

# Behind the scenes at Nachusa Grasslands, where animals from mice to bison find stability

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Credit: CC0 Public Domain

On a hilltop about 95 miles west of Chicago grow plant species that have been there for hundreds, if not thousands of years. The soil is sandy, so

when the surrounding lowlands were used for agriculture, the hill remained untouched. From that vantage point, Nachusa Grasslands sprawls below with sections of savanna, a pond frequented by blue herons, patchy spots where bison have grazed, and a red barn to the far north that marks the volunteer and scientist headquarters.

Looking out from her favorite view, Elizabeth Bach feels at the center of it all.

Bach, an ecosystem restoration scientist, is the only full-time scientist at Nachusa, responsible for facilitating the more than 40 scientists conducting research at the site and planning how to manage its 4,000 acres through controlled burns and plantings. Nachusa is home to animals across food chains, many of which have relatively stable populations.

"This is the goal in ecosystem restoration," Bach said. "You want a system where these natural processes are happening."

But Nachusa has shown that people aren't just needed at planting season. Rather, people can improve conservation outcomes through regular management and stewardship of the land.

Researchers from Northern Illinois University tested the popular "field of dreams" ecological hypothesis that posits that by reintroducing plant biodiversity into a setting, the wildlife will follow. But the study showed human management, including the reintroduction of a [bison](#) herd and regular controlled burns, was six times more effective in improving animal biodiversity than just restoring diverse plant communities.

Nachusa Grasslands is a restored swath of prairie, woodland and wetland with plant and animal species native to Illinois. The project began in 1986 when a group of community members bought about 400 acres to

bring back the native prairie in its titular state after years of the land being used for agriculture. According to the U.S. National Park Service, prairie is one of the rarest and most endangered ecosystems in the world.

Now, the grassland's size is 10 times that and continues to expand with the purchase of new land parcels, something the Nature Conservancy, the nonprofit organization that manages Nachusa, takes every opportunity to do, Bach said.

Bach started at the site in 2018, so she hasn't witnessed the huge changes that have occurred at Nachusa. But she has seen memorable shifts. In 2020, the Nature Conservancy bought a former cornfield and built wetlands. Now sandhill cranes, a species often spotted in Chicago that is expanding out across Illinois, use it for foraging.

At the grassland, research and conservation intertwine. When the project started, there was no template for bringing back a native landscape, and the key scientific question was simply, "Can we even plant a prairie?" Bach said. Over the years, those questions have become more rigorous and more complex, like "Why is a bison grazing on a milkweed?" Bach's job is to make sure these questions ultimately advance the Nature Conservancy's ability to manage the prairie.

Data sets as large as those at Nachusa are rare in ecology research, Bach said. Most grant-funding cycles last three to five years, and getting funding for a project beyond that is a "steep challenge," she said. This means the data may only reflect a few seasons, when natural landscape changes can take much longer.

"It's really exciting where there are opportunities to plug into projects that have been able to continue going year after year," she said.

Each project and its findings represent a little piece of a puzzle that Bach

gets to put together year after year, slowly building a picture of ecosystem restoration. But in this puzzle, there are no edge pieces—the landscape continues to expand.

## **A herd 100 strong**

Nachusa Grasslands is famous for its bison, the large furry mammal that almost went extinct in the 1800s.

In 2014, 30 bison were brought to the site, and in 2015, the first wild calf in over 200 years was born east of the Mississippi.

The goal was to get the herd size to 100, which the team at Nachusa hit in 2018, Bach said. Now, the Nature Conservancy transfers some of the bison to other conservation projects in order to control the population size relative to the land. This October, some bison will be moved to Wisconsin to restore the animals to Native American tribes, an initiative led by the InterTribal Buffalo Council.

Bison are a keystone species, meaning they have a disproportionate impact on the health of an ecosystem. Their grazing is believed to play a major role in increasing biodiversity, a hypothesis Bach is studying now.

"The bison will use an area for a while and they may abandon it, lose interest in it, and then it recolonizes," Bach said. "So this creates new patches in the landscape."

At Nachusa, the bison roam wild, untouched by human interference outside of an annual roundup to provide basic veterinary care. They graze over 1,500 acres that is inaccessible to visitors, though scientists conduct research on the land.

Within the herd, females stick close to their calves, forming a tight

family unit. Male bison may roam off on their own, sometimes popping up where Bach least expects them. They spend the days ambling about, issuing guttural noises and wallowing, when they roll in the dirt to remove flies and leave behind their scent, visible from the poof of a dust cloud.

## **Stable small mammal populations**

A few fields over, Erin Rowland-Schaefer, a doctoral candidate at NIU, doesn't name the mice she works with, but she does talk to them when collecting data about each catch.

"I really do find that talking to them helps everyone stay much more calm," she said.

At Nachusa, there are eight fields where researchers set traps for [small mammals](#) to determine how many critters are out there. Population data is collected in the spring, summer and fall to estimate each species' size.

The traps resemble long metal boxes, stuffed with pieces of cotton when the temperature's low to keep any captured mice or voles warm at night. Arranged in a five-by-five grid system, each team member takes a row to see if a trap is closed. If so, Rowland-Schaefer empties the creature briefly into an open and large Ziploc bag to scan it for a microchip, which would signal that it has already been registered. If it has one, she collects new measurements and lets it go. If not, she grabs the mouse by the extra skin at its neck to measure its tail and legs, and logs a new population member.

The [data collection](#) takes a week of intensive work, but it's part of an almost decadelong research project on the health and stability of the small mammal population in Nachusa as the habitat has been restored.

"The more information you have, the more informed decisions you can make," Rowland-Schaefer said. "Every little piece helps."

Small mammal research can be thought of as the link between plant diversity and other animals, Bach said. Small mammals, such as mice and voles, primarily eat seeds, which affects what [plant species](#) thrive and where. The small creatures themselves are food for the predators on the grasslands, such as raptors, coyotes and foxes.

Over the years, the small mammal populations have remained relatively stable, while more and more rare populations are making an appearance, such as the meadow jumping mouse, Rowland-Schaefer said. Typically, the researchers catch one a year, but over the summer, she caught nine.

## **Inspiring projects and people**

The success at Nachusa Grasslands has inspired other grassland and savanna restoration projects, such as the Southeastern Grasslands Initiative in Tennessee.

Nachusa has also inspired individuals. In September, Booker Moritz made the trek from Charlottesville, Virginia, to Franklin Grove when he heard about a job opportunity at Nachusa to spend the fall collecting and spreading seeds and studying the prairie. To Moritz, Nachusa is an inspiration, and he hopes to take some of the skills he learns in his time there back home for his own efforts.

"You can focus in, and rather than think about everything that's happening, what we're doing here is good and beautiful and successful," Moritz said.

Previously, Moritz worked in health care and bought land in the Shenandoah Valley in Virginia. Keeping the lawn perfectly mowed

wasn't his style so instead, he planted a section of prairie. He had also worked at the Platte River Prairies in Nebraska and knew Nachusa was the place to be for studying ecological restoration.

Moritz said ecological restoration requires putting aside the fact that this work could be too little, too late in the face of climate change.

"You take the perspective that if by chance, we rally together and do something about the extinction crisis, the biodiversity crisis, climate change—if by chance we do something, you want these refuges left where we can build from," Moritz said. "You can't just give up and sit on the sidelines, that's not accomplishing anything."

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