

Asotin IMW Washington – Accomplishment Report

Asotin IMW Overview

Focal Species: Steelhead trout (bull trout and Chinook likely to benefit too)

Limiting factors: Riparian condition, habitat complexity, floodplain connectivity, temperature

Restoration strategy: protect/restore riparian in long-term; add LWD in short-term to promote creation of habitat complexity, interaction between channel and floodplain

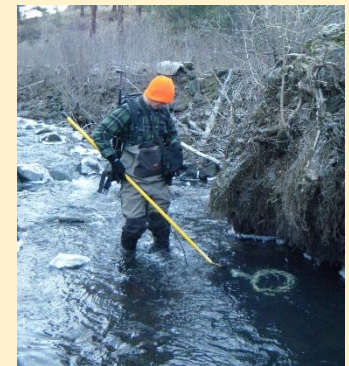
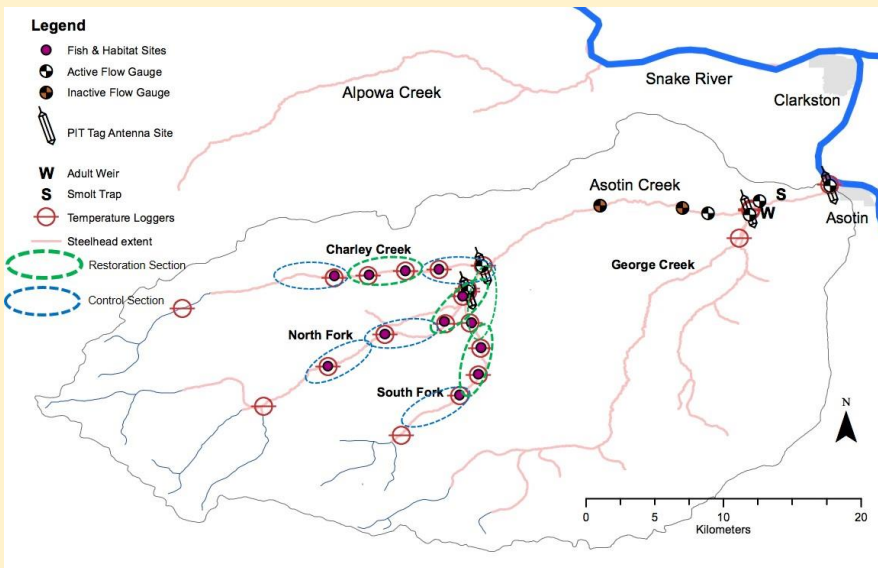


Experimental Design

Asotin IMW study includes the lower 12 km of Charley Creek, North Fork, and South Fork of Asotin Creek. Hierarchical-staircase design where one 4 km section of stream was restored each year from 2012-2014. An additional treatment was applied in 2016 to increase the area restored.

Monitoring Approach

Within each restoration and control **Section** we are PIT tagging juvenile steelhead to estimate abundance, growth, movement, survival, and smolt production. We are also monitoring fish habitat, invertebrates, discharge, and temperature across the watershed. WDFW operate fish-in fish-out monitoring for the entire Asotin mainstem.

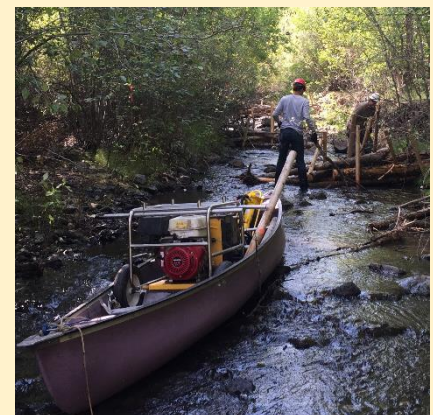


Using mobile PIT-tag surveys to estimate seasonal survival

Experimental and monitoring design. Locations of fish and habitat sample sites, PIT tag arrays, discharge and temperature sites, smolt trap and adult weir.

Restoration Approach

Hand built low cost wood structures at high density, using logs held in place with wooden fence posts driven into the streambed with a post driver. This approach was applied to protect the recovering riparian areas, reduce costs, and increase applicability to steelhead streams.



Hand building post-assisted log structures (PALS) to protect riparian

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Restoration Accomplishments

- 39% of study area restored (14/36 km)
- installed 658 LWD structures in 14 km
- 4.8 structures/100m

Riparian/Habitat/Floodplain Responses

- ~70% of riparian fenced/protected
- significant increase in LWD, pool, habitat diversity
- limited floodplain connection due to below average floods from 2012-2016

Fish Population Responses

- seasonal estimates of abundance, growth, movement, survival, production, and productivity
- 26% increase in abundance across study area



Low diversity, planebed channel pre-restoration



Planebed channel post-restoration



Habitat heterogeneity created after restoration: a) upstream bar, b) bank-attached PALS, c) eddy pool, d) scour pool, e) undercut bank, and f) riffle bar.

Future Direction

- validate estimates of smolts/spawner and NREI capacity estimates pre and post treatment section
- determine factors that cause variation in population parameters
- model carrying capacity using net rate of energy intake
- develop IMW specific life cycle model
- develop tools to extrapolate Asotin IMW results to other similar watersheds

