

Introduction:

The Eel River Watershed Improvement Group (ERWIG) (Permittee) and the California Conservation Corps (CCC) assessed the habitat along the Sproul Creek project reach and found existing large wood (LW) to be well below SONCC target values. The lack of LW is tied to low shelter values, reduced gravel sorting, shallower pools, a plain, single thread channel, and reduced flood plain inundation. The 2016 CDFW stream inventory assessment and the 2014 CDFW South Fork Eel River Watershed Assessment both agree with the findings of the ERWIG/CCC assessment that a lack of LW is resulting in decreased habitat values. During the ERWIG/CCC habitat assessment, locations suitable for habitat enhancement LW structures were identified and LW structures were designed to best optimize habitat at each location.

This project is the construction of 71 LW structures with a total of 414 pieces of LW, including 117 key pieces. The LW structures will be placed along 2.9-miles of Sproul Creek and will exceed SONCC target values of "very good" for number of pieces of LW per mile and number of key pieces per 100 meters. Large wood structures will provide winter refugia, improved flood plain access and shelter for all life stages of coho salmon. Structures will also provide summer habitat for juvenile coho and will improve spawning gravel availability for adult coho.

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, Section VII.

<https://www.wildlife.ca.gov/Grants/FRGP/Guidance>.

Objective(s):

The objective of this project is to improve the quality and quantity of habitat available to salmonids in Sproul Creek. A total of 71 large wood (LW) structures containing 414 pieces of LW, including 117 key pieces will be constructed along 2.9-miles of Sproul Creek. This project will increase the frequency of flood-plain and side channel inundation, increase pool and flatwater shelter, increase pool and flatwater depths, provide velocity refugia, sort substrate, and aggrade the channel.

Project Description:

Location:

The project is located on Sproul Creek, tributary to the South Fork Eel River, tributary to the Eel River. The project site is near the town of Garberville, CA and is located in Township 05 South, Range 03 East, Section 4 of the Garberville 7.5 Minute U.S. Geological Survey Quadrangle. The downstream extent of the project reach is 1.2-miles upstream from the confluence of Sproul Creek with the South Fork Eel River. The upstream extent is located at the confluence of Sproul Creek with West Fork Sproul Creek. This occurs 4.1-miles upstream from the

mouth of Sproul Creek. Project coordinates are: 40.05500 N. Latitude, - 123.85342 W Longitude.

Project Set Up:

Permittee Staff: Executive Director: Task 1. Contract oversight and reporting will be conducted by Executive Director with assistance from the Permittee Project Manager. Project Manager: Tasks 1, 3, 4, and 6. Will assist with contract oversight, invoicing, and reporting. Will manage all aspects of project implementation.

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

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

Arch/Bot Subcontractor: Task 2. Will conduct research, botanical and archeological surveys, and prepare CEQA reports.

Paleontology Subcontractor: Task 2. Will conduct paleontological research, surveys and prepare CEQA report.-Registered Professional Forester (RPF): Task 4. Will make sure trees chosen for project use are appropriate.

Woodbenders: Task 5. Will plant disturbed areas with native trees and plants.

Ross Taylor & Associates: Task 3. Will clear crossings of fish and amphibians.

Materials:

All materials will be purchased by Permittee. Some logs will be donated by landowner. Anchoring Hardware: 1` Rebar, 5/8` Wire Rope, 5/8` Clamps, Nuts and Plates (Washers), these items are used to anchor logs to live trees, boulders, bedrock and other logs. Tools: Portable band saws, wood drills, chain saws, and timber bits will be used to anchor the structures. Wood drills and timber bits are used to drill holes in live trees and logs for rebar attachment. Portable band saws are used to cut rebar to length. Chain saws are used to cut limbs and dead trees out of the way and to cut logs to length. Portable Generators: Used to power the power tools that are used during the anchoring process. Hilti epoxy glue: Used to glue wire rope `mollys` into boulders. Misc items: Small items such as chuck keys, allen wrenches, socket wrenches, shear pins, hammers and band saw blades, which are used during construction. Misc item also includes erosion control materials, fish exclusion fencing materials

(hardware cloth, t-posts) and field supplies (boots, waders, flagging and other items necessary for project work). Permits: LSAA permit is needed to meet permitting requirements. Permittee Mileage: Reimbursement for miles driven by Permittee staff to and from project site in order to manage project. Conifer Logs: Are the primary elements of the habitat features, needed to make project features. Some of the logs will be donated by the landowner and some will be purchased. Boulders: Will be used in the construction of habitat structures. Boulders are primarily used as ballast and for structure strength. Boulders will also provide some habitat. Boulders will be purchased from the Garberville quarry and will range in size from two to three tons. 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. Rental Costs: Tasks 3 & 4, a forklift will need to be rented for the rebar and nuts delivery, a porta potty will be rented for on-project use by staff and subcontractors. Per diem: Permittee staff will stay overnight near to the project site during construction in order to facilitate construction of habitat features.

Tasks & Deliverables:

Task 1. Project Management and Administration:

Description of Activities:

1. Grant oversight including invoicing and reporting will be conducted by Grantee 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 CDFW Grant Manager:
2. Request to spend project funds in order to prepare for implementation (e.g., obtain permits, secure subcontracts, purchase supplies, apply for a Streambed Alteration Agreement, etc.). Requests shall be sent by email or telephone.
3. Access agreement that will be project specific and meet grant agreement requirements.
4. Subcontractor Agreements. A written copy of the sub agreement 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.
5. 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 Application (LSAA) package. Final Archaeological, botanical, and paleontological surveys shall be delivered prior to the End Term date.
6. Send Grantor LSAA 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.

Deliverables: 1600 Permit, Subcontractor Agreements, Access Agreements, Invoices, Invoice Progress Reports

Start Date: 04/01/2021

End Date: 01/31/2024

Task 2. CEQA Surveys and Research

Description of Activities: A subcontractor 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. A subcontractor will conduct paleontological research and surveys and prepare reports. Botanist will note wetland habitat to avoid.

Deliverables: Interim and Final Survey Reports

Start Date: 04/01/2021

End Date: 12/31/2021

Task 3. Site Preparation

Description of Activities: The Permittee Project Manager will finalize site specific designs based on channel morphology, equipment access, and LW availability. They will submit designs for CDFW Project Manager approval. The 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 Permittee. Tools and materials will be purchased by Permittee prior to the start of implementation and on an as needed basis throughout the project.

Permittee staff will set up exclusion fencing at the five stream crossing locations prior to the excavator needing to cross. In conjunction with CDFW, Ross Taylor and Associates will remove fish and amphibians from stream crossing locations and release them at appropriate locations upstream or downstream of crossings. Ross Taylor and Associates will write all reports necessary for the e-fishing activities. Each stream crossing used by equipment will be a wet ford and will only be crossed by one excavator two times and will only do so after CDFW gives permission. If necessary, an all-terrain vehicle (ATV) will be used to bring fuel to the excavator. Fueling will happen outside of the high-water area. Exclusion fencing will be removed immediately after the crossing is no longer needed. No stream de-watering will occur during this project.

Deliverables: Finalized design plans, flagged equipment access routes, pre-project photos and metrics, relocation report.

Start Date: 05/03/2021

End Date: 07/31/2021

Task 4. Large Wood Structure Construction

Description of Activities: With approval from the CDFW grant manager and under the direction of the Permittee Project Manager, site construction on 71 large wood features will begin. Some features may involve cutting down or uprooting trees, this will be accomplished by the LTO (Edwards Excavation & Restoration) and the licensed equipment operator (Edwards Excavation & Restoration), respectively. The Registered Professional Forester (RPF) will approve all trees chosen for use in the project prior to trees being felled. Some logs will be purchased and delivered to the project reach. The licensed equipment operator will place logs and boulders into the stream in accordance with design plans. Boulders purchased for this project will range in size from two to three tons. When necessary, CCC Corpsmembers will move LW into position using a grapple 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 hole hawg 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 Conservationist 1 (C1) and the Permittee Project Manager. Site construction, wood placement, and anchoring will be in accordance with the CDFW, *California Salmonid Stream Habitat Restoration Manual*, Section VII (Flossi et al. 2010). 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. To address concerns over invasive species this project will follow the Permittee Aquatic Invasive Species Decontamination Protocol, which is in line with the CDFW *Aquatic Invasive Species Decontamination Protocol*. Permittee staff will monitor water quality when necessary.

Deliverables: Seventy-one (71) LW features made up of 414 pieces of LW, including at least 117 key pieces. Water quality monitoring data sheets.

Start Date: 07/12/2021

End Date: 10/31/2021

Task 5. Riparian Planting

Description of Activities: The tree planting subcontractor will return in the winter following project implementation to plant 300 conifer seedlings and 100 native plants, with a primary focus in areas lacking sufficient conifer cover or riparian vegetation.

Deliverables: Three hundred conifer seedlings and 100 native plants planted along the project reach.

Start Date: 12/01/2021

End Date: 03/31/2022

Task 6. Reporting, Post Project Metrics and Photos

Description of Activities: Permittee staff will write annual and yearly reports. ERWIG staff will collect post-project metrics and photos.

Deliverables: Annual reports, draft final report in electronic format, final report in electronic and hard copy formats. Post project metrics and photos.

Start Date: 11/01/2021

End Date: 01/31/2024

Additional Requirements:

The Permittee 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 Salmonid Stream Habitat Restoration Manual*, Volume I and Volume II.

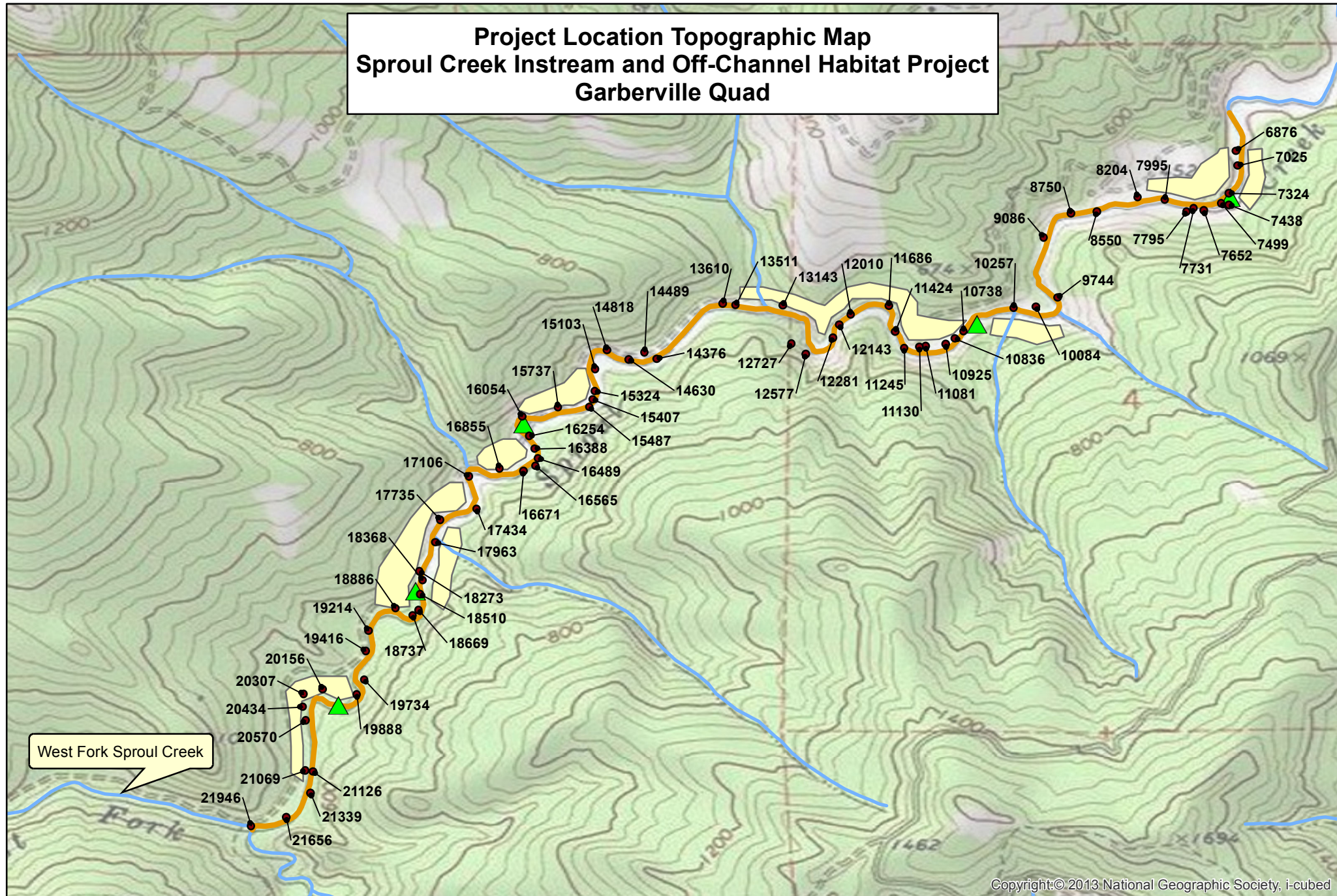
The Permittee shall notify the CDFW a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Permittee 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 National Marine Fisheries Service (NMFS) Biological Opinion.
- d. 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.
- e. USFWS Approved fisheries biologists will provide fish relocation data via the Permittee to the CDFW personnel on a form provided by CDFW.

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

Project Location Topographic Map Sproul Creek Instream and Off-Channel Habitat Project Garberville Quad



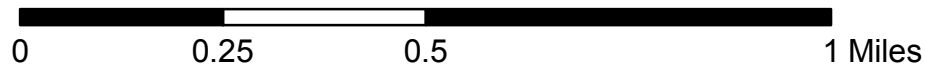
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— Sproul Creek Project Reach

▲ Equipment Crossings

● Feature Locations

■ Planting Area



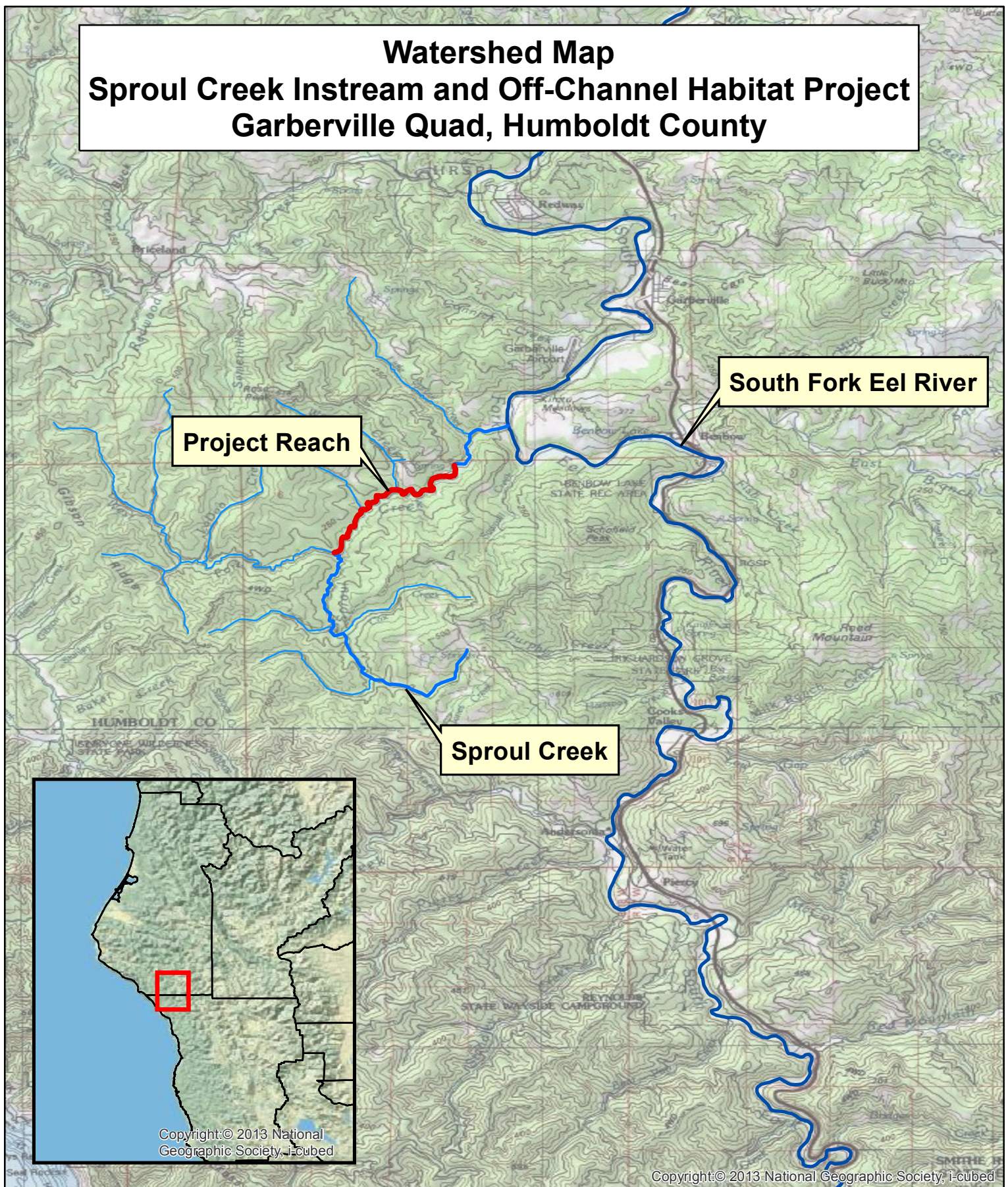
Eel River Watershed Improvement Group
March 2020



Watershed Map

Sproul Creek Instream and Off-Channel Habitat Project

Garberville Quad, Humboldt County



- Project Reach
- Sproul Creek
- South Fork Eel River

0 0.5 1 2 3 4 Miles

Eel River Watershed Improvement Group
March 2020





Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad< IS (Garberville (4012317) OR Piercy (3912387) OR Bear Harbor (3912388) OR Briceland (4012318) OR Ettersburg (4012328) OR Miranda (4012327) OR Fort Seward (4012326) OR Harris (4012316) OR Noble Butte (3912386))

Possible species within the Garberville and surrounding quads for 1723382 - Sproul Creek Salmonid Habitat Restoration Project, Humboldt County

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|--|--------------|----------------|----------------------|-------------|------------|--------------------------------|
| <i>Accipiter cooperii</i> Cooper's hawk | ABNKC12040 | None | None | G5 | S4 | WL |
| <i>Antrozous pallidus</i> pallid bat | AMACC10010 | None | None | G5 | S3 | SSC |
| <i>Aquila chrysaetos</i> golden eagle | ABNKC22010 | None | None | G5 | S3 | FP |
| <i>Arabis mcdonaldiana</i> McDonald's rockcress | PDBRA06150 | Endangered | Endangered | G3 | S3 | 1B.1 |
| <i>Arboremus pomo</i> Sonoma tree vole | AMAFF23030 | None | None | G3 | S3 | SSC |
| <i>Arctostaphylos stanfordiana ssp. raichei</i> Raiche's manzanita | PDERI041G2 | None | None | G3T2 | S2 | 1B.1 |
| <i>Ascaphus truei</i> Pacific tailed frog | AAABA01010 | None | None | G4 | S3S4 | SSC |
| <i>Astragalus agnicidus</i> Humboldt County milk-vetch | PDFAB0F080 | None | Endangered | G2 | S2 | 1B.1 |
| <i>Bombus caliginosus</i> obscure bumble bee | IIHYM24380 | None | None | G4? | S1S2 | |
| <i>Bombus occidentalis</i> western bumble bee | IIHYM24250 | None | Candidate Endangered | G2G3 | S1 | |
| <i>Calamagrostis foliosa</i> leafy reed grass | PMPOA170C0 | None | Rare | G3 | S3 | 4.2 |
| <i>Carex arcta</i> northern clustered sedge | PMCYP030X0 | None | None | G5 | S1 | 2B.2 |
| <i>Castilleja litoralis</i> Oregon coast paintbrush | PDSCR0D012 | None | None | G3 | S3 | 2B.2 |
| <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>Coptis laciniata</i> Oregon goldthread | PDRAN0A020 | None | None | G4? | S3? | 4.2 |
| <i>Empidonax traillii brewsteri</i> little willow flycatcher | ABPAE33041 | None | Endangered | G5T3T4 | S1S2 | |
| <i>Emys marmorata</i> western pond turtle | ARAAD02030 | None | None | G3G4 | S3 | SSC |
| <i>Erethizon dorsatum</i> North American porcupine | AMAFJ01010 | None | None | G5 | S3 | |



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>Eriogonum kelloggii</i> Kellogg's buckwheat | PDPGN083A0 | None | Endangered | G2 | S2 | 1B.2 |
| <i>Erythronium oregonum</i> giant fawn lily | PMLIL0U0C0 | None | None | G4G5 | S2 | 2B.2 |
| <i>Erythronium revolutum</i> coast fawn lily | PMLIL0U0F0 | None | None | G4G5 | S3 | 2B.2 |
| <i>Eumetopias jubatus</i> Steller (=northern) sea-lion | AMAJC03010 | Delisted | None | G3 | S2 | |
| <i>Falco peregrinus anatum</i> American peregrine falcon | ABNKD06071 | Delisted | Delisted | G4T4 | S3S4 | FP |
| <i>Gentiana setigera</i> Mendocino gentian | PDGEN060S0 | None | None | G2 | S2 | 1B.2 |
| <i>Gilia capitata ssp. pacifica</i> Pacific gilia | PDPLM040B6 | None | None | G5T3 | S2 | 1B.2 |
| <i>Howellia aquatilis</i> water howellia | PDCAM0A010 | Threatened | None | G3 | S2 | 2B.2 |
| <i>Kopsiopsis hookeri</i> small groundcone | PDORO01010 | None | None | G4? | S1S2 | 2B.3 |
| <i>Mitellastra caulescens</i> leafy-stemmed mitrewort | PDSAX0N020 | None | None | G5 | S4 | 4.2 |
| <i>Montia howellii</i> Howell's montia | PDPOR05070 | None | None | G3G4 | S2 | 2B.2 |
| <i>Myotis evotis</i> long-eared myotis | AMACC01070 | None | None | G5 | S3 | |
| <i>Myotis thysanodes</i> fringed myotis | AMACC01090 | None | None | G4 | S3 | |
| <i>Myotis yumanensis</i> Yuma myotis | AMACC01020 | None | None | G5 | S4 | |
| <i>Northern Interior Cypress Forest</i> Northern Interior Cypress Forest | CTT83220CA | None | None | G2 | S2.2 | |
| <i>Noyo intersessa</i> Ten Mile shoulderband | IMGASC5070 | None | None | G2 | S2 | |
| <i>Oncorhynchus kisutch pop. 2</i> coho salmon - southern Oregon / northern California ESU | AFCHA02032 | Threatened | Threatened | G4T2Q | S2? | |
| <i>Oncorhynchus mykiss irideus pop. 36</i> summer-run steelhead trout | AFCHA0213B | None | Candidate Endangered | G5T4Q | S2 | SSC |
| <i>Pandion haliaetus</i> osprey | ABNKC01010 | None | None | G5 | S4 | WL |
| <i>Pekania pennanti</i> fisher - West Coast DPS | AMAJF01021 | Endangered | Threatened | G5T2T3Q | S2S3 | SSC |
| <i>Piperia candida</i> white-flowered rein orchid | PMORC1X050 | None | None | G3 | S3 | 1B.2 |



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>Rana boylei</i> foothill yellow-legged frog | AAABH01050 | None | Endangered | G3 | S3 | SSC |
| <i>Rhyacotriton variegatus</i> southern torrent salamander | AAAAJ01020 | None | None | G3G4 | S2S3 | SSC |
| <i>Sedum laxum ssp. eastwoodiae</i> Red Mountain stonecrop | PDCRA0A0L1 | None | None | G5T2 | S2 | 1B.2 |
| <i>Sidalcea malachroides</i> maple-leaved checkerbloom | PDMAL110E0 | None | None | G3 | S3 | 4.2 |
| <i>Sidalcea malviflora ssp. patula</i> Siskiyou checkerbloom | PDMAL110F9 | None | None | G5T2 | S2 | 1B.2 |
| <i>Silene campanulata ssp. 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>Tracyina rostrata</i> beaked tracyina | PDAST9D010 | None | None | G2 | S2 | 1B.2 |
| <i>Upland Douglas Fir Forest</i> 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 |
| <i>Viburnum ellipticum</i> oval-leaved viburnum | PDCPR07080 | None | None | G4G5 | S3? | 2B.3 |

Record Count: 51