

Division of Parks and Trails

Strategic Plan for Bison Management



**Minnesota Department of Natural Resources
Division of Parks and Trails**

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For more information on this management plan amendment, please contact the DNR Division of Parks and Trails at (651) 259-5600.



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Introduction

Department of Natural Resources Division of Parks and Trails (division) has two overarching strategic directions for managing American Plains bison (*Bison bison bison*):

- *Manage and interpret bison as a natural resource, part of the prairie ecosystem.* This direction is consistent with the mandate set out in Minnesota state statute for state parks to “preserve, perpetuate, and interpret natural features that existed in the area of the park prior to settlement and other significant natural, scenic, scientific or historic features that are present.” (*Minn. Stat.* 86A.05 Subd. 2c.) The statute further directs the division to reestablish plants and animals that were formerly present at the site but are now missing.
- *Contribute to the overall conservation of American Plains bison.* The division will maintain a population of bison with a genetic makeup free from evidence of interbreeding with other species and work in cooperation with other agencies and organizations to support the preservation of bison as a distinct species - as a wild animal managed in the public interest, not for commercial production.

The division has developed a strategic plan encompassing six goals for bison management with action items that establish initial steps for pursuing these goals. The division has entered into a partnership with the Minnesota Zoological Garden (MZG) to work together to preserve and interpret bison and conserve other prairie wildlife species native to Minnesota. MZG participated in the development of the strategic directions and goals for the strategic plan and with the division are the founding partners in the effort to manage bison within state parks as part of a larger national conservation effort.

*For discussion of the six goals, see **Goals for Bison Management** starting on page 7.*

Background

The bison population in North America has gone through dramatic decline since Euro-American settlement. From tens of millions of animals, bison were hunted to near extinction in the 19th century until less than 1,000 remained. Currently, there are an estimated 430,000 American Plains bison (*Bison bison bison*) and Wood bison (*Bison bison athabasca*) in North America. Of that number, only about seven percent are in publicly owned conservation herds managed to preserve the population and genome of wild bison. The International Union for Conservation of Nature classifies bison as “near-threatened” because of the small number of bison that are managed to preserve the species. Threats to bison include genetic manipulation of commercial herds to produce marketable traits, habitat loss, cattle gene

introgression (cross-breeding with cattle), and small population effects in most conservation herds (inbreeding).

The historic range of bison in Minnesota included all of the state except the northeastern portion. The last wild bison in the state was observed in Norman County in 1880. There are a number of bison farms and ranches in Minnesota today. However, the herd at Blue Mounds State Park is the only known publically-owned herd in Minnesota being managed to preserve the population and genome of wild bison. It represents a fraction of the seven percent of bison in North America being managed in conservation herds.

Bison in the Minnesota State Park System

The division has been managing bison in the state park system since three animals from Fort Niobrara National Wildlife Refuge were reintroduced to Blue Mounds State Park in 1961. For the next 30 years, the bison herd grew and the bison range within the park was occasionally expanded to meet the needs of the growing number of bison. During that time Blue Mounds State Park remained the only state park unit with bison.

In the late 1990's, a new direction for the herd at Blue Mounds State Park was established to closer reflect the intent described in state statute by creating a more historically representative, natural prairie ecosystem at the state park and increase the opportunities for visitors to see and learn about bison. Among the actions taken was doubling the size of the bison range at the park to 533 acres – which would support a larger herd and eliminate overgrazing – and the installation of a bison viewing platform.

In 2008, the division began another evaluation of how it managed bison. The division created an ad-hoc workgroup to review and consider the direction for bison management. Two fundamental questions were considered as a framework for the workgroup's discussions:

- *Are bison on division lands an exhibit or a natural resource?*
- *What role should the division play in the conservation of American Plains bison as a species?*

The workgroup recommended the division manage and interpret bison as a natural resource, as part of the prairie ecosystem. In doing so, the division should consider reintroducing bison to other state park units where the division is working to manage remnant and reconstructed prairie communities. Bison could be used as a flagship species to help raise awareness and understanding of prairie landscapes. The workgroup also recommended that the division actively participate in bison conservation efforts and work cooperatively with federal agencies and other organizations that manage bison. The workgroup recommendations were endorsed by division leadership. From those recommendations, the workgroup developed the six goals for bison



Adult bison and calves at Blue Mounds State Park

What does “managing as a natural resource” mean?

Managing bison as a natural resource means that the division will place them in prairie environments that can provide food, water, and shelter with minimal management intervention.

The limited size of the available ranges means some intervention is necessary to manage the herd size and preserve the health of the bison and other prairie species.

management which were refined with division leadership and form the framework of the strategic plan.

Forming a Partnership

As the division workgroup recommendations were being finalized in 2010, Minnesota Zoological Garden (MZG) approached the Department of Natural Resources about working more closely on conservation of Minnesota wildlife species. Among the potential projects discussed was cooperation on bison management, including the possibility of sharing animals for display at MZG. Among the first cooperative efforts for the division and MZG regarding bison involved genetic and disease testing of the animals at Blue Mounds State Park.

Genetic testing of the Blue Mounds State Park herd in 2011-12 produced very positive results. The herd was found to contain only bison mitochondrial DNA and 99.8% bison nuclear DNA. This small amount of cattle introgression is similar to that found in several Department of Interior (DOI) herds like those at Badlands National Park, Theodore Roosevelt National Park and the National Bison Range National Wildlife Refuge. The Blue Mounds State Park herd also compared very favorably with DOI herds in terms of genetic diversity. The genetic testing results showed that the bison at Blue Mounds State Park are most closely related to animals in the herds at Wind Cave National Park, Fort Niobrara National Wildlife Refuge, and Theodore Roosevelt National Park.

Recognizing the opportunity for preserving bison and for providing greater opportunities for visitors to experience bison, the division and MZG established a formal interagency agreement in 2012 to work cooperatively to “preserve the genome of the American Plains Bison (Bison bison bison) and conserve other prairie wildlife species native to Minnesota” (see **Appendix A**).

Selecting a “Second Site”

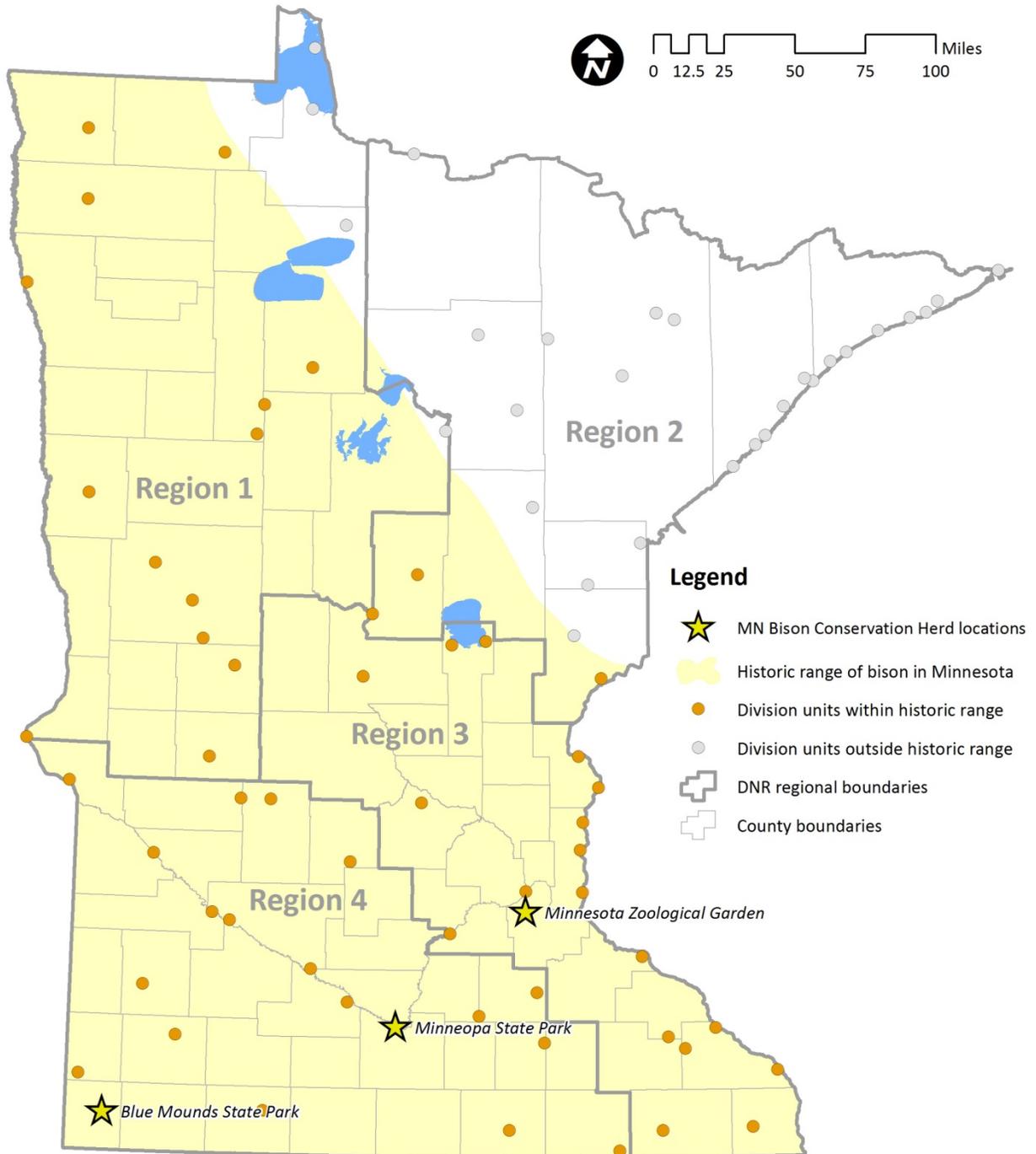
As an initial step toward achieving its identified goals for bison management, the division developed criteria for selecting new bison reintroduction sites and selected a second unit (after Blue Mounds State Park) within the state park system for reintroducing bison. The division bison strategic planning workgroup selected Minneopa State Park as the second reintroduction site in June 2013. With bison relocated from MZG and Blue Mounds State Park to Minneopa State Park in fall 2015, there are currently three sites where subgroups of the jointly managed herd are located (see **Figure 1: Minnesota Bison Conservation Herd Locations**).

*For the complete text of the Interagency Agreement, see **Appendix A**.*

*For more information about the selection criteria, see **Appendix B**.*

*For more information about the process for selecting Minneopa State Park as the second site see **Appendix C**.*

Figure 1: Minnesota Bison Conservation Herd Locations



Creating a Minnesota Bison Conservation Herd

The division and MZG are working cooperatively to establish and manage a bison conservation herd in Minnesota with the aim to contribute to preserving the genetics and population of wild bison. For this partnership, a conservation herd has several characteristics:

- The herd has high quality genetics free of evidence of genes from cross-breeding with domestic cattle.
- The herd is being managed for conservation purposes, not for meat production or other commercial reasons.
- The herd locations are within the bison’s historic range in Minnesota.
- The herd members are wild animals, present in large enough numbers and in an open landscape to allow the herd to behave as close to a wild herd as practical.
- The herd is large enough to be sustainable genetically – approximately 500 animals.

Defining the conservation herd in this way has several implications for how the division and MZG approach management of bison:

- Genetic and disease testing will be conducted for animals born within the herd and new animals brought into the herd to track animal lineage, prevent the introduction of disease or animals with cattle genes into the herd.
- The herd will be divided into several subgroups located in different places beginning with Blue Mounds State Park, Minneopa State Park, and MZG.
- Locations that host bison will be large enough to support a “herd”, both for genetic health and for appearance to visitors – roughly 40 to 50 animals or greater at a unit.
- Locations that host bison will support bison through natural forage without the use of supplemental feeding.
- Individual animals may be moved between subgroups to foster genetic diversity and prevent inbreeding.
- Individual animals may be moved out of the herd to control population size or adjust the genetic makeup and age balance of the herd
- Animals may be brought into the conservation herd or exchanged with other conservation herds to enhance the genetic makeup of the herd and contribute to the genetic diversity of other conservation herds.
- The conservation herd will be promoted as an ambassador species to help raise awareness and understanding of prairie environments in Minnesota.

Because of the limited size of the exhibit space at MZG, it is not practical to achieve the herd size and natural forage objectives at that location.

Need for Additional Re-introduction Sites

The population of bison managed cooperatively by the division and MZG at Blue Mounds State Park, Minneopa State Park and MZG will be approximately 140 animals. Current research indicates that minimum of 400 animals is needed to sustain 90% of the genetic variation in a population for 200 years. Additional data recommends that populations be closer to 1,000 with sub-populations of about 500 animals. From this research, the division and MZG have set a target of 500 animals for the conservation herd.

Based on the size of suitable habitat present within division units, the division will need to re-introduce bison to several additional sites in order to achieve the target herd size. Expansion of the bison range at Blue Mounds State Park may also account for some of this need. The division and MZG are open to partnering with other organizations in Minnesota as part of the Minnesota Bison Conservation Herd effort (See **Partnerships**). If another partner has land suitable for hosting a bison subgroup, the number of division-managed sites needed to reach 500 animals may be fewer.

Communicating about the Conservation Herd

The interagency agreement lays the foundation for the division and MZG to work together on media relations and communication efforts about the partnership. Beyond that, the division and MZG share an interest and desire to share with visitors and the general public the history of bison in North America and about their cooperative work to preserve bison. Interpretation of the natural features, plants and animals found in state parks is part of the division's statutory direction. Likewise, MZG's mission "to connect people, animals and the natural world to save wildlife" frames the work of its visitor and public education programs and animal conservation programs that support efforts to protect animals and habitat around the world. The division and MZG will work together to coordinate marketing and educational efforts that complement and promote each other's locations and programs.

As part of the effort to clearly communicate with the public and other agencies about the conservation herd, the division developed the [Minnesota Bison Conservation Herd Style Guide and Reference](#). The style guide provides definitions of terms, common facts about the Minnesota Bison Conservation Herd and the efforts by the division and MZG. The name conventions section of the style guide is included in **Appendix D**.



Bison calf and mother at MZG.

*For more information about the [Minnesota Bison Conservation Herd Style Guide and Reference](#), see **Appendix D**.*

Goals for Bison Management

The division in partnership with the Minnesota Zoological Garden established six goals to guide its efforts for creating and managing the Minnesota Bison Conservation Herd. The goals and action statements provide a framework for allocating funds and prioritizing projects related to bison management activities. The division and MZG will update the status on the action items annually, as well as consider any new action item.

G1 – Play a Role in Conservation of Bison Population and Genetics

The division, in partnership with the Minnesota Zoological Garden (MZG), will work to preserve American Plains bison and cooperate with larger national conservation efforts. The division and MZG are working cooperatively to manage a Minnesota Bison Conservation Herd. The conservation herd will be managed to maintain the high quality genetics (i.e. lack of cattle cross-breeding) of the existing herd and sustain an example of bison as they existed prior to Euro-American settlement. The conservation herd approach will preserve the genetic fitness of the bison for the prairie environment, maintaining their sustainability and resilience. The target for bison management is to increase the size of the Minnesota Bison Conservation Herd to approximately 500 animals. To support a population of approximately 500 animals, the division and MZG will need to re-introduce bison to several more sites in addition to Blue Mounds State Park and Minneopa State Park. Expansion of the bison range at Blue Mounds State Park may address a portion of that need. Sites managed in cooperation with other partners could reduce the number of division-managed sites needed.

G1 Action Items:

1. Develop criteria for evaluating sites for bison reintroduction.
Status: *Complete*
The criteria were developed by the division workgroup in 2013 (see **Appendix B** for the Unit Selection Criteria). The criteria may be refined as it is used during future unit selection processes.
2. Reintroduce bison to a second division-managed unit.
Status: *Complete*
The division workgroup used the Unit Selection Criteria to identify Minneopa State Park as the second division unit for bison reintroduction in 2013 (see **Appendix C** for a summary of the section process). Resource management activities and infrastructure work were conducted in 2014 and 2015. Animals from Blue Mounds State Park and MZG were moved to Minneopa State Park to start the new herd subgroup in September 2015. The division successfully applied for

*For more information about the criteria used to select reintroduction sites, see **Appendix B.***

*For more information about the process for selecting Minneopa State Park as the second site see **Appendix C.***

funding from the Legislative-Citizen Commission on Minnesota Resources (LCCMR) to help fund the reintroduction efforts. The Environment and Natural Resource Trust Fund moneys allocated by the LCCMR are being used for infrastructure development including a handling facility and road improvements. Additional investments for interpretation, visitor services, and bison management at Minneopa State Park will be implemented beyond 2016.

3. Assess the potential to expand the size of the bison herd at Blue Mounds State Park

Status: *Not Started*

The division will assess the existing land base at the state park to evaluate the potential to expand the bison range. The potential for expanding the park boundary will also be investigated.

4. Maintain a studbook for the Minnesota Bison Conservation Herd

Status: *Ongoing*

MZG is leading the management of the studbook. MZG manages studbook information for conservation efforts of other rare and endangered species around the world. Pedigree information and genetic testing results are entered into the studbook to track the genetic sustainability of the herd and are utilized to help make decisions about removing animals from the herd and introduction of new animals from other conservation herds.

5. Incorporate additional animals into the conservation herd through natural birth and introduction.

Status: *Ongoing*

Roughly 25-30 new calves are born into the conservation herd at Blue Mounds State Park each year. Typically a number of animals - primarily young males - are removed from herd each year to maintain a sustainable herd size and the appropriate age and gender balance in the herd. The division and MZG will work with the U.S. Department of Interior and other conservation herd managers, including other American Zoological Association members, regarding animal exchanges to manage genetic diversity and herd size. A new bull acquired from Wichita Mountain National Wildlife Refuge was added to the herd in 2013 intending to replace the dominant breeding male at Blue Mounds State Park and introduce additional genetic diversity to the herd. A new bull was also acquired from Badlands National Park in 2013 as the breeding male at MZG.

6. Implement a process to identify additional sites for bison re-introduction utilizing the unit selection criteria.

Status: *Not Started*

The next unit selection process will be conducted in 2017 and 2018, once the herd subgroup at Minneopa State Park is established. The process will be repeated to select additional units for bison



Badlands National Park bull now located at MZG.

reintroduction until units are identified with enough range capacity to support an overall herd size of 500 animals.

G2 – Manage Bison to Ensure Long-Term Sustainability of the Population and G5 – Improve the Diversity/Quality of the Prairie Community within the Bison Range

These goals are closely linked and will be addressed together, including action items. The Minnesota Bison Conservation Herd will be managed as a population, divided into herds located across several locations – initially Blue Mounds State Park, Minnesota Zoological Garden (MZG) and Minneopa State Park (the division’s “second site”). The division and MZG will work together to track and manage the genetics of the conservation herd focused on the overall population, not on individual animals. Genetic information will help inform decisions on moving animals between the herd locations to sustain the overall genetic health and diversity. The information will also be used to identify from what other herds new animals should be acquired to add to the Minnesota Conservation Bison Herd. The quality of the prairie communities in the areas utilized by the bison will also be monitored for health and diversity. Adjustments to the number of animals and prairie management techniques will be made as necessary to maintain or improve the overall conditions in the prairie.

G2 and G5 Action Items:

1. Collect genetic data on animals incoming to the population.
Status: *Ongoing*
Genetic testing will be done for animals coming into the population, calves born into the existing herd and animals brought in from outside of the conservation herd. The data will be entered into the studbook and used to track the herd’s genetic makeup and diversity.
2. Develop genetic testing/data collection protocols for new animals born into the population.
Status: *Complete*
The testing and data collection protocols are being used during the fall roundups at Blue Mounds State Park and by MZG for animals brought there for quarantine before release into the conservation herd.
3. Establish site evaluation criteria and herd maximums to avoid need for supplemental feeding.
Status: *Complete*
Sustainable herd size figures have been established for Blue Mounds State Park and Minneopa State Park based on forage analysis. Incentive feeding has been used at Blue Mounds as a management tool, unrelated to food supply or animal health.



MZG staff taking blood samples for genetic testing at Blue Mounds State Park.

4. Develop a disease management protocol

Status: *In progress.*

The division and MZG veterinarian staff will work with the DNR veterinarian to create and evaluate disease management protocols - what testing is needed for animal transfer protocols, monitoring herds for disease signs, and disease response procedures.

5. Conduct prairie flora and fauna baseline assessments and create a monitoring protocol to insure maintaining/improving the quality of the prairie in the bison range at each site.

Status: *Ongoing*

Baseline assessments have been completed for Blue Mounds State Park and Minneopa State Park. Monitoring plans have been developed for both parks and will be utilized to track prairie health and sustainability.

6. Maintain estimates of the number of animals in each subgroup to help gauge herd health and resource sustainability.

Status: *Ongoing*

Individual unit staff will maintain estimates of the number of animals at their site.



Conduct flora and fauna baseline assessments and create monitoring protocols.

G3 – Provide Opportunities for Interpretation & Observation of Bison & Prairie Communities by Visitors

The division intends to use bison and the reintroduction process as an educational tool to promote more interest in state parks and prairie environments. Bison will serve as an ambassador species for prairie ecosystems. Utilizing different methods for bison and visitor interactions at bison re-introduction sites will encourage people to visit all the units where bison have been re-introduced. The division will coordinate marketing and educational efforts with MZG to complement and cross-promote each other's locations and educational programs.

G3 Action Items:

1. Evaluate interpretive efforts being used by other agencies with bison such as Custer State Park (South Dakota) and Belwin Conservancy for possible application to division units

Status: *Ongoing*

Bison are interpreted at sites managed by other agencies throughout their range. Many examples of safety and orientation signage exist and can be utilized to aid the development of division signage and other interpretive materials.

2. Provide a diversity of interpretive efforts at division sites which offer different, complementary experiences to park visitors.

Status: *Ongoing*

Beginning with the Unit Selection Criteria, the division will use potential interpretive experiences to gauge unit's strength as introduction sites

and will develop interpretive projects that create a variety of experiences for park visitors. The division is developing a Minnesota Bison Conservation Herd Interpretive Plan. With animals and multiple locations including MZG and potentially on other non-division administered lands, there is a need to establish a consistent image, language, and set of diverse visitor experiences to help create a project identity and drive tourism at all bison reintroduction sites.

3. Select and implement enhanced interpretive options at Blue Mounds State Park.

Status: *In Progress*

The division will create a tour-like experience with a “bison buggy” that will take park visitors onto the bison range. Funding for this effort is included in Environment and Natural Resource Fund allocation from LCCMR for the bison re-introduction project.

4. Select and implement interpretive options for Minneopa State Park.

Status: *In Progress*

Minneopa State Park was chosen as the second reintroduction site in part because of the interpretive opportunities offered by the existing park road and overlook that could be incorporated with the bison range.

5. Coordinate interpretive/educational efforts with MZG.

Status: *Ongoing*

The division and MZG have adopted common language and phrases to consistently describe the Minnesota Bison Conservation Herd throughout all communication and interpretive products. The division and MZG will share interpretive products and seek to provide educational activities that are unique to their respective resources and staff expertise. The division and MZG may also share interpretive messaging about bison conservation with other zoos in the American Zoological Association.

6. Promote bison as a significant interpretive feature in the state park system.

Status: *In progress*

The division is developing interpretive materials to highlight bison conservation efforts and viewing opportunities in the system. The division will also explore potential cooperation with other entities such as National Park Service, MN Bison Producers’ Association, and Explore MN Tourism to increase the reach of its interpretive messaging.

G4 – Explore Cultural Resource Management Opportunities

The division will research the place of bison in the cultural history of Minnesota and the Great Plains with the intent to communicate these stories through interpretation. Topics to investigate include relationships with American Indian culture, Euro-American western expansion and



Interpretive sign about bison at MZG.

subsequent bison decimation, and efforts toward preservation. The division will engage tribal interests and seek opportunities to integrate tribal needs and understandings into the division's bison management program. The division will monitor known cultural resources for impacts caused by the presence of bison and bison management activities.

G4 Action Items:

1. Investigate themes for bison as part of American Indian and Euro-American cultural history in Minnesota and the Great Plains.
Status: *Not Started*
As part of this effort, the division will work through the Minnesota Indian Affairs Council to contact American Indian Tribal Governments in Minnesota.
2. Partner with the U.S. Department of Interior on communicating the history of and current efforts toward bison preservation.
Status: *Not Started*
The division and MZG will approach the U.S. Department of Interior and units that manage bison herds about messaging and communications around American Plains Bison preservation efforts.
3. Continue to work with American Indian Tribal Governments to grant requests for bison parts intended for personal and ceremonial purposes.
Status: *Ongoing*
The division will consider requests on an individual basis and grant requests that are consistent with the strategic directions and goals for managing the Minnesota Bison Conservation Herd.
4. Discuss interpretive opportunities with American Indian Tribal Governments to determine how they may want to be involved in interpreting bison/prairie, role of bison in their culture.
Status: *Not Started*
The division is interested in working with the tribal governments to communicate stories about the American Indians' connection with bison. The division will work with the tribal governments directly and through the Minnesota Indian Affairs Council.
5. Investigate the potential for cooperating with American Indian Tribal Governments on future bison conservation efforts.
Status: *In progress*
MZG has received financial support from the Shakopee Mdewakanton Sioux Community for work on bison conservation. Some of those funds were used for transporting animals as part of the reintroduction effort at Minneopa State Park.
7. Conduct initial cultural resource assessments and create a monitoring protocol to evaluate the impact of bison and bison management activities.



Working an excavation unit at Minneopa State Park.

Status: *Ongoing*

A cultural resource survey should be conducted of the bison range at Blue Mounds State Park. Surveys at Minneopa State Park in 2015 identified several archaeological sites within the bison range.

Monitoring plans will be developed for both parks to measure any long-term impacts to cultural resources from the presence of bison or from bison management activities.

G6 – Develop an Operational Handbook for Managing Bison in a State Park Setting

The division will define the operational needs and procedures for the improvement and expansion of its bison management efforts. The operational handbook will encompass best management practices related to bison management, staff training and emergency plans, as well as infrastructure and equipment requirements for bison-related activities at division units. The handbook will incorporate coordination of activities with MZG related to genetic and disease testing, quarantine and animal movement procedures and other topics. The handbook will aid the division in planning future re-introduction efforts by providing benchmarks for capital development, operations, and maintenance costs associated with bison management.

G6 Action Items:

1. Develop an operational handbook for site-level management of bison at division units.

Status: *Complete*

Operational handbooks have been completed for Blue Mounds and Minneopa State Parks. These documents will continue to evolve with operational needs and herd management practices.

2. Identify infrastructure requirements for developing future bison sites (fencing, handling areas, interpretive elements, parking and other visitor support facilities) and identify appropriate funding sources.

Status: *Ongoing*

Infrastructure needs and requirements have been identified as part of the bison-related development at Minneopa State Park. The rationale and supporting documentation for decisions made in the development at Minneopa State Park will need to be recorded as well as the lessons learned in operating at Blue Mounds State Park.

3. Develop operations and maintenance standards and associated cost estimates and identify appropriate funding sources.

Status: *In Progress*

Standards based on the experience gained managing the bison herd at Blue Mounds State Park serve as a baseline for estimating costs at other units. Standards will be modified based on the individual unit's



Bison handling facility at Blue Mounds State Park.

operational needs as dictated by its goals within the bison management strategic plan.

4. Develop maintenance and replacement schedules/cost estimates for interpretive facilities, equipment, displays and other materials associated with bison management.

Status: *Ongoing*

Facilities and equipment currently at Blue Mounds State Park will be upgraded as needed. Facilities at Minneopa State Park have been identified, and the initial phases have been developed utilizing funding through an appropriation from the Environment and Natural Resource Trust Fund.

Partnerships

The division and the Minnesota Zoological Garden (MZG) have an agreement to work cooperatively to preserve the genome of the American Plains bison and conserve other prairie wildlife species native to Minnesota. The interagency agreement sets out goals and several initial actions for the shared work, as well as helping to frame the roles for each agency (see **Appendix A**).

*For the complete text of the Interagency Agreement, see **Appendix A**.*

Founding Partners

The central piece of the division and MZG's work under the agreement to date is as founding partners in establishing and managing the Minnesota Bison Conservation Herd. In general, roles for the partners are the division as the "owner" and manager of the bison with the majority of animals on its lands, and MZG providing expertise in genetics and disease testing, quarantine, and animal transport activities, as well as hosting a number of animals on exhibit at MZG. The founding partners work together on interpretation efforts and communications with the public about the conservation herd and preservation efforts.

Evaluating Potential Partners

The division and MZG are open to partnering with other agencies or organizations as part of the Minnesota Bison Conservation Herd effort. A potential partner would need to be committed to the goals for the conservation herd and willing to follow the guidelines and procedures established by the founding partners.

Potential partners could contribute to the project goals in several ways including providing land to host subgroups of the conservation herd, aiding communication and interpretive efforts with the public, or raising awareness and support for the conservation herd efforts through their advocacy networks.

The division and MZG will work together to evaluate potential partners for their fit with the conservation herd effort goals and procedures, and the contributions they would bring as a partner. The division and MZG together can achieve the project goals without additional participation from other organizations and are committed to continuing the conservation herd effort even if no other partnerships are established.

Implementation

Implementation of the strategic plan requires effort and resources from across the division – operations and maintenance, resource management, interpretive services, and capital development. The division will use a range of funding sources to support plan implementation – aligning bison management activities with how other similar work is funded.

The division will utilize its biennial budget process and annual workplans to identify resources needed to achieve the strategic goals within the plan. Development project processes and funding request cycles will be used to establish the scale and timing for interpretive service investments, infrastructure and other capital-related projects.

- Operations & Maintenance –
Efforts in this area include animal management activities, facility maintenance, equipment, visitor services and administration costs. The division will utilize information developed in the operational handbook to formulate best management practices and assess cost estimates when evaluating new re-introduction sites.
Funding source options: General Fund (including allocations via resource standards hours), Parks & Trails Legacy Fund, and Working Capital funds
- Resource Management –
Efforts in this area include conducting prairie baseline assessments and long-term prairie health monitoring, cultural resource assessments and monitoring, animal genetic and disease testing, acquisition of new animals, prairie management and improvement activities, and coordination on conservation efforts for other prairie species with Minnesota Zoological Garden.
Funding source options: General Fund, Parks & Trails Legacy Fund, and Working Capital funds
- Interpretive Services –
Efforts in this area include interpretive programming development, funding support for unit or area interpretive staff, smaller scale interpretive improvements (displays, signage) or equipment purchases, and coordination on interpretive messages and programming with MZG.
Funding source options: General Fund, Parks & Trails Legacy Fund, Legislative-Citizen Commission on Minnesota Resources (LCCMR) appropriations, and Working Capital funds
- Capital Development –
Efforts in this area include infrastructure investments such as fencing and handling facilities, visitor support facilities (including parking areas,



Using prescribed fire for prairie management.

sanitation), larger scale interpretive improvements (facilities, displays) or equipment purchases.

Funding source options: Capital Bonding, Parks & Trails Legacy Fund, and LCCMR appropriations.

Tracking Progress

The division will create an annual progress report to document the work and accomplishments for each action item. The report will allow the division to demonstrate all the efforts that contribute to bison reintroduction and management – across various development and resource management projects, staff time allocations, and funding sources. The annual progress report will be a vehicle for identifying next steps for pursuing existing action items, as well as developing new action items under the six goals.

The division will work with MZG, and any addition partners, in developing the progress report and identifying next steps or new action items.

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Page 6 – *Bison calf and mother at MZG.* Courtesy of Minnesota Zoological Garden.

Page 8 - *Badlands National Park bull now located at MZG.* Courtesy of Minnesota Zoological Garden.

Page 11 - *Interpretive sign about bison at MZG.* Courtesy of Minnesota Zoological Garden.

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Appendix A – Interagency Agreement



**Interagency Agreement
Between the
Minnesota Zoological Garden &
MNDNR – Division of Parks & Trails
Regarding the
Cooperative Management of Bison
and other Prairie Wildlife Native to
Minnesota**



The Interagency Agreement was signed July 12th, 2012 by Courtland Nelson, MnDNR Division of Parks and Trails Director and Lee Ehmke, CEO/Director of Minnesota Zoological Garden.

This agreement is made and entered into on July 12 2012, by and between the Minnesota Department of Natural Resources, Division of Parks and Trails (MNDNR-PAT) and the Minnesota Zoological Garden (MZG). For purposes of this agreement, the MNDNR-PAT or the MZG may each be referred to as “party” and collectively as “parties”.

Whereas, it is a goal of the MNDNR-PAT and the MZG to assist in efforts to preserve the genome of the North American Plains Bison (*Bison bison bison*) and conserve other prairie wildlife species native to Minnesota.

Whereas, Minnesota Statutes (86A.05 subd. 2c) directs state parks to preserve, perpetuate and interpret natural features that existed in the area prior to [European] settlement and to re-introduce desirable species that were formerly indigenous but are now missing.

Whereas, Minnesota Statutes (85A.02 subd. 2c) directs the MZG to preserve and exhibit wild animals such as bison and other prairie wildlife native to Minnesota and cooperative interagency management of these native species will facilitate their restoration to appropriate protected areas of Minnesota and educate Minnesotans about the their conservation story and the important roles bison and other native wildlife play in our prairie ecosystem.

Now, therefore, the parties agree as follows:

1. MZG will maintain a small herd of bison at their facility composed of a viable breeding group of cows, their offspring, and one mature bull. Genetic source of the animals will be mutually agreed upon by both the MZG and the DNR to support diversity and sustainability of the bison genome over time.
2. All bison held and produced at the MZG under this agreement will be on a “breeding loan” status and will be owned by the MNDNR-PAT.
3. MNDNR-PAT will maintain a population of bison at one or more PAT units. Some animals from this population may be provided to the MZG

for their bison herd. Selection of which animals to be transferred will be done by mutual agreement.

4. All bison transported to the MZG will be subject to medical health testing as requested by the MZG before transfer. All bison transported back to the MNDNR-PAT may be subject to medical health testing as requested by the MNDNR-PAT before transfer.
5. Bison calves produced at the MZG will be transported to the MNDNR-PAT at approximately 1.5 years of age; however, female offspring born at the MZG may be retained as replacement animals for the MZG herd.
6. Future replacement bulls will be acquired from a location that is mutually agreed upon by the MZG and the MNDNR-PAT to enhance the genetic diversity and sustainability of Minnesota's bison genome.
7. All financial costs of testing and transporting MNDNR-PAT bison to the MZG for quarantine and then to their final destination will be paid for by the MNDNR-PAT. MZG will be responsible for testing and transportation costs related to MNDNR-PAT bison that will part of the Zoo's collection.
8. The MZG and the MNDNR-PAT both agree to cull bison testing positive for Johnes disease and remove them from the population.
9. The MZG agrees to produce and manage a genetic studbook for the entire Minnesota genetically pure bison herd and will make periodic recommendations to the MNDNR-PAT on animal transfers for breeding purposes.
10. The MZG and the MNDNR-PAT will cooperate and share animal handling expertise and equipment whenever it is to the benefit of both agencies.
11. The MZG and the MNDNR-PAT will cooperatively facilitate media relations and communication efforts relating to this partnership.
12. The MZG and the MNDNR-PAT will cooperate on periodic genetic testing of MNDNR-PAT bison. All direct costs associated with the genetic testing, such as sample analyses and PIT-tags, will be borne by the MNDNR-PAT.
13. The MNDNR-PAT and MZG may cooperate on the collection, research, captive breeding and re-introduction program for rare MN butterflies.
14. This agreement may be amended or modified in writing by mutual consent of both parties hereto. Such amendments shall be incorporated into this Agreement as addenda.

15. An annual meeting will be held in Jan-Feb of each year for the purposes of planning and to review this Agreement.
16. Liability - the MNDNR-PAT and MZG agree that each party will be responsible for its own acts and the results thereof.
17. This agreement will remain in effect starting from the signing date of this agreement. Both parties hereto reserve the right to terminate the agreement unilaterally by giving the other party 365 days written notice.
18. Upon termination, any records held by one party relating to animals or projects co-managed by the parties under this agreement would be made available to the other party.
19. Upon termination, ownership of bison maintained at the MZG would revert to the MZG.

Appendix B – Unit Selection Criteria

The unit selection criteria and process assume that bison will be managed similarly to the approach at Blue Mounds State Park, with the bison roaming free within an enclosed area.

Criteria for selecting PAT units for potential bison reintroduction are divided into four areas: ecological, interpretive/educational, operational, and visitor experience. The criteria were developed to be applied to all future unit selection processes. The criteria will be weighted for each selection process to identify which criteria are the most important for that specific unit selection. Each potential site will offer opportunities that better address some criteria areas than others. Weighting will help the division target certain criteria and assure that all four areas represented in the criteria are addressed across the whole set of bison reintroduction units.

The unit selection criteria encompass elements discussed in International Union for Conservation of Nature's *Guidelines for Reintroductions and Other Conservation Translocations*. Some issues raised in the guidelines are further addressed during the selection process as part of the division's resource assessment process and other division processes.

Ecological Criteria

1. The unit must be within the historic range of bison in Minnesota.

The historic range of bison includes the majority of the state except several counties in the northeast: Lake, Cook, St. Louis, Itasca, Koochiching, Lake of the Woods, Carleton counties and portions of Beltrami, Cass, Aitkin & Pine counties.

2. The unit must be able to support a "herd" of bison.

The division defines a "herd" using biological and human dimension parameters, and "support" as adequate forage being available so supplemental feeding is not necessary. A biological minimum herd size is 20-50 animals based on establishment numbers for a number of Department of Interior herds. For a human dimension minimum, the division considers 50-60 animals based on division staff experience. The unit must be able to support enough animals so the herd resembles a natural age/gender distribution (look/act like a bison herd). The division estimates roughly 3-5 acres are needed to sustain a bison without supplemental feeding. Actual carrying capacity of a given site will need to be determined using site productivity and animal unit (AU) figures. Units with larger areas of habitat are preferred to achieve a larger herd size.

3. What percentage of the proposed bison habitat is remnant/restored prairie?

The division will build cohorts from existing data regarding percentages of remnant/restored prairie and old field for units in order to prioritize future locations for bison reintroduction and prairie reconstruction. Units with ranges primarily comprised of remnant/restored prairie are preferred due to the complexity of reconstructing prairie with bison on-site.

4. Water sources for bison must be present or capable of being restored/created.

The most suitable units for bison re-introduction will have natural water sources existing within the proposed bison habitat. Second in suitability are units that have water sources that could be restored, and lastly would be units where water sources need to be created. The water sources must be able to be used by bison without significantly damaging the quality of the water source and/or adjacent land. The water sources will be evaluated relative to their potential to serve as a disease vector from/to adjacent lands.

5. Slopes within the proposed reintroduction area must be capable of bison use without becoming degraded.

Sites that have gentler topography and more resilient soils/vegetation are preferred. Locations that have steeper slopes and easily erodible soils should be avoided.

6. Are there natural resources (native wildlife or plants, especially ETS), or cultural resources that would be negatively impacted by reintroducing bison to the site (effects of bison, installation of fencing, etc.)?

The division anticipates that the reintroduction of bison will positively affect most prairie species. However, there are some instances where species could be negatively impacted, such as deer getting caught in fencing or bison wallows disturbing archeological artifacts. Sites without these challenges will be preferred to those that have these complications. At units with potential conflicts, is it likely that impacts could be prevented or avoided by using exclosures or other actions?

7. Has there been a recent disease outbreak, such as Bovine TB, that could be transmitted to/from bison and cattle?

The division will work with DNR and MZG veterinarians to identify unit-related disease risks and possible mitigation actions. Issues to consider include: how long since livestock have been present on the land within the unit, and to what extent can the bison range be separated from grazing livestock on adjacent land.

Operational Criteria

1. Is there/will there be full-time permanent staff assigned to the proposed unit?

The division needs to be committed to long-term support for operations and maintenance related to bison, increased visitation and interpretation at the unit if selected for bison re-introduction. It is critical that the unit be staffed on a year-round basis. Onsite staff will need to be trained in managing bison, dealing with the potential of escaped animals, interpreting bison and other unit interpretive themes, repairing/maintaining handling facilities, fencing, water systems, etc.

2. Is there a suitable space at the unit for a handling facility (corral)?

A handling facility (corral) will be needed to sort animals for sale/transfer, conduct testing, etc. About one acre is needed to accommodate the handling facility itself (0.5 acres) and associated access drive, vehicle turnarounds and parking.. It should be located on level ground with good drainage away from primary visitor use areas, away from visitor views, but close to staff facilities. Both water and electric service need to be available at the handling facility.

3. What is the likely reaction of the local community to a bison reintroduction in the unit?

Until the unit proposed for bison reintroduction is publicly identified, the division will have to rely on staff input to identify likely public support and concerns.

- a) Is the local community likely to be generally supportive or generally opposed?
- b) What are those concerns likely to be: public safety, bison/cattle disease transmission, etc.? Can these be adequately addressed?

4. What are the potential changes to existing visitor uses as a result of a bison reintroduction?

- a. Trail relocations, changes in type, or losses of trail. How will it change the quality of the trail experience?
- b. Adequacy of other existing facilities to support increased visitation or changing visitor use patterns – parking, sanitation, interpretive facilities, etc.

Interpretive Services Criteria

1. What are the existing and potential audiences for interpretive services at the unit?

A primary goal of expanding bison in the state park system is to reach a larger and more diverse audience with interpretive programming about bison and prairie. Locations near population centers or along major interstate or highway corridors will likely have larger potential audiences. Opportunities to connect with school groups and diverse audiences will be ranking factors. Current visitation levels and other attractions available at the unit and in the immediate vicinity will also be factors in ranking units.

2. How does the unit rank in the state park system for interpretive services given the unit's resource quality/significance and visitation?

The division will assess the quality/significance of the unit's resources for interpretation, including the addition of bison, utilizing the grouping framework set out in the Interpretive Services Plan. Visitation – both existing and potential (with bison present) - will be assessed. The level of interpretive effort necessary with the introduction of bison and the division's ability to commit to that effort will be determined.

3. What bison-related interpretive opportunities are possible/most feasible for the unit?

This criterion has both an interpretive and operational component. Wildlife drives, tours, and observation platforms are some of the options that should be considered. What interpretive efforts are best suited or can be practically provided at the site when considering landscape type, impacts to significant existing uses, operational costs, and resource management needs?

4. Would potential interpretive opportunities at the site complement those offered at other PAT units with bison and the MZG?

The unit should provide complementary experiences to those provided at other PAT units and the MZG. Although each unit may offer some similar basic experiences, each unit should offer a unique experience best fit to the unit's landscape and character. Ideally, the interpretive opportunities at each location will encourage people to visit the other locations to experience these different opportunities.

5. Are there interpretive cultural or natural resource stories that would be enhanced by having bison there? Could interpreting bison be enhanced by the cultural and natural resources available at that site?

Bison-related interpretation should complement other interpretive themes at the unit. Scores will be higher where the addition of bison can enhance the overall storytelling within the unit.

Visitor Experience Criteria

1. Would adjacent features enhance or detract from the experience of viewing the bison herd?

This criterion would be scored by analyzing what features within the viewshed of the bison herd area would affect the public's experience – features inside the park as well as on adjacent lands.

2. Does having a bison herd enhance or detract from overall visitor experience at the unit?

This criterion would be scored by considering the overall number and type of visitor experiences at the park to categorize expected visitor experience in general, and how bison would impact it.

Appendix C - Utilizing the Criteria: Second Unit Selection

In order to make significant progress towards Goals #1 and #3, the Division established a target of introducing bison to a second state park location by 2014. A division strategic planning group was established in early 2013 to develop the overall strategic plan for managing bison and to review and recommend a second location for reintroducing bison within the state park system.

To build support for the overall effort to play a role in the conservation of North American plains bison, the focus at the next reintroduction site would need to be interpretative opportunities and visitor experience. The division set 4 points of emphasis for the selection process to address this:

- Close to a major population center.
- Visitors are assured of being able to see bison when they visit.
- Academic institutions are relatively nearby so they can serve as potential research partners.
- Progress toward goals 1-5 can be achieved at the unit.

The aggressive timeline for reintroducing bison in 2014 also meant that units would score better if they already possessed operational and interpretive staff and site conditions that required less preparation (existing infrastructure, significant prairie within the bison range).

Three state park units were identified for further consideration as bison reintroduction sites – Afton State Park, Minneopa State Park, and Myre-Big Island State Park. All of the selection criteria were utilized during the selection process with additional weight given to those that addressed the 4 points above. Among the selection criteria, criteria given additional weight included:

Interpretive Services Criteria #1: What are the existing and potential audiences for interpretive service at the unit?

Interpretive Services Criteria #2: How does the unit rank in the state park system for interpretive services given the unit's resource quality/significance and visitation?

Interpretive Services Criteria #3: What bison-related interpretive opportunities are possible/most feasible for the unit?

Visitor Experience Criteria #1: Would adjacent features enhance or detract from the experience of viewing the bison herd?

The consensus of the strategic planning group was that Minneopa State Park best met the selection criteria as weighted for this process. Among the strengths identified for Minneopa State Park as a reintroduction site were:

- Over 200,000 people live within a 50 miles radius of the park and another 3 million live within the Minneapolis-St. Paul metropolitan area less than a two hour drive from the park.
- Nearby colleges and universities have potentially complementary academic programs in biology, American Indian Studies and natural resource management.
- Existing park infrastructure including a park road through the potential bison range and a scenic overlook provide “ready-made” opportunities for viewing bison.
- The proposed bison range encompasses approximately 330 acres of remnant and reconstructed prairie, meaning native plant community reconstruction will not be required.
- The bison reintroduction is anticipated to aid prairie management more at Minneopa State Park than other locations – primarily by retarding encroachment of woody species.
- The local community is expected to be supportive of the reintroduction.

The selection of Minneopa State Park in June 2013 initiated several actions to prepare for the reintroduction including design of the fencing, water systems, and handling facilities; resource management activities including prescribed fire, tree removal, and archaeological surveys; and design of interpretive programming and materials. An amendment to the Minneopa State Park management plan addressing the bison reintroduction was prepared and was approved in August 2014. Complications with the design and installation of infrastructure to support the bison reintroduction at Minneopa State Park resulted in delaying the arrival of bison until 2015.

Appendix D – Minnesota Bison Conservation Herd Style Guide and Reference

(The following text is an excerpt concerning name conventions and common terminology from the division's Minnesota Bison Conservation Herd Style Guide and Reference.)

The terms, meanings, and words associated with bison vary in usage. This guide outlines basic rules on usage pertaining to the Minnesota Bison Conservation Herd to promote consistent communications within and between partner agencies. Please refer to this guide to clarify usage in any communications related to the Minnesota Bison Conservation Herd.

Minnesota Bison Conservation Herd

A bison herd with high quality genetics managed for the public good is being expanded through a 2012 formal interagency agreement between the **Minnesota Department of Natural Resources** and **Minnesota Zoological Garden**. The partners will work cooperatively to preserve **American Plains bison** with healthy genetics and conserve other prairie wildlife species native to Minnesota. This is the first herd being managed for conservation in Minnesota. The herd will be grown from the sustainable herd of 90 bison at the **Blue Mounds State Park Unit**, to a 500-animal herd occupying several locations. Genetic testing of the herd from 2011-2014 found them largely free of any genetic material that would have come from cross-breeding with cattle. This makes them rare. Currently, there are approximately 500,000 bison in North America. While not all of these bison have been tested, of those that have, 1% shows no evidence of cattle DNA.

Nomenclature Associated with Minnesota Bison Conservation Herd

American plains bison: This is the subspecies of bison managed within the Minnesota Bison Conservation Herd. Use this name in all circumstances when referencing the Minnesota Bison Conservation Herd. This also differentiates from the second subspecies, wood bison. Do not use Great Plains bison, North American plains bison or plains bison.

American bison: Used only when distinguishing bison occurring in North America from the Eurasian species. This includes two sub-species: American Plains bison and wood bison.

Bison bison: The scientific name of American bison.

Bison bison bison: The subspecies scientific name of American Plains bison.

Bison bison athabasca: The subspecies scientific name of wood bison.

Buffalo: True buffalo are native to only Africa and Asia. Historically and culturally this name was used by early French explorers who called them "les boeufs," meaning oxen. The name evolved from "boeufs" to "buffelo" and finally to its present "buffalo" with many variations. Due to its prevalence in pop-culture, it will be used by some of the public and should not be considered incorrect, just less descriptive.

Units within the Minnesota Bison Conservation Herd

Blue Mounds State Park Unit: A 533-acre unit within Blue Mounds State Park which is home to a sustainable herd of approximately 90 animals of the Minnesota Bison Conservation Herd. This herd originated with the introduction of three animals (two bulls and one cow) to the park in 1961. The interpretive focus is the relationship between bison and the prairie.

Minneopa State Park Unit: A 350-acre parcel within Minneopa State Park which will eventually be home to 30-40 animals of the Minnesota Bison Conservation Herd. The public will be allowed to drive personal vehicles through the range on a maintained road. The interpretive focus will be the historic relationship between bison and humans.

Minnesota Zoo Unit: A six acre exhibit is home to 12-15 animals with three to four calves born every spring. This herd provides up close viewing opportunities for the 1.2 million zoo visitors every year. The interpretive opportunities not found at other Minnesota Bison Conservation Herd locations include the evolving science of bison conservation biology.

Minnesota Department of Natural Resources: Minnesota Department of Natural Resources (DNR). Use DNR only after first referencing the full agency name. See also Minnesota Department of Natural Resources.

Minnesota Zoological Garden: Use full name first time before abbreviating to Minnesota Zoo or MZG.

Minnesota Zoo staff coordinates the genetic testing and pedigree tracking of the bison herd. All bison calves born at the zoo are released into a Minnesota state park at the yearling age.