

**JOINT RECOMMENDATION TO  
THE WYOMING GAME AND FISH DEPARTMENT  
AND  
THE SUPERINTENDENT OF GRAND TETON NATIONAL PARK  
CONCERNING ELK MANAGEMENT WITHIN  
GRAND TETON NATIONAL PARK  
FOR THE YEAR 2014**

The undersigned field representatives of the Wyoming Game and Fish Department and Grand Teton National Park respectfully submit for your joint consideration the following supporting information and a recommended elk management program for Grand Teton National Park for 2014. The proposed programs have the long-range objectives of reducing the need to harvest elk within Grand Teton National Park, continue progress toward restoring historic distributions and migration patterns, and encourage elk to use historic fall and winter range areas in the southern half of Grand Teton National Park. The proposed program would continue to manage for a winter National Elk Refuge herd of 5,000 elk.

Supporting Information

The harvest quotas established below are maximum harvest objectives associated with Grand Teton National Park and the National Elk Refuge herd segments. These quotas are part of the overall harvest objectives established for the Jackson elk herd unit.

Management data indicate the portion of the Jackson Elk Herd wintering on lands within the National Elk Refuge number approximately 8,300 animals during the 2013 – 2014 winter. The estimated post hunt 2014 population will be approximately 11,500 elk. To reduce this herd segment towards the population objective, the harvest must exceed 1,000 elk. A harvest of the Grand Teton National Park, Area 78, and the National Elk Refuge herd segments is desired. The following harvest quotas focus on resident and migrating elk that winter on or adjacent to the National Elk Refuge. The proposed season structure should lead to restoration of traditional elk numbers and migration patterns in areas outside National Park boundaries and to reduce elk numbers toward the National Elk Refuge population objective of 5,000 elk.

**Maximum Harvest Quotas**

Areas 75, 79 (Grand Teton National Park, Summer Herd Segment)	300
Area 77 (National Elk Refuge, Grand Teton National Park, Area 78, and Area 80, Summer Herd Segment)	400
Areas 70, 71, 75, 77 & 79 (North Migratory Segment)	300
	<hr/> 1,000

## Recommended 2014 Park Program

The following elk management program is recommended for Grand Teton National Park in 2014 to facilitate an overall coordinated interagency program for managing the Jackson Elk Herd. The management program will be open to persons holding a valid Grand Teton National Park Permit and certified as having successfully completed an approved Hunter Safety Course. Hunters are only allowed to harvest one elk during the 2014 Grand Teton National Park elk management program.

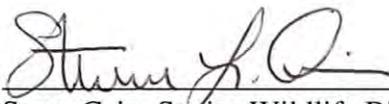
1. Issue 200 Area 75 Type 4 Limited Quota Licenses valid for antlerless elk for the period October 18 through November 30, 2014 in that portion of Area 75 designated as open. The area designated as the Snake River Bottom from Deadman's Bar access road to Ditch Creek west of US Highway 26, 89, 191 shall be closed.
2. Allow Area 75 Type 4 licenses to hunt in Area 75 for the period December 1 through December 7, 2014 in that portion of Area 75 designated as open. The area designated as Antelope Flats and the area designated as the Snake River Bottom from Deadman's Bar access road to Ditch Creek west of US Highway 26, 89, 191 shall be closed.
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5. Allow unused Area 75 Type 4 licenses to hunt in Area 79 for antlerless elk for the period of October 18 to November 2, 2014 in that portion of Area 79 designated as open.
6. Maintain hunting in Area 75 through December 7, 2014 and Area 79 through November 2, 2014 or prior to the maximum harvest quota being obtained from these hunt areas. Hunt Areas may close on two days notice if the overall quota is reached prior to the closing date.
7. Maintain the closure of Area 72 and monitor elk numbers and movement patterns in that herd segment.
8. Retain a provision for extending the season to obtain desired quotas.

9. Maintain posted boundaries in Area 75 and 79 for ½ mile around most buildings, as indicated on the detailed Area 75 and 79 hunt area maps. Buildings not included in this closure include those within the Gros Ventre Campground, all stand-alone toilets and/or wellhouses, the McCollister Cabin, the Shane Cabin, the Cunningham Cabin, the Cowboy Cabin, and the Elk Ranch buildings. In addition, a portion of Area 75 in the SW 1/4 of Section 22, T43N, R115W, S½ S½ of Sections 3 and 4, T42N, R115W, will be posted as closed.
  
10. The technical committee of the Jackson Hole Cooperative Elk Studies Group annually reviews all available data concerning the Jackson Elk Herd to better evaluate the reduction program within Grand Teton National Park.
  
11. When any news media contacts either the Wyoming Game and Fish Department or Grand Teton National Park concerning the elk reduction program, the agency contacted by the news media will immediately notify the other agency to establish a coordinated response.

**Grand Teton National Park**

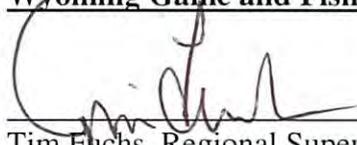
  
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 Michael Nash, Chief Park Ranger  
 Grand Teton National Park

5.9.2014  
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 Date

  
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 Steve Cain, Senior Wildlife Biologist  
 Senior Wildlife Biologist

5.9.2014  
 \_\_\_\_\_  
 Date

**Wyoming Game and Fish Department (WGFD)**

  
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 Tim Fuchs, Regional Supervisor  
 WGFD, Jackson Region

5/9/14  
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 Date

  
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 Alyson Courtemanch, Wildlife Biologist  
 WGFD, Jackson Region

5/9/14  
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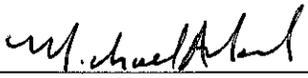
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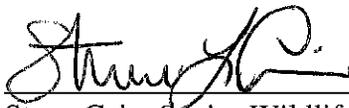
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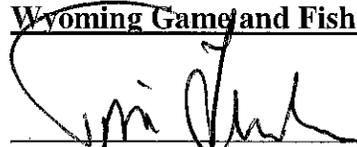
  
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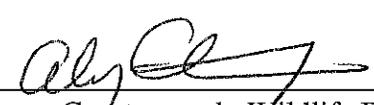
  
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## BRUCELLOSIS MANAGEMENT (EL102) – 2013 JCR

### FEEDGROUND SURVEILLANCE

#### Gros Ventre Feedgrounds

Ten adult female elk were chemically immobilized and fitted with GPS collars in late March, 2014. An eleventh elk was captured at the National Elk Refuge (NER) on March 26, 2014 to remove a collar deployed on Alkali Creek feedground in the spring of 2013. GPS collars are scheduled to drop during February, 2015. Four of the 11 (36.4%) blood samples tested positive for exposure to *B. abortus* (Table 1). However, this sample size falls far short of WGFD’s standard for 85% confidence that the measured seroprevalence is within +/- 15% of the actual seroprevalence, thus no inferences should be made about the population from these data.

VIT and GPS collar data have been collected in the Gros Ventre since 2010 as part of an effort to analyze relationships between serostatus and elk movements, define brucellosis transmission risk areas, determine parturition locations and investigate elk use of habitat treatments. Collar and VIT locations of 10 elk telemetered during 2013-2014 are shown in Figure 1. Collar data from Gros Ventre elk will be compared to elk on other feedgrounds for determining effects of feedground practices and feeding season length. The Safari Club International funded a portion of the collar costs in 2010-2013, and North Wind provided the 10 collars deployed in 2014 (mortality collars from a separate project in southwestern Sublette Co., WY with a year of battery life remaining).

Table 1. Yearling, adult, and total female seroprevalence of elk on feedgrounds in the Jackson elk herd based on 4 standard tests and cELISA, 1985-2014.

Feedground	Year	Yearling			Adult			All Females		
		+	<i>n</i>	%	+	<i>n</i>	%	+	<i>n</i>	%
Alkali	1990	3	8	38	27	108	25	30	116	26
	1992	1	6	17	25	65	38	26	71	37
	1999	0	1	0	12	47	26	12	48	25
	2002*	0	0	0	4	6	67	4	6	67
	2010*	0	0	0	1	6	17	1	6	17
	2012*	0	0	0	2	10	20	2	10	20
	2013*	0	1	0	2	9	20	2	10	20
	<b>Sum</b>	<b>4</b>	<b>16</b>	<b>7.9</b>	<b>73</b>	<b>251</b>	<b>30.4</b>	<b>77</b>	<b>267</b>	<b>30.3</b>
Patrol Cabin	2002*	0	0	0	5	13	38	5	13	38
	2003*	0	0	0	3	6	50	3	6	50
	2011*	0	0	0	0	4	0	0	4	0
	2012*	0	0	0	1	1	100	1	1	100
	2013*	0	0	0	1	1	100	1	1	100

	2014*	0	0	0	3	10	30	3	10	30
	<b>Sum</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>35</b>	<b>53</b>	<b>13</b>	<b>35</b>	<b>53</b>
NER	1985*	1	3	33	2	10	20	3	13	23
	1988	0	6	0	22	44	50	22	50	44
	1990	0	6	0	10	30	33	10	36	28
	1993	0	0	0	12	38	32	12	38	32
	1995*	2	7	29	5	10	50	7	17	41
	1996	5	10	50	16	49	33	21	59	36
	1997*	0	5	0	6	25	24	6	30	20
	1998	3	18	17	28	60	47	31	78	40
	1999	0	6	0	9	33	27	9	39	23
	2001*	0	1	0	1	13	8	1	14	7
	2002	3	18	17	10	37	27	13	55	24
	2003*	1	7	14	3	16	19	4	23	17
	2004*	1	1	100	0	4	0	1	5	20
	2005*	1	2	50	4	8	50	5	10	50
	2006*	0	2	0	5	24	21	5	26	19
	2007*	0	0	0	2	17	12	2	17	12
	2009*	0	0	0	0	12	0	0	12	0
	2010*	1	2	50	1	8	13	2	9	22
	2011*	0	0	0	5	12	42	5	12	42
	2012*	0	0	0	2	12	17	2	12	17
2014*	0	0	0	1	1	100	1	1	100	
	<b>Sum</b>	<b>18</b>	<b>94</b>	<b>17.1</b>	<b>144</b>	<b>463</b>	<b>29.8</b>	<b>161</b>	<b>555</b>	<b>29.4</b>

\* Inadequate sample size for the estimated prevalence to be +/- 15% of the true prevalence.

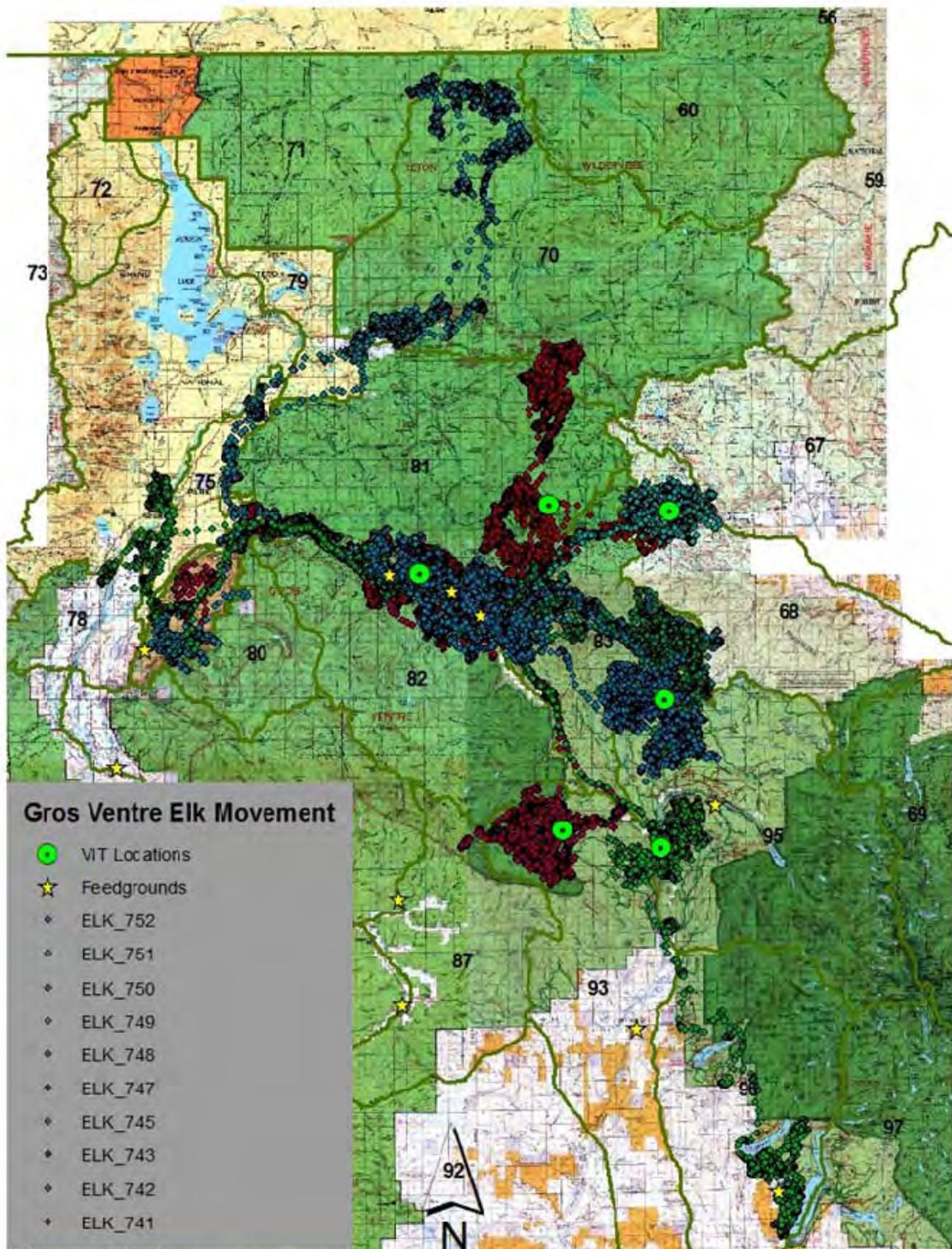


Figure 1. VIT locations (bright green circles) and GPS collar locations from elk captured on Alkali Creek and Patrol Cabin feedgrounds, February 2013 through January 2014.

A total of 1,263 individual elk were captured and tagged on the National Elk Refuge (1,135), Alkali (128) and Patrol Cabin (17) feedgrounds between 1993 and 2013. Among these, information of 180 harvested elk were returned to the WGFD. A breakdown of eartag return locations by elk herd unit is in Table 2. Over 87% of all elk tagged in the Jackson herd were harvested in the Jackson herd.

Table 2. Proportion of elk eartag returns of elk captured and tagged on Patrol Cabin, Alkali, and the National Elk Refuge feedgrounds in the Jackson elk herd from 1993-2013.

<b>Jackson elk eartag return summary; 1993-2013</b>			
Location of harvest	Number of returns	Percent of total tag returns	Percent of all tagged elk
Jackson herd	157	87.2%	12.4%
Unreported area	10	5.6%	0.8%
Upper GR herd	5	2.8%	0.4%
Fall Cr. herd	3	1.7%	0.2%
Hoback herd	2	1.1%	0.2%
State of Idaho	1	0.6%	0.1%
Targhee herd	1	0.6%	0.1%
Wiggins Fk. Herd	1	0.6%	0.1%
Total	180	100%	1263

## STRAIN 19 VACCINATION

### **Gros Ventre Feedgrounds**

Vaccination efforts were conducted at Patrol Cabin feedground from March 10-14, 2014. Alkali Creek and Fish Creek feedgrounds had few or no elk in attendance during vaccination. Feeders and WGFD personnel vaccinated 328 of the 373 calves classified (88%). A total of 7,818 elk have been vaccinated on the Gros Ventre feedgrounds since vaccination efforts were established in the area. Annual vaccine coverage on the Gros Ventre feedgrounds has been declining over the last decade because of unpredictable elk distributions and behavior.

### **National Elk Refuge**

*Brucella* Strain 19 elk vaccination has occurred annually on the NER basis since the winter of 2003. In 2014, vaccination activities began February 11 by acclimating elk to the presence of the snowcat and the sound of the vaccine and paint-marking guns. The first live vaccine was fired February 14 but with less than ideal vaccination conditions, progress was slow and vaccination attempts ceased on March 24. Vaccinating elk on the NER tends to be the least efficient/most labor-intensive site compared to the state-

operated feedgrounds; a team of 3 contract employees vaccinated from a single snowcat during the 2013/2014 winter further reducing the efficacy of the program. A total of 237 calves were vaccinated out of 1097 classified on the NER during winter 2014 (22% coverage). Since 2003, 8,448 elk have been vaccinated with s19 on the NER (7,836 calves, 612 cows).

### CHRONIC WASTING DISEASE SURVEILLANCE

The National Elk Refuge (NER) provided funds to the Wyoming Game and Fish Department (WGFD) to support Chronic Wasting Disease (CWD) surveillance in the Jackson elk herd and adjacent elk, deer, and moose herds during the 2013 hunting seasons. The funding was used to hire two temporary CWD technicians, employed with the WGFD from mid-September through December 2013. The technicians logged 1024 hours and 10,694 miles, mostly while conducting field contacts with hunters and pulling samples (medial retropharyngeal lymph nodes) from carcasses. Having two technicians allowed field presence nearly every day of open hunting seasons in the Jackson area, and helped maximize the number of samples collected from all species throughout the Jackson WGFD Region.

The highest yielding method of collecting elk samples for subsequent CWD testing in the Jackson region comes from hunter contacts in the field, especially those within Grand Teton National Park (GTNP) and the NER. Hunter contacts are made throughout the fall in an effort to increase sample size and participation, and to educate hunters on CWD. NER parking areas and highly used locations in GTNP, such as the Kelly Hayfields and Blacktail Butte, are reliable places to make hunter contacts and collect samples. Frequent communication among NER law enforcement, elk retrieval operators and other WGFD personnel is essential for locating successful hunters soon after they've harvested their elk. During calendar year 2013, 300 lymph nodes were collected from elk sampled within the Jackson elk herd (Table 3).

Successful hunters whose animals are not sampled in the field are requested to deposit heads with attached harvest information in bear-proof containers placed at Moose and Moran Junctions within GTNP in the same locations as the tooth and permit drops. Another container is stationed at Kelly Warm Springs, mostly for use by hunters returning from the Gros Ventre drainage, and more head-drop containers are placed at three of the hunter parking areas on the NER. Additional collection barrels in the Jackson region are located at the WGFD office in Jackson, South Park Wildlife Habitat Management Area (WHMA), Camp Creek, Greys River road, and the Greys River WHMA.

Many samples are obtained through the cooperation of the local game meat processor (Jackson Hole Ice & Game and Hog Island Meats). Processor employees save heads along with harvest date, location, and hunter contact information, which are retrieved by CWD technicians daily. CWD samples are also collected from road-killed and "targeted" (euthanized due to illness) animals throughout the year. In addition, GTNP personnel make a concerted effort to sample from road-killed animals within the Park (Figure 2).

Personnel at the WGF Wildlife Disease Laboratory use the IDEXX enzyme-linked immunosorbent assay (ELISA) to analyze lymph node samples for CWD. Any IDEXX-positive samples would then be confirmed with the Bio-Rad ELISA. Samples positive on both ELISAs would be confirmed by immunohistochemistry. Results are reported to hunters typically within three weeks of sample submission. Hunters can obtain results by accessing the Department's web site, and hunters that submit a positive sample are personally notified via phone and letter. The WGF also notifies other state wildlife agencies if a hunter from their state harvests a CWD test-positive animal in Wyoming.

Table 3. CWD samples collected from elk within the Jackson elk herd by year, with corresponding population and harvest estimates.

Year	Sample size	Population Estimate	% of Est. Pop Sampled	# Harvested	% of Harvest Sampled
1997	243	16463	1.48%	3290	7.39%
1998	317	17641	1.80%	3159	10.03%
2000	197	16385	1.20%	2350	8.38%
2002	234	13457	1.74%	2253	10.39%
2004	187	12610	1.48%	1818	10.29%
2005	189	12855	1.47%	1776	10.64%
2006	184	12904	1.43%	1678	10.97%
2007	116	12795	0.91%	1689	6.87%
2008	301	12935	2.33%	1316	22.87%
2009	434	13349	3.25%	1486	29.21%
2010	414	11976	3.46%	1414	29.28%
2011	275	11962	2.30%	1146	24.00%
2012	241	11051	2.18%	1037	23.24%
2013	300	11500	2.61%	1100	27.27%

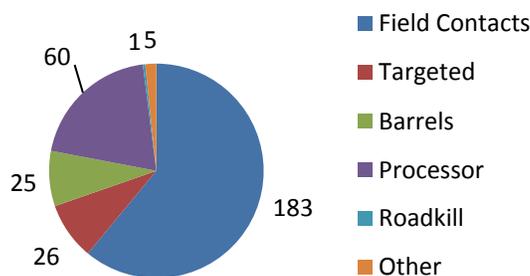


Figure 2. Collection method of 300 total elk CWD samples obtained in the Jackson elk herd, 2013.

## **BRUCELLOSIS MANAGEMENT (EL103) – 2013 JCR**

### **FEEDGROUND SURVEILLANCE/RESEARCH**

#### **Camp Creek Feedground**

Five adult female elk were chemically immobilized at this site on March 18, 2014. Three of the five captured elk were pregnant, and were fitted with Vaginal Implant Transmitters (VITs) that will be expelled upon either abortion or parturition during late winter/spring 2014, and GPS collars which record a location every 30 minutes that will automatically drop off in one year. One of these elk died in May 2014 of probable mountain lion predation. All five cows were bled for brucellosis diagnostics, and two (40%) were considered positive for exposure to *B. abortus* (Table 1). However, this sample size falls far short of WGFD's standard for 85% confidence that the measured seroprevalence is within +/- 15% of the actual seroprevalence, thus no inference of brucellosis prevalence should be made about the population from these data.

#### **Dog Creek Feedground**

Five adult female elk were chemically immobilized on this feedground on March 13, 2014; all cows were pregnant and received GPS collars and VITs. The GPS collars are on 30 minute fixes and programmed to drop in January of 2016. Four of the five (80.0%) blood samples were considered positive for exposure to *B. abortus* (Table 1). However, this sample size is also short of WGFD's standard for 85% confidence that the measured seroprevalence is within +/- 15% of the actual seroprevalence, thus no inference of brucellosis prevalence should be made about the population from these data.

#### **South Park Feedground**

One adult female elk was chemically immobilized and fitted with a GPS collar and VIT on March 1, 2014. This female had been captured and equipped with a GPS collar and VIT at Camp Creek feedground during the winter of 2012-13 but the collar failed to drop off as programmed during January of 2014 when the elk was found on South Park feedground. Upon capture to remove the collar at South Park, it was determined the cow was again pregnant and was opportunistically fitted with a new VIT and GPS collar, which is programmed to drop in January of 2015. Blood collected during the capture was considered negative for exposure to *B. abortus* (Table 1).

Table 1. Yearling, adult, and total female seroprevalence of elk on feedgrounds in the Fall Creek Elk Herd based on 4 standard tests and cELISA, 1987-2014.

Feedground	Year	Yearling			Adult			All Females		
		+	<i>n</i>	%	+	<i>n</i>	%	+	<i>n</i>	%
South Park	2003	4	12	33	8	30	27	12	42	29
	2005*	0	1	0	0	1	0	0	2	0
	2008	2	10	20	11	21	52	13	31	42
	2009*	0	0	0	3	7	43	3	7	43
	2010*	0	0	0	4	7	57	4	7	57
	2011	2	18	11	14	27	52	16	45	36
	2013	0	0	0	0	0	0	16	64	25
	2014*	0	0	0	0	1	0	0	1	0
	<b>Sum</b>	<b>8</b>	<b>41</b>	<b>20</b>	<b>40</b>	<b>94</b>	<b>28.9</b>	<b>64</b>	<b>199</b>	<b>29</b>
Horse Creek	1988*	1	4	25	8	24	33	9	28	32
	2000	2	12	17	18	30	60	20	42	48
	2011*	0	0	0	3	4	75	3	4	75
	2012*	0	0	0	2	5	40	2	5	40
		<b>Sum</b>	<b>3</b>	<b>16</b>	<b>19</b>	<b>31</b>	<b>63</b>	<b>49</b>	<b>34</b>	<b>79</b>
Camp Creek	1989	2	12	17	24	52	46	26	64	41
	2013*	0	0	0	2	5	40	2	5	40
	2014*	0	0	0	2	5	40	2	5	40
		<b>Sum</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28</b>	<b>62</b>	<b>42</b>	<b>30</b>	<b>74</b>
Dog Creek	1987*	0	0	0	0	1	0	0	1	0
	1996*	0	5	0	4	13	31	4	18	22
	1997*	0	0	0	6	6	100	6	6	100
	1998*	1	6	17	1	4	25	2	10	20
	2010*	0	0	0	3	4	75	3	4	75
	2014*	0	0	0	4	5	80	4	5	80
		<b>Sum</b>	<b>1</b>	<b>11</b>	<b>9</b>	<b>18</b>	<b>33</b>	<b>51.8</b>	<b>19</b>	<b>44</b>

\* Inadequate sample size for the estimated prevalence to be +/- 15% of the true prevalence.

Table 2. Proportion of elk eartag returns of elk captured and tagged in the Fall Creek elk herd compared to other elk herds in Western Wyoming from 1993-2013.

Fall Creek elk eartag return summary; 1993-2013			
Location of harvest	Number of returns	Percent of total tag returns	Percent of all tagged elk
Fall Cr. herd	93	75.6%	10.7%
Afton herd	12	9.8%	1.4%
Jackson herd	9	7.3%	1.0%
Unreported area	4	3.3%	0.5%
Hoback herd	3	2.4%	0.3%
Cody herd	1	0.8%	0.1%
Piney herd	1	0.8%	0.1%
<b>Total</b>	<b>123</b>	<b>100%</b>	<b>869</b>

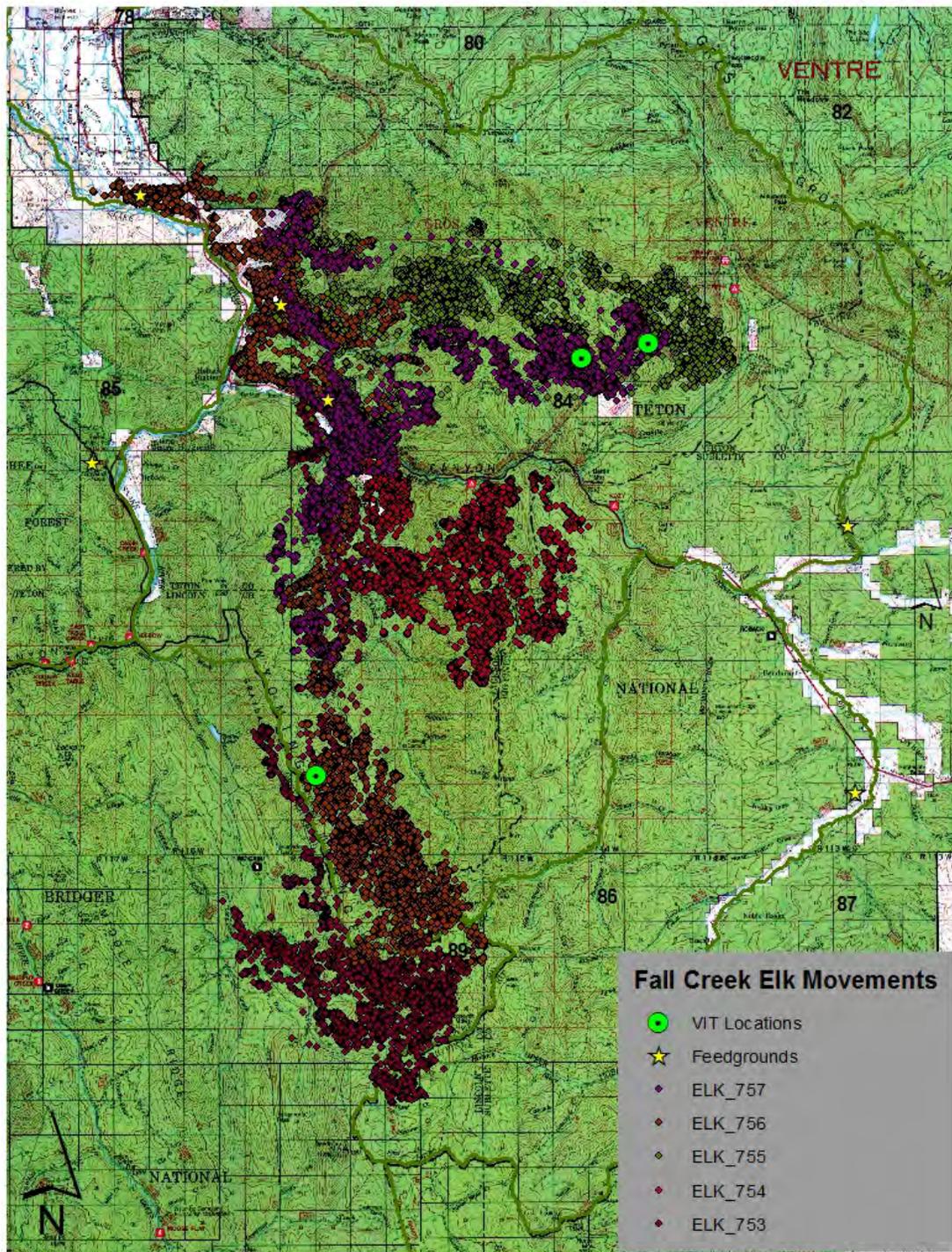


Figure 1. VIT expulsion locations (bright green circles; parturition sites) and GPS collar locations from elk captured on Camp Creek feedground, February 2013 through January 2014.

## STRAIN 19 VACCINATION

### **Dog Creek Feedground**

Vaccination was completed from March 11<sup>th</sup>-18<sup>th</sup>, 2014. While 191 calves were classified, 170 calves (89%) were vaccinated, potentially due to elk movements from the feedground post classification. From 1990, when the vaccination program was initiated on the Dog Creek feedground, 4,681 juveniles and 1,252 adults have been vaccinated.

### **Camp Creek Feedground**

Vaccination was completed from January 30<sup>th</sup> through March 11<sup>th</sup>, 2014. The majority of elk in the Horse Creek/Camp Creek feedground complex attended Camp Creek during vaccination activities facilitating increased coverage with 85% of Camp Creek calves receiving vaccine and 73% of all calves classified in the Horse Creek/Camp Creek feedground complex being vaccinated. Since 1993, a total of 3,855 juveniles have been vaccinated. Elk were first vaccinated on Camp Creek in 1989.

### **Horse Creek Feedground**

Vaccination was not attempted at Horse Creek feedground in 2014. Most of the cow and calf elk within the Horse Creek/Camp Creek feedground complex attended Camp Creek during vaccination. Calf elk remaining at Horse Creek feedground proved to be very sensitive to human activity and often left the area resulting in increased private property damage concerns. Since 1993, a total of 4,910 juveniles have been inoculated. Elk were first vaccinated on Horse Creek feedground in 1989.

### **South Park Feedground**

Vaccination was completed for the 23rd consecutive year at this feedground. The elk feeder vaccinated elk from March 1<sup>st</sup>-8<sup>th</sup>. While 210 calves were classified in February, 260 calves (>100%) were vaccinated, potentially due to elk movements to the feedground after classification and some yearlings may have been misidentified as calves and received a booster dose. Since 1990 when vaccination began at South Park, a total of 5,639 juveniles and 909 adult females have been inoculated.

## **BRUCELLOSIS MANAGEMENT (EL105) - 2013**

### **BRUCELLOSIS SURVEILLANCE/RESEARCH**

#### **Greys River Feedground**

Elk were not captured at Greys River feedground this winter due to warm temperatures in early February which caused the elk trap to be inundated with nearly 3 feet of water. Colder temperatures later in the month froze and prevented operation of nearly all trap chutes and gates. This was the first winter in nearly a quarter century that elk have not be captured at this feedground and tested for antibodies to *Brucella abortus*. Brucellosis serology data of elk captured from Greys River feedground in located in table 1.

From 2008-2013, 19 GPS collars and 38 VITs have been deployed on/in elk captured from the Greys River feedground. GPS collars were deployed on 19 individual elk for one year; data indicate some elk movement north into the Fall Creek elk herd and some movement west into Idaho, but most elk use occurs in HA 88 and the northwestern corner of HA 89 (Figure 1). Among the 38 VITs, WGFD personnel identified the locations of 32 parturition sites and 4 reproductive failures (abortions; Figure 1). One elk died prior to expelling the VIT, and one elk's VIT was classified as unknown (could not be located). These data are allowing managers to assess feedground interchange and define areas of high risk for inter and intra-specific brucellosis transmission.

#### **Forest Park Feedground**

Two adult females were chemically immobilized on this feedground on April 15, 2014. Brucellosis serology data of elk captured from Forest Park feedground in located in table 1. Both cows were pregnant and received novel, paired GPS collar-VIT technology for field testing in cooperation with the University of Wyoming and Advanced Telemetry Systems. The Iridium platform GPS collars communicate with the VIT while implanted, and upon expulsion the collar sends a signal to a satellite and the user is emailed the coordinates of the cow (and expelled VIT), essentially eliminating the need for periodic monitoring of VITs from the ground and air for abortion or parturition events. Deep snow conditions and winter-like weather this spring allowed easy darting at Forest Park in mid-April, one of the latest elk captures conducted.

From 2011-2013, 16 GPS collars and 15 VITs were deployed on elk captured from Forest Park. Collar data indicate most elk use is within HA90, with limited movement north into southern HA89 and east into HA 92 (Figure 1). Among the VITs, personnel documented 12 parturition sites and two abortions; one elk was confirmed pregnant via blood testing, but had not calved by early August when funding for flights prevented further monitoring. The signal from this VIT was not heard again.

### **Southern Star Valley native winter range (Spring Creek) elk collaring**

The WGF and University of Wyoming conducted an elk research project from 2010-2013 involving the collaring of elk on and off feedgrounds and body condition monitoring to determine potential differences in migrations and health, and document movements of little studied elk populations. Elk utilizing native winter range in the Spring and Crow creek areas of southern Star Valley, Wyoming were chosen as one of the four non-feedground elk populations for the project. Ten adult cows were net-gunned from a helicopter (Leading Edge Aviation, LLC) on January 8, 2010. All were negative for exposure to brucellosis, and received GPS collars programmed to drop off in 2012; 9 of the 10 were pregnant and received VITs. Nine of the 10 collars were retrieved, and data indicate significant movement west into Idaho following wintering in Wyoming, and one cow made a large movement south to winter on the southern end of the Sublette range north of Cokeville, Wyoming in 2011 (Figure 1). All nine VITs were retrieved and all parturition sites were located in Idaho.

Table 1. Yearling, adult, and total female seroprevalence of elk captured from feedgrounds in the Afton elk herd based on 4 standard tests and cELISA, 1985-2014.

AFTON ELK HERD UNIT										
Feedground	Year	Yearling			Adult			All Females		
		+	<i>n</i>	%	+	<i>n</i>	%	+	<i>n</i>	%
Forest Park	1985*	0	0	0%	5	7	71%	5	7	71%
	1986*	1	10	10%	4	10	40%	5	20	25%
	2001	1	9	11%	11	18	61%	12	27	44%
	2002	2	21	10%	14	28	50%	16	49	33%
	2011	2	16	13%	4	15	27%	6	31	19%
	2012	3	9	33%	14	31	45%	17	40	43%
	2013	0	11	0%	7	20	35%	7	31	23%
	2014	0	0	0%	1	2	50%	1	2	50%
	SUM	9	76	12%	60	131	46%	69	207	33%
	Grey's River	1993	4	13	31%	10	34	29%	14	47
1994*		0	6	0%	5	18	28%	5	24	21%
1995		1	19	5%	7	28	25%	8	47	17%
1996		0	16	0%	4	17	24%	4	33	12%
1997		3	14	21%	7	24	29%	10	38	26%
1998		5	12	42%	9	31	29%	14	43	33%
1999		2	6	33%	4	29	14%	6	35	17%
2000		7	17	41%	10	21	48%	17	38	45%
2001		5	12	42%	18	25	72%	23	37	62%
2002		4	10	40%	19	32	59%	23	42	55%
2003		6	17	35%	25	38	66%	31	55	56%
2004		2	8	25%	20	31	65%	22	39	56%
2005		1	16	6%	19	53	36%	20	69	29%
2006*		0	2	0%	7	22	32%	7	24	29%
2007		1	19	5%	4	17	24%	5	36	14%
2008		1	6	17%	7	32	22%	8	38	21%
2009		2	17	12%	8	25	32%	10	42	24%
2010		2	9	22%	14	39	36%	16	48	33%
2011		1	16	6%	9	35	26%	10	51	20%
2012		1	23	4%	4	19	21%	5	42	12%
2013	2	5	40%	6	37	16%	8	42	19%	
SUM	50	263	19%	216	607	36%	266	870	31%	
<b>TOTAL</b>		<b>59</b>	<b>339</b>	<b>17%</b>	<b>276</b>	<b>738</b>	<b>37%</b>	<b>335</b>	<b>1077</b>	<b>31%</b>

\* inadequate *n* for the estimated prevalence to be +/- 15% of the true prevalence

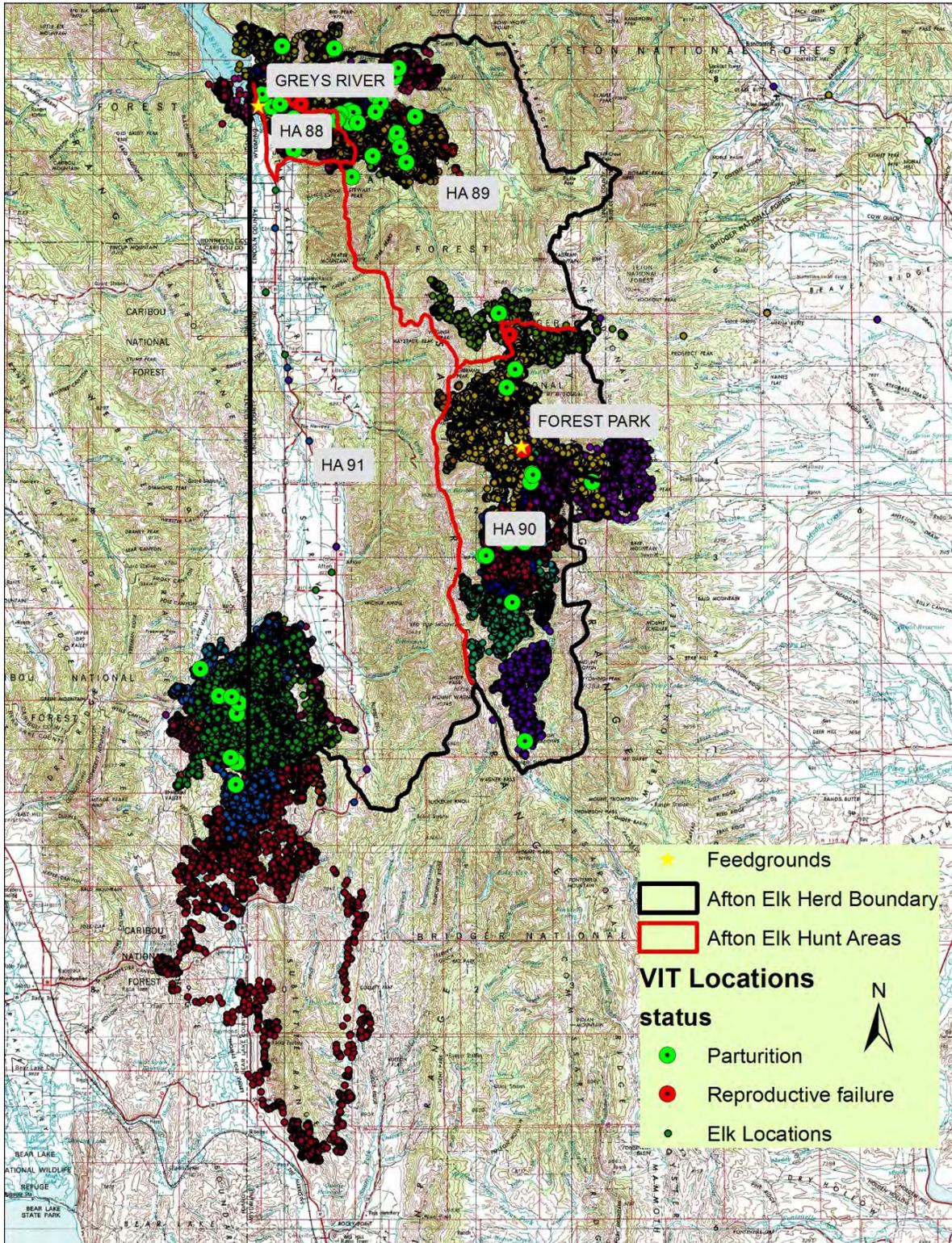


Figure 1. Elk feedgrounds, herd unit and hunt area boundaries, and elk GPS collar locations and VIT expulsion sites (2008-2013) of the Afton elk herd.

A total of 3,558 individual elk were captured and tagged on Greys River (2,824) and Forest Park (734) feedgrounds between 1993 and 2013. Among these, information of 410 harvested elk were returned to the WGFD. A breakdown of eartag return locations by elk herd unit is in Table 2. Over 90% of all elk tagged in the Afton herd were harvested in the Afton herd.

Table 2. Proportion of elk eartag returns of elk captured and tagged on Greys River and Forest Park feedgrounds in the Afton elk herd from 1993-2013.

<b>Afton elk eartag return summary; 1993-2013</b>			
Location of harvest	Number of returns	Percent of total tag returns	Percent of all tagged elk
Afton herd	371	90.5%	10.4%
Fall Cr. herd	19	4.6%	0.5%
State of Idaho	5	1.2%	0.1%
Piney herd	5	1.2%	0.1%
Unreported area	5	1.2%	0.1%
Hoback herd	3	0.7%	0.1%
Pinedale herd	1	0.2%	<0.1%
W. Green R. herd	1	0.2%	<0.1%
<b>Total</b>	<b>410</b>	<b>100%</b>	<b>3558</b>

## STRAIN 19 VACCINATION

### **Greys River Feedground**

*Brucella abortus* Strain 19 (S19) vaccination of elk calves on Greys River feedground was accomplished March 3, 2014. There were 115 calves at the time of classification; 107 calves were vaccinated for 93% coverage. The S19 elk vaccination program on Wyoming's feedgrounds initiated at the Greys River feedground in 1985. Since then, a total of 6,524 calves have been vaccinated on Greys River and yearly coverage has been very complete. Juvenile coverage rates has averaged nearly 100% since inception of the program. The large proportion of juveniles annually covered by s19 vaccine indicates a successful vaccination delivery program.

### **Forest Park Feedground**

Vaccination at Forest Park was accomplished from March 6-18, 2014. There were 176 calves at the time of classification and 241 calves were vaccinated, indicating immigration of elk into the feedground after classification occurred. Vaccination was skipped at Forest Park in 2009 and again in 2011 because of short supplies of vaccine. In all other years, coverage has been nearly 100%. Vaccination was initiated at this feedground in 1988. Since that time, a total of 5,303 juveniles and 715 adult females have been vaccinated.

## BRUCELLOSIS MANAGEMENT (B101) – 2013

### HUNTER-HARVEST BRUCELLOSIS SURVEILLANCE 2013

The majority of successful bison hunters submitted blood samples from their harvested bison for brucellosis testing during fall of 2013 and early winter of 2014. Usable blood samples were collected from 78 bull bison and 66 cow bison. Serologic testing conducted at the WGFD's wildlife disease laboratory in Laramie indicated 67% of all bison tested in 2013/2014 were positive for antibodies to *Brucella abortus* (seropositive). A positive blood test reveals that the animal was exposed to the bacteria, but does not indicate actual infection. Brucellosis seroprevalence of male bison was 67% ( $n = 52/78$ ), and 68% of females were positive ( $n = 45/66$ ; Table 1). In addition to blood samples, hunters provided teeth for cementum annuli age determination. Cementum annuli analysis resulted in an average age of harvest for female bison (including male calf harvest) of 4.1 years ( $n=134$ ) and male bison (males calves excluded) of 5.2 years ( $n=106$ ).

Table 1. Seroprevalence of hunter-harvested bison from the Jackson Herd, 1999-2014. Sample sizes do not equal total harvested as not all harvested animals were sampled and not all samples were testable.

Year	Total Female Bison				Total Male Bison			
	# Pos	# Neg	Total	%	# Pos	# Neg	Total	%
1999	1	2	3	33	3	4	7	43
2000	4	1	5	80	2	3	5	40
2001	8	12	20	40	15	9	24	63
2002	10	11	21	48	15	6	21	71
2003	5	4	9	56	15	8	23	65
2004	7	2	9	78	12	5	17	71
2005	7	5	12	58	16	7	23	70
2006	19	4	23	83	13	9	22	59
2007	73	53	126	58	73	47	120	61
2008	63	33	96	66	68	58	126	54
2009	17	16	33	52	55	35	90	61
2010	62	35	97	64	52	27	79	66
2011	55	31	86	64	54	44	98	55
2014	45	21	66	68	52	26	78	67
<b>Total</b>	<b>376</b>	<b>230</b>	<b>606</b>	<b>60.6</b>	<b>445</b>	<b>288</b>	<b>733</b>	<b>60.4</b>