



**Study of Shedding and
Venereal Transmission of
Brucella abortus by Bison
Bulls in the Greater
Yellowstone Area**

**Environmental Assessment
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Agency Contact:

Dr. Brian McCluskey
Director – Western Region
Veterinary Services
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
2150 Centre Avenue, Bldg B, Mailstop 3E13
Fort Collins, CO 80526-8117

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I. Introduction

A. Background

The wild, free-ranging bison in Yellowstone National Park (YNP) are an essential part of the biological, ecological, cultural, and aesthetic aspects of the Park. Yellowstone bison are chronically infected with *Brucella abortus*, the causative agent of bovine brucellosis. Studies estimate that between 40% to 60% of the YNP bison have serological evidence of brucellosis, indicating exposure to the disease (Meyer and Meagher, 1995; Cheville et al., 1998). Greater than 40% of the serological positive bison are culture-positive for *B. abortus*, indicating infection with the disease. Bison roam free in the YNP and often migrate outside the Park onto National Forest public lands and private lands in Montana during the winter months. There is concern that brucellosis-infected bison from the YNP may be a potential source for the spread of this disease to cattle maintained on these lands outside of the Park.

The Interagency Bison Management Plan (IBMP), signed in 2000, is designed to coordinate bison management activities among five State and Federal partners¹. Under the IBMP, these five Federal and State agencies work cooperatively within an adaptive management framework to conserve the YNP wild, free-ranging bison population, while concurrently reducing the potential risk of transmission of brucellosis between wildlife and cattle populations. Investigating and mitigating potential modes of disease transmission by brucellosis-infected YNP bison that migrate outside the Park is an important component of IBMP activities. Developing and incorporating effective short- and long-term adaptive management strategies are essential to the success of the IBMP's goals of bison management and reduction of the risk of brucellosis transmission.

The United States Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) established a national brucellosis program to safeguard the health of domestic livestock, maintain the economic viability of the U.S. cattle industry in national and international trade, protect public health, and ensure food safety. The goal of the program is to eradicate brucellosis from the United States. Through cooperative Federal-State-industry efforts, the United States has made significant progress since the program's inception in 1934. As of July 2009, all 50 States achieved Class-Free State status (e.g., disease-free status) in cattle. However, unique challenges impede final eradication. APHIS Veterinary Services (VS) recently developed a concept paper

¹ USDO National Park Service; USDA Animal and Plant Health Inspection Service; USDA Forest Service [USFS]; Montana Department of Livestock; and Montana Fish, Wildlife and Parks.

(74 Federal Register 51115-51116, October 5, 2009), describing a plan for the program that focuses on using a more adaptable science-based approach that is both effective and timely and that addresses the unique challenges. One component of the plan that addresses the unique challenge posed by the presence of brucellosis in wildlife is to enhance efforts to mitigate disease transmission between wildlife and livestock.

APHIS VS has partnered with wildlife agencies and other entities to develop risk mitigation strategies to prevent the further spread of brucellosis and to enhance efforts to eliminate *B. abortus* in the United States. The IBMP partners work together, as outlined in the IBMP memorandum of understanding, to mitigate the risk of disease transmission by brucellosis-infected bison in the Greater Yellowstone Area (GYA). Continued collaborations are needed to develop effective strategies to determine the location and range of brucellosis-affected wildlife, reduce the prevalence of disease in wildlife, and mitigate the potential risks of disease transmission between wildlife and cattle. Potential strategies include partnering with State and Federal wildlife agencies to conduct wildlife surveillance in areas with brucellosis-affected livestock, supporting research to find tools (e.g., vaccination and contraceptives) and strategies (e.g., adaptive management) to reduce the prevalence of brucellosis in wildlife, and instituting those strategies as appropriate.

USDA's APHIS VS is interested in investigating the potential of venereal exposure as a mode of transmission of brucellosis by YNP bison bulls. It is known that bison bulls shed *Brucella* in their semen (Robison et al., 1998; Olsen et al., 1999). However, the potential for transmission of brucellosis via the venereal route is not known. We do know that brucellosis can be transmitted by direct contact with infected animals or within an environment that has been contaminated with discharges from infected animals. In infected animals, seminal fluids, aborted fetuses, placental membranes or fluids and other vaginal discharges from post-calving or abortion events may be contaminated with infectious *Brucella* organisms.

Determining the potential for venereal transmission of brucellosis by YNP bison bulls would assist in developing effective adaptive management strategies that could be included in IBMP operating procedures. Under the current IBMP adaptive management strategy, allowing bison bulls access to public lands in Montana year-round is desired and will be evaluated as part of the expansion of bison habitat. This expansion of habitat would put bison bulls in closer proximity and potentially increase the opportunity for commingling with cattle grazing in the area. Understanding the potential for shedding of *B. abortus* in the semen of bison bulls is vital to assessing the appropriateness of this adaptive management strategy. The

proposed action, a proposed two-phase study described in more detail in the Proposed Action section (II.B.), would consist of temporarily immobilizing mature bison bulls in limited areas outside of the YNP and collecting their semen and blood samples for testing. People other than those involved in this proposed study would not likely be present, and environmental impacts would be avoided or minimized.

According to the APHIS' National Environmental Policy Act (NEPA) implementing procedures (7 CFR part 372), this proposed action is classified as one for which an environmental assessment (EA) is appropriate because it is part of the "Development of program plans that seek to adopt strategies, methods, and techniques as the means of dealing with particular animal and plant health risks that may arise in the future," is part of the "Implementation of program plans at the site-specific, action level," and is "Research or testing that will be conducted outside of a laboratory or other containment area." [7 CFR § 372.5(b)(1)(i), (ii) and (5)(i)]. Recognizing the substantial interest regarding brucellosis in bison in the YNP and bison management activities in the GYA, APHIS has prepared this EA.

B. Purpose of and Need for the Proposed Action

The purpose of the proposed action is to conduct a two-phase study to evaluate the potential shedding of *Brucella abortus* in the semen of bison bulls from the YNP and to assess the potential for venereal transmission of brucellosis by infected bison bulls. The overall goal of the proposed two-phase study is twofold: 1) to ascertain data and information essential to scientific and epidemiologically sound decision-making regarding bison management activities and adaptive management strategies such as habitat access, and 2) to facilitate the understanding of the potential role of brucellosis-infected bison bulls in venereal transmission of brucellosis. Evaluation of these issues would further efforts to improve the health of the wild, free-ranging bison population in the GYA and enhance the quality of the environment in the GYA. Data and information garnered from this proposed study would be useful for efforts to reduce the potential risk of brucellosis transmission between bison and cattle while conserving the free-ranging nature of the YNP bison population.

The need for Phase 1 of the proposed study is to collect samples to evaluate the semen from mature Yellowstone bison bulls for shedding of *B. abortus*, in order to determine if infective doses of *B. abortus* are shed in the semen, and to determine if semen quality is affected by *B. abortus* infection. This information is needed to determine and implement appropriate strategies and adaptive management practices such as habitat expansion while assuring mitigation of the risk of disease transmission to cattle grazing in the area. In addition, activities conducted in Phase 1 of

the proposed study would provide for validation of the sample collection and evaluation procedures as the same collection and evaluation procedures would be used in Phase 2 of the proposed study.

The need for Phase 2 of the proposed study is to assess the role of bison bulls in venereal transmission of brucellosis. This assessment is needed to provide information essential to developing appropriate and effective disease management and elimination strategies. Proposals to eliminate brucellosis from Yellowstone bison using nonlethal strategies currently focus on ways of eliminating the shedding of the disease organism by bison cows at calving (Miller, et al., 2004). If venereal transmission by bison bulls contributes to the spread of brucellosis within the YNP bison population and possibly to cattle outside the YNP, further development and implementation of mitigation strategies that include bison bulls may be warranted. Information garnered from this proposed study would be valuable to YNP's bison vaccination strategy. Conversely, if venereal transmission by bison bulls does not contribute to the spread of brucellosis, then resources and activities focused on limiting bison bull activities might not be warranted or could be modified to maximize risk mitigation activities.

Overall, this proposed study would provide information regarding the shedding of *Brucella* by mature bison bulls and allow for the assessment of the potential risk of disease transmission between bison bulls and cattle in the same proximity. The proposed study would help determine the level of shedding of *Brucella* during the non-rut season (Phase 1 of the proposed study) as compared to the rut season (Phase 2 of the proposed study). Data would be garnered on the prevalence of shedding of *Brucella* by mature bison bulls from the YNP. In addition, the proposed study would more specifically evaluate levels of shedding of *Brucella* and the subsequent impact on semen quality, viability, and infectivity. This information would be useful for assessing the brucellosis status of the YNP bison breeding population. Mitigating transmission of brucellosis within the YNP bison population would further the long-term goal of conserving a wild, disease-free, bison population which in turn would restore and enhance the quality of the environment.

II. Proposed Action and Alternatives

A. No Action (the Current Situation)

The No Action alternative would result in no proposed study. The purpose of the proposed study is to better understand the potential risk for disease transmission by brucellosis-infected bison bulls from the YNP and assess the potential impact of this risk on adaptive management strategies.

Without this proposed study, managers would continue to follow the current “no tolerance” strategy of bison bulls outside the Park during designated times of the year. The “no tolerance” strategy is predicated on the assumption that brucellosis-infected bison bulls pose a risk of disease transmission. Without this proposed study, information to quantify and assess this potential risk of disease transmission would not be collected. Data and information to assess the potential for venereal transmission of disease by brucellosis-infected bison bulls would not be ascertained as well.

B. Proposed Action

The proposed action is a two-phase study designed to address shedding of *B. abortus* in the semen of bison bulls that have migrated out of the YNP in the winter and spring and to investigate the potential for venereal transmission of disease by brucellosis-infected bison bulls in the GYA. Each phase of the proposed study would be conducted under the appropriate permits for the study locations.

Phase 1 of the proposed study would be conducted under a Montana Fish, Wildlife and Parks (MFWP) *Research and Technical Services Animal Care and Use Committee* permit with MFWP assistance. MFWP has the jurisdiction to capture wildlife on the Forest Service (USFS) lands in Montana where Phase 1 of the proposed study would be conducted. Phase 1 would be conducted on USFS public lands in the IBMP Zone 2 area on the west side of the YNP, where IBMP bison management activities routinely occur each spring, and in the Eagle Creek/Bear Creek Special Management Area on the north side of the YNP, where bison are allowed year-round². Phase 1 would occur in April/May 2010 when bison bulls are normally present in the IBMP Zone 2 areas. Field activities to accomplish Phase 1 of the proposed study would be conducted daily as bison bulls become available in the proposed study areas during the months of April and May until hazing of bison begins on or about May 15, 2010. The IBMP Zone 2 field locations used in Phase 1 of the proposed study would be accessed in accordance with Gallatin National Forest Service travel plans. If migration of bison bulls out of the YNP in April/May 2010 to either location is limited in number, it may be necessary to conduct the proposed Phase 1 study activities again in 2011, perhaps as early as February 15, in order to collect the statistically determined number of samples needed.

The location for Phase 2 of the proposed study has yet to be determined. Details of Phase 2 of the proposed study would be finalized based on the successful completion of Phase 1 of the proposed study. Given that the

² For maps of these areas, see <http://ibmp.info/Library/2%20-%20State%20ROD3%20-%20Maps.pdf>

goal of Phase 2 of the proposed study is to assess the potential for venereal transmission of disease by brucellosis-infected bison bulls, Phase 2 of the proposed study would be conducted during or as close as possible to the rut season in September/October 2012. Once a location is determined for Phase 2 of the proposed study, this EA would be supplemented to reflect a NEPA review of applicable issues.

A statistical analysis determined that samples from 50 individual bison bulls would be needed for each Phase of the proposed study. This analysis is based on the assumption that the population of bison bulls in the YNP is approximately 1,500 and that 20% of the seropositive bison bulls in the YNP would be shedding *B. abortus* in their semen. This sample size assures a 99% confidence of finding at least one bull shedding *B. abortus* and provides for adequate evaluation of semen quality.

The proposed study would include the following activities:

- Temporarily immobilizing the bison bulls,
- Collecting blood and semen samples from them, and
- Testing and evaluating those blood and semen samples.

Capture and temporary immobilization of the bison bulls would be accomplished using established safe chemical immobilization and recovery techniques for bison to ensure the health and safety of the bison and study personnel. Veterinary oversight for animal care and handling, immobilization, and sample collection would be provided during the proposed study activities. Wildlife biologists trained and experienced in the capture and handling of bison would also be participating in the proposed study activities. Chemical immobilization would be administered via darting from the ground by qualified individuals. It is expected that the bison would be chemically immobilized and restrained for no more than 20 minutes and would be appropriately monitored throughout this time. After the study samples are collected and the identification tags applied, the chemical immobilization would be reversed and the bison would be observed to assure a full recovery.

Collection of blood and semen samples and application of identification tags would be performed by the veterinarians and wildlife biologists. Blood samples would be collected using safe venipuncture techniques, and semen samples would be obtained using established standard bull semen collection techniques. Each bison bull would be fitted with an eartag and marked with a non-permanent visual marker. The eartag would identify the animal as having received a controlled substance and would provide a phone number to call should the animal be harvested during a native hunt or the Montana bison hunting season. The same techniques for sample collection would be used in both Phases of the proposed study.

Testing and evaluation of the blood samples collected from the bison bulls in this proposed study would be performed in the laboratory. The semen samples collected from the bison bulls in this proposed study would be evaluated in the field for semen quality and sent to the laboratory for additional testing.

C. Other Possible Alternatives to Proposed Action

APHIS is exploring and considering potential feasible locations for Phase 2 of the proposed study. APHIS is open to partnering with appropriate land and wildlife management agencies to conduct Phase 2 of the proposed study; however, no agreements are in place at this time.

D. Other Alternatives Considered but Dismissed from Further Consideration

APHIS VS considered the alternative of conducting Phase 1 of the proposed study in conjunction with other bison management activities. One such activity might be if and when bison bulls are captured during IBMP activities related to testing and shipping to slaughter. However, capturing, testing, and shipping bison to slaughter varies from year to year. The numbers of bison bulls available during the aforementioned bison management activities could be limited and might not provide for the statistically determined number of samples needed for the proposed study. In addition, bison bulls of the age group needed for this proposed study are not easily handled in the trapping facilities and pose a greater safety risk both to proposed study personnel and to the bison bulls themselves. Capture activities occur at a time of year when the bison bulls are further from their rut, thus precluding their use in Phase 2 of the proposed study. Therefore, this alternative has been dismissed from further consideration.

APHIS VS also considered the alternative to conduct Phase 1 of the proposed study during other times of the year. This alternative was dismissed from further consideration because bison bulls are not tolerated outside the YNP during other times of the year.

III. Potential Environmental Impacts

The NEPA implementing regulations provide criteria that Federal agencies should evaluate, if applicable, in environmental documents for proposed actions. This section of the EA addresses the applicable criteria related to potential impacts from the No Action alternative and from the proposed action. NEPA criteria that are applicable for consideration in this section

of the document include animal impacts, human health and safety, and the physical environment.

A. No Action

Without the proposed action, efforts to gather scientific information to better understand the potential risk for disease transmission by brucellosis-infected bison bulls in the GYA would be hindered. The opportunity to further evaluate the merits of adaptive management strategies which currently limit bison habitat in order to mitigate the risk of disease transmission to cattle would be lost, as would be the consideration of expanding bison habitat. Without the proposed action to assist in developing strategies to effectively control and eliminate brucellosis, the disease may continue to spread within the wild, free-ranging bison population in the GYA.

B. Proposed Action

Brucellosis is a serious disease of livestock and wildlife that has significant animal health, public health, and international trade consequences. Brucellosis is a contagious disease, caused by bacteria of the genus *Brucella*, which affects both animals and humans. *Brucella abortus* mainly affects cattle, bison, and swine; however, other species of animals and humans are susceptible as well. In cattle and bison, the disease localizes in the lymph nodes and in the reproductive organs and/or the udder, causing spontaneous abortions in dams or birth of weak offspring, as well as systemic effects in both males and females. Infertility, decreased milk production, weight loss, and lameness may also be associated with brucellosis infection. There is no effective means of treating brucellosis in livestock and wildlife. In humans, brucellosis, often called undulant fever, causes generalized musculoskeletal malaise, flu-like symptoms, and pain and fatigue. The symptoms can last for years and may develop into a variety of chronic conditions. Humans can be treated for brucellosis with a rigorous course of antibiotic therapy.

1. Animal Impacts

a. Bison Bulls

The proposed study involves temporarily immobilizing and restraining bison bulls. The objective for the immobilization and handling of the individual bison is to collect semen and blood samples to determine the brucellosis status of the animal and to evaluate the possible shedding of *B. abortus* in the semen of infected bulls. This information will be used to consider expansion of bison habitat outside the YNP and to assess the potential for venereal transmission of brucellosis by bison bulls.

Ensuring humane handling and treatment of the bison bulls during the proposed study activities is a priority. The activities would be conducted as quickly and efficiently as possible and in a manner that would prevent undue stress, trauma, injury, or any unnecessary discomfort to the animal. Bison bulls would be immobilized only at locations that are safe for the bison and the proposed study personnel. Veterinary oversight for animal care and handling, immobilization, and sample collection would be provided during the proposed study activities. Wildlife biologists trained and experienced in the capture and handling of bison would also be participating in the proposed study activities.

The bison bulls would be temporarily immobilized via darting from the ground, using the standard administration protocol of FDA-approved anesthetic and analgesic drugs conventionally used in wildlife management activities. Blood samples would be collected via venipuncture technique, and semen samples would be obtained using established standard bull semen collection techniques. Once the proposed study samples were collected, the chemical immobilization drug would be reversed, allowing each animal to recover within minutes of administration.

Given the analgesic nature of the chemical immobilization compounds, it is anticipated that the bison bulls would not experience negative impacts during the collection of study samples. It is expected that they would be immobilized and restrained for no more than 20 minutes. Their vital signs would be monitored throughout the sampling procedures and initial recovery phase. Every precaution would be taken to prevent immobilization and handling-related trauma, injuries, or death to the bison. The standard chemical immobilization protocol that would be used in this proposed study does not have long-term physical or physiological effects. The bison bulls would be observed for as long as they are visible after recovery. No harmful or negative impacts to the bison bulls are expected due to the proposed action.

b. Non-Target Species

Some non-target species may be temporarily impacted while activities associated with this proposed study are occurring. However, the proposed study activities would occur for brief periods of time only on days when bison bulls are present in the proposed study area. The temporary impacts that might occur to non-target species during the proposed study activities are the same in nature as temporary impacts associated with IBMP activities and were analyzed in the “Bison Management Plan Environmental Impact Statement” (BMP EIS) (USDOI and USDA, 2000). These types of activities were determined to be not likely to adversely affect non-target species.

Immobilized bison bulls would be monitored as they return to their environment. If circumstances should indicate the need to euthanize a bison bull that has been chemically immobilized as part of the proposed study activities, the carcass would be removed and incinerated or buried in a secure landfill. Therefore, chemical immobilization of bison bulls is not likely to adversely affect non-target species, including predators and scavengers.

2. Human Health and Safety

a. The General Public

Brucellosis is a zoonotic disease that can infect people, causing undulant fever. Symptoms include intermittent fever, chills, night sweats, body and joint pain, poor appetite, and weakness. The general public would be at no risk of contracting the disease from bison as a result of the study activities.

b. Hunters

Generally, hunting does not occur during the time of year that Phase 1 of the study is planned. However, U.S. treaties with some Native American groups allow hunting without restrictions for time of year and number of bison taken. Phase 1 study activities would be carried out in areas where Native American groups could hunt according to treaties. If hunting activities by these groups are still occurring during the study timeframe, APHIS would ensure communications with Native American group officials about the study activities on mature bison bulls. In addition, APHIS would fit the study bulls with eartags, identifying them as having been administered controlled substances. A 45-day withdrawal period is required after use of the drugs before the bison meat could be consumed. Should one of the study bison be harvested, the eartag would provide a telephone number for the hunter to call for information to determine when the animal was administered the drugs.

c. Other Potential Land Users

During the time and in the Zone 2 locations proposed for the study, USFS does not allow recreational activities on USFS land because of IBMP operational activities. Therefore, no change in impacts would occur to land use by recreationists during this time of year as a result of the study activities.

d. Worker Safety/Occupational Safety

The study team would follow a protocol that includes operational safety considerations for ensuring the health and safety of the team members. At least one cell phone would be available for all communications outside of the team. Study personnel would notify USFS authorities in advance of any planned bison capture and immobilization activities.

Bison would be captured in locations that are safe for both bison and the study team members. One person on the team would be responsible for monitoring other nearby bison to alert the team of any dangerous behavior. As grizzly bears are known to frequent the proposed study areas and could be active during Phase 1 of the study, the study team would be alert for bears in the area and would carry bear spray at all times.

As it is unknown as to whether the bison bulls may be infected with brucellosis, all personnel handling bison would wear protective gloves and take precautions to prevent direct contact with fluid samples drawn. The study team would also carry disinfectant to thoroughly clean/wash if needed.

Personnel who would be involved in the study activities have a variety of expertise and experience needed to carry out the study activities, including wildlife chemical immobilization using darting technique, proficiency in darting, veterinary care, animal restraint, tagging and marking animals, sample collection, and bison bull reproductive evaluation.

In the event of human exposure to the immobilization drugs, syringes with appropriate levels of a reversal drug would be drawn up and available. Drugs used for the study would be stored in a safe or lockable device in transit and reversal drugs would be available during the study activities in the field. First aid kits would be available at all times.

3. Vegetation and Physical Environment

This section of the EA considers the potential impacts on components of the physical environment, specifically vegetation, soil, and water.

a. Vegetation and Soil

The time of year the study activities would occur is the early to mid-spring season when snow cover is possible. Activities under the proposed study that could impact vegetation and soil include physical access to USFS land. Other study activities, such as darting and drawing fluid samples, are not likely to impact the physical environment.

APHIS, VS would be accessing USFS land in compliance with Gallatin National Forest Travel Plans for access. A combination of snow machines, horses, vehicles and travel by foot would be used to access Zone 2, as allowed according to the Travel Plans. In following the Travel Plans, minimal disturbance to vegetation and soil on the ground surface would occur from land access.

The use of darts to temporarily immobilize the bison bulls is not likely to result in impacts to ground cover, vegetation, or soil. Although it is possible that a dart might not complete intramuscular penetration of the bull or could miss the intended target, the study personnel doing the darting would be sufficiently knowledgeable to handle the situation. If a dart were to miss the intended target, study team members would make every effort to recover the dart. Darts would be made to be easily identifiable. In the event a lost dart is not recovered, the study team would document this occurrence and notify USFS with information relative to the occurrence.

One scenario considered is the dart imploding upon impact on the bison bull and, for some reason, not successfully penetrating the animal and then falling onto the ground. Under this scenario, the anesthesia mixture (10 milligrams) would adsorb quickly into the snow (and then be diluted) or into the soil (and then be adsorbed). Since the amount of the drug would be minute and would not be available for ingestion by wildlife (because of being diluted into the snow and/or adsorbing into the soil), there would be negligible impact on the environment.

b. Water

Bison would be captured in locations that are safe for both bison and staff. Unsafe locations may include waterways, roads or other obstacles that interfere with the immobilization of bison. The study activities would not directly impact water because they would be carried out on ground surface away from water resources. The types of activities involved would have minimal, if any, impact to nearby water resources.

c. Recreational and Cultural Land Uses

(1) Recreational Land Use

During the timeframe and location for the proposed study activities, recreational activities are restricted because of IBMP operational activities that occur in Zone 2 at that time of year. Therefore, no change would occur to land use by recreationists during this time of year as a result of the study activities. Prior to carrying out the study activities, APHIS, VS would communicate its intentions with USFS and public agencies that

carry out IBMP operational activities. APHIS would continue to communicate with these public agencies during the study timeframe in order to ensure that the study activities do not conflict with or impede IBMP activities.

(2) Native American Hunting Rights

Three Native American groups (the Nez Perce Tribe, the Confederated Salish and Kootenai Tribes, and the Shoshone-Bannock Tribes) have reserved hunting rights in the public lands designated as Zone 2 in the IBMP. These USFS lands are termed “unoccupied lands of the United States” in the treaties with these Native American groups. The timing and study area of Phase 1 activities may coincide with the hunting activities of at least one of these tribes. If Native American hunters are still hunting in the study area at the time for Phase 1 study activities to begin, APHIS would brief the tribal hunting authorities about the APHIS study activities prior to starting them. The briefing would include information about the study protocol, the drugs that would be used for temporary immobilization, drug withdrawal times, and the marking of immobilized bison bulls.

IV. Other Environmental Review Requirements

A. Endangered or Threatened Species

Section 7 of the Endangered Species Act (ESA) and ESA’s implementing regulations require Federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of critical habitat. Therefore, the following section discusses the effect of the proposed action and No Action alternatives on federally listed threatened and endangered species in Gallatin and Park Counties in Montana.

Three federally listed threatened species occur in Gallatin County: Ute ladies’ tresses (*Spiranthes diluvialis*), grizzly bear (*Ursus arctos horribilis*), and Canada lynx (*Lynx canadensis*) and its designated critical habitat. Only the grizzly bear and the Canada lynx and its critical habitat occur in Park County. APHIS has determined that the proposed bison bull semen study would have no effect on these species or designated critical habitat for the following reasons:

In Montana, Ute ladies’-tresses are found in the Middle Rockies-Blue Mountains ecoregion (Fertig et al., 2005). The proposed study area does not occur in this ecoregion.

Grizzly bears and Canada lynx may occur in the study area, but are unlikely to be found in the open rangeland area where capture and temporary immobilization of bison bulls would occur.

Primary constituent elements of Canada lynx critical habitat include boreal forest landscapes supporting a mosaic of differing successional forest stages and containing snowshoe hares, sites for denning, and other habitat that lynx may travel through to access boreal forest (USDOJ, 2009). The temporary activities of capture and immobilization would have no effect on this habitat and would only occur in open rangeland that would be used to access preferred sites.

B. Bald Eagle and Golden Eagle Protection Act

Although no longer a federally listed endangered or threatened species in most areas of the United States, including Montana, the bald eagle is protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Bald eagles are sensitive to human activities, such as recreational activities and resource and urban development. Although bald eagles are sensitive to human activities, they do appear to acclimate to some activities occurring at predictable frequencies, intensities, and time limits. In Montana and Wyoming, nest building starts in January and fledging of young ends in July. Early in the season with nest building and egg laying, they are most sensitive to human activity. Depending on the type of activity, U.S. Fish and Wildlife Service (FWS) guidelines recommend buffers for different activities. The buffers generally suggested for eagles include a 330-foot buffer from nests during the breeding season from any activities. There have historically been bald eagle nests in Zone 2 areas. Prior to initiating sample collections APHIS would confer with USFS to ensure that study activities do not interfere with bald eagles in proposed study areas.

C. Historic and Cultural Resources

The activities described as the proposed action in this EA are within the range of activities that were considered in the BMP, the IBMP supporting analysis. The proposed action is a research study that is associated with adaptive management actions under the IBMP. The types of activities associated with the study would not affect historic sites. Because the proposed action would occur on USFS lands, APHIS confirmed with USFS that the proposed action presents no concerns and no effects to historic and cultural resources.

The BMP EIS addresses the importance of bison, including their importance to the cultural landscapes and visual resources of the GYA.

Bison are a cultural resource to many, including Native American tribes, GYA residents, the American viewing public, and public agencies.

During bison management activities carried out by public agencies in accordance with the BMP EIS, bison may be marked using a variety of techniques, including ear tags, paper backtags, paint, peroxide, hair dye stripes, and clipped hair. Marking techniques vary by public agency, the purpose, and location. Markings during bison management activities serve a purpose, e.g., to prevent testing a bison multiple times or to indicate that a bison has tested negative for the *Brucella* organism. Some marking techniques are visible from 100 yards or farther. Some markings are temporary, such as those made with paint, and their duration can depend on the weather conditions. Temporary markings are often visible until the bison shed their winter fur in the spring. Although tags used to identify bison during management activities are visually intrusive, they are necessary to minimize the need to capture and handle the bison more than once to determine its brucellosis status. The BMP EIS addresses marking and other bison identification techniques as actions that alter the historic image of the bison and that would have a temporary, moderate impact on the historic landscapes of the GYA. The use of a non-permanent visual marker and an ear tag during the proposed study activities would impact bison in the same way.

Some activities associated with the proposed study, such as identifying a bison with an ear tag and a non-permanent visual marker, are important for the study but would impact the bison in an aesthetic manner. Using markers on bison bulls from the proposed study also serves the purpose of identifying the bison for potential hunters, such as Native Americans who have treaty rights to hunt during the study time period, who might otherwise harvest and consume meat from a darted bison. Although these actions are not physically harmful to the bison, they may be temporarily visually unappealing to the public.

V. Cumulative Impacts

This EA examines the activities associated with a proposed study to assess the shedding and potential for venereal transmission of *B. abortus* by bison bulls in the GYA. Activities associated with the proposed study are not expected to result in adverse cumulative effects.

Since Phase 1 of the proposed study would occur during the same time of year as other IBMP activities, there could be a temporary secondary impact to these activities. However, the study group and IBMP partners would be communicating with one another throughout this time regarding on-going activities. Spatial separation would be maintained should any

proposed study and IBMP activities occur simultaneously. In addition, based on previous field studies of bison involving immobilization, it is anticipated that bison bulls may become sensitive to capture disturbance and wary of the proposed study activities, thus avoiding these areas. However, the study is of short duration; therefore, if this impact occurs, it should also be short-lived.

One of the goals of the IBMP is to manage temporal and spatial separation of bison and cattle to mitigate potential transmission of brucellosis. Currently, this is accomplished through hazing, capture, test and slaughter of sero-positive animals and vaccination of sero-negative animals, and a limited hunt in Montana. The proposed study may provide important information that would allow for re-evaluation and re-consideration of some of the current IBMP activities. This may result in impacts to future decision-making regarding protocols for bison habitat management, bison vaccination strategies, and the bison hunt activities. IBMP activities that could be impacted include strategies to maintain appropriate bison population and distribution should bison habitat be expanded.

VI. Agencies or Persons Contacted

U.S. Forest Service, Gallatin National Forest

Montana Fish, Wildlife and Parks

USDA, Animal and Plant Health Inspection Service, Veterinary Services

USDA, Animal and Plant Health Inspection Service, Policy and Program Development, Environmental and Risk Analysis Services

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