

## **San Gregorio Creek Habitat Enhancement Project**

### **Introduction:**

San Mateo County Resource Conservation District (RCD) is the Grantee for the proposed San Gregorio Creek Habitat Enhancement Project (HI 204). The project is an instream habitat improvement project that will increase instream habitat complexity for all life stages of coho salmon –immigration, spawning, summer and winter rearing, and emigration. Twelve to thirteen large wood structures will be installed in the creek, along 0.42 miles of mainstem San Gregorio Creek in coastal San Mateo County.

The project is necessary because instream habitat complexity along San Gregorio Creek has been identified as poor and is a known limiting factor for coho salmon adults, summer rearing juveniles, winter rearing juveniles, and smolts. Encouraging retention and recruitment of large woody debris for all historical salmonid rearing habitats in San Gregorio Creek is identified as a priority 1 immediate restoration action in NMFS Final recovery Plan for CCC coho salmon ESU (2012).

The project will follow established techniques outlined in the California Salmonid Stream Habitat Restoration Manual (Part VII Project Implementation).

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultation, and/or Notice to Proceed are secured.

### **Objective(s):**

The main goal of the project is to increase habitat complexity and shelter value by creating winter refuge and summer rearing habitat, improving gravel sorting and increasing cover for all life stages of coho salmon. This will be accomplished by installing large wood structures in channel reaches that are devoid of habitat complexity. A total of 12-13 large wood structures along 0.42 miles of San Gregorio Creek will be installed, creating eight additional pools and enhancing four existing pool habitats. An additional goal is to use the project as a pilot project for the Grantee's Large Woody Debris program for coastal San Mateo County. Following implementation, the project will be showcased as an educational example to local landowners on the necessity of large and small wood structures in creeks for salmonid habitat complexity and how wood structures in San Gregorio creek can be installed without undue risk to life and/or property.

### **Project Description:**

#### **Location:**

The project site is located in the San Gregorio watershed in coastal San Mateo County near the unincorporated community of San Gregorio. The upstream end of the project site is 10 miles upstream of the mouth of San Gregorio Creek and extends 0.42 miles downstream. The approximate mid-point of the project site is

at 37.31900; -122.29800 (Decimal Degrees, Geographic, NAD83). The project site is on Peninsula Open Space Trust's (POST) Driscoll Ranch Property, with one structure partially and one optional structure entirely on neighboring Tichenor Ranch. This portion of POST's Driscoll Ranch Property, commonly referred to as the Apple Orchard, is managed by the Midpeninsula Regional Open Space District.

## **Project Set Up:**

Task 1 will be performed by the San Mateo RCD. The RCD Conservation Project Coordinator with support from the RCD Executive Director and RCD Finance Director will be specifically performing Task 1.

Task 2 will be performed by the RCD Conservation Project Coordinator with assistance from the RCD Executive Director and subcontractor, Alnus Ecological.

Task 3 will be accomplished by subcontractor, Alnus Ecological and RCD Conservation Project Coordinator

Task 4 will be accomplished by yet to be determined licensed timber operators under the supervision of a Registered Professional Forester of Blencowe Watershed Management. LWD structures may be modified or "field fitted" by the project team which includes Blencowe Watershed Management, Alnus Ecological, and the RCD Project Manager.

Task 5 will be performed by the RCD Conservation Project Coordinator with assistance from two RCD interns.

## **Materials:**

- LWD: 21 logs and/or whole trees harvested on site (trees greater than 36inches DBH or large snags greater than 16inches DBH and 20 feet high will be use; NO DECADENT TREES)
- small Woody Debris
- rubber tired tractor
- hand tools (chainsaw, winches, rockbars, and shovels)
- one inch threaded rebar
- washers and nuts
- wood screws
- boulders
- polyester resin adhesive
- sandbags, gravel bags or logs covered by plywood and/or Visqueen for stream crossing

**Tasks: *Task 1: Project Management***

The Grantee, San Mateo RCD, will take the lead in fiscal management, developing and managing subcontracts, meeting reporting and performance requirements, convening project team meetings, developing project information, and coordinating with funders and partners. In addition, the Grantee will be responsible for dissemination of project materials and results.

Task elements include: convene project team meetings; finalize workplan; draft and finalize subcontracts; manage contracts ; manage project budget; coordinate with project partners; submit financial and progress reports; draft and submit final report ; disseminate project materials and results.

***Task 2: Permitting***

RCD staff and subcontractor, Alnus Ecological, will work with the CDFW Fisheries Restoration Grant Program (FRGP) grant manager to develop and finalize the Lake and Streambed Alteration Agreement (LSAA) and prepare other necessary local permits and environmental compliance consultation and documents to include: the San Mateo County Tree Removal Permit; consultation with the U. S. Fish and Wildlife Service on the fully ESA protected San Francisco garter snake; and consultation with CDFW Habitat Conservation on appropriate protective measures for the CESA listed San Francisco garter snake. The RCD project coordinator will work with CDFW to finalize the scope of work for San Francisco garter snake protective measures.

***Task 3: Biological Monitoring and Physical Surveys***

Pre-implementation wildlife surveys will be conducted in the project area and along access routes by Alnus Ecological as per the requirements of the FRGP CEQA document and RGP to identify potential habitat for special status species. Sensitive species with potential habitat within the project area will be assumed present to avoid impacts to those species. California red legged frogs, San Francisco garter snakes, marbled murrelets, San Francisco dusky footed woodrat, western pond turtle, and salmonids are species with special status protections that will be assumed to be present in the project area.

Qualified biological monitors will be on-site during all construction activities to ensure compliance with all permits. All aspects of construction, including staging and implementation, will comply with all resource protection measures and permit requirements such as worker training, exclusionary fencing, revegetation, and species avoidance.

Physical surveys include: pre- and post-construction topographic surveys of LWD sites to measure changes in physical conditions associated with project goals. Pre-construction surveys will be conducted after the winter prior to construction. Post-construction surveys will be repeated at the same time of year following the next five winters. Pre- and post-construction physical surveys will include the following: a longitudinal profile will be measured throughout the project reach

along with cross sections no less than 100' apart. At each LWD site a minimum of five cross sections will be measured along with pool scour depths, pool area, amount of cover contributed, and aggradation of streambed material. Pebble counts will be conducted no less than 100' apart and below each LWD structure projected to scour pools and sort gravel. At the minimum, presence or absence of juvenile rearing will be recorded along the entire project reach through above water observations. If anticipated matching funds are awarded, counts of individual juveniles will occur through snorkel surveys instead of presence/absence surveys. Photos of each site looking up and downstream at the structure will be taken. Photo monitoring protocols will be based on those developed by the State Water Resources Control Board's Stream Photo Documentation Procedure (SOP 4.2.1.4). Habitat typing of the stream reach will be recorded to Level IV as described CDFW's California Salmonid Stream Habitat Restoration Manual, 4th edition.

#### ***Task 4: Construction***

Construction will start no earlier than September 1 to avoid marbled murrelet nesting season.

Approximately of 21 logs and/or whole trees will be harvested on site and placed in the channel using a rubber-tired tractor. When placing wood, the equipment will be restricted to flat or gently sloping ground (less than 40%) or existing roads, and will not enter the wetted portion of the channel. There will be no channel excavation, dewatering, or fish relocation. Fine adjustment and bucking (where appropriate) of placed logs may be performed with hand tools including chain saws, winches, rockbars, and shovels. None of the site designs call for logs to be placed in a manner to control grade; channel-spanning logs will be placed with one end on the streambank and the other in the channel (i.e. not level).

Some large trash is present at the proposed LWD sites, and will be removed from the stream channel before placing wood. Trees will be sourced on site, and in most cases will be thinned from dense clusters according to accepted forestry practices. No "decadent" trees, or those with defects, cavities, nests, late seral characteristics, trees greater than 36 inches DBH, or large snags greater than 16 inches DBH and 20 feet high will be used.

A total of 12-13 specific placement locations requiring approximately 21 pieces have been identified within the 0.42 mile project reach. All placed wood pieces will be tagged for identification and monitoring. All sourced project material will have a minimum of 16 inches in diameter or greater on the large end and be 30-65 feet in length. Licensed timber operators will be retained to fall trees and place large wood pieces under the supervision of a Registered Professional Forester.

The LWD structures described below may be modified or "field fit" by the project team. Adjustments via field fit could include minor changes in alignment and

station location based on changed sites conditions between 2014 and construction as well as specific dimensions and post-felling condition of local trees to be used for the project. The following descriptions of the proposed LWD structures are intended to provide site specific details on the variations to the engineered structure design typicals provided in the supplemental materials. Anchoring techniques for connecting two pieces of wood will utilize two 1" threaded rebar fitted through a drilled hole and capped with washers and nuts. When the backside of one of the pieces of wood is not accessible, wood screws will be used. It is anticipated that only two of the sites (2 and 10) where logs are anchored to existing stable LWD will need wood screws. Logs that will be anchored to boulders will use threaded rebar and a polyester resin adhesive. Boulders will be added to structures and anchored at the contractor's discretion. In order to reduce potential impacts to the aquatic environment and control project costs, the current project proposal avoids the need to dewater the channel. There will be no grading or earthmoving work conducted in the wetted channel for construction of any of the proposed structures. All work will be done from either the top of bank or a stable dry gravel bars along the toe of the banks. Grantee expects one necessary channel crossing to access sites 1 and 2. Rubber tired equipment will cross the creek on a series of sandbags, gravel bags, or logs that will be covered in either plywood and/or Visqueen to (a) allow unimpeded flow through the crossing, (b) keep equipment at least 12" above the water surface elevation, and (c) prevent any accident spill of fluids into the live stream. Water level at this site is very low during the typical construction season, and stream flow will be able to percolate through the sand/gravel bags or logs. Remaining sites will be accessed via the main ranch road which crosses the creek at an established wet crossing. Grantee will use on-site small wood debris (SWD) and pin remnant pieces under larger LWD structures and/or incorporate them into the structures to add complexity.

The start of the survey reach is at bottom of riffle next to a bedrock cut-bank on the right bank (-122.2950 W, 37.319 N ). Station 0 + 00 (feet).

**LWD site 1:** Station 1 + 29, structure type A

- Two logs on the right bank will be anchored to redwood trees at the far end away from the active channel and wedged against alder trees towards the middle of the logs. The logs may be anchored to the alder trees if the contractor determines this is necessary. The two logs will be pinned together where they meet in the thalweg. The upstream log will have a downstream angle while the downstream log will have an upstream angle.
- The primary goals of this structure are to 1) increase cover habitat for all age classes under the suspended lengths of the logs, 2) create low-velocity refuge during high-flows near the gravel bar on the right bank, and 3) improve summertime rearing habitat by increasing pool scouring at the downstream end of a current riffle and next to an undercut bank

- The wood for this structure will be sourced from two redwood trees located just up the right bank (northeast) of LWD site 1. The logs will be transported and placed using a rubber tire skidder, which will cross the creek downstream of LWD site 1 at the temporary crossing.

## **LWD site 2:** Station 3 + 61, structure type B

- One log will be placed alongside the right bank and anchored at the up and downstream ends to existing pieces of stable LWD (redwood logs that have rootwads embedded in the right bank). Available SWD will be placed underneath the log, keyed into the bank and to existing LWD and SWD. An optional log will span the channel in a downstream angle towards the right bank and the existing downstream LWD. On the left bank the optional log will be anchored to an imported boulder.
- The primary goals of this structure are to 1) create cover habitat underneath suspended lengths of the logs, 2) create year-round cover habitat along the right bank mimicking an undercut bank, 3) create low velocity refuge during high flows along the right bank (and left bank if optional log is included), and 4) promote the recruitment of SWD.
- The wood for this structure will likely be sourced from a redwood grove located just up the right bank from LWD sites 4 through 8 if suitable logs cannot be sourced from the redwood grove located up the right bank from LWD site 1 and 2. This site will be accessed using the same temporary crossing as site 1.

## **LWD site 3:** Station 7 + 89, structure type B

- One log will be placed parallel to the channel over a point bar towards the left bank and anchored at its upstream end to a redwood rootwad. The log will be anchored to an embedded boulder at its downstream end. Additional SWD will be placed underneath the log and keyed into the bank.
- The primary goals of this structure are to 1) increase cover habitat associated with the existing rootwad and the pool it has formed, 2) create year-round habitat mimicking an undercut bank over both the main channel and the secondary channel on the left side of the point bar, 3) increase high flow refuge by slowing water velocities along the left side of the channel, 4) promote the recruitment of additional SWD, and 5) support the further development of the existing point bar and related deposition of spawning gravels.
- The wood for this structure will likely be sourced from a redwood grove located just up the right bank (north) from LWD site 4 through 8. The skidder will transport these logs to the site overland and be placed in the

stream channel without entering the creek.

**LWD site 4:** Station 9 + 28, structure type D

- One Douglass fir log with rootwad attached or two stacked redwood logs will be anchored to a redwood clump at the upslope end and again towards the middle to a clump of alders. The log(s) will be oriented roughly perpendicular to flow with the root wad positioned in the thalweg. A boulder may be placed at the downstream end of the log(s) and anchored if the contractor determines this is necessary. This station is located at the upstream end of a relatively straight and homogenous plane bed reach with little to no LWD, pool and cover habitat.
- The primary goals of this structure are to 1) create cover habitat underneath the suspended length of the log on the right bank, 2) create a sour pool immediately downstream of the in-stream end of the log(s), and 3) increase low-velocity refuge during high-flows along the right bank next to the base of the alder trees growing within the bankfull channel.
- The wood for this structure will likely be sourced from a mixed conifer grove north of the barn and/or a redwood grove located just up the right bank from LWD site 4 through 8. The skidder will transport these logs to the site overland and be placed in the stream channel without entering the creek.

**LWD site 5:** Station 10 + 35, structure type D

- Refer to site 4.

**LWD site 6:** Station 12 + 10, structure type D

- Refer to site 4.

**LWD site 7:** Station 13 + 28, structure type C

- Two logs will cross at a roughly 45 degree angle, oriented upstream in the middle of the plane bed stream channel and pinned together. The upslope end of the logs will be anchored to large alder trees and to the ground if conditions permit. Invasive ivy is currently growing on the alder trees and it will be girdled to reduce the deleterious effects of the ivy on the anchor trees. While not funded through this grant, the Grantee and landowners are seeking additional funding to address the ivy infestation along this reach.
- The primary goals of this structure are to 1) increase cover habitat for all age classes under the suspended lengths of the logs, 2) improve summertime rearing habitat by increasing pool scouring downstream of where the logs cross, and 3) create low-velocity refuge during high-flows near both banks

- The wood for this structure will likely be sourced from a redwood grove located just up the right bank from LWD site 4 through 8. The skidder will transport these logs to the site overland and be placed in the stream channel without entering the creek.

**LWD site 8:** Station 14 + 24, structure type C

- Refer to site 7.

**LWD site 9:** Station 15 + 66, structure type A

- Two logs on the left bank will be anchored at their ends to redwood trees and pinned together where they meet in the thalweg at a roughly 45 degree angle. The upstream log will be oriented with a downstream angle, while the downstream log will be roughly perpendicular to the stream channel.
- The primary goals of this structure are to 1) increase cover habitat for all age classes under the suspended lengths of the logs, 2) create low-velocity refuge during high-flows near the base of the redwood clump on the left bank, and 3) improve summertime rearing habitat by increasing pool scouring at the bend in the creek.
- The wood for this structure will likely be sourced from a redwood grove located just up the right bank from LWD site 4 through 8. The skidder will transport these logs to the site overland and be placed in the stream channel without entering the creek.

**LWD site 10: Station 16 + 29, structure type B**

- Two logs will be anchored to the right bank and pinned together where they cross over the downstream end of an existing redwood log with rootwad that is embedded along the right bank. One log will be positioned at a roughly 45 degree upstream angle and also anchored to alder trees at the upslope end. The end of this log will be positioned over the thalweg and above the wintertime base-flow stage. The second log will be positioned parallel to the stream flow and the existing LWD piece. Additional SWD will be placed underneath the second log and keyed into the existing LWD and SWD.
- The primary goals of this structure are to 1) increase cover habitat associated with the existing LWD and SWD pieces on the right bank, 2) create year-round habitat mimicking and undercut bank over slightly undercut right bank, 3) increase low-velocity refuge during high-flows by slowing water velocities along the right side of the channel, and 4) promote the recruitment of additional SWD.
- The wood for this structure will likely be sourced from a redwood grove



located just up the right bank (north) from LWD site 4 through 8. The skidder will transport these logs to the site overland and be placed in the stream channel without entering the creek. LWD site 11: Station 16 + 63, structure type A.

- Two logs on the right bank will be anchored once at their ends and a second time towards the middle to several alder trees. The two logs will be pinned together where they meet in the thalweg at a roughly 45 degree angle. The upstream log will be oriented with a downstream angle, while the downstream log will have an upstream angle.
- The primary goals of this structure are to 1) increase cover habitat for all age classes under the suspended lengths of the logs, 2) create low-velocity refuge during high-flows near the right bank, and 3) improve summertime rearing habitat by increasing pool scouring in a relatively homogenous stream reach.
- The wood for this structure will likely be sourced from a redwood grove located just up the right bank from LWD site 4 through 8. The skidder will transport these logs to the site overland and be placed in the stream channel without entering the creek.

#### **LWD site 12:** Station 18 + 09, structure type C

- Two logs will cross at a roughly 45 degree angle, oriented upstream in the middle of the plane bed stream channel and pinned together. The upslope end of the logs will be anchored to large alder trees and to the ground if conditions permit.
- The primary goals of this structure are to 1) increase cover habitat for all age classes under the suspended lengths of the logs, 2) improve summertime rearing habitat by increasing pool scouring downstream of where the logs cross, and 3) create low-velocity refuge during high-flows near both banks.
- The wood for this structure will likely be sourced from a redwood grove located just up the right bank from LWD site 4 through 8. The skidder will transport these logs to the site overland and be placed in the stream channel without entering the creek. LWD site 13: Station 20 + 37, structure type A.
- Two logs on the right bank will be anchored once at their ends and a second time towards the middle to several alder trees, and to the ground if conditions permit. The two logs will be pinned together where they meet in the thalweg at a roughly 45 degree angle. The upstream log will be oriented with a downstream angle, while the downstream log will have an

upstream angle.

- The primary goals of this structure are to 1) increase cover habitat for all age classes under the suspended lengths of the logs, 2) create low-velocity refuge during high-flows near the right bank, and 3) improve summertime rearing habitat by increasing pool scouring at the bend in the creek.
- The wood for this structure will likely be sourced from a redwood grove located just up the right bank from LWD site 4 through 8. The skidder will transport these logs to the site overland and be placed in the stream channel without entering the creek.

### ***Task 5: Public School Watershed and Fishery Conservation Education***

The Grantee has established a partnership with CA State University (CSU), San Francisco, Geography and Environment Department and will provide undergraduate students the opportunity to become involved with a real-life project implementing the concepts they are learning in the Watershed Restoration course. Students will learn about the different phases of project planning and implementation, visit the project site, and assist with collection of physical survey data. The RCD Conservation Project Coordinator will coordinate with the CSU Geography Department, prepare educational materials, and lead at least two site visits to educate at least 40 students. In addition to these educational site visits, two students will be hired as RCD interns (one per semester during the project period) and will attend two additional educational events by assisting the project coordinator with surveys described under Task 3.

### **Deliverables**

#### Task 1: Project Management

- final access agreements with landowners
- progress reports and invoices
- executed contracts
- draft and Final report

#### Task 2: Permitting

- permit application(s)
- secured permits

#### Task 3: Biological Monitoring & Physical Surveys

- pre-construction wildlife survey results
- daily monitoring logs
- pre and post construction physical surveys

#### Task 4: Construction

- as-built descriptions of each structure
- log tag ID number, length, and large and small end diameters for each log
- photos taken before, during, and after construction to show conditions and restoration techniques

## Task 5: Public School Watershed and Fishery Conservation Education

- three educational documents
- photos of four educational event with students

### **Timelines:**

1. Provide completion dates for all tasks, deliverables, and steps of implementation.
2. List time frame (the season's work window). Use generic time frame (June 15 – October 31) if actual time frame is not known.

### **Additional Requirements:**

1. 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.
2. 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*.
3. 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.
4. The Grantee needs to pursue USFWS Section 7 ESA consultation for San Francisco garter snake avoidance measures.

California Department of Fish and Game  
Natural Diversity Database  
Selected Elements by Common Name - Portrait  
724568 San Gregorio Creek Habitat Enhancement Project

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 Alameda song sparrow <i>Melospiza melodia pusillula</i>	ABPBXA301S			G5T2?	S2?	SC
2 American badger <i>Taxidea taxus</i>	AMAJF04010			G5	S4	SC
3 Anderson's manzanita <i>Arctostaphylos andersonii</i>	PDERI04030			G2	S2?	1B.2
4 Bay checkerspot butterfly <i>Euphydryas editha bayensis</i>	IILEPK4055	Threatened		G5T1	S1	
5 Ben Lomond buckwheat <i>Eriogonum nudum var. decurrens</i>	PDPGN08492			G5T1	S1	1B.1
6 Ben Lomond spineflower <i>Chorizanthe pungens var. hartwegiana</i>	PDPGN040M1	Endangered		G2T1	S1	1B.1
7 Blasdale's bent grass <i>Agrostis blasdalei</i>	PMPOA04060			G2	S2	1B.2
8 Bonny Doon manzanita <i>Arctostaphylos silvicola</i>	PDERI041F0			G1	S1	1B.2
9 Butano Ridge cypress <i>Hesperocyparis abramsiana var. butanoensis</i>	PGCUP04082	Endangered	Endangered	G1T1	S1	1B.2
10 California black rail <i>Laterallus jamaicensis coturniculus</i>	ABNME03041		Threatened	G4T1	S1	
11 California clapper rail <i>Rallus longirostris obsoletus</i>	ABNME05016	Endangered	Endangered	G5T1	S1	
12 California least tern <i>Sternula antillarum browni</i>	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2S3	
13 California red-legged frog <i>Rana draytonii</i>	AAABH01022	Threatened		G2G3	S2S3	SC
14 California tiger salamander <i>Ambystoma californiense</i>	AAAAA01180	Threatened	Threatened	G2G3	S2S3	SC
15 Choris' popcornflower <i>Plagiobothrys chorisianus var. chorisianus</i>	PDBOR0V061			G3T2Q	S2	1B.2
16 Congdon's tarplant <i>Centromadia parryi ssp. congdonii</i>	PDAST4R0P1			G3T2	S2	1B.1
17 Crystal Springs fountain thistle <i>Cirsium fontinale var. fontinale</i>	PDAST2E161	Endangered	Endangered	G2T1	S1	1B.1
18 Crystal Springs lessingia <i>Lessingia arachnoidea</i>	PDAST5S0C0			G1	S1	1B.2
19 Davidson's bush-mallow <i>Malacothamnus davidsonii</i>	PDMAL0Q040			G2	S2	1B.2
20 Dudley's lousewort <i>Pedicularis dudleyi</i>	PDSCR1K0D0		Rare	G2	S2	1B.2
21 Edgewood Park micro-blind harvestman <i>Microcina edgewoodensis</i>	ILARA47010			G1	S1	
22 Edgewood blind harvestman <i>Calicina minor</i>	ILARA13020			G1	S1	
23 Franciscan onion <i>Allium peninsulare var. franciscanum</i>	PMLIL021R1			G5T1	S1	1B.2

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Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
24 Franciscan thistle <i>Cirsium andrewsii</i>	PDAST2E050			G3	S3	1B.2
25 Hall's bush-mallow <i>Malacothamnus hallii</i>	PDMAL0Q0F0			G2Q	S2	1B.2
26 Hoover's button-celery <i>Eryngium aristulatum var. hooveri</i>	PDAP10Z043			G5T1	S1	1B.1
27 Kellman's bristle moss <i>Orthotrichum kellmanii</i>	NBMUS56190			G2	S2	1B.2
28 Kellogg's horkelia <i>Horkelia cuneata var. sericea</i>	PDROS0W043			G4T2	S2?	1B.1
29 Kings Mountain manzanita <i>Arctostaphylos regismontana</i>	PDERI041C0			G2	S2	1B.2
30 Marin western flax <i>Hesperolinon congestum</i>	PDLIN01060	Threatened	Threatened	G2	S2	1B.1
31 Methuselah's beard lichen <i>Usnea longissima</i>	NLLEC5P420			G4	S4	4.2
32 Monterey Pine Forest	CTT83130CA			G1	S1.1	
33 Monterey pine <i>Pinus radiata</i>	PGPIN040V0			G1	S1	1B.1
34 Myrtle's silverspot butterfly <i>Speyeria zerene myrtleae</i>	IILEPJ608C	Endangered		G5T1	S1	
35 N. Central Coast Calif. Roach/Stickleback/Steelhead Stream	CARA2633CA			GNR	SNR	
36 North Central Coast Drainage Sacramento Sucker/Roach River	CARA2623CA			GNR	SNR	
37 North Central Coast Short-Run Coho Stream	CARA2632CA			GNR	SNR	
38 North Central Coast Steelhead/Sculpin Stream	CARA2637CA			GNR	SNR	
39 Northern Coastal Salt Marsh	CTT52110CA			G3	S3.2	
40 Northern Interior Cypress Forest	CTT83220CA			G2	S2.2	
41 Ohlone manzanita <i>Arctostaphylos ohloneana</i>	PDERI042Y0			G1	S1	1B.1
42 Pajaro manzanita <i>Arctostaphylos pajaroensis</i>	PDERI04100			G1	S1	1B.1
43 Point Reyes meadowfoam <i>Limnanthes douglasii ssp. sulphurea</i>	PDLIM02038		Endangered	G4T2	S2	1B.2
44 Ricksecker's water scavenger beetle <i>Hydrochara rickseckeri</i>	IICOL5V010			G2?	S2?	
45 Sacramento-San Joaquin Coastal Lagoon	CALA1360CA			GNR	SNR	
46 San Francisco Bay spineflower <i>Chorizanthe cuspidata var. cuspidata</i>	PDPGN04081			G2T1	S1	1B.2
47 San Francisco champion <i>Silene verecunda ssp. verecunda</i>	PDCAR0U213			G5T2	S2.2	1B.2
48 San Francisco collinsia <i>Collinsia multicolor</i>	PDSCR0H0B0			G2	S2	1B.2

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Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
49 San Francisco dusky-footed woodrat <i>Neotoma fuscipes annectens</i>	AMAFF08082			G5T2T3	S2S3	SC
50 San Francisco garter snake <i>Thamnophis sirtalis tetrataenia</i>	ARADB3613B	Endangered	Endangered	G5T2Q	S2	
51 San Francisco popcornflower <i>Plagiobothrys diffusus</i>	PDBOR0V080		Endangered	G1Q	S1	1B.1
52 San Mateo thorn-mint <i>Acanthomintha duttonii</i>	PDLAM01040	Endangered	Endangered	G1	S1	1B.1
53 San Mateo woolly sunflower <i>Eriophyllum latilobum</i>	PDAST3N060	Endangered	Endangered	G1	S1	1B.1
54 Santa Clara red ribbons <i>Clarkia concinna ssp. automixa</i>	PDONA050A1			G5?T3	S3.3	4.3
55 Santa Cruz Mountains beardtongue <i>Penstemon rattanii var. kleei</i>	PDSCR1L5B1			G4T2	S2	1B.2
56 Santa Cruz Mountains pussypaws <i>Calyptridium parryi var. hesseae</i>	PDPOR09052			G3G4T2	S2	1B.1
57 Santa Cruz cypress <i>Hesperocyparis abramsiana var. abramsiana</i>	PGCUP04081	Endangered	Endangered	G1T1	S1	1B.2
58 Santa Cruz kangaroo rat <i>Dipodomys venustus venustus</i>	AMAFD03042			G4T1	S1	
59 Santa Cruz microseris <i>Stebbinsoseris decipiens</i>	PDAST6E050			G2	S2.2	1B.2
60 Santa Cruz wallflower <i>Erysimum teretifolium</i>	PDBRA160N0	Endangered	Endangered	G2	S2	1B.1
61 Schreiber's manzanita <i>Arctostaphylos glutinosa</i>	PDERI040G0			G1	S1	1B.2
62 Serpentine Bunchgrass	CTT42130CA			G2	S2.2	
63 Toren's grimmia <i>Grimmia torenii</i>	NBMUS32330			G2	S2	1B.3
64 Townsend's big-eared bat <i>Corynorhinus townsendii</i>	AMACC08010		Candidate Threatened	G3G4	S2S3	SC
65 Valley Needlegrass Grassland	CTT42110CA			G3	S3.1	
66 Valley Oak Woodland	CTT71130CA			G3	S2.1	
67 arcuate bush-mallow <i>Malacothamnus arcuatus</i>	PDMAL0Q0E0			G1Q	S1	1B.2
68 bank swallow <i>Riparia riparia</i>	ABPAU08010		Threatened	G5	S2S3	
69 black swift <i>Cypseloides niger</i>	ABNUA01010			G4	S2	SC
70 coast yellow leptosiphon <i>Leptosiphon croceus</i>	PDPLM09170			G1	S1	1B.1
71 coastal marsh milk-vetch <i>Astragalus pycnostachyus var. pycnostachyus</i>	PDFAB0F7B2			G2T2	S2	1B.2
72 coho salmon - central California coast ESU <i>Oncorhynchus kisutch</i>	AFCHA02034	Endangered	Endangered	G4	S2?	

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Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
73 foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050			G3	S2S3	SC
74 fragrant fritillary <i>Fritillaria liliacea</i>	PMLILOV0C0			G2	S2	1B.2
75 great blue heron <i>Ardea herodias</i>	ABNGA04010			G5	S4	
76 hoary bat <i>Lasiurus cinereus</i>	AMACC05030			G5	S4?	
77 legenere <i>Legenere limosa</i>	PDCAM0C010			G2	S2	1B.1
78 long-eared owl <i>Asio otus</i>	ABNSB13010			G5	S3?	SC
79 longfin smelt <i>Spirinchus thaleichthys</i>	AFCHB03010	Candidate	Threatened	G5	S1	SC
80 lost thistle <i>Cirsium praeteriens</i>	PDAST2E2B0			GX	SX	1A
81 marbled murrelet <i>Brachyramphus marmoratus</i>	ABNNN06010	Threatened	Endangered	G3G4	S1	
82 marsh microseris <i>Microseris paludosa</i>	PDAST6E0D0			G2	S2	1B.2
83 mimic tryonia (=California brackishwater snail) <i>Tryonia imitator</i>	IMGASJ7040			G2G3	S2S3	
84 monarch butterfly <i>Danaus plexippus</i>	IILEPP2010			G5	S3	
85 pallid bat <i>Antrozous pallidus</i>	AMACC10010			G5	S3	SC
86 perennial goldfields <i>Lasthenia californica ssp. macrantha</i>	PDAST5L0C5			G3T2	S2	1B.2
87 rose leptosiphon <i>Leptosiphon rosaceus</i>	PDPLM09180			G1	S1	1B.1
88 round-leaved filaree <i>California macrophylla</i>	PDGER01070			G2	S2	1B.1
89 salt-marsh harvest mouse <i>Reithrodontomys raviventris</i>	AMAFF02040	Endangered	Endangered	G1G2	S1S2	
90 salt-marsh wandering shrew <i>Sorex vagrans halicoetes</i>	AMABA01071			G5T1	S1	SC
91 saltmarsh common yellowthroat <i>Geothlypis trichas sinuosa</i>	ABPBX1201A			G5T2	S2	SC
92 sand-loving wallflower <i>Erysimum ammophilum</i>	PDBRA16010			G2	S2	1B.2
93 short-leaved evax <i>Hesper-evax sparsiflora var. brevifolia</i>	PDASTE5011			G4T2T3	S2S3	1B.2
94 showy rancheria clover <i>Trifolium amoenum</i>	PDFAB40040	Endangered		G1	S1	1B.1
95 slender silver moss <i>Anomobryum julaceum</i>	NBMUS80010			G4G5	S2	4.2

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Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
96 slender-leaved pondweed <i>Stuckenia filiformis ssp. alpina</i>	PMPOT03091			G5T5	S3	2B.2
97 steelhead - central California coast DPS <i>Oncorhynchus mykiss irideus</i>	AFCHA0209G	Threatened		G5T2Q	S2	
98 tidewater goby <i>Eucyclogobius newberryi</i>	AFCQN04010	Endangered		G3	S2S3	SC
99 unsilvered fritillary <i>Speyeria adiaсте adiaсте</i>	IILEPJ6143			G1G2T1	S1	
100 vaginulate grimmia <i>Grimmia vaginulata</i>	NBMUS32340			G2G3	S1	1B.1
101 western leatherwood <i>Dirca occidentalis</i>	PDTHY03010			G2G3	S2S3	1B.2
102 western pearlshell <i>Margaritifera falcata</i>	IMBIV27020			G4G5	S1S2	
103 western pond turtle <i>Emys marmorata</i>	ARAAD02030			G3G4	S3	SC
104 western snowy plover <i>Charadrius alexandrinus nivosus</i>	ABNNB03031	Threatened		G3T3	S2	SC
105 white-flowered rein orchid <i>Piperia candida</i>	PMORC1X050			G3?	S2	1B.2
106 white-rayed pentachaeta <i>Pentachaeta bellidiflora</i>	PDAST6X030	Endangered	Endangered	G1	S1	1B.1
107 woodland woollythreads <i>Monolopia gracilens</i>	PDAST6G010			G2G3	S2S3	1B.2



