

Introduction:

Rural Human Services will implement the Rowdy Creek Instream Habitat Enhancement Project: Reach IV. The purpose of the project is to improve spawning habitat and rearing habitat for salmonids through pool retention, pool development and increased habitat complexity. This will be accomplished through installing 78 or more logs within 16 to 18 large woody debris structures along 1135 feet of Rowdy Creek. In addition, 500 native conifer trees will be planted to provide for future large wood recruitment.

The project is necessary because Rowdy Creek continues to transport large amounts of gravel resulting in loss of salmonid habitat. Specifically pool depth, pool complexity, and in-channel large woody debris is limiting to salmonids. The objective of this project is to continue the short-term plan to increase large wood by implementing large wood structures along a reach of Rowdy Creek where pool development is occurring and cover complexity is limited. Planting trees will implement the long term plan to increase large woody debris recruitment. Woody cover provides rearing fry with protection from predation, rest from water velocity, and divides territorial units to reduce density dependent competition.

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 will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Parts VII and XI (Flosi et al 1998 and 2002).

Objective(s):

The goals of this project are to improve spawning habitat and rearing habitat for salmonids through pool retention, pool development, and increased habitat complexity in Rowdy Creek. An additional goal is to provide for future large wood recruitment in Rowdy Creek. These goals will be achieved by installing large woody debris structures in the creek and planting native conifer trees along the riparian zone.

Project Description:

Location: The Grantee will conduct work along a section of Rowdy Creek. The locations of the project boundaries are approximately 41.93615100 ° north latitude, 124.10558000° west longitude at the downstream end; and 41.93922400 ° north latitude, 124.09927800° west longitude at the upstream end.

Project Set Up: The project coordinator will conduct and oversee project tasks such as permitting, pre-project inspections, coordinating with landowners, subcontractors, and heavy equipment operators, manage project materials, plan exact structure locations, purchase materials, arrange for equipment decontamination, and provide education for CCC work crews.

The natural resources technician will provide support for log and boulder delivery, material staging activities, final site design, final photo documentation, and CCC support in anchoring placed structures.

The CCC will anchor the large woody debris structures and plant riparian trees. Qualified heavy equipment operators will be subcontracted to transport and stage materials and install the large woody debris and boulder structures in the creek. The logging subcontractor will log the whole tree materials and transport them to staging areas.

Materials: Materials that will be in this project include 500 conifer trees, 60 boulders, 28 whole tree materials, 10 straw bales, 2 chain saws, 2 heavy equipment hazmat supplies, 2 heavy equipment decontamination kits, and 2 safety kits.

Tasks: Habitat improvements will be accomplished by installing 78 or more logs within instream habitat structures at 16-18 sites on 1135 feet of stream. Additionally, 500 native conifer trees will be planted in the riparian zone. Tasks will consist of the following:

- Update landowner access permit to conduct work.
- The Grantee will finalize structure design and placement by field consultation between the grantee and the CDFW Grant Manager. Submit 1600 stream alteration permit and coordinate botanical and archeological field review.
- Import logs with root wads intact when possible to staging sites along the creek.
- Import 56 to 60 boulders for use as anchor points for placed LWD.
- Purchase personnel protective equipment.
- Conduct budgeting and tracking budget expenditures, developing and submitting invoices to funding agency.
- Use an excavator to place the logs and boulders near the stream then CCC hand crews will place the logs in the predetermined locations within the project reach.
- Hand crews will anchor the logs to the boulders using one inch threaded rebar, ¾ inch cable and polyester resin adhesive as needed.
- Mulching of disturbed surfaces will occur to maximize erosion control.
- Plant 500 mixed conifer trees to enhance the riparian zone.
- Final reporting preparation and submission.

Deliverables: Photo documentation of the project sites and a final report prepared for CDFW. Placement of a 16-18 instream structures made of logs and boulders. Planting of 500 conifers within the project reaches. Submission of final report containing required detail contained in agreement.

Timelines:

June 1, 2016 to October 30, 2016 and/or June 1, 2017 to October 31, 2017 – Project planning and implementation

December 15, 2016 to March 15, 2017 and/or December 15, 2017 to March 2018 – Conifer planting

November 2016 to March 2018 – Final project documentation and reporting

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 insure the best chance of survival of the seedlings.

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Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible Species within the High Divide Quad and Surrounding Quads for: Rowdy Creek Instream Habitat Enhancement Project Reach IV. T18N, R01E, S19, High Divide, Del Norte County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 Butte County morning-glory <i>Calystegia atriplicifolia ssp. buttensis</i>	PDCON04012			G5T3	S3	4.2
2 Chace juga <i>Juga chacei</i>	IMGASK4180			G1	S1	
3 Coast Range lomatium <i>Lomatium martindalei</i>	PDAPI1B140			G5	S3	2B.3
4 Coastal Brackish Marsh	CTT52200CA			G2	S2.1	
5 Coastal and Valley Freshwater Marsh	CTT52410CA			G3	S2.1	
6 Darlingtonia Seep	CTT51120CA			G4	S3.2	
7 Del Norte pyrrocoma <i>Pyrrocoma racemosa var. congesta</i>	PDASTDT0F4			G5T4	S2	2B.3
8 Del Norte salamander <i>Plethodon elongatus</i>	AAAAD12050			G4	S3	SC
9 Fort Dick limnephilus caddisfly <i>Limnephilus atercus</i>	IITRI15020			G3G4	S1	
10 Gasquet rose <i>Rosa gymnocarpa var. serpentina</i>	PDROS1J1V1			G5T3T4	S2	1B.3
11 Greenland cochlearia <i>Cochlearia groenlandica</i>	PDBRA0S020			G4?	S2	2B.3
12 Henderson's fawn lily <i>Erythronium hendersonii</i>	PMLIL0U070			G4	S2	2B.3
13 Howell's fawn lily <i>Erythronium howellii</i>	PMLIL0U080			G3G4	S2	1B.3
14 Howell's jewelflower <i>Streptanthus howellii</i>	PDBRA2G0N0			G2G3	S2	1B.2
15 Howell's sandwort <i>Minuartia howellii</i>	PDCAR0G0F0			G4	S3	1B.3
16 Humboldt marten <i>Martes caurina humboldtensis</i>	AMAJF01012			G5T1	S1	SC
17 Koehler's rockcress <i>Boechera koehleri</i>	PDBRA060Z0			G3	S2	1B.3
18 Langsdorf's violet <i>Viola langsdorffii</i>	PDVIO04100			G4	S1	2B.1
19 Lyngbye's sedge <i>Carex lyngbyei</i>	PMCYP037Y0			G5	S2	2B.2
20 Mcdonald's rockcress <i>Arabis mcdonaldiana</i>	PDBRA06150	Endangered	Endangered	G3	S3	1B.1
21 Mendocino gentian <i>Gentiana setigera</i>	PDGEN060S0			G2	S1	1B.2
22 Methuselah's beard lichen <i>Usnea longissima</i>	NLLEC5P420			G4	S4	4.2
23 Northern Coastal Salt Marsh	CTT52110CA			G3	S3.2	
24 Nuttall's saxifrage <i>Cascadia nuttallii</i>	PDSAX0U160			G4?	S1	2B.1

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25 Oregon coast paintbrush <i>Castilleja litoralis</i>	PDSCR0D012			G4G5T4	S3	2B.2
26 Oregon goldthread <i>Coptis laciniata</i>	PDRAN0A020			G4	S3	4.2
27 Oregon polemonium <i>Polemonium carneum</i>	PDPLM0E050			G3G4	S2	2B.2
28 Oregon silverspot butterfly <i>Speyeria zerene hippolyta</i>	IILEPJ6087	Threatened		G5T1	S1	
29 Pacific gilia <i>Gilia capitata ssp. pacifica</i>	PDPLM040B6			G5T3T4	S2	1B.2
30 Pacific tailed frog <i>Ascaphus truei</i>	AAABA01010			G4	S3S4	SC
31 Sanford's arrowhead <i>Sagittaria sanfordii</i>	PMALI040Q0			G3	S3	1B.2
32 Siskiyou bells <i>Prosartes parvifolia</i>	PMLIL0R014			G2?	S2	1B.2
33 Siskiyou checkerbloom <i>Sidalcea malviflora ssp. patula</i>	PDMAL110F9			G5T2	S2	1B.2
34 Siskiyou paintbrush <i>Castilleja elata</i>	PDSCR0D213			G3	S2S3	2B.2
35 Steller (=northern) sea-lion <i>Eumetopias jubatus</i>	AMAJC03010	Delisted		G3	S2	
36 Thurber's reed grass <i>Calamagrostis crassiglumis</i>	PMPOA17070			G3Q	S2?	2B.1
37 Tracy's romanzoffia <i>Romanzoffia tracyi</i>	PDHYD0E030			G4	S2	2B.3
38 Waldo rockcress <i>Arabis aculeolata</i>	PDBRA06010			G4	S2	2B.2
39 Waldo wild buckwheat <i>Eriogonum pendulum</i>	PDPGN084Q0			G4	S3	2B.2
40 Wolf's evening-primrose <i>Oenothera wolfii</i>	PDONA0C1K0			G2	S1	1B.1
41 Yontocket satyr <i>Coenonympha tullia yontockett</i>	IILEPN6035			G5T1T2	S1	
42 Yuma myotis <i>Myotis yumanensis</i>	AMACC01020			G5	S4	
43 alpine marsh violet <i>Viola palustris</i>	PDVIO041G0			G5	S1S2	2B.2
44 angel's hair lichen <i>Ramalina thrausta</i>	NLLEC3S340			G5	S2?	2B.1
45 arctic starflower <i>Lysimachia europaea</i>	PDPRI0A030			G5	S1	2B.2
46 bald eagle <i>Haliaeetus leucocephalus</i>	ABNKC10010	Delisted	Endangered	G5	S2	
47 bank swallow <i>Riparia riparia</i>	ABPAU08010		Threatened	G5	S2	

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48 black crowberry <i>Empetrum nigrum</i>	PDEMP03020			G5	S1?	2B.2
49 black swift <i>Cypseloides niger</i>	ABNUA01010			G4	S2	SC
50 bluff wallflower <i>Erysimum concinnum</i>	PDBRA160E3			G3	S3	1B.2
51 cackling (=Aleutian Canada) goose <i>Branta hutchinsii leucopareia</i>	ABNJB05035	Delisted		G5T3	S2	
52 coast cutthroat trout <i>Oncorhynchus clarkii clarkii</i>	AFCHA0208A			G4T4	S3	SC
53 coast fawn lily <i>Erythronium revolutum</i>	PMLIL0U0F0			G4	S3	2B.2
54 coast sidalcea <i>Sidalcea oregana ssp. eximia</i>	PDMAL110K9			G5T1	S1	1B.2
55 dark-eyed gilia <i>Gilia millefoliata</i>	PDPLM04130			G2	S2	1B.2
56 double-crested cormorant <i>Phalacrocorax auritus</i>	ABNFD01020			G5	S4	
57 eulachon <i>Thaleichthys pacificus</i>	AFCHB04010	Threatened		G5	S3	
58 fibrous pondweed <i>Potamogeton foliosus ssp. fibrillosus</i>	PMPOT030B1			G5T2T4	S1S2	2B.3
59 fisher - West Coast DPS <i>Pekania pennanti</i>	AMAJF01021	Proposed Threatened	unknown code...	G5T2T3Q	S2S3	SC
60 foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050			G3	S3	SC
61 fork-tailed storm-petrel <i>Oceanodroma furcata</i>	ABNDC04010			G5	S1	SC
62 ghost-pipe <i>Monotropa uniflora</i>	PDMON03030			G5	S2	2B.2
63 giant fawn lily <i>Erythronium oregonum</i>	PMLIL0U0C0			G5	S2	2B.2
64 great burnet <i>Sanguisorba officinalis</i>	PDROS1L060			G5?	S2	2B.2
65 great egret <i>Ardea alba</i>	ABNGA04040			G5	S4	
66 green yellow sedge <i>Carex viridula ssp. viridula</i>	PMCYP03EM5			G5T5	S2	2B.3
67 horned butterwort <i>Pinguicula macroceras</i>	PDLNT01040			G4	S2	2B.2
68 lagoon sedge <i>Carex lenticularis var. limnophila</i>	PMCYP037A7			G5T5	S1	2B.2
69 leafy-stemmed mitrewort <i>Mitellastra caulescens</i>	PDSAX0N020			G5	S4	4.2

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70 little-leaved huckleberry <i>Vaccinium scoparium</i>	PDERI180Y0			G5	S3	2B.2
71 maidenhair spleenwort <i>Asplenium trichomanes ssp. trichomanes</i>	PPASP021K2			G5T5	S1	2B.3
72 maple-leaved checkerbloom <i>Sidalcea malachroides</i>	PDMAL110E0			G3	S3	4.2
73 mardon skipper <i>Polites mardon</i>	IILEP66030			G2G3	S1	
74 marsh pea <i>Lathyrus palustris</i>	PDFAB250P0			G5	S2	2B.2
75 minute pocket moss <i>Fissidens pauperculus</i>	NBMUS2W0U0			G3?	S2	1B.2
76 nodding vanilla-grass <i>Anthoxanthum nitens ssp. nitens</i>	PMPOA0F041			G5	S2	2B.3
77 northern meadow sedge <i>Carex praticola</i>	PMCYP03B20			G5	S2	2B.2
78 northern red-legged frog <i>Rana aurora</i>	AAABH01021			G4	S2?	SC
79 obscure bumble bee <i>Bombus caliginosus</i>	IHYM24380			G4?	S1S2	
80 opposite-leaved lewisia <i>Lewisia oppositifolia</i>	PDPOR040B0			G4	S2	2B.2
81 pink sand-verbena <i>Abronia umbellata var. breviflora</i>	PDNYC010N4			G4G5T2	S1	1B.1
82 rhinoceros auklet <i>Cerorhinca monocerata</i>	ABNNN11010			G5	S3	
83 rocky coast Pacific sideband <i>Monadenia fidelis pronotis</i>	IMGASC7032			G4G5T1	S1	
84 sand dune phacelia <i>Phacelia argentea</i>	PDHYD0C070			G2	S1	1B.1
85 seacoast ragwort <i>Packera bolanderi var. bolanderi</i>	PDAST8H0H1			G4T4	S2S3	2B.2
86 seaside pea <i>Lathyrus japonicus</i>	PDFAB250C0			G5	S2	2B.1
87 serpentine catchfly <i>Silene serpentinicola</i>	PDCAR0U2B0			G2	S2	1B.2
88 serpentine sedge <i>Carex serpenticola</i>	PMCYP03KM0			G4	S3	2B.3
89 short-leaved evax <i>Hesperevax sparsiflora var. brevifolia</i>	PDASTE5011			G4T3	S2	1B.2
90 silver-haired bat <i>Lasionycteris noctivagans</i>	AMACC02010			G5	S3S4	
91 small groundcone <i>Kopsiopsis hookeri</i>	PDORO01010			G4G5	S1S2	2B.3
92 snowy egret <i>Egretta thula</i>	ABNGA06030			G5	S4	

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93 southern torrent salamander <i>Rhyacotriton variegatus</i>	AAAAJ01020			G3G4	S2S3	SC
94 spiral-spored gilded-head pin lichen <i>Calicium adspersum</i>	NLT0005640			G3G4	S1?	2B.2
95 summer-run steelhead trout <i>Oncorhynchus mykiss irideus</i>	AFCHA0213B			G5T4Q	S2	SC
96 tidewater goby <i>Eucyclogobius newberryi</i>	AFCQN04010	Endangered		G3	S3	SC
97 tufted puffin <i>Fratercula cirrhata</i>	ABNNN12010			G5	S1S2	SC
98 twisted horsehair lichen <i>Bryoria spiralifera</i>	NLTEST5460			G3	S1S2	1B.1
99 western bumble bee <i>Bombus occidentalis</i>	IIHYM24250			G2G3	S1	
100 western lily <i>Lilium occidentale</i>	PMLIL1A0G0	Endangered	Endangered	G1	S1	1B.1
101 western pearlshell <i>Margaritifera falcata</i>	IMBIV27020			G4G5	S1S2	
102 western pond turtle <i>Emys marmorata</i>	ARAAD02030			G3G4	S3	SC
103 western ragwort <i>Packera hesperia</i>	PDAST8H1L0			G3	S1	2B.2
104 western snowy plover <i>Charadrius alexandrinus nivosus</i>	ABNNB03031	Threatened		G3T3	S2	SC
105 western white bog violet <i>Viola primulifolia ssp. occidentalis</i>	PDVIO040Y2			G5T2	S2	1B.2
106 white-flowered rein orchid <i>Piperia candida</i>	PMORC1X050			G3	S3	1B.2
107 white-tailed kite <i>Elanus leucurus</i>	ABNKC06010			G5	S3S4	
108 willow flycatcher <i>Empidonax traillii</i>	ABPAE33040		Endangered	G5	S1S2	
109 woodnymph <i>Moneses uniflora</i>	PDPYR02010			G5	S3	2B.2
110 yellow-tubered toothwort <i>Cardamine nuttallii var. gemmata</i>	PDBRA0K0R3			G5T3Q	S2	3.3

Rowdy Creek Instream Habitat Enhancement Project: Reach IV
Project Location Map
T18N, R01E, S19, High Divide Quad, Del Norte County

