

**Seasonal Fish Densities Near River Banks Stabilized**

**with Various Stabilization Methods**

**First Year Report of the Flood Technical Assistance Project**

by

**Roger J. Peters, Brian R. Missildine, David L. Low**

**U.S. Fish and Wildlife Service**

**North Pacific Coast Ecoregion**

**Western Washington Office**

**Aquatic Resources Division**

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*Abstract.*- This report describes results obtained from data collected during the first year of a two-year study to determine which methods of river bank stabilization are most commonly used for flood protection in western Washington and the impacts/benefits of these methods to fish densities.

We also examined the influence of different habitat variables on fish densities. We mailed a survey to agencies and organizations involved with bank stabilization and received documentation of 667 river bank stabilization projects in western Washington. Riprap (414 of 667) and riprap with deflectors (82 of 667) were the most common methods used to stabilize river banks in western Washington. Methods commonly considered fish-and-wildlife friendly, such as bioengineering (16 of 667) and large woody debris (13 of 667), were rarely used.

Using survey results, we selected five types of bank treatments to further evaluate their impacts/benefits to fish. We examined seasonal fish densities at streambanks stabilized using riprap, riprap with large woody debris (LWD) incorporated into the project, rock deflectors, rock deflectors with LWD (combination projects), and LWD. LWD-stabilized sites were the only project types that consistently had greater fish densities than their control areas during spring, summer, and winter surveys. Riprap sites consistently had lower fish densities than their control sites during all surveys. Fish densities were generally lower at deflector sites than their controls during the spring and summer, but greater during the winter. Although large differences (between stabilized sites and controls) existed in some cases, the differences were rarely statistically significant due to high variation and small sample size.

Instream LWD cover and overhead riparian cover were the habitat variables that most consistently influenced fish densities at stabilized and control sites we surveyed. Fish densities were generally positively correlated with increasing surface area of LWD and increased overhead riparian cover within 30 cm of the water surface.

We recommend using LWD cover when possible, based on these preliminary findings. LWD incorporated into riprap and rock deflectors needs to be larger and provide more complex cover than what is currently used.

A final report describing results of both years of this research will be completed during the summer of 1999.

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