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

## P1110320 Lindsay Creek Bridge Restoration Project

**Project Objective(s)** – The primary goal of this project was remove a partial and temporal barrier from Lindsay Creek in order to provide unimpeded fish passage to approximately 20 miles of fish habitat for Chinook salmon, coho salmon and steelhead trout and provide cover and refuge during high and low flow conditions by installing four large woody debris (LWD) structures in the treatment reach.

**Project Location(s)** – Lindsay Creek; tributary to the Mad River; near the town of Blue Lake; in Humboldt County

**Project Description** – Gunite false work and associated rock slope protection (RSP) materials had dislodged from bridge abutments and had fallen into the stream channel, constricting flows and creating two high gradient, cascade riffles which made fish passage for juvenile and adult salmonids difficult during low and high flow conditions. The gunite and small RSP material was excavated from the channel and larger RSP material was placed along the banks to protect the abutments during high flows. In addition to this work, four LWD structures were anchored within the channel to provide cover and high flow refugia. Stream banks and all disturbed areas were seeded and mulched, and 85 native saplings along with willow sprigs were planted help restore riparian habitat.

*Photo Credit: A. Garcia*

**Figure 1.** Undermined gunite false work and RSP material along right bank and in channel – Pre-treatment condition. 7/23/2013

*Photo Credit: N. Campise*

**Figure 2.** Newly placed RSP material and LWD feature placed along right bank – Post-treatment condition, 10/21/2015

Report prepared by Trevor Lucas, Fish Biologist, 1/21/2016. Additional information can be obtained from CDFW Monitoring and Evaluation of Salmonid Habitat Restoration (MESHR) -- (707) 725-1068
1455 Sandy Prairie Ct, Suite J, Fortuna, CA 95540

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## Project Monitoring Dates

| Pre-treatment | Implementation | Post-treatment |
|---|---|---|
| 7/23/2013 | 9/19/2013 | 10/21/2015 |

## Post-Treatment Monitoring Summary

The gunite false work and most of the associated rock slope protection (RSP) material that had dislodged into the stream channel was successfully removed from the stream channel. This has increased the stream width and created a lower gradient channel profile through the project site. All replaced RSP material appeared to be appropriately sized and stable along both bridge abutments. No undermining or scouring of this larger rock armoring was observed. Bedload material that had accumulated upstream of the project site has started to naturally redistributed downstream from two successive winters. No partial or temporal barrier to juvenile or adult passage remains at this site. The four LWD features appear to be functioning as intended and have increased instream cover to the pool units. All anchoring hardware is intact and no shifting or loss of LWD material was observed.

All project access areas that were seeded are covered with a healthy layer of native grasses and the majority of plantings are showing adequate growth and survival considering current regional drought conditions.

Photo Credit: A.Garcia

**Figure 3.** RSP partial barrier downstream of bridge – (Pre-treatment condition, 7/23/2013)

*Photo Credit: N.Campise*

**Figure 4.** RSP removed from channel and LWD feature installed on right bank– (Post-treatment condition, 10/21/2015)

## Project Funding & Cost

- Department of Fish and Wildlife Fisheries Restoration Grant Program ..... $47,774
- Federal Bridge Maintenance Funding ..... $23,409
- Applicant ..... $4,313
- **Total Project Cost** ..... **$75,496**

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