Replanting a Tallgrass Prairie

by Susan Morse

Step foot on the Neal Smith National Wildlife Refuge in south-central Iowa and it's hard to miss a sense of mission. Over the past 17 years, the refuge has drawn acclaim for returning 3,000 acres (1,215 hectares) of Midwest corn and bean fields to a landscape closer to what early 19th century settlers saw. The return of rare native plants that once covered parts of 14 states has made these lands capable of supporting other long-absent species, including elk, and bison, and rare breeds of birds and butterflies.

True, the Neal Smith Refuge is no longer the world's largest tallgrass prairie reconstruction; that distinction has been claimed by Glacial Ridge National Wildlife Refuge in Minnesota. But there's more than size at stake. By any standards, Neal Smith's is a remarkable success story, one in which project leader Nancy Gilbertson rightly takes pride.

Just don't use the word "restored" to describe the fragile prairie environment she and many others at the refuge are still laboring to recreate. Gilbertson and her fellow prairie enthusiasts take the long view on restoration of an ecosystem that developed over thousands upon thousands of years.

"We have 3,000 acres out of our 5,600 that have been planted," she'll correct you if you slip and use the "r" word. "I won't use that word 'restored' til I'm about 10,000 years old."

The prairie reconstruction effort has become a powerful environmental education tool and a veritable regional industry for scientists, university students (whose professors build curricula around the project), volunteers, schoolchildren, and Scout troops.

Elementary and middle school students hand-harvest the seeds of native grasses, plant them in a greenhouse on the refuge, and tend the seedlings until they're ready for transplanting on refuge lands.

Youngsters swoop across the fields, swinging butterfly nets to help with a monarch butterfly tagging program in which the United States, Canada, and Mexico take part. The refuge is a rest stop on the monarchs' fall migration to Mexico. In the spring, on their return trip, the butterflies lay eggs on several species of native milkweed found on the prairie. Refuge staffers put a tiny sticker on the wings of captured butterflies to track their migration, and the kids release them. The activity "gives the

Native plants cover a tallgrass prairie restoration site at Neal Smith National Wildlife Refuge.

Tom Prall

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Young students help plant prairie species at Neal Smith NWR.

kids a chance to explore the prairie and find all kinds of things that they can show their classes, such as animal skulls. They all really love it," says Visitor Services manager Cheryl Groom.

Signs of Progress

When Neal Smith Refuge staff and volunteers cut non-native trees, Scouts stack the wood for burning. Wildfires – part of the original prairie ecosystem – used to do the job. But fire suppression over the past century and a half allowed trees to take root. Now, regular controlled burns play a part in thinning the non-native growth.

Staff at the refuge see progress in the return of nesting grassland birds. The first Henslow's sparrow (*Ammodramus henslowii*) nest was discovered on the refuge in 2001, says Gilbertson. "Every year, we find more nests, so that's exciting."

With the refuge's help, some rare butterflies have also made a comeback. Using seeds and plant stock found on prairie remnants, refuge staff planted several thousand prairie violets (*Viola pedatifida*). Then they brought back gravid (pregnant) females of the regal fritillary butterfly (*Speyeria idalia*), a striking orange and black variety whose young feed on the violets. At first, the staff set large cages over the violets and the butterflies, which the state of Iowa has designated a species of concern. Now the butterflies are found throughout the refuge.

Increasingly, however, the refuge is waging a war against invasive species – a threat, says refuge research coordinator Pauline Drobney, that didn't exist a couple of hundred years ago. Staff and volunteers are hand-pulling noxious exotics before they choke out native plants, and applying herbicide where necessary. Two particular targets are Sericea lespedeza, a shrubby legume native to Asia, and Canada thistle (*Cirsium arvensis*), a perennial with a vigorous rootstock.

Refuge visitors begin their orientation to the land's origins and complex plant and animal interrelationships at the refuge's spacious visitor's center, a facility equipped with classrooms, an exhibit area, a theater, and a bookstore.

Says Drobney, "I don't think we truly teach about prairie. The best thing we can do is provide an experience for people to find it themselves. They have to really touch it to have it catch hold of them. As Rayford Ratcliff, a volunteer who used to work out here, once told me, 'To really understand prairie, you have to get your back up agin' it.' He was right. You have to let yourself get in it, and let it get into you."

Learning Patience

Why does restoration of a prairie landscape matter? Drobney waxes philosophic:

"Ultimately, these ecosystems are the things that allow life on earth to exist.… It would be a pretty grim place, even in terms of surviving, without the functions we are given from native ecosystems."

Take native pollinators, for example: butterflies, bees, hummingbirds, bats, and moths. Make the land less hospitable to them and you can measure the loss in fruit and flowers.

There's a visual richness, too, provided by fields of native big bluestem (*Andropogon gerardii*) and golden Indian grass (*Sorghastrum nutans*) waving in the wind. And then there's history. For Iowans, says Drobney, prairie is "part of who we are really.…One of the things that tend to hook people [on prairie restoration] is knowing their ancestors came through this landscape and this is what it was like."

The hard part is having patience.

Says Gilbertson, "What I have to keep in perspective is that prairie restoration doesn't happen in a few years or even 20 years. Yes, it's not a cornfield anymore, but...." she says, drawing out the last word and leaving it hanging.

"I have to remind myself of something John Madson said. He was an Iowa native who was considered the father of the modern prairie restoration movement. He said, 'Be patient; have faith; and don't mind the dirt under your fingernails.'"