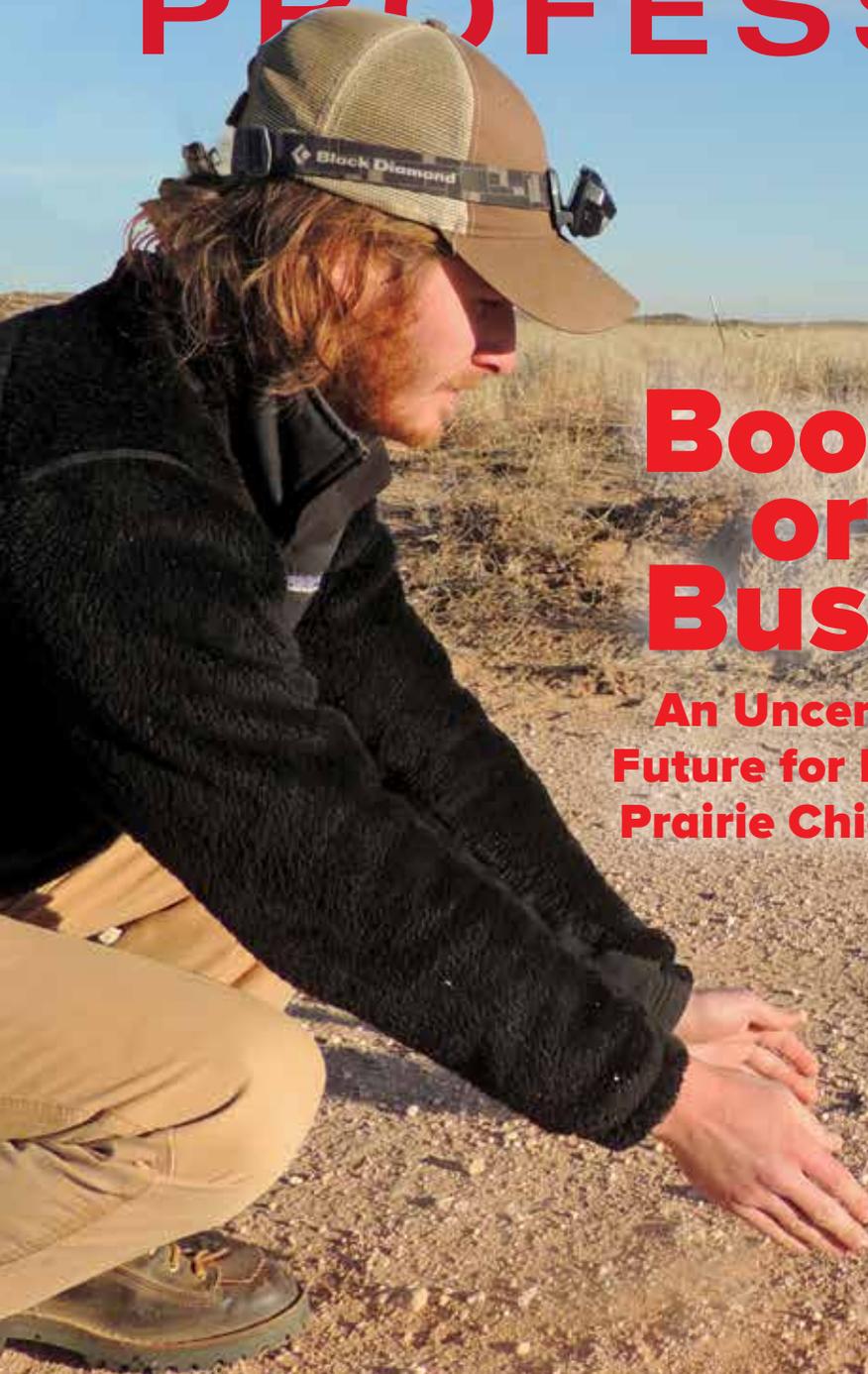


THE WILDLIFE PROFESSIONAL



Boom or Bust?

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Bison Versus Beef

TODAY'S WESTERN RANGE WAR?

By Michel Kohl

From a rise barely higher than the surrounding grasslands, I looked out across the northeast Montana plains and watched a herd of bison roam across the native grasses. The bison's dark shapes looked almost like shadows against the pale brown landscape. The prairie seemed to me nearly as pristine as it must have the day Lewis and Clark climbed its rocky bluffs more than two centuries earlier.

Unlike much of the Great Plains, the native Montana prairie had remained largely untilled, and it still supported many of its historic species. Wolves (*Canis Lupus*) and grizzlies (*Ursus actos*) were gone and some other species were extinct or imperiled; but elk (*Cervus elaphus*), pronghorn (*Antilocapra americana*), bighorn sheep (*Ovis canadensis*) and deer (*Odocoileus spp.*) still roamed the Missouri Breaks, even if their numbers were fewer than they once were. Now the bison (*Bison bison*) were back, too. They were what I had come to study and what had many locals worried.

In 2009, I plunged myself into some of Montana's most rural landscapes and one of its biggest controversies. For the next three summers I would wander through miles of open prairie filled with Wyoming big sagebrush (*Artemisia tridentate ssp.*) and motor all-terrain vehicles along unmarked, two-track trails to reach observation points like this one, just high enough to peek over the prairie. From these vantage points, I could look down on my subjects, the bison recently returned to their native grasslands despite the protests of concerned ranchers.

More than two years earlier, 16 bison were reintroduced onto this Montana prairie. Their arrival created a modern-day range war. For conservationists, bison seemed like a silver bullet in their efforts to restore western rangelands and wildlife. Many Americans considered the animal, which has since been named our national mammal, an icon of the American West. But some Montanans saw it as a threat to ranching culture. They felt the bison were



Credit: Michel Kohl

more dangerous, destructive and diseased than cattle and represented a step backward from the state's modern-day cattle ranching society.

Reintroduced to their historic grasslands, these modern-day bison took their place in the midst of cattle country. Amid a landscape of fences, dams and human influence, conservation groups established small, isolated populations scattered throughout portions of the bison's historic range. Seeing these fenced-in herds, I wondered, did we really bring back the bison at all? Would they be able to play the role in the ecosystem that they once did, or were they now little more than controversial cattle?

A grand idea

I was a graduate student in the Boone and Crocket Wildlife Conservation Program at the University of Montana when I arrived at this remote corner of the Montana prairie, just a few hours' drive from where I grew up on the Fort Peck Indian Reservation. Here, 50 miles south of the town of Malta, the population density was less than 0.1 person per square mile. This was the Home Ranch of the American Prairie Reserve, a protected area of private and public land created with a vision of one day preserving more than 3 million acres of Montana grasslands. It was one of the grandest

▲ American Prairie Reserve staff transport an adult bull bison via snow sled to a secondary pasture unit after removing his tracking collar.



Credit: Michel Kohl

▲ The remote landscape of the American Prairie Reserve in eastern Montana represents some of the most intact native prairie left in the Great Plains. Here, the prairie is dotted with the occasional ranch, a few roads and miles of cattle fencing. In the distance are the Charles M. Russell National Wildlife Refuge and the Missouri River Breaks.

conservation ideas, both in vision and scale, since the creation of national parks.

In the early 2000s, the World Wildlife Fund determined that an independent entity focused on preserving Montana's Northern Great Plains could best oversee a large-scale conservation effort. In June 2001, The Prairie Foundation was formed to serve that role. Now known as the American Prairie Reserve, the organization has set out to restore, protect and maintain the biological diversity of North America's globally important temperate grasslands. Through generous donations, the APR quickly began acquiring land to lay the groundwork. Today APR oversees more than 350,000 acres of deeded and leased land. That makes it the second largest wildlife reserve in the Great Plains. When combined with the adjacent Charles M. Russell National Wildlife Refuge (CMRNWF), it's the fifth largest reserve in the continental United States.

The initiative had met with strong resistance from the local ranching communities. I could understand their concerns. I imagined my own feelings if my family had built up a ranch over generations only to see it suddenly circled on a map, apparently targeted by outsiders who envisioned a different use for it. The model for APR, however, was one of private property rights, bringing together willing sellers with willing buyers.

The APR's vision for the prairie was important, because conservation could play a key role in this ecosystem. In 1999, the Nature Conservancy published *Ecoregional Planning in the Northern*

Great Plains Steppe, a document that pinpointed this region as among the most critical for restoring the prairie's habitats and among the most viable for restoring and conserving the diversity of grassland plants and animals. The abundance of wildlife here was remarkable, despite the loss of some species and the shrinking numbers of others. Conservationists saw returning the bison here as crucial to restoring western rangelands and its wildlife.

In particular, bison were thought to be critical for the recovery of grassland songbirds. Endemic to the prairie ecosystem, these songbirds were declining at a devastating rate, and although variable by species, ecologists pinpointed cattle grazing practices as a potential cause. For example, researchers have found that a 10-percent removal of biomass from grazing here results in a 14-percent decline in Baird's sparrow (*Ammodramus bairdii*) (Lipsey 2015). Results such as these suggest that the transition to contemporary rest-rotation practices used across the western United States may have altered habitat for birds that prefer the "grazing mosaic" of tall and short grasses that bison historically created through their foraging and migratory behaviors. Conservationists came to see restoring bison as an answer to the demise of songbirds and other wildlife that evolved with bison grazing patterns.

But given the human encroachment that had reined in the bison's historical range, I wondered, would returning the bison really make a difference?

The return of a grazer

With my advisor Paul R. Krausman, APR senior scientist Kyan Kunkel and collaborators from APR and World Wildlife Fund, I set out to answer that question. We weren't interested in another "bison are better than cattle" study. We were determined to understand how bison and cattle differed. Could we use that information to manage both species to mimic historical grazing and improve the prairie habitat for wildlife?

We set out to deploy GPS collars on bison on the APR. We would do the same on cattle on two adjoining ranches to compare cattle and bison behaviors. We would also collar bison 100 miles to the north in Grasslands National Park in Saskatchewan, Canada. The two herds made for an ideal comparison. Released in 2005, the Canadian herd matched the genetic lineage of the APR herd and was nearly identical in population size. The only significant



differences involved the reserves themselves. With 45,000 acres of year-round pasture, Grasslands National Park was much larger than APR's 8,600 acres of summer pasture, and it had a lower density of water sources.

We spent the next three summers surrounded by prairie. From our modest observation points, we would spend four to eight hours at a time recording how the bison and cattle behaved. Using behavioral observation and GPS data, we logged their movements, grazing behaviors and habitat use. We were especially interested in how each animal used the artificial water reservoirs they came across.

What we learned

Based on previous studies, we predicted that cattle would spend more time using areas close to water sources (Kohl et al. 2013). They did, we discovered, but we also found that bison — whether in Montana or Saskatchewan — differed drastically from cattle in *all* behaviors. The time they spent grazing, standing, bedded and moving were all starkly different than cattle.

Cattle spent nearly twice as much time grazing than bison, and they spent a greater amount of time near water sources, especially as summer temperatures climbed. This was important, because it supported the idea of using bison as an ecological management tool to create a mosaic of vegetation heights across the landscape.

We proposed changes in grazing practices that we believed would improve wildlife habitat while still maintaining the economic sustainability of cattle operations. By replacing permanent, manmade water sources with temporary ones, we suggested, we could better mimic bison grazing. That could result in some of the potential benefits that come with bison's heterogeneous grazing. It probably wouldn't be enough to do this just on an individual ranch, though. For it to be beneficial, it would require a large area, such as a grazing cooperative or a county. This may come at a financial cost to ranchers, but that could be addressed through incentive programs like Wild Sky Beef, a program that pays ranchers for wildlife-friendly livestock management practices, or The Nature Conservancy's grass banking program.

We also found that bison are strongly affected by characteristics of the landscape they occupy. The bison in Montana and those in Saskatchewan behaved

quite differently from each other at times, possibly because Saskatchewan's lower water availability encouraged the bison to use a larger landscape. And bison, we found, use much larger areas than cattle. Bison feeding areas measured nearly 29,000 acres. Cattle moved in areas ranging from 50 to 1,500 acres. To assume its historical ecological role and pattern of behavior, we estimated, our small



Credit: APR Staff

◀ Michel Kohl performs behavioral observations on bison on the American Prairie Reserve. Observations lasted from four to eight hours per day in which biologists recorded information on watering events and behaviors such as moving, bedded and grazing to quantify the behavioral differences between bison and cattle.



Credit: APR Staff

▲ Field work conducted over three years consisted of taking photos and video of watering events to measure the time that bison and cattle spent at reservoirs. Researchers documented bison spending less time at water and grazing further from water than cattle.



Credit: Michel Kohl

► A bull bison crests a hillside in Grasslands National Park following an afternoon thunderstorm.

bison herd of about 200 animals may need more than 500,000 acres to roam. If manmade water reservoirs were removed from the landscape as we suggested, bison would travel farther, and thus, the area needed for such a bison herd would increase to the size APR is proposing to manage.

Moving beyond conflict

As tempting as it was for me to see this grassland and think of the wild landscapes Lewis and Clark experienced, I reminded myself that even this remote landscape has been subtly shaped over the past 200 years. Abandoned homesteads, old one-room school houses and modern-day ranches dotted the prairie. Cropland, manmade reservoirs and a labyrinth of barbed-wire fence cut across it. Still as vast as Montana’s “big sky,” the prairie of today is divided into private, federal, state and tribal lands. One constant remains throughout the landscape, though. This is cattle country. Livestock has been the foundation for ranchers here for as many as six generations.

Further back, however, this was a sustainable bison economy for Native Americans for 600 generations, and bison can still play an important

role. Today, commercial bison throughout the United States number over 500,000, but fewer than 21,000 are managed within conservation herds. Only 8 percent of those herds are managed on areas greater than 774 square miles. This lack of large-scale, ecologically-effective bison herds has propelled a few small-scale bison conservation projects throughout the West. Most are on Native American reservations where the culture and conservation ethic dramatically differ from the non-native ranching community. These projects may be too small to be effective, though. If we are to maximize the ecological effectiveness of bison in the West, as our research showed and others have speculated, these projects must occur on vast landscapes, largely free of traditional human economic norms.

At this scale, however, we may only exacerbate the controversies. If we as a society desire ecologically restored bison populations, we must first deal with the social, political, and economic ramifications at the local level. Creating a diversified economy and social system that recognizes the ethical, ecological, cultural, economic and spiritual values of wildlife restoration is the start.

The APR has provided robust economic growth and investment in this region of Montana, and it has inspired thousands of people regionally, nationally, and globally. It is creating a new paradigm that moves beyond slogans and set views. After over a decade of bison restoration, most of its neighbors feel the APR safely manages bison on the current range without conflict, but they’re still wary about seeing bison introduced in other areas. The APR must continue to work with its neighbors and use the best science and monitoring available to further demonstrate that bison and ranchers can coexist.

It is time to move beyond conflict and cliché to something more transcendent — something inspiring and ecologically, culturally and economically sustainable in the West. ■



Credit: Erin Kohl



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