

Department of the Interior

Bison Conservation Initiative



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U. S. Department of the Interior
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PRINCIPLES OF THE DOI BISON CONSERVATION INITIATIVE

- I. DOI will base management of its bison herds on the best science available, seeking to restore them to their ecological and cultural role on appropriate landscapes.
- II. DOI will apply adaptive management principals to our bison conservation efforts
- III. DOI will seek to develop genetic tests to identify and develop bison herds with high levels of bison genetic diversity.
- IV. DOI will seek to develop new tests and techniques to diagnose, prevent, and control diseases in bison that may impact domestic livestock or other bison herds.
- V. DOI will work with interested parties, including States, Tribes, landowners, and conservationists, to discuss advantages and concerns associated with specific actions, guided by Executive Order #13352 - Facilitation of Cooperative Conservation.

PRIORITIES FOR THE DOI BISON CONSERVATION INITIATIVE

1. Charter the DOI Bison Conservation and Management Working Group to guide management of DOI bison herds.
2. In FY 08, the Working Group will organize and convene a Genetic Conservation Workshop to develop bison genetic management guidelines, including the appropriate role of bison with cattle allele introgression in future conservation actions.
3. In FY 09 the Working Group should organize and convene a bison disease and health workshop to guide bison health management.
4. The working group will actively consult with BIA and Tribal partners to determine the best way to coordinate and assist with Tribal bison initiatives.
5. The Working Group will actively seek to coordinate opportunities to increase existing DOI herds to 1,000 or more bison, or establish new herds or metapopulations that can reach that size, without impacts from non-native diseases and with little or no cattle allele introgression.
6. The Working Group will seek to support the efforts of the Greater Yellowstone Interagency Brucellosis Committee (GYIBC), coordinate with them and offer advice and support as requested.
7. The Working Group will actively support the development of tests to identify cattle gene introgression in individual bison.
8. The Working group will coordinate development of guidance for disease surveillance and herd health monitoring programs for DOI herds where not already in place.

INTRODUCTION

Bison have been revered, used, and incorporated into many Native American cultures over many millennia. The bison is the icon of the Department of the Interior and the National Park Service. Following the near extinction of bison during the 19th century, substantial numbers of bison currently exist as a result of the combined management efforts of State, tribal and Federal governments, conservation groups, and private ranchers and landowners.

This framework for managing bison by the Department of the Interior (DOI) bureaus articulates a basis for improved management of the species and provides a foundation to strengthen existing and build new partnerships with States, Native American tribes, landowners, agricultural interests, conservationists and others interested in bison.

The framework establishes steps to address the health and genetic composition of DOI bison herds, and acknowledges the ecological and cultural role of bison on the American landscape. It proposes specific actions to better manage and integrate bison populations on select Interior lands in 2008 and future years.

One of the iconic symbols of American frontier expansion is the image of vast herds of North American bison (*Bison bison*) grazing on the western plains. While the days of millions of free-roaming bison are gone, it may be possible to develop partnership arrangements that will permit bison herds to recreate their natural role in areas where biologically suitable and socially acceptable.

In appropriate areas, the presence of bison in adequate numbers may help support the restoration or maintenance of other native species and habitats. This in turn would provide inspiration or enjoyment to diverse elements of our society. As demonstrated convincingly at Yellowstone National Park, observing bison ranging freely over the landscape holds a major attraction for the American public.

Any bison conservation initiative will only be realized by working integrally with States, which have management responsibility for most of the bison within their boundaries; with agricultural interests, both landowners and those with public land leases; with Native Americans, whose culture in many instances is tied to bison; with conservation groups dedicated to bison and other wildlife conservation; with the Governments of Canada and Mexico and with other interested parties.

The following sets out intended short-term actions to inaugurate the DOI Bison Conservation Initiative, and provides background information on the status of DOI bison herds, current issues of concern and existing external and internal bison conservation efforts.

Background

The North American Bison Population

North American plains bison, which in the 17th century numbered over 25 million and occurred over much of the continental United States, southern Canada and northern Mexico, were by the end of the 19th century limited to less than 30 animals in Yellowstone National Park and isolated individuals in zoos or private captivity. In the early years of the 20th Century, private landowners played an integral role in stabilizing plains bison populations. In 1905 the American Bison Society was formed, playing a key role in subsequent rebuilding of bison populations on public lands.

As of the early 21st century, a variety of efforts have succeeded in bringing plains bison back to relative abundance, with over 500,000 animals now present in North America, mostly in private ownership. The current plains bison population in North America reflects its disparate roots. Most of the herds number fewer than 1000, are contained by fences, and show evidence of cross-breeding with domestic cattle at some point in their ancestry. Conservation efforts to date have essentially developed two lines of the same species: the domestic bison, subjected to the selection and breeding schemes common in livestock management; and a wild bison, subject to natural breeding and selection to the degree that space and management constraints allow. It appears only a small percentage of existing bison are managed for species conservation purposes, and as recently noted by Sanderson et al (Conservation Biology, Vol. 22, No 2 2008), bison “in no place express the full range of ecological and social values of previous times.”

Wood bison are larger than plains bison and are well adapted to northern meadow and forest habitats. Originally ranging over large portions of Alaska and northwest Canada, wood bison declined to approximately 300 by the end of the 19th century. These few remnants were preserved by the efforts of the Government of Canada.

There are now about 4,000 wood bison in healthy, free-ranging herds in Canada, with a National Recovery Plan for the Wood Bison.

Population, Genetic and Disease Status of Plains Bison Populations Managed by DOI

Currently there are bison populations in seven National Wildlife Refuges and five National Parks, as discussed below. Of the approximately 4,700 bison managed in five National Parks, about 3,000 are infected with or exposed to brucellosis. FWS manages about 1100 bison free of such diseases across six National Wildlife Refuges, and there are about 950 brucellosis-infected or exposed bison based in Grand Teton NP (included in Parks total above) that winter on the National Elk Refuge.

A large-scale genetics study, conducted from 1999 – 2002, found no cattle gene introgression in bison at Yellowstone or Wind Cave national parks, nor at the FWS herd

previously at Sully's Hill, and low levels in the other herds. However, the Yellowstone bison herd is exposed and individual bison may be infected with brucellosis.

There are currently approximately 2,100 bison Yellowstone National Park; about 950 that migrate between Grand Teton NP and the National Elk Refuge; 650 at Badlands National Park, 610 at Theodore Roosevelt NP, and 400 at Wind Cave NP.

In addition to these managed herds, bison are known to range onto other NPS lands: bison-cattle hybrids occur at Grand Canyon National Park, plains bison occur in wood bison range at Wrangell-St. Elias National Park and Preserve, and plains bison from the Henry Mountain herd cross onto Capitol Reef National Park.

Aside from the National Elk Refuge herd mentioned above, the Fish and Wildlife Service maintains bison herds at Fort Niobrara NWR, the National Bison Range, Wichita Mountains NWR, Neal Smith NWR, Rocky Mountain Arsenal NWR and Sully's Hill National Game Preserve. The bison kept at Ft. Niobrara NWR are two separately maintained herds – the long-term herd, which has low levels of cattle allele introgression, and the herd previously at Sully's Hill National Game Preserve, which was transported to Ft Niobrara NWR in December 2006.

This transported herd lacks detectable cattle allele introgression and therefore is maintained separately from the prior Ft. Niobrara herd. To ensure maintenance of diversity, the original Sully's Hill herd is permitted unlimited expansion to provide an additional source of non-introgressed bison. The original Ft. Niobrara herd numbers 325, has a small amount of cattle gene introgression, and is managed to maintain unique bison allele diversity but not to increase in size.

The Wichita Mountains herd has a relatively stable population of 660 bison. Rocky Mountain Arsenal has an increasing herd that currently numbers 21. The original Sully's Hill herd now at Ft. Niobrara numbers 47 and is increasing. Neil Smith NWR has 48 bison. Sully's Hill in North Dakota has 9 bison (transferred there after the previous herd was relocated). The Neil Smith, RMA, and current Sully's Hill herds are satellites of the National Bison Range herd, which consists of 320 bison.

On lands administered by the Bureau of Land Management, the Henry Mountains of central Utah cover 2 million acres of remote land and support a bison herd. This free-ranging herd shares the area with cattle during the summer when livestock grazing is permitted. The population is managed as wildlife by the Utah Department of Wildlife Resources. In 2007, eighty-one public once-in-a-lifetime bison hunting permits were issued in Utah.

Current Bison Disease Issues

Brucellosis is a globally significant human and livestock disease. Since the 1930s, the United States has been committed to the eradication of brucellosis from livestock, and in 2008 all 50 states were, for the first time, certified brucellosis-free in livestock.

GYA elk and bison are the last reservoir of *B. abortus* in the United States. Preliminary estimates indicate that the GYA herds may hold nearly 12,500 brucellosis-positive elk (out of a total population of 125,000) and 1,500 *brucellosis-positive bison* (out of a total population of 2,100-YELL and 950 GRTE). These statistics are informed estimates because of the difficulty of diagnosis. Brucellosis management programs are based on blood tests that identify bison and elk with antibodies to *B. abortus*. Some with positive tests may be falsely positive because antibody from other pathogens can cross-react on brucellosis tests. There are no efficient or effective surveillance diagnostics on live animals to separate those only exposed to *B. abortus* from those that are currently infected.

While brucellosis has been a significant challenge for bison management, the risk of introduction of novel diseases may pose even greater threat to bison conservation. Endemic livestock disease (e.g. malignant catarrhal fever), foreign animal diseases (e.g. foot and mouth disease), and emerging infectious diseases have the potential to devastate the DOI herds through direct mortality, culling to protect livestock, and instituting a moratorium on movement.

In addition to brucellosis management efforts, other disease prevention measures, e.g., livestock-bison separation and disease surveillance, are occurring; however, these activities are now informally coordinated. Management actions for potential disease threats must be tailored to the disease of concern but may include spatial-temporal separation of bison and livestock, baseline disease surveillance, pre-movement disease testing and/or quarantine, and preventive treatments.

Current Actions by Bison Conservation Organizations and DOI Agencies

Recently, conservation organizations have focused on regional and landscape-level short and long-term bison conservation strategies. These initiatives include:

- A nearly completed Status and Action Plan for North American Bison prepared by the IUCN;

- The American Prairie Foundation has proposed restoring bison to key areas of the central Montana prairies, including lands in southern Saskatchewan;

- Proposals by The Nature Conservancy to establish free-ranging bison on multi-jurisdictional landscapes in Colorado (Great Sand Dunes NP and adjoining San Luis Valley Fish and Wildlife Refuge Complex);

- Substantial bison conservation efforts on privately held lands in Oklahoma, New Mexico and elsewhere; and

The Wind River Indian Reservation, Wyoming, is preparing a bison reintroduction plan for a portion of the reservation. Implementation of the plan may result in a request to DOI for source stock.

These initiatives have often looked at Department of the Interior bison herds as potential foundation stock.

Wood bison conservation initiatives are guided by Canada's Wood Bison Recovery Plan and Recovery team (WBRT) which includes the Canadian Wildlife Service, Parks Canada Agency, University of Calgary, Yukon Department of Renewable Resources and the Alaska Department of Fish and Game (ADF&G). ADF&G has led an effort to restore wood bison with the cooperation of the Council of Athabaskan Tribal Governments, FWS, NPS and other private partners.

Existing Initiatives within the Department of the Interior

In 1998, FWS and NPS formed a Bison Conservation and Management Working Group that has met annually to share information concerning wildlife health, culling practices, and related conservation issues. The Group sponsored the bison genetic studies of DOI bison herds by James Derr and Natalie Halbert from Texas A&M University. The Working Group's efforts informed several of the proposals in this paper.

FWS has established bison herd genetic profiles including prevalence and site of introgressed loci, allelic diversity, and frequency of private alleles for all its herds. FWS bison are individually identified animals, permitting much greater latitude in genetic management. FWS has established a goal to conserve unique and rarely occurring bison alleles through metapopulation management, and to this end has established the three satellite herds of the National Bison Range herd noted above for genetic conservation.

Site-Specific Actions:

- Fort Niobrara National Wildlife Refuge has worked with the State of Nebraska to expand bison grazing habitat on the refuge;
- Charles M. Russell National Wildlife Refuge is in the early stages of considering devoting part of the refuge to bison habitat with adjoining land owners, including the Bureau of Land Management;
- NPS is continuing population genetics studies at several parks with bison herds. For example, recent studies have shown that the Badlands population is divided into 2 subpopulations corresponding to the 2 origins of the herd;
- Tallgrass Prairie National Preserve has a plan to establish a new herd which may serve as a satellite population for Wind Cave; and

- Yellowstone National Park is cooperating with the State of Montana and APHIS in quarantine and testing trials that may result in Yellowstone bison being available in the future to start new herds or augment existing herds

New DOI Actions for the Initiative:

Action Item 1: Immediately Launch the Bison Conservation Initiative.

DOI will create a Bison Conservation and Management Working Group, based upon the existing informal group referenced above, with expanded representation and scope of action, to review, provide oversight, foster interagency cooperation and recommend actions that would further the goals of coordinated bison conservation. The group will consist of officials of the DOI, agency leads, representatives from the refuges and parks that manage bison, state wildlife management representation, appropriate representation from BLM and USGS, and the Animal and Plant Health Inspection Service (APHIS) of USDA in the future. Consideration will be given broadening the group to include other Federal land managing agencies, such as the Forest Service and DOD.

As a key part of the Initiative, DOI should actively seek partners to showcase Interior lands with small bison herds to expand and enhance interpretive and educational opportunities, and seek to work with zoos to accomplish these objectives in areas where there are no DOI bison herds.

There are already several groups that are discussing bison issues with the Department. They include the IUCN, American Bison Society, State and tribal governments. The Working Group will evaluate the costs and benefits of creating a Federal Advisory Committee to formalize the partnership efforts. In any event, significant outreach efforts must be undertaken to bring those most likely to be affected by decisions, as well as bison advocates, into this process before proceeding with any significant planning or decision-making.

DOI and partners will give active consideration to the draft conservation action plan being developed by the World Conservation Union.

The Working Group will give priority to establishing a mechanism for involving Tribal bison experts in DOI's activities, and assisting with Tribal bison initiatives.

Action Item 2: Prevent, Control, or Eliminate Non-native Diseases Impacting Bison Conservation

There is one existing disease, bovine brucellosis (*Brucella abortus*), that severely impacts bison conservation. However, other non-native diseases have potential to affect bison health and restoration efforts. These are discussed in the Background section below. The challenges are to: 1) Control or eliminate brucellosis from the Greater Yellowstone Area (GYA); 2) Prevent spread of brucellosis or other diseases between DOI bison and other

bison or domestic livestock; and 3) Prevent introduction or establishment of other non-native diseases in all DOI herds.

To more effectively combat brucellosis, the Secretaries of Agriculture and Interior and the Governors of Montana, Wyoming, and Idaho established the Greater Yellowstone Interagency Bison Committee (GYIBC) in 1994. Since then, the committee has recommended actions and facilitated cooperation and coordination among the signatories. The new Working Group will coordinate with the GYIBC, but not seek to supplant its efforts.

Specific DOI actions for 2008-2009

- 1) Direct the Bison Conservation and Management Working Group to organize and convene a bison disease workshop in FY 09 to develop guidelines and protocols for addressing diseases impacting bison and bison conservation efforts.
- 2) Support activities of GYIBC as appropriate.
- 3) Work directly with the US Animal Health Association (USAHA) Committee on Brucellosis, including urging the Department of State to host Russian vaccine scientists at the 2008 USAHA Meeting where results on the Russian brucellosis vaccine would be discussed.
- 4) Seek resources to initiate baseline disease surveillance monitoring in all DOI bison herds where it is not currently undertaken.

Action Item 3: Actively pursue and expand as needed the current NPS and FWS efforts to create bison metapopulations of herds with high levels of bison genetic integrity and not impacted by non-native diseases

Maintaining or creating herds or metapopulations in excess of 1,000 animals is considered as likely essential to the long-term genetic viability of individual bison within the herds. Where range will not support populations of 1,000 or more animals, the creation of satellite herds will be considered to increase the viable population size. This should be pursued using animals of appropriate status from available sources.

Both the NPS herd at Wind Cave and the FWS herd originally at Sullys Hill (relocated to Ft. Niobrara NWR in 2006) are free of cattle genes and regulated livestock diseases; these bison will be an essential element of this effort. However, we should not limit ourselves to these bison, but consider any that can be similarly shown to be both free of cattle genes and of diseases that may impact livestock or other bison herds. The objective will be to create 1,000+ bison populations or metapopulations without impacts from non-native diseases and with little or no cattle allele introgression wherever appropriate, given available land and other resources.

The first steps for this effort will be to determine exactly what is needed to reach the goal and whether bison from other DOI or non-DOI herds should be included in the effort. Subsequent steps will be to prioritize and carry out actions needed to reach the goal.

Action Item 4: Manage DOI Herds Through Conservation of Genetic Variation and Natural Selection.

The challenge is to manage the Department's current plains bison herds to preserve their genetic diversity and to conserve or simulate natural selection pressures to the best of our abilities. To implement the goals of the framework, the Department must also ensure an adequate supply of acceptable animals for populating restored habitats or for augmenting existing herds when found to be appropriate.

DOI plains bison herds have until relatively recently existed in isolation from each other with little or no opportunity for exchange of animals between them, although that is now changing. Of all plains bison herds managed by DOI, only the Yellowstone herd now meets the criteria for independent long-term genetic conservation (large population size and natural selection). This herd is infected with brucellosis.

The DOI herds are a unique resource, having low levels of domestic cattle introgression and a relatively high degree of genetic diversity. If the brucellosis issue were resolved, Yellowstone bison could potentially be used to increase genetic diversity in public and privately managed plains bison herds throughout the country. And if cattle allele introgression issues were resolved, bison from many other DOI herds could be used for that purpose as well.

Our genetic goals in managing the Department's bison herds are retaining the genetic integrity of the bison and maximizing their genetic diversity so that they can adapt to changing environmental conditions. With genetic information on so many of the DOI herds, there is a great opportunity to apply adaptive management principles in developing management options for each herd.

The genetics workshop later this year, and the subsequent American Bison Society conference should provide a great deal of valuable information on how best to proceed. The Working Group will address these issues as part of its basic function.

Actions for 2008-2009

The genetic management options outlined above should be informed by interactions between experts in wildlife genetics, animal breeding, and wildlife management. To this end, the Department of the Interior, coordinating with potential partners, will host a summit focusing on bison genetics in the summer of 2008.

We will ensure that managers of DOI bison herds are well represented, although all conservation herds should be considered. Managers of State herds and private

conservation herds (such as the Castle Rock herd) are also critically interested in these results and should be invited to participate. Further, experts in the zoo community with animal breeding and population management expertise could make an important contribution to discussions at the summit.

The results of this summit will then be provided to the Fall American Bison Society conference to ensure exposure of the results to and recommendations from a wide group of bison experts from various backgrounds.

Once the genetics workshop has been held and the outcomes fully reviewed by the agencies and stakeholders, the appropriate role of bison herds with cattle genetic material in bison conservation will be under continuing review.

Action Item 5: Pursue Collaborative Bison Conservation projects

The DOI Bison Working Group should actively seek bison conservation projects consistent with this framework that involve partnership efforts, for both plains and wood bison. While several projects have been suggested, none are presently in a state to be offered for action.

The Bison Conservation Initiative intends to build upon and coordinate existing efforts, as appropriate, in order to sustain a strong foundation for bison conservation throughout this country, throughout this century.