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# Frogs and fish respond to wetlands restored with microtopography

**M**any of the sloughs, oxbows, and other wetland features of forested land in the Mississippi River Alluvial Valley (MAV) have been drained over time.

Now these wetlands are being restored through the U.S. Department of Agriculture (USDA) Wetlands Reserve Program (WRP). Arkansas, Louisiana, and Mississippi lead the Nation in land enrolled in the WRP.

Early on, WRP restorations were made by planting trees, with little attention paid to restoring the hydrology of the wetland. More recently, microtopographic features have been incorporated in the wetlands.

Microtopography and macrotopography features—oxbows, sloughs, pools, and managed moist soils areas—were re-created with the intent to restore wetlands features that are valuable to amphibians, fish, and waterfowl.

A study was done by the University of Arkansas at Pine Bluff (UAPB), U.S. Geological Survey (USGS), and Louisiana State University (LSU) AgCenter to determine whether micro and macrotopography were effective habitat restoration strategies and, if so, what characteristics these sites should have to support diverse frog and fish communities.

Researchers sampled breeding frog use of more than 30 restored wetlands in the White River Basin of Arkansas and other wetlands, as well as fish use of six other wetlands.

They found that micro and macrotopography can be rapidly utilized by flood plain fish and amphibians.

They also found that while certain types of wetlands supported higher richness of frogs, no single wetland type was good for all species.

“Landowners or managers who want a diversity of amphibians and fish

should consider developing a complex of wetlands of various sizes, depths, and flood lengths that support diverse wetland plant communities,” says Dr. Ed Buckner of UAPB, who helped supervise the study. “The wetlands would also be more effective if surrounded by forests,” he says.

Findings suggested that fish communities in pool habitats of WRP-created wetlands with micro/macrotopography rapidly became rich and diverse, but fish species composition changed as wetlands aged.

From a fisheries perspective, it is important to include deeper areas to ensure connectivity to the river and provide refuge. “However, since some species of amphibians cannot coexist with fish, a diversity of wetland types can be helpful,” says Dr. Sammy King of LSU.

Finally, actively managing water levels can create soil and water conditions that aid germination and growth of desired plant species, control problem vegetation, stimulate invertebrate production, and make resources available for target species. Water control structures should be placed where water circulation will be maximized, facilitating nutrient cycling and helping to reduce the risk of disease outbreaks.

Study results are important to the USDA Natural Resources Conservation Service (NRCS) field offices as the Agency restores wetlands, according to Ed Hackett, a biologist with the NRCS Agricultural Wildlife Conservation Center (AWCC) who facilitated the study for the NRCS. Funding was provided by the AWCC. The AWCC, located in Madison, Mississippi, is a fish and wildlife technology development center.



*NRCS photo by Lynn Betts*

**Complex wetlands are the goal of WRP**

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For more information on wildlife conservation technology, contact:

**Ed Hackett**  
NRCS AWCC  
Phone: (601) 607-3131  
E-mail: [ed.hackett@ms.usda.gov](mailto:ed.hackett@ms.usda.gov)  
Web site: <http://www.whmi.nrcs.usda.gov>

For more information on this summary, contact:

**Dr. Ed Buckner**  
UAPB  
Phone: (870) 575-7185  
E-mail: [bucknere@uapb.edu](mailto:bucknere@uapb.edu)

**Dr. Sammy King**  
Louisiana Cooperative Fish and Wildlife  
Research Unit  
LSU  
Phone: (225) 278-7564  
E-mail: [sking16@lsu.edu](mailto:sking16@lsu.edu)