Baker Creek Improvement Project

Monitoring Report to NOAA Fisheries

Year 1 Project Summary

April 2013

Mattole River Watershed

BLM Arcata Field Office

In partnership with: Sanctuary Forest, Mattole Salmon Group, NOAA Northwest Fisheries Science Center, U.S. Fish and Wildlife Service

Baker Creek Project Overview

- Year one implementation in late September/early October 2012

Accomplishments

- Three primary log structures installed
- One secondary log complex installed
- Off-channel/abandoned side channel connectivity restored

Pre-project. Site of lowermost grade control log. Note characterstic channel downcutting to bedrock in lower ½ of photo and near dry channel.

Post-project – Log step #1. Channel-spanning log installed to begin gradual “step-up” to target elevation to fill entrenched reach and backwater abandoned side-channel.


December 2012 – Log Step #1. Late November, early December saw the highest flows of the 2012-2013 winter. High water mark shown by arrow.

Pre-project – Site of log steps 1-3. BLM fisheries biologist AJ Donnell standing at beginning of entrenched reach proposed for treatment. Here, distance between floodplain and channel bed begins to increase.

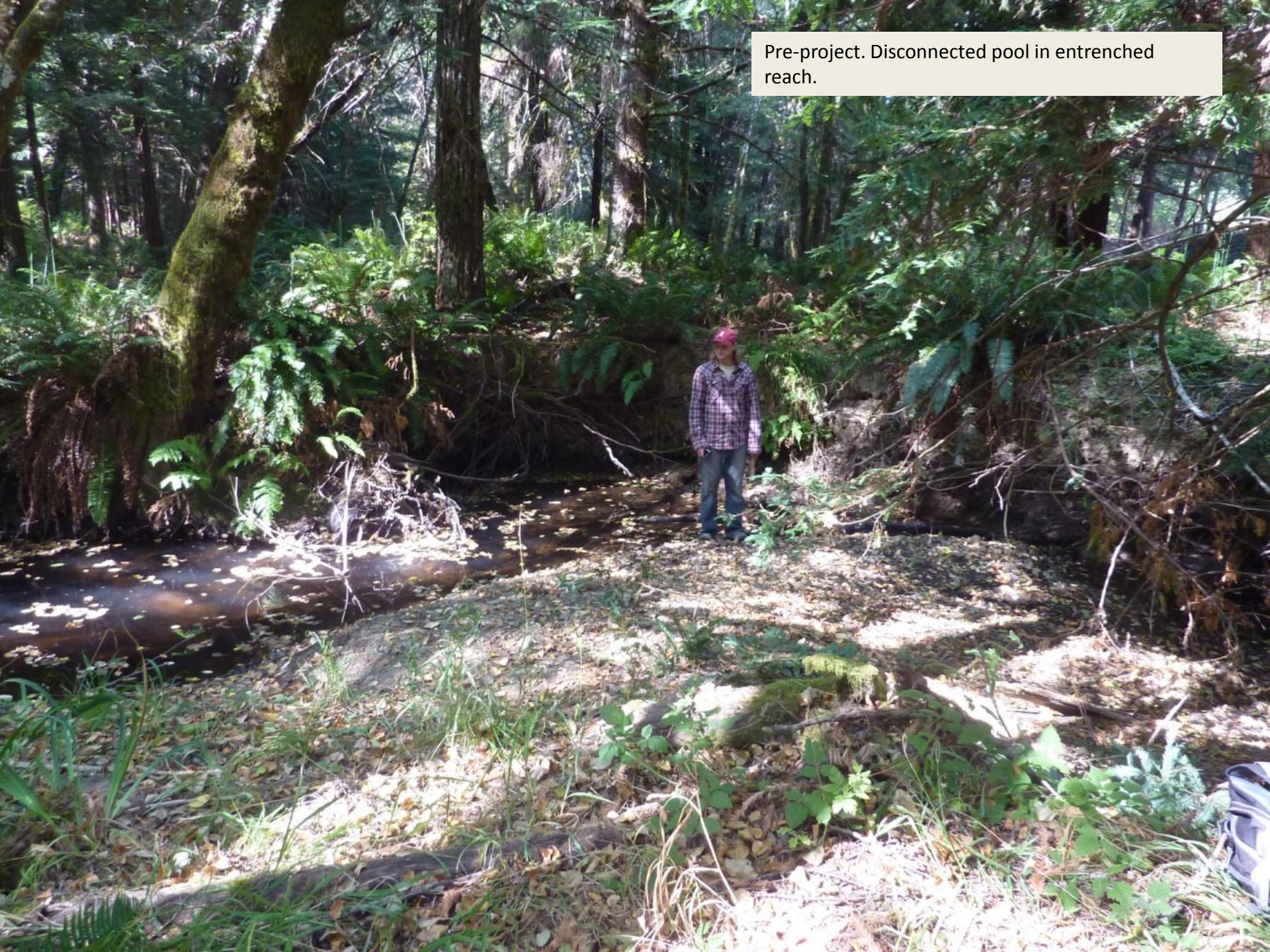
Pre-project. BLM fisheries biologist AJ Donnell standing next to disconnected pool at beginning of entrenched reach.

Implementation at step #3. Logs are trenched, anchored to boulders, backfilled and compacted. Trenches are partially filled with boulders anticipating some degree of restored floodplain flow. Logs are installed at target elevations to maintain jump heights and heights relative to the historic floodplain. The three primary grade control log structures are visible in lower photo with step #3 in foreground.

Post-project. Work began in late September with no surface flow present in Baker Creek. Disconnected pools provided marginal habitat for rearing juvenile steelhead. As the project was completed in mid-October, air temperatures had cooled and evapotranspiration had diminished such that surface flow returned, immediately filling the newly created pools despite no rainfall.

December 2012. Log steps 1-3. High water mark visible on right bank. Minor widening was noted at steps #2 and 3 though no adverse effect were noted. Scour on the RB at step #3 is barely evident here. Currently, all flow appears to be over the top of structure and “snugness” of underlying logs would suggest very limited underflow is possible.

Post-project. Log structures were sealed with various natural and imported materials to promote backwatering of pools during low flows. The effectiveness of sealing methods will be evaluated over the winter and coming summer.



Pre-project. Disconnected pool in entrenched reach.

October 2012. Implementation. Applying mulch to disturbed soil at project site. Surface flow was absent during implementation, though some subsurface water seeped into depressions.

Post-project. Despite no rain, subsurface flow allowed the pool to fill.

December 2012. This is a site for further debris addition to add complexity. An alder rootwad and excess boulders were placed instream to provide interim cover. This site will be closely monitored as work time approaches and treatments may be curtailed or restricted due to the presence of y-o-y coho salmon in the pool.

Pre-project. Abandoned side channel entrance to Baker Creek. This area was enlarged, and in combination with the downstream grade control, intended to provide off-channel habitat for juvenile salmonids.

Pre-project. BLM fisheries biologist AJ Donnell standing at mouth of side channel.

Post-project. Enlargement of side channel. Surface water present is a result of the downstream grade control. Partially visible here are two crossed logs to promote scour and connectivity of the off-channel feature.

Post-project. Logs arranged to promote scour near alcove inlet and collect additional debris during high flows. Alcove inlet constructed to remain connected at all flows. Alcove floor is graded to rear to avoid any closed depressions at lowest flows.

December 2012. Alcove inlet following late November/Early December high flows. Inlet showed no discernible loss of connectivity.

Simple two-log structure racking additional debris during December 2012. Entrance to alcove is at left. Sufficient turbulent flow was generated at log structure to maintain entrance with no discernible deposition.

Simple two-log structure, January 2013. Note portion of flow circulating into alcove entrance and maintaining entrance depth.

Alcove near peak flow, early December 2012.