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Efforts to use the bison herd at Blue Mounds State Park near Luverne, Minn., to help create a healthier North American bison could make Minnesota pivotal in conserving an animal that once neared extinction.

CONTINUED FROM 1A

> Preserving the bison

area at Blue Mounds State Park in Luverne, about four hours from the Twin Cities in the southwest corner of the state.

State conservationists now want to use the herd to help build genetic diversity, creating healthier North American bison, and someday to bring the native giants to more state parks — where experts say they once lived. This could make Minnesota pivotal in conserving an animal that was near extinction, said Craig Beckman, park manager at Blue Mounds.

“The overall purpose is to preserve and conserve the bison genetic line of the United States,” Beckman said. “If we can achieve that in Minnesota, we can also achieve becoming a real player in bison conservation.”

The Minnesota Zoo and the state Department of Natural Resources announced in July that they would partner to breed bison from federal herds with the state’s herd.

The first bison could come this fall from Oklahoma and South Dakota.

The goal is to create a “metapopulation” — in which a group of animals is divided into smaller groups, depending on their genetics, and allowed to breed in hopes of a more diversified species.

In Minnesota, the state’s herd would eventually grow to about 500 bison but would be managed as smaller groups at various state parks and the zoo, said Ed Quinn, natural resource program consultant for the DNR.

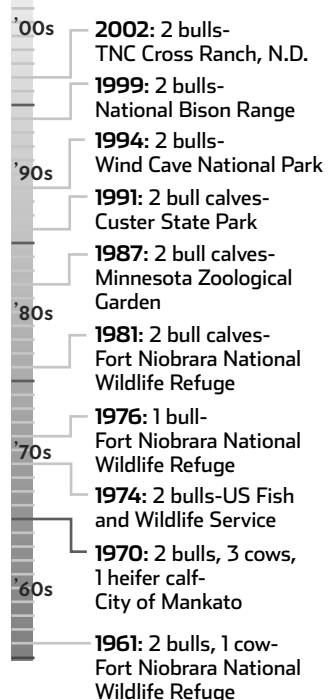
Why are bison genetics so important?

When the population crashed in the late 1880s, mostly because of hunting and disease, fewer than 200 bison remained in the country, said Jim Derr, professor of genetics at Texas A&M University’s College of Veterinary Medicine. He specializes in bison genetics.

A handful of ranchers saved

Minnesota’s public bison herd

The Blue Mounds State Park started with three bison. Today, about 100 bison roam 533 acres. The herd’s population is maintained through an annual auction at the park.



Source: Blue Mounds State Park PIONEER PRESS



Blue Mounds State Park manager Craig Beckman watches the bison herd gathered at one of the park’s two “buffalo wallows.” More bison from federal herds may join the group soon for breeding purposes.

“What we really are striving to do is to make it possible for our visitors to get out there — to be amongst the bison, to experience the bison, the sights, the sounds, the smells of the prairie setting where the bison are. It’s just a sight that many people in Minnesota don’t get to see because a setting like that is rare now.”

Craig Beckman, park manager at Blue Mounds State Park

the few remaining animals, Derr said. At the time, the ranchers experimented with breeding cattle with the bison — which helped save the population but also permanently transformed bison genetics.

Today, nearly all of the country’s bison are descendants of those animals, and most bison still carry a fraction — less than 1 percent — of cattle genes.

One of the goals of the new project is to rid the Blue Mounds herd of its foreign cattle lineage.

We want to “preserve the pure genetic line of the bison,” Beckman said.

CREATING COUPLES

The Blue Mounds herd started in 1961 with two bulls and a cow on 50 acres of pasture.

The species is called “bison bison,” not to be confused with the buffalo species, such as water buffalo native to parts of Asia.

Today, there’s room for about 100 animals on 533 acres. To keep the herd a good size, the park invites the public to buy bison at a yearly fall auction. About 35 animals are sold each year.

New bulls have regularly been brought in to inseminate the cows and spread their genes. A cow breeds with a single bull each year.

They breed in the fall; gestation lasts nine months and ends in the spring.

The state had records showing what parks the Blue Mounds bison came from but had never tested their genetics before last year, when Minnesota Zoo staff helped park staff round up the animals to collect blood and hair samples.

The samples were sent to Derr and his team at Texas A&M.

The testing costs \$67 per animal, Quinn said. State lottery funds helped pay for the first round of testing, he said, but future testing will likely come from the state parks’ working capital fund, which helps pay for natural resource management.

The results showed the herd contained few cattle genes and was diverse enough to be starter stock for the metapopulation.

“We were very pleasantly surprised,” Quinn said.

Of the 26 cows tested, only one of them had cattle genes. The goal is for the herd to eventually have no sign of cattle genes.

The tests also showed what herds the bison came from. Overall, the animals are a mixture of three or more lineages from eight federal herds. In September, the park plans to do another round of testing with about 30 more bison.

“We would like to know the genetic makeup of as many animals as we can,” Quinn said.

Understanding their genetics also will help determine which animals should mate with each other.

The first round of testing showed that about 3 percent of Blue Mounds bison come from Wichita Mountains Wildlife Refuge in Oklahoma, and about 2 percent are derived from Badlands National Park in South Dakota.

Those two herds will soon become a bigger part of the Minnesota herd.

This fall, plans call for a bull from the Badlands to join two Blue Mounds cows at the Min-

nesota Zoo, said Tony Fisher, the zoo’s animal collections manager. The animals are expected to breed next year.

Meanwhile, two bulls from Wichita will be introduced at Blue Mounds.

As part of the project, the zoo will maintain a “genetic studbook” tracking the state’s bison pedigrees to manage them as a metapopulation, Fisher said. The zoo already tracks genetics for endangered species like tigers, which have a national Species Survival Plan.

“With that database, it’ll be easy for us to see what animals we need to breed,” he said.

REVERSING A DECLINE

Imagine seeing herds of an estimated 60 million bison — so many that the prairie looked black, Beckman said. That’s what the first European settlers in North America recorded seeing before the population began decreasing in the 1700s.

Cattle that came with the European settlers brought deadly diseases to bison, Derr said. Bison hunting in the late 1880s also helped kill off the population. In a span of about 150 years 99.99 percent of the bison in the U.S. were gone.

It’s “one of the largest population crash that any species has taken and survived,” Derr said. “This was an unprecedented tragedy.”

Today, the U.S. has more than 500,000 bison, most of them privately owned. Canada has about 200,000, Derr said.

A handful of ranchers from the U.S. and Canada helped the bison survive by breeding them with cattle, Derr said. Some believed — and still do — that crossing a bison with cattle makes a better beef animal.

But the crossbred animals were not as fertile, Derr said. Nearly all males of first-generation hybrids are sterile, and females experience reduced fertility too.

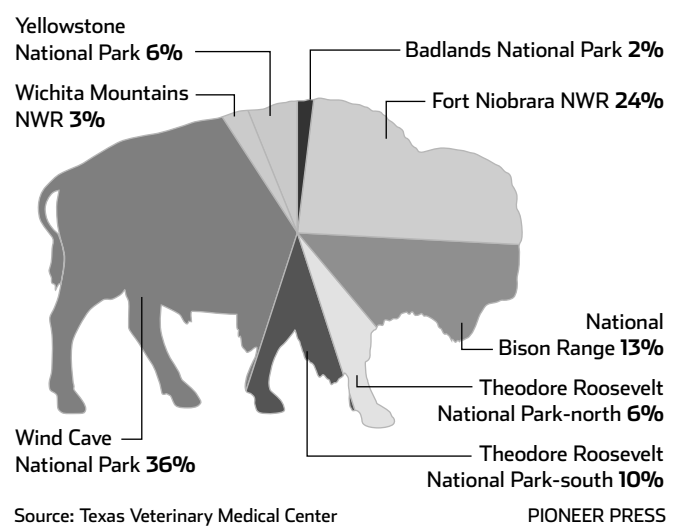
“This experiment did not produce a better beef animal,” Derr said.

By the 1900s, almost all cattle ranchers had abandoned the idea.

But more than 60 U.S. ranchers still breed the animals,

Bison genes

Bison at Blue Mounds State Park are derived from a mixture of three or more bison lineages from across the country, according to recent genetic testing of 26 bison in the Minnesota herd.



Source: Texas Veterinary Medical Center PIONEER PRESS

now known as beefalo — three-eighths bison and five-eighths bovine — according to the American Beefalo Association. The meat is a healthy alternative without losing the taste of beef, the group says.

The animals bear a striking resemblance to cattle.

Derr and his team are taking the next step in bison genetics by determining the species’ DNA sequence for all of its genes. His department also will compare the results to historic samples collected in the late 1800s, during the population’s decline.

The process will determine bison’s genetic traits, Derr said. It also will help establish, once and for all, the differences between cattle and bison genes.

It’s “pretty exciting stuff to get to work with,” Derr said.

A CLOSER VIEW

Many visitors at Blue Mounds expect to see bison, Quinn said. But to their disappointment, the animals often are nowhere to be found.

Chances are the herd is resting near its waterhole — far away from the park’s wooden viewing platform. Sometimes, you can see the animals from the park’s 16 miles of trails.

“What we really are striving to do is to make it possible for our visitors to get out there — to be amongst the bison, to experience the bison, the sights, the sounds, the smells

of the prairie setting where the bison are,” said park manager Beckman. “It’s just a sight that many people in Minnesota don’t get to see because a setting like that is rare now.”

DNR officials are considering adding a “bison buggy” so park staff can drive visitors into the bison’s fenced-in prairie. Another idea is to add webcams.

Any changes are more than a year away, the DNR’s Quinn said.

Also on the horizon is determining other state parks where bison could be introduced, he said. The goal is to find land where they once roamed — before it became a park. DNR officials have identified some parkland that has enough prairie vegetation to sustain grazing bison. But Quinn declined to give details just yet.

The state plans to use grazing bison — along with prescribed burning — to naturally help maintain healthy prairies. Park officials say the bison’s biggest job will be becoming ambassadors for the prairie ecosystem throughout Minnesota.

“These are bison that are functioning naturally,” Quinn said. They’re “cruising around the landscape, eating and drinking and doing what they want to do.”

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