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**EMU receives \$633,000 NOAA grant to map invasive species in Detroit River International Wildlife Refuge**

From the ground, Phragmites australis looks harmless enough. We're used to seeing this native reed swaying in the breeze next to ponds, in wetlands, even where water's collected in the highway median.

But, in the last five to 10 years, a European strain of Phragmites has gone on an aggressive growth spurt, crowding out native wetland plants in Southeastern Michigan, including much of the Detroit River International Wildlife Refuge (DRIWR). The refuge spans 48 miles of Detroit River shoreline from River Rouge to just outside of Toledo.

A team of Eastern Michigan University geographers and wetland biologists were recently awarded a two-year, \$633,000 National Oceanic and Atmospheric Administration (NOAA) grant to give DRIWR staff the information they need to make good decisions about Phragmites control.

"We're trying to partner with the wildlife refuge to provide them with the information they need to manage the Phragmites," said EMU biologist Steve Francoeur. "That means giving them good GIS maps and remote sensing so they can figure out where the reed is and where they have problems. And then we also want to investigate how the wetlands are functioning and exactly what the problems are in the wetlands that have this plant in them."



**WETLANDS INVADERS:** Yichun Xie (left), head of EMU's Institute for Geospatial Research and Education, examines Phragmites, an invasive wetlands species in Southeastern Michigan. With the help of a \$633,000 NOAA grant, EMU faculty — including (above, from middle) Steve Francoeur, Kristi Judd and Bill Welsh — are taking an interdisciplinary approach to helping Detroit River International Wildlife Refuge staff with the mapping and water quality data it needs to manage the wetlands and deal with the invasive species.

By combining the expertise - and the tools - of geographers, biologists and natural area managers, the team leading this research hopes to relieve some of the pressure on the DRIWR's wetlands and, ultimately, give managers a new platform from which to deal with other invasive species.

"In our disciplinary-based world, we tend to just talk to each other," said Bill Welsh, an EMU assistant geography professor. "Biologists talk to biologists, and so on and so forth. And, yet, real-world problems are often more complex and require a variety of expertise that no one individual or field has."

Welsh and geography colleague Yichun Xie, head of EMU's Institute for Geospatial Research and Education, will zoom out, while Francoeur and fellow wetland biologist Kristi Judd zoom in.

Using Geographic Information Systems (GIS) and hyperspectral remote sensors, Welch and Xie can map specific species and ecosystem conditions to create a picture of the reed's prevalence and spread patterns that couldn't be seen from the ground. Francoeur and Judd, meanwhile, will collect water quality samples and measure ecological indicators that tell the story of the wetland's health.

The project also will give EMU graduate and undergraduate students, and select Detroit Public Schools students, a chance to get direct, hands-on experience with scientific research and technology.

"One of the key benefits of this project for EMU and the community is the synergy between research and teaching - providing experiences that classroom lectures alone cannot," Welsh said.

Not so long ago, people saw wetlands as little more than swamps - nasty places one didn't particularly want to go.

Only more recently have those swamps gotten their due credit as fish nurseries, water filters, wildlife habitats, carbon collectors and recreation areas.

Francoeur estimates that 95 percent of the original wetlands in the refuge have been drained and/or filled in the heavy industrial corridor. The wetlands that are left there are under increasing pressure to do all those functions that wetlands do, and Phragmites represents one more stress on an already strained system.

Eastern Michigan's team will follow up on the U.S. Fish and Wildlife Service's control efforts to measure their effectiveness and determine if those efforts had any unintended consequences on the wetland or its function. Partnering with the wildlife refuge also lets the EMU researchers learn from ongoing Department of Fish and Wildlife control efforts - such as spraying herbicides from a helicopter - that would have been far beyond the budget of the NOAA grant.

"I like the idea of taking advantage of natural experiments that are going on that would otherwise not be scientifically recorded," Judd said. "We talked to some people at the DNR who are very enthusiastic about having somebody go out there and take some water quality measurements and perform some ecological surveys. They just don't (have the resources to do that). Their time and money is put into control."

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