2015 - JCR Evaluation Form

SPECIES: Bighorn Sheep

PERIOD: 6/1/2015 - 5/31/2016

HERD: BS609 - WHISKEY MOUNTAIN

HUNT AREAS: 8-10, 23

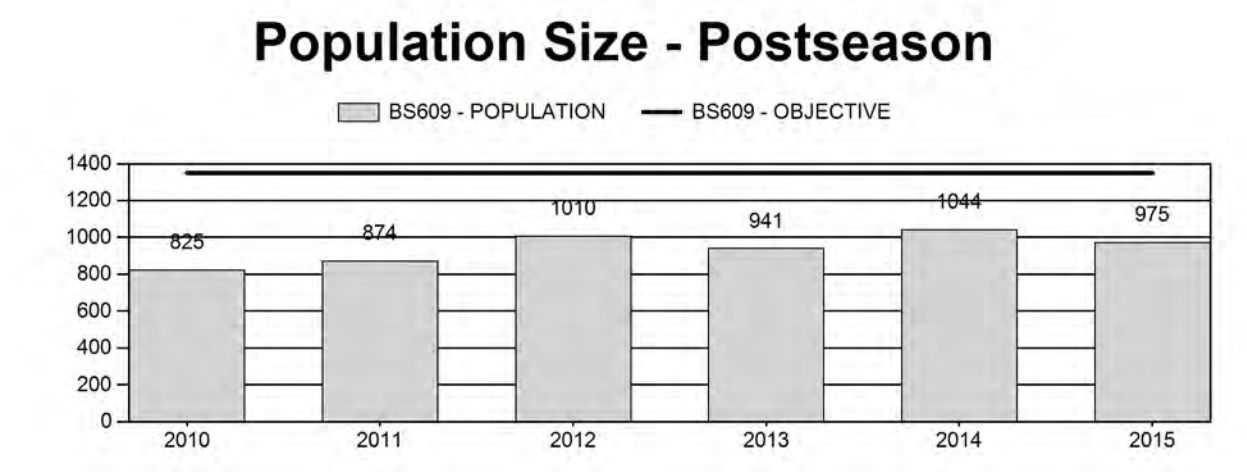
PREPARED BY: GREG ANDERSON

	2010 - 2014 Average	2015	2016 Proposed
Population:	939	975	969
Harvest:	14	16	16
Hunters:	24	21	24
Hunter Success:	58%	76%	67%
Active Licenses:	24	21	24
Active License Success:	58%	76%	67%
Recreation Days:	209	213	220
Days Per Animal:	14.9	13.3	13.8
Males per 100 Females	46	47	
Juveniles per 100 Females	30	25	

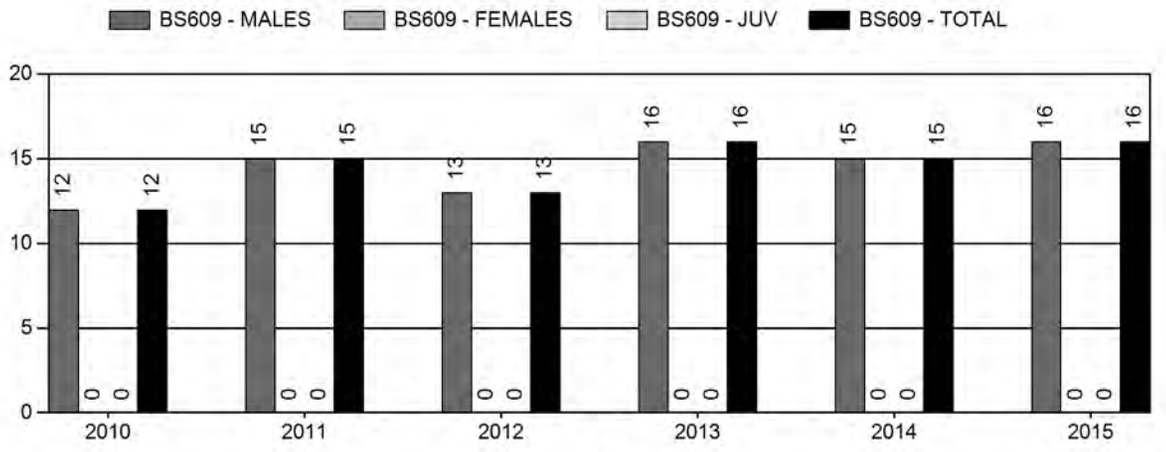
Population Objective (± 20%) :	1350 (1080 - 1620)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-27.8%
Number of years population has been + or - objective in recent trend:	10
Model Date:	2/16/2016

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

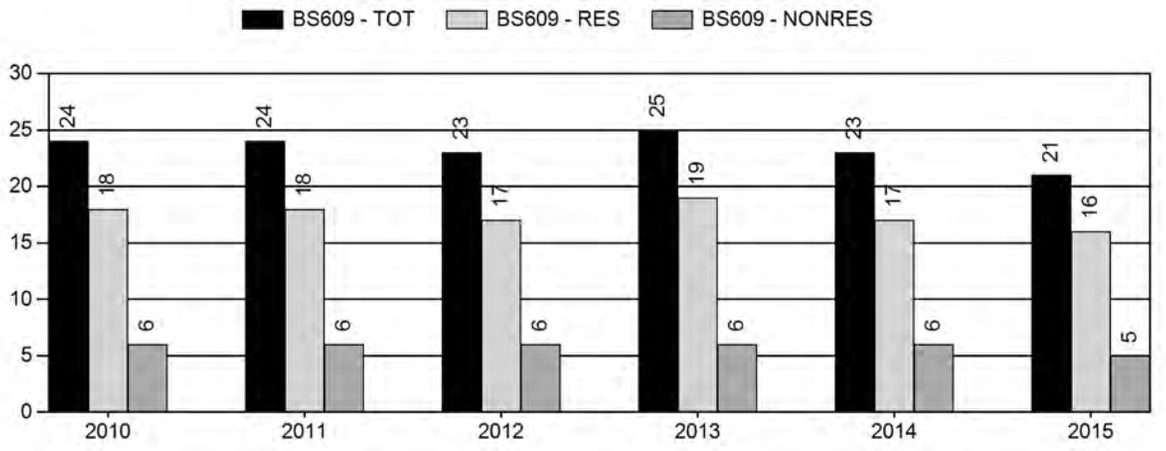
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	6%	6%
Juveniles (< 1 year old):	0%	0%
Total:	1%	1%
Proposed change in post-season population:	-4%	0%



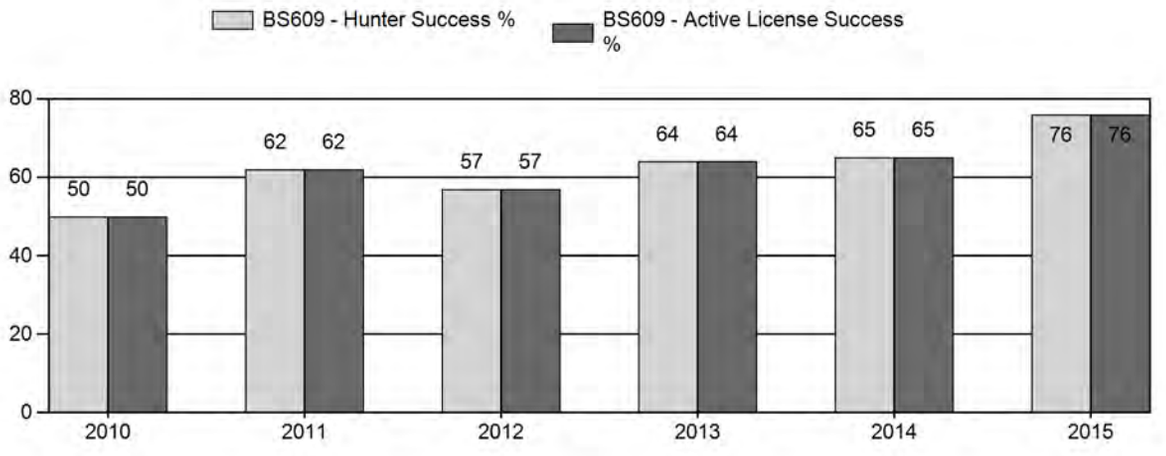
Harvest



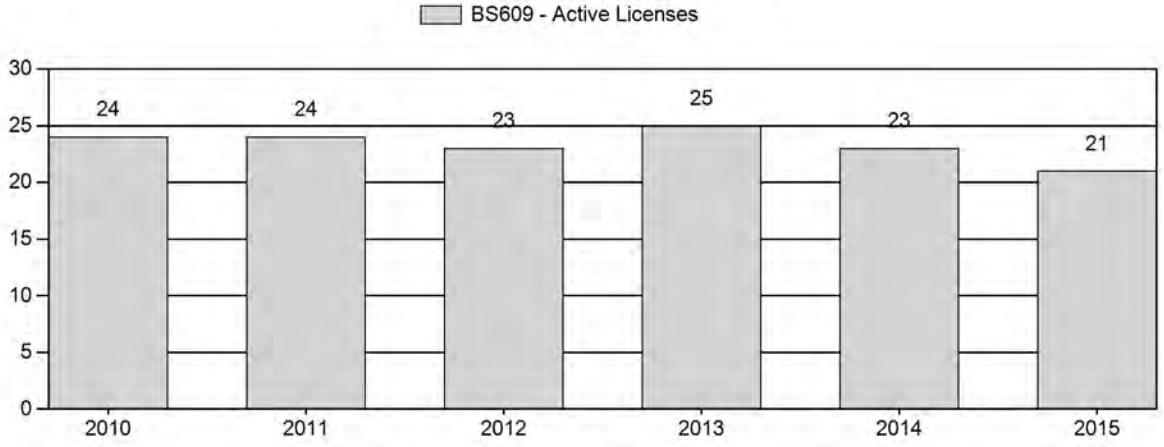
Number of Hunters



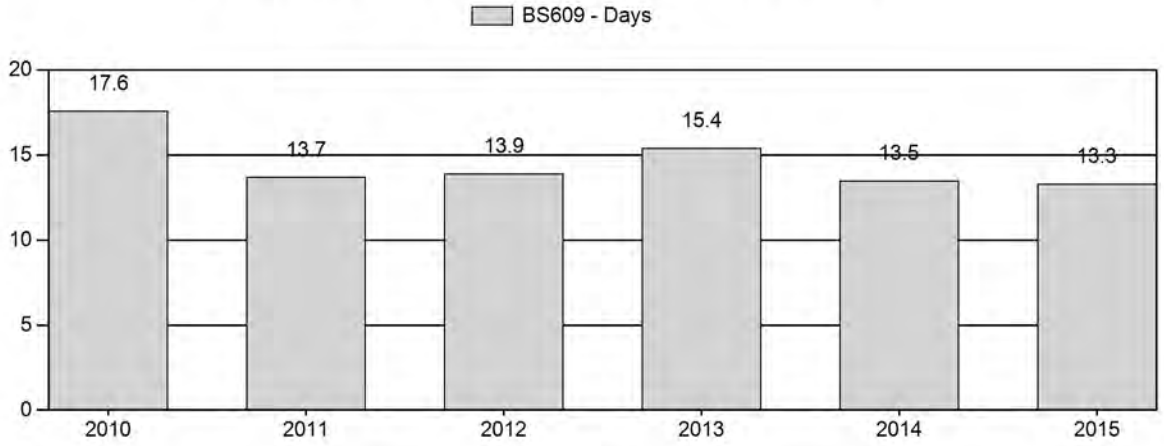
Harvest Success



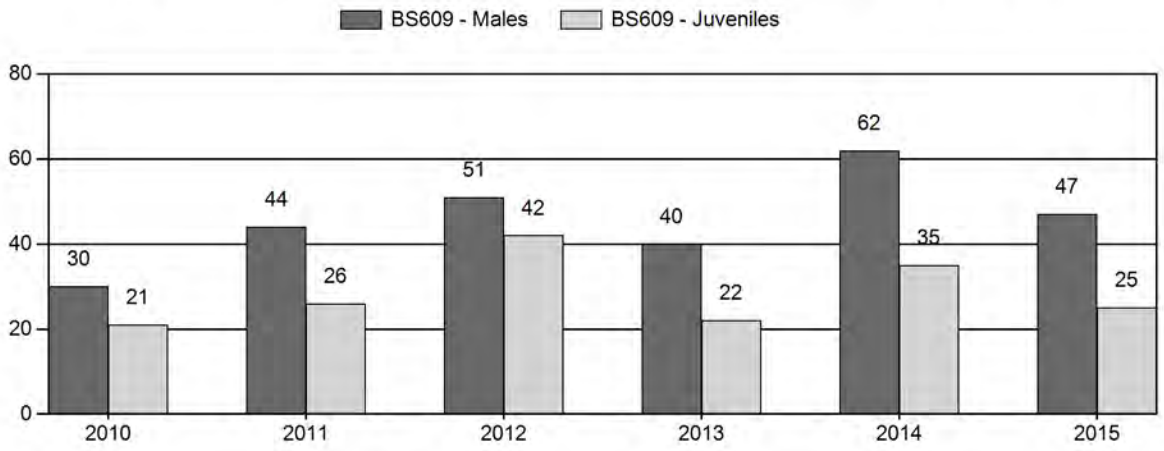
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2010 - 2015 Postseason Classification Summary

for Bighorn Sheep Herd BS609 - WHISKEY MOUNTAIN

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
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	22	132	154	31%	249	51%	88	18%	491	559	9	53	62	± 6	35	± 4	22
2015	975	24	128	152	27%	323	58%	81	15%	556	0	7	40	47	± 4	25	± 3	17

2016 HUNTING SEASONS
WHISKEY MOUNTAIN BIGHORN SHEEP (BS 609)

Hunt Area	Type	Season Dates Opens	Closes	Quota	License	Limitations
8, 23	1	Sep. 1	Oct. 31	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			Refer to section 3
9		Aug. 1	Aug. 14			Refer to section 3
10		Aug. 1	Aug. 14			Refer to section 3

Hunt Area	Type	Quota change from 2015
Total		

Management Evaluation
Current Postseason Population Management Objective: 1,350
Management Strategy: Special
2015 Postseason Population Estimate: ~1,000
2016 Proposed Postseason Population Estimate: ~1,000

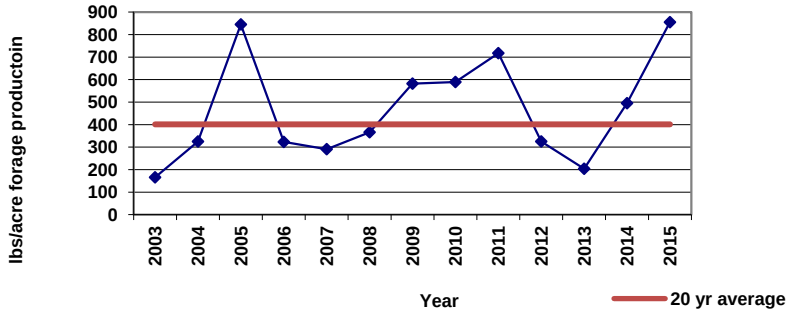
Management Issues
The post-season population objective for this herd is 1,350 sheep and it is classified as special management. The current objective was originally adopted in 2002. In 2013 the Department conducted an objective evaluation and review including a public meeting. The objective was left 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. In 2015, 20 more sheep were outfitted with GPS collars to enable tracking over a 3-year period. The intent is to monitor body condition, lamb production, and overall health of the 20 collared ewes. The monitoring will allow comparisons between ewe health and environmental conditions.

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 and was the highest on record in 2015. Average production across all monitoring sites on winter range was 855 lbs/acre and well above the 20-year average of 401 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. Despite appearing to enter winter in good body condition, preliminary results from the body condition study initiated in 2015 indicated collared ewes entered winter in extremely poor shape. Fourteen collared ewes were sampled using ultrasound in December, 2015. The data revealed they only gained an average of 1% body fat relative to when they were previously sampled in March, 2015.

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



Field/Harvest Data/Population

Classification data yielded a lamb/ewe ratio of 25/100 in 2015 (Fig. 2). This ratio was very close to the 10-year average of 27/100. Although the lamb/ewe ratio for the entire herd unit was close to average, the lamb/ewe ratio in hunt area 10 where most of the sheep in the herd unit winter was quite low at 14/100. In particular, sheep groups wintering at the top of Whiskey Mountain and on Torrey Rim had particularly low lamb/ewe ratios at 9/100 and 8/100 respectively.

Reasons for the low recruitment ratios at these sites are unknown as it appeared forage conditions were good throughout the year and environmental conditions were mild. Again, samples taken from 14 sheep in December, 2015 indicated sheep wintering in hunt areas 9 and 10 were in quite poor body condition. Although low lamb recruitment has been a persistent problem in this herd, the lamb/ewe ratio for 6 of the last 10 years has been 25/100 or above. Average recruitment is still well below the levels typically seen prior to the 1990-91 pneumonia die-off but the herd has had 2 excellent recruitment years in the last 4. 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 62/100 in 2014 (Fig. 3). The ram/ewe ratio declined a bit to 47/100 in 2015 but indicates ram numbers are still good in the herd unit

A population model developed in 2012 behaved predictably with the addition of data in 2015. For 2015, 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 5 years. The 2015 population estimate is approximately 1,000 sheep.

Harvest success in the herd unit was 76% in 2014 which was a bit higher than the 5-year average of 60%. This included success rates of 50% in hunt area 9, 100% in hunt area 10, and 66% in hunt areas 8/23. Much of the increased success in the herd unit was due to better success in areas 8 and 23 in 2015. The 66% success rate in these areas was well above the 5-year average success rate in these areas of 58%. The average age of rams harvested in areas 8/23 and 10 remained essentially unchanged between 2014 and 2015 (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. In addition, 1 yearling ram was harvested in area 9 in 2015 and brought the average age down significantly. Overall, the average age of harvested rams does not reveal any significant demographic trend in any hunt areas throughout the herd unit over the past 10 years.

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

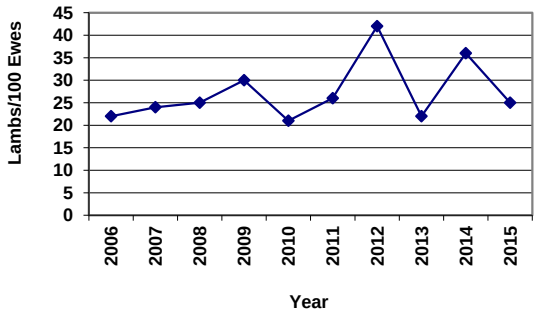


Figure 3. Ten-year history of the ram/ewe ratio in the Whiskey Mountain Bighorn Sheep Herd.

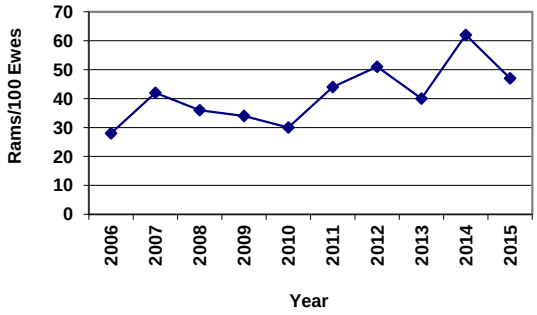
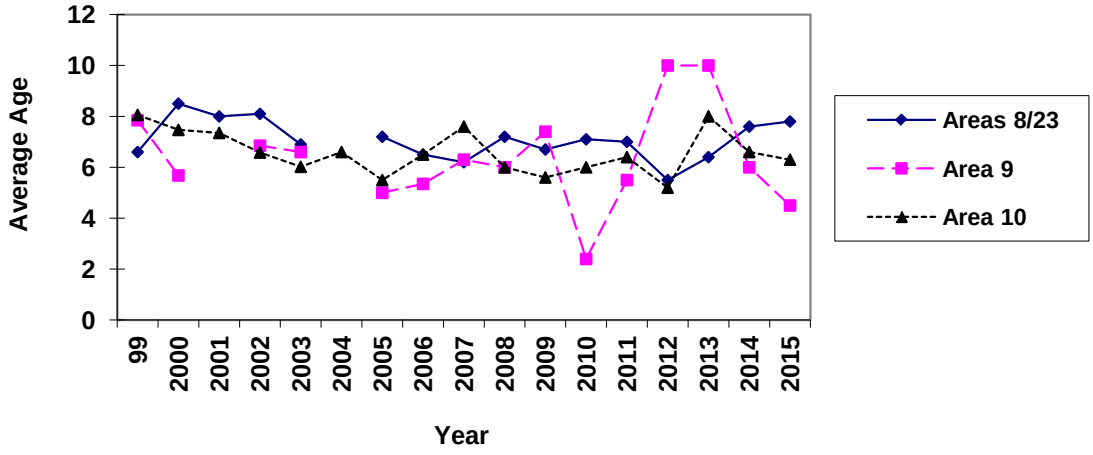


Figure 4. Average age of rams harvested in the Whiskey Mountain Bighorn Sheep Herd.

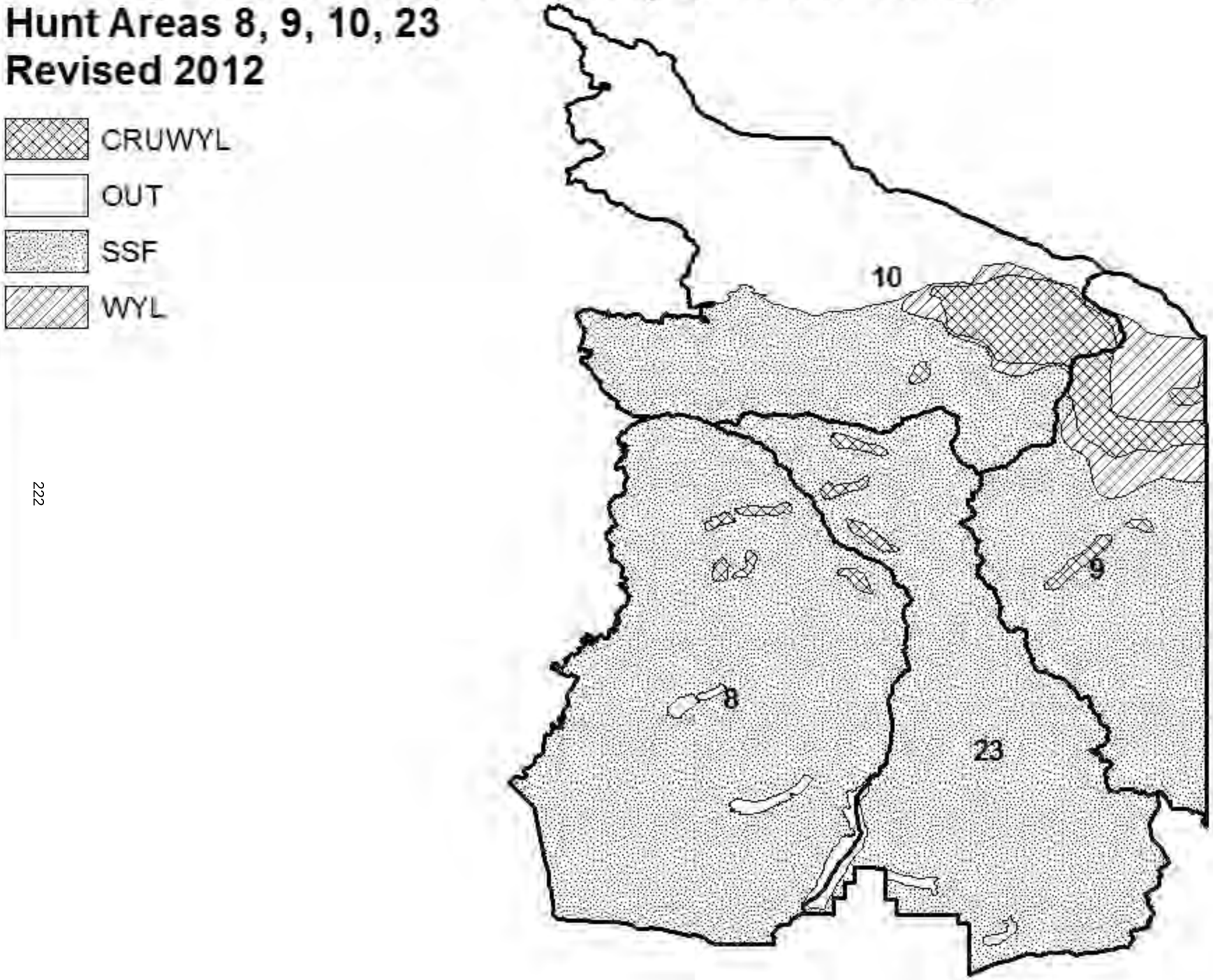


Management Summary

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, license numbers for the 2016 hunting season will remain unchanged. In hunt areas 8 and 23, the season length will be extended 16 days and run until October 31. This change is in response to comments from hunters and outfitters wondering why sheep seasons in many areas throughout the state last a full 2 months but have traditionally only been 1.5 months in 8 and 23. With 24 licenses issued throughout the herd unit, hunters are expected to harvest 15 rams in 2015. The population is expected to remain stable in 2016 at about 1,000 animals.

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



2015 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2015 - 5/31/2016

HERD: BS615 - FERRIS-SEMINOE

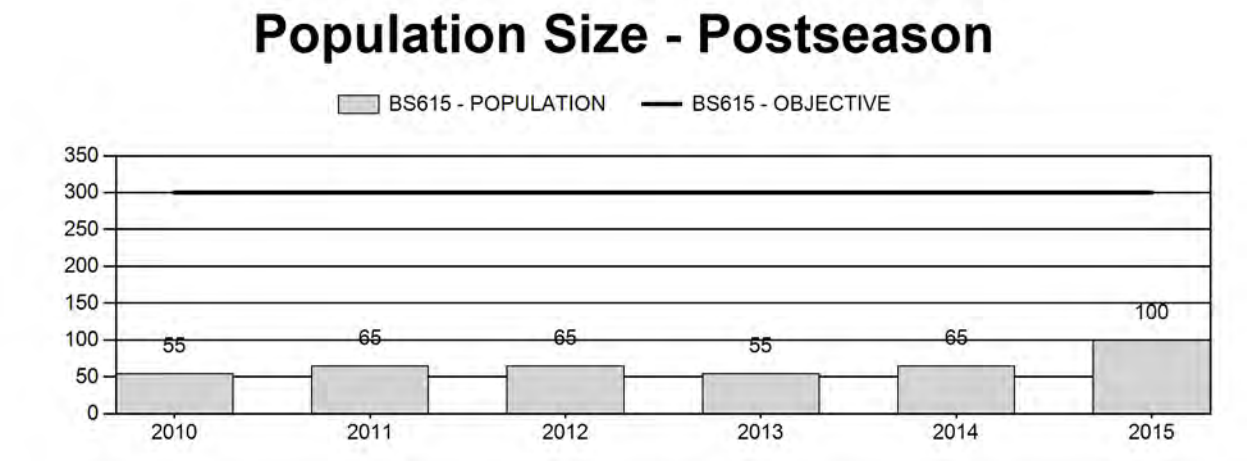
HUNT AREAS: 17, 26
PREPARED BY: GREG HIATT

	2010 - 2014 Average	2015	2016 Proposed
Population:	61	100	150
Harvest:	0	1	2
Hunters:	0	1	2
Hunter Success:	0%	100%	100 %
Active Licenses:	0	1	2
Active License Success:	0%	100%	100 %
Recreation Days:	1	6	10
Days Per Animal:	0	6	5
Males per 100 Females	0	83	
Juveniles per 100 Females	0	79	

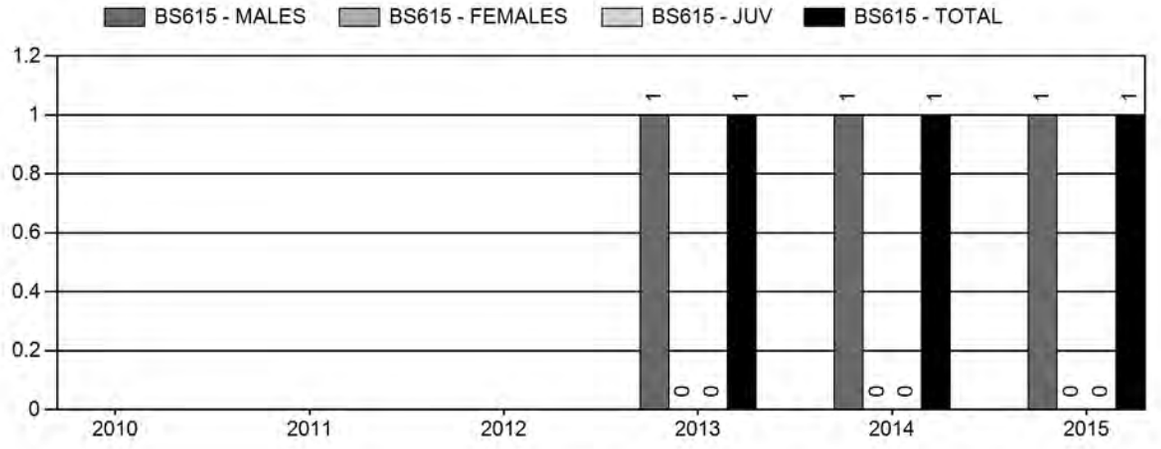
Population Objective (± 20%) :	300 (240 - 360)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-66.7%
Number of years population has been + or - objective in recent trend:	31
Model Date:	None

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

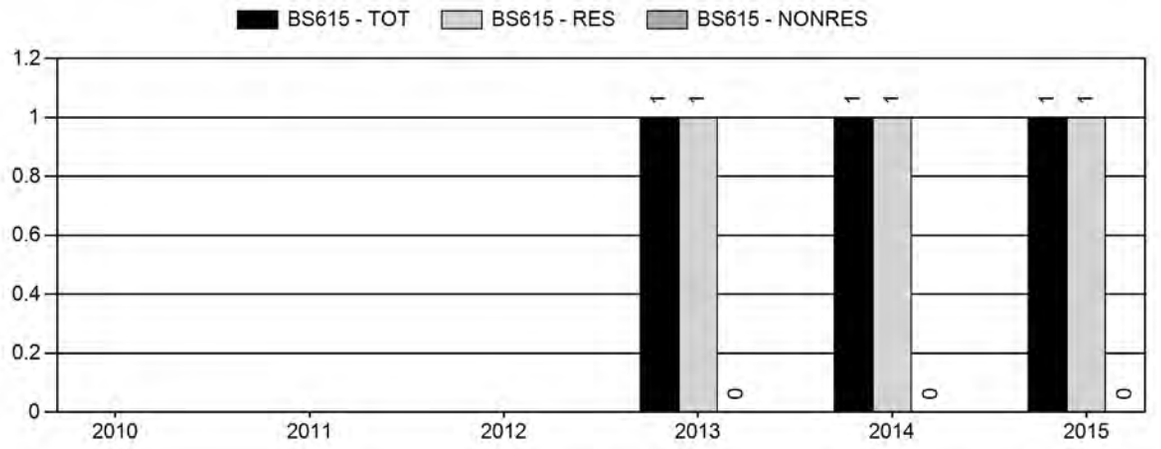
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	5%	6%
Juveniles (< 1 year old):	0%	0%
Total:	0%	1%
Proposed change in post-season population:	54%	+50%



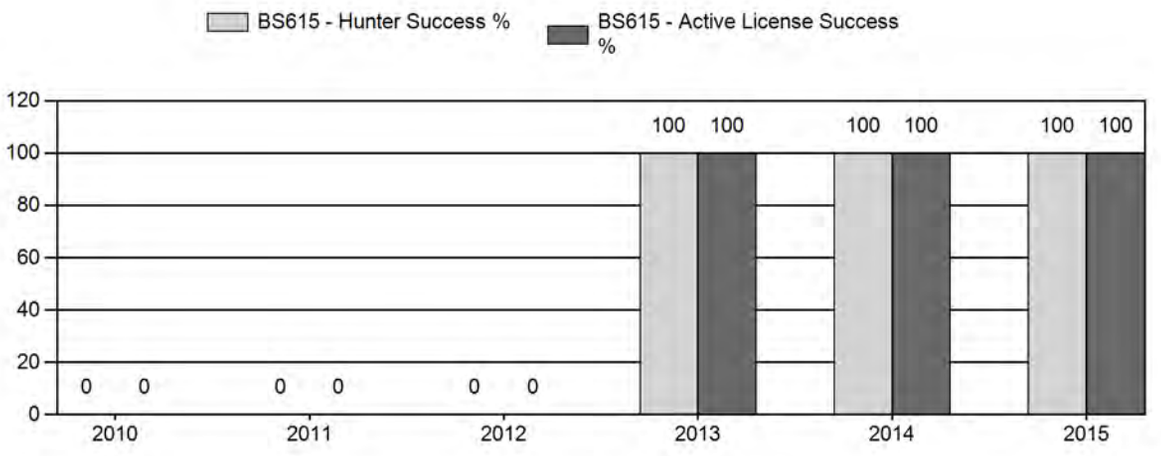
Harvest



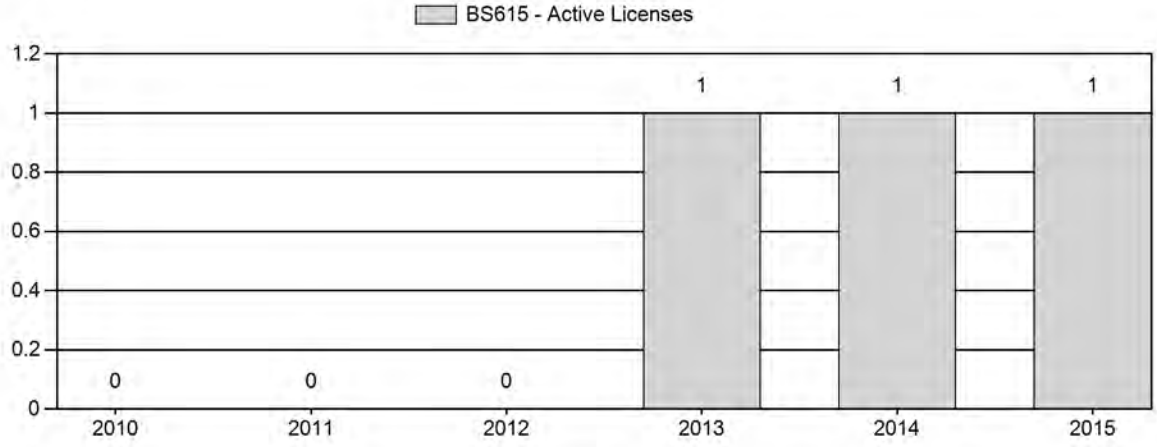
Number of Hunters



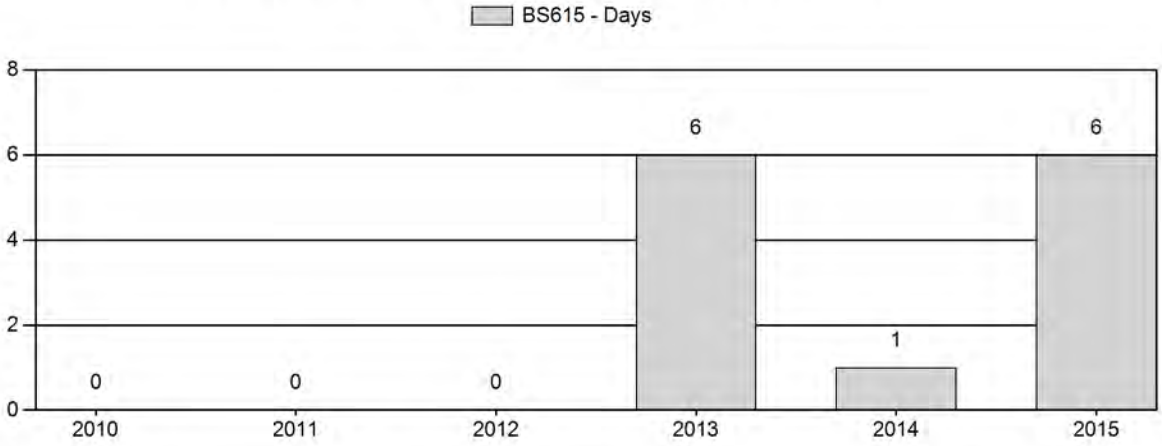
Harvest Success



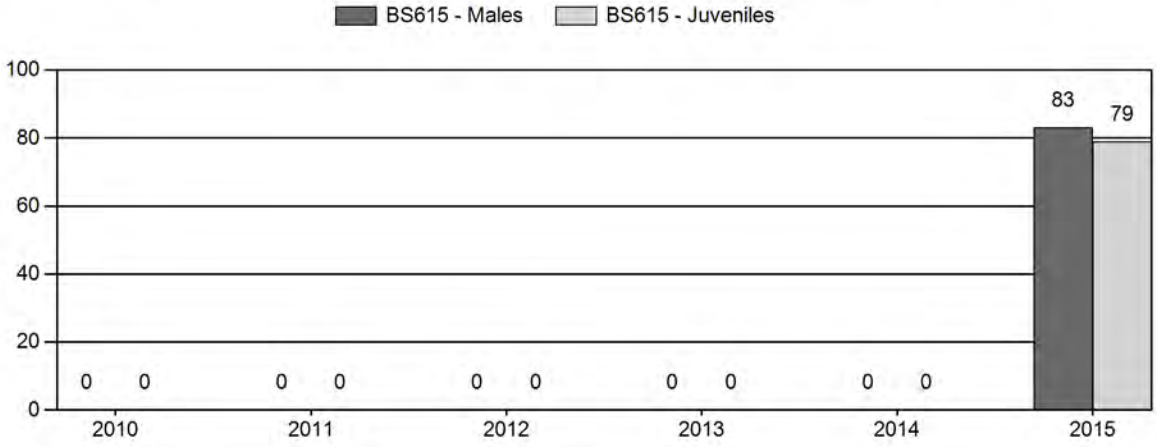
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2010 - 2015 Postseason Classification Summary

for Bighorn Sheep Herd BS615 - FERRIS-SEMINOE

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
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	100	1	19	20	32%	24	38%	19	30%	63	97	4	79	83	± 20	79	± 19	43

2016 HUNTING SEASONS
FERRIS-SEMINOE BIGHORN SHEEP HERD (BS615)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	License	Limitations
17, 26	1	Sep. 1	Oct. 31	2	Limited quota	Any ram (1 resident and 1 nonresident)
Archery 17		Aug. 15	Aug. 31			Refer to Section 2 of this Chapter

Hunt Area	License Type	Quota change from 2015
17	1	+1
Herd Unit Total	**1**	**+1**

Management Evaluation
Current Postseason Population Management Objective: 300
Management Strategy: Special
2015 Postseason Population Estimate: ~100
2016 Proposed Postseason Population Estimate: ~140

Herd Unit Issues

The management objective for the Ferris-Seminoe Bighorn Sheep Herd Unit is a post-season population objective of 300 sheep, established in 1984 and last publicly reviewed in 1994. As with all bighorn sheep herds, management strategy is "special" management. The objective and management strategy are currently undergoing public review, with no changes proposed.

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 Seminoe 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 Seminoe 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 Seminoe transplant, survival of transplanted animals was good.

Poor lamb survival during summer months was a major problem for this reintroduced herd, in both the Seminoe 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 lambed 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 sooner 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, and the herd unit boundary was expanded to encompass the ranges of these animals in a new Hunt Area 26.

Initial indications are these sheep are reproducing well in the Seminoe and Bennett Mountains, and another transplant of low-elevation, non-migratory, early-lambing sheep were released into the Ferris Mountains in February 2016 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.

Weather

Following severe drought in 2012 and 2013, improved precipitation arrived in the latter half of 2014 and continued through 2015. Record precipitation in 2015 produced exceptional vegetative growth, improving lamb survival. Condition of bighorn sheep going into the 2015-16 winter is expected to have been excellent. The 2015-16 winter had numerous bitter cold spells, with significant snowfall, but milder conditions arrived in mid-February. Winter losses are not expected to be above average.

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 2015. While no herbaceous habitat transects are established within this herd unit, herbaceous forage production appeared to be exceptional due to the increased precipitation. Herbaceous production measured on the Morgan Creek WHMA in the Seminoe Mountains was exceptionally high.

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. The Rawlins BLM again coordinated and funded aerial application of Plateau® in 2015 to mitigate cheatgrass spread on BLM and WGFD 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 Seminoe 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.

Thirty-seven bighorn sheep were classified during helicopter surveys for mule deer in the Seminoe Mountains in December 2015. Another 14 sheep were classified from the ground along Hamilton Creek, as well as 12 sheep east of the Miracle Mile in Area 26, yielding a total sample of 63 sheep classified out of an estimated population of 100 animals. The sample did not include any sheep on the south slopes of the Bennett Mountains, which are presumed to number ~15-20 sheep, nor any of the sheep along Long Creek in the Seminoes.

Lamb production was exceptional in 2015, presumably a consequence of the record precipitation. Nineteen lambs were found in the classification sample, with a lamb:ewe ratio of 79:100. Even if the high ratio is a result of a statistically inadequate sample size, 19 lambs is a significant improvement over the one or two lambs that used to be found in this herd when it consisted of sheep from a high-elevation, migratory source herd.

Classifications also confirmed 20 rams, for a ram:ewe ratio of 83:100. Again possibly an artifact of the small sample, these data do indicate there are more than enough rams in the herd for the single harvest allowed each of the past three years.

Harvest Data

The single resident hunter in this area harvested a 3-year old ram during the regular season. It was eartagged, and was a young ram transplanted from the Devil’s Canyon herd seven months earlier. The hunter reported six days of hunting, compared to a single day for the hunter in 2014 and six days for the hunter in 2013. Where the 2013 and 2014 rams were taken from the ridges on the south face of the Seminoe Mountains, the 2015 harvest came from the north slope of the

Seminoes. It is surprising that the harvested rams only averaged three years of age, while quite a few older rams were included in the classification sample.

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 Seminoe and Bennett 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 was high in 2015, and the herd is estimated near 100 animals at posthunt 2015. While lamb production is unlikely to remain at the level seen in 2015, recovery of burned areas should improve the quantity and quality of forage available for gestating and lactating ewes and the herd is expected to continue to increase.

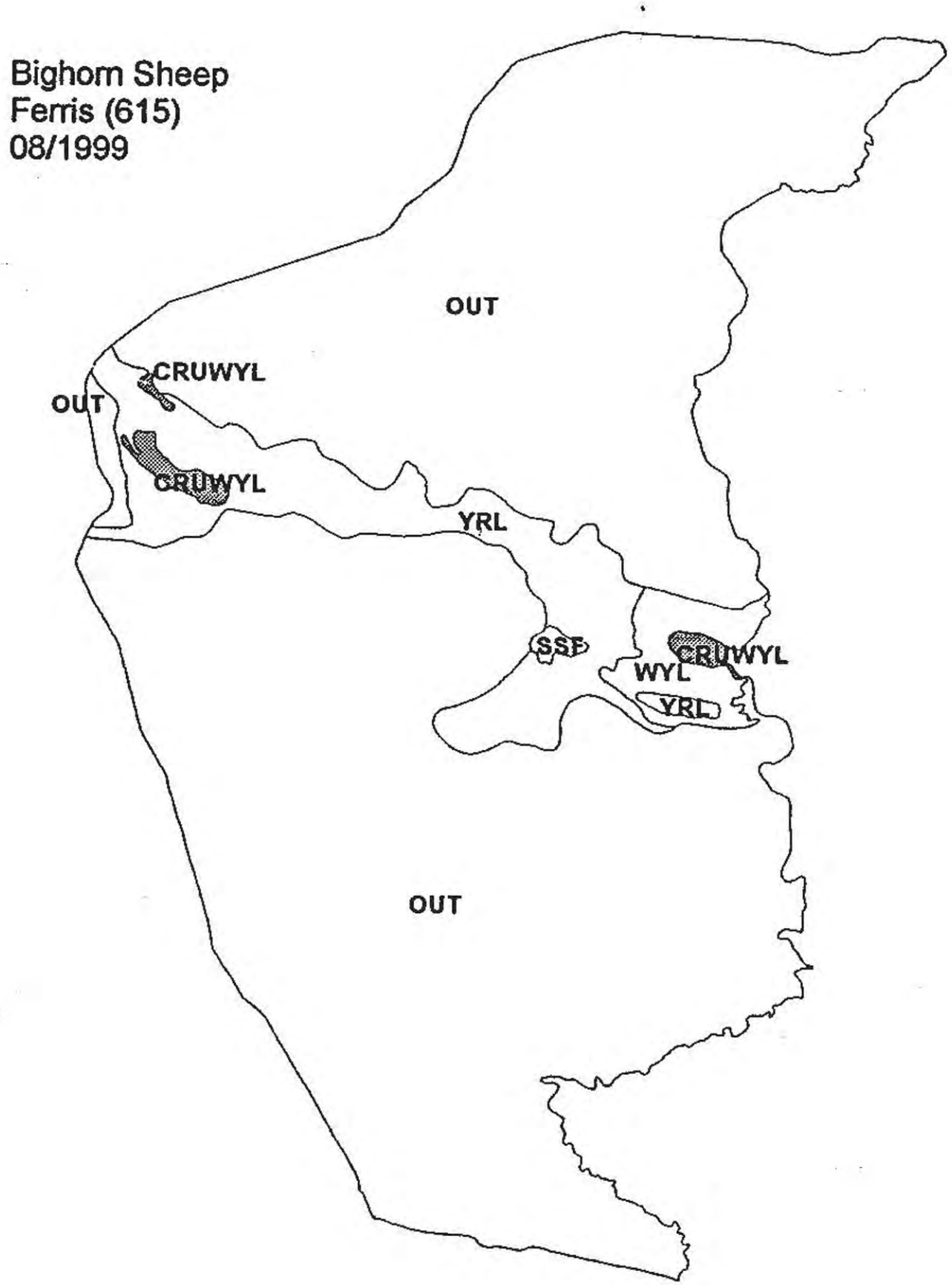
Twenty-four low-elevation, non-migratory, early-lambing bighorn sheep from the Devil's Canyon herd near Lovell were released in Miner's Canyon on the east end of the Ferris Mountains on 21 February 2016. The release consisted of 20 ewes, 1 male lamb and three young rams. All but the lamb and one ewe with injuries on her neck were marked with satellite-uplink telemetry collars. Assuming most of these sheep will remain in the Ferris Mountains and adding expected recruitment from a 2016 lamb crop, the herd is expected to reach 140 animals by fall of 2016.

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 Seminoe Mountains. A single resident license for "any ram" was issued in each of the past three years. Classification data indicate there are at least 20 rams available in the Seminoe Mountains and in the Bennett Mountains in the new Area 26, several of which are nearing true trophy age classes. With these numbers of trophy animals available, the license quota is increased by 1 in 2016. To satisfy the 25 percent requirement, one of these licenses needs to be issued to a nonresident.

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


Bighorn Sheep
Ferris (615)
08/1999
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