

Juvenile salmon, other fish benefit from enhanced wetlands in flood plains

Flood plain wetlands are often structurally enhanced for waterfowl and wildlife habitat, but new information from a study by Oregon State University indicates they can be managed to benefit salmon and other fish species, as well.

Freshwater emergent wetlands—those isolated low areas within flood plains that are temporarily connected to rivers when rivers overflow their banks—appear to be important habitat for juvenile coho salmon.

“We compared two enhanced emergent wetlands, two unenhanced emergent wetlands, and two oxbow habitats in the Chehalis River flood plain in southwestern Washington,” says Julie Henning. “Coho salmon was the dominant salmonid at all sites, and enhanced wetlands had significantly more numbers of coho yearlings than unenhanced wetlands.

Henning conducted research in 2003 and 2004 as part of a Master’s thesis. “We found that agricultural landscapes with rehabilitated emergent wetlands can offer valuable rearing habitat to riverine species, including coho salmon,” she says.

In all study sites, fish emigration was possible during winter flooding when the wetlands were connected to the tributaries. The enhanced wetlands, however, kept water levels higher for a longer period, allowing fish to feed, grow, and in some cases, spawn. In the enhanced wetlands, drainage ditches were blocked, levees were constructed, and water control structures were installed to create a defined outlet that connected the wetland to an adjacent tributary of the Chehalis River.

“Survival of young salmon was dependent on their ability to leave the wetland before dissolved oxygen concentrations and water quality decreased, or fish were stranded,” Henning says.

“Patterns suggested young salmon emigrated as conditions declined if an outlet was built into the wetland design for them.”

Henning and fellow researchers found 18 fish species using the wetlands. Nearly all were native; oxbow and enhanced wetlands had about twice as many species as the unenhanced wetlands.

While coho salmon dominated oxbow wetlands, enhanced wetlands were dominated by other nongame native species. “Enhanced wetlands appear to be able to fulfill a niche for native nongame fishes that beaver ponds and oxbows are not providing,” Henning says.

According to Kathryn Boyer, a fisheries biologist with the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) in Portland, Oregon, fish will find their way into the quiet waters of emergent wetlands during high river flows. In addition, juvenile coho salmon and other native fish often prefer these habitats for rearing and feeding. However, they must also be able to get out of the wetland and back to the river when the wetland waters recede to avoid stranding and death. In wetlands with water control structures, an outlet pipe with adequate flow is critical to allow them to leave the wetland and reenter the river as habitat conditions decline with the onset of warmer temperatures.

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The AWCC, located in Madison, Mississippi, is a fish and wildlife technology development center.



Enhanced wetland with water control structure

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