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A Proposed Feasibility Study of Bison Quarantine Procedures

Keith Aune- Montana Department of Fish, Wildlife and Parks
Dr. Jack Rhyan-USDA/APHIS/Veterinary Services

SENATE NATURAL RESOURCES
COMMITTEE NO. 2
DATE 2/09/2005
BILL NO. SB 337

“Every great achievement was once thought impossible”

Introduction

There has been a long history in North America of restoring wildlife populations by capturing animals from robust populations and transplanting them to new habitats or augmenting existing populations facing extinction. In the Greater Yellowstone Ecosystem, there is an extensive history of capturing, holding, transporting and relocating wildlife as a species conservation strategy. Yellowstone elk were routinely captured and widely distributed in the mid 1900's to successfully restore wild elk throughout North America. Bison and antelope have been captured and moved from Yellowstone to create or augment free-ranging populations elsewhere. Yellowstone has also been a recipient of such transplanted wildlife during restoration efforts including rocky mountain wolves from Canada and bison from Texas and northern Montana.

As it applies to the bison management dilemma surrounding Yellowstone National Park (YNP), there have been many discussions about quarantine procedures and using this growing population to establish other free-ranging bison herds. Several quarantine options have been considered, and USDA/APHIS has established and published a protocol that would apply to this situation (Interagency Bison Management Plan, Appendix B). Federal funding was appropriated for this activity but has not been expended. Despite frequent discussions of quarantine proposals and the disbursement of federal funding for this activity a specific plan has not been developed or approved.

Concurrent with the discussions about quarantine in the GYA, there have also been frequent discussions and meetings regarding bison conservation strategies in North America and the potential for restoring the species to grassland ecosystems. There currently is no unified conservation plan for bison in North America. The successful development of such a plan and subsequent implementation of a conservation strategy for plains bison is contingent upon reliable and suitable source stocks for restoration efforts. The World Conservation Union (IUCN)-Bison Specialist Group of North America recently supported a project to examine the status of bison, which presents several conservation recommendations (Boyd, 2003). This project outlines the current status of bison, offers guidance for the advancement of a conservation strategy and identifies the few free-ranging and genetically pure bison herds in North America suitable for restoration projects. According to this document, there are only about 8300 plains bison, classified as free-ranging and genetically pure, in 13 conservation herds and they present the best source stocks available for restoration efforts (Boyd 2003). Nearly 2/3 of these bison are from larger diseased herds, such as the Yellowstone and Grand Teton bison, while the remainder is found in small fragmented populations with limited potential as a reliable source for restoration efforts. The larger diseased conservation herds could become suitable source stock for conservation programs provided that disease free animals could be reliably filtered from the population. If animals can be declared disease free then bison from Yellowstone National Park

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could serve as a reliable source of genetically pure bison to be reintroduced into historical habitats contributing to the continued conservation of this species.

Several factors support a decision to explore the feasibility for using YNP bison for conservation efforts. The Yellowstone National Park bison herd provides a very good genetically diverse source of bison that have been free ranging for many decades (Halbert 2003). Currently, the bison population in Yellowstone National Park is above the management trigger levels for aggressive removals and there are annual habitat and weather dependent movements of bison out of YNP causing conflict and concern in the states of Montana, Idaho and Wyoming (Plumb and Aune 2002). The major elements of this conflict include the presence of brucellosis, a nationally regulated disease, in YNP bison and managing the population size and distribution of Yellowstone bison. As we attempt to manage brucellosis, many bison are routinely hazed or captured, tested and slaughtered to minimize the risk of transmission to cattle. Despite the successful management of the risk for transmission of brucellosis there are no strategies in place to restrain the base population of bison in this conservation herd. The removal of bison through a valid quarantine program could provide one means of reducing population pressures resulting in the annual migrations of bison out of YNP.

We propose that it is possible that some bison migrating from YNP could be placed through a quarantine program to restrain population growth, conserve genetics and ultimately provide bison for restoration projects in other portions of North America. This selected removal program along with other population regulating tools such as a limited hunting program, as well as natural mortality, could operate in consort to remove an increment of bison from the herd to help maintain a relatively stable core population yet curb the frequent range expansions of bison in this confined ecosystem.

Prior to the development of a science-based quarantine program some preliminary research is needed to develop and test appropriate quarantine protocols and quantitatively evaluate the risks associated with quarantine programs. In this document we present a quarantine research proposal to scientifically evaluate the feasibility of using quarantine as a management tool in the Montana portion of the Greater Yellowstone Area (GYA) with minimum capital investment. This initial research will provide critical research information needed to further expand and fully develop a quarantine program designed to use animals from this robust Yellowstone bison population to create other free-ranging bison populations in North America. This adaptive research approach will require approval from many government regulators and will require cooperation among concerned Montana publics, various conservation groups, Native Americans, and state/federal government agencies.

Project Goal

There are three main project goals described below in this proposed feasibility study of bison quarantine.

1. Develop quarantine procedures, using the best available science and adaptive research strategies, that will allow bison from Yellowstone National Park to be accepted as free of brucellosis and suitable for the establishment of new public and Native American bison herds or to augment existing populations in North America.
2. To research the feasibility of a program to conserve genetics from free-ranging Yellowstone bison by the creation of additional conservation bison herds in other habitats in North America without transmitting brucellosis onto these landscapes.

3. To examine the feasibility of quarantine protocols and the reintroduction of bison to large grassland systems as a conservation strategy that may benefit the management of bison in the GYA where populations are expanding beyond social tolerance limits.

The overall project goals of this study are consistent with historical conservation strategies applied in wildlife restoration efforts throughout North America and previously validated for several species of ungulates (elk, bison and antelope) found within the Yellowstone Ecosystem. The proposed project could lead to the conservation of a genetically diverse bison population in which, to date, no cattle genes have been detected (Halbert 2003). In so doing it may lead to programs that might establish new bison herds of similar genetic composition to reinforce the long-term conservation of wild bison genes at locations beyond the borders of the Yellowstone Ecosystem. Recent work by Halbert (2003) has confirmed the diverse genetics of bison from YNP and present significant genetic concerns for many other Department of Interior bison herds. The bison processed through quarantine programs could be utilized for periodic introduction into existing public bison herds to immediately enhance management programs that selectively remove animals with domestic cattle genes and improve genetic diversity of those herds further ensuring conservation of this species.

The proposed study, as presented here, will test several key hypotheses that explore the feasibility of implementing quarantine procedures that meet and exceed the existing approved quarantine standards established by USDA/APHIS. Results from this research could lead to the development and implementation of improved quarantine standards and will allow a careful analysis of the risks associated with utilizing improved test protocols. This research project will provide precise risk assessment data to guide conservation decisions that could lead to the introduction of bison onto new landscapes without the risk of introducing brucellosis.

Proposal Review Process

To assure that the research goals and basic theory behind this research project were legitimate a draft concept proposal was presented, reviewed and eventually approved by the Greater Yellowstone Interagency Brucellosis Committee (GYIBC) and the U. S. Animal Health Association-Committee on Brucellosis (Appendix A). In addition, Montana Fish, Wildlife and Parks, Montana Department of Livestock and USDA/APHIS Veterinary Services have reviewed the draft research proposals. These animal health groups and government agencies recommended continued development of this concept into a research project of quarantine protocols and requested the project team to report results annually to ensure good scientific scrutiny throughout project development and implementation. The Interagency Tribal Bison Cooperative was also consulted, provided proposal review, and offered support to assure Native American participation in the project.

Additional, reviews will be conducted by the National Park Service and a Research Permit will be necessary to continue the project. In addition, NEPA compliance documents will be prepared to assure appropriate State/Federal compliance with all laws, rules and regulations.

Project Objectives and Developmental Concepts

- 1) This research project will develop a quarantine protocol using an adaptive process by gradually phasing in evaluations during each procedural step until bison are qualified for release.
 - a. The three-phased program will include:
 - i. A Selection Process-This will include the retention of up to 100 calves for 1 year at the Brogan Bison Facility leased by USDA/APHIS. These calves will have been born the previous June and captured during the winter period (typically Jan-April) after migrating toward the YNP boundary. Approximately ½ of these animals will be euthanized at the end of phase I and cultured for brucellosis to determine the likelihood of latent expression of this disease.
 - ii. A Maintenance and Breeding Process- This will involve the continued quarantine of the bison through their second birthday at a facility on Dome Mountain Wildlife Management Area currently administered by the Montana Department of Fish, Wildlife and Parks. Breeding of these 2-year old female bison will be accomplished using existing or previously quarantined Yellowstone bull bison during the late summer (August-September). Breeding activity will be carefully monitored and mating will be constructed to maximize genetic diversity.
 - iii. Calving Phase-Providing that a degree of success is achieved in early phases, pregnant 3-year old bison will be moved to a third facility if available or cycled back to the Brogan Facility to complete their first calving.
 - b. This sequence of quarantine phases, if completed, could generate an original population of disease-free animals and a calf crop for a potential soft release project. This sequential protocol will be executed a second time to complete the feasibility study. Following the approval of the second batch of bison as disease free and suitable for release studies a detailed review of procedures will be conducted and further quarantine plans will be considered based upon these review findings. Further NEPA analysis would be included in the decision process to develop an enhanced quarantine program.
- 2) This feasibility study will be conducted within the northern Yellowstone Ecosystem so there is no risk of transmitting brucellosis outside of the area where wildlife are currently infected. Locating the study facilities within the GYA will assure that if there were failures in the procedure, brucellosis would remain inside the GYA.
- 3) A detailed analysis and review of the quarantine procedures and testing protocols will be performed at the end of the feasibility study to provide explicit data for accurate risk assessment. These data can be used by animal health authorities to evaluate the risk of using bison from an infected herd to restore or augment populations at other locations.
- 4) The proposed research project will limit the initial capital investment in highly valued land and in permanent facilities during the research and development phase of the program by using existing facilities in the area and available state owned lands. Also the agencies will initiate capital investments in facility only after some demonstrable success in each preceding phase of the program. This arrangement will minimize the purchase of