California Department of Fish and Wildlife
Fisheries Restoration Grant Program
Restoration Project Case Study

Q2010526 Bear Gulch Coho Stream Habitat Enhancement Project

Project Objective(s) – The project objective was to improve instream habitat for salmonids by installing 33 large wood (LW) structures using 88 pieces of LW within 3,315 feet (0.63 miles) of Bear Gulch. The LW features were intended to improve geomorphic function by capturing spawning gravels, improving winter and summer instream refugia, creating off-channel habitat and improving access to floodplains.

Project Location(s) – Bear Gulch; tributary to the South Fork Noyo River; tributary to the Noyo River; approximately 8 miles (mi) southeast of the town of Fort Bragg; in Mendocino County.

Project Description – Instream work was completed July 6, 2022, through September 6, 2022. During construction, project feature designs were modified with approval from the California Department of Fish and Wildlife (CDFW) Grant Manager. Original plans proposed 35 LW features and 33 were built. Four features were deleted from the project reach, three due to a lack of quality onsite woody material, and one due to water quality concerns at a pool associated with the feature that was holding juvenile salmonids. Two features were added to the project reach, both near features that were deleted from the project reach. The logs intended for the deleted features were instead installed at the added features and in other locations within the project reach. Various CDFW approved anchoring techniques were used to hold multiple logs together to form complex structures, including wedging logs into existing live mature trees on riparian banks and anchoring logs to live trees with hardware.

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Photo Credit: Kaydee Boozel, Fishery Biologist (Pacific States Marine Fisheries Commission - PSMFC)

Figure 1. Bear Gulch prior to addition of LW showing low diversity habitat.
Pre-treatment photo date: 3/31/2021

Photo Credit: Monica Gosselin-Boeman, Fisheries technician (PSMFC)

Figure 2. LW placed in the channel of Bear Gulch redirected flow to scour a pool, provide cover and improve salmonid habitat. Depth at this pool increased by 1.15 feet.
Post-treatment photo date: 7/9/2025

Project Monitoring

Pre-Treatment	Implementation	Post-Treatment
Date(s): 3/31/2021-4/1/2021	Date(s): 7/28/2022, 10/3/2022, 10/27/2022	Date(s): 7/8-7/9/2025

Post-Treatment Project Rating and Summary

Post-treatment monitoring was completed on July 8th and 9th, 2025. Many of the LW features were modified during implementation. The modifications to proposed feature designs included repositioning and adding additional LW. Features that were deleted or added did not receive post-treatment monitoring and are not included in the post-treatment summary.

Most features successfully scoured pools and added habitat complexity, but the channel remained straight, narrow and incised. Pool frequency within the treated reach increased from 14.3 pools/mi to 41.3 pools/mi. Of the 31 pools monitored, 25 (81%) increased in depth. The mean change in pool depth across all monitored pools was +0.70 feet (ft). Percent shelter cover within pool habitats increased at every feature by a mean of 29.4%.

Biological validation monitoring was conducted via snorkel surveys during pre- and post-treatment surveys. The same five pools were snorkeled on each survey. No salmonids were observed in 2021 at pre-treatment monitoring. Post-treatment validation monitoring was completed on July 9th, 2025. Five pools were surveyed with an overall mean surface area of 221 ft^2 and a mean depth of 1.7 ft. Eighty-nine Coho Salmon were observed throughout the reach, with a mean density of 8.78 individuals per 100 ft^2.

Project Funding & Cost

- Department of Fish and Wildlife Fisheries Restoration Grant Program $192,117.53
- California Conservation Corps $406,303
- Jackson Demonstration State Forest $50,820
- **Total Project Cost $649,240.53**

Report prepared by Kori Roberts and Carter Perez Adamson, Fishery Biologists at PSMFC, 2/9/2026. For permission to use with proper citation, contact CDFW Monitoring and Evaluation of Salmonid Habitat Restoration –
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