

Bison Broaden Biodiversity at Broken Kettle Grasslands

Broken Kettle Case Study Key Points

Controlled grazing:

- is bringing more biodiversity to Iowa's largest prairie
- has shown a favorable response from butterflies, grassland birds, and other animal and plant species
- with bison gives different results than grazing with cattle
- is producing good results for both the prairie and local graziers



Grazing Generates Diversity at Iowa's Largest Prairie

Broken Kettle Grassland Preserve, Iowa's largest prairie, is being grazed for ecological reasons.

"We're grazing for diversity," says



Scott Moats

Scott Moats, manager of the 4,000-acre preserve in the Loess Hills of northwest Iowa. "Natives thrive on disturbance. We use fire in the spring and fall, but cows or bison moving

around the prairie and selecting the plants they want to eat at the time will give you even more diversity."

Moats is grazing 330 cow-calf pairs on 2400 acres at the preserve, and 28 adult bison and 9 calves on 500 acres.

While the prairie supports more than 200 species of plants and 150 different bird species, the preserve's owner, The Nature Conservancy, wants to increase that biodiversity.

The prairie has a mix of about 40 percent cool season grasses and 60 percent native grasses and forbs. "I'd like to reduce the competition from the cool season grasses, set them back to give the natives an advantage," Moats says. "I think grazing bison will help do that—they will give us more

long-term pressure on the cool season grasses, which will give us year round grazing."

Moats has had the small bison herd for only a year. "We knew 10 years ago we wanted bison, but we had to have enough land and infrastructure—fences and corrals—to be ready for them," he says. "Barbed wire works for cattle, but we needed 6-foot high woven wire with a high tensile electric wire on top for bison.

While the bison are more difficult to handle, they're not very susceptible to disease. They're a hands-off animal, Moats says. "We'd like to expand the herd to 250 adults and put them on

able plants available at the time.

But bison will move without mineral. "I couldn't tell you how far the bison walk in a day, but I do know they'll cover the entire 500-acre pasture every day, eating the plants that are most succulent that day. The way they roam and pick and choose plants brings more biodiversity to our prairie. The wallows they create also add diversity."

Cattle, on the other hand, will do a better job controlling small woody species. "We expect we will have to use more fire with bison," Moats says.

The prairie has about 25 percent tree cover, Moats says, but he'd like

that to be reduced to 15 percent. He wants a mosaic of grassland. "Some birds and mammals need short

grassland, some need heavy cover, and some are in between. The way you graze depends on whether you're managing for rattlesnakes, grassland birds, or fuel loading for fire. It's difficult, but we're trying to support all that biodiversity."

Grazing good for the prairie

"Grazing is always good for the prairie if you have the appropriate stocking rate and don't overgraze," Moats says. "When we first acquired most of the parcels of land, they had been grazed pretty heavily. So we grazed lightly to begin with to bring plant vigor back,"

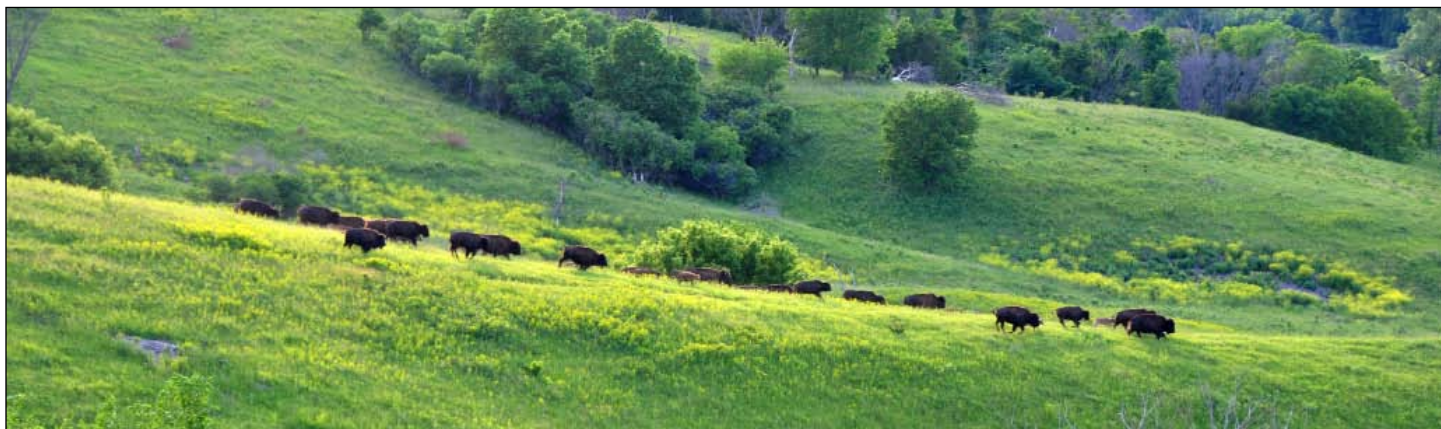
"What you want is large-scale disturbance to create a mosaic of habitats."

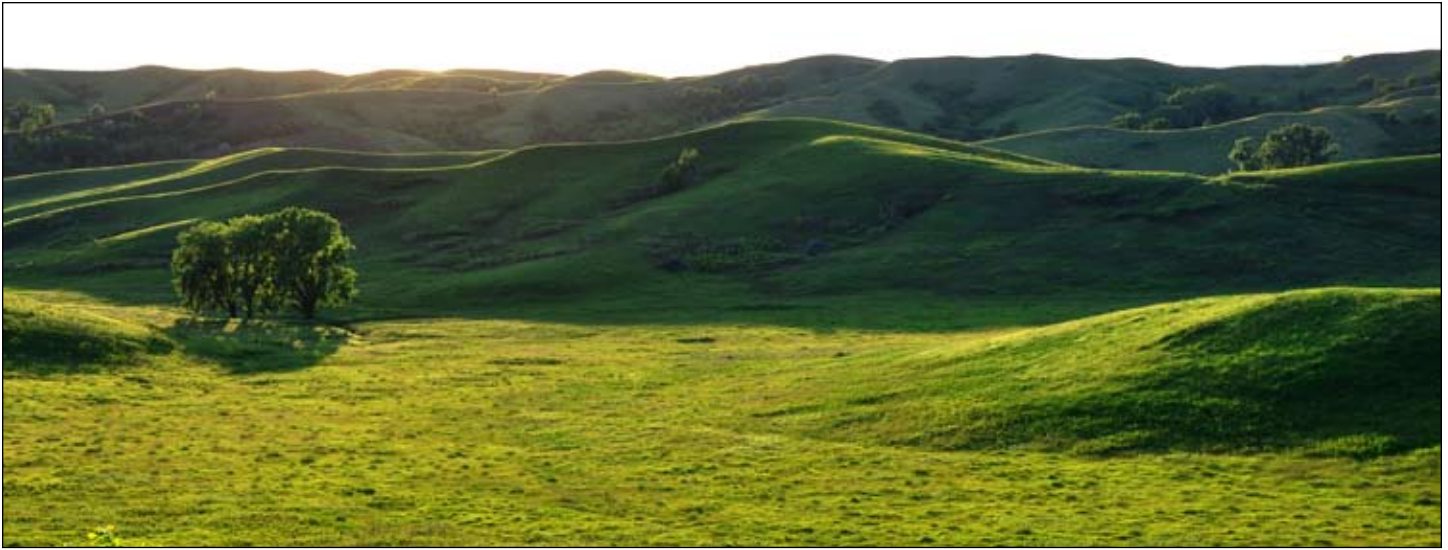
2,500 acres—turn them out in a big pasture and let them do their thing," Moats says.

Cows, bison graze differently

Cows and bison have different diets—bison focus on sedges and grasses, while cattle will eat more forbs," Moats says. "And cattle are more tied to water. They'll hang around the water, but bison can go a long time without water so they'll roam the prairie more."

Moats says mineral is often used to move cattle around—they're likely to stay in an area eating the most palat-





Moats says. “Now, we’ll shoot for 10 acres for a cow-calf pair. But some of our land is down to three and a half acres, depending on our purpose.

Moats doesn’t have a conventional rotation. His grazing season is May 15 to October 15. Stocking rate and time in a pasture varies by the biodiversity it will create. “We run at about 70 percent utilization of most of our pasture. We’re not trying to maximize grazing,” he says.

Grazed cattle for 10 years

The Nature Conservancy has acquired land at Broken Kettle over the past 15 years, and often rented the pasture back to the producers who sold land to them.

Ed Schoenfelder was the first. He’s rented pasture at Broken Kettle since 1995, running 130 Black or Red An-

gus and Simmental cow-calf pairs on about 1700 acres.

“I think it’s working out great,” Schoenfelder says. “I can run more cattle, and it helps Scott keep trees and brush down. It’s the same as renting from anyone else. He provides you with enough acres for the cattle and says how many cattle you can have. It’s on a cow-calf basis, not a per acre basis. Scott controls how long the grass is that way—he wants to keep about 8 inches of grass there and he and I agree when it’s time to rotate the cows to a new pasture.”

“We’re working with five local cattlemen who are amenable to our requirements to move the cattle as needed,” Moats says. “They don’t have to be botanists, but they do have to work with us. It’s not my job to make their cattle fat, but I think we

Broken Kettle Grasslands, Iowa’s largest remaining prairie, is nestled in the rugged Loess Hills in northwest Iowa.

offer a fair market value for rent and believe they’ve been happy when their cattle come off the pasture.”

There’s a written yearly contract that says how long the number of cow-calf pairs can stay on the pasture, and provides for a shorter time if there’s a drought.

A mix of grasses and forbs

“It’s a mix of grass,” Schoenfelder says. “Some of the valleys used to be farmed, and they’ve switched by themselves from brome to bluegrass. The hills are mainly unbroken prairie with a lot of big and little bluestem, Indiangrass and a lot of forbs.”

He says the cattle work the cool season grasses in the valleys in the spring, then move to the hilltops when the warm season grasses there get some height, usually in early June.

“It’s about the same as rotating,” he says. “The cows won’t go on the hills until the grass grows there.”

They stay on the hills until fall, when they’re moved back to the valleys for more cool season grasses.

“The calves do fantastically on the grass,” Schoenfelder says. “There’s no fertilizer and no maintenance except for burning, and Scott does that.

Ed Schoenfelder is one of four local cattlemen grazing his cattle on the Broken Kettle Grasslands Preserve.





Scott Moats shows how invasive leafy spurge plants (left) have been killed by flea beetles (dead plant in hand on the right).

They've worked together to control leafy spurge, an invasive species. "We brought in flea beetles from Idaho and the Dakotas eight years ago, and we have a 65 percent stem reduction in leafy spurge by using those beetles," Moats says.

Schoenfelder and other cattlemen are satisfied with their production from the prairie grasses. "I'm happy with the rate of gain, and how I don't have to graze my own land except for early in the spring and late in the fall," says Schoenfelder.

A positive wildlife response

Moats says studies done at the preserve show butterflies, grassland birds, and other animal and plant species are doing well with the diverse management scheme. There were no bobolinks when he began the grazing program, but they're present now. Dickcissels and other grassland bird numbers are up as well.



Moats checks cattle and bison by horseback and ATV (top). In background is Rattlesnake Knob, one of the areas being grazed to sustain biodiversity. Moats built an extensive corral to handle bison (above).

"I've seen new plant species on the preserve from grazing and using fire, plus cutting trees," Moats says. "And I'm trying to get a handle on rattlesnake numbers. I've seen them. I think I could go out most any day and find a rattler if I wanted to find one." Broken Kettle Grasslands is the only place in Iowa you can find the prairie rattlesnake and nesting magpies.

Moats says the prairie is diverse and complex, and changes every day. He says it's particularly beautiful in the fall when the native grasses cure out. "Late September and October are the best times here," he says. "It's gorgeous."



Yellow flax (left, above) and porcupine grass (right, above) are two of the more than 200 species of plants now found on the Broken Kettle Grasslands. Moats is grazing both bison and cattle to maintain and increase the diversity of plants on the prairie.

One of 5 Case Studies investigating the benefits of well-managed grazing to the land, livestock and people—brought to you by the Leopold Center's Grass-based Livestock Working Group.

