

Wetland restoration in the northern Everglades: Watershed potential and nutrient legacies

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To most people, restoration of Florida's Everglades means recovering and protecting the wetlands of south Florida, including Everglades National Park. But what many don't realize is how intimately the fortunes of the southern Everglades are tied to central Florida's Lake Okeechobee and lands even further north.

"The Everglades at the southern tip of Florida—the remains of what was once a vast ecosystem—is interconnected with a large hydrologic system that really begins in Orlando with the northern Everglades," says Patrick Bohlen, a professor of biology at University of Central Florida. The heart of the system is Lake Okeechobee, he continues, which collects [water](#) from the northern Everglades region. This water then used to flow from the [lake](#) into the Everglades of the south.

But this natural path of water has been greatly altered by people, leading to a host of environmental problems that state and federal scientists, policy makers, conservationists, and private landowners are now trying to solve. On Monday, Nov. 4, Bohlen will present "Wetland Restoration in the Northern Everglades: Watershed Potential and Nutrient Legacies." His talk is part of the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America Annual Meetings, Nov. 3-6 in Tampa, Florida.

One of the big challenges is nutrient pollution. Land in the northern

Everglades is mostly privately owned, and urbanization and agriculture now send runoff laden with fertilizers and other contaminants into Lake Okeechobee. This nutrient-contaminated water would damage the delicate southern Everglades should it reach them. So, much of the water that historically flowed south from Lake Okeechobee is now diverted to estuaries on Florida's east and west coasts.

As a result, the southern Everglades are somewhat starved for water, while the coastal estuaries receive far too much from the lake. Although a connection hasn't been definitively made, heavy flows of nutrient-rich freshwater into the estuaries are suspected in die-offs of eelgrass, manatees and pelicans; huge blooms of algae; and zones of oxygen-starved water, Bohlen says.

The situation reached a crisis this summer, but people have actually been working to restore the northern Everglades ever since problems with Lake Okeechobee first emerged in the 1980s. During his talk, Bohlen will first summarize these issues and then discuss his research on the effectiveness of various restoration practices and policies.

Cattle ranching is the main land use directly north of the lake. So, one restoration practice is to pay ranchers to restore wetlands or create ponds to hold water on their lands. This way, water from the northern Everglades doesn't flow as quickly or in as large amounts into Lake Okeechobee, taking pressure off the lake, its dike, and the estuaries. It may also be cheaper to store water in this manner, rather than in huge public works projects.

Plus, by holding back some water in restored marshes or ponds "in theory, at least, you'll also be holding back some of the nutrients," Bohlen says. Restored wetlands are generally very good, in fact, at removing nitrogen from the system. Phosphorus is trickier. According to Bohlen's research, re-flooding land that was formerly drained and

farmed can actually release stored phosphorus into the water, rather than removing it.

"There's a tremendous legacy of accumulated phosphorus in the soils due to past fertilizer use," Bohlen says. "So we have this legacy that we have to live with."

Provided by American Society of Agronomy

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