Coulborn and Sebbas Creeks Salmonid Habitat Assessment and Enhancement Planning and Design Project

2020

Introduction:

The Mattole Salmon Group (Permittee) will develop 100% constructible, engineered and non-engineered, plans and designs for wood loading in 6.2-miles of anadromous reaches of the Coulborn Creek and Sebbas Creek sub-watersheds. Both streams are coho salmon and steelhead trout bearing tributaries of the upper Indian Creek Watershed, one of the most prioritized watersheds in the South Fork Eel River Watershed. The plans will result in improved pool habitat and cover, rearing and spawning habitat, channel structure, hydraulic diversity, floodplain inundation, and restored fluvial geomorphic processes.

The Permittee shall not proceed with on the ground implementation until all necessary permits, consultations, and Notice to Proceed are secured. All habitat improvements will follow techniques in the *California Stream Habitat Restoration Manual* (Vol. I, Section VII https://www.wildlife.ca.gov/Grants/FRGP/Guidance).

Objective(s):

This project will result in 100% design plans ready to implement along 6.2-miles of fish bearing stream in Coulborn and Sebbas Creeks. The end goal includes 100% designs for at least 190 constructed log jam features and four engineered designs utilizing Large Woody Material (LWM) in the four highest priority reaches. Development of 35%, 65%, and 100% engineered design plans will be based on hydraulic, biologic, and geomorphic characterization using a project team and technical advisory committee.

Project Description:

Location:

The project is located on Lost Coast Forestlands, LLC (LCF) property in the Indian Creek watershed located west of Piercy in northern Mendocino County. Both Sebbas Creek and Coulborn Creek are located roughly 7.7-miles upstream of the Indian Creek confluence with the South Fork Eel River. The center point of the project assessment area is 39.9745º north latitude, -123.8920º west longitude and is located on the Briceland and Bear Harbor 7.5 Minute U.S. Geological Survey (USGS) Quadrangle maps.

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Project Set Up:

The project will be completed by a multidisciplinary team consisting of the Permittee, Pacific Watershed Associates, Inc (PWA), and the California Conservation Corps (CCC).

The Permittee will process invoices and vendor payments, grant tracking, reporting, perform periodic reviews of project progress, assist PWA in characterization and designs, conduct contracting oversight and administration, invoicing, scheduling, implementation oversight, landowner communications, selecting TAC members, coordinating TAC meetings, and agency and landowner communications. Upon final execution of the grant, and prior to receiving a final Notice to Proceed, Permittee will deliver the landowner access agreements and subcontracts. Elements of this task will continue throughout the life of the project.

Subcontractor PWA will lead assessments characterizing historic disturbances, biologic habitat and species utilization, geomorphology, riparian composition, hydrologic modeling, geomorphic mapping, risk analysis and examination of subsurface materials. Detailed topographic surveys will be conducted in at least four selected streams. Bankfull widths, hydraulic pinch points and a longitudinal profile through the project site will be surveyed to help evaluate and develop Digital Elevation Models (DEMs) and feature-specific design sketches. PWA will employ subsurface investigations and materials analysis to examine the depth to bedrock and to characterize the types and consistency of materials overlying the bedrock in the highest priority stream reaches. A hand auger will be utilized to pull core samples from the adjacent floodplain to help evaluate how the channel is carved into the underlying bedrock and to identify the current depth to groundwater.

Subcontractor CCC will brush and tree limbs to increase visibility for the topographic surveys. Exploratory test pits will be hand dug by the CCC and samples from each pit will be taken to a soils lab to determine soils texture, consistency, and composition analysis.

Materials:

Permittee's and PWA's office supplies include, but are not limited to, waterproof paper, printer toner, writing implements, Mylar overlay, plastic film laminate, laminator, large format maps.

PWA's field supplies include notebooks, maps, flagging, measuring tapes, tablets (rental), GPS devices, cameras, work trucks, first aid kits, cell booster (for communications remote in no-cell areas), waders, total station, hip chain, stadia rod, kick-net, (personal waders/boots/dry suit/mask and snorkel), laser distance measurer, brushing tools, shovels, hand auger, current meter, pressure transducers (rental), ambient pressure gage (rental), staff plates, construction materials for stream gaging stations.

CCC field supplies will include clippers, loppers, and shovels.

Tasks:

Task 1. Topographic Surveys and Water Level Monitoring:
PWA will conduct topographic surveys with a total station in at least four selected, highest priority stream reaches of Coulborn and Sebbas Creeks (1-mile total) using a total station. These surveys will characterize the topography and pool bathymetry of the channel, channel thalweg profile, riffle crests, channel banks and edges, high water marks, and floodplains in the high priority reaches. Permanent benchmarks will be established outside of any potential disturbance areas. Coverage will focus on thalweg profile and cross sections to allow for detailed hydraulic modeling. Results will be integrated with existing LiDAR data to produce a topographic base map and final digital terrain model (DTM) will be used for hydraulic modeling, geomorphic mapping, and feasibility analysis of proposed LWM structures. Brush and tree limbs that limit visibility for the topographic surveys will be brushed and trimmed by the California Conservation Corps. (CCC) stream habitat restoration group before the surveys are conducted.

Task 2. Hydraulic Modeling:
PWA will conduct hydraulic modeling within the four selected, highest priority stream reaches of Coulborn and Sebbas Creeks and will be based on stream flow measurements and modeled runoff from the most proximal relevant stream and rainfall gauges (USGS StreamStats). PWA will develop a steady-state, 2-D, HEC-RAS model to simulate water surface elevations, stream flow velocities, and shear stresses under several discharge conditions. The model will be used to estimate forces that will act on proposed LWM designs and evaluate predicted water surface elevations and floodplain inundation frequencies after construction of any proposed LWM features in the selected stream reaches. The hydraulic model will be calibrated by installing a staff plate, pressure transducer and ambient air pressure/temperature gauge at each of the selected stream reaches. The empirical data from the transducer will be used to verify and adjust the modeling results.

Task 3. Soil Analysis:
This task will be conducted to characterize the existing fluvial geomorphic/biologic conditions which ultimately provide the project team with the information needed to determine the location and construction specifications of the specific feature designs. This information will be used to quantitatively document existing conditions within the project area and focuses on field mapping, geologic and geomorphic evaluations, basemap preparations, and analysis needed to understand the project reach and anticipated response to placement of nonengineered and engineered features. Work will also include identification of site features that may affect risk associated with engineered installations. PWA will conduct subsurface investigations and materials analysis to examine the depth to bedrock and characterize the types and consistency of materials overlying the bedrock in the highest priority stream reaches. Using the CCC, exploratory test pits will be hand dug in at least four selected and prioritized stream reaches in Coulborn and Sebbas Creeks and samples from each pit will be assessed for soils texture, consistency, and composition analysis. PWA will use a hand auger to investigate and sample floodplain areas in order characterize and evaluate engineering properties of bed and bank materials for the application of bank-supported design components.

Deliverables:

Task 1. Topographic Surveys and Water Level Monitoring:
Integrated LiDAR and total station digital terrain model that can be used for 2-D hydrologic modeling, field mapping, hydrologic rating curve, and hydrograph, and will inform possible designs.

Task 2. Hydraulic Modeling:
HEC-RAS output maps of the selected project reach showing modeling results under several discharge conditions and structure designs, including existing conditions. Summary of hydrologic conditions within the selected project reaches.

Task 3. Soil Analysis:
Depth of underlying bedrock in relation to channel alignment, consistency of subsurface materials in lab report, depth to groundwater, mapped locations, and elevations.

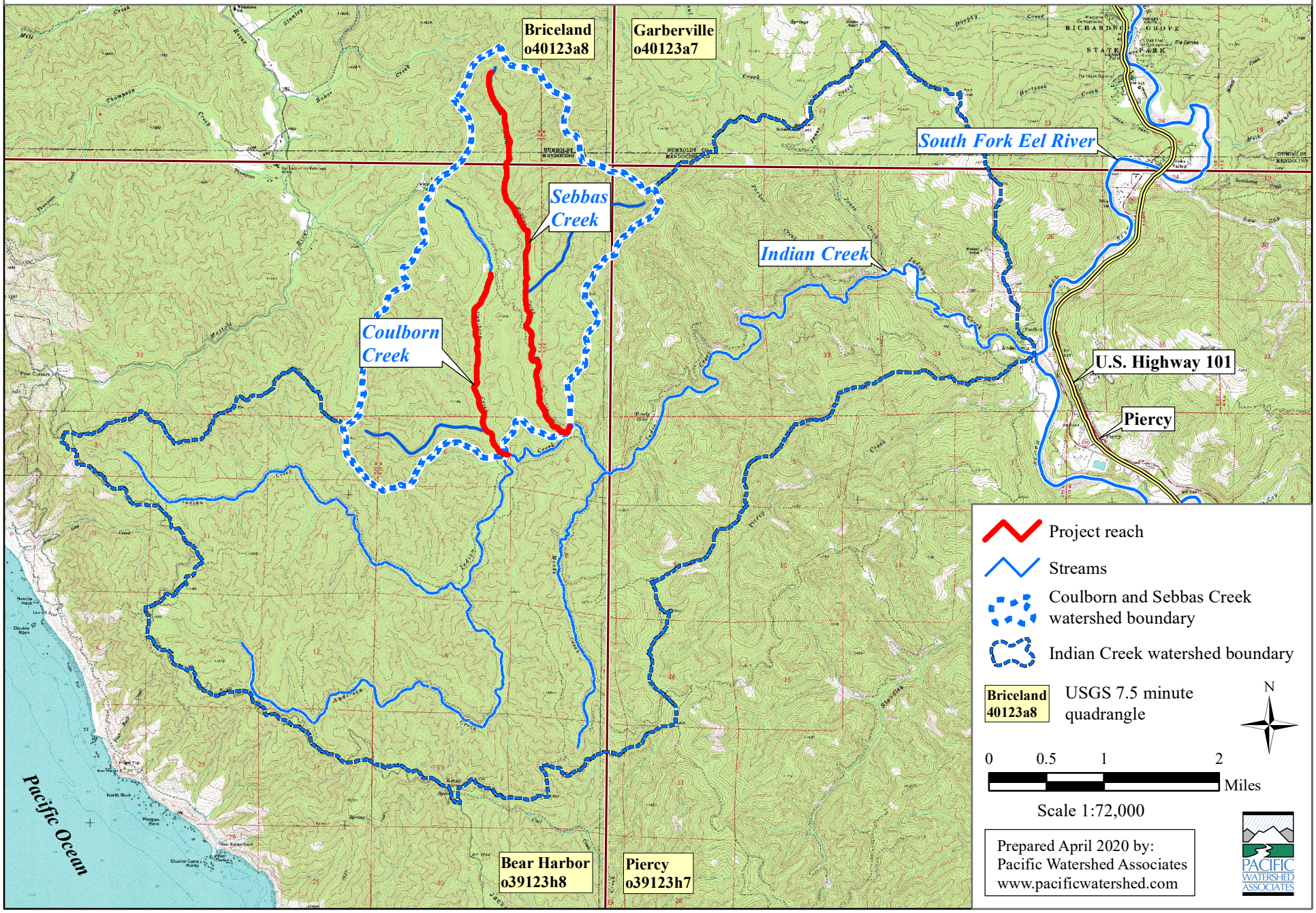
Timelines:

Task 1. Topographic Surveys and Water Level Monitoring. September 1, 2021 to May 31, 2022.

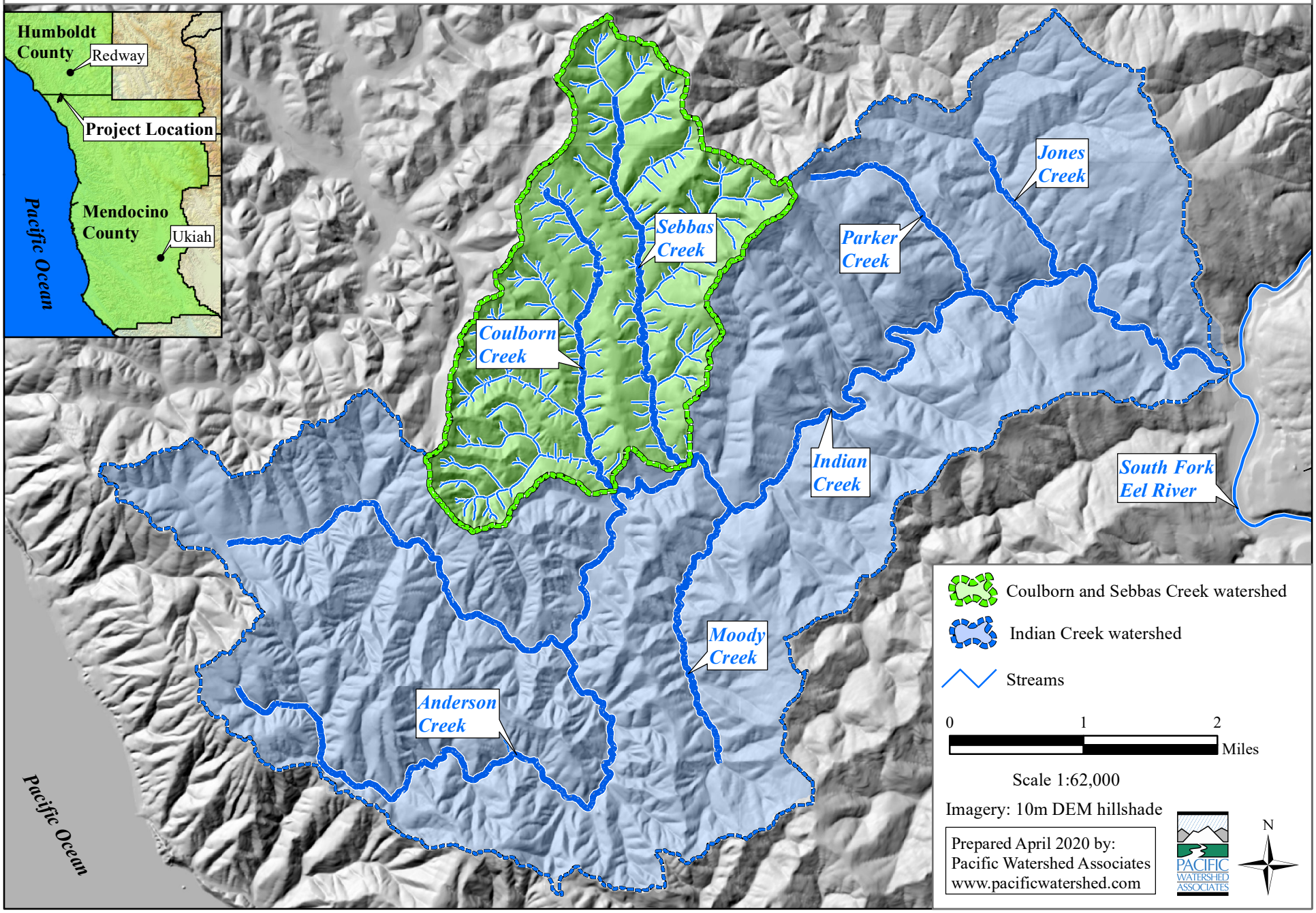
Task 2. Hydraulic Modeling. June 1, 2022 to October 15, 2022.

Task 3. Soil Analysis: June 1, 2021 to June 1, 2022.

Map 1. Project Location Topographic Map, Coulborn and Sebbas Creeks Wood Loading Design Project, Mendocino County, California. (Briceland and Bear Harbor USGS 7.5' quadrangles). Grantee: Mattole Salmon Group



Map 2. Watershed Map for Coulborn and Sebbas Creeks Wood Loading Design Project, Mendocino County, California.
Grantee: Mattole Salmon Group



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Bear Harbor (3912388) OR Mistake Point (3912378) OR Shelter Cove (4012411) OR Briceland (4012318) OR Garberville (4012317) OR Piercy (3912387) OR Hales Grove (3912377))

Possible species within the Bear Harbor and surrounding quads for 1723435 - Coulborn and Sebbas Creeks Salmonid Habitat Assessment and Enhancement Planning and Design Project, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
Calamagrostis foliosa leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
Carex arcta northern clustered sedge	PMCYP030X0	None	None	G5	S1	2B.2
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eumetopias jubatus Steller (=northern) sea-lion	AMAJC03010	Delisted	None	G3	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Hesperocyparis pygmaea pygmy cypress	PGCUP04032	None	None	G1	S1	1B.2
Horkelia marinensis Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lathyrus palustris marsh pea	PDFAB250P0	None	None	G5	S2	2B.2
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	Candidate Endangered	G5T4Q	S2	SSC
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti fisher - West Coast DPS	AMAJF01021	Endangered	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Thermopsis robusta	PDFAB3Z0D0	None	None	G2	S2	1B.2
robust false lupine						
Usnea longissima	NLLEC5P420	None	None	G4	S4	4.2
Methuselah's beard lichen						

Record Count: 42