

Native fish, amphibians use drainage channels in grass seed lands of Oregon

Although the historic flood plain habitats of lowland streams and rivers in the Upper Willamette River Basin have been altered to improve agricultural drainage, many native fish continue to use those areas.

Those drainage channels and seasonal streams are providing the food and habitat some native fish and amphibians need to grow and reproduce, a study by Oregon State University (OSU) shows, and could do even more if managed with fish in mind.

“The Upper Willamette Basin is primarily managed for grass seed production because rye grass does well where heavy winter rains and poorly drained soils are common,” says Randall Colvin. “Our study showed that seasonal drainages of grass seed farms provide important late fall to early spring habitats for native fish and amphibians.”

As part of a Master’s thesis, Colvin sampled fish and amphibian species at 22 sites from December 2002 to May 2003, and 12 sites from December 2003 to May 2004.

He found 14 species of fish and 5 species of amphibians over the two field seasons; about 99 percent of them were native to the Willamette Basin. This is significant because the ratio of native to nonnative fish in the main stem of the Willamette is about 1:1; farm “streams” are thus providing winter refuge for native fish that are well adapted to life in seasonal streams. Two of the species found—Chinook salmon and Oregon chub—are federally listed as threatened and endangered species, respectively.

The study has implications for grass seed farmers in the Willamette Basin, and perhaps other farmers in the Pacific Northwest. Knowing the potential agricultural drainages have as winter habitat for fish and amphib-

ians, conservation practices can be employed to protect these habitats. These include maintaining physical connections between the drainage channels and the main river channels to allow fish to migrate to tributaries during the winter and employing practices that improve fish passage, maintain streamside vegetation, and enhance wetlands. Among Colvin’s findings:

- Fish use of seasonal stream habitats was limited by how far tributaries were from perennial water.
- Seasonal stream habitat provided insect and other invertebrate food for fish residing there during the winter and spring.
- Unlike some perennial stream systems, a low number of land-based invertebrates found in the diets of these fish suggest terrestrial prey were not an important winter food source.
- Water velocity and habitat complexity of the drainages also affected the types of fish, frogs and salamanders found in these working lands.

The study results can be used to guide managers of agricultural drainage networks to benefit fish in the Pacific Northwest, according to Kathryn Boyer, a fisheries biologist with the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) in Portland, Oregon, who facilitated the study for the NRCS.

Funding for the 4-year study was provided by the Oregon Seed Council, USDA Agricultural Research Service, and NRCS Agricultural Wildlife Conservation Center (AWCC).

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



Photos by Stephen Griffith, ARS

Grass seed production field; Drainage channel for grass seed field (inset)

Summary of:

Agricultural Wildlife Conservation Center
Project # 68-7482-2-26

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