

Interagency Bison Management Plan

AGENCY: National Park Service, Yellowstone National Park
INVOLVED PARTIES: Montana Department of Fish, Wildlife, and Parks, Montana Department of Livestock, Gallatin National Forest, U.S. Department of Agriculture Animal and Plant Health Inspection Service
POINT OF CONTACT: Rick Wallen, 307-344-2207, rick_wallen@nps.gov
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INTERNET SITE: <http://www.nps.gov/yell/technical/planning/bison/bmpstatusreview.pdf>

PROJECT DESCRIPTION:

An interagency partnership developed an adaptive management (AM) plan for conserving a free-ranging population of bison that primarily utilizes summer and winter habitats inside Yellowstone, but over time, some bison use extended to low-elevation winter ranges outside Yellowstone. Since the late 1980s, the National Park Service (NPS) and the State of Montana have been working to find a bison management strategy that would allow Montana to maintain its brucellosis-free status and allow NPS to maintain a bison population that fluctuates in response to ecosystem processes while maintaining greater than 2,300 animals (the goal for protecting the genetic variability in this population of bison). Prior to adoption of the Interagency Bison Management Plan (IBMP), all bison that left the administrative boundaries of Yellowstone National Park (Yellowstone) were killed because some members of the population were infected with brucellosis. The bison management strategy of killing all bison that left the Yellowstone boundaries allowed Montana to retain its brucellosis-free status but put the Yellowstone bison population at risk of falling below acceptable levels. From 1989 through 1996, NPS attempted to develop a bison management strategy in collaboration with other agencies tasked to manage wildlife beyond the Yellowstone boundary. Three interim plans (environmental assessments [EAs]) were completed to guide management while the long-term planning effort continued. Stakeholders could not agree on which bison management strategy to implement. An impasse led to litigation, which was resolved through continued planning (National Environmental Policy Act [NEPA] analyses) and ultimately a negotiated settlement. The State of Montana, NPS, U.S. Forest Service, and the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service developed an AM strategy that was incorporated into the 2000 final environmental impact statement (EIS) (U.S. Department of the Interior [DOI] and USDA, 2000a). The record of decision (ROD) for this final EIS provided the rationale for implementing this AM program (DOI and USDA, 2000b).

The IBMP identifies three levels of bison management. Each level of management identifies specific thresholds to be achieved before the next level can be implemented. The measurable criteria to be achieved under Level I include (1) no commingling of bison and domestic livestock in specific geographic areas, (2) allowance of only disease free bison (as determined through capture and testing procedures) on some lands in Montana outside of Yellowstone National Park when cattle are not present, (3) initiation of a bison vaccination program once a safe vaccine is identified for use in bison, (4) bison must be off winter range for a specific amount of time (time period was reduced as new information became available through research about bacterial survival in the local environment) before summer cattle grazing occurs, (5) risk of brucellosis transmission (as identified by Montana State veterinarian) must be at an acceptable level, and (6) bison population level stays above 2,300 animals,.

Level II management involves applying the effective management strategies learned through Level I monitoring to a larger geographic area (low-elevation winter range beyond the Yellowstone

boundary). In addition, the intensity of management actions (i.e., hazing and capturing bison) is reduced as more information is gained about the true risk of disease transmission. The objective that needs to be achieved to move from Level II to Level III is that a remote bison vaccination program much be developed for the entire Yellowstone bison population.

One key component of this plan is to gain greater stakeholder tolerance for seasonal presence of bison (up to about 400 on three key areas of Federal [Gallatin National Forest] and potentially on private lands adjacent to Yellowstone). Achieving such tolerance requires lowering the perceived risk of transmission of the disease brucellosis (*Brucella abortus*) from bison to livestock and learning more specifically the risks of disease transmission. A second key component of this AM strategy is protecting Montana's brucellosis class-free status, which is economically important for the state's cattle producers. The AM strategy is intended to provide a mechanism to: (1) learn whether the partnership could prevent the commingling of bison and cattle on lands outside the national park, where the respective species range overlaps occur, (2) manage large migrations of bison outside Yellowstone when and if they occur, (3) implement a bison vaccination program, and (4) identify more specifically the actual risks of transmission.

ADAPTIVE MANAGEMENT (AM) ELEMENTS:

What management issue was the primary driver?

The primary driver is the conservation of a viable free-ranging wild bison population. In order for the population to fluctuate in abundance within the expected range of variation, greater tolerance for bison on low-elevation winter ranges outside the national park needs to occur (Gates et al., 2005). The growth of the bison population over time in the absence of recurring population management related mortality resulted in expanded use not only of summer and winter ranges within the national park but also expansion of winter range use to lands beyond the Yellowstone boundary. The presence of wild bison on public and private lands outside Yellowstone created immense concern for, and perceived threat to, Montana's livestock growers because of the potential commingling of cattle with bison from a brucellosis-infected population.

What uncertainties led to an Adaptive Management approach being selected?

Several uncertainties existed in 2000 when the State and Federal agencies completed a coordinated environmental analysis process and signed separate RODs. One was that the specificity of standard tests to detect bison infected with brucellosis was low enough that an unknown percent of test-negative bison were falsely diagnosed. Thus, there is a need for a more reliable diagnostic test to identify infected bison. A second was that, although preliminary information showed the duration of viability for *Brucella abortus* organisms shed into the open environment by infectious bison is reduced the closer to summer the bacteria are shed, the preliminary work was completed in southern Wyoming, and the State of Montana felt it was important to validate those results specifically in the two management areas proposed for winter range expansion. A third was that, in 2000, livestock were moved onto Federal lands grazing allotments that also were expected to be bison winter range and that, since tolerance for bison on lands within Montana had never occurred previously in two identified special management zones outside the national park boundary, there was inadequate knowledge regarding which locations would be the areas most likely for bison parturition events (areas of high brucellosis transmission risk) to occur. Fourth, since tolerance for bison occupying habitats in this zone was new, the potential areas of overlapping bison winter range and cattle summer range needed further study. Finally, there was some uncertainty whether a new bovine cattle vaccine (RB51) would be both safe and effective in bison, thus leaving uncertain whether the systematic use of vaccination as a tool for reducing the risk of brucellosis transmission

from bison to cattle would be suitable. While the vaccine research was not complete in 2000, AM elements were established to develop a bison vaccination program in a systematic manner.

How was the monitoring and science framework designed to support timely management adjustments to changing resource conditions and increased certainty?

The monitoring framework was designed to address uncertainties identified in the planning and litigation processes of the 1990s. The interagency research and monitoring program addressed:

1. Persistence and viability of *Brucella* bacteria shed in areas of bison winter range, to understand better the probability of bacterial survival rates in the specific locations where cattle and bison ranges overlap. The field research is completed, and the agencies that conducted the work are completing the analyses. The results will be used in clarifying the timing of winter range tolerance on the Gallatin National Forest.
2. How bison movement patterns occur on winter ranges that include lands adjacent to Yellowstone National Park, including the timing and frequency of bison birthing events on these winter ranges. Pregnant seronegative (disease-free) bison are released after capture to monitor their patterns of habitat use and their probability of giving birth in areas where cattle and bison ranges overlap. Prior to the IBMP, these pregnant, apparently disease-free bison were not tolerated in Montana. Marking and monitoring these individuals has gained greater tolerance and provided a learning opportunity.
3. How effective could a bison vaccination program be in lowering the brucellosis prevalence in the bison population? Gross et al. (2002) have modeled the probabilities of exposure to shed bacteria and determined that vaccination in combination with the test and removal programs directed by the respective State and Federal RODs would reduce the risk of brucellosis transmission by driving down the disease-prevalence rate in the bison population. Subsequently, the agencies have completed decision documentation to initiate the first phase of bison vaccination (Wallen and Gray 2003; Lewis 2003; USDA 2004; Montana Department of Livestock [DOL] 2005). Further analyses through an EIS process are being done potentially to expand the vaccination program parkwide. This will lead to the final steps of greater tolerance of bison outside Yellowstone boundaries.

The objectives are clear; however, timeliness of management decisions is disputed by some stakeholders. While uncertainties have been reduced through implementation of management experiments and learning from those experiments through monitoring results, there are divergent opinions among the agencies exactly as to what should be the threshold for adaptive change. The agencies respect each others' decision authorities to decide what is right within their jurisdictions. Thus, the process of adaptive change for greater tolerance of bison outside Yellowstone is slow.

Please describe the process used for involving partners/stakeholders.

Nongovernmental stakeholders are involved principally through the NEPA process. In addition to the NEPA process, the agencies meet one to three times per year to discuss operational issues and respond to comments from public constituencies at these meetings.

Please describe the mechanism for adapting decisions based on monitoring results. Was an Environmental Management System (EMS) used?

Although no formal EMS has been written, the AM program (which evolved through settlement negotiations) follows the EMS model. A monitoring system is partially described in the State and

Federal RODs and the Interagency Field Operating Procedures (DOI and USDA 2000a; Montana Department of Fish, Wildlife, and Parks [FWP] and Montana DOL 2000; IBMP managers 2002). The agencies implementing the IBMP meet two to four times a year to coordinate activities and share information. In 2005, the interagency partnership evaluated accomplishments and progress toward advancing to the next AM step. They determined that while some of the uncertainties have been addressed, the conditions necessary to move to the subsequent management step had not been met. The agencies implementing the IBMP make recommendations to the decision makers of the five agencies collaborating on the IBMP. The agency decision makers may use the recommendations for the next year's management actions.

Two key issues still need to be resolved: (1) identifying an area-specific strategy for bison use in a management zone north of the Yellowstone boundary and (2) developing a method for remote delivery of brucellosis vaccine to untested bison in an identified management zone west of the Yellowstone boundary.

Was the AM approach established as a result of a National Environmental Policy Act (NEPA) process (analysis and documentation supporting the decision to implement the AM)? If so, how did the NEPA process address subsequent adaptive decisions and actions?

A NEPA planning process for evaluating bison management issues was initiated following the development of an interagency memorandum of understanding between the State of Montana, Yellowstone National Park and the Gallatin National Forest in 1989 (Montana FWP et al 1990). Additional partners were brought into the planning effort in 1992 (DOI and USDA 2000a). Subsequent years of planning resulted in two EAs to describe interim management plans, several court cases to resolve disputes (including one between the State and Federal agencies), and a deadlock between the State and Federal agencies following the release and public comment period for the draft EIS. The AM elements were added to the management plan during this long process to focus on gaining better understanding of uncertainties about the risk of brucellosis transmission from bison to cattle.

A passive AM program allowed litigation between the State and Federal agencies to be settled. The two parties had disagreed on which alternative to implement. The AM strategy established a mechanism for reaching common ground on some issues, allowed the partnership to learn how bison use the landscape, and increased understanding of the true risk of brucellosis transmission from bison to cattle. Subsequent decisions and actions are addressed through Federal or State environmental analyses that tier from the final EIS.

NEPA identified ultimate goals to be achieved (i.e., credible brucellosis risk management strategy, and a three-step phased approach to greater tolerance for bison on low-elevation winter range adjacent to Yellowstone). AM identified the triggers that need to occur for the agencies to progress through two interim management strategies to reach the final step of implementation.

Has the AM approach been evaluated in a subsequent NEPA process? If so, what has AM contributed to the NEPA process?

Components of the AM approach identified in the original ROD have been assessed in EAs tiered from the initial Federal and State RODs (USDA 2004; Montana FWP 2004a, Montana FWP 2004b; Montana FWP 2004c; Montana FWP 2005). The 2000 final EIS (DOI and USDA 2000a) discussed, but did not fully address, two issues: an in-park remote vaccination program for bison and a quarantine program for managing test-negative bison that would otherwise be consigned to slaughter. The development of the vaccination program is the subject of a current EIS process. The

feasibility of a quarantine program is being assessed and depending upon results, may be the subject of a future NEPA process. The AM approach provided guidance for some follow-up analyses to be addressed in EAs rather than another EIS.

RESULTS:

Benefits provided by AM to date (i.e., reduced uncertainty, improved project efficiency and efficacy compared with other management options):

The AM approach has been reviewed by an interagency Technical Work Group and the results reported in a 5-year status review presented to agency decision makers. This report is available on line. Monitoring of key parameters identified in the NEPA process has reduced the level of uncertainty.

Few changes in management strategy have been implemented at this time, since the elements in the AM strategy identified in 2000 as triggers for progression have been slow to evolve. Uncertainty about the safety and effectiveness of vaccinating bison has been reduced through numerous studies (Wallen and Gray 2003). A bison vaccination program has been initiated at both boundary area locations where bison are captured and individually handled (Lewis 2003, Montana DOL 2005). Additional review of a remote parkwide vaccination program that does not require capturing individual bison is in progress through a new EIS. The State of Montana has initiated a hunting program that requires greater tolerance for bison on these low-elevation winter ranges beyond the Yellowstone boundary during the established hunting season (mid-November through mid-February). While this was not described in the original decisions (DOI and USDA 2000a; Montana FWP and Montana DOL 2000), implementation of this program through AM has benefited some bison by providing greater tolerance on lands west of Yellowstone during the hunting season. Few hunters use this area for harvesting their bison. A *Brucella abortus* viability and persistence study has been conducted, and results of the study are pending. A program to mark and follow seronegative female bison that are released after capture and brucellosis testing has resulted in data to describe how bison use one of the risk management zones along the west boundary and has shown the risk of transmission to be very low. The risk of disease transmission has been reduced by a Federal lands grazing permittee voluntarily vacating an area of bison winter range/cattle summer range overlap. The Gallatin National Forest determined to keep this allotment vacant, benefiting the long-term goal of increasing tolerance for bison on this winter range area.

The major benefit of the AM strategy is that the impasse that developed between the agencies during the environmental planning process has been broken. The agencies have developed an effective communication process that does not involve litigation. A bison population is being conserved even though most agencies are still somewhat uncomfortable with some of the risk management activities, including bison hazing, capture, and periodic slaughter. Montana has maintained the brucellosis class-free status that is valuable to the livestock industry of the State.

Limitations of using AM:

The limitations of the AM approach are grounded in the fate of the negotiated settlement that resulted in the IBMP. In finding common ground, all agencies conceded some of the aspects of bison management that were developed during the NEPA process. The progression through the AM steps toward greater tolerance on low-elevation winter ranges is very slow (considerably slower than the NEPA process predicted) but is being conducted in a very deliberate manner in an attempt to avoid miscommunication.

Financial cost of implementing AM:

The total cost of this program has been high due to IBMP implementation by five agencies. The precise financial costs are difficult to estimate for litigation, extensive research efforts, and multiple EA documents. Current costs on an annual basis may not have declined. Additional costs include monitoring, research, and bison management actions.

How did the AM approach affect the timeline for managing the system?

The AM approach has generated a more realistic awareness among all stakeholders about the extended time period that will be required to answer the key scientific questions and gain greater acceptance of having bison winter range overlap with livestock summer range.

The AM program has increased tolerance of bison beyond the national park boundary through interim management measures. The preliminary steps for initiating a bison vaccination program are based on what was learned about the safety of vaccines. The implementation of a hunting program has provided Montana with a way to manage abundance within the State. Finally, the building of relationships between the partner agencies in conducting collaborative management operations to haze and capture bison at boundary areas has given the State greater comfort that contingency plans to manage large out-migrations can be successful. Developing a quantitative assessment of the risk of brucellosis transmission is not yet completed. However, progress toward learning what that risk may be has been initiated through research about bacterial survival in the management zones and providing greater tolerance for pregnant bison that test disease-free and are monitored following release. A risk assessment should provide information for managers to decide whether to progress further through the adaptive steps toward maximum tolerance in Montana.

Degree of stakeholder buy-in:

Stakeholder buy-in is guarded, and the positions of some stakeholders remain unchanged. However, progress is being made through communications, including a moderately high level of agency involvement. Although management challenges remain, the combination of research, monitoring, bison population management, and public hunting is generating new information, practical experience, and creating opportunities to improve engagement with stakeholders. Building these relationships is helping us move forward in a way that should solve the challenges.

CHALLENGES:

What impediments, constraints, and/or challenges were overcome? How?

The big challenges ahead involve the ability of technology to develop a suitable vaccine for use in remote delivery methods and the ability of constituency groups to accept that some individual bison mortalities will occur in order to preserve the long-term future of the wild and viable population of bison. Greater acceptance for bison on low-elevation winter range areas in the State of Montana requires that advances be made in systematically lowering the disease prevalence, thus lowering the probability of disease transmission from bison to cattle adjacent to Yellowstone.

Building relationships upon the foundation of trust, learning, and professional communication is imperative for long-term success. Learning the details about how to apply AM principles to the decision-making process will be a challenge for some of the partner agencies. Decision makers from each of the partner agencies meet at least two times per year to discuss progress and decide whether enough new information is available to modify field operations.

What aspects of the project need improvement?

Two areas of improvement would lead toward a major reduction in conflict. There needs to be more acceptance that multiple and competing social values are driving much of the conflict. A focused effort to develop a credible management program for bison in the buffer area between two management paradigms (NPS ecological processes management vs. State wildlife management for social-carrying capacities and/or maximum sustainable yield of harvestable wildlife) is slowly evolving through systematic AM. In addition, there is a need for bison to be managed as a wildlife species similar to the way other native ungulates are managed.

How and when will the need for improvement be addressed, if at all?

Improvements are ongoing and will be achieved through developing our ability to trust our partners and communicate effectively with both our partners and our stakeholders.

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