Montana State Legislature

Exhibit Number: 13

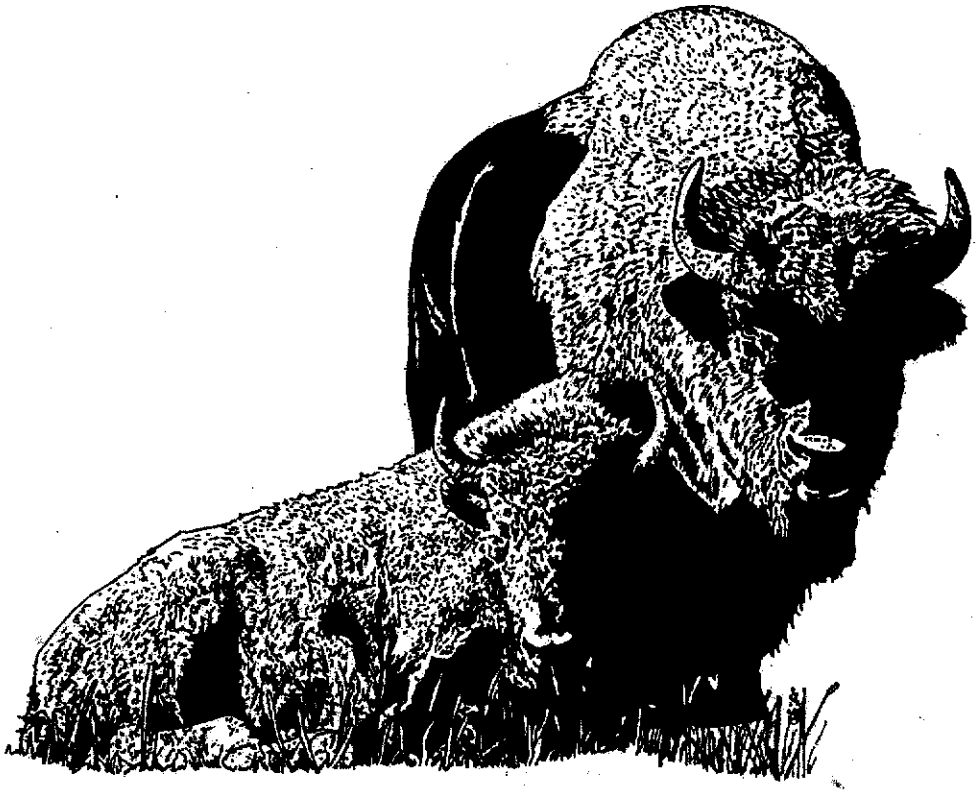
The following exhibit is several assorted documents that exceeds the 10-page limit therefore it cannot be scanned. A small portion has been scanned to aid in your research for information. The exhibit is on file at the Montana Historical Society and can be viewed there.

Montana Historical Society Archives, 225 N. Roberts, Helena, MT 59620-1201; phone (406) 444-4774. For minutes in paper format, please contact the Montana State Law Library, Justice Building, 215 N. Sanders, Helena, MT 59620; (406) 444-3660. Tapes and exhibits are also available at the Historical Society (tapes are retained for five years). Scanning done by: Susie Hamilton

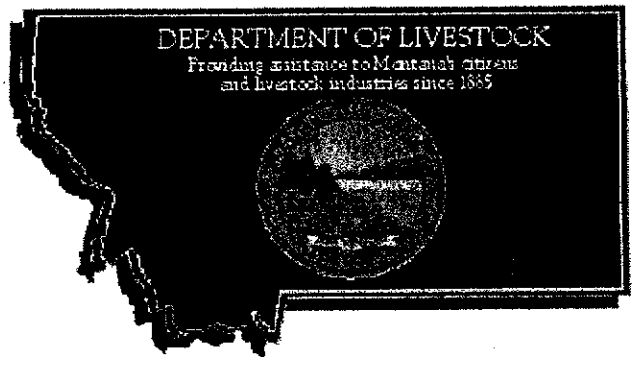
Comments due Jan 5, 2005

BFC
EXHIBIT 13
DATE 2/15/05
HB 149 22

BISON VACCINATION ENVIRONMENTAL ASSESSMENT



DECEMBER 3, 2004



MONTANA DEPARTMENT OF LIVESTOCK

Bison Population Dynamics

The estimated size of the YNP bison population was estimated at 2,616 when the IBMP was implemented in 2000. Since then, the herd has increased to about 4,240 bison (Table 1).

Table 1. Bison population estimates in Yellowstone National Park.

Winter	Previous summer population estimate	Late winter population estimate
2000/2001	2616	2870
2001/2002	3283	3300
2002/2003	3900	3160 (range 3050 to 3690)
2003/2004	4250	3604 (range 3430 to 4352)
2004/2005	4240	

Since 1997, 326 bison have been captured and removed from the Western Boundary Area and an additional 6 bison have been removed by other lethal means (Table 2). A total of 144 bison were captured, tested and released from the capture facilities in the Western Boundary Area. Numbers of bison that will be vaccinated in the Western Boundary Area is dependent upon the number of bison that move into that area. Vaccination will be incidental to other management activities in that area and the Department does not propose to significantly change the intensity of management. It is unlikely that the total number of calves and yearlings vaccinated in the Western Boundary Area would ever exceed 100 bison in any one year.

Table 2. Summary of bison management actions in the Western Boundary Area.

Year	Captured	Slaughtered	Released	Hazed
1997-1998	15	11	4	>300*
1998-1999	142	90	52	615
1999-2000	0	0	0	415
2000-2001	14	5**	9	1,591
2001-2002	262	202**	63	1,026
2002-2003	20	13**	8	1,603
2003-2004	18	11**	8	52

*Totals of hazed animals include animals that may have been hazed multiple times
**Totals include lethal removal of animals that were not first captured

Since 2000, 495 bison have been captured and removed at the Stephens Creek facility. In addition, 198 bison were captured, tested and returned to the Park from the Stephens Creek facility. In 2003-04, NPS, with cooperation from all agencies, initiated vaccination of seronegative bison at the Stephens Creek facility (Table 3-following page). Following vaccination, the bison were held at the facility and subsequently released back into the Park in the spring. There were no apparent adverse effects to those vaccinated bison.

testing of all test-eligible cattle grazing in the West Yellowstone Area. In addition, the first year the private land was leased by this producer, all test-eligible cattle were tested negative prior to turn out. APHIS pays the direct costs for testing and vaccination. The herd plan also specifies grazing dates, locations and cattle numbers.

Montana's Compliance with the National Brucellosis Eradication Program

The potential economic consequences of Montana's failure to comply with the National Brucellosis Eradication Program were detailed in the FEIS. Hendry (2002) described the various ways that in which brucellosis affects cattle operations and, in general, the rural communities whose economies are dependent on agriculture. The Department does not believe that a decision to postpone vaccination of bison calves and yearlings would be interpreted by animal health authorities as a failure to comply with the National Brucellosis Eradication Program and does not anticipate any associated economic effects.

Vaccination is used within the context of a herd brucellosis management plan, as defined by the Brucellosis Eradication Uniform Methods and Rules (UMR; USDA 2003), and typically involves vaccinating female calves aged 4 to 12 months (official calfhood vaccinates). Historically, *Brucella* vaccines have been administered to female calves to provide some protection, while minimizing adverse effects such as retained antibody titers and the occasional disease-causing effect of the vaccine on pregnant adult females (Roffe and Olsen 2002). On occasion, adult female cattle and bison can also be vaccinated (official adult vaccinates), if part of a herd approved for whole-herd vaccination. Roffe and Olsen noted that privately owned bison were included in the National Brucellosis Eradication Program in the 1980's because of widespread infection in domestic bison herds. Methods for management of brucellosis affected bison herds generally follow those established for cattle, as outlined in the UMR. Vaccination is one component of a herd brucellosis management and eradication plan. RB51 has been approved for use in brucellosis eradication in cattle and bison. Vaccines may only be administered by Federal, State and/or accredited veterinarians.

The Department understands that current bison management actions in the Western Boundary Area are intended to maintain temporal and spatial separation of bison and cattle and will not achieve eradication of brucellosis from this bison herd. The Department also understands that the addition of vaccination of calves and yearlings to the management plan in the Western Boundary Area is not intended to achieve eradication. However, the Department anticipates that vaccination of calves and yearlings will, over time, result in a lower incidence of brucellosis in this herd because the frequency of transmission will be reduced and the percentage of susceptible animals also will be reduced. Thus, the Department has determined that a decision to begin vaccination of bison calves and yearlings in the Western Boundary Area would be consistent with its commitments pursuant to the National Brucellosis Eradication Program.

Cheville et al. (1998) noted that, given the lack of sufficient information and the lack of capability, brucellosis eradication as a goal is more a statement of principle than a workable program. They suggested that, in the near future, the best possible approach is

a management emphasis on the reduction of risk of brucellosis transmission from wildlife to cattle. The Department understands that risk reduction is the focus of current management. Revision of current management to include subcutaneous vaccination of bison calves and yearlings with RB51 is consistent with a focus on risk reduction, even though the efficacy of the vaccine is uncertain and only a portion of the eligible bison will be vaccinated.

Public Controversy

From public comments that were submitted in response to the EIS and again in response to the APHIS vaccination EA and during public scoping for this EA, it is apparent that some people question whether the transmission of brucellosis from YNP bison to domestic livestock is possible. These people refer to the lack of documented cases and the lack of controlled field studies that are specific to YNP bison. It is correct that transmission from YNP bison to cattle has not been documented. It also is correct that YNP bison have been actively managed to prevent free association with cattle. This bison herd is infected with brucellosis. The mechanisms of brucellosis transmission in infected Yellowstone bison herds are similar to that observed in infected cattle herds (Roffe et al. 1999; Rhyan et al. 2001). Consistently, from 35% to 50% of those bison that have been sampled, test positive for the presence of antibodies to *Brucella*. Therefore, the Department has concluded that brucellosis is being maintained in this herd through frequent transmission from bison to bison; that transmission of brucellosis from bison to cattle is possible; and, that compliance with the National Brucellosis Eradication Program and corresponding state statutes and regulations requires management that maintains temporal and spatial separation between bison and cattle. The Department also has concluded that the potential for transmission of brucellosis within the bison herd and from bison to cattle would be reduced with the addition of vaccination to the plan for management of bison in the Western Boundary Area.

Some people express concern that bison are wildlife, the Department is not a wildlife management agency and the Department personnel are not trained in wildlife management. They believe, therefore, that the Department should have no authority for the management of this bison herd. However, the Department's authority for bison management is clearly defined in Montana statute. This authority was assigned to the Department in recognition of the fact that the regular movement of bison from YNP into Montana is a recent phenomenon; the fact that brucellosis is endemic in this herd; and, the fact that brucellosis poses a significant risk to Montana's economy. Authority for the management of bison is shared among several agencies and the Department participates in the IBMP with the understanding that the plan honors the authorities of all of the cooperating agencies.

Torbit et al. (2002) expressed the concern that the controversy surrounding Yellowstone bison is further evidence of continuing erosion of public trust responsibility, with a potential collapse characterized by wildlife populations tolerated at the whims of special interests that may dictate wildlife occurrence according to personal enrichment or inconvenience. The Department does not agree that this perspective correctly characterizes the purpose of bison management. Regardless, the effects of vaccination,

EFFICACY OF SINGLE CALFHOOD VACCINATION OF ELK WITH *BRUCELLA ABORTUS* STRAIN 19

THOMAS J. ROFFE,[1,2] Biological Resources Division, U.S. Geological Survey, Bozeman, MT 59718, USA
LEE C. JONES, Biological Resources Division, U.S. Geological Survey, Bozeman, MT 59718, USA
KENNETH COFFIN,[3] Biological Resources Division, U.S. Geological Survey, Bozeman, MT 59718, USA
MARK L. DREW, Wildlife Health Laboratory, Idaho Department of Fish and Game, Caldwell, ID 83605, USA
STEVEN J. SWEENEY,[4] Biological Resources Division, U.S. Geological Survey, Bozeman, MT 59718, USA
SUSAN D. HAGIUS, Veterinary Science, Louisiana State University, Baton Rouge, LA 70803, USA
PHILIP H. ELZER, Veterinary Science, Louisiana State University, Baton Rouge, LA 70803, USA
DONALD DAVIS, School of Veterinary Medicine, Texas A&M University, College Station, TX 77843, USA

Abstract: Brucellosis has been eradicated from cattle in the states of Wyoming, Montana, and Idaho, USA. However, free-ranging elk (*Cervus elaphus*) that use feedgrounds in the Greater Yellowstone Area (GYA) and bison (*Bison bison*) in Yellowstone and Grand Teton national parks still have high seroprevalence to the disease and have caused loss of brucellosis-free status in Wyoming. Management tools to control or eliminate the disease are limited; however, wildlife vaccination is among the methods currently used by wildlife managers in Wyoming. We conducted a controlled challenge study of single calfhood vaccination. Elk calves, caught in January and February of 1999 and 2000 and acclimated to captivity for 3 weeks, were randomly assigned to control or vaccinate groups. The vaccinate groups received *Brucella abortus* vaccine strain 19 (S19) by hand-delivered intramuscular injection. Calves were raised to adulthood and bred at either 2.5 or 3.5 years of age for 2000 and 1999 captures, respectively. Eighty-nine (44 controls, 45 vaccinates) pregnant elk entered the challenge portion of the study. We challenged elk at mid-gestation with pathogenic *B. abortus* strain 2308 by intraconjunctival instillation. Abortion occurred in significantly more ($P = 0.002$) controls (42; 93%) than vaccinates (32; 71%), and vaccine protected 25% of the vaccinate group. We used *Brucella* culture of fetus/calf tissues to determine the efficacy of vaccination for preventing infection, and we found that the number of infected fetuses/calves did not differ between controls and vaccinates ($P = 0.14$). Based on these data, single calfhood vaccination with S19 has low efficacy, will likely have only little to moderate effect on *Brucella* prevalence in elk, and is unlikely to eradicate the disease in wildlife of the GYA.

JOURNAL OF WILDLIFE MANAGEMENT 68(4):830–836

Key words: abortion, *Brucella abortus*, *Cervus elaphus*, elk, Greater Yellowstone Area, infection, reproduction, vaccine efficacy.

Brucellosis in GYA bison and elk has been a source of controversy and a focus of the Greater Yellowstone Interagency Brucellosis Committee (GYIBC) for years. Brucellosis had been eradicated from cattle in Wyoming, Montana, and Idaho, and these states were classified as "brucellosis free" with regard to livestock. However, 2 different outbreaks in cattle during 2003 and 2004, linked to feedground elk, resulted in downgrading of Wyoming's brucellosis status to Class A on 24 February 2004 (U.S. Department of Agriculture 2004). Free-ranging elk that use feedgrounds in the GYA and bison in Yellowstone and Grand Teton National Parks still have high seroprevalence to the disease and are viewed as a threat to the state–federal cooperative national brucellosis eradication program. The GYIBC, representing the state and federal agencies involved in wildlife and livestock management in the 3 states, has committed to eventual elimination of brucellosis from wildlife. Management tools to control or eliminate the disease are limited; however, wildlife vaccination is among the methods currently employed.

The Wyoming Game and Fish Department has vaccinated >40,000 elk with *B. abortus* S19 vaccine (Kreeger et al. 2002). Earlier studies of S19 efficacy (Herriges et al. 1989) suffered from inadequate controls, culling animals differentially from control and vaccinate groups, unknown causes of fetal losses, small sample sizes, combining results from disparate trials, and use of animals from a known infected herd. This has resulted in considerable controversy and debate regarding the effectiveness of S19 in elk. To address these concerns, we conducted a single-dose S19 calfhood vaccine efficacy study in elk.

[1] E-mail: troffe@montana.edu
[2] Present address: U.S. Fish and Wildlife Service, 1400 South 19th Avenue, Bozeman, MT 59718, USA.
[3] Present address: Tongass National Forest, Sitka Road, 204 Siginaka Way, Sitka AK 99835, USA.
[4] Present address: Animal and Plant Health Inspection Service, U.S. Department of Agriculture, 424 Oxford Drive, Bozeman, MT 59715, USA.

METHODS

Capture

We captured femal
calves from free-rangir
25) and Montana (n =
(n = 54) in 2000. Cap
ary 1999 (Idaho), 1
tana), and 16–18 Fe
included land owned
neering and Environ
mately 65 km north
and both private and
20 km northeast of
had not previously b
tions by the respectiv
We captured elk
Each animal was blind
in a heavy rubberize
the staging area. At t
tagged with 2 uniq
weighed using a tri
assigned a unique id
ear-tag number). We
by jugular venipunct
tum with lubricatec
ported elk to the Id
Game Wildlife Hea
Idaho, and released
(4 pens total), desig
vaccinate pen. We
ment and age-segreg

Monitoring, Handl

Following capture
facility until March.
vaccine and sterile
Company (Denver,
vaccine chilled prior
procedures and rec
vaccinate elk per m
2 ml dose consisted
units (CFU) per do
per dose in 2000, ba
pany titrations. We
cular hand injectior
gauge 3.81-cm nee
March 2000 while t
a cattle chute. Elk
of-age at vaccinatior
by the same metho
We provided elk
trace mineral salt,
the duration of th