Does Salmon Freshwater Production Increase Following Watershed-Scale Habitat Restoration?
The Lower Columbia Intensively Monitored Watershed (IMW) Study

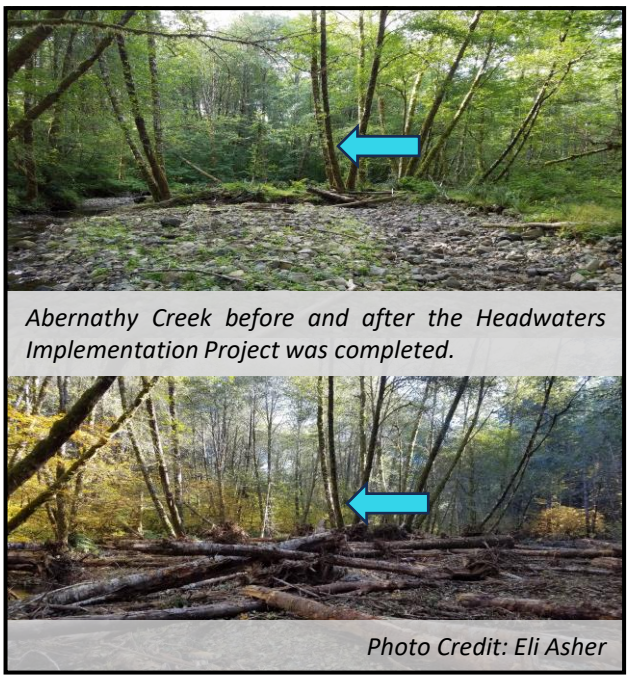
Study Approach

The Lower Columbia IMW is a long-term study designed to help scientists, restoration practitioners, land use managers and salmon recovery organizations better understand how stream restoration supports salmon recovery at population scales.

Decades of life cycle monitoring and coordination with the restoration community identified clear restoration treatments to improve ESA-listed coho salmon survival and production in Abernathy Creek.

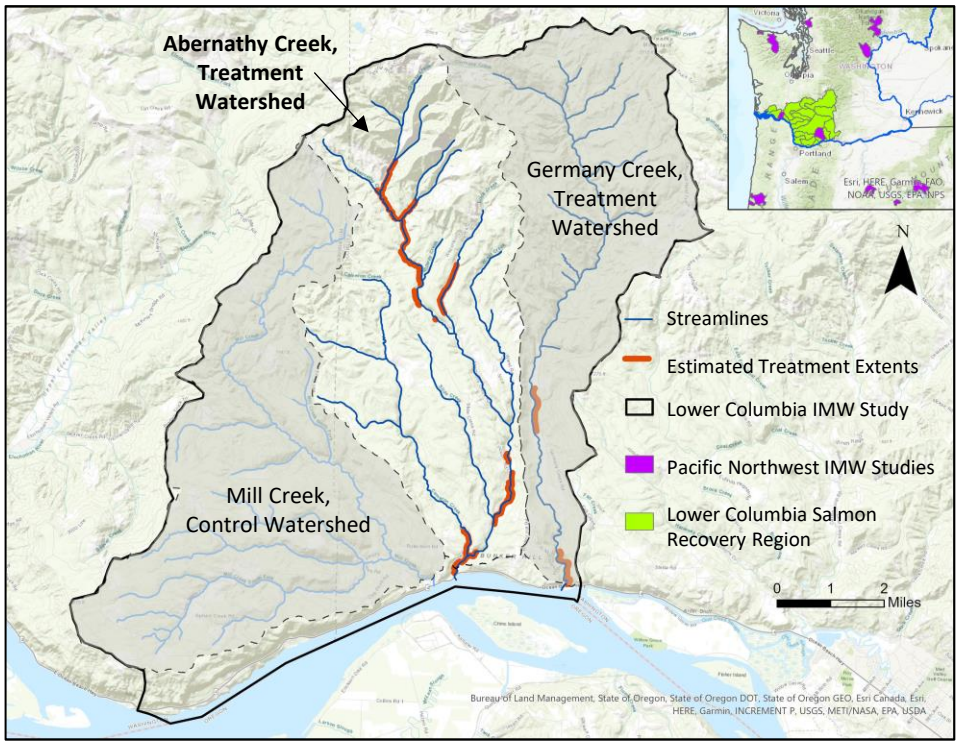
Restoration Strategy: Increase habitat complexity and connectivity throughout headwater summer and winter rearing habitat. 33% of total salmon and steelhead habitat was treated in Abernathy Creek, including:

- 13.1 km mainstem, side-channel and off-channel habitat;
- 0.19 km^2 of riparian habitat; and
- 2.7 km of improved fish passage.

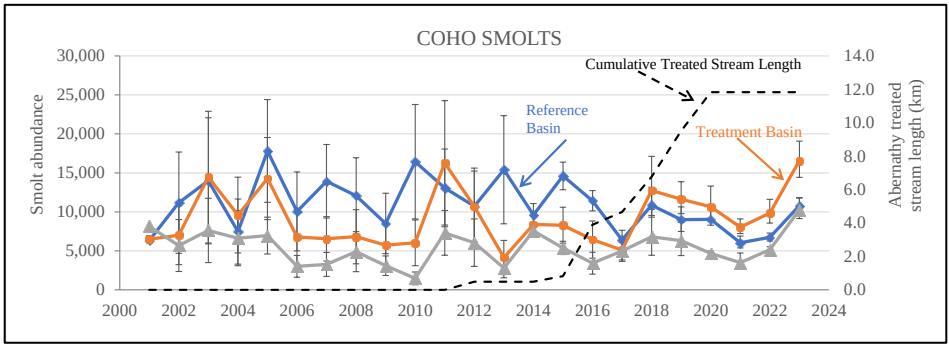


Abernathy Creek before and after the Headwaters Implementation Project was completed.

Photo Credit: Eli Asher



The Lower Columbia IMW Study encompasses three tributaries to the lower Columbia River in Cowlitz County, WA. It is part of a network of 14 IMW studies across the Pacific Northwest. Primary land uses are industrial and state forest management, rural residential and agriculture. Stream restoration project locations are shown in orange, and primarily occurred in the headwaters of Abernathy Creek.



Annual coho salmon smolt production in the lower Columbia IMW (WDFW 2024). Abernathy Creek, the "Treatment Basin", is the highest producer since 2018.

Baseline Monitoring 2004 - 2012 → **Habitat Treatment** 2010 - 2021 → **Post-Treatment Monitoring** 2022 - 2031

Study Results

- Coho salmon smolt production is increasing in Abernathy Creek following targeted and substantial habitat restoration.
- Watershed conditions in the control watershed, Mill Creek, continued to decline without restoration actions.

Applications for Salmon Recovery

- Identify focal watersheds and treatments for restoration investments to achieve population-scale benefits.
- Address fish passage constraints to expand habitat access and improve life history diversity.
- Coordinate with land use managers to address continued habitat degradation.

Lower Columbia Fish Recovery Board

Thank you to our IMW program funders and partners! NOAA, USFWS, Pacific States Marine Fisheries Commission, WA State Legislature, Cowlitz Indian Tribe, RCO, Ecology, DNR, WDFW, Weyerhaeuser, Columbia Land Trust, Cowlitz Conservation District, Cowlitz County .