subcontractor relative to the services and materials provided under the grant. 4. CEQA survey interim reports for archaeological and botanical surveys. Interim reports shall be delivered prior to receiving notice to proceed, as part of the Notification of Lake or Streambed Alteration. Final Archaeological, botanical and paleontological surveys shall be delivered prior to the End Term date. 5. Send Grantor Notification of Streambed Alteration with a check for the most current permit fee. The Grantee shall notify the CDFW Grant Manager a minimum of 10 business days prior to the beginning of project implementation.

Task 2. CEQA Surveys: William Rich and Associates will conduct archeological and botanical surveys within the project reach to fulfill CEQA requirements. Interim survey reports will be delivered to CDFW Grant Manager prior to receiving a Notice to Proceed. Paleontological survey crew will conduct paleontological research and surveys and prepare reports.

Task 3. Site Preparation: The ERWIG Project Manager will finalize site specific designs based on channel morphology, equipment access, and LWD availability. They will submit designs for CDFW Project Manager approval. The ERWIG Project Manager will flag sites for wood selection, staging, and installation, clear brush as needed, and designate staging areas for wood along project reaches.

Pre-project photos and metrics will be collected by ERWIG. Tools and materials will be purchased by ERWIG prior to the start of implementation and on an as needed basis throughout the project.

Task 4. LWD Structure Construction: With approval from the CDFW grant manager and under the direction of the ERWIG Project Manager, site construction on 40 LWD features will begin. Some features may involve cutting down or uprooting trees, this will be accomplished by the LTO or the EO, respectively. The RPF will approve all trees chosen for use in the project. The licensed equipment operator will place downed logs into the stream in accordance with design plans. When necessary, CCC Corpsmembers will move LWD into position using a come along. The project will utilize living riparian trees as anchors by wedging the logs between them, where feasible. CCC Corpsmembers will anchor the sites according to design and anchoring specifications. Corpsmembers will use one-inch threaded rebar to anchor logs to mature riparian trees and other logs. Holes will be drilled through the logs and their anchor trees using a drill, timber bit, and drill bit extensions when necessary. One-inch rebar will be strung through the log and secured with nuts and washers. Corpsmembers will be supervised by a trained C1 and the ERWIG Project Manager. Erosion control methods will be employed by the CCC as required at each structure and along equipment corridors to eliminate the possibility of sediment transport to the stream. Any tools that break down will be taken to a repair shop or replaced, if necessary. To address concerns over invasive species this project will follow the ERWIG Aquatic Invasive Species Decontamination Protocol.

Task 5. Riparian Planting: ERWIG staff will return in the winter following project implementation to plant 150 redwood seedlings and 50 native plants, with a primary focus in areas lacking sufficient conifer cover or riparian vegetation.

Task 6. Post Project Photo and Data Collection: Following implementation ERWIG will take post-project photos and quantitative implementation metrics will be collected which satisfy the Project Annual Progress Reports and Final Report.

Task 7. Reporting: ERWIG Staff will write and deliver yearly annual reports, and a draft and final report.

Deliverables:

Task 1. Project Management and Administration: Streambed Alteration Agreement, Subcontractor Agreements, Final Landowners Agreements, Invoices, and Invoice Progress Reports.

Task 2. CEQA Surveys: Interim and Final Survey Reports.

Task 3. Site Preparation: Finalized design plans, flagged equipment access routes, pre-project photos and metrics.

Task 4. LWD Structure Construction: 40 LWD structures made up of 136 logs, including 32 key pieces.

Task 5. Riparian Planting: 150 redwood seedlings and 50 native plants planted along the project reach.

Task 6. Post Project Photo and Data Collection: Post-project metrics and photos.

Task 7. Reporting: Yearly annual reports, draft final report in electronic format, final report in electronic and hard copy formats.

Timelines:

Task 1. Project Management and Administration: 04/01/2020 to 02/28/2022.

Task 2. CEQA Surveys: 04/30/2020 to 07/30/2020.

Task 3. Site Preparation: 07/30/2020 to 06/21/2021.

Task 4. LWD Structure Construction: 06/21/2021 to 09/30/2021.

Task 5. Riparian Planting: 12/01/2021 to 01/31/2022.

Task 6. Post Project Photo and Data Collection: 10/01/2021 to 02/01/2022.

Task 7. Reporting: 11/16/2020 to 02/14/2022.

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 Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

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. Any and 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 California Department of Fish & Wildlife 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.

The Grantee shall notify the Grantor Project Manager 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 Grantor 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:

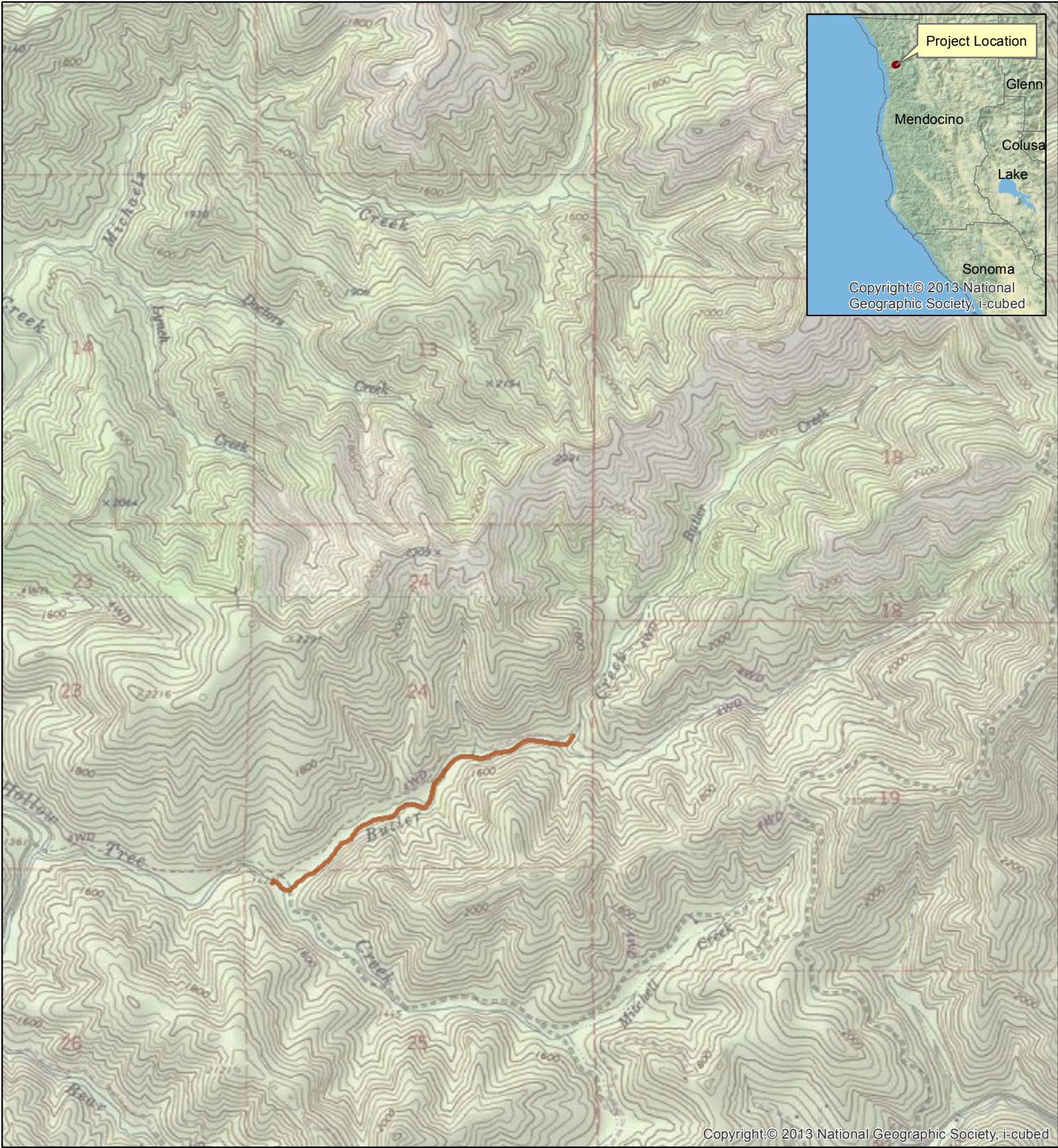
- a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
- b. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.
- c. 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 NMFS Biological Opinion.
- d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
- e. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*.

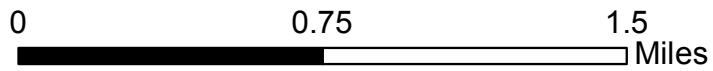
All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings.

Butler Creek Habitat Restoration Watershed Map

Butler Creek, Lincoln Ridge Quad, Mendocino County



— Butler Project Reach



Eel River Watershed Improvement Group
April 2019





Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad (Lincoln Ridge (3912366) OR Tan Oak Park (3912375) OR Cahto Peak (3912365) OR Sherwood Peak (3912355) OR Dutchmans Knoll (3912356) OR Inglenook (3912357) OR Westport (3912367) OR Hales Grove (3912377) OR Leggett (3912376))

Possible species within the Lincoln Ridge and surrounding quads for 3085 Butler Creek Habitat Restoration Project, Mendocino County

Table with 7 columns: Species, Element Code, Federal Status, State Status, Global Rank, State Rank, Rare Plant Rank/CDFW SSC or FP. Rows include species like Abronia umbellata var. breviflora, Accipiter gentilis, Agrostis blasdalei, Alisma gramineum, Anodonta californiensis, Arborimus pomo, Arctostaphylos manzanita ssp. elegans, Arctostaphylos stanfordiana ssp. raichei, Ardea herodias, Ascaphus truei, Astragalus agnicidus, Bombus caliginosus, Bombus crotchii, Bombus occidentalis, Brachyramphus marmoratus, Brasenia schreberi, Calamagrostis crassiglumis, and Calamagrostis foliosa.



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Campanula californica</i> swamp harebell	PDCAM02060	None	None	G3	S3	1B.2
<i>Cardamine angulata</i> seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
<i>Carex lyngbyei</i> Lyngbye's sedge	PMCYP037Y0	None	None	G5	S3	2B.2
<i>Carex saliniformis</i> deceiving sedge	PMCYP03BY0	None	None	G2	S2	1B.2
<i>Carex viridula ssp. viridula</i> green yellow sedge	PMCYP03EM5	None	None	G5T5	S2	2B.3
<i>Castilleja mendocinensis</i> Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
<i>Ceanothus foliosus var. vineatus</i> Vine Hill ceanothus	PDRHA040D6	None	None	G3T1	S1	1B.1
<i>Charadrius alexandrinus nivosus</i> western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
<i>Chorizanthe howellii</i> Howell's spineflower	PDPGN040C0	Endangered	Threatened	G1	S1	1B.2
<i>Clarkia amoena ssp. whitneyi</i> Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coastal Brackish Marsh Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
<i>Coelus globosus</i> globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
<i>Collinsia corymbosa</i> round-headed Chinese-houses	PDSCR0H060	None	None	G1	S1	1B.2
<i>Coptis laciniata</i> Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
<i>Emys marmorata</i> western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
<i>Entosphenus tridentatus</i> Pacific lamprey	AFBAA02100	None	None	G4	S4	SSC
<i>Erethizon dorsatum</i> North American porcupine	AMAFJ01010	None	None	G5	S3	
<i>Eriogonum kelloggii</i> Kellogg's buckwheat	PDPGN083A0	None	Endangered	G2	S2	1B.2
<i>Erysimum concinnum</i> bluff wallflower	PDBRA160E3	None	None	G3	S2	1B.2



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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Erysimum menziesii</i> Menzies' wallflower	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
<i>Erythronium revolutum</i> coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
<i>Eucyclogobius newberryi</i> tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
<i>Fen</i> Fen	CTT51200CA	None	None	G2	S1.2	
<i>Gilia capitata ssp. pacifica</i> Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
<i>Gilia millefoliata</i> dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
<i>Grand Fir Forest</i> Grand Fir Forest	CTT82120CA	None	None	G1	S1.1	
<i>Hesperevax sparsiflora var. brevifolia</i> short-leaved evax	PDASTE5011	None	None	G4T3	S2	1B.2
<i>Hesperocyparis pygmaea</i> pygmy cypress	PGCUP04032	None	None	G1	S1	1B.2
<i>Horkelia marinensis</i> Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
<i>Lasiurus cinereus</i> hoary bat	AMACC05030	None	None	G5	S4	
<i>Lasthenia californica ssp. bakeri</i> Baker's goldfields	PDAST5L0C4	None	None	G3T1	S1	1B.2
<i>Lasthenia californica ssp. macrantha</i> perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
<i>Lilium maritimum</i> coast lily	PMLIL1A0C0	None	None	G2	S2	1B.1
<i>Margaritifera falcata</i> western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
<i>Mitellastra caulescens</i> leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
<i>Navarretia leucocephala ssp. bakeri</i> Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
<i>North Central Coast Fall-Run Steelhead Stream</i> North Central Coast Fall-Run Steelhead Stream	CARA2631CA	None	None	GNR	SNR	
<i>Northern Coastal Salt Marsh</i> Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
<i>Noyo intersessa</i> Ten Mile shoulderband	IMGASC5070	None	None	G2	S2	
<i>Oenothera wolfii</i> Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1



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<i>Oncorhynchus kisutch</i> pop. 4 coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G4	S2?	
<i>Oncorhynchus mykiss irideus</i> pop. 16 steelhead - northern California DPS	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
<i>Pekania pennanti</i> fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
<i>Phacelia insularis</i> var. <i>continentis</i> North Coast phacelia	PDHYD0C2B1	None	None	G2T2	S2	1B.2
<i>Piperia candida</i> white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
<i>Pleuropogon hooverianus</i> North Coast semaphore grass	PMPOA4Y070	None	Threatened	G2	S2	1B.1
<i>Potamogeton epihydrus</i> Nuttall's ribbon-leaved pondweed	PMPOT03080	None	None	G5	S2S3	2B.2
<i>Progne subis</i> purple martin	ABPAU01010	None	None	G5	S3	SSC
<i>Rana aurora</i> northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
<i>Rana boylei</i> foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
<i>Rhyacotriton variegatus</i> southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
<i>Rhynchospora alba</i> white beaked-rush	PMCYP0N010	None	None	G5	S2	2B.2
<i>Sidalcea malachroides</i> maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
<i>Sidalcea malviflora</i> ssp. <i>purpurea</i> purple-stemmed checkerbloom	PDMAL110FL	None	None	G5T1	S1	1B.2
<i>Silene campanulata</i> ssp. <i>campanulata</i> Red Mountain catchfly	PDCAR0U0A2	None	Endangered	G5T3Q	S3	4.2
<i>Taricha rivularis</i> red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
<i>Taxidea taxus</i> American badger	AMAJF04010	None	None	G5	S3	SSC
<i>Thermopsis robusta</i> robust false lupine	PDFAB3Z0D0	None	None	G2	S2	1B.2
<i>Triquetrella californica</i> coastal triquetrella	NBMUS7S010	None	None	G2	S2	1B.2
Upland Douglas Fir Forest Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
<i>Usnea longissima</i> Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2



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<i>Viburnum ellipticum</i> oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3

Record Count: 82