Idaho IMW– Accomplishment Report

Potlatch River Overview

FOCAL SPECIES
Steelhead Trout

LIMITING FACTORS
Tributary blockages and dewatered reaches in western basin, simplified habitat in eastern basin

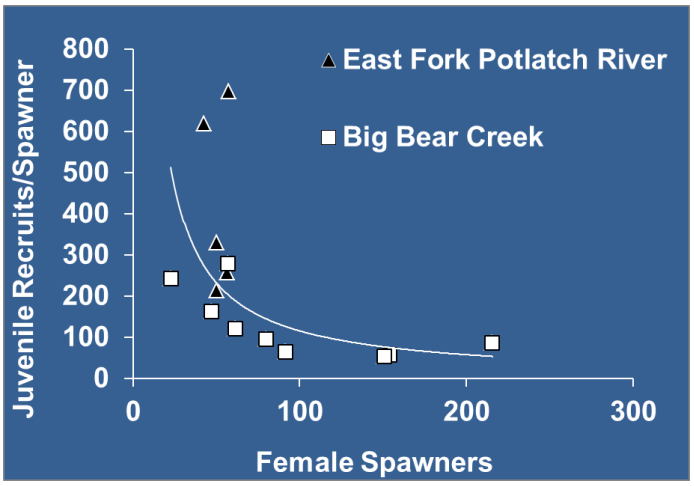
RESTORATION STRATEGY
Barrier removal and flow supplementation (west), in-stream LWD and riparian restoration (east)

RESTORATION INVENTORY
- Removed 3 barriers, opened 10 km
- Installed 78 LWD structures, 2.7 km treated
- Flow supplementation, >16 km treated
- Development of projects on private lands still in progress

MONITORING METRICS
- **Fish-In/Fish-Out:** adult and juvenile abundance, smolt/female productivity
- **Before-After-Control-Impact Design:** juvenile density, growth, and survival
- **Habitat:** novel late summer rearing habitat metric (west), LWD/pool density (east)

FUTURE DIRECTION
Habitat restoration: in western basin, restore passage to >30 km and maintain improved rearing conditions in 16 km of rearing habitat; in eastern basin, restore 8 km of stream channel and riparian habitat

Life cycle modeling: in development; initial efforts predict detectable smolt production response (>40% increase in western basin; >15% increase in eastern basin) following anticipated habitat restoration



Smolt/female productivity for Potlatch River index tributaries

ACCOMPLISHMENTS
Short-term local responses observed as projects implemented, population-level response should manifest with continued implementation and multiple Steelhead Trout generations

Habitat:
- Barrier removals expanded accessible habitat
- Water releases <1.0 cfs resulted in restored connectivity, reduced water temperatures, and increased dissolved oxygen
- LWD structures increased aquatic habitat complexity and stream hydrologic function

Fish:
- Spawning by adults in a blocked reach after barrier removal
- Use of in-stream structures by juvenile Steelhead Trout
- Pre-treatment smolt/female productivity series
- Published study on resident and anadromous *O. mykiss* interactions (TAFS, Vol. 145, 2016)
- Juvenile emigration life history differences between eastern and western basins

Management:
- *NOAA Recovery Plan-* site-specific information for restoration planning in a key population, focused previous efforts, documented additional life history complexity for Lower Clearwater population
- *Population Monitoring–* important index stream
- *Integration-* data used in Idaho status assessment monitoring network, regional regulatory decisions, FCRPS BiOp expert panel process

Spring Valley Creek before and after flow supplementation

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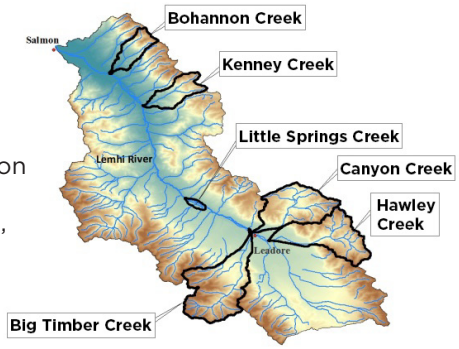
Lemhi River
Overview

FOCAL SPECIES
Chinook Salmon, Steelhead Trout, Bull Trout

LIMITING FACTORS
Lack of connectivity between Lemhi River and tributaries, reduction of spawning and rearing habitat, reduced flow in the mainstem

RESTORATION STRATEGY
- Tributaries- Prioritize 6 candidate Lemhi River tributaries for reconnection based on productivity, historical fish distribution, and feasibility (outlined on map).



- Mainstem- Increase flow, re-establish floodplain connection, restore riparian zone function, and improve habitat complexity.

RESTORATION INVENTORY
- 3 of 6 priority tributaries reconnected, allowing migrations without delay
- Lower Lemhi River minimum flow agreement; 25 - 35 cfs through June 30 and minimum of 25 cfs beginning July 1
- Large scale restoration projects on mainstem Lemhi River including channel re-meandering, floodplain reconnection, side channel construction, and LWD

MONITORING METRICS
- **Fish-In/Fish-Out:** adult and juvenile abundance at the sub-basin, tributary, and reach scales; smolt per female productivity at multiple spatial scales; experimental tributary evaluation between treatment and control (Hayden Creek)
- **Distribution-** life stage specific movement patterns and distribution changes
- **Survivial-** spatially explicit seasonal survival rates of different life stages

FUTURE DIRECTION
Major upcoming habitat restoration:
- Restore 4km of the lower Lemhi River to increase spawning and rearing habitat
- Complete tributary actions to open additional > 50km spawning and rearing habitat

New monitoring:
- BACI design to evaluate changes in summer salmonid abundance associated with the large-scale lower Lemhi River restoration project
- PIT array infrastructure to investigate constructed side channel use

Big Timber Creek Disconnected

Big Timber Creek After bridge and flow projects

ACCOMPLISHMENTS

Habitat:
- **Tributaries-** reconnected >38 km of spawning and rearing habitats
- **Flow-** minimum flow agreement in lower Lemhi River, water conservation measures in select reaches and tributaries
- **Habitat Complexity-** 5+ mainstream river projects containing LWD
- **Floodplain/Lateral Habitat-** 3 projects in upper Lemhi River and 1 in lower Lemhi river containing expanded floodplain with lateral river channels and LWD.

Fish:
- **Juveniles-** spatially continuous electrofishing surveys in tributaries detect an increase in abundance and upstream expansion of Chinook Salmon and Steelhead, and survival advantages for Chinook Salmon using reconnected tributaries
- **Adults-** rigorous annual spawning surveys conducted in five restoration candidate tributaries, the reference/ control tributary (Hayden Creek), and in the Lemhi River; precise adult abundance estimates from PIT tag arrays; described poorly known Bull Trout life histories
  - Steelhead Trout spawning activity in 1 fully reconnected tributary and 1 partially reconnected tributary
  - Chinook Salmon entry into 1 reconnected tributary, but no spawning activity

Management:
- **Project Implementation-** RM&E efforts identifying life stage specific limiting factors (e.g. overwinter survival), which are guiding restorative actions
- **Regional-** data are used to develop fish/habitat relationships and monitoring techniques through the ISEMP program
- **Integration-** data used in Idaho status assessment monitoring network and to guide restoration actions throughout the upper Salmon River basin

Channel meander project on mainstem Lemhi River