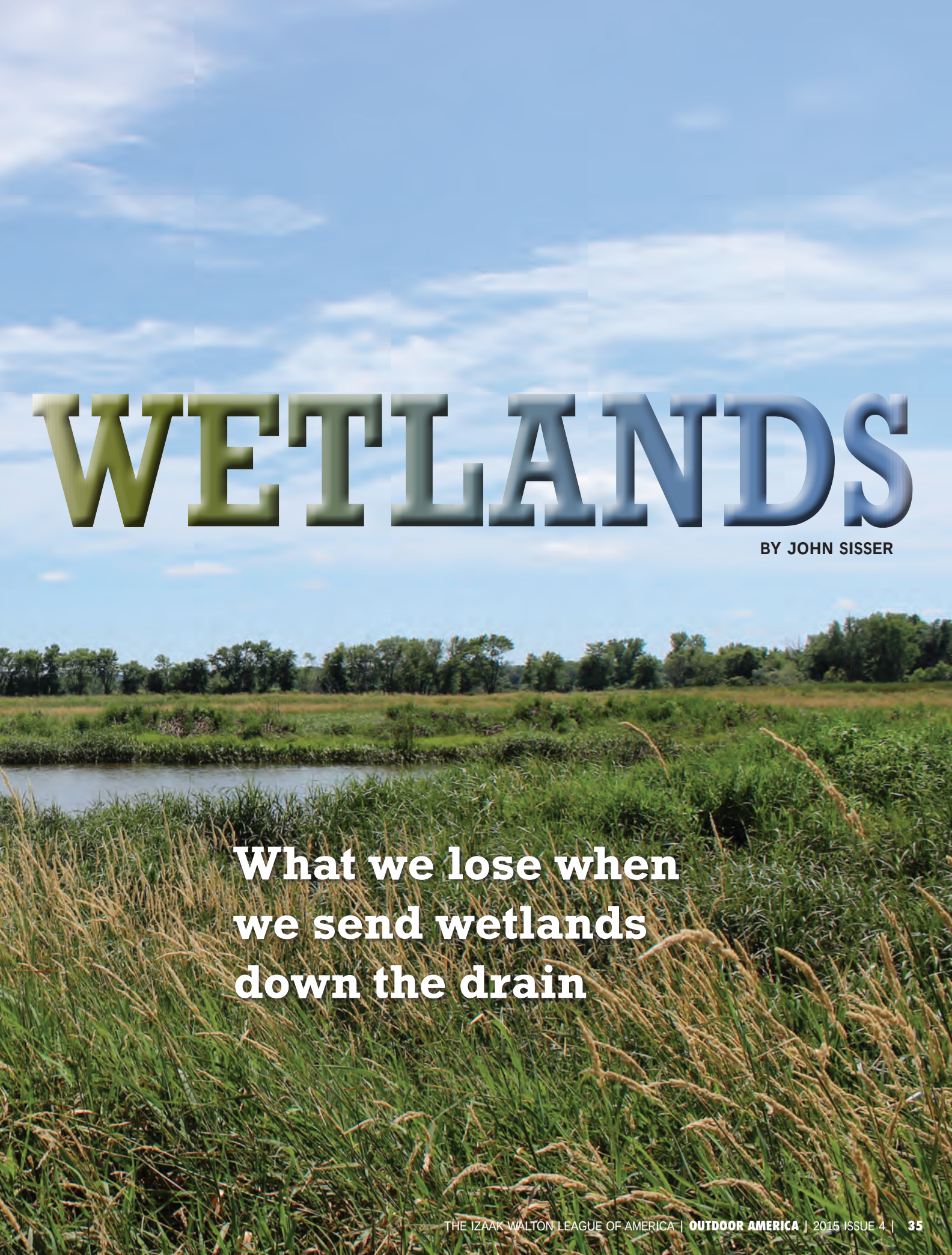
DISAPPEARING

JESSICA PIISPANEN, USFWS

WETLANDS

BY JOHN SISSER



What we lose when we send wetlands down the drain

Imagine a drive through the Great Plains. The open road cuts through vast acres of tallgrass prairie, with big bluestem and goldenrod as far as your eye can see. To your right, white-tailed deer race across the pristine grasslands. And to your left, small wetlands dot the open field as hundreds of ducks — thousands, even — take flight.

Then imagine taking the same drive just a few years later, only to find that the big bluestem and goldenrod are gone. There's not a deer or a duck in sight. And that seemingly endless expanse of prairie and wetlands you remember so vividly? It has been replaced with row after row of corn and soybeans.

What happened? In many cases, prairie was plowed under and wetlands drained to convert the land to agricultural use. It's a story America's sportsmen and women know all too well, because even wetlands that hold water for just a few weeks each year are vital for the next generation of ducks and other wildlife. Half the small, seasonal wetlands that once dotted the Great Plains have already been drained. With more wetlands lost each year, one of the nation's irreplaceable landscapes faces serious risk of disappearing.

All of this begs the question: what are we losing when we send our wetlands down the drain?

Why Wetlands Matter

One of the last bastions of wetlands in America is the Prairie Pothole Region, which cuts a swath through the Dakotas, western Minnesota, and northern Iowa. As glaciers retreated across the region 12,000 years ago, they scraped the ground below, forming millions of small depressions that, ultimately, became productive wetlands known as "potholes." Those wetlands include large, deeply flooded basins as well as small, seasonal wetlands.

"Prior to agricultural conversion in the Prairie Pothole Region, you would have had about seven acres of temporary, seasonal wetlands for every acre of permanent wetland," says Sue Galatowitsch, head of the Department of Fisheries, Wildlife and Conservation Biology at the University of Minnesota–Twin Cities. "They were just a massive part of the wetland landscape."

The U.S. Environmental Protection Agency (EPA) calls the prairie potholes one of the world's most important wetland regions. Nestled in the heart of a vast stretch of native prairie, these wetlands — sometimes present for only a few weeks each year during heavy rains or snowmelt — are magnets for waterfowl, which are drawn to the region for its rich habitat. In fact, more than half of North America's migratory waterfowl call the prairie potholes home for part of the year, and the region is responsible for up to 80 percent of North America's annual duck production. It's statistics such as these that earned the region the title of "North America's duck factory."

But if the Prairie Pothole Region is a factory, it produces far more than ducks. In addition to much-needed wildlife habitat, prairie potholes — and wetlands in general — provide far-reaching benefits, including:

- **Water quality:** Wetland vegetation filters pollutants out of rain and snowmelt before they run into streams or sink into the water table. The filtering process keeps nutrients and other pollutants from contaminating recreational and drinking water sources. This is particularly important in the Upper Midwest because pollutants in small streams combine in the Mississippi River and empty into the Gulf of Mexico, where excess nutrients create a "dead zone" for fish and marine life each year of almost 6,500 square miles.
- **Flood control:** Wetlands also store water after heavy rain or snowmelt, slowing the flow of water into streams and rivers. Coastal wetlands protect communities from flooding during severe weather events.
- **Economic support:** Wetland vegetation provides critical nesting habitat for upland birds and waterfowl alike. The prairie pothole portion of South Dakota alone attracted 80,000 out-of-state pheasant hunters in 2010. Hunters, anglers, and wildlife viewers spend money on lodging, restaurants, and gear, injecting money into local economies and creating jobs for residents.

These economic and environmental benefits are hardly limited to the Prairie Pothole Region. Companies across the country that manufacture goods used by hunters, anglers, and wildlife watchers benefit as well. In 1997, the Millennium Ecosystem Assessment estimated that wetlands around the globe are worth around $15 trillion — nearly the value of the United States' annual economic productivity.

If wetlands are so critical, why are we removing them from our landscapes?

Drain, Baby, Drain

Early settlers typically viewed wetlands as wastelands more likely to breed mosquitos than mallards. It's no surprise then that as technology moved forward and expansion moved westward, settlers jumped at the opportunity to drain the swamps and bogs that stood in their way.

Early on, **surface drainage** systems were the go-to solution for removing unwanted water. Surface drainage is relatively straightforward: a series of ditches, channels, and other alterations move water off the land. This type of drainage system is usually visible in a field or development and was used to drain low-lying wetlands in coastal southeast colonies as early as the 1700s.

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Sub-surface drainage is a less obvious and more recent drainage system. Perforated pipes called "tiles" are buried a few feet below the surface. Instead of water saturating the soil to form a wetland, it now seeps into the tile and is funneled into a ditch or stream.

Since its early use in upstate New York in the 1830s, tile drainage has been one of the driving forces behind the emergence of the American Corn Belt. Before settlement of the Midwest, much of Ohio, Indiana, Illinois, and Iowa was not particularly conducive to agricultural production due to poorly drained soils. Today, 35 percent of Illinois' cropland is tiled. That number jumps to 39 percent in Iowa, and at least 50 percent in Indiana and Ohio. Where crops are already established, adding sub-surface drainage systems can still boost yields by 20 to 40 percent.

But that drainage comes at a cost: wetlands. Perhaps one of the most egregious examples of wetland loss is the Great Black Swamp in northwest Ohio. Ever heard of it? Probably not, because it disappeared about a century and a half ago. Before settlers arrived in northern Ohio, a vast wetland — about the size of Connecticut — covered a large part of the western Lake Erie basin. Thick oak forests towered above feet of swampy water and mud, home to black bears, bobcats, and wolves.

But a few miles of ditches and decades of profitable lumber sales later, the Great Black Swamp is gone. The wetlands where wilderness once reigned now boast suburban shopping centers, a state university, and some of the most productive agricultural lands in the country.

In many ways, prairie potholes are falling victim to the same pro-drainage mentality. High commodity prices coupled with wetter precipitation patterns created a perfect storm for more drainage installation and, subsequently, wetland conversion to agriculture in recent years. Tracking wetland conversion over large landscapes is difficult, time-consuming, and usually relies on high-quality satellite imagery. But one recent study showed the nation's highest rates of wetland conversion clustered in the heart of the Prairie Pothole Region. Due to limits on satellite image resolution, many estimates may not even account for conversion of tiny, seasonal wetlands. According to Galatowitsch, those are disappearing even faster. "Temporary wetlands are the easiest to drain, but they are also the hardest to restore," she says. In fact, wetland restoration in general can be a significant investment in time and money without a great payoff for the environment. Studies comparing wetland mitigation sites with the original "impact" sites have found that only 15-30 percent of new wetlands fully compensated for lost functions and values.

Who Is Watching Wetlands?

For decades, public policy encouraged the installation of drainage systems for production agriculture. Several local and federal government programs actually *supported* wetland conversion in the mid-20th century, facilitating extensive wetland destruction from the Florida Everglades to California's Central Valley.

Wetland loss began to enter the public consciousness in the 1970s as part of a wave of environmentalism ignited by concerns over pollution and public health. The Clean Water Act brought many wetlands under federal protection in 1972, and by the 1980s, the "Swampbuster" provision of the Farm Bill discouraged wetland conversion for agricultural use by tying wetland protection to eligibility for some farm program benefits.

The Food Security Act of 1985 (the 1985 Farm Bill) delivered another victory for wetland protection: the Conservation Reserve Program (CRP). This program gives farmers the opportunity to voluntarily set aside and restore acreage — including wetlands — and receive payments supporting conservation. Through these contracts, farmers retain ownership of the land and keep highly-erodible and other sensitive lands out of agricultural production.

Wetland conservation reached its high point in January 1989 when EPA announced a new policy: not only would the federal government attempt to slow the tide of wetland conversion nationally, it would also set the goal of "no net loss" of wetlands.

The goal of this policy was to maintain the total acreage of wetlands nationwide as well as the unique functions and values provided by different wetland

TILING: HOW DOES IT WORK?

Nearly two centuries years ago, a Scottish farmer named John Johnston installed one of the first sub-surface drainage systems on American soil in upstate New York. Johnston would go down in history as the "Father of Tile Drainage in the United States" — and suddenly, the West was open to agricultural expansion.

Ohio, Indiana, Illinois, and Iowa make up one of the most agriculturally productive regions of the country: the Corn Belt, as it's sometimes called. But for a long time, soils in this region were thought to be too wet for production agriculture.

Enter the sub-surface drainage solution. Known as "tile" because of the short clay pipes used in early systems, sub-surface drainage is a hydrological manipulation — kind of like a diversion channel, but underground.

It works like this: Perforated drainage pipes are buried just a few feet below the surface. After a heavy rain or spring snowmelt, water seeps through the soil, into the pipes, and is routed elsewhere. Think of it as a reverse irrigation system.

Drainage tile systems come at a financial and environmental cost. Drainage systems can easily cost tens of thousands of dollars. Therefore, drainage installation is susceptible to fluctuations in crop prices. For example, record-setting corn prices just a few years back led to a surge in drainage installation in parts of the Midwest as farmers saw an opportunity to make an investment and boost future yields.

More importantly, tile drainage has environmental costs. Studies show that drainage systems may increase pollution from certain nutrients, including nitrogen. And while many farmers use drainage systems simply to control soil moisture and improve crop production on existing farmland, tile is used to drain valuable wetlands, eliminating water quality, wildlife habitat, and flood control benefits.

USFWS; KRISTA LUNDGREN, USFWS (2); LAURA HUBERS, USFWS; IWLA

types. For years, all levels of government had allowed and even encouraged practices that whittled wetland acreage in the continental U.S. to half of what it once was. "No net loss" was an ambitious attempt to put a permanent clog in wetland drainage.

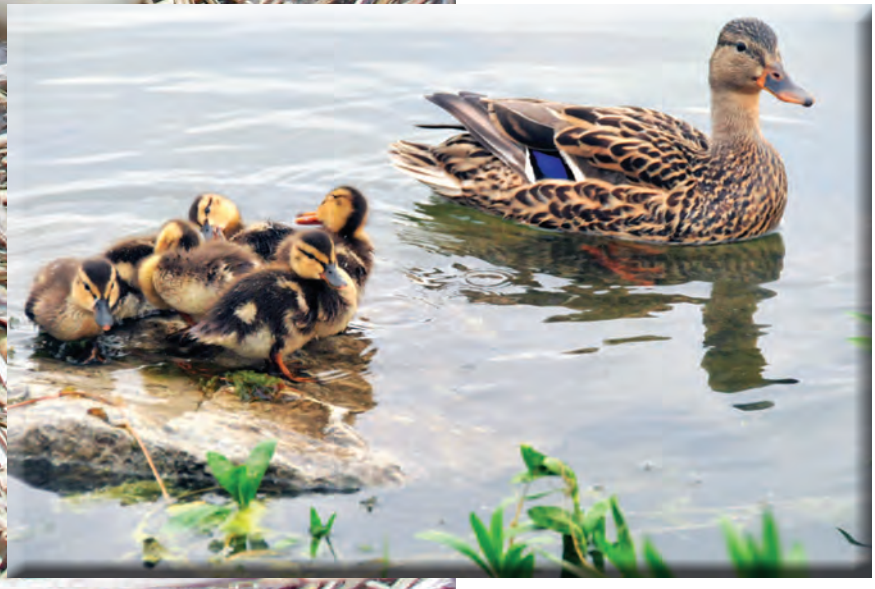
Spoiler alert: it hasn't. Wetland losses over the past 30 years have slowed compared with previous decades of widespread drainage, but they have not stopped. In fact, the U.S. Fish and Wildlife Service reports that wetland losses increased by 140 percent nationwide between 2004 and 2009, with coastal, forested, and prairie pothole wetlands all recording losses.

CRP initially boosted wetland conservation, but voluntary incentives cannot always compete with market prices. Once CRP contracts expire, many previously protected wetland acres are put into production. The challenge, Galatowitsch says, is how to restore and conserve wetlands on an agricultural landscape when the economy rewards crop production. It's a complex question with no clear answer just yet. But conservationists are working on it.

Solutions

We are overdue for a paradigm shift in how we think about wetlands — from looking at them as wasted land development opportunities to valuing them as ecological assets. But valuing wetlands in theory will not be enough to protect them. Instead, it will take a concerted effort by local, state, and federal decision-makers to develop effective policies that work for producers, consumers, and outdoor enthusiasts.

As wetlands continue to disappear — in the Prairie Pothole Region and elsewhere — policy initiatives aimed at protecting them become more important than ever. Here's a look at a few policies the League is working on to address the problem of wetland drainage for agricultural use:



- **Re-linking conservation and crop insurance:** The League and other conservation groups won a major victory when the 2014 Farm Bill re-linked eligibility for federal crop insurance premium subsidies with basic conservation measures, including the "Swampbuster" wetland protection provision. Farmers participating in the U.S. Department of Agriculture's (USDA) crop insurance program

can no longer drain wetlands on their property while receiving subsidies for insurance premium payments. USDA estimates that the 2014 Farm Bill changes will extend Swampbuster protections to as many as 1.1 million additional wetland acres across the country.

- **Wetland conservation:** Voluntary programs such as CRP or the Agricultural Conservation Easement Program may not beat out sky-high corn prices, but they do help make wetland protection more economically viable for farmers. Amid government spending cuts and conservation program consolidation, the League continues to fight to make sure these programs are available to help restore and protect wetlands across the country.
- **Wetland mitigation banks:** Producers who drain wetlands on their property can sometimes purchase credits from a wetland mitigation "bank" where wetlands have been restored, enhanced, or created to replace lost functions and acreage. The League is working with members and partner organizations to influence how mitigation banks are structured to ensure they provide meaningful protections for wetlands and live up to the no-net-loss standard.

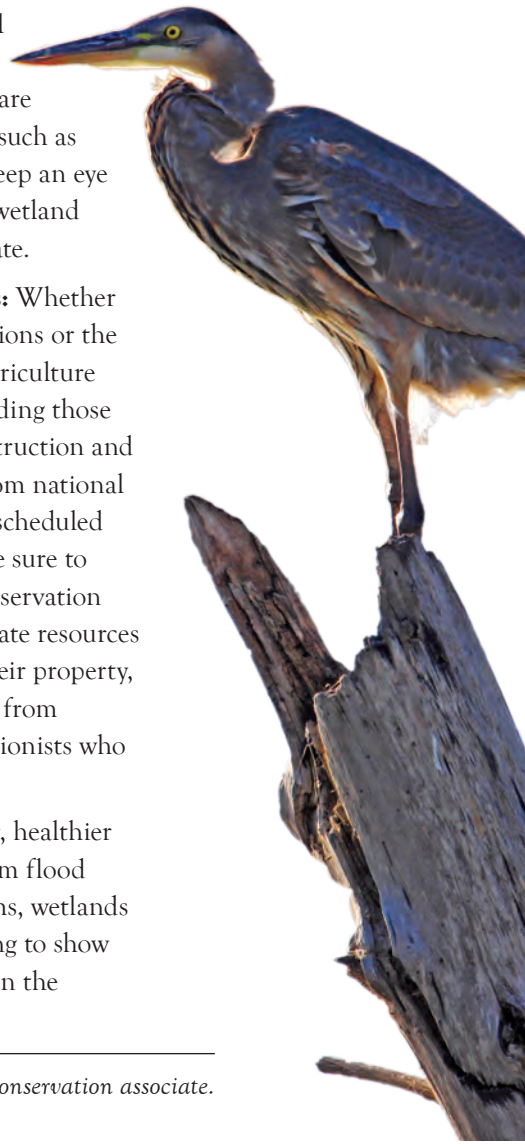
The League is also working to ensure wetland conservation remains a national priority through comments on rulemakings, meetings with policymakers, and general outreach and education. Here's how you can help:

- **Get to know farmers in your area:** Identify conservation champions who are protecting wetland habitat on their land. Try to get a better understanding of why wetlands are important to them as well as the challenges they face as producers. They can be your best advocates locally for wetland conservation. If they are enrolled in state or federal conservation programs such as CRP, get their input on how the programs work and opportunities for improvement, and share that information with League staff.

- **Track state policy:** Federal farm programs get a lot of attention, especially when it comes time to pass a Farm Bill, but there's plenty happening at the state level, too. Some states have their own statutes protecting wetlands or a special land set-aside program. In addition, some federal policies are implemented at the state level, such as wetland mitigation banking. Keep an eye out for opportunities to make wetland protection a priority in your state.
- **Talk with your representatives:** Whether it is in future Farm Bill discussions or the annual appropriations cycle, agriculture conservation programs — including those that protect wetlands from destruction and degradation — need support from national policymakers. Have a meeting scheduled with a member of Congress? Be sure to make a case for agriculture conservation programs. Farmers need adequate resources to protect critical habitat on their property, and policymakers want to hear from hunters, anglers, and conservationists who support these investments.

Whether it's safer drinking water, healthier wildlife populations, protection from flood damage, or cleaner lakes and streams, wetlands give us many benefits. We're working to show our appreciation by keeping them on the landscape for generations to come.

John Sisser is the League's agriculture conservation associate.



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