

Reintroduction and recolonization of Spring Chinook salmon and Pacific lamprey in the Hood River Basin



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Confederated Tribes of Warm Springs



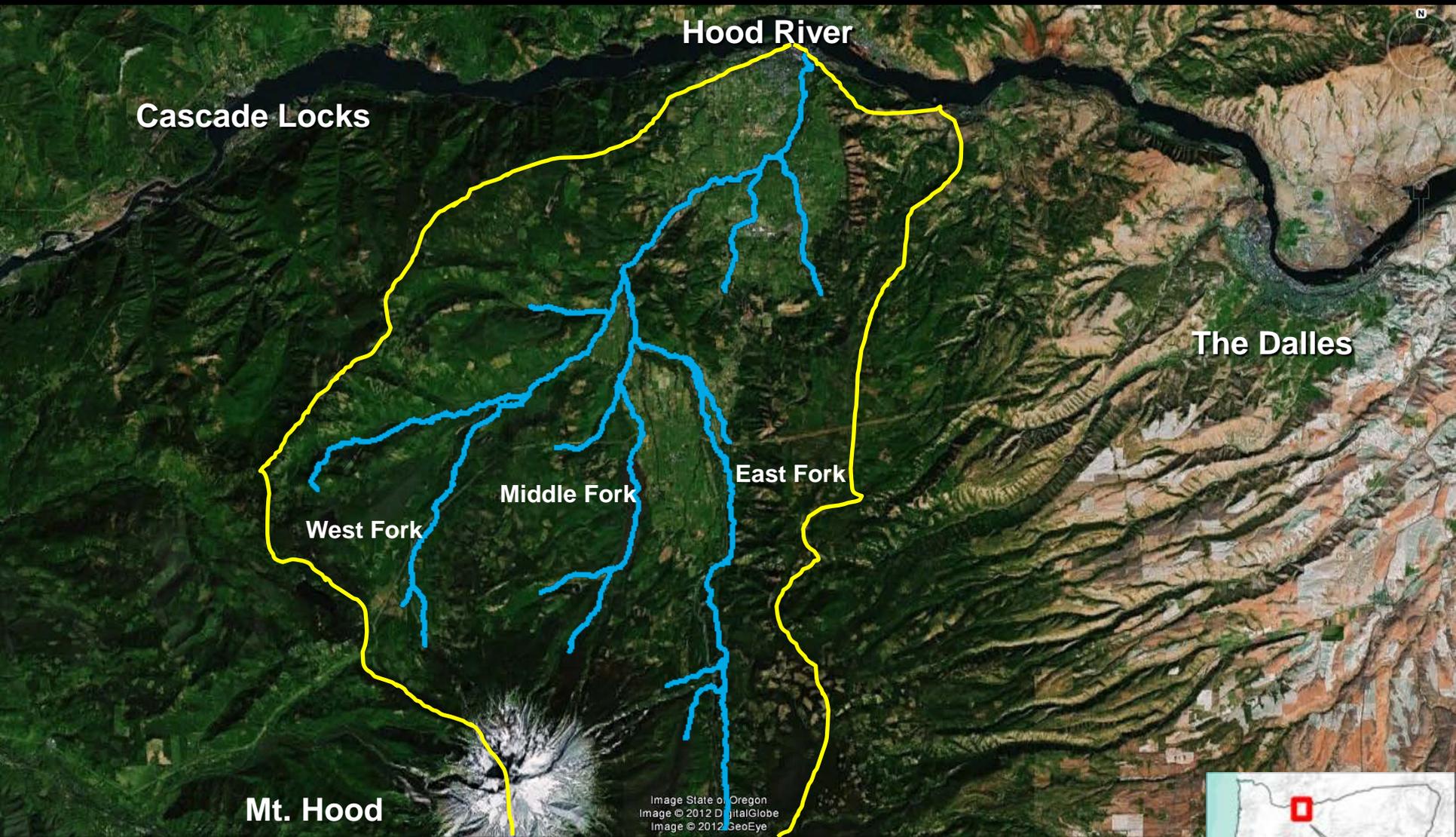


Image State of Oregon
Image © 2012 DigitalGlobe
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Notable events in reintroduction

- 1960's Spring Chinook extirpated
- 1988 ODFW begins releasing Carson stock from Bonneville Hatchery into the West Fork
- 1991 Hood River Production Program founded, switch to Deschutes Stock from Round Butte Hatchery
- 1998 Parkdale Fish Facility built, releases to the Middle Fork begin
- 2001 Tribal subsistence fishery opened
- 2006 November glacial outburst flood exposes new barriers in the Middle Fork
- 2008 HRPP revised master plan, project included in the Fish Accords
- 2010 Powerdale Dam Removed

Multi-Vectored Reintroduction

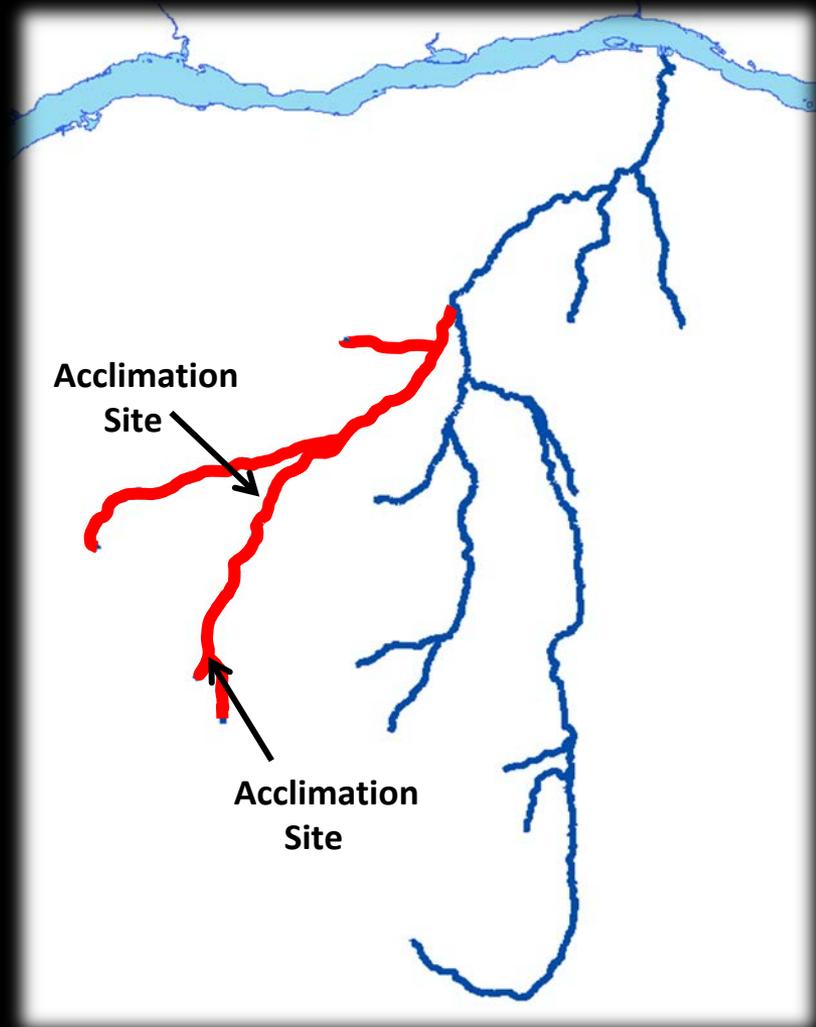
- Intentional release of Chinook smolts to target habitat
- Dispersal from seeded areas to previously unoccupied areas in the basin
- “Unsolicited” colonization naturally from nearby populations

Reintroduction and Colonization A Tale of Three Forks



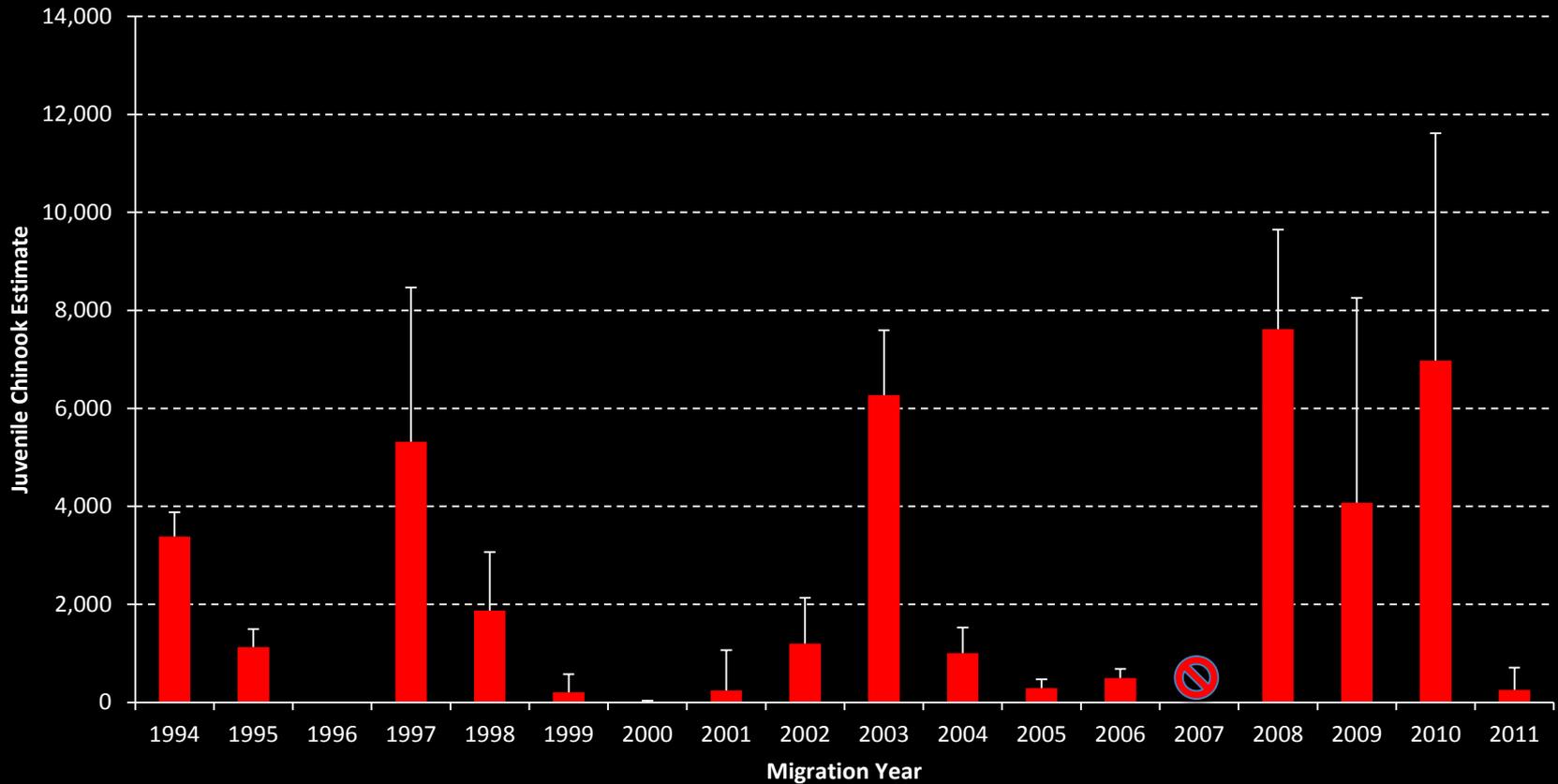
West Fork

- Suspected as the core habitat of the population before extinction and the highest quality habitat
- Evidence of Chinook recolonizing before deliberate reintroduction
- Targeted for heaviest smolt stocking



West Fork Juvenile Migrant Trend

West Fork Hood River Trap - Fall

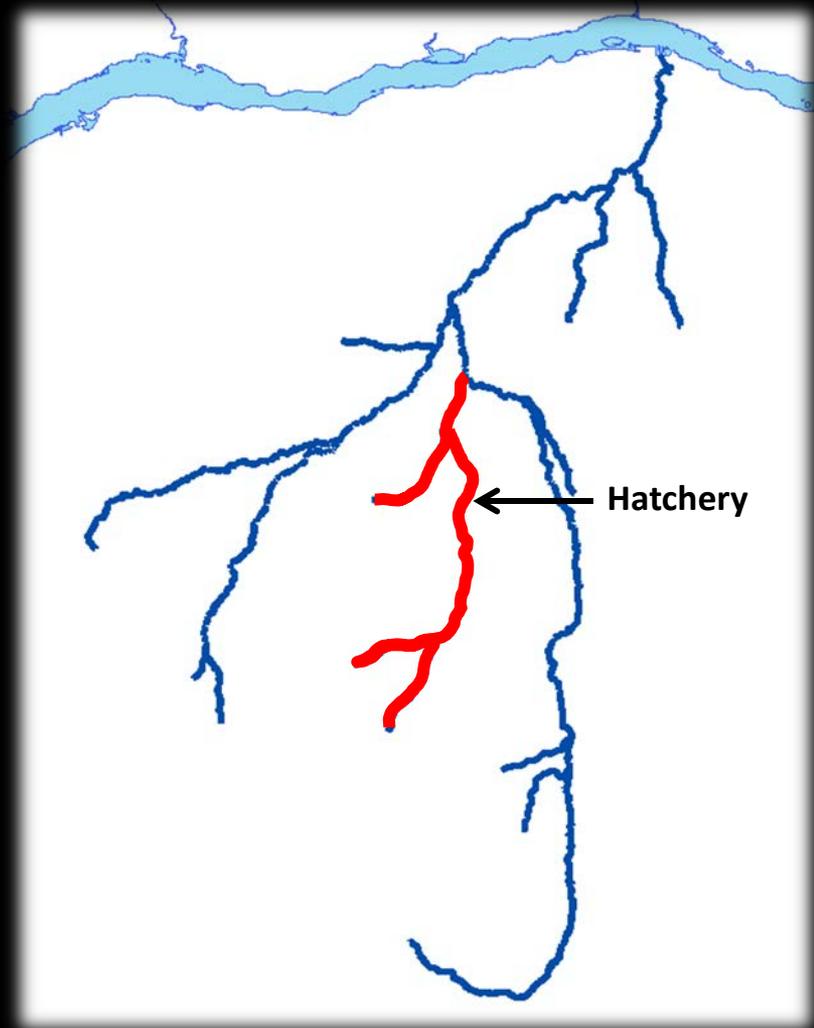


✘ indicates fish were caught but not enough recaptures for estimates

⊘ indicates trap not operated that season

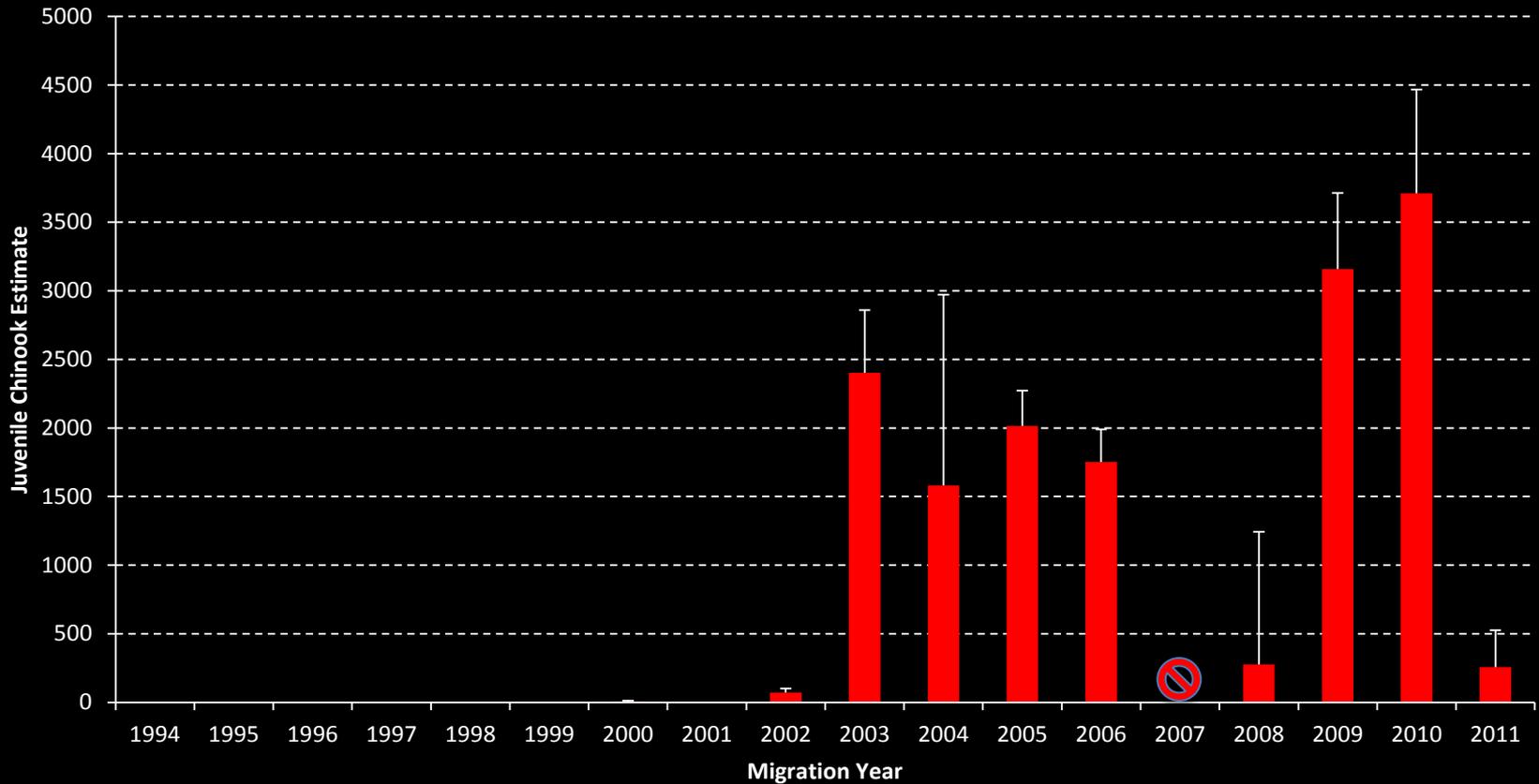
Middle Fork

- Assessed as having less extensive and lower quality available habitat
- No evidence of previous colonization
- Later and lower smolt stocking



Middle Fork Juvenile Migrant Trend

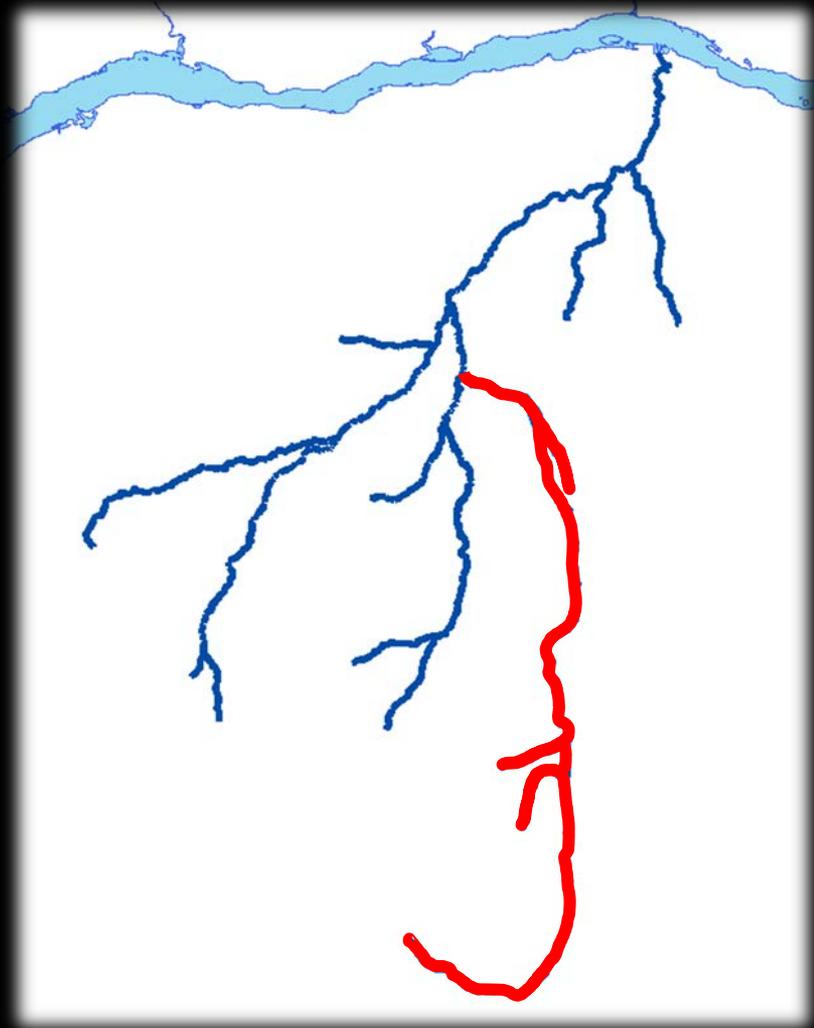
Middle Fork Hood River Trap - Fall



-  indicates fish were caught but not enough recaptures for estimates
-  indicates trap not operated that season

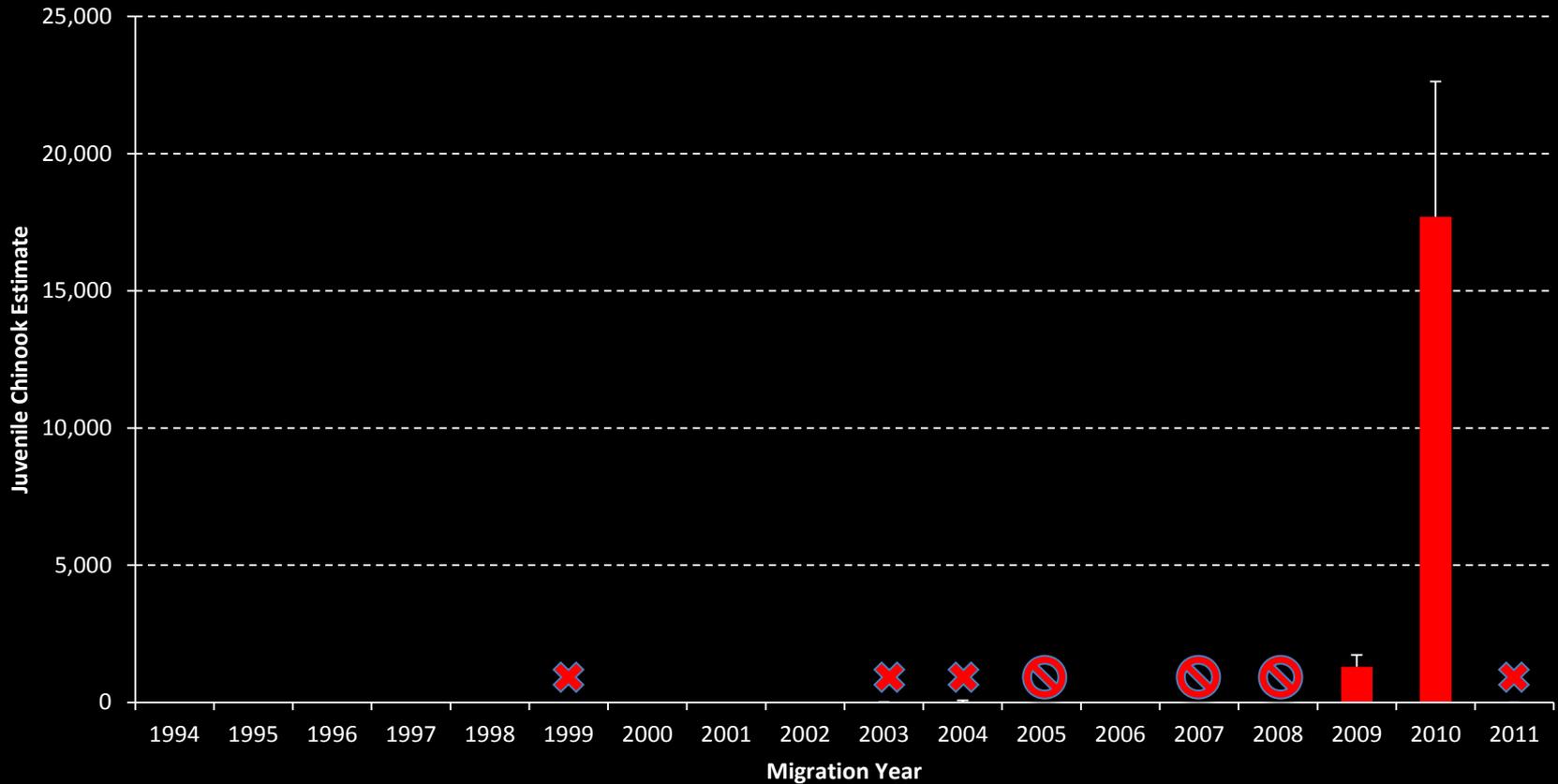
East Fork

- Initially considered marginal Chinook habitat
- No evidence of previous outside colonization
- No smolt releases



East Fork Juvenile Migrant Trend

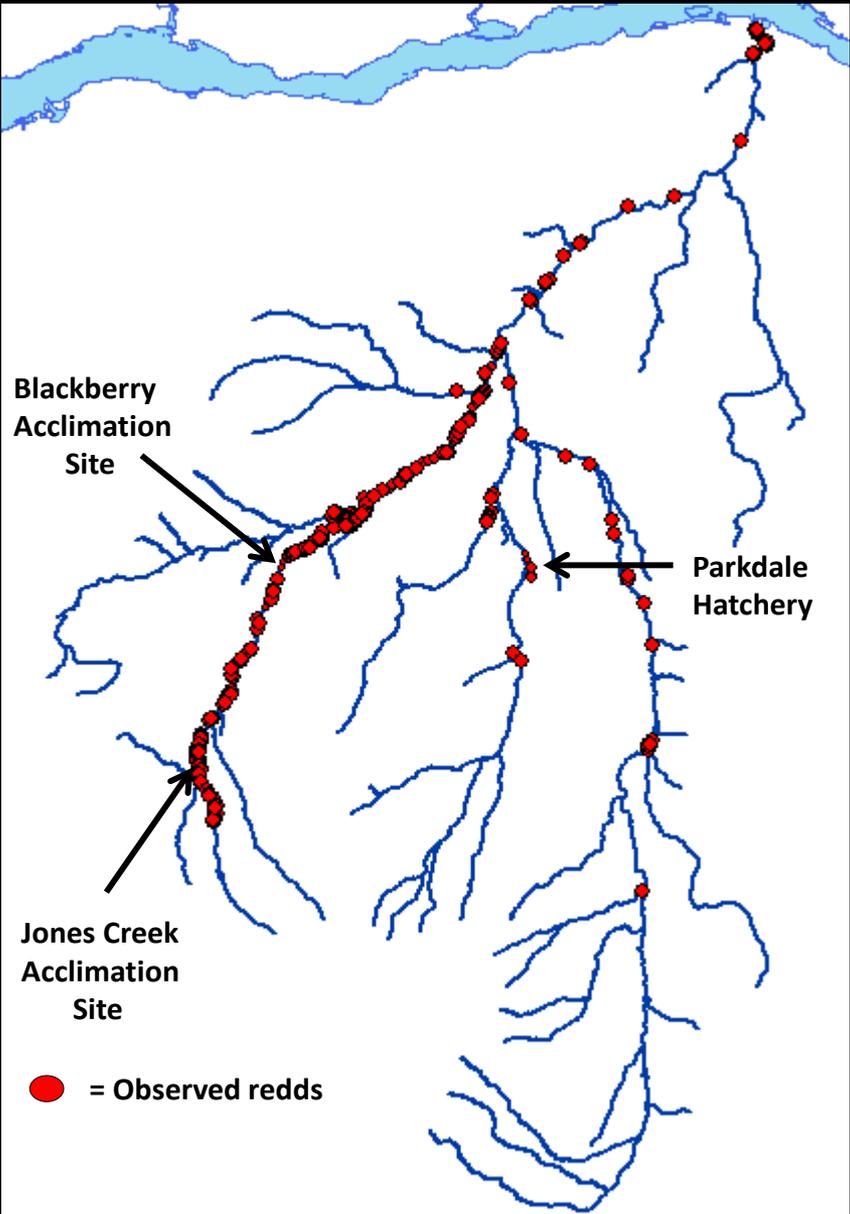
East Fork Hood River Trap - Fall



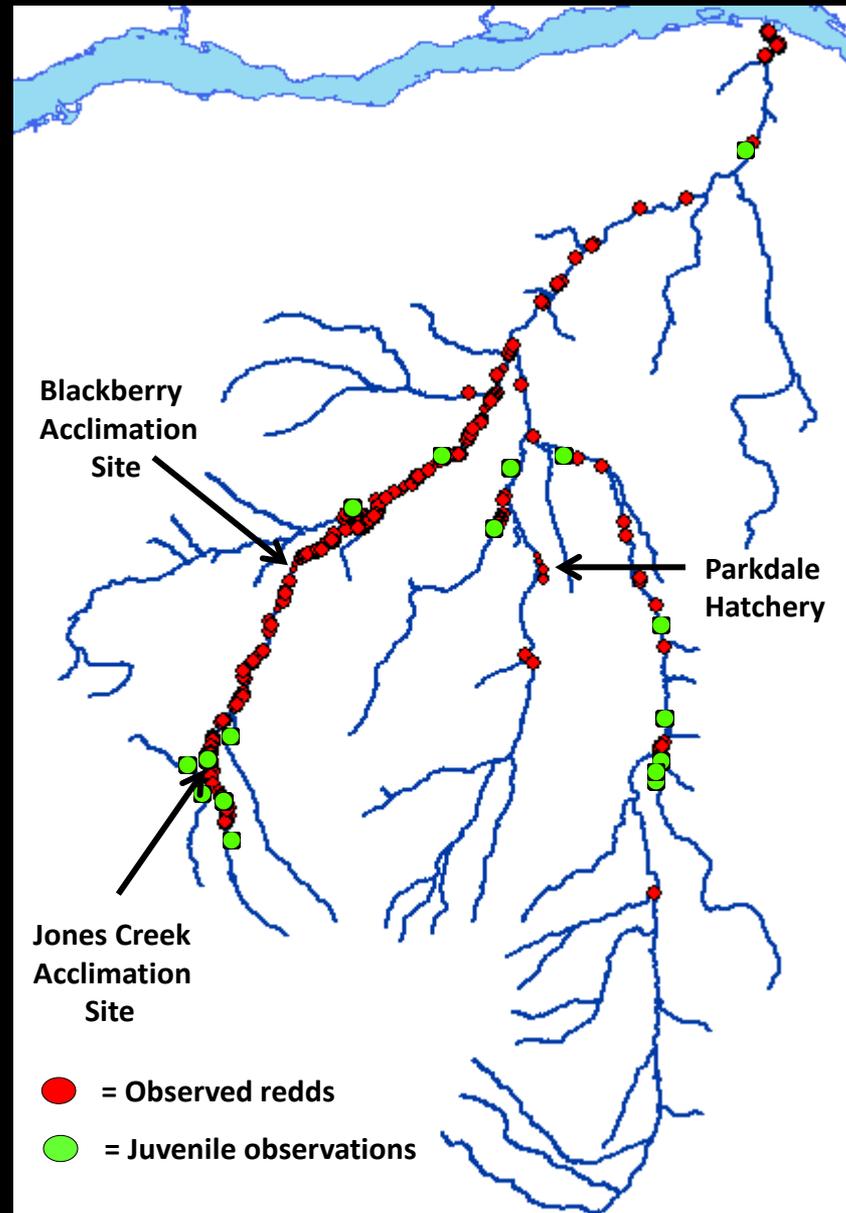
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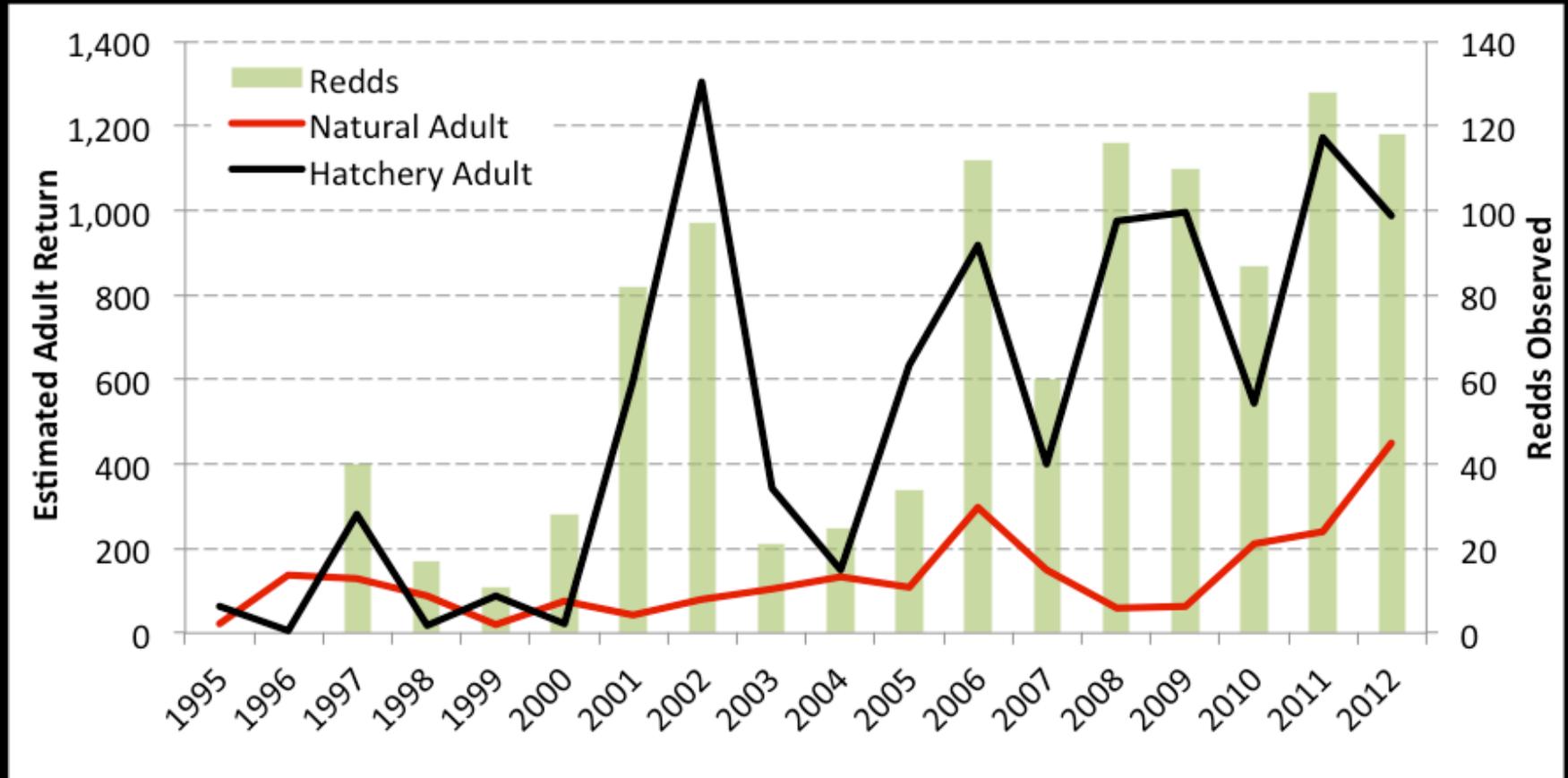
Dispersal Throughout the Basin - Adults



Dispersal Throughout the Basin - Juveniles



Spring Chinook abundance trends

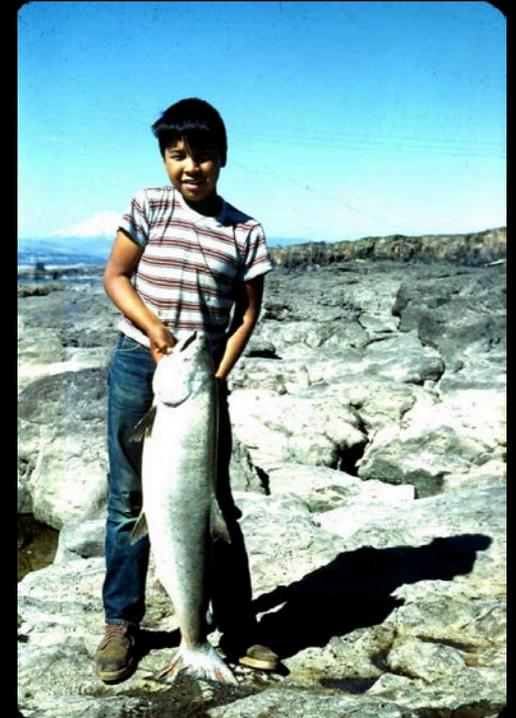


Relative Reproductive Success (RRS)

- CRITFC conducted genetic analysis to see if reintroduced Chinook were increasing in reproductive fitness and thus adapting to the Hood
- They found adult abundance and RRS of naturally produced Chinook was increasing
- However the analysis revealed the presence of fish from the lower Columbia lineage in the population. Fish from this lineage had far higher RRS, 2.4 times that of the interior lineage fish stocked for reintroduction.

Where are these Lower Columbia colonizers from and why are they so much more successful?

- Most assign to the Willamette River population group. Clackamas and Sandy Rivers have nearest populations
- Larger body size
- Later run timing
- Similar environments?



In Conclusion

- Spring Chinook have been successfully reintroduced to the Hood River. Are meeting naturally produced adult escapement goals more consistently.
- Natural colonization and dispersal are part of the process. Also the fish seem to know better than us what does or doesn't constitute suitable habitat. In the Hood River Chinook are successfully colonizing places we didn't expect.
- Extinction and re-colonization is a natural process in the Northwest, lucky for us salmon are equipped for adapting to a new environment, but some stocks may be a better fit than others in particular reintroduction scenarios.

Fifteenmile Creek and Hood River Lamprey Projects



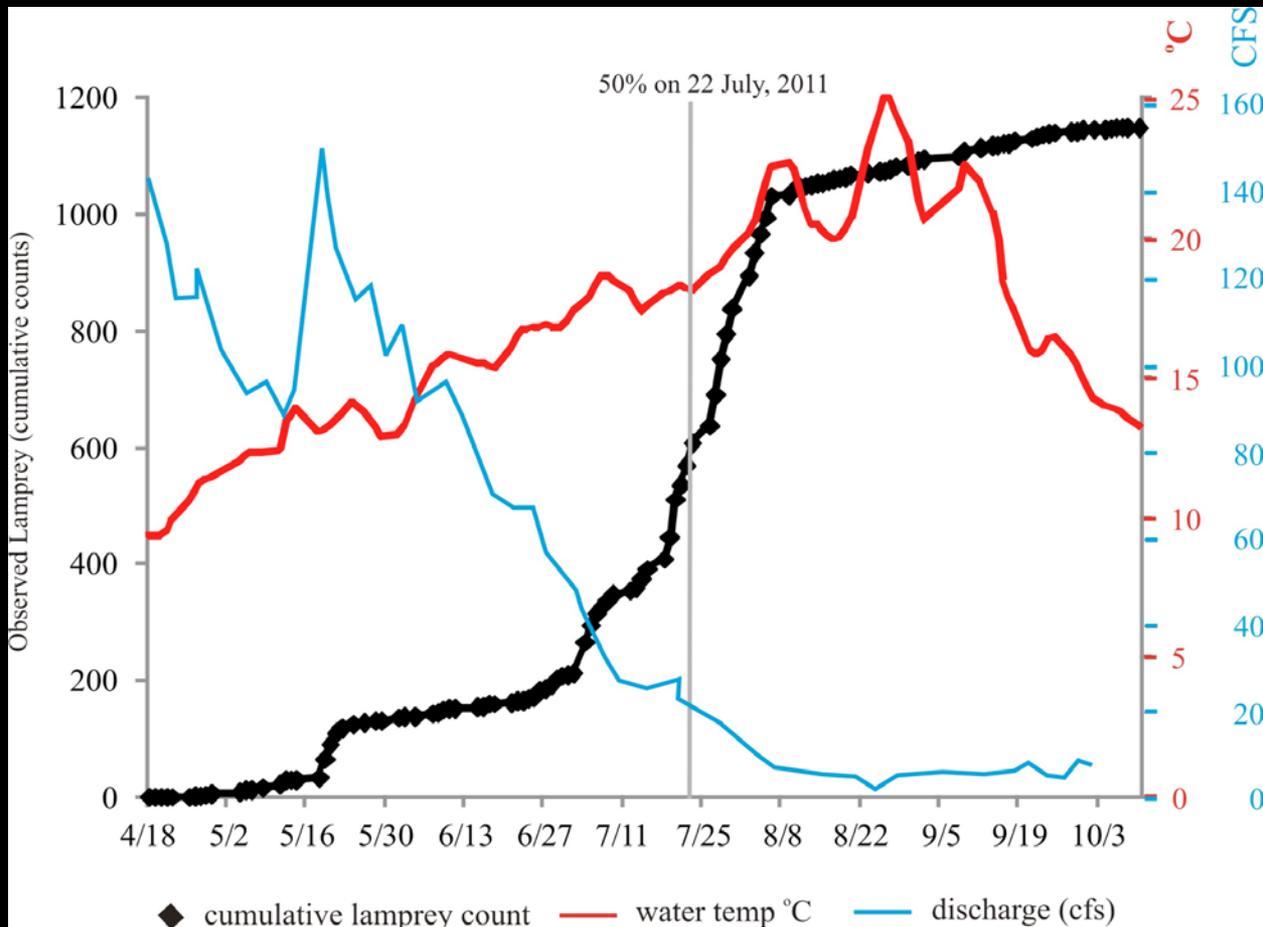
Overview

- Fifteenmile Creek
 - Monitoring occurred 2010-Present
 - Ammocoete Abundance & Distribution
 - Adult Escapement & Harvest Monitoring
 - Spawning Distribution
 - Develop Monitoring Methods

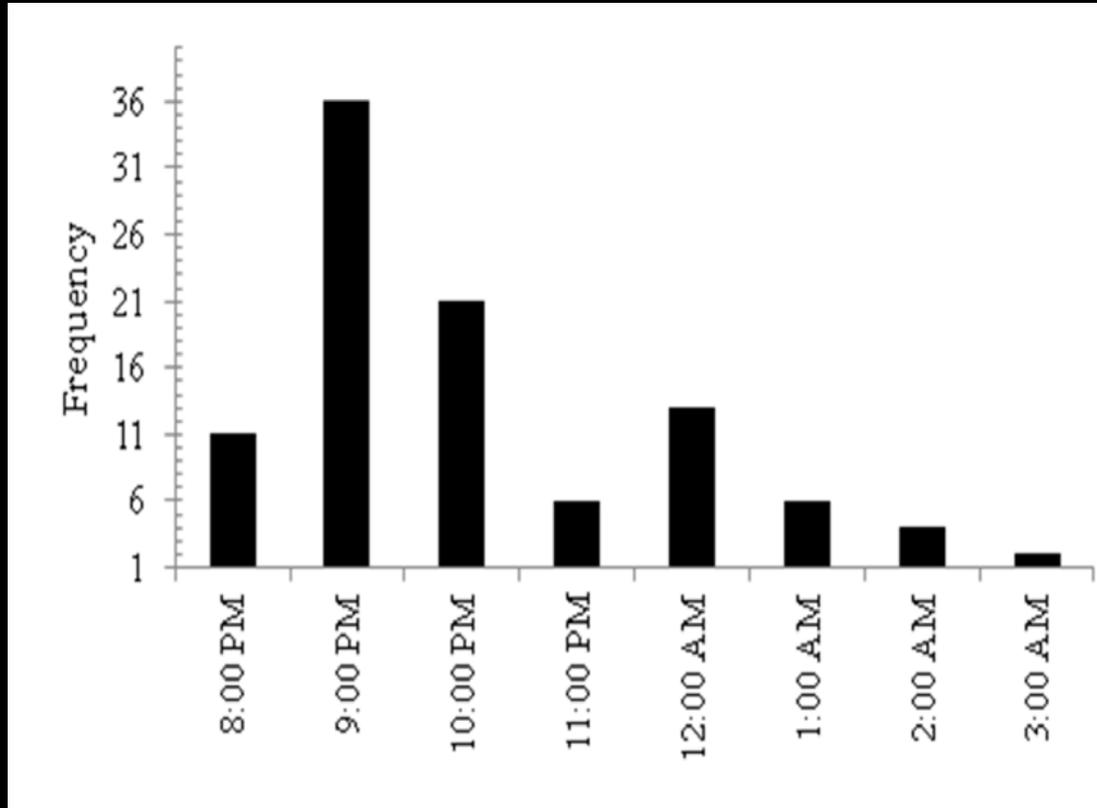
Fifteenmile-Results

- 2012
 - Adults observed mid-April thru early-October
 - Estimated 1,147 fish ascended Cushing Falls
 - 160 fish tagged, ~38% detected
 - Larvae documented in Fifteenmile and Eightmile creeks, not found in Dry, Ramsey, or Fivemile Creeks
 - 30 Nests found, 15+ with adults present

Night Counts



PIT tag detection frequency



- No detections outside of this time range, so all movement appears to be happening at night

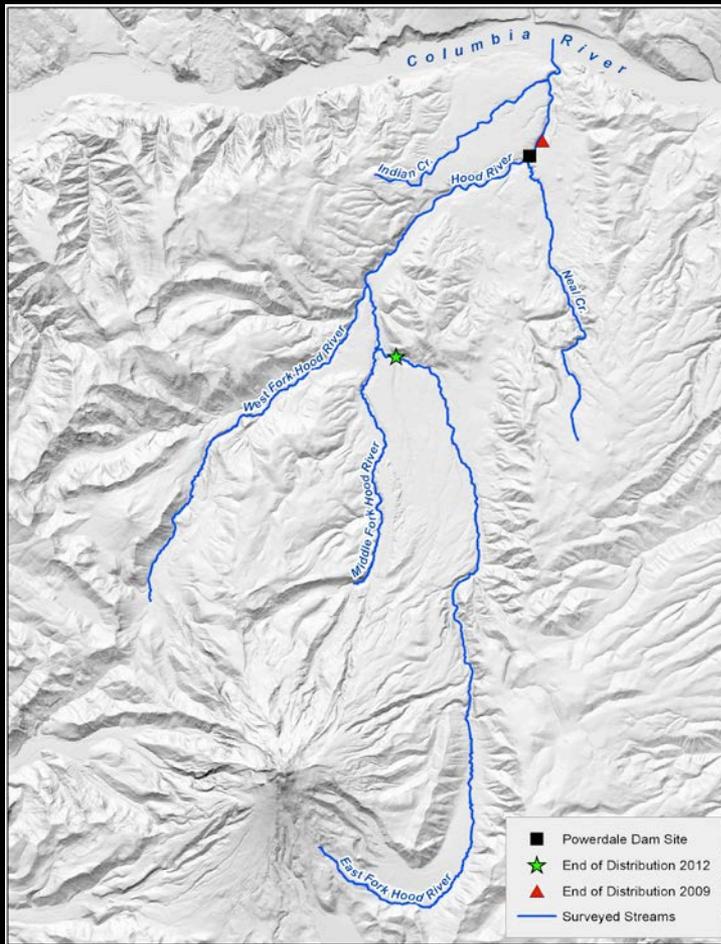
Overview

- Hood River
 - Project officially began in 2011 following removal of Powerdale Dam in 2010
 - Document Recolonization
 - Distribution & Abundance
 - Develop Methods Detect/Trap
 - Fish movement-Half-duplex (HDX) PIT Antenna

Hood River-Results

- 2012
 - Antenna Location
 - Near mouth just below foot bridge, spanning nearly 160ft of stream
 - Ammocoete Distribution 2011&2012
 - First verified adult in ODFW screw trap
 - 3 Adults tagged at Bonneville detected
 - 60 0+ age ammocoetes DNA analyzed and confirmed as Pacific Lamprey

Hood River Lamprey Distribution



- Amoecetes found just below the dam in 2009
- In 2012 they were found in the East Fork as high as the ODFW screw trap
- None observed in Middle or West Forks yet.

Whats next?

- Continue current monitoring
 - 15 mile escapement & harvest
 - Spawning and juvenile distribution
- 7 new HDX readers to refine adult distribution
 - Hood River (2)
 - Fifteenmile Creek (5)
 - Mill Creek (1) (first lamprey monitoring)

Acknowledgements



ODFW Hood River M&E project (Rob Reagan, Phil Simpson, and crew)



CRITFC (Peter Galbreath, Maureen Hess, Jon Hess)



Bonneville Power Administration

Generations of fisheries biologists, technicians, and volunteers working for salmon recovery in the Hood River

Questions?

