Researcher makes case for restoring wetlands on agricultural lands

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(Phys.org) —New research by an Indiana University scientist reveals the value of restoring wetlands and riparian habitat on agricultural lands. The study is among the first to demonstrate the water quality benefits of converting farmland back to natural habitats.

A team of scientists, led by Christopher Craft from IU Bloomington's School of Public and Environmental Affairs, measured soil processes such as de-nitrification and phosphorus sorption. Those processes improve water quality by removing excess nutrients from agricultural runoff. The restoration of these habitats under two programs administered by the U.S. Department of Agriculture helped prevent pollutants from entering local water supplies, Craft said.

The scientists analyzed soil samples from restored wetlands and natural and restored riparian buffers (vegetated areas alongside streams). They compared that soil with samples taken from nearby farm fields. All of the land tested was owned by farmers and landowners enrolled in the USDA Wetlands Reserve Program or Conservation Reserve Program. The research was conducted in central Ohio, and an ongoing project in Indiana shows similar results.

Potential benefits of restoration include improved water quality locally and regionally as well as reducing the impact of farm runoff on the dead zone in the Gulf of Mexico. The dead zone is a large area in the northern gulf where a surge in chemical nutrients flowing out of Midwest farms has been blamed for diminished oxygen levels in the water. That in turn

has damaged the fishing and shrimping industries.

The potential benefits of wetland and riparian habitat restoration extend worldwide, Craft said.

"This is particularly important considering that as global population and agricultural production increase around the world, global nitrogen and phosphorous fertilizer use are predicted to increase significantly," he said.

Craft cautioned that wider participation in the USDA programs and similar efforts in other nations won't yield instant results.

"Benefits from conservation practices may not be noticeable for several years, though they may be more rapid in intermittently flooded systems such as riparian buffers," Craft said.

Natural wetlands have been steadily eliminated since the earliest European settlers in the U.S. began building cities and clearing land for farms.

Craft is the Janet Duey Professor in Rural Land Policy at IU and directs the Ph.D. in Environmental Science Program at IU. He was joined in this study by John Marton from the Louisiana Universities Marine Consortium and Siobhan Fennessy from Kenyon College.

Their findings will be included in an article accepted for publication in the academic journal *Restoration Ecology*.

For more information on Craft's research, visit his Wetlands Laboratory website.

Provided by Indiana University