

Pinedale Elk Herd Unit Test and Removal Pilot Project

Year One: Muddy Creek Feedground 2006

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Introduction

This report was compiled to comprehensively document efforts, expenditures, and results of year one (winter 2005-2006) of the five year pilot test and slaughter project in the Pinedale elk herd unit. The Wyoming Game and Fish Department (WGFD) initiated the pilot project in response to a recommendation developed by the Governor's Brucellosis Coordination Team (BCT). The goal of this recommendation is to measure the potential reduction of brucellosis seroprevalence in elk and reduce the risk of brucellosis transmission from elk to cattle.

WGFD operates three elk feedgrounds within the Pinedale elk herd unit boundary (Figure 1). The Muddy Creek feedground was chosen as the first site within this herd unit to implement the effort. WGFD has committed to expand the pilot project to Fall and Scab Creek feedgrounds within the five-year period of winter 2005-2006 to winter 2009-2010.

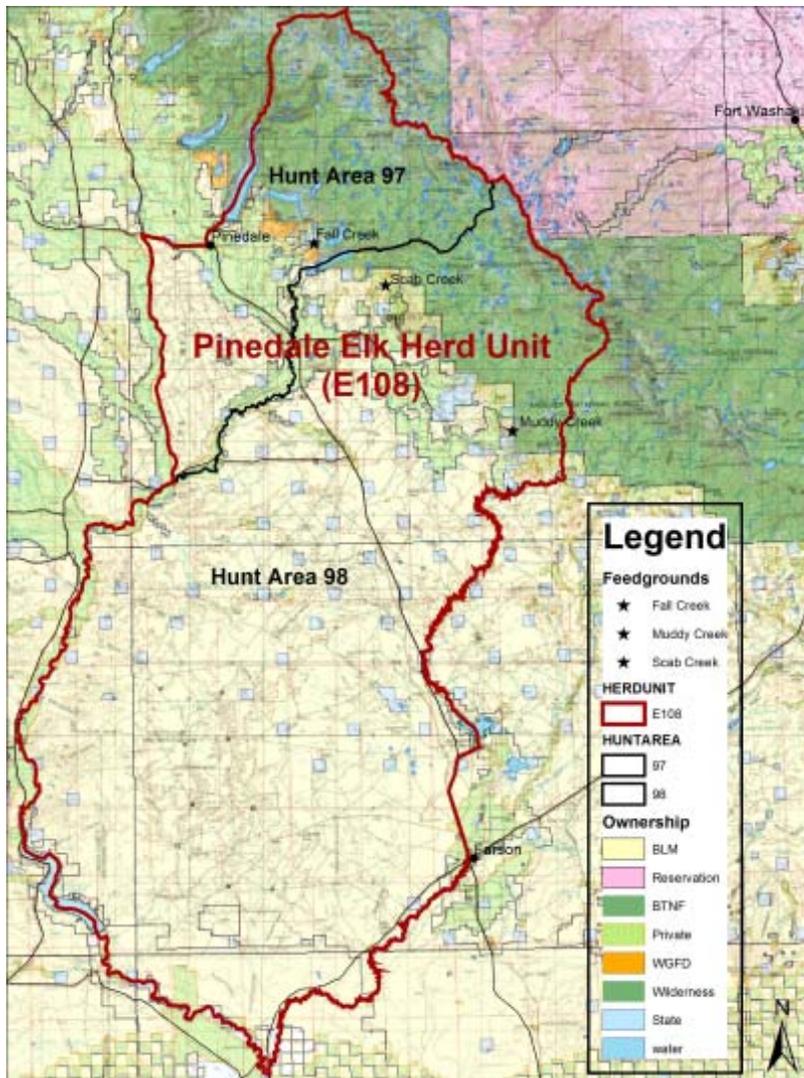


Figure 1. Hunt areas, elk feedgrounds, and land ownership of the Pinedale elk herd unit.

Methods

Portable elk trap

BCT members determined capturing a large proportion of the total female elk within the feedground population as imperative for the success of the test and slaughter project. The existing permanent elk trap located on Muddy Creek feedground did not have the capacity to hold (~50' diameter main corral), and effectively process (4 handling chutes) large numbers of elk. Its purpose was for general brucellosis surveillance, and capturing up to 70 elk at a time was typical during its use. A larger trap was needed.

WGFD personnel began investigating various trap designs and manufacturers during spring 2005. TJ Welding, Inc. had experience constructing and operating portable elk traps for the Idaho Fish and Game Department on the Rainy Creek elk feedground. WGFD selected TJ Welding and worked with their professionals as well as a renowned animal behavior and facilities design consultant on the design, eventual construction and erection of a large portable elk trap (Figure 2). The trap was erected on Bridger Teton National Forest Lands at the Muddy Creek feedground during October 3-6, 2005.

Muddy Creek Elk Trap

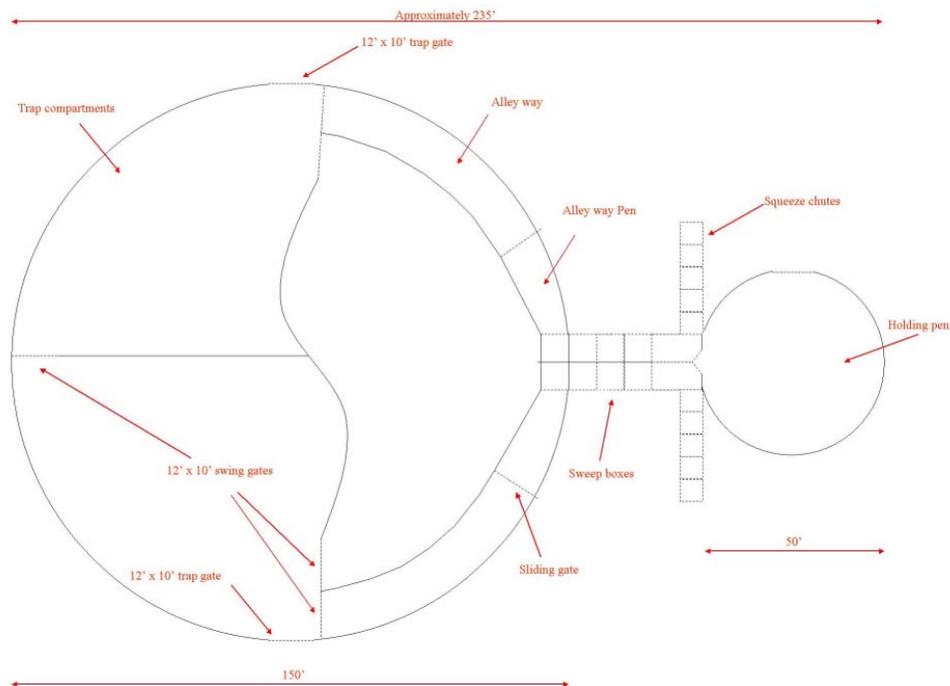


Figure 2. Layout of portable elk trap used at Muddy Creek feedground, winter 2005-06.

Snow and Ice Removal

Snow removal is a necessary component of elk trapping efforts. Significant snow accumulation in the main corral effectively reduces the height of the walls and can permit elk to escape, and snow accumulation in all areas of the trap reduces traction and increases risk of injury to elk and trapping personnel. Additionally, the road into the feedground must remain passable to ensure personnel access to the trap and allow removal of selected elk via stock trailer. A contract for snow removal was established, after a bid-process, with the Muddy Creek elk feeder to keep the road open and remove snow from accessible portions of the trap. Snow removal on the main access road occurred almost daily. Remaining snow in and on the trap was removed with roof-rakes and shovels after each significant snowfall and just prior to each trapping effort. Additionally, significant ice accumulated at the bases of the squeeze chute awnings, preventing operation of some sliding doors, and was removed regularly with pick and shovel and salt.

Trap Acclimatization

The feeder at Muddy Creek feedground began baiting the main corral of the trap with hay approximately four days prior to the first trapping attempt. Bull excluders (17" wide, 68" tall metal guards placed over gate openings to deter branch antlered bulls) were placed into position one day before the initial trapping. Hay was fed inside the trap with bull excluders in place until all trapping operations ceased.

Trapping

Test (1-8-06)

A trial run was determined necessary to ensure effectiveness of the new portable elk trap and familiarize personnel with trapping operations. Two remote-triggered gate release devices were affixed to both main gates of the corral and set. Small amounts of hay were fed outside the trap to entice elk into the corral, which was baited liberally with hay. The elk feeder and WGFD personnel observed elk from the main hayshed and triggered the gates to close when a small number of animals entered the trap. A total of 35 elk were captured during this attempt (Table 1). One juvenile elk was euthanized due to a fractured leg. Otherwise, the trial effort determined the trap as a very effective and efficient facility for capturing and processing elk.

All females, including juveniles, were bled and tested. Bleeding and testing juveniles significantly increased the amount of time required to work elk through the trap, increasing stress on captured animals, and past data collected by WGFD indicates low seroprevalence of brucellosis in juveniles. Thus, the decision was made to not sample juveniles during subsequent attempts.

First Effort (1-30-06)

An orientation meeting was held the evening of 28 January to familiarize the trapping crew with the trap and the plan for the next day's effort. The crew was comprised of 60 individuals; 40 WGFD employees, 5 USFS personnel, 3 University of Wyoming academics, 3 from Sublette County Sheriff's Office, 3 each from USDA APHIS VS and Wyoming Livestock Board, 2 members of the BCT, and one representative from USGS.

The crew met at the Pinedale Regional office the next morning as personnel charged with triggering the trap met the feeder and proceeded to the Muddy Creek feedground. The trap was baited heavily with hay and a small amount was trailed from the main feeding area to the gates. Elk consumed all the hay outside of the trap and very few elk entered. Once elk began trailing back to the main feeding area, the feeder decided to start his tractor and feed more hay. Ultimately, this enticed more elk to venture into the trap (~250), but the continual entering/exiting and the occasional mass exodus made counting the number of yearling and adult females (target population cohort) very difficult. It was decided to not trigger the trap without being certain a large number of females were present to avoid creating a disturbance that would compromise the next day's potential success.

Personnel responsible for setting/triggering the trap again met the feeder and drove into the feedground on the morning of 30 January. This time, however, personnel arrived at the feedground after daylight and did not have vehicle lights on, which may have unnerved elk the previous day. Remaining trapping personnel met at the Pinedale Regional Office and proceeded to the staging area (~1.5 miles from feedground) to await radio communication to move ahead once the trap gates had been triggered.

The trap gates were triggered around 9:49 am and the advance team left the staging area to travel to the trap. There, personnel chemically immobilized and removed 14 branch antlered bulls from the trap to prevent goring injuries and loaded all remaining elk from the main corrals into the alleyway holds (Figure 2). The rest of the trapping crew arrived at the trap and both sides of processing chutes began working elk around 11:30 am. Elk were worked in 10 chutes, where all animals were sexed, aged via incisor wear, ear-tagged, and bled/collared (if yearling or adult female). Elk were completely processed by 2:21 pm and bled elk were returned to the main corral to remain overnight. Trapping crews exited the feedground immediately thereafter, except two WGFD personnel who remained on location to prevent any disturbance and ensure elk remained in the corral.

WGFD Diagnostic Laboratory personnel established a remote lab in the Pinedale Regional office to analyze blood samples for brucellosis exposure interpretation. Fifty blood tubes were delivered from the trap site around 12:45 pm to enable the lab to begin testing. The remaining blood tubes were delivered with the return of the trapping crew. Testing was completed and final results posted in approximately 12 hours.

A smaller group of trapping personnel was assigned to sort and load tested elk the following day, 31 January. Sorting began around 7:45 am and was complete by 8:25 am. One seropositive cow elk, trampled the previous day, was euthanized. Tissues from this animal were collected for laboratory examination. Remaining seropositive elk were loaded onto three horse trailers and left the trap around 8:43 am, arriving and unloading at the processing plant in Idaho around 2:25 pm. One elk was dead upon arrival at the processor; necropsy revealed shattered vertebrae. Tissue samples were also collected from this animal for laboratory analysis.

A total of 115 female elk were bled and tested, 43 of which were seropositive (Table 1). Two seropositive animals were killed, as previously mentioned, prior to delivery to the processor. One seropositive animal was not identified as a positive and was released (caught next trap effort). A total of 40 seropositive elk were slaughtered, processed, and packaged at the processor.

Second Effort (2-16-06)

An additional trapping effort was determined necessary to increase the proportion of female elk tested from the feedground population. The elk on Muddy Creek feedground had taken approximately one week to return to their normal patterns after the large disturbances associated with the first test and slaughter effort. Some elk were displaced from the feedground, potentially by this disturbance. The feeder continued to bait elk in the trap with the gates open and bull excluders closed soon after the elk returned to normal patterns.

A somewhat smaller trapping crew (n=46) comprised of 40 WGFD personnel, 2 University of Wyoming academics, 2 Sublette County Sheriff's Office, and 2 USFS law enforcement officials met at the Pinedale Firehouse at 7:00 am on 15 February. WGFD personnel charged with baiting and triggering the trap had traveled to the feedground earlier and found the road impassable due to 4 foot drifts approximately 1/2 mile from the trap. The feedground tractor was used to try and clear the drifts, but soon became stuck itself. The effort was cancelled for the day and a large Sublette County plow was requested to come in and clear the road, which it did with considerable difficulty.

Inclement weather subsided and WGFD personnel were able to access the trap on the morning of 16 February. The trap was baited with alfalfa and grass hay, and additional amounts were placed outside the trap and trailed to the main feeding area to lure elk. The trap gates were triggered to close after what was determined to be the maximum number of un-collared female elk had entered the trap. Advanced team personnel were radioed in, where they chemically immobilized and removed 7 adult bulls from the trap and then moved the remaining elk into the alleyway holds. The rest of the trapping crew arrived and both sides of processing chutes began working elk. Elk were processed completely, bled animals were returned to the main corral, and all personnel left shortly thereafter, except the two WGFD personnel night watchmen.

The WGFD Diagnostics Lab crew began testing the 40 female elk blood samples upon arrival in Pinedale (Table 1). Results of 16 positive elk (includes one seropositive animal captured but released during the 1-16-06 effort) were made available to the sorting/shipping crew whom sorted the bled elk the next morning. A total of 14 seropositive elk were loaded onto one horse trailer and shipped to the processing facility. Two seropositive elk were inadvertently released back to the feedground population, where they were later killed and tissue samples were collected for laboratory analysis.

Table 1. Numbers of female and male elk, recaptures, newly captured elk, total elk bled, and number of elk testing seropositive for exposure to brucellosis captured during three trapping efforts on the Muddy Creek Feedground, winter 2005-2006.

Trap Date	Females				Males				Recaptures	New Elk	Total Bled	# Sero +
	Adults	Yring	Juv	Total	Adults*	Yring	Juv	Total				
01/08/06	3	0	13	16	0	0	19	19	0	35	16**	0
01/30/06	107	9	39	155	2	7	44	53	18	206	115	43
02/16/06	39	1	22	62	1	2	6	9	53	44	40	15
TOTAL	149	10	74	233	3	9	69	81	71	285	171	58

*does not include 21 adult males chemically immobilized, reversed and released

**juveniles were bled

Meat Donation

A total of 54 seropositive elk were processed by the USDA approved slaughter facility in Idaho. Approximately 10,192 lbs of boxed and wrapped burger, steaks, and roasts were hauled via commercial refrigerated truck to a cold storage facility in Casper, Wyoming. Meat was then equally distributed among each WGFD Regional office and donated to the public on a first come-first served basis on April 12th, 2006.

Expenditures

A significant amount of time, effort and money were expended on the test and slaughter project during the first year. WGFD Fiscal Division established a special project code to allow expenditures associated with the test and slaughter project to be tracked (Table 2). Additionally, a considerable amount of personnel time and mileage was incurred, mostly by WGFD Veterinary Services Branch, prior to the establishment of the code, mostly devoted to the design development, periodic visits to assess construction progress, and eventual erection of the portable elk trap, as well as the development of the portable serology lab. These costs are difficult to determine precisely, but 1,487 personnel hours, 4,536 vehicle miles, and \$800 in travel expenses were accrued during test and slaughter related activities prior to the establishment of the project code. Assuming a rough estimate of \$20/hour and \$0.32/mile, this equates to an additional \$31,992.

Combining expenses tracked under the special project code with costs incurred prior to the establishment of the code, a total of 5,099 personnel hours and 36,480 miles were dedicated to the effort. A conservative estimate of total test and slaughter expenditures incurred by the WGFD to conduct year one of this project is \$342,848.11.

A total of 58 seropositive elk were removed from the population at a cost of approximately \$5911/elk. Fifty-six of 58 seropositive elk were cultured with preliminary results (Table 3) indicating 18 were culture positive for *Brucella*. Subsequent culturing efforts may reveal additional culture positives, but these 18 elk were removed at a cost of \$19,047/elk.

Table 2. Test and Slaughter expenditures incurred by the WGFD tracked via special project code.

Portable Elk Trap	\$153,105.35
Personnel Salary and Fringe*	\$97,676.30
Travel Expenses	\$17,196.63
WGFD Lab and other supplies	\$16,920.88
Vehicle Usage**	\$13,130.26
Meat Processing, Storage, and Distribution	\$12,826.69
TOTAL	\$310,856.11

* 3,612 personnel hours recorded conducting test and slaughter

** 31,944 total miles driven for test and slaughter efforts

Culture Results

Fifty-six of the 58 seropositive elk have been cultured to date. Of the 56, 31 had strong reactions (titers) on the 6 standard brucellosis serological assays. As a general rule, the higher the titer - the more likely the animal will be culture positive. During slaughter, lymph nodes most likely to harbor *B. abortus* were collected for culture and analysis. The results below (Table 3) are preliminary and are based only on cultures of fetal fluid and iliac lymph nodes.

Laura Linn, a graduate student at the University of Wyoming, is conducting an investigation of the relationship between serology and culture status from elk killed during the test and slaughter pilot project. The student is planning a thorough culture of the remaining elk tissues during summer/fall 2006, and may identify additional positives.

Table 3. Preliminary culture results from Muddy Creek feedground seropositive elk.

Trap Date	Total Elk Cultured	Total Fetuses Cultured	Positive Elk	Positive Fetuses
1/30/2006	42	35	12	0
2/16/2006	14	10	6	5
<u>Total</u>	56	45	18	5

Future Efforts

WGFD is committed to implementing the pilot test and slaughter project in the Pinedale elk herd unit for the 5-year period of winter 2005-2006 to winter 2009-2010. Results will be comprehensively analyzed after the duration of the effort to determine its affects on brucellosis seroprevalence within the elk herd and total costs. However, numerous logistical challenges pertinent to the mechanical success of the project still lie ahead.

Muddy Creek feedground is arguably the easiest of the three feedgrounds within the Pinedale elk herd unit on which to implement the effort. Access roads into Fall and Scab Creek feedgrounds are much longer in length and may present extreme snow removal challenges to keep roads passable. The successful implementation of efforts at Muddy feedground during winter 2005-06 required significant personnel resources. The WGFD plans to establish a statewide elk trapping crew for the remaining years of the pilot project in an effort to relieve the heavy workload experienced by personnel in the Jackson/Pinedale Region during winter. Compounding trapping efforts on two, and ultimately three feedgrounds may impact other job duties.