

Evaluation of habitat restoration for Pacific salmon

Problem Statement

Governments spend hundreds of millions of dollars each year to restore salmon habitat, but little money is spent on evaluation or monitoring to determine whether or not habitat restoration efforts are effective.

Critical Factors

- Little is known about which species and life history stages benefit from restoration projects or how those projects affect fish community structure, diversity, or interactions among species.
- Many stream restoration activities are designed to improve conditions for one or two species of salmonids, with relatively little concern being paid to other salmonid and non-salmonid fish species that might be resident in the stream.

Status of Research

The Northwest Fisheries Science Center's (NWFSC) Instream Restoration Project is evaluating the extent to which placing logs, boulders, and other structural elements in streams improves habitat quality and increases salmon abundance. NWFSC researchers have sampled 30 small streams in Washington and Oregon to determine the effectiveness of stream restoration techniques, comparing restored streams to those with natural reaches. In particular, scientists wish to determine the effects of instream structures on the abundance, density, movement, and interactions of juvenile coho, steelhead, and cutthroat trout. To date, fish species that prefer pools to continually-flowing water (e.g., coho) seem to benefit from additional instream structures, while certain life stages of steelhead and cutthroat do not.

NWFSC scientists are also evaluating restoration projects on large rivers such as the Stillaguamish and Skagit and they are conducting a historical reconstruction of fish habitat in the Stillaguamish River basin. In addition, the effects of salmon carcasses on juvenile chinook production, the effects of salmon-derived nitrogen and nutrients on riparian vegetation, and the overall relationship between salmon carcasses and stream productivity are being examined.

Future Considerations

NWFSC scientists will continue to investigate the most effective ways to restore degraded aquatic and riparian habitats for Pacific salmon. This research will be critical to the success of recovery plans, habitat conservation plans (HCPs), monitoring plans, and other efforts to protect and maintain valuable salmon populations.

Key Players

Environmental Conservation (EC) Division, NWFSC

Bonneville Power Administration

King County Department of Natural Resources

Oregon Department of Fish and Wildlife

Trout Unlimited

Mid-Puget Sound Fisheries Enhancement Group

Tulalip Tribe

U.S. Bureau of Land Management

U.S. Forest Service

U.S. Fish and Wildlife Service

Washington Department of Natural Resources

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Habitat restoration using log weirs

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