

2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep

PERIOD: 6/1/2014 - 5/31/2015

HERD: BS609 - WHISKEY MOUNTAIN

HUNT AREAS: 8-10, 23

PREPARED BY: GREG
ANDERSON

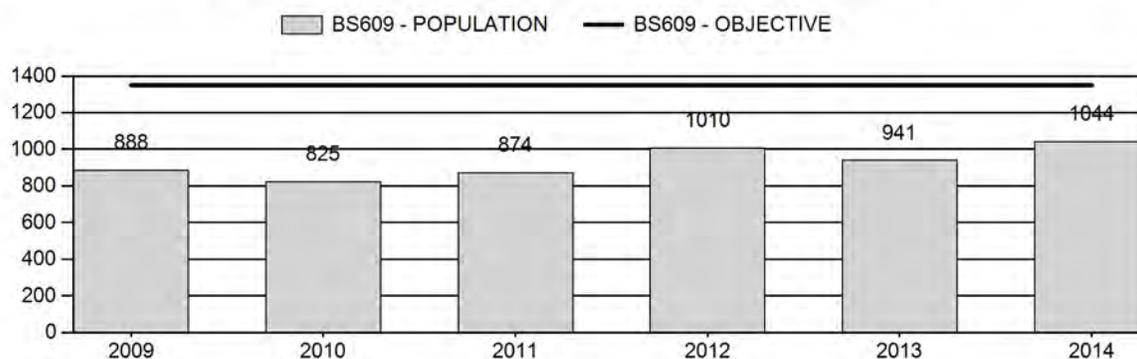
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	908	1,044	1,000
Harvest:	14	15	15
Hunters:	24	23	24
Hunter Success:	58%	65%	62%
Active Licenses:	24	23	24
Active License Success:	58%	65%	62%
Recreation Days:	215	203	210
Days Per Animal:	15.4	13.5	14
Males per 100 Females	40	59	
Juveniles per 100 Females	29	36	

Population Objective (± 20%) :	1350 (1080 - 1620)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-22.7%
Number of years population has been + or - objective in recent trend:	10
Model Date:	02/17/2015

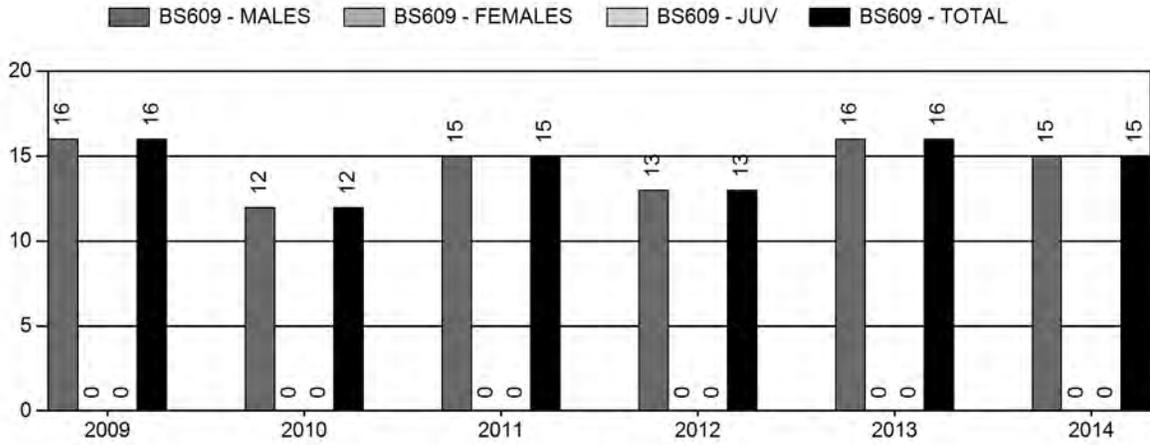
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	6%	6%
Juveniles (< 1 year old):	0%	0%
Total:	1%	1%
Proposed change in post-season population:	0%	-4%

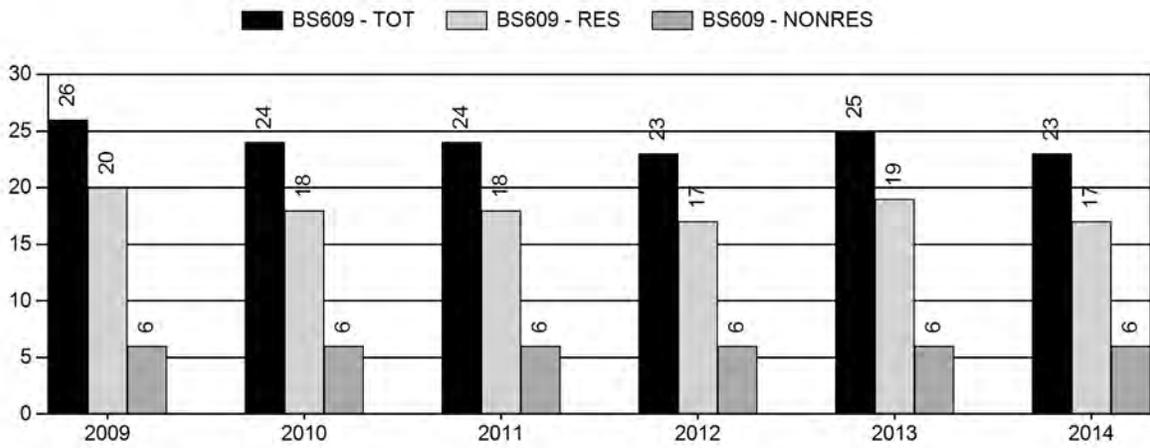
Population Size - Postseason



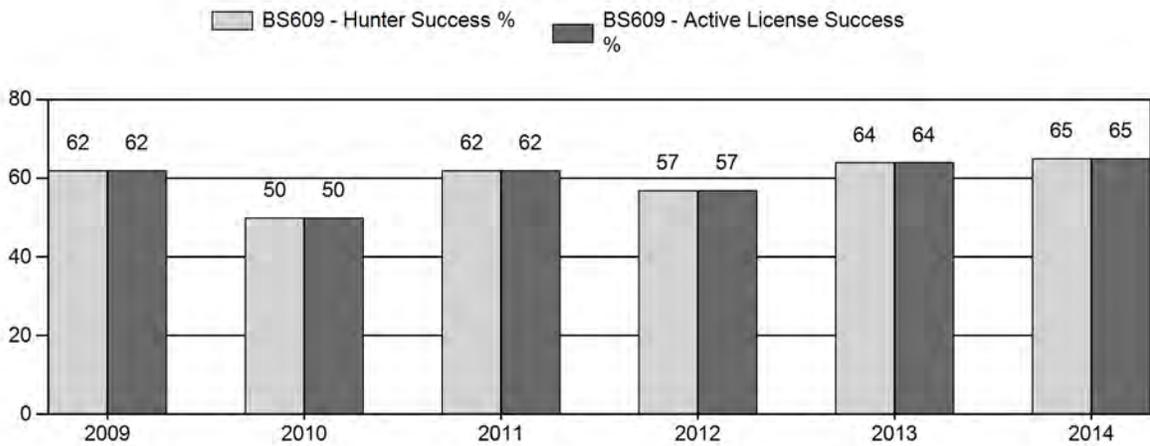
Harvest



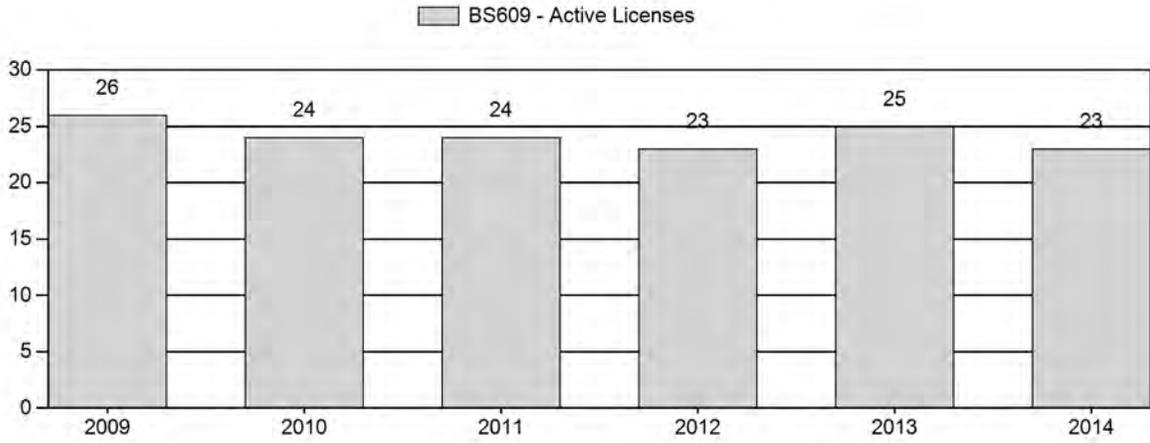
Number of Hunters



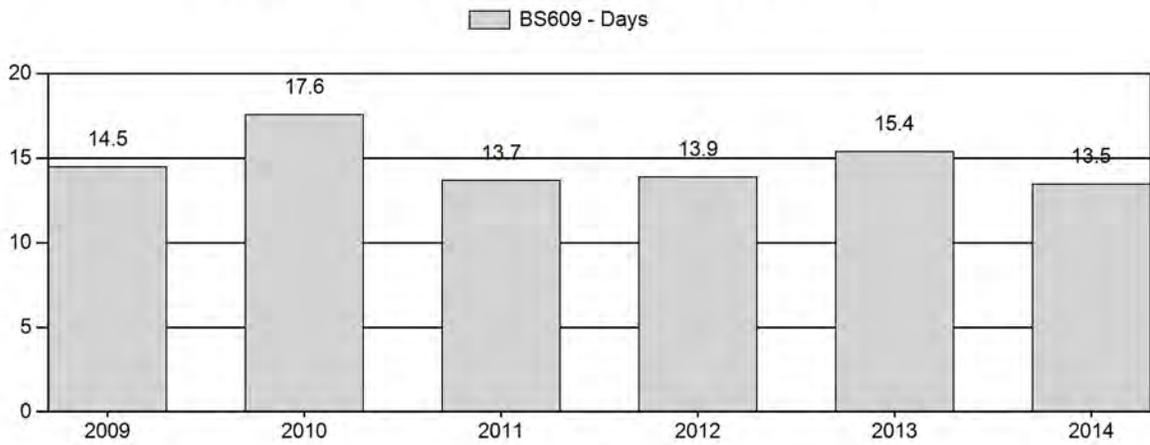
Harvest Success



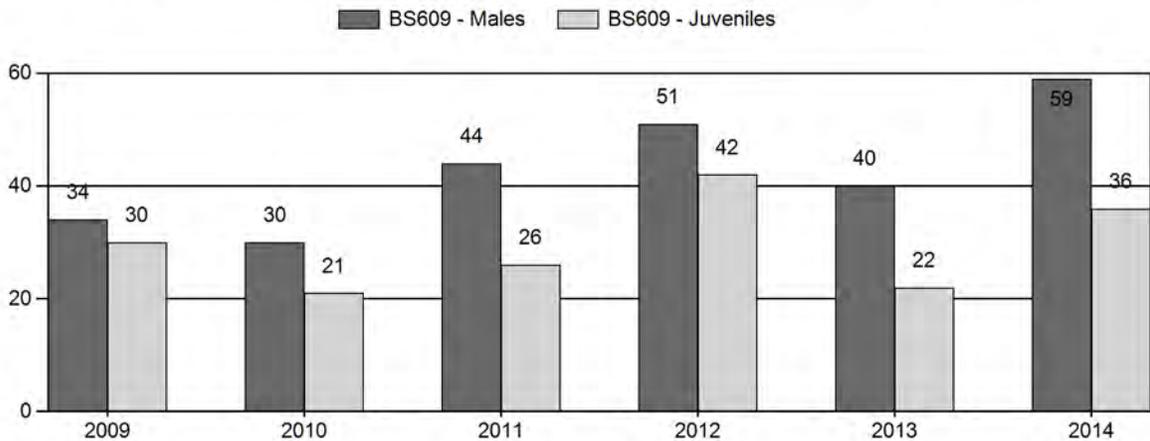
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Bighorn Sheep Herd BS609 - WHISKEY MOUNTAIN

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	888	1	26	119	21%	348	61%	106	18%	573	264	0	7	34	± 3	30	± 3	23
2010	825	0	0	77	20%	255	66%	53	14%	385	240	0	0	30	± 4	21	± 3	16
2011	874	15	83	98	26%	223	59%	58	15%	379	328	7	37	44	± 5	26	± 4	18
2012	1,010	14	149	163	26%	320	52%	133	22%	616	496	4	47	51	± 4	42	± 3	28
2013	941	16	79	95	24%	240	62%	53	14%	388	365	7	33	40	± 5	22	± 3	16
2014	1,044	16	111	127	30%	215	51%	78	19%	420	559	7	52	59	± 7	36	± 5	23

**2015 HUNTING SEASONS
WHISKEY MOUNTAIN BIGHORN SHEEP (BS 609)**

Hunt Area	Type	Season Dates		Quota	Limitations
		Opens	Closes		
8, 23	1	Sep. 1	Oct. 15	12	Limited quota; any ram
9	1	Aug. 15	Oct. 15	4	Limited quota; any ram
10	1	Aug. 15	Oct. 15	8	Limited quota; any ram
Archery					
8, 23		Aug. 15	Aug. 31		Limited quota; refer to license type
9		Aug. 1	Aug. 14		Limited quota; refer to license type
10		Aug. 1	Aug. 14		Limited quota; refer to license type

Hunt Area	Type	Quota change from 2014
Total		

Management Evaluation

Current Management Objective: 1,350

Management Strategy: Special

2014 Postseason Population Estimate: ~1,000

2015 Proposed Postseason Population Estimate: ~1,000

Management Issues

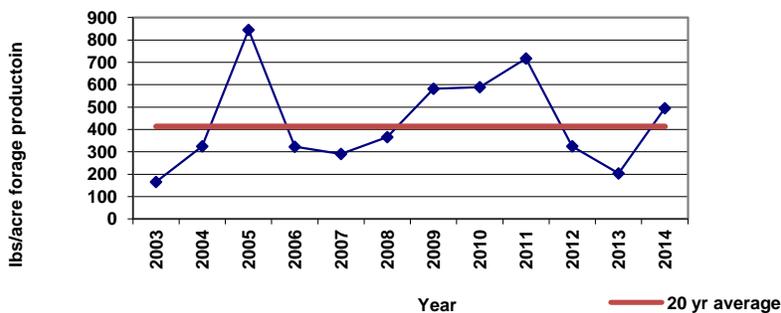
The post-season population objective for this herd is 1,350 sheep and it is classified as special management. The current objective was originally adopted in 2002. In 2013 the Department conducted an objective evaluation and review including a public meeting. The objective was left at 1,350 following the 2013 review. The herd has been below objective for over two decades following a catastrophic, all-age pneumonia die-off in 1991. The population continues to languish below objective primarily due to low recruitment associated with persistent lamb pneumonia. The Department collected blood samples from 47 sheep in 2012 and 22 sheep in 2014 to document the presence and frequency of various pathogens (see Appendix I for a summary of the 2014 results).

Habitat/Weather

The Whiskey Mountain bighorn sheep herd occupies the northern Wind River Mountain Range. The majority of sheep winter at sites located along the very northern tip of the Wind River Mountains. Some sheep winter at high elevation along the continental divide and scattered throughout the west slope of the mountains. Sheep disperse from the wintering sites to populate the entire northern portion of the Wind River Mountains in the summer and fall. Much of the sheep habitat is located in wilderness areas and remains undisturbed. Important winter range sites in the upper Wind River Valley are part of the Department's Whiskey Mountain WHMA and are also relatively undisturbed.

Despite protection from development and disturbance, the condition of key winter range throughout this herd unit is still subject to change based on environmental conditions. In 2012 and 2013, sheep range throughout the herd unit was impacted by extreme drought. Casual observations both years suggest vegetation production was quite low at high elevation summer range. Based on data from vegetation monitoring transects, herbaceous production on winter range in both 2012 and 2013 was well below average for the area (Fig. 1). In contrast to the previous 2 years, vegetation production throughout the herd unit was quite good in 2014. Average production across all monitoring sites on winter range was 495 lbs/acre and above the 20 year average of 413 lbs/acre. Again, based on casual observations, it appeared forage production was also good at high elevation summer range sites. Body condition of sheep entering winter appeared to be very good.

Figure 1. Annual, herbaceous forage production on bighorn sheep winter range



Field/Harvest Data/Population

Lamb recruitment was outstanding for this population with a lamb/ewe ratio of 36/100 in 2014 (Fig. 2). The high lamb/ewe ratio can be attributed at least in part to the excellent forage conditions throughout the year. Although low lamb recruitment has been a persistent problem in this herd, the lamb/ewe ratio for 5 of the last 10 years has been above 25/100. Average recruitment is still well below the levels typically seen prior to the 1990-91 pneumonia die-off

but the herd has had 2 good recruitment years in the last 3. Despite low recruitment for much of the last 20 years, the ram/ewe ratio has remained fairly stable over that time period. Since 2011 the ram/ewe ratio steadily increased and peaked at 59/100 in 2014 (Fig. 3). The higher ram/ewe ratios over the last several years can in part be attributed to good recruitment in both 2009 and 2012.

A population model developed in 2012 behaved predictably with the addition of data in 2013 and 2014. For 2014, the TSJ/CA version of the model was selected to track the population. While this model had a higher AIC value than 2 other models, it was the only version to produce reasonable population estimates. Both the CJ/CA and SCJ/SCA models produce estimates of less than 500 sheep annually for the past 10 years and show a declining population. Many of the estimates produced by these 2 models are well below the number of sheep personnel classified on a given year. Indications are the TSJ/CA model does a fair job of simulating the population. The model simulates a long, steady decline in the sheep population from the late 1990's through 2010. The population then increased in 2012 following a good recruitment year. Overall, the model indicates the population has been stable over the past 4 years. The 2014 population estimate is approximately 1,000 sheep.

Harvest success in the herd unit was 65% in 2014 which was nearly identical to success of 64% in 2013. This included success rates of 75% in hunt area 9, 88% in hunt area 10, and 45% in hunt areas 8/23. Area 9 success was significantly higher than it has been over the past several years, but success rates in the other areas were close to 2013 rates. The average age of rams harvested did change in each hunt area in 2014 but none of the changes are indicative of any demographic trends (Fig. 4). The most notable change is the significant decline in age of harvested rams in hunt area 9. On closer inspection, this decline is due to the fact only 1 ram was killed in each of 2012 and 2013. Both were older rams, thus the high age of harvest for those years. The average age of 6 for rams harvested in 2014 is well within the historic range for this area. Areas 10, 8/23 saw minor decreases and increases in average harvest age respectively. Neither change is remarkable as the average harvest age for these areas is within the historical range.

Figure 2. Ten-year recruitment history in the Whiskey Mountain Bighorn Sheep Herd

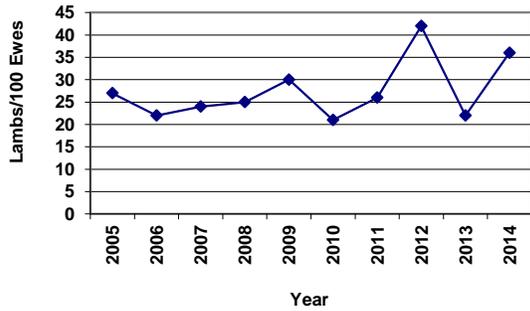


Figure 3. Ten-year history of the ram/ewe ratio in the Whiskey Mountain Bighorn Sheep Herd.

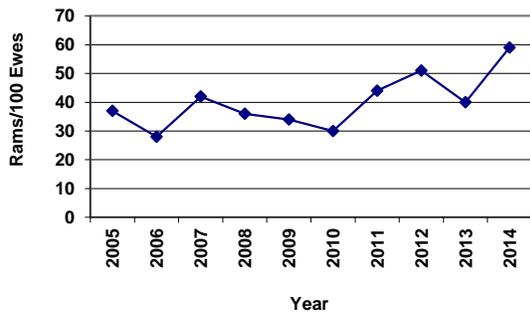
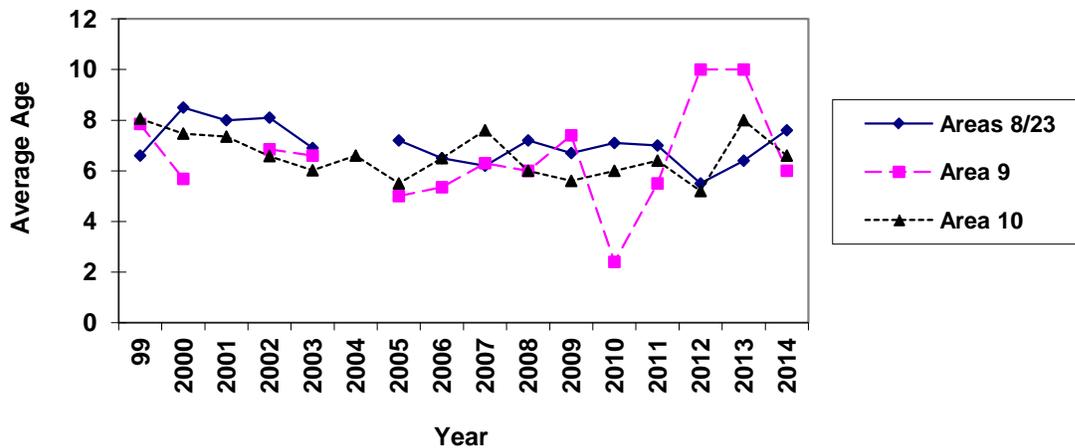


Figure 4. Average age of rams harvested in the Whiskey Mountain Bighorn Sheep Herd.



Management Summary

Overall, indications are there was little demographic change in this population over the past year. This population remains well below objective. Given no indications of significant population

growth, the 2015 hunting season is unchanged. With 24 licenses issued throughout the herd unit, hunters are expected to harvest 15 rams in 2014. The population is expected to remain stable in 2015 at about 1,000 animals.

INPUT
 Species: Bighorn Sheep
 Biologist: Greg Anderson
 Herd Unit & No.: Whiskey Mountain
 Model date: 02/17/15

Clear form

MODELS SUMMARY		Relative AICc	Fit	Notes
CJ,CA	Constant Juvenile & Adult Survival	65	56	
SC,J,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	66	56	
TS,J,CA	Time-Specific Juvenile & Constant Adult Survival	159	37	

Year	Posthunt Population Est. Field Est	Trend Count	Predicted Prehunt Population			Predicted Posthunt Population			Total	Objective
			Juveniles	Total Males	Females	Juveniles	Total Males	Females		
1993			190	273	724	186	223	724	1137	
1994			161	243	702	186	223	702	1049	
1995			127	243	717	186	223	717	1061	
1996			181	250	709	186	223	709	1113	
1997			197	286	732	186	223	732	1188	
1998			136	279	714	186	223	714	1100	
1999			201	271	698	186	223	698	1140	
2000			112	268	687	186	223	687	1031	
2001			109	235	653	186	223	653	965	
2002			63	209	621	186	223	621	865	
2003			154	194	598	186	223	598	921	
2004			164	186	580	186	223	580	910	
2005			159	208	587	186	223	587	937	
2006			125	207	571	186	223	571	882	
2007			140	227	580	186	223	580	925	
2008			142	216	560	186	223	560	903	
2009			165	213	543	186	223	543	903	
2010			110	212	531	186	223	531	841	
2011			140	232	537	186	223	537	893	
2012			231	261	556	186	223	556	1034	
2013			123	273	552	186	223	552	934	
2014			205	289	566	186	223	566	1044	
2015			164	291	561	186	223	561	1000	
2016										
2017										
2018										
2019										
2020										
2021										
2022										
2023										
2024										
2025										

Survival and Initial Population Estimates

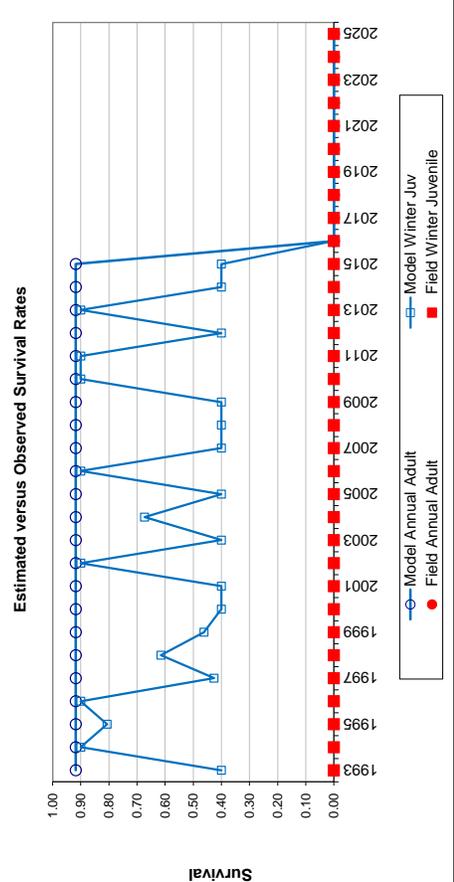
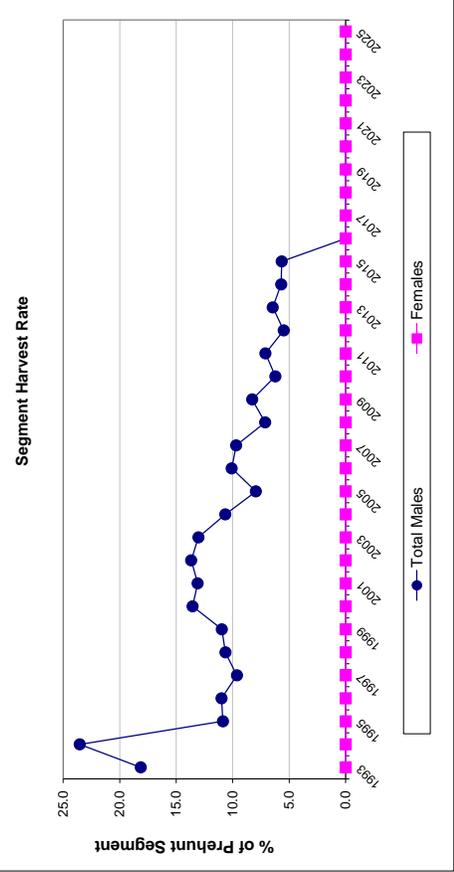
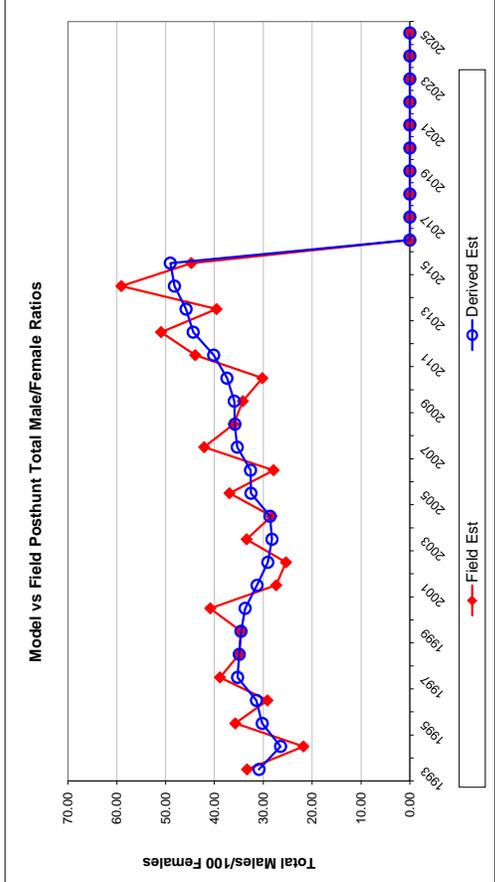
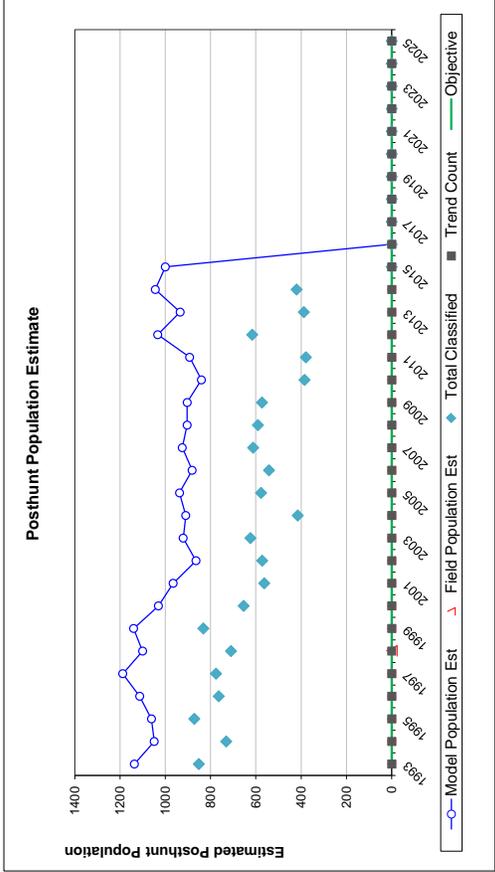
Year	Winter Juvenile Survival Rates		Annual Adult Survival Rates	
	Model Est	Field Est SE	Model Est	Field Est SE
1993	0.40		0.92	
1994	0.90		0.92	
1995	0.81		0.92	
1996	0.90		0.92	
1997	0.43		0.92	
1998	0.61		0.92	
1999	0.46		0.92	
2000	0.40		0.92	
2001	0.40		0.92	
2002	0.90		0.92	
2003	0.40		0.92	
2004	0.67		0.92	
2005	0.40		0.92	
2006	0.90		0.92	
2007	0.40		0.92	
2008	0.40		0.92	
2009	0.40		0.92	
2010	0.90		0.92	
2011	0.90		0.92	
2012	0.40		0.92	
2013	0.90		0.92	
2014	0.40		0.92	
2015	0.40		0.92	
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				

Parameters:	Optim cells
Adult Survival =	0.918
Initial Total Male Pop/10,000 =	0.022
Initial Female Pop/10,000 =	0.072

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

Year	Classification Counts						Harvest						
	Juvenile/Female Ratio			Total Male/Female Ratio			Juv	Yr1 males	2+ Males	Females	Total Harvest	Segment Harvest Rate (% of Prehunt Segment)	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE						Total Males	Females
1993		26.22	2.49	30.87	33.33	2.88	0	0	45	0	45	18.1	0.0
1994		22.97	2.37	26.46	21.78	2.29	0	0	52	0	52	23.5	0.0
1995		17.78	1.92	30.22	35.74	2.92	0	0	24	0	24	10.9	0.0
1996		25.51	2.55	31.40	29.15	2.76	0	0	25	0	25	11.0	0.0
1997		26.92	2.70	35.27	38.89	3.40	0	0	25	0	25	9.6	0.0
1998		19.09	2.22	34.92	34.92	3.20	0	0	27	0	27	10.6	0.0
1999		28.88	2.70	34.58	34.58	3.02	0	0	27	0	27	11.0	0.0
2000		16.35	2.14	33.72	40.87	3.72	0	0	33	0	33	13.6	0.0
2001		16.62	2.23	31.29	27.37	2.99	0	0	28	0	28	13.1	0.0
2002		10.19	1.63	29.08	25.36	2.74	0	0	26	0	26	13.7	0.0
2003		25.77	2.88	28.23	33.42	3.37	0	0	23	0	23	13.0	0.0
2004		28.30	3.70	28.63	28.30	3.70	0	0	18	0	18	10.7	0.0
2005		26.99	3.12	32.53	36.93	3.79	0	0	15	0	15	7.9	0.0
2006		21.82	2.71	32.62	27.90	3.14	0	0	19	0	19	10.1	0.0
2007		24.18	2.86	35.34	42.12	4.03	0	0	20	0	20	9.7	0.0
2008		25.41	2.95	35.83	36.07	3.66	0	0	14	0	14	7.1	0.0
2009		30.46	3.38	35.95	34.20	3.63	0	0	16	0	16	8.3	0.0
2010		20.78	3.14	37.45	30.20	3.93	0	1	11	0	12	6.2	0.0
2011		26.01	3.83	40.17	43.95	5.33	0	0	15	0	15	7.1	0.0
2012		41.56	4.29	44.36	50.94	4.90	0	0	13	0	13	5.5	0.0
2013		22.08	3.35	45.82	39.58	4.80	0	0	16	0	16	6.5	0.0
2014		36.28	4.80	48.20	59.07	6.61	0	0	15	0	15	5.7	0.0
2015		29.34	3.88	49.05	44.75	5.11	0	0	15	0	15	5.7	0.0
2016													
2017													
2018													
2019													
2020													
2021													
2022													
2023													
2024													
2025													

FIGURES



Comments:

END

Appendix I. Results from 2014 sheep disease sampling in Hunt Areas 10 and 22.

In 2014, Department personnel sampled a total of 30 bighorn sheep in the Dubois area. The largest number of biological samples (22 sheep sampled) came from Torrey Rim in conjunction with a trapping operation in the Whiskey Mountain Bighorn Sheep Herd. In addition, Department employees placed GPS collars on five sheep wintering on Dennison Mountain and Spring Mountain. The main purpose for the collars was to track sheep movement in the southern Absaroka mountains over the summer, but blood samples were taken as well. Finally, in March, personnel sampled 3 sheep in the Torrey Rim group with what appeared to be skin lesions caused by scabies. These 3 sheep were darted to check for mites and administer anti-parasite medication. While they were immobilized personnel also took blood samples.

As seen in Table 1, all 30 sheep sampled had *B. trehalosi*. In 2012, 46 of 47 sheep sampled had *B. trehalosi*. Based on this information, it is likely all the sheep sampled in 2012 had this bacteria but the lab was unable to isolate it in one sheep. Clearly this bacteria is ubiquitous in sheep around Dubois. Again, it is likely fairly benign, but the 2 leukotoxic + samples are a concern.

Table 1. Bacteria isolated from samples taken from sheep near Dubois in winter, 2014.

	<i>Bibersteinia trehalosi</i>		<i>Pasturella multocida</i>	<i>Mannheimia spp.</i>		<i>Mycoplasma ovipneumoniae</i>
		leukotoxic +			leukotoxic +	
# of sheep with bacteria	30	2	3	13	12	12

In contrast, *P. multocida* was present at a fairly low level in only 3 of the 30 sheep. This particular bacteria was also present at a very low level in 2012 and found in only 2 of 47 sheep sampled.

Close to 50% of the sheep sampled had a Mannheimia species. As mentioned previously, many researchers have been focusing on *M. haemolytica* in the belief it may be a primary culprit in catastrophic all-age die-offs. It is interesting to note, our lab folks continue to isolate other Mannheimia bacteria in addition to *M. haemolytica*. Speculation is our sheep have *Mannheimia glucosida*, but we do not have the analytical tools to identify this bacteria consistently. In 2012, 1 of the 47 samples was identified to have *M. glucosida*. Of note, 12 of the 13 samples with Mannheimia bacteria were leukotoxic +.

Finally, 12 of 30 sheep sampled had *Mycoplasma ovipneumoniae*. This was a little higher prevalence rate than in 2012 when 14 of 47 sheep were found to be infected.

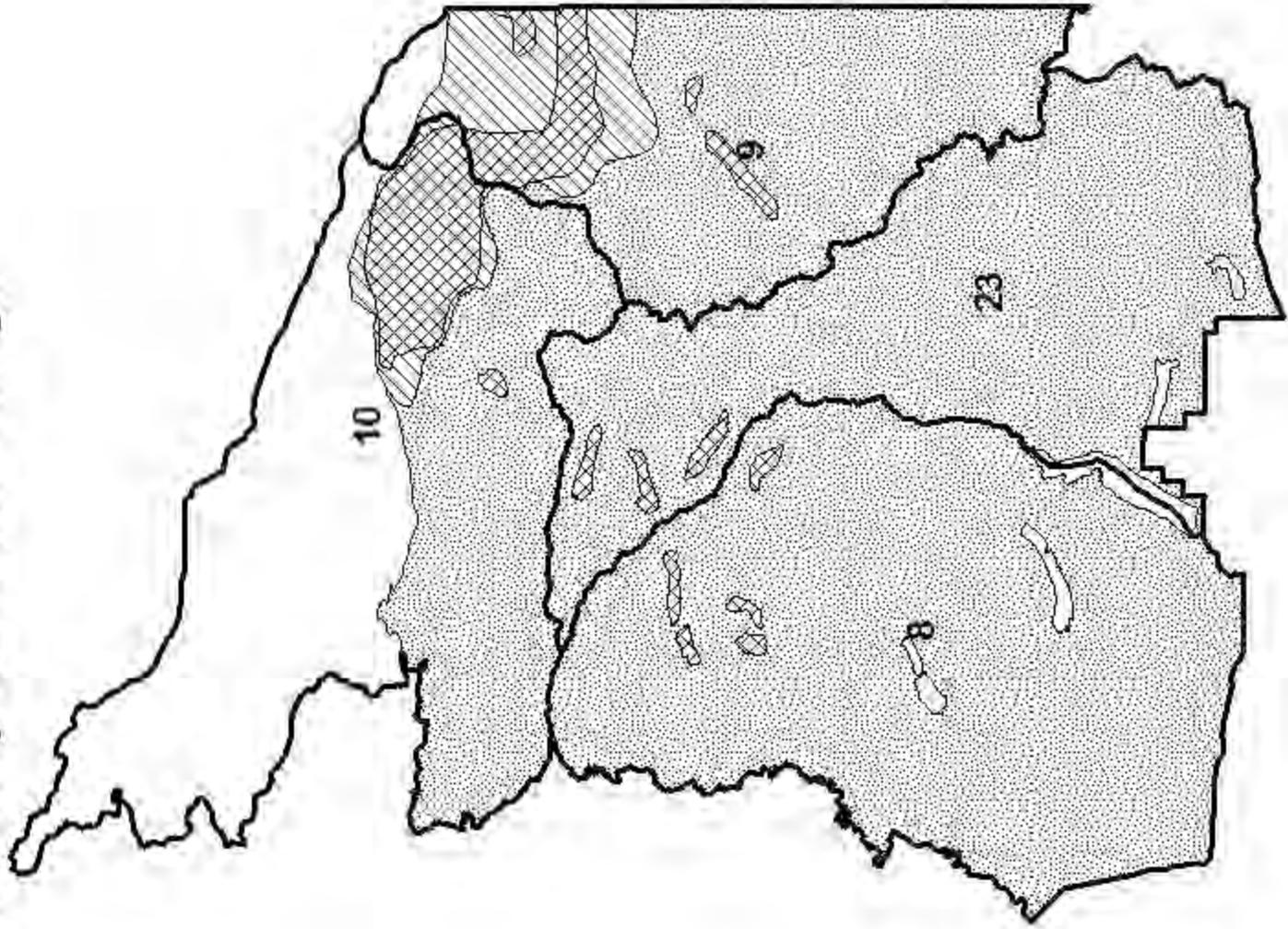
To summarize, the Whiskey Mountain sheep are infected with a number of bacterial pathogens likely connected to pneumonia outbreaks. It appears 2 bacteria of great concern (*Mannheimia spp.* and *Mycoplasma ovipneumoniae*) are present at fairly high levels. Also of note, high levels of *Mannheimia haemolytica* were not found, but it appears we have a different species of Mannheimia present in our sheep. Speculation is our sheep have *M. glucosida*. Of the Mannheimia bacteria present, a fair number appear to be leukotoxic +.

None of this is particularly surprising given the history of the Whiskey Mountain sheep herd. Also, the results from 2014 are fairly similar to those from 2012. The more we know about the prevalence of pathogens in our sheep, the more likely we will be able to identify proactive disease management in the future.

On a positive note, we did not find any *Psoroptes* mites (scabies) in the sheep that had skin lesions or in any of the sheep we trapped. Our veterinarians are not sure the cause of the lesions but it seems to be affecting only a few animals. Thus we will not have to battle a scabies outbreak in addition to pneumonia over the next year.

**Whiskey Mountain Bighorn Sheep Seasonal Range
Hunt Areas 8, 9, 10, 23
Revised 2012**

-  CRUWYL
-  OUT
-  SSF
-  WYL



2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep

PERIOD: 6/1/2014 - 5/31/2015

HERD: BS615 - FERRIS-SEMINOE

HUNT AREAS: 17, 26

PREPARED BY: GREG HIATT

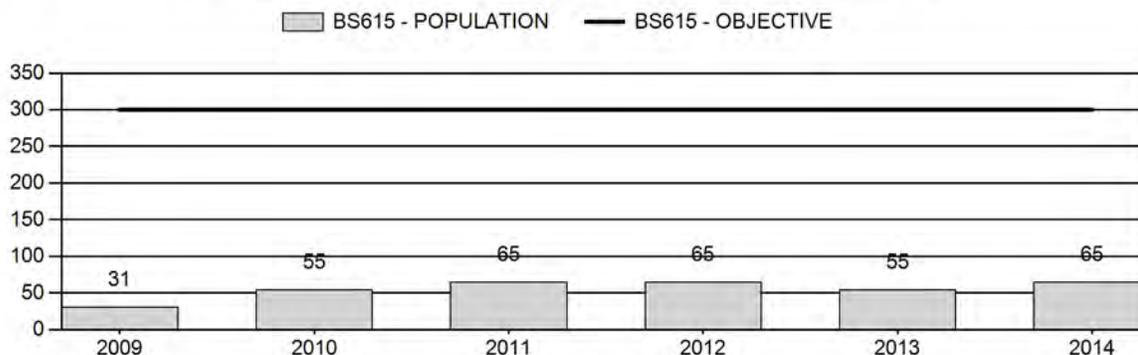
	<u>2009 - 2013 Average</u>	<u>2014</u>	<u>2015 Proposed</u>
Population:	54	65	100
Harvest:	0	1	1
Hunters:	0	1	1
Hunter Success:	0%	100%	100 %
Active Licenses:	0	1	1
Active License Success:	0%	100%	100 %
Recreation Days:	1	1	4
Days Per Animal:	0	1	4
Males per 100 Females	38	0	
Juveniles per 100 Females	10	0	

Population Objective ($\pm 20\%$) :	300 (240 - 360)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-78.3%
Number of years population has been + or - objective in recent trend:	30
Model Date:	None

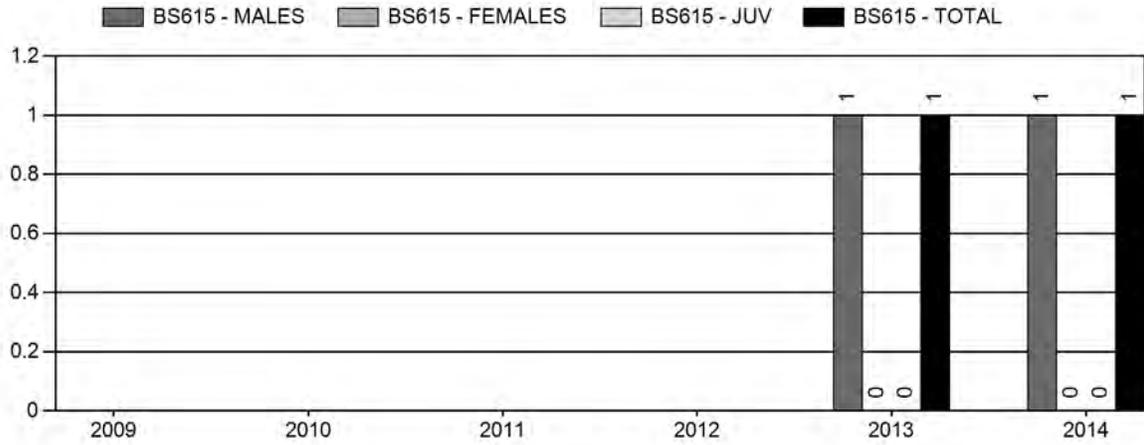
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	6%	5%
Juveniles (< 1 year old):	0%	0%
Total:	0%	0%
Proposed change in post-season population:	18%	54%

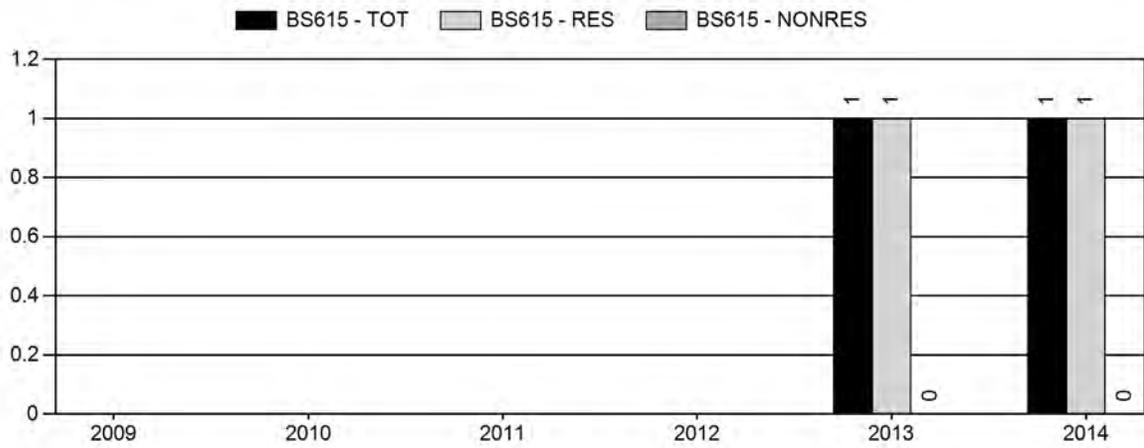
Population Size - Postseason



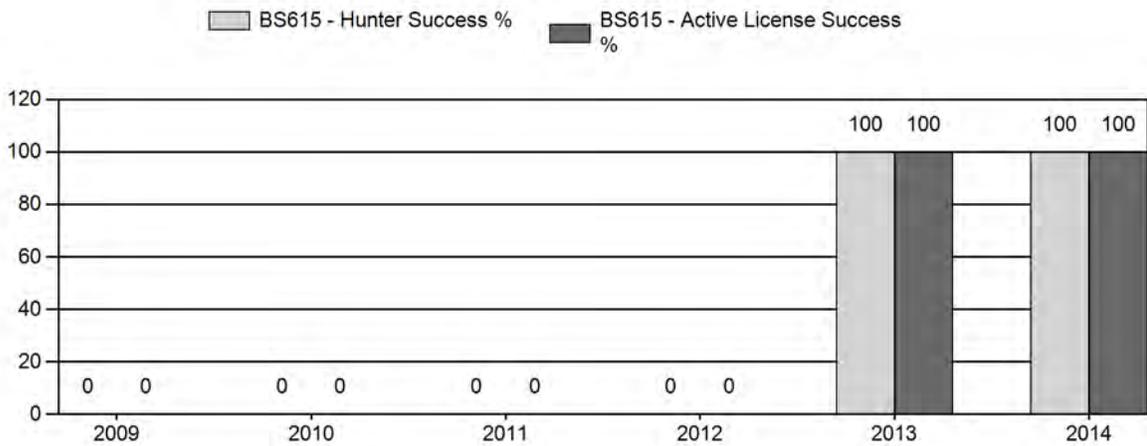
Harvest



Number of Hunters



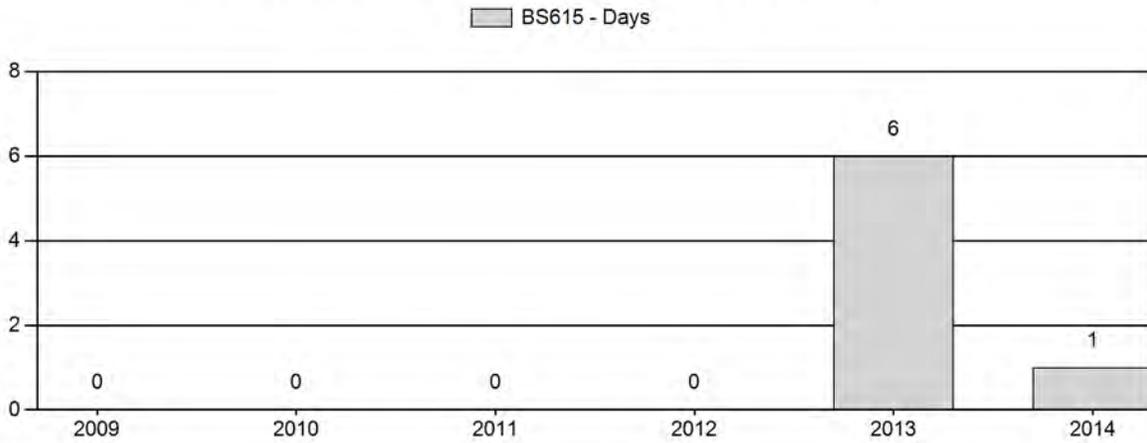
Harvest Success



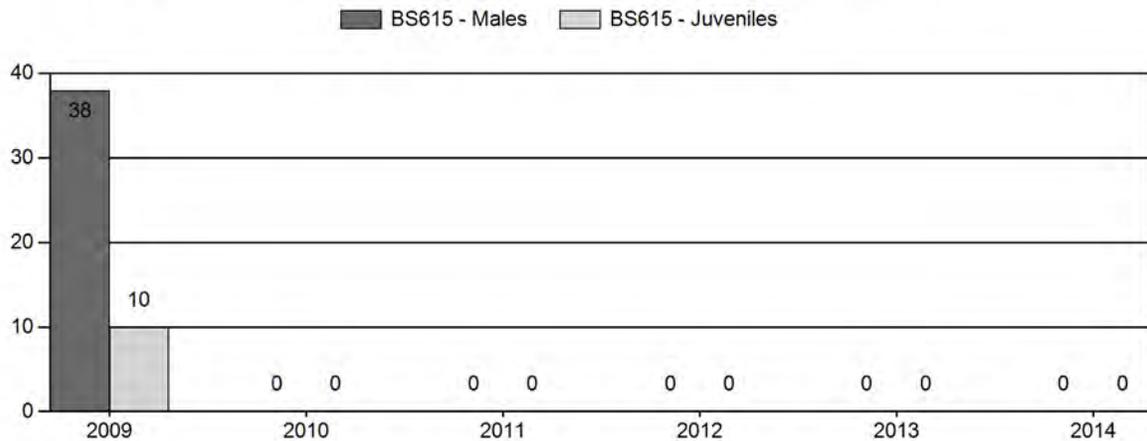
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Bighorn Sheep Herd BS615 - FERRIS-SEMINOE

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	31	2	6	8	26%	21	68%	2	6%	31	0	10	29	38	±0	10	±0	7
2010	55	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2011	65	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2012	65	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2013	55	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0
2014	65	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	±0	0	±0	0

**2015 HUNTING SEASONS
FERRIS-SEMINOE BIGHORN SHEEP HERD (BS615)**

Hunt Area	Type	Dates of Seasons		Quota	Limitations
		Opens	Closes		
17	1	Sep. 1	Oct. 31	1	Limited quota; any ram (resident only)
Archery 17		Aug. 15	Aug. 31		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2014
17	1	0
Total	1	0

Management Evaluation

Current Management Objective: 300

Management Strategy: Special

2014 Postseason Population Estimate: ~65

2015 Proposed Postseason Population Estimate: ~100

The management objective for the Ferris-Seminole Bighorn Sheep Herd Unit is a post-season population objective of 300 sheep, established in 1984. As with all bighorn sheep herds, management strategy is “special” management. The objective and management strategy were last publicly reviewed in 1994.

Herd Unit Issues

Bighorn sheep were first reintroduced into the Ferris Mountains in the late 1940's with two small transplants, one of which consisted of desert bighorns from Nevada. Neither produced a viable population. Slightly larger transplants were made into the Seminole Mountains in the 1950's and 1960's, but numbers never increased appreciably. A total of one hundred bighorn sheep from the Whiskey Mountain herd were released on the Morgan Creek Unit in the Seminole Mountains in 1978 and 1980 and, after initial losses and dispersal, a reproducing population was established. Survival of transplanted animals was high, and animals were successfully recruited into the population, but growth rate for the herd was low. To expand the herd's size and range, another 100 bighorn sheep from Whiskey Mountain were released in the Muddy Creek drainage of the Ferris Mountains in January of 1985. Dispersal was high, but roughly 40 to 60 of the sheep remained in the herd unit. As with the Seminole transplant, survival of transplanted animals was good.

Poor lamb survival during summer months was a major problem for this reintroduced herd, in both the Seminole and Ferris portions, with few yearling bighorns recruited each year. Three

summers of intensive monitoring identified poor forage quality as the most likely cause of lamb loss. Few losses to predation were found, with numerous lambs dying untouched on lambing grounds. No herd threatening diseases were identified. The source population for these transplanted sheep was the Whiskey Mountain herd by Dubois, where sheep are adapted to high elevation summer habitats and lambled in the first half of June. In the Ferris and Seminoe Mountains, sheep were in essentially low elevation year-long range where much of the lush spring growth is cured and gone by the time lambs were born. Low recruitment failed to replace natural mortality and the herd steadily declined. By 2003, there were estimated to be fewer than 15 sheep remaining in this population.

Forty low elevation, non-migratory bighorn sheep from Oregon and 12 surplus sheep from the Devil's Canyon herd in Wyoming were transplanted into the Seminoe Mountains in 2009 and 2010. These animals typically lamb 4-6 weeks earlier than the high-elevation migratory sheep brought in from Dubois and lambing appears to be better synchronized with spring green-up for the Seminoe and Ferris habitats. About a half dozen of these sheep established themselves in the Bennett Mountains east of Seminoe Reservoir and have successfully reproduced and recruited young animals. Habitats there appear to be suitable for bighorns, but the herd unit boundary will need to be expanded to encompass these animals.

Weather

Drought conditions in 2012 and 2013 continued into the first half of 2014, with significant precipitation not arriving until the last quarter of July. Precipitation during the following three months produced good vegetative growth, but was probably too late to significantly improve lamb survival. Condition of bighorn sheep going into the winter is expected to have been good. Thirteen sheep were captured for disease sampling and monitoring on 13 February 2015 and all were in good physical condition. The 2014-15 winter had numerous bitter cold spells, coupled with unusually warm periods, but little significant snowfall until late February.

Habitat

Decades without fire resulted in decadent shrub stands encroached by conifer in this herd unit. Severe drought reduced the quantity and quality of forage in 2012 and 2013. Two browse transects have been established in this herd unit, but one was burned by fire in 2012 and the other was not read in 2014. No transects have been established for herbaceous forage.

Over the past several years the Rawlins BLM has implemented prescribed burns in the Seminoe and Ferris Mountains, partly to address conifer encroachment while also rejuvenating decadent mountain mahogany and bitterbrush stands. In the summer of 2012, two large wildfires in the Seminoe Mountains and the eastern Ferris Mountains burned thousands of acres, including occupied bighorn habitat. In addition to opening habitats adjacent to rocky escape cover, the prescribed burns should benefit bighorn sheep productivity with herbaceous cover and return of young vigorous shrub complexes. Forage benefits from the wildfires will be longer term.

The Seminoe Fire burned over 3,800 acres in the Seminoe Mountains including areas within Morgan Creek WHMA. As in 2012 and 2013, the Rawlins BLM again coordinated and funded aerial application of Plateau® in 2014 to mitigate cheatgrass spread on BLM and WGFDF managed areas within the fire perimeter. The wildfire enveloped several previously planned

prescribed burns, although not with the desired prescriptions. Plans for additional prescribed fires in the Seminole Mountains, particularly on the Morgan Creek WHMA, have been accelerated to take advantage of the secure fire breaks provided by the 2012 wildfire.

Field Data

Obtaining reliable classification samples from small populations is difficult because, statistically, the majority of the population must be included in the sample to have any confidence in the resulting ratios. These low elevation sheep do not congregate in restricted, well-defined winter ranges like many herds in high mountain valleys, having instead the option to move wherever winds have exposed forage. All telemetry collars have dropped off these sheep, so bands are more difficult to locate.

Fifty-one bighorn sheep were found during helicopter surveys for mule deer in the Seminole Mountains in December 2014, including at least 5 lambs. Twenty-four sheep were found on the south side of the Seminoes on Sheep Ridge, near the Seminole Road. The other 27 were together in a draw below power lines immediately west of Kortez Canyon, so not all could be classified. The survey did confirm only 5 lambs out of the 51 bighorn sheep. The survey did not include the Bennett Mountains to the east, which are presumed to number ~12-15 sheep.

Harvest Data

The single resident hunter in this area harvested a 4-year old ram on the opening day of the regular season. It was not eartagged, and is presumed to have been born in the Seminole Mountains. The hunter reported a single day of hunting, compared to six days for the single resident hunter in 2013. As in 2013, the ram was harvested from the ridges on the south face of the Seminole Mountains.

Population

No model exists for this small herd, and with limited classification data, one is not likely in the near future. Current population estimates are based upon limited observations of bands in the Seminole Mountains. Based upon known mortality of telemetered bighorns, losses during the 2012-13 winter were probably high, and the herd was estimated to be between 60 to 70 sheep at post-hunt 2014, roughly the same size as after the 2010 transplants. Lamb production did not appear to be high in 2014, with five lambs confirmed in the northern band along the Miracle Mile and two in the band on the southern slopes, so growth of the herd in 2014 was low. Recovery of burned areas should improve the quantity and quality of forage available for gestating and lactating ewes, despite drought conditions, and lamb production is expected to improve.

Twenty-five low-elevation, non-migratory bighorn sheep from the Devil's Canyon herd near Lovell were released in the Seminole Mountains west of Seminole State Park on 7 March 2015. The release consisted of 21 ewes, 1 male lamb and three young rams. All but the lamb and one young ram were marked with telemetry collars, 13 VHS collars and ten GPS collars that will drop off for data recovery in May 2017. A few of these crossed Seminole Reservoir into the Bennett Mountains again, with the rest appearing to settle in the Seminoes in the same habitats occupied by earlier transplants. Assuming most of these sheep remain in the Seminole Mountains,

as with the previous three transplants, and adding recruitment from the 2015 lamb crop, the herd is expected to reach 100 animals by fall of 2015. This supplemental release should essentially make up for losses during the 2012-13 winter.

Management Evaluation

The population was first hunted in 1983, with two rams being harvested by four hunters. Minimal hunts with only four licenses were held each year through 1989, with a total of 21 rams being harvested by 28 hunters. Illegal killing of both rams and ewes was a problem during this period, but decline of the herd was attributed to lambing of the high elevation sheep used to re-establish this population being asynchronous with plant phenology in these lower mountain ranges. With better adapted “low-elevation sheep” introduced into this herd, that issue appears to be resolved.

Non-consumptive use of this herd is high, particularly in the Seminole Mountains. A single resident license for “any ram” was issued in both 2013 and 2014. Department and BLM personnel, and the 2013 and 2014 hunters, all report seeing at least 8-10 rams in the Seminole Mountains, several of which are nearing true trophy ageclasses. With these numbers of trophy animals available, a limited harvest by a single license is warranted again in 2015.

Opening and closing dates are the same used in this herd during the 1980s, the same as in 2013 and 2014 and comparable to most other sheep areas in the state. Archery season dates are standard for most areas.

Initial indications are the low-elevation, non-migratory sheep are reproducing well in the Seminole and Bennett Mountains, and consideration should be given to transplanting similar sheep into the Ferris Mountains to expand their range. The 2011 prescribed natural fire and 2012 wildfire on the eastern end of the Ferris Mountains should provide improved habitats for bighorn.

Bighorn Sheep
Ferris (615)
08/1999

