The Last Hideout

Restoring Driftless Area Prairies

Top: This remnant sedge meadow, a type of wet prairie, is on Prairie Haven Farm. (Marcie O'Connor)

Inset: Swamp milkweed attracts many insect pollinators. Monarch butterfly larvae feed only on milkweed. (Wiki Commons, Derek Ramsey)

By Pamela Eyden

The Driftless Area — 24,000 square miles straddling the Mississippi in Wisconsin, Minnesota, Illinois and Iowa — is more than a place of scenic beauty. The steep hillsides, rocky bluffs and flat ridges were originally covered in prairie and oak savannas, and still harbor more pockets of ancient ecosystems than anywhere else in the Midwest. The area is critical for the survival of hundreds of species of plants and animals that are endangered and threatened elsewhere. For them, the Driftless Area is the last hideout.

They include: Henslow's sparrows, Bell's vireos, bobolinks, dickcissels, timber rattlesnakes, six-lined racerunners, pickerel frogs, regal fritillaries, Otoe skippers and Gorgone checkerspot butterflies, wild indigo duskywing and hickory hairstreak moths, prairie bush clover, brittle prickly pear, Hill's thistle, dragon wormwood, white camas, small scullcap and dotted blazing star.

Fascination with this diversity and an urge to protect it inspires some people to take on the hard work of prairie restoration.

"One of my strongest drives is to nurture rare and endangered species, and counter some of the damage that's been done. About one species goes extinct on earth every minute," said Gary Eldred, one of the founders of The Prairie Enthusiasts. "Now with climate change, we don't know what's going to happen. The odds are against them."

The Prairie Enthusiasts (TPE) is a nonprofit environmental organization dedicated to preserving and restoring the prairies and savannas of the Midwest. It was started in the 1970s "by a small bunch of guys who loved prairies and liked to burn them, then drink beer and talk about preserving remnants," according to the TPE website. Today it has 1,500 members, most of whom are working to restore prairies

on their own land. TPE owns more than two dozen prairie sites and maintains a dozen others.

Because of the Driftless Area's rough terrain, it was not grazed or farmed as intensely as flatter land, so more ancient ecosystems escaped destruction. The prairies here don't all match the popular image of waving grasses and coneflowers. They are diverse, each adapted to its own combination of soil, slope, sun and weather.

Wet prairies occur where water doesn't drain away; mesic prairies have some water and good drainage; dry prairies inhabit steep bluffs and sandy areas. Then there are oak savannas, places where the prairies of the Western U.S. overlap with hardwood forests of the East. Each has specific mixes of plants, microorganisms and pollinators.

"Restoring prairie is slow-motion work," O'Connor said.

Prairies that have never been disturbed, called remnants, are rare. They provide a blueprint for restoration efforts.

Landowners Step Up

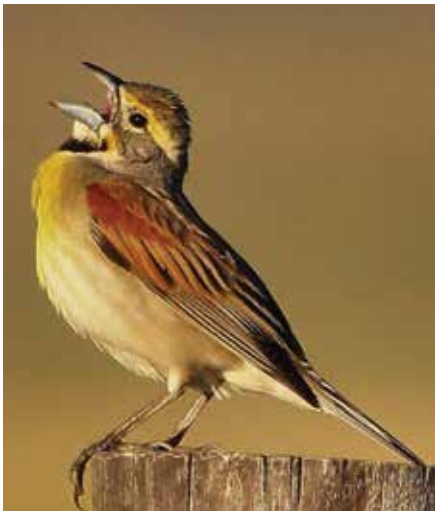
Most remnant prairies are on private land, so it's up to private landowners to do the hard work. They are increasingly supported by public agencies, including the Natural Resources Conservation Service; Wisconsin, Minnesota, Illinois and Iowa departments of natural resources (DNRs); U.S. Fish and Wildlife Service; county conservation offices; and many more. Land trusts and an array of environmental groups are also working to restore Driftless prairies.

Darcy Kind, a biologist with the Wisconsin DNR, said, "These agencies collaborate because we all recognize that prairie restoration is critical for species that are at risk, threatened or endangered. All data have pointed to how important the Driftless Area is for plants, animals, insects, fish."

Kind coordinates the Wisconsin DNR's Landowner Incentive Program (LIP), which works with landowners on cost-sharing conservation projects, such as opening up old patches of oak forest and clearing cedars from bluff prairies. LIP has tackled 15 projects per year since 2005. The projects are one-time efforts. "But restoration is a 100- to 150-year effort," she said.

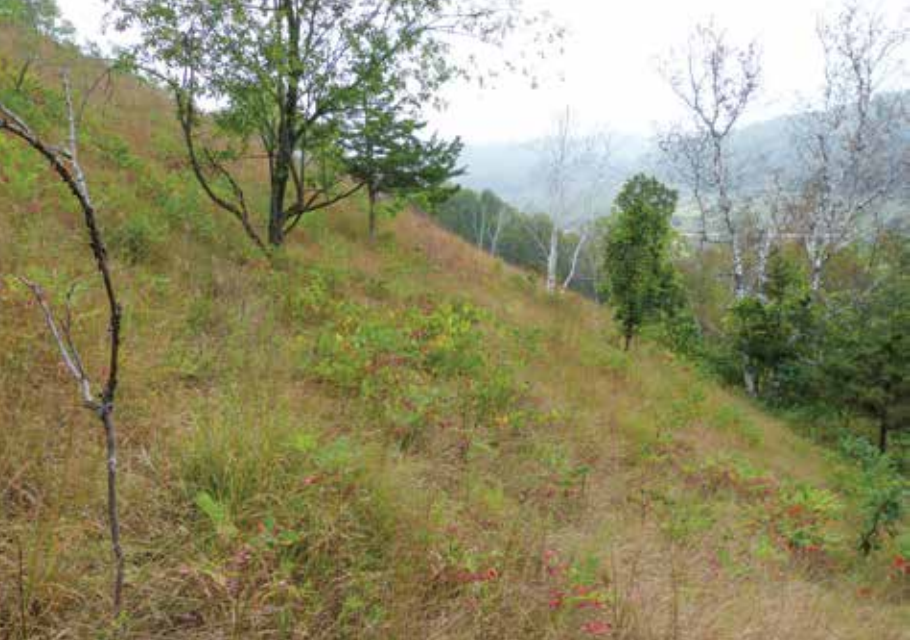
Marcie O'Connor and her husband, Mike, bought a 420-acre farm in Buffalo County, Wis., in 2000. Marcie, who has a background in botany and plant ecology, decided to restore it to the way it was before it was farmed. She was curious and thought it would be fun. She did not know what she was getting into.

"The first thing we did was try to



Dickcissels nest in prairie grasslands and savannas. (Gary Eldred)

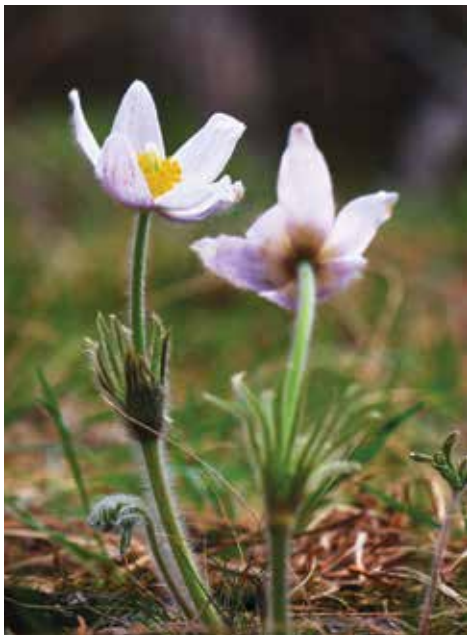
This field was plowed and planted for many years before the O'Connors planted it in prairie in 2000. Fifteen years later, the same field is lush with grasses and forbs. (both Marcie O'Connor)



Above: A steep bluff prairie at Prairie Haven Farm.

Above right: A northern flower moth nestles into an aromatic aster that grows on bluff prairies. (both Marcie O'Connor)

Right: Early blooming pasque flowers grow in dry sandy prairies and on blufftops. (Gary Eldred)



turn a 150-acre planted crop field into prairie, 20 acres at a time. We didn't know what we were doing, so we just started," O'Connor said.

First, she didn't know how much seed to plant. Because prairie seed is expensive, O'Connor gathered her own, watching out the windows of her car as she drove to St. Paul and back, noting where the prairie flowers were, then returning a few weeks later to gather the seed. She gathered half of what she needed and bought the rest. She planted about 30 seeds per square foot.

"That was an early lesson — you have to plant lots of seeds," O'Connor recalled. "Some don't like the soil or other conditions, so they don't grow, and a lot of seeds get eaten."

Now she plants 100 seeds per square foot.

Another lesson was to plant lots of forbs (flowers), which tend to get muscled out by prairie grasses.

In 17 years O'Connor has worked to transform 15 aces of overgrown hillside agricultural fields that were fallow for a long time and six large bluffside prairies, also called goat prairies, that had become overgrown. She is also restoring oak savanna on the south and west slopes of the hills, and wet prairies along a creek on 20 acres that were once drained by tiles.

"Restoring prairie is slow-motion work," O'Connor said. "You don't know right away what's going to work. You have to wait four or five years. And it's changing all the time — you change one thing and all kinds of other things happen."

Long-used farm fields are often planted with prairie seed to start. Other areas may only need to be cleared of trees and brush for the seed bank in the soil to rise up again. Prairies will need to be burned off every few years. Still, it takes years to attract helpful pollinators and to accumulate the original microorganisms.

"We haven't begun to discover the links between species and the biological characteristics that may be very useful in the future," Eldred predicted.

Like many prairie restorers, O'Connor has a keen interest in identifying the plants and wildlife at Prairie Haven Farm. She keeps an inventory of animals, birds, butterflies, other insects, plants, fungi, lichens and 800 species of moths on her blog.

"It's astounding, how many critters there are," she said.

When a colleague sent an alert last fall that the rare northern flower moth was out and about, O'Connor spent time climbing the bluff prairies looking for aromatic aster flowers (*Symphyotrichum oblongifolium*), known to be the only host plant for the moth larvae. She found the moths clustered into the center of asters, and later returned to follow their life cycle.

Nurturing Diversity

Surprisingly little is known about many of the plants, insects and microorganisms in Driftless Area prairies. Marci and Jim Hess are restoring the oak savanna and prairie on their 46-acre farm south of Mount Horeb, Wis. They

Top: A hawkmoth visits a wild geranium. (Gary Eldred)

Top right: An oak savanna at Prairie Haven Farm. (Marcie O'Connor)

Above: Kitten tails. (Meyer, Wis. DNR)

think of themselves as citizen scientists.

"I'm curious and I want to know more, and I want to keep learning as long as I live," Marci said.

She recently got a grant from the Prairie Biotics company to study a tiny plant called kitten tails (*Wolfenia bullii*), which is rare in the Driftless Area and threatened globally.

"No one knows anything about the pollinators and other insects in relation to this plant," Marci said. She intends to observe a patch of kitten tails she located on unmanaged land, for several years.

Darcy Kind's counterpart, Minnesota DNR biologist Jaime Edwards, works to restore south-facing bluff prairies (also known as goat prairies because they are so steep only goats could graze them). These prairies are home to hundreds of species of plants and animals. Pollinators — regal fritillaries, bumble bees, tiny wasps — are of great interest and concern now, she said, but a lot of her work focuses on timber rattlesnakes (*Crotalus horridus*),

Explore a Driftless Area Prairie

- **Bluff prairies:**
  - Nelson Dewey State Park, Cassville, Wis.
  - Perrot State Park, Trempealeau, Wis.
  - Falling Down Prairie (Illinois DNR), Hanover, Ill.
- **Dry prairies:**
  - Weaver Dunes Scientific and Natural Area, Kellogg, Minn.
  - Hogback Prairie State Natural Area, north of Steuben, Wis.
  - Holland Sand Prairie State Natural Area, Holmen, Wis.
  - Grey Cloud Dunes Scientific and Natural Area, Cottage Grove, Minn.
  - Lost Valley Prairie Scientific and Natural Area, Hastings, Minn.
  - Lost Mound Unit of Savanna Army Depot (U.S. Fish and Wildlife Service), Savanna, Ill. The largest remnant sand prairie in the state.
- **Oak savannas:**
  - Merrick State Park, Fountain City, Wis.
  - Hanley Savanna, Hanover, Ill.
  - Savanna Springs Nature Area, Chatfield, Minn.
  - Lower Chippewa River State Natural Area, in Dunn, Buffalo and Pepin counties. The largest concentration of remaining prairies and savannas in Wisconsin.
- **Wet prairies:**
  - Avoca Prairie and Savanna State Natural Area, east of Muscoda, Wis. The largest intact prairie in Wisconsin.
  - Lower Chippewa River State Natural Area, in Dunn, Buffalo and Pepin counties. The largest concentration of remaining prairies and savannas in Wisconsin.
- **Mesic prairies:**
  - Lost Valley Prairie Scientific and Natural Area, Afton, Minn.

A patch of prairie stretches between oaks at Prairie Haven Farm. (Marcie O'Connor)

which are categorized as threatened in Minnesota.

Rattlesnake hunters collected bounties for rattlers in Minnesota until 1989. Their numbers declined dramatically because of the bounty and because their habitat — bluff prairies — has been disrupted.

Farming didn't disrupt this kind of native prairie, but a native tree — the red cedar — did. The wildfires that once swept across Driftless Area bluff tops and ridges kept bluff prairies open and free of cedar trees. So did grazing goats in many places. But in the last decades, cedar trees have been creeping in, shading the rocks that many generations of rattlers used for sunning. This causes rattlesnakes to move downhill in search of new denning and sunning spots. When they do, they sometimes end up in people's back yards. Edwards is restoring bluff prairies and reducing encounters between humans and snakes.

An adult fritillary butterfly feeds on butterfly weed — its caterpillars feed only on violets. Without violets there would be no fritillaries.

Early-blooming wood betony has a chemical in the roots that keeps early grasses at bay long enough for the plant to grow. (both Gary Eldred)

Clearing undergrowth from old oak savannas and cedar trees from bluffs is rugged work. When I reached Erik Thomsen, co-owner with Beth Schaldach of Ku-Le Region Forestry, he was standing on the side of a hill in Yaeger Valley in Buffalo County. They were clearing a wooded slope with chainsaws. Ku-Le is one of a handful of small businesses that help agencies and landowners with tough restoration projects.

"Bluffs have become our specialty," said Erik, who claims he walks more easily on slopes than on flat land. "The views from those bluff prairies are amazing. Nobody's even been up there since the 1940s or 50s."

Eight or nine decades are nothing compared to the span of time that created Driftless Area prairies. The diversity found here is a treasure long in the making.

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Pamela Eyden is the news and photo editor.