2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS201 - CLARKS FORK

HUNT AREAS: 1

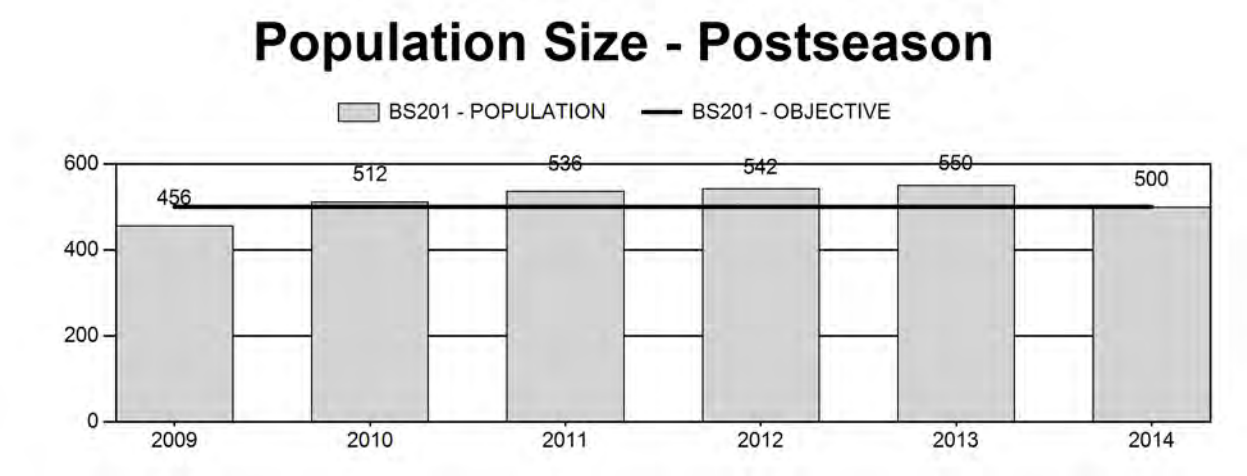
PREPARED BY: DOUG MCWHIRTER

	2009 - 2013 Average	2014	2015 Proposed
Population:	519	500	500
Harvest:	14	18	16
Hunters:	20	21	20
Hunter Success:	70%	86%	80 %
Active Licenses:	20	21	20
Active License Success:	70%	86%	80 %
Recreation Days:	204	156	150
Days Per Animal:	14.6	8.7	9.4
Males per 100 Females	27	27	
Juveniles per 100 Females	40	22	

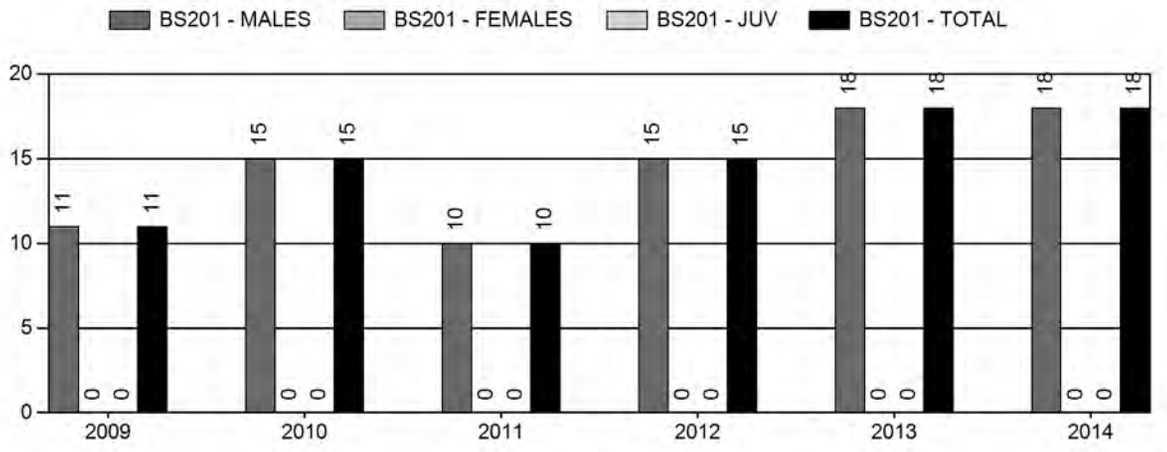
Population Objective (± 20%) :	500 (400 - 600)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	0%
Number of years population has been + or - objective in recent trend:	8
Model Date:	2/19/2015

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

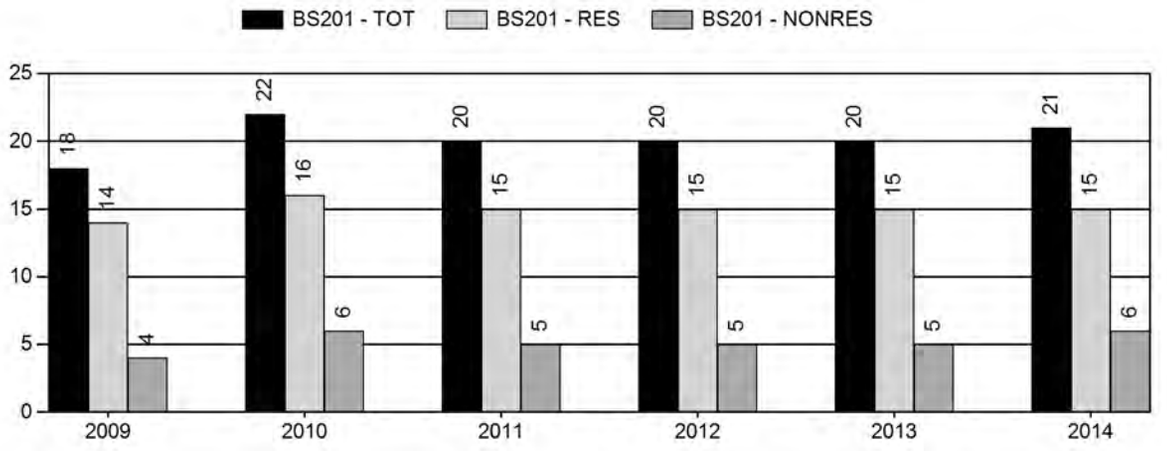
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	17.8%	24.5%
Juveniles (< 1 year old):	0%	0%
Total:	3.1%	3.5%
Proposed change in post-season population:	-10.2%	-10.0%



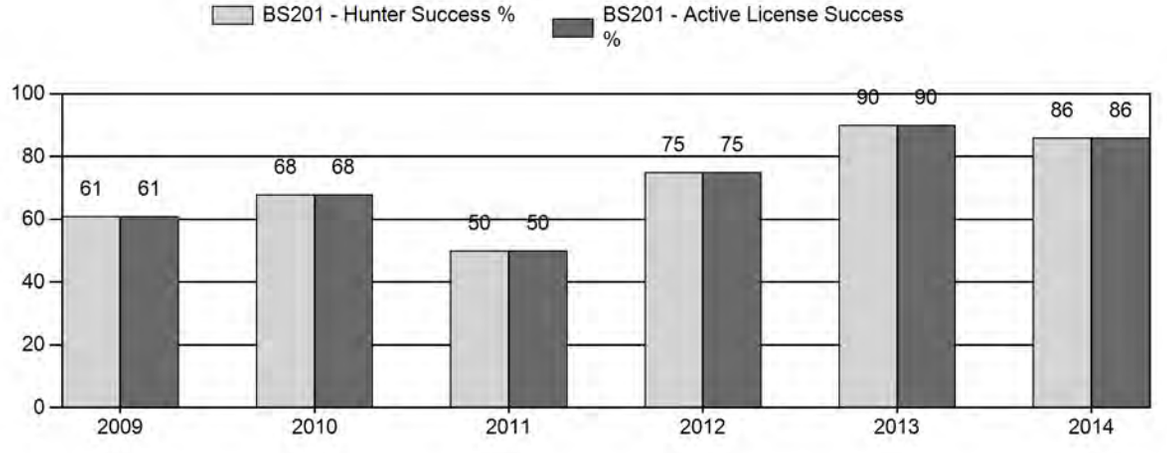
Harvest



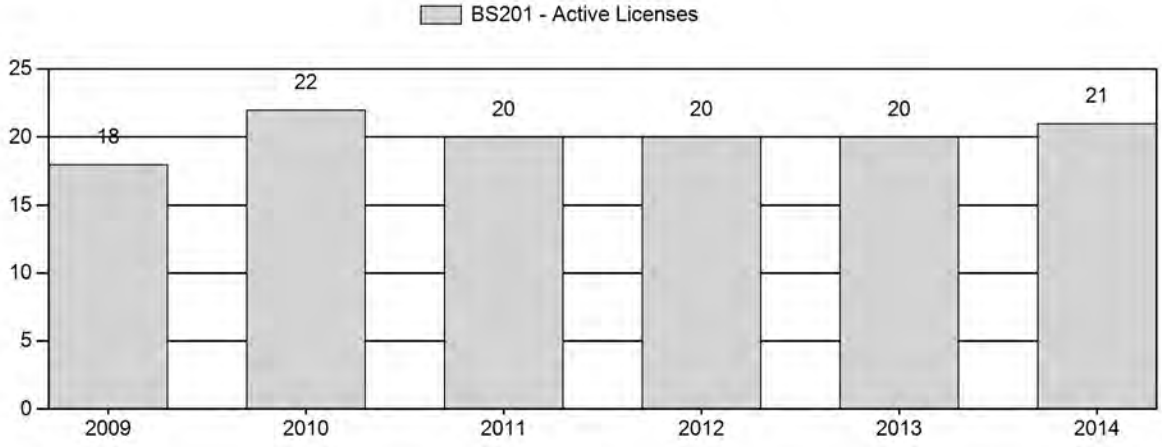
Number of Hunters



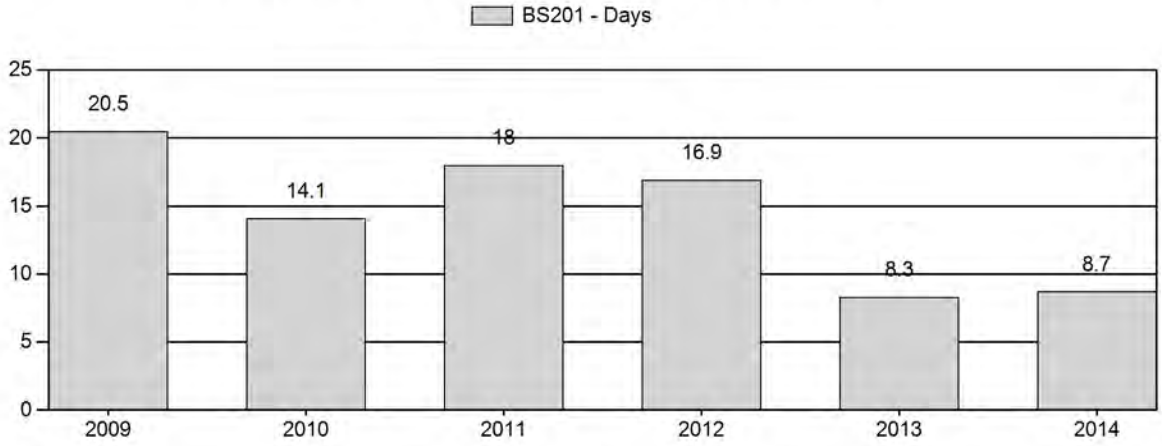
Harvest Success



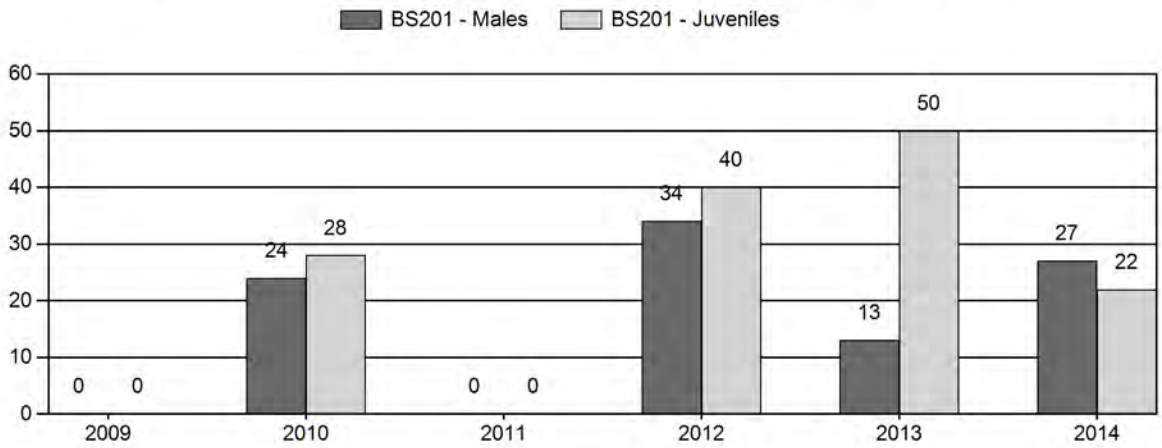
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Bighorn Sheep Herd BS201 - CLARKS FORK

		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
2009	456	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2010	512	0	7	7	16%	29	66%	8	18%	44	274	0	24	24	± 12	28	± 14	22
2011	536	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2012	542	0	26	26	19%	77	57%	31	23%	134	274	0	34	34	± 9	40	± 10	30
2013	550	0	4	4	8%	30	61%	15	31%	49	289	0	13	13	± 9	50	± 19	44
2014	500	0	25	25	18%	91	67%	20	15%	136	274	0	27	27	± 7	22	± 6	17

2015 HUNTING SEASONS
CLARKS FORK BIGHORN SHEEP SUB-HERD

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
1	1	Sep. 1	Oct. 31	20	Limited quota; any ram
Archery		Aug. 15	Aug. 31		Refer to Section 4 of this Chapter

Hunt Area	Type	Quota change from 2014
		No Change
Total		**No Change**

Management Evaluation

Current Postseason Population Management Objective: 500
Management Strategy: Special
2014 Postseason Population Estimate: ~500
2015 Proposed Postseason Population Estimate: ~450

Herd Unit Issues. Most sheep in this herd unit are found in the Absaroka Mountains, although a small number (currently less than 50) occupy the Beartooth Mountains year-round. Some Absaroka Mountains sheep from the northern portion of the sub-herd migrate into Montana, where they are subjected to hunting seasons there (currently an unlimited season with a harvest quota of 2). These sheep often end up wintering in the Wyoming portion of the Beartooth Mountains. In addition, perhaps 10%-15% of the sheep in this sub-herd reside (some seasonally, some year-round) in Yellowstone National Park (YNP). Both of these factors (Montana harvest and sheep unavailable for harvest in YNP) must be taken into account when managing this herd.

Periodic fixed-wing trend counts (and more recently helicopter classification/trend surveys) during summer have been used to assess population performance. Summer surveys are done because many sheep migrate into Montana to winter, and surveys were designed to more closely monitor sheep while on Wyoming summer ranges. Classifications collected mid-summer are useful in tracking ram:ewe ratios, but allow little understanding of lamb survival as they are conducted so early in the year.

Weather. Weather conditions during the summer of 2014 were favorable throughout the Absaroka Mountains, with good precipitation to promote forage growth. However, lamb survival could be adversely affected by the above average snow accumulations of the 2013-2014 winter. The 2014-2015 winter was relatively severe to begin with, but moderated dramatically by mid-January.

Habitat. No habitat monitoring data is collected in this sub-herd.

Field Data. Attempts to classify sheep on summer range while conducting mountain goat surveys in 2013 were not successful. Preseason classification samples from recent surveys however reflect good lamb:ewe (51:100 – 65:100) and ram:ewe (42:100 – 56:100) ratios in most years surveyed (6 surveys over the last 10 years). Poor lamb:ewe ratios as seen in 2009 (32:100) do occasionally occur and can affect ram

recruitment. Recent trend counts (401 sheep in 2006, 409 in 2009, 390 in 2011) also provide support that this herd is probably near the objective of 500 sheep.

Harvest Data. In 2014, 21 hunters took 18 rams for a success rate of 86.6%, which is among the better years seen since permits were increased to 20 in 2007. The average age of rams killed in 2014 was 7.7 years old, with 55.6% of the rams killed being 8 years old and older. One ram less than ¾ curl was killed in 2014, representing 5.5% of the harvested rams.

Population. The "Time Specific Juvenile – Constant Adult Mortality Rate" (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC, the population estimate appears to be the most reasonable. The earlier trend projected by the model (early 1990s – early 2000s) is not felt to be entirely accurate, but estimates in the recent past appear reasonable. The postseason 2014 population is estimated to be approximately 500 sheep. Efforts will continue to improve this model and improve reliability.

All indicators show good population performance, and an acceptable presence of mature rams. Therefore license numbers will remain at 20 for the 2015 season. This should result in a postseason 2015 population of approximately 450-500 sheep.

Harvest parameters for the Clarks Fork Bighorn Sheep Herd Unit, 1968-2014 (Wyoming portion only).

	1968-72	1973-91	1992-97	1998-2002	2003-2006*	2007-2013*	2014*
Permits	20	24	20	16	16	20	21
Harvest	7.4	11.9	10.7	10.6	14.3	13.4	18
% Success	49.0%	53.5%	52.9%	67.7%	90.3%	67.6%	85.6 %
Effort (days/ram)	6.8	16.7	17.7	16.7	10.3	18.2	8.7
Avg. Age	-	6.6	6.9	7.0	6.4	7.0	7.7
% Rams ≥ 8 Yrs	-	31.7%	26.7%	32.0%	21.1%	35.2%	55.6%
% Rams ≤ ¾ Curl	-	-	-	-	15.9%	6.4%	5.5%

* "any ram" regulation in place

INPUT	
Species:	Bighorn Sheep
Biologist:	Doug McWhirter
Herd Unit & No.:	Clarks Fork
Model date:	02/19/15

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	62	71	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	1726	1735	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	43	223	☑ TSJ,CA Model	

Population Estimates from Top Model

Year	Predicted Prehunt Population (year *i*)			Total	Predicted Posthunt Population (year *i*)			Total	Predicted adult End-of-bio-year Pop (year *i*)			LT Population Estimate		Trend Count	Objective
	Juveniles	Total Males	Females		Juveniles	Total Males	Females		Total Males	Females	Total Adults	Field Est	Field SE		
1993	37	42	111	**191**	37	32	111	**181**	37	113	**151**				
1994	57	37	111	**205**	57	23	111	**192**	39	123	**162**				
1995	51	38	121	**210**	51	26	121	**198**	39	130	**170**				
1996	54	39	127	**220**	54	25	127	**207**	34	132	**166**				
1997	61	34	129	**224**	61	23	129	**213**	33	135	**168**				
1998	66	32	132	**231**	66	22	132	**221**	34	139	**173**				
1999	66	33	136	**236**	66	21	136	**224**	33	143	**176**				
2000	68	32	140	**240**	68	22	140	**230**	34	147	**181**				
2001	87	34	144	**265**	87	23	144	**254**	47	163	**211**				
2002	81	46	160	**288**	81	31	160	**272**	53	177	**230**				
2003	113	52	173	**338**	113	35	173	**321**	66	199	**265**				
2004	105	65	195	**364**	105	49	195	**349**	78	217	**295**				
2005	124	76	213	**413**	124	63	213	**400**	97	240	**337**				
2006	119	95	235	**449**	119	79	235	**433**	102	252	**354**				
2007	138	100	247	**485**	138	83	247	**468**	105	263	**368**				
2008	144	103	257	**504**	144	93	257	**494**	117	273	**391**				
2009	86	115	268	**468**	86	103	268	**456**	121	278	**399**				
2010	138	118	273	**529**	138	102	273	**512**	123	287	**410**				
2011	145	121	281	**547**	145	110	281	**536**	128	296	**424**				
2012	143	125	291	**558**	143	109	291	**542**	128	305	**432**				
2013	147	125	299	**571**	147	105	299	**551**	98	284	**382**				
2014	137	96	278	**511**	137	77	278	**491**	74	264	**337**				
2015	127	72	258	**458**	127	55	258	**440**	50	245	**296**				
2016	118	49	240	**408**	118	32	240	**390**							
2017															
2018															
2019															
2020															
2021															
2022															
2023															
2024															
2025															

Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.40			0.93		
1994	0.60			0.93		
1995	0.60			0.93		
1996	0.40			0.93		
1997	0.40			0.93		
1998	0.40			0.93		
1999	0.40			0.93		
2000	0.40			0.93		
2001	0.60			0.93		
2002	0.60			0.93		
2003	0.60			0.93		
2004	0.60			0.93		
2005	0.60			0.93		
2006	0.48			0.93		
2007	0.40			0.93		
2008	0.40			0.93		
2009	0.55			0.93		
2010	0.40			0.93		
2011	0.40			0.93		
2012	0.40			0.93		
2013	0.00			0.93		
2014	0.00			0.93		
2015	0.00			0.93		
2016	0.00			0.93		
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:	Optim cells
Adult Survival =	0.930
Initial Total Male Pop/10,000 =	0.004
Initial Female Pop/10,000 =	0.011

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		33.33	6.51	37.70	55.24	9.04	9	0	0	9	23.6	0.0
1994		51.72	8.23	32.95	23.28	4.97	12	0	0	12	36.1	0.0
1995		42.53	7.37	31.59	39.26	7.01	11	0	0	11	31.8	0.0
1996		42.53	7.37	30.35	39.26	7.01	12	0	0	12	34.1	0.0
1997		46.85	7.87	25.98	24.32	5.22	10	0	0	10	32.7	0.0
1998		50.00	7.60	24.45	33.85	5.90	9	0	0	9	30.6	0.0
1999		48.42	7.73	24.52	29.09	5.56	11	0	0	11	36.2	0.0
2000		48.42	7.73	23.00	29.09	5.56	9	0	0	9	30.7	0.0
2001		60.75	9.55	23.38	10.28	3.26	10	0	0	10	32.7	0.0
2002		50.89	8.10	29.06	25.33	5.10	14	0	0	14	33.1	0.0
2003		65.22	9.68	30.17	40.87	7.08	16	0	0	16	33.7	0.0
2004		53.61	9.21	33.28	37.11	7.24	14	0	0	14	23.7	0.0
2005		58.39	7.58	35.88	56.52	7.41	12	0	0	12	17.3	0.0
2006		50.73	6.11	40.42	44.88	5.63	15	0	0	15	17.4	0.0
2007		55.77	8.14	40.61	40.94	6.49	16	0	0	16	17.5	0.0
2008		55.77	8.14	40.13	40.94	6.49	9	0	0	9	9.6	0.0
2009		31.91	4.23	42.85	42.13	5.05	11	0	0	11	10.5	0.0
2010		50.51	6.84	43.32	45.08	6.21	15	0	0	15	14.0	0.0
2011		51.74	6.25	43.01	42.29	5.47	10	0	0	10	9.1	0.0
2012		49.14	6.72	43.03	42.28	5.94			0	15	13.2	0.0
2013		49.14	6.72	41.85	42.28	5.94			0	18	15.8	0.0
2014		49.14	6.72	34.72	42.28	5.94			0	18	20.5	0.0
2015		49.14	6.72	27.91	42.28	5.94			0	16	24.4	0.0
2016		49.14	6.72	20.59	42.28	5.94			0	16	35.6	0.0
2017												
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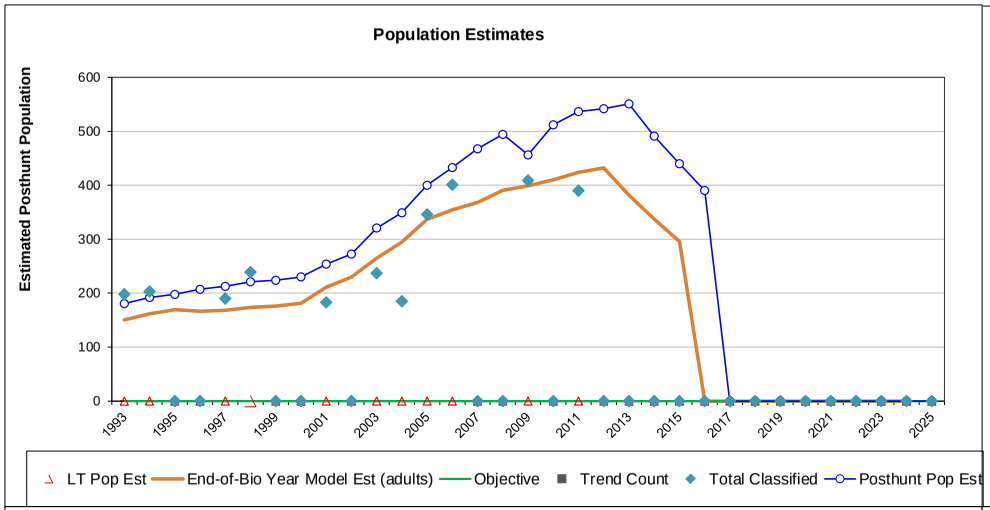
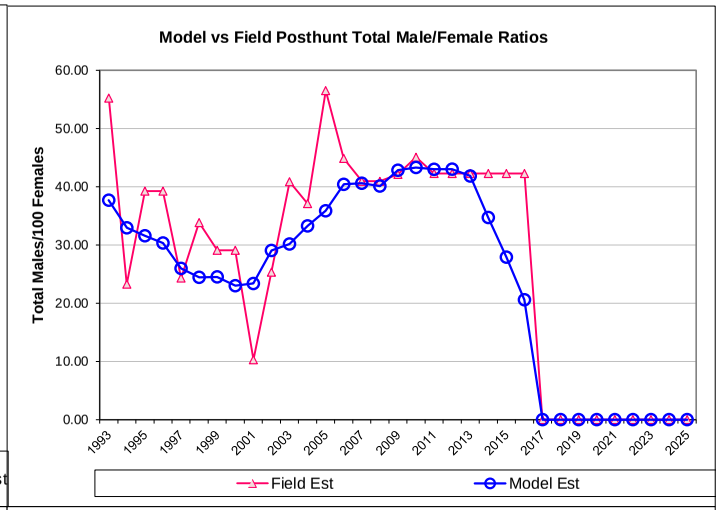
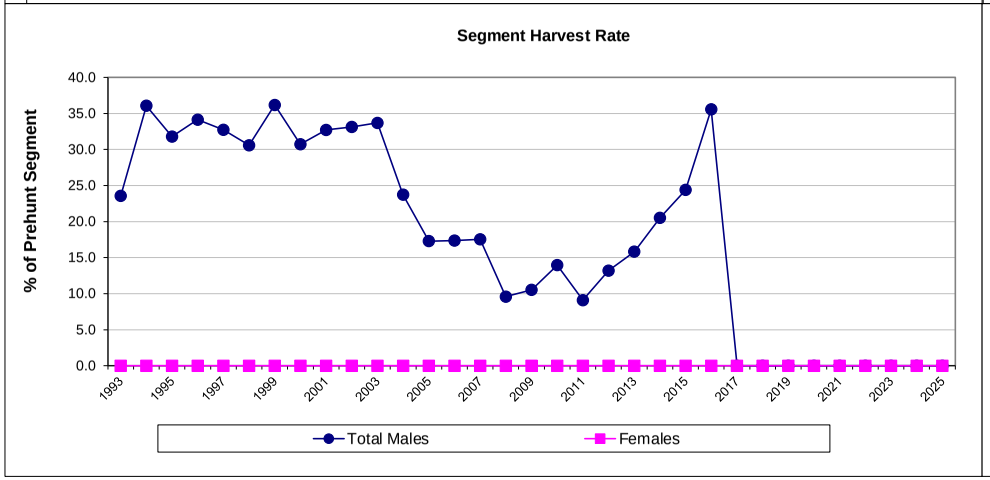
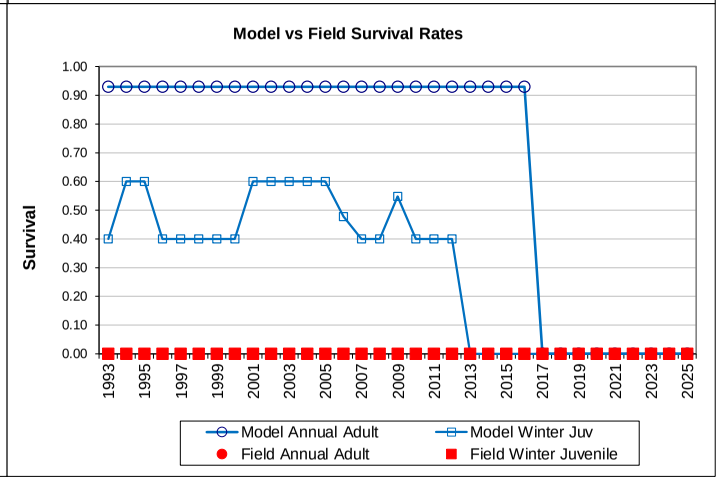
FIGURES









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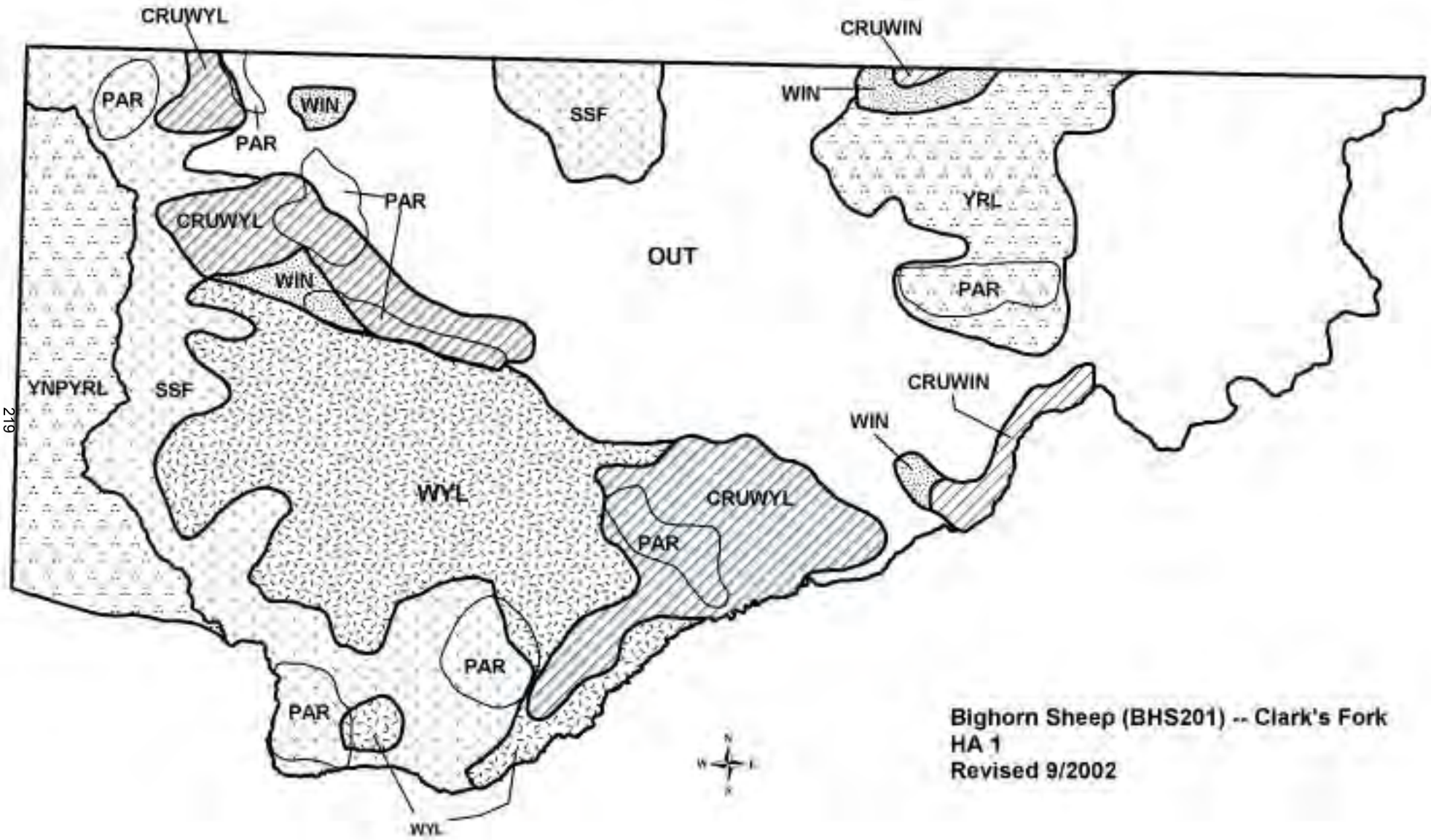
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Bighorn Sheep (BHS201) -- Clark's Fork
HA 1
Revised 9/2002

2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2014 - 5/31/2015

HERD: BS202 - TROUT PEAK

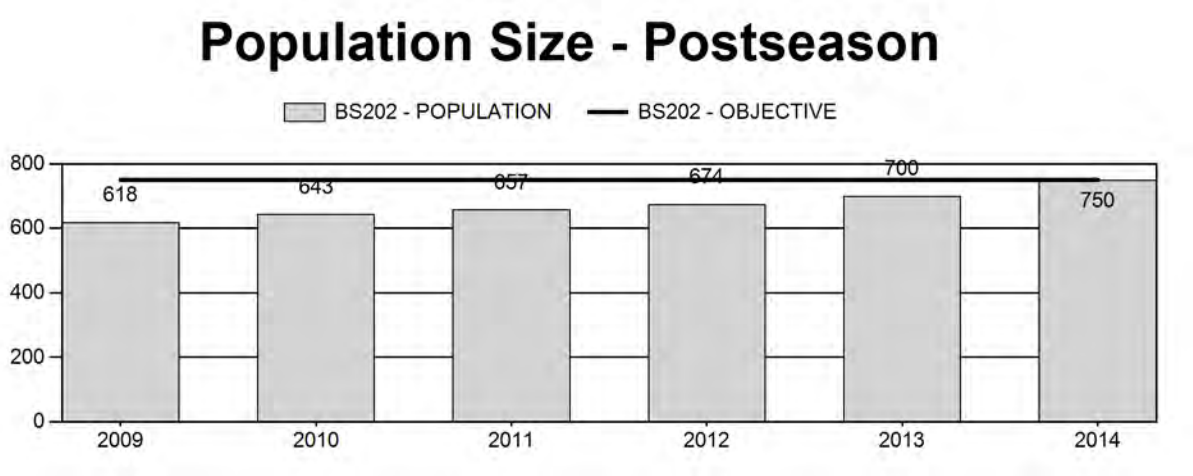
HUNT AREAS: 2
PREPARED BY: DOUG MCWHIRTER

	2009 - 2013 Average	2014	2015 Proposed
Population:	658	750	750
Harvest:	20	21	20
Hunters:	25	27	24
Hunter Success:	80%	78%	83 %
Active Licenses:	25	27	24
Active License Success:	80%	78%	83 %
Recreation Days:	243	252	250
Days Per Animal:	12.2	12	12.5
Males per 100 Females	39	31	
Juveniles per 100 Females	27	31	

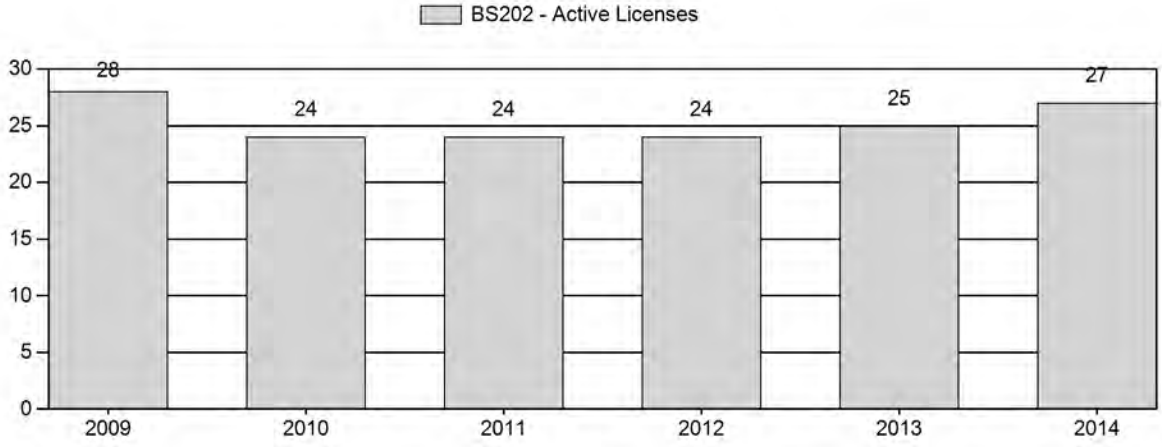
Population Objective (± 20%) :	750 (600 - 900)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	0%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/19/2015

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

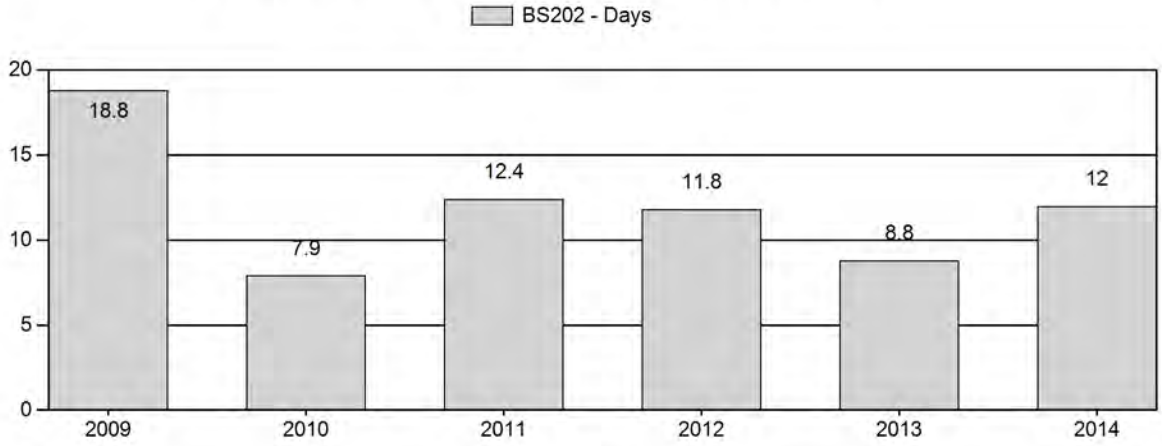
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	11.3%	10.7%
Juveniles (< 1 year old):	0%	0%
Total:	2.7%	2.6%
Proposed change in post-season population:	+2.6%	0.0%



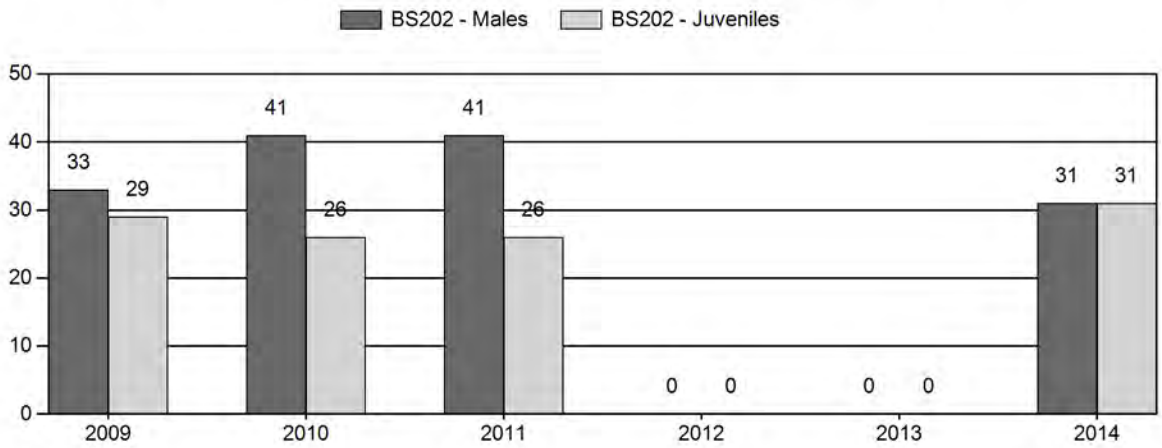
Active Licenses



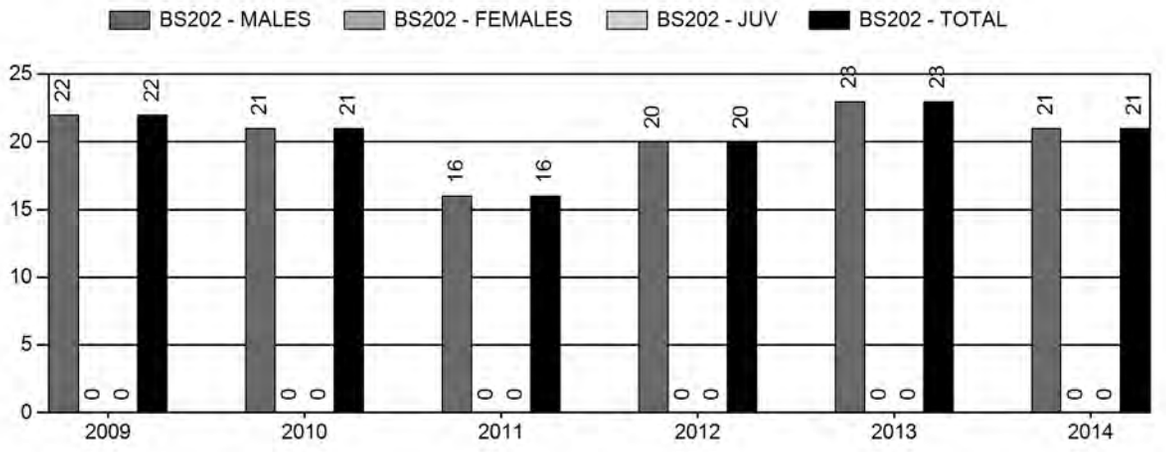
Days per Animal Harvested



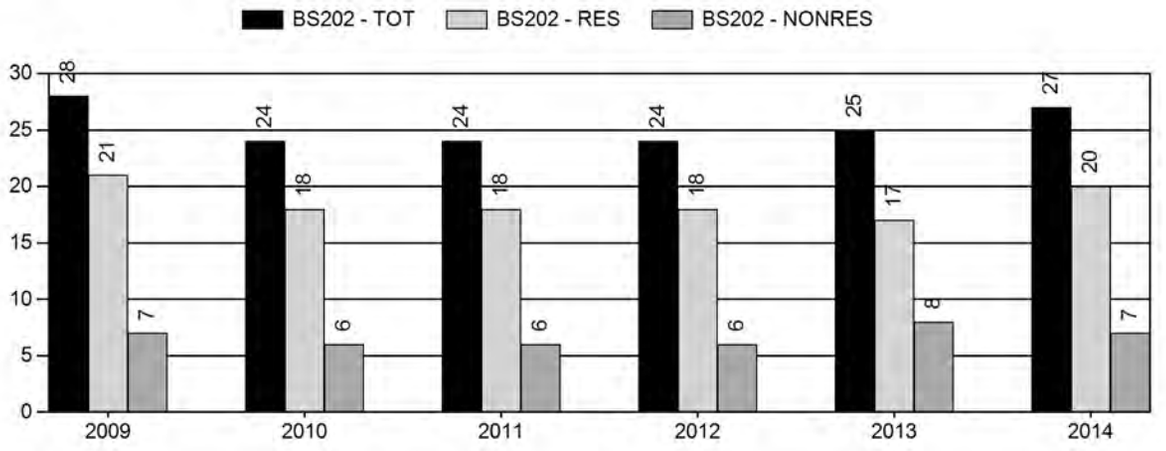
Postseason Animals per 100 Females



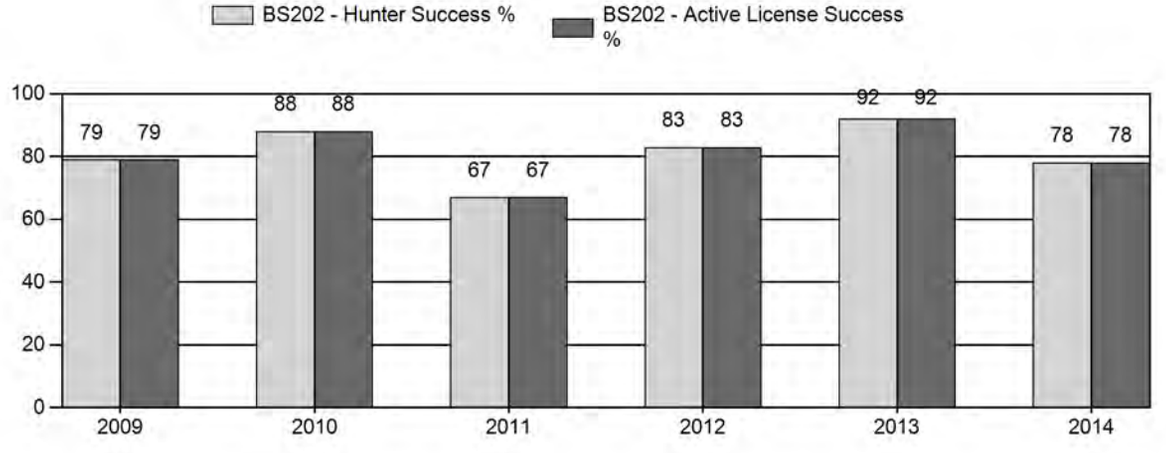
Harvest



Number of Hunters



Harvest Success



2009 - 2014 Postseason Classification Summary

for Bighorn Sheep Herd BS202 - TROUT PEAK

		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
2009	618	9	54	63	20%	192	62%	55	18%	310	311	5	28	33	± 4	29	± 4	22
2010	643	0	111	111	24%	273	60%	71	16%	455	0	0	41	41	± 3	26	± 2	18
2011	657	1	110	111	24%	273	60%	71	16%	455	338	0	40	41	± 3	26	± 2	18
2012	674	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2013	700	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2014	750	3	63	66	19%	216	62%	66	19%	348	325	1	29	31	± 4	31	± 4	23

2015 HUNTING SEASONS
TROUT PEAK BIGHORN SHEEP SUB-HERD

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
2	1	Sep. 1	Oct. 31	24	Limited quota; any ram
Archery		Aug. 15	Aug. 31		Refer to Section 4 of this Chapter

Hunt Area	Type	Quota change from 2014
2	1	-1
Total		**-1**

Management Evaluation
Current Postseason Population Management Objective: 750
Management Strategy: Special
2014 Postseason Population Estimate: ~750
2015 Proposed Postseason Population Estimate: ~750

Herd Unit Issues. The Trout Peak Herd Unit possesses some of the most rugged terrain in Wyoming, which is partially responsible for the wide variation in hunter statistics for which this herd is famous. A small percentage of sheep (presumably less than 10%) reside within Yellowstone National Park. Sheep can be found on low elevation winter ranges along the North Fork of the Shoshone River, but also occupy high elevation ranges throughout the hunt area.

Weather. Weather conditions during the summer of 2014 were favorable throughout the Absaroka Mountains, with normal to near normal precipitation to promote forage growth. However, lamb survival could be adversely affected by the above average snow accumulations of the 2013-2014 winter. The 2014-2015 winter was relatively severe to begin with, but moderated dramatically by mid-January.

Habitat. No habitat monitoring data is collected in this herd unit.

Field Data. Eight surveys have been conducted over the last 11 years, resulted in samples ranging from 117 to 480 classified sheep. Lamb:ewe ratios have ranged from 15:100 to 31:100 over this time, while ram:ewe ratios have varied from 30:100 to 67:100. The most recent survey in 2014 resulted in 348 sheep observed, even though the western portion of the hunt area was not surveyed. The lamb:ewe ratio for this sample was 31:100, which is above average for this sub-herd (25.8:100), and the ram:ewe ratio was 31:100, which is below the previous seven survey average of 43.5:100.

Harvest Data. In 2014, 27 hunters took 21 rams for a success rate of 78%, which is not unusual for this sub-herd. The average age of rams killed in 2014 was 7.9 years old, with 52.0% of the rams killed being 8 years old and older. No rams less than ¾ curl was killed in 2014. All of these indicators, plus good lamb:ewe and ram:ewe ratios from recent surveys, indicate good population performance, and an acceptable presence of mature rams.

Population. The "Time Specific Juvenile – Constant Adult Mortality Rate" (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC, the population estimate and trend appears to be very reasonable. The postseason 2014 population is estimated to be 750 sheep. Efforts will continue to improve this model and improve reliability.

Since adopting the any ram regulation in 2004, this herd unit has exhibited some of the variation in harvest parameters for which it has always been famous. When averaged over the last 8 years, however, harvest parameters are within desirable ranges. Therefore permit levels will remain at 24 licenses for the 2015 season. With average reproduction and survival, the postseason 2015 population is estimated to remain at approximately 750 sheep.

Harvest parameters for the Trout Peak Bighorn Sheep Herd, 1978-2014.

	1978-96	1997-2002	2003	2004-2013*	2014*
Permits	32	24	28	24	27
Harvest	18.8	15.2	16	18.9	21
% Success	61.0%	63.8%	61.5%	78.7%	78%
Effort (days/ram)	18.2	16.0	25.1	12.7	12.0
Avg. Age	5.9	6.7	6.6	7.0	7.9
% Rams $\geq$ 8 Yrs	19.5%	25.6%	18.8%	33.1%	52.0%
% Rams $\leq$ ¾ Curl	-	-	-	4.0%	0.0%

*any ram regulation in place

INPUT	
Species:	Bighorn Sheep
Biologist:	Doug McWhirter
Herd Unit & No.:	Trout Peak
Model date:	02/19/15

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	48	57	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	806	815	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	41	201	☑ TSJ,CA Model	

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population			Total	Predicted Posthunt Population			Total	Objective
	Field Est	Field SE		Juveniles	Total Males	Females		Juveniles	Total Males	Females		
1994				97	123	274	493	97	101	274	471	750
1995				103	113	274	490	103	96	274	472	750
1996				79	110	275	463	79	91	275	445	750
1997				83	100	272	455	83	84	272	438	750
1998				84	94	269	448	84	77	269	430	750
1999				134	101	280	514	134	88	280	501	750
2000				124	128	307	560	124	113	307	544	750
2001				135	149	329	613	135	129	329	593	750
2002				85	167	353	606	85	150	353	588	750
2003				88	156	346	589	88	139	346	572	750
2004				92	159	352	604	92	137	352	582	750
2005				109	147	347	603	109	129	347	584	750
2006				151	158	361	670	151	132	361	645	750
2007				110	153	366	629	110	135	366	611	750
2008				72	164	379	614	72	153	379	603	750
2009				108	167	377	653	108	143	377	629	750
2010				117	171	389	677	117	148	389	654	750
2011				105	179	403	686	105	161	403	668	750
2012				110	186	411	708	110	164	411	686	750
2013				113	191	421	725	113	166	421	700	750
2014				132	194	431	757	132	171	431	733	750
2015				120	205	447	772	120	183	447	750	750
2016												750
2017												750
2018												750
2019												750
2020												750
2021												750
2022												750
2023												750
2024												750
2025												750
2026												750

Survival and Initial Population Estimates

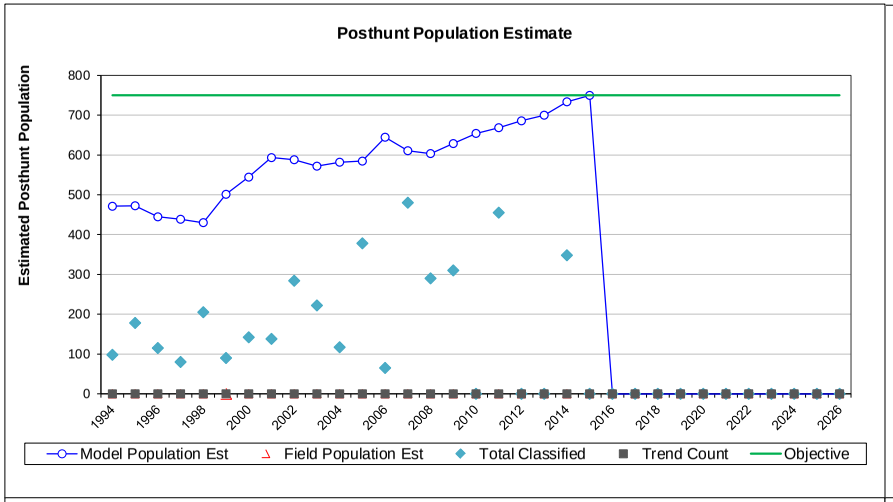
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1994	0.40			0.93		
1995	0.40			0.93		
1996	0.40			0.93		
1997	0.40			0.93		
1998	0.70			0.93		
1999	0.70			0.93		
2000	0.70			0.93		
2001	0.70			0.93		
2002	0.40			0.93		
2003	0.70			0.93		
2004	0.42			0.93		
2005	0.70			0.93		
2006	0.40			0.93		
2007	0.70			0.93		
2008	0.70			0.93		
2009	0.70			0.93		
2010	0.70			0.93		
2011	0.70			0.93		
2012	0.70			0.93		
2013	0.70			0.93		
2014	0.70			0.93		
2015	0.70			0.93		
2016	0.70			0.93		
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						
2026						

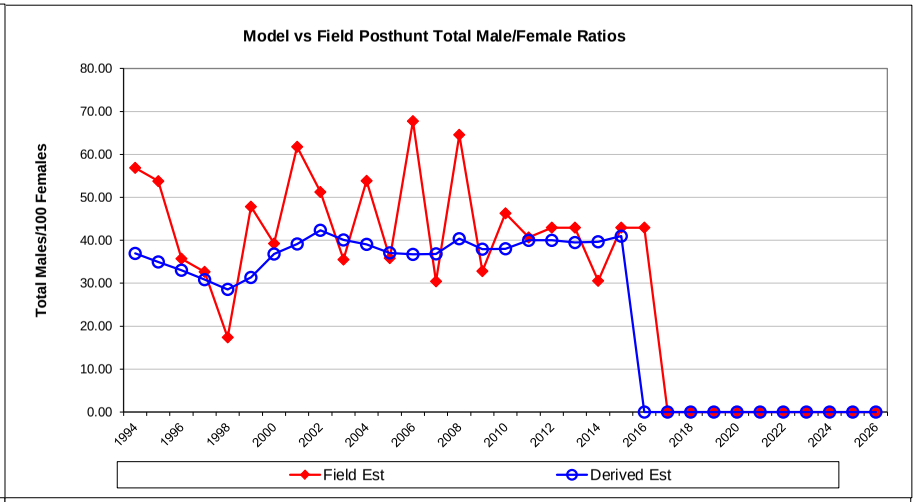
Parameters:	Optim cells
Adult Survival =	0.930
Initial Total Male Pop/10,000 =	0.010
Initial Female Pop/10,000 =	0.027

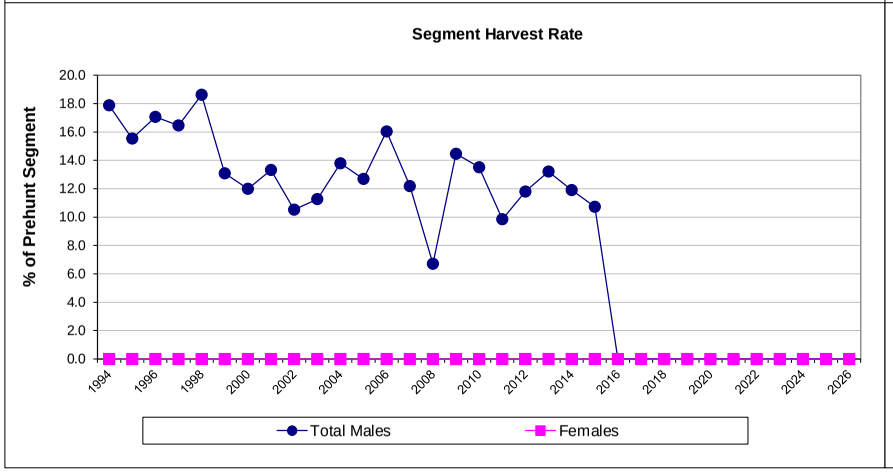
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

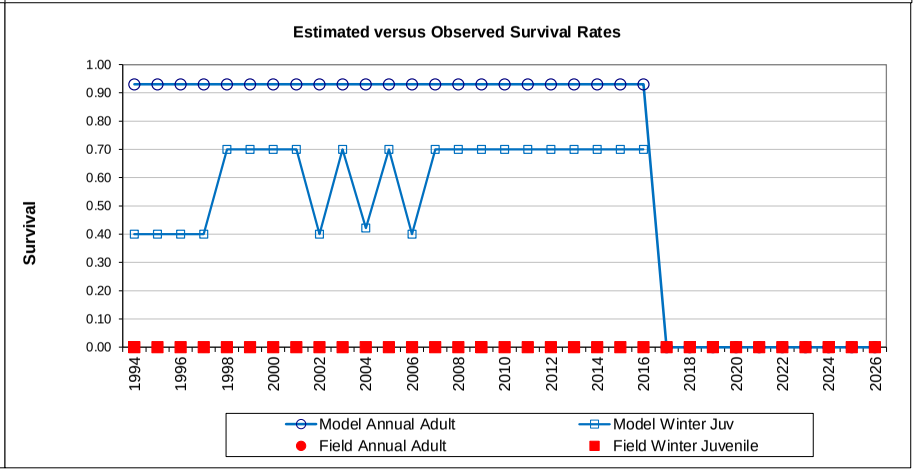
Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio			Harvest				Harvest: Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1994		35.29	9.68	36.93	56.86	13.22	0	20	0	20	17.9	0.0
1995		37.63	7.46	34.95	53.76	9.43	0	16	0	16	15.5	0.0
1996		28.57	7.24	33.02	35.71	8.32	0	17	0	17	17.1	0.0
1997		30.61	9.03	30.83	32.65	9.40	0	15	0	15	16.5	0.0
1998		31.16	5.44	28.56	17.39	3.85	0	16	0	16	18.6	0.0
1999		47.83	12.40	31.34	47.83	12.40	0	12	0	12	13.1	0.0
2000		40.51	8.49	36.80	39.24	8.32	0	14	0	14	12.0	0.0
2001		41.18	9.25	39.14	61.76	12.12	0	18	0	18	13.3	0.0
2002		24.07	4.29	42.32	51.23	6.92	0	16	0	16	10.5	0.0
2003		25.36	4.80	40.07	35.51	5.90	0	16	0	16	11.3	0.0
2004		26.15	7.12	39.04	53.85	11.29	0	20	0	20	13.8	0.0
2005		31.42	4.27	37.07	35.84	4.64	0	17	0	17	12.7	0.0
2006		41.94	13.86	36.71	67.74	19.15	0	23	0	23	16.0	0.0
2007		30.10	3.62	36.83	30.43	3.64	0	17	0	17	12.2	0.0
2008		18.99	3.78	40.36	64.56	8.20	0	10	0	10	6.7	0.0
2009		28.65	4.38	37.92	32.81	4.76	0	22	0	22	14.5	0.0
2010		30.22	5.98	38.02	46.28	8.08	0	21	0	21	13.5	0.0
2011		26.01	3.46	39.98	40.66	4.58	0	16	0	16	9.9	0.0
2012		26.79	4.25	39.98	42.95	5.85	0	20	0	20	11.8	0.0
2013		26.79	4.25	39.47	42.95	5.85	0	23	0	23	13.2	0.0
2014		30.56	4.30	39.65	30.56	4.30	0	21	0	21	11.9	0.0
2015		26.79	4.25	40.95	42.95	5.85	0	20	0	20	10.7	0.0
2016		26.79	4.25		42.95	5.85						
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												
2026												

FIGURES









Comments:

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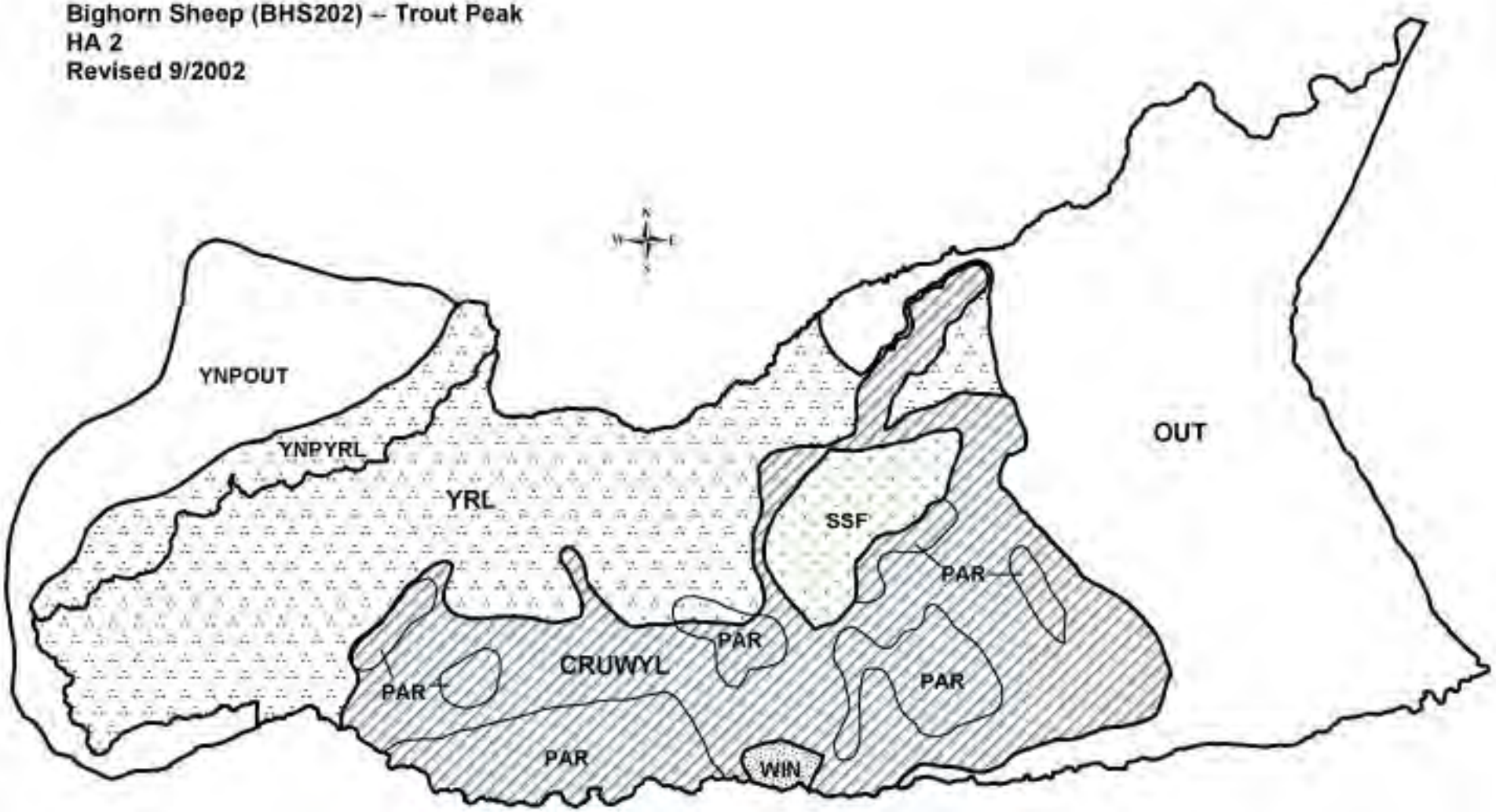
Bighorn Sheep (BHS202) -- Trout Peak
HA 2
Revised 9/2002



2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2014 - 5/31/2015

HERD: BS203 - WAPITI RIDGE

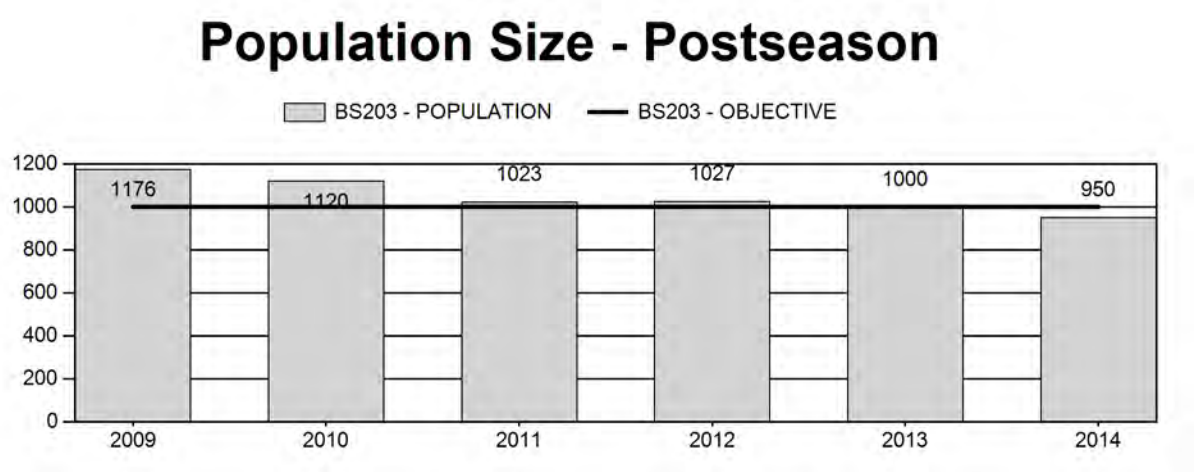
HUNT AREAS: 3
PREPARED BY: DOUG MCWHIRTER

	2009 - 2013 Average	2014	2015 Proposed
Population:	1,069	950	900
Harvest:	37	33	35
Hunters:	44	38	40
Hunter Success:	84%	87%	88 %
Active Licenses:	44	38	40
Active License Success:	84%	87%	88 %
Recreation Days:	354	304	325
Days Per Animal:	9.6	9.2	9.3
Males per 100 Females	31	24	
Juveniles per 100 Females	25	25	

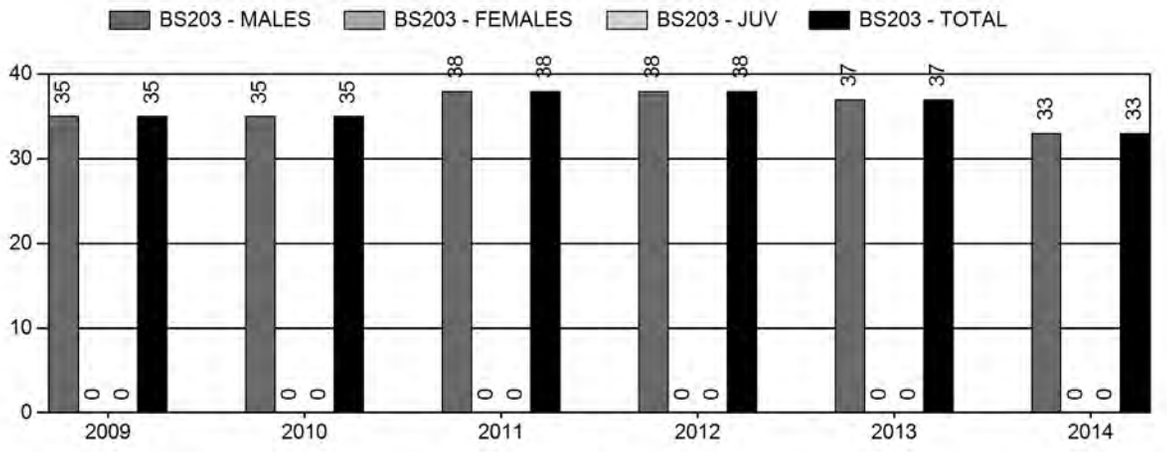
Population Objective (± 20%) :	1000 (800 - 1200)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-5%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/19/2014

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

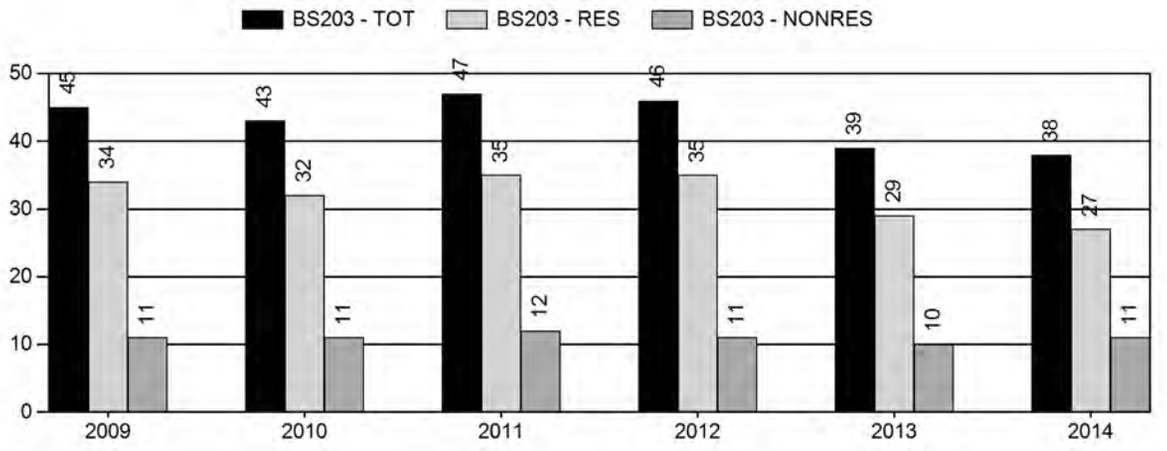
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	23.8%	18.1%
Juveniles (< 1 year old):	0%	0%
Total:	4.2%	3.7%
Proposed change in post-season population:	-14.0%	-5.6%



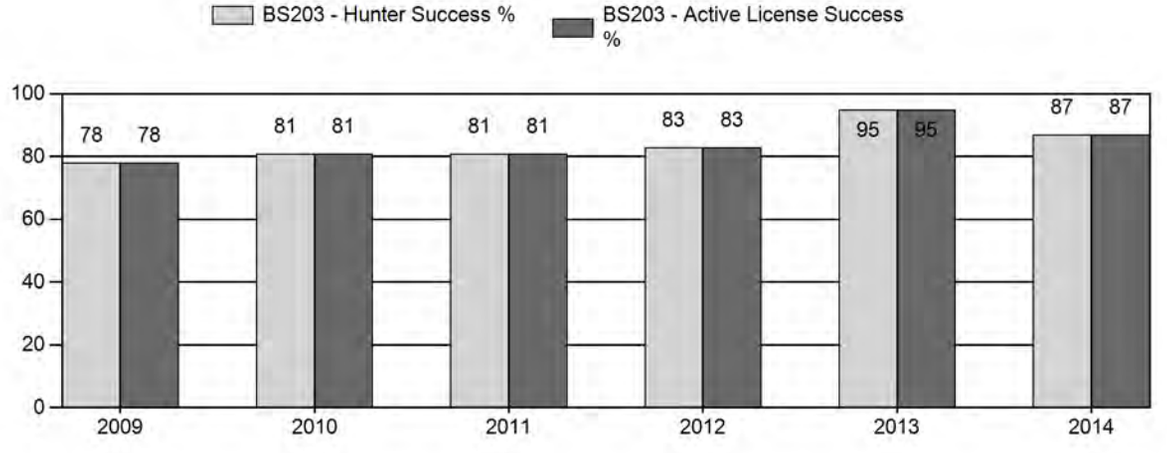
Harvest



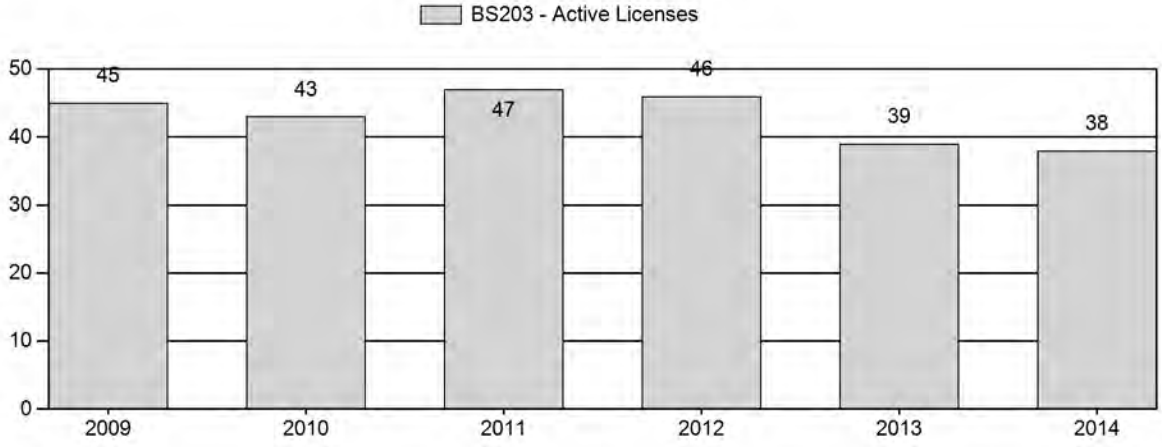
Number of Hunters



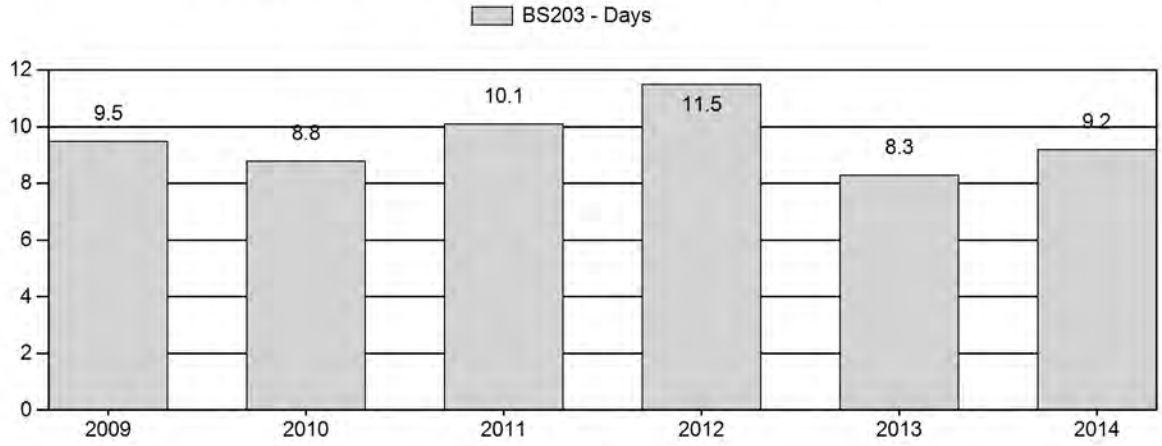
Harvest Success



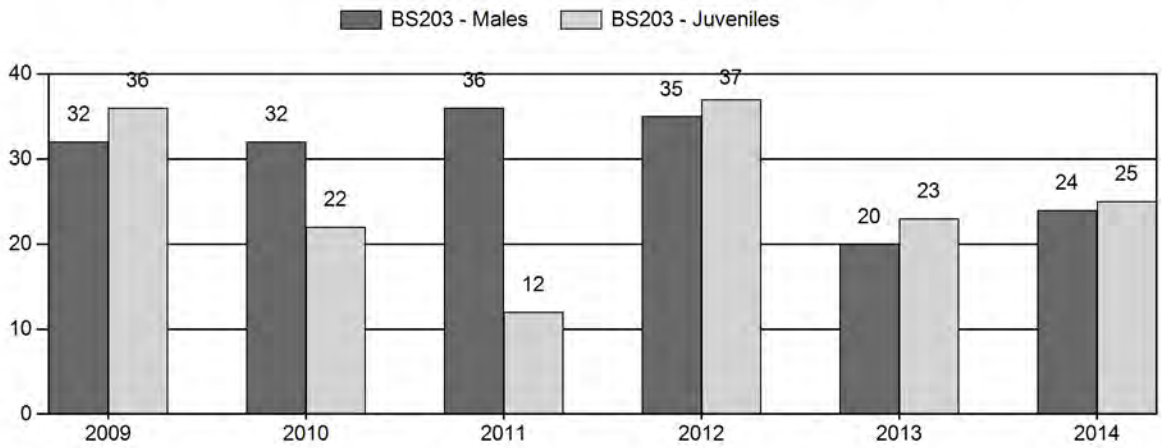
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Bighorn Sheep Herd BS203 - WAPITI RIDGE

		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
2009	1,176	49	126	175	19%	544	60%	195	21%	914	392	9	23	32	± 2	36	± 2	27
2010	1,120	8	33	41	21%	130	65%	28	14%	199	392	6	25	32	± 7	22	± 5	16
2011	1,023	12	148	160	24%	446	67%	55	8%	661	415	3	33	36	± 3	12	± 1	9
2012	1,027	7	32	39	20%	111	58%	41	21%	191	392	6	29	35	± 8	37	± 8	27
2013	1,000	9	41	50	14%	246	70%	56	16%	352	378	4	17	20	± 3	23	± 3	19
2014	950	6	109	115	16%	487	67%	124	17%	726	363	1	22	24	± 2	25	± 2	21

2015 HUNTING SEASONS
WAPITI RIDGE BIGHORN SHEEP SUB-HERD

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
3	1	Sep. 1	Oct. 31	40	Limited quota; any ram
Archery		Aug. 15	Aug. 31		Refer to Section 4 of this Chapter

Hunt Area	Type	Quota change from 2014
3	1	-1
Total	**1**	**-1**

Management Evaluation

Current Postseason Population Management Objective: 1,000
Management Strategy: Special
2014 Postseason Population Estimate: ~950
2015 Proposed Postseason Population Estimate: ~900

Herd Unit Issues. The Wapiti Ridge Herd Unit consists of sheep that occupy low elevation winter ranges along the North and South Forks of the Shoshone River, but also occupy high elevation ranges throughout the hunt area. A small percentage of sheep (presumably less than 10%) reside within Yellowstone National Park.

Weather. Weather conditions during the summer of 2014 were favorable throughout the Absaroka Mountains, with normal to near normal precipitation to promote forage growth. However, lamb survival could have been adversely affected by the above average snow accumulations of the 2013-2014 winter. The 2014-2015 winter was relatively severe to begin with, but moderated dramatically by mid-January.

Habitat. No habitat monitoring data is collected in this herd unit.

Field Data. Nine surveys have been conducted over the last 11 years, resulted in samples ranging from 315 to 914 classified sheep. Lamb:ewe ratios have ranged from 12:100 to 37:100 over this time, while ram:ewe ratios have varied from 24:100 to 46:100. The most recent survey in 2014 resulted in 737 sheep observed, a lamb:ewe ratio of 26:100 (which is below the recent average), and a ram:ewe ratio of 24:100, which is below average for this herd unit.

Harvest Data. In 2014, 38 hunters took 33 rams for a success rate of 87%, which is above average for this sub-herd. The average age of rams killed in 2014 was 7.8 years old, with 55% of the rams killed being 8 years old and older. Two rams less than ¾ curl were killed in 2014, representing 6% of the total harvest. Hunter effort was 9.2 days per ram harvested in 2014, which is near normal for this sub-herd.

Population. The "Time Specific Juvenile – Constant Adult Mortality Rate" (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC, the population estimate appears to be reasonable. The rather steep decline produced by the model however, is not believed to entirely realistic. The postseason 2014 population is

estimated to be approximately 950 sheep. Efforts will continue to improve this model and improve reliability.

A worrisome factor is the number of pickup heads registered in 2011 (n=21) and 2012 (n=24). These numbers represent an increase of 69% and 94% over the previous 10-year average number of pickup heads per year. The 2010-2011 winter obviously had impacts on this population, as evidenced by the lamb:ewe ratio of 12:100 seen in postseason 2011 surveys. A total of 16 pick-up heads were registered from Area 3 in 2013, and 14 were registered in 2014.

With the extremely poor lamb production experienced recently, it is likely that the availability of rams will decline in this herd unit in coming years as lambs from these cohorts enter mature ram age classes. Impacts from the 2010-2011 winter had localized impacts on this population as well. Further permit reductions may be necessary in the near future to preserve or improve ram hunting opportunities. Harvest statistics should be monitored closely to determine if such a situation is developing. License numbers were reduced to 40 for the 2013 and 2014 seasons, and should remain so for the 2015 season. The postseason 2015 population is estimated to be approximately 900 sheep.

Harvest parameters for the Wapiti Ridge Bighorn Sheep Herd Unit, 1978-2014.

	1978-83	1984-85	1986-92	1993-1999	2000-04*	2005-13*	2014*
Permits	32	36	40	44	48	43.8	38
Harvest	22.5	29.5	36.1	36.9	38.0	36.6	33
% Success	69.3%	81.2%	83.0%	79.0%	77.6%	82.9%	86.8%
Effort (days/ram)	11.3	9.3	8.6	9.0	9.8	9.9	9.2
Avg. Age	5.9	7.1	6.9	7.1	6.8	6.7	7.8
% Rams $\geq$ 8 Yrs	12.8%	49.2%	41.5%	35.1%	31.0%	33.5%	54.5%
% Rams $\leq$ ¾ Curl	-	-	-	-	8.4%	8.3%	6.0%

* “any ram” regulation in place

INPUT	
Species:	Bighorn Sheep
Biologist:	Doug McWhirter
Herd Unit & No.:	Wapiti Ridge
Model date:	02/14/14

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	18	27	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	20092	20101	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	8	188	☑ TSJ,CA Model	

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population			Total	Predicted Posthunt Population			Total	Objective
	Field Est	Field SE		Juveniles	Total Males	Females		Juveniles	Total Males	Females		
1993				309	425	961	1695	309	386	961	1656	1000
1994				355	409	927	1690	355	367	927	1649	1000
1995				178	401	905	1485	178	363	905	1446	1000
1996				104	362	850	1317	104	321	850	1276	1000
1997				228	310	786	1324	228	267	786	1281	1000
1998				265	320	787	1372	265	281	787	1333	1000
1999				306	345	801	1453	306	305	801	1412	1000
2000				270	381	828	1480	270	338	828	1437	1000
2001				296	399	840	1535	296	358	840	1495	1000
2002				151	426	860	1437	151	385	860	1395	1000
2003				225	399	826	1450	225	358	826	1409	1000
2004				240	401	822	1464	240	358	822	1421	1000
2005				137	370	788	1295	137	332	788	1257	1000
2006				283	346	757	1387	283	305	757	1345	1000
2007				216	331	738	1285	216	290	738	1244	1000
2008				188	304	707	1199	188	265	707	1160	1000
2009				242	276	674	1192	242	237	674	1153	1000
2010				147	287	681	1115	147	249	681	1076	1000
2011				82	275	664	1021	82	234	664	979	1000
2012				231	239	626	1096	231	197	626	1054	1000
2013				139	224	610	972	139	183	610	931	1000
2014				152	213	597	963	152	177	597	926	1000
2015				148	212	591	952	148	174	591	913	1000
2016				146	208	584	938	146	170	584	900	1000
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Survival and Initial Population Estimates

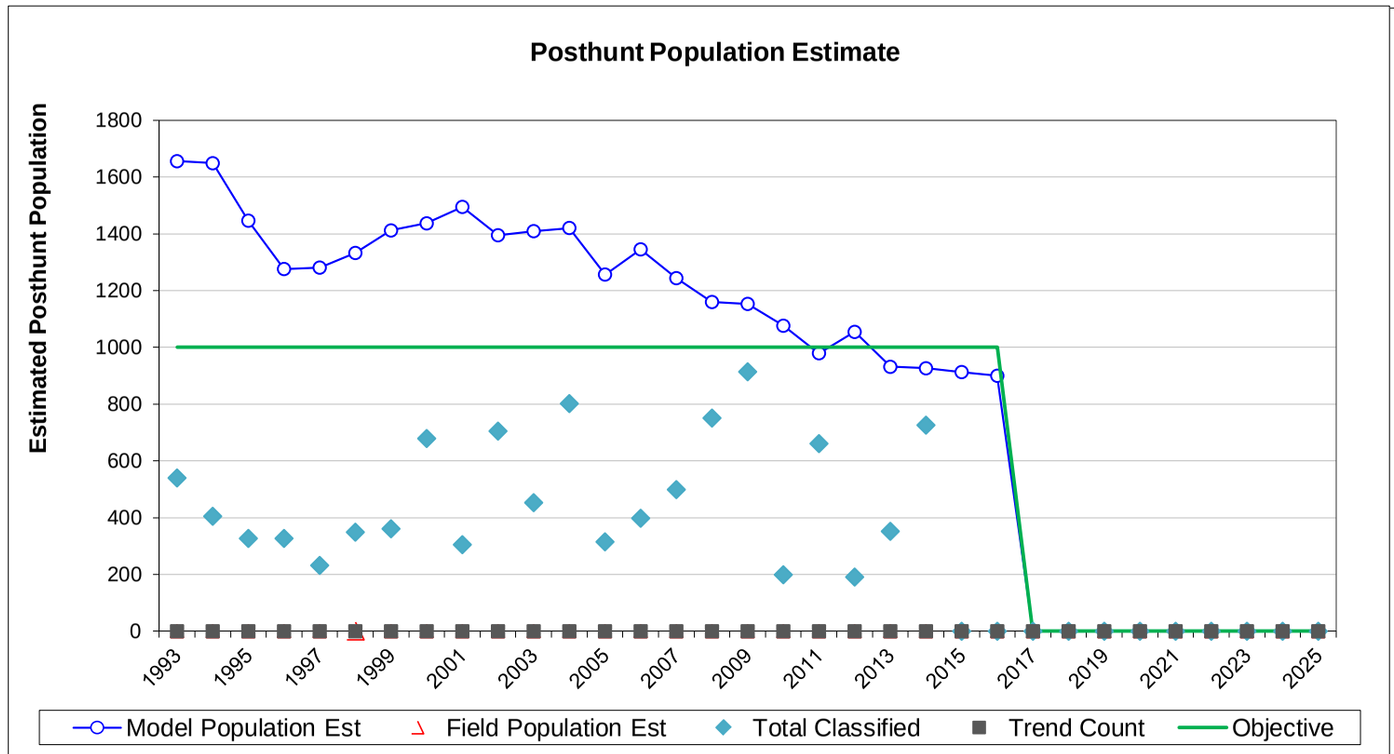
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.40			0.90		
1994	0.40			0.90		
1995	0.40			0.90		
1996	0.40			0.90		
1997	0.70			0.90		
1998	0.70			0.90		
1999	0.70			0.90		
2000	0.70			0.90		
2001	0.70			0.90		
2002	0.70			0.90		
2003	0.70			0.90		
2004	0.40			0.90		
2005	0.70			0.90		
2006	0.40			0.90		
2007	0.40			0.90		
2008	0.40			0.90		
2009	0.61			0.90		
2010	0.70			0.90		
2011	0.70			0.90		
2012	0.40			0.90		
2013	0.70			0.90		
2014	0.70			0.90		
2015	0.70			0.90		
2016	0.70			0.90		
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

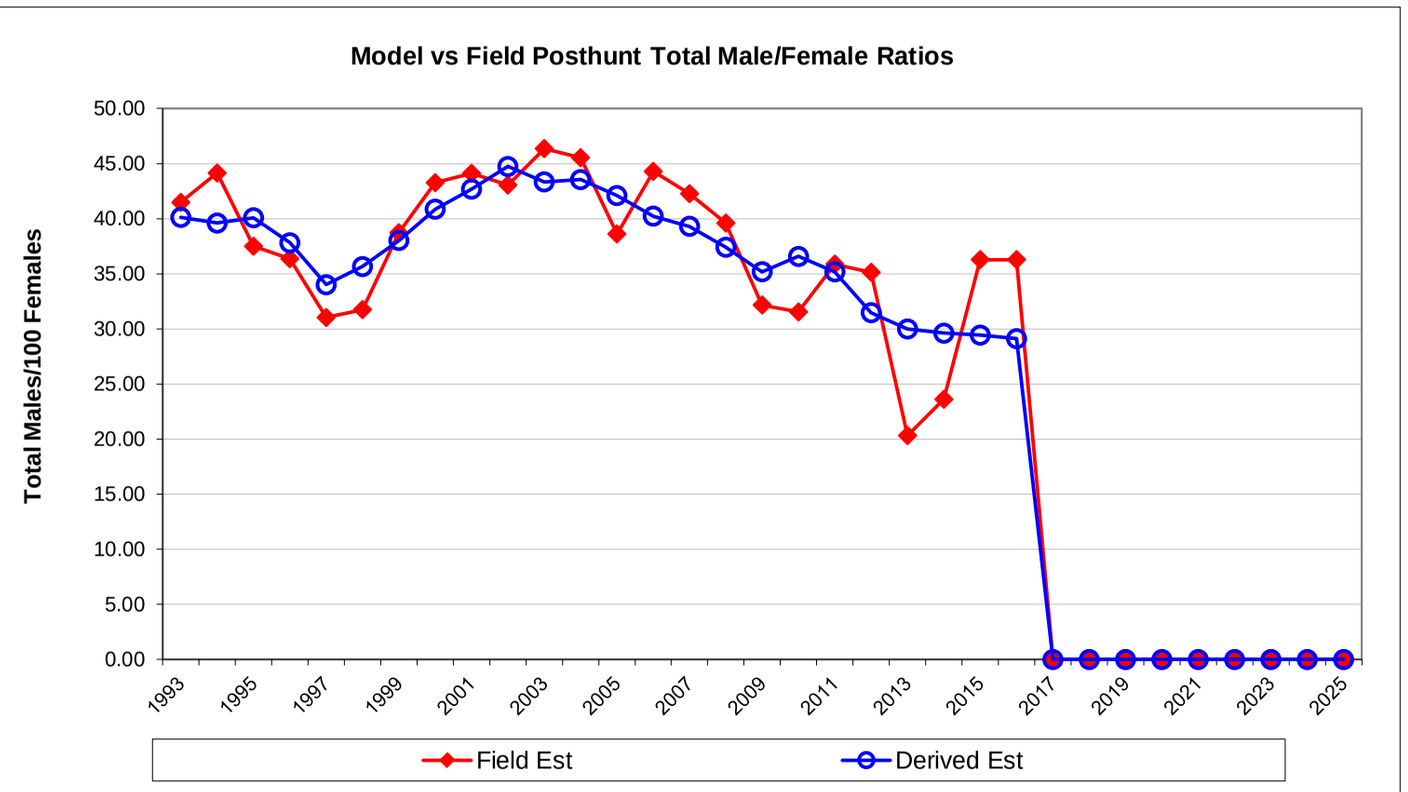
Parameters:	Optim cells
Adult Survival =	0.900
Initial Total Male Pop/10,000 =	0.039
Initial Female Pop/10,000 =	0.096

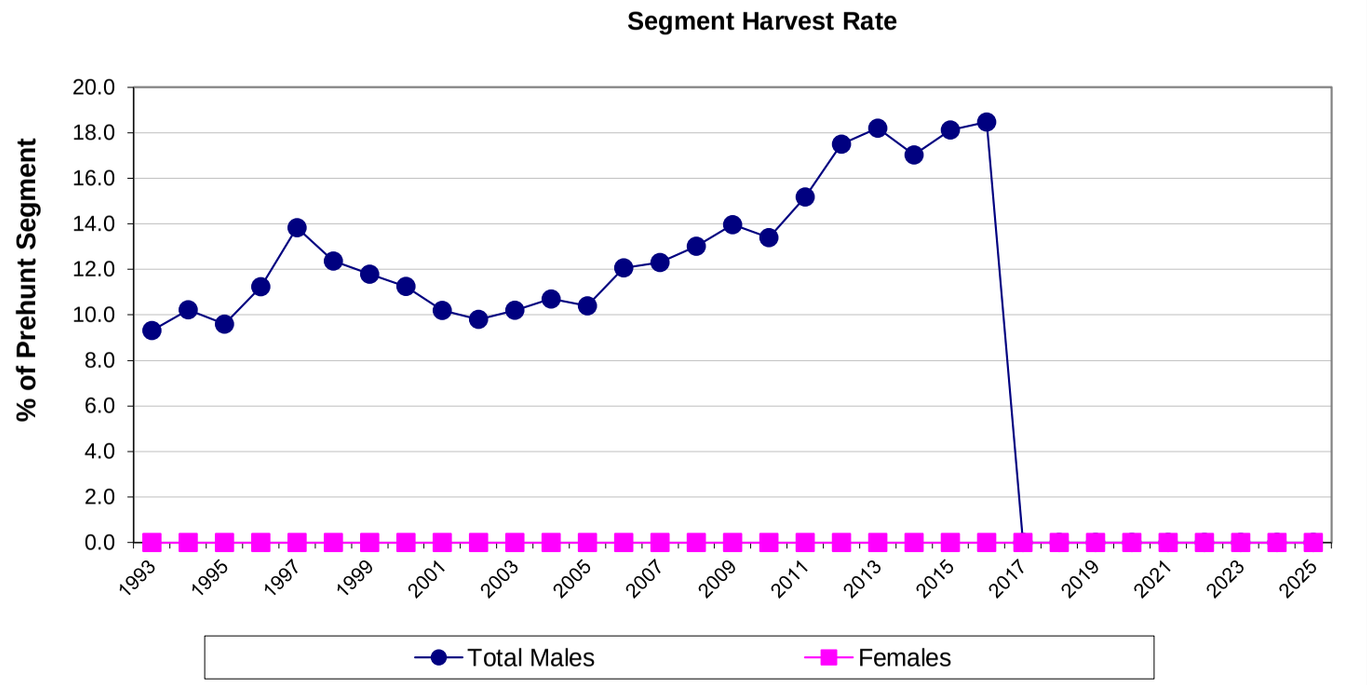
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

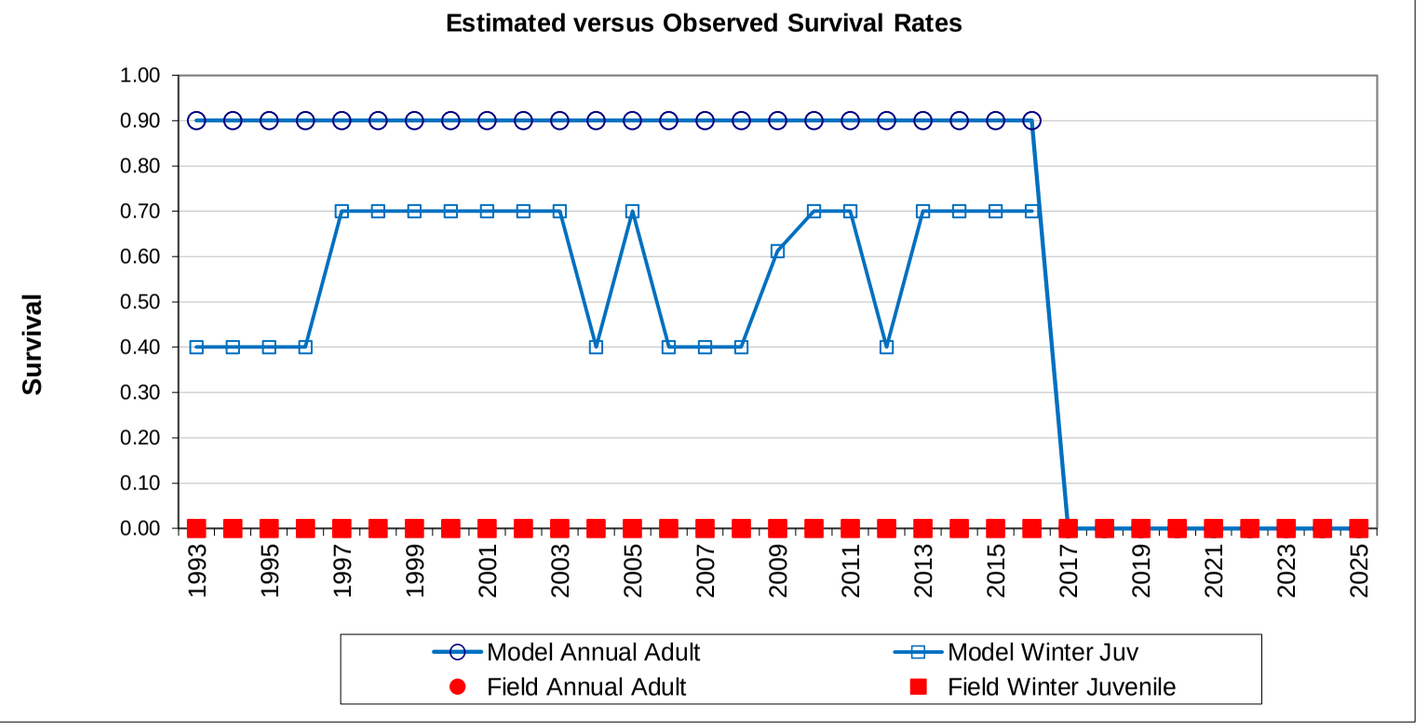
Classification Counts							Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		32.15	3.70	40.12	41.48	4.34	0	36	0	36	9.3	0.0
1994		38.29	4.88	39.60	44.14	5.35	0	38	0	38	10.2	0.0
1995		19.71	3.37	40.08	37.50	4.98	0	35	0	35	9.6	0.0
1996		12.27	2.50	37.81	36.36	4.75	0	37	0	37	11.2	0.0
1997		28.97	5.08	34.01	31.03	5.30	0	39	0	39	13.8	0.0
1998		33.65	4.62	35.66	31.75	4.45	0	36	0	36	12.4	0.0
1999		38.24	5.09	38.02	38.73	5.13	0	37	0	37	11.8	0.0
2000		32.64	3.35	40.86	43.26	4.01	0	39	0	39	11.3	0.0
2001		35.29	5.30	42.68	44.12	6.12	0	37	0	37	10.2	0.0
2002		17.54	2.17	44.73	43.05	3.75	0	38	0	38	9.8	0.0
2003		27.20	3.64	43.34	46.36	5.10	0	37	0	37	10.2	0.0
2004		29.19	2.87	43.54	45.53	3.80	0	39	0	39	10.7	0.0
2005		17.33	3.17	42.10	38.61	5.15	0	35	0	35	10.4	0.0
2006		37.44	4.85	40.23	44.29	5.40	0	38	0	38	12.1	0.0
2007		29.21	3.60	39.31	42.27	4.55	0	37	0	37	12.3	0.0
2008		26.55	2.73	37.41	39.60	3.50	0	36	0	36	13.0	0.0
2009		35.85	2.99	35.19	32.17	2.80	0	35	0	35	14.0	0.0
2010		21.54	4.49	36.57	31.54	5.65	0	35	0	35	13.4	0.0
2011		12.33	1.76	35.18	35.87	3.31	0	38	0	38	15.2	0.0
2012		36.94	6.75	31.47	35.14	6.54	0	38	0	38	17.5	0.0
2013		22.76	3.37	29.99	20.33	3.15	0	37	0	37	18.2	0.0
2014		25.46	2.56	29.61	23.61	2.45	0	33	0	33	17.0	0.0
2015		25.09	3.11	29.44	36.29	3.96	0	35	0	35	18.1	0.0
2016		25.09	3.11	29.11	36.29	3.96	0	35	0	35	18.5	0.0
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES









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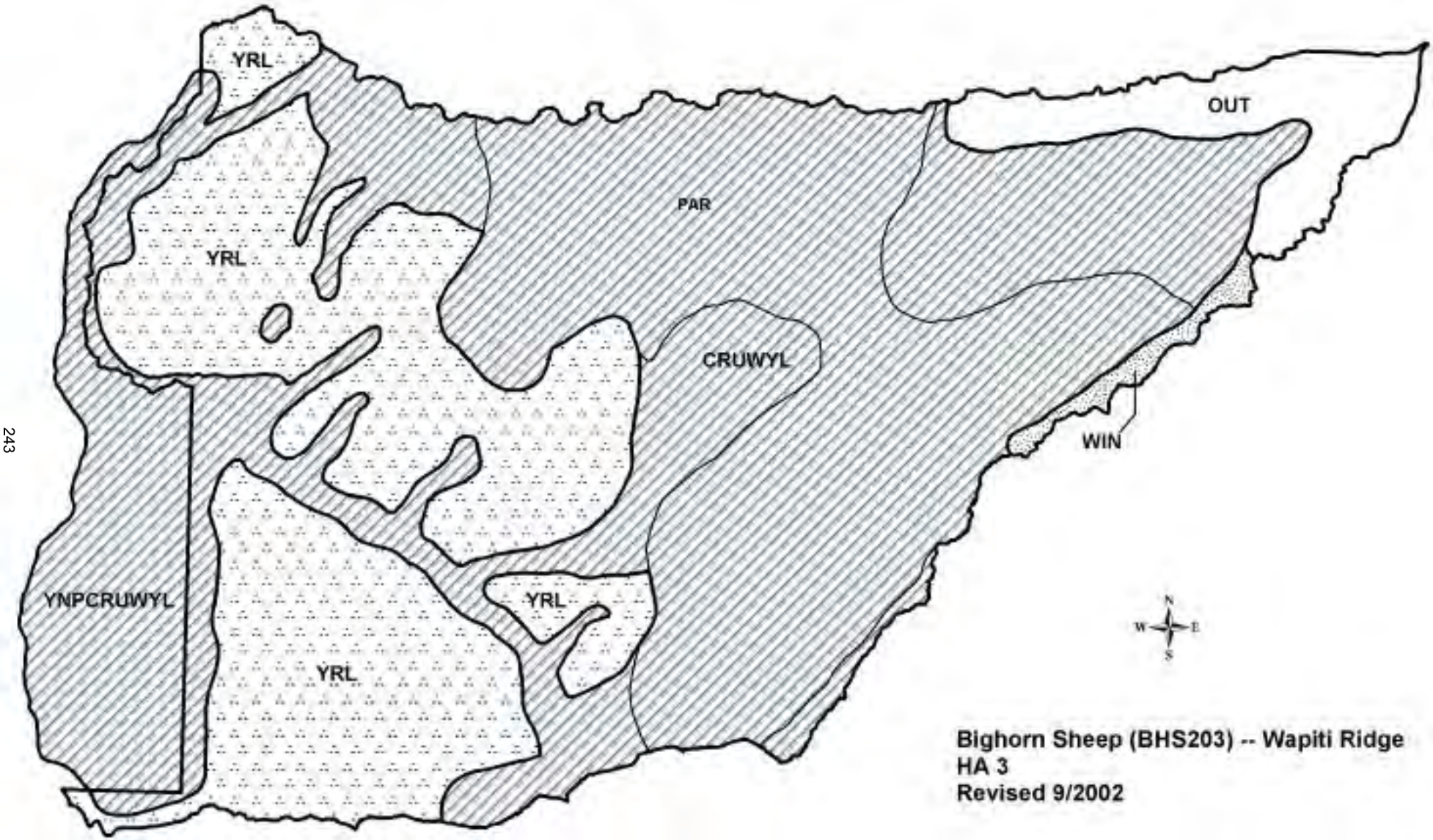


Bighorn Sheep (BHS203) -- Wapiti Ridge
HA 3
Revised 9/2002

2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep

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

HERD: BS204 - YOUNTS PEAK

HUNT AREAS: 4

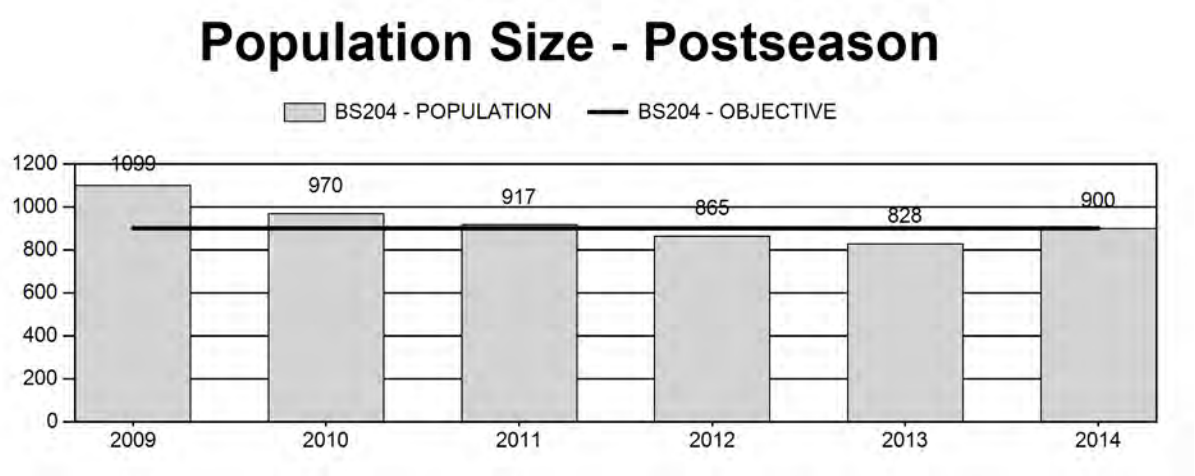
PREPARED BY: DOUG MCWHIRTER

	2009 - 2013 Average	2014	2015 Proposed
Population:	936	900	900
Harvest:	25	15	15
Hunters:	34	22	20
Hunter Success:	74%	68%	75 %
Active Licenses:	34	22	20
Active License Success:	74%	68%	75 %
Recreation Days:	258	183	175
Days Per Animal:	10.3	12.2	11.7
Males per 100 Females	40	44	
Juveniles per 100 Females	20	36	

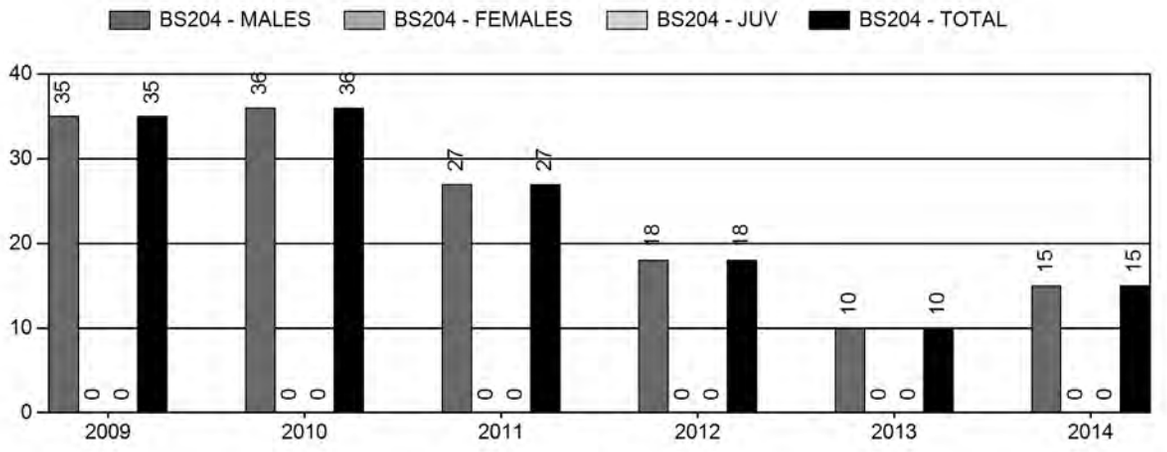
Population Objective (± 20%) :	900 (720 - 1080)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	0%
Number of years population has been + or - objective in recent trend:	3
Model Date:	2/19/2015

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

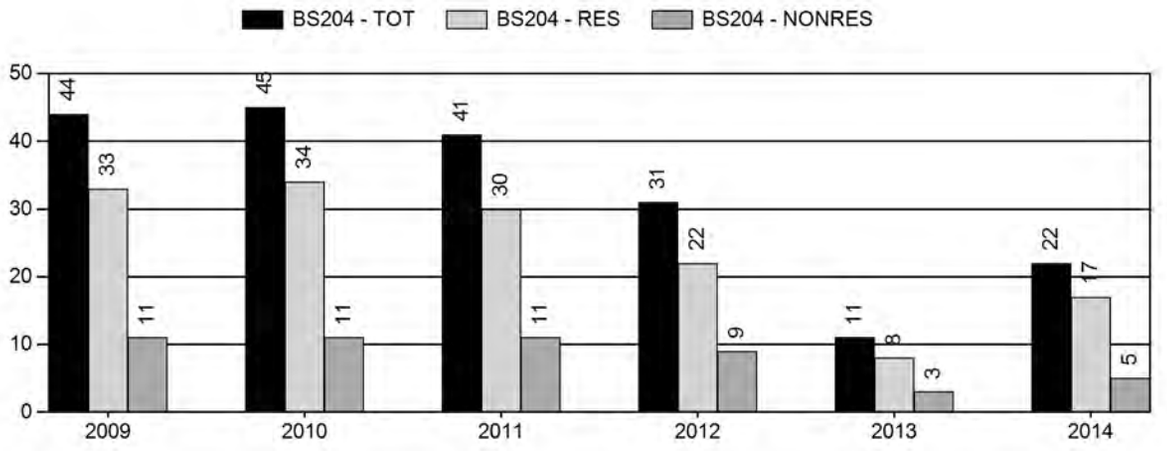
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	9.4%	6.7%
Juveniles (< 1 year old):	0%	0%
Total:	2.0%	1.7%
Proposed change in post-season population:	-12.3%	0.0%



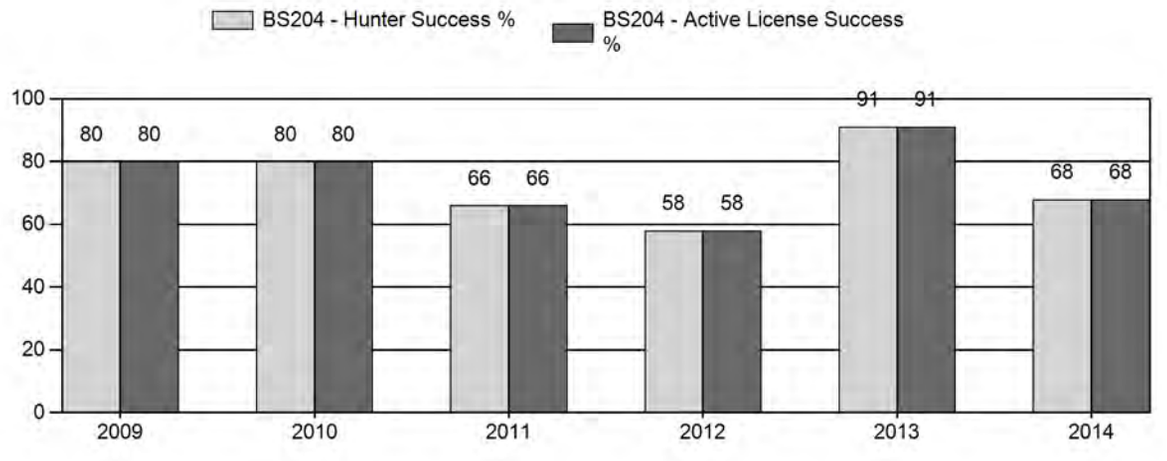
Harvest



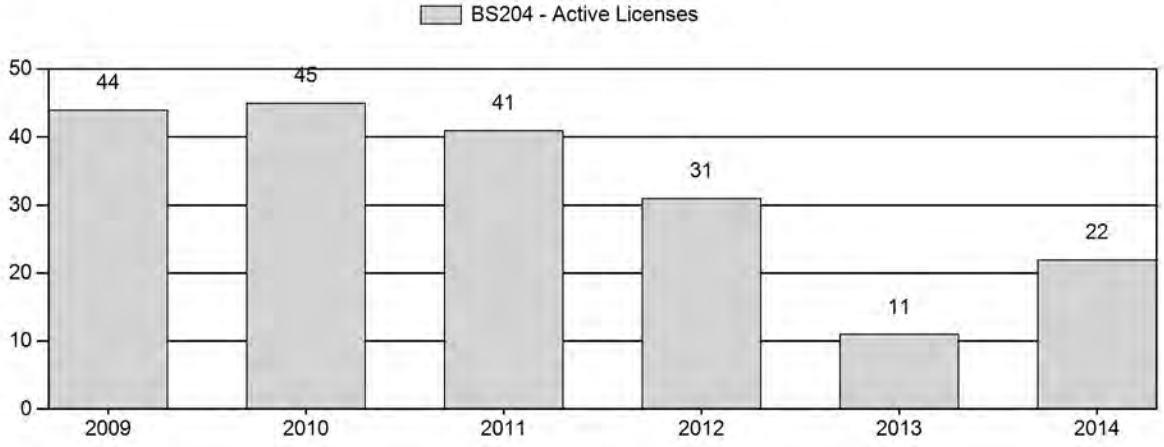
Number of Hunters



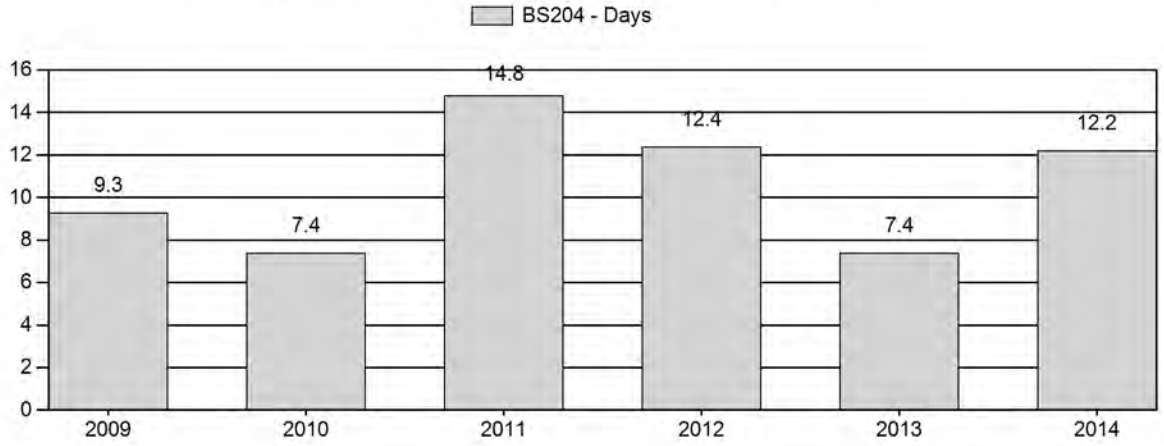
Harvest Success



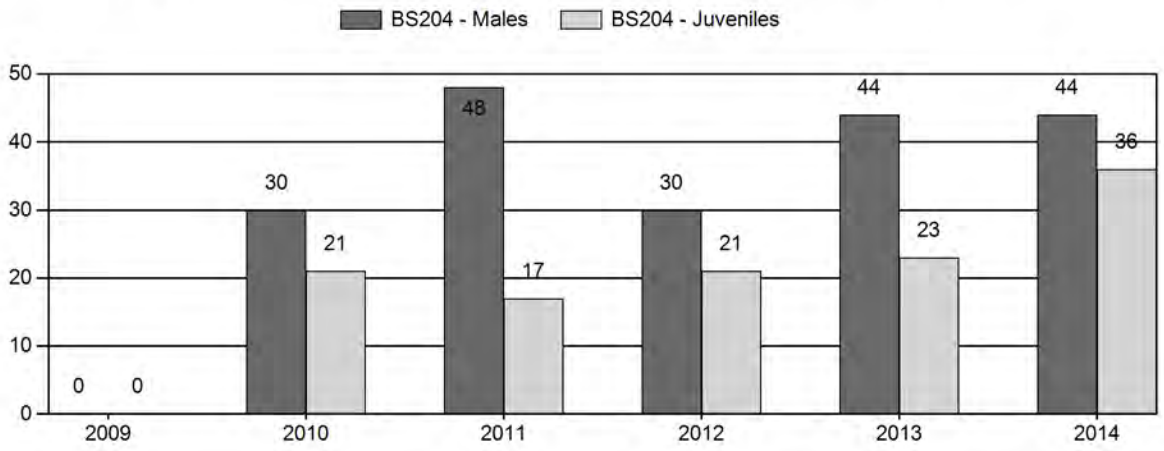
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Bighorn Sheep Herd BS204 - YOUNTS PEAK

		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
2009	1,099	0	0	0	0%	0	0%	0	0%	0	376	0	0	0	± 0	0	± 0	0
2010	970	0	46	46	20%	155	67%	32	14%	233	409	0	30	30	± 6	21	± 4	16
2011	917	21	126	147	29%	305	60%	53	10%	505	386	7	41	48	± 4	17	± 2	12
2012	865	0	46	46	20%	155	67%	32	14%	233	345	0	30	30	± 5	21	± 4	16
2013	828	4	115	119	26%	269	60%	63	14%	451	345	1	43	44	± 4	23	± 3	16
2014	900	10	100	110	24%	252	56%	91	20%	453	355	4	40	44	± 5	36	± 4	25

2015 HUNTING SEASONS
YOUNTS PEAK BIGHORN SHEEP SUB-HERD (BS204)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
4	1	Sep. 1	Oct. 31	20	Limited quota; any ram
Archery		Aug. 15	Aug. 31		Refer to Section 4 of this Chapter

Hunt Area	Type	Quota change from 2014
4	1	+8
Total	**1**	**+8**

Management Evaluation

Current Postseason Population Management Objective: 900
Management Strategy: Special
2014 Postseason Population Estimate: ~900
2015 Proposed Postseason Population Estimate: ~900

Herd Unit Issues. The Younts Peak Herd Unit is characterized by sheep that live at extremely high elevation year-round. This subjects many of them to occasionally heavy winter losses, which occurred in 1995, 1996, and 2010.

Weather. Weather conditions during the summer of 2014 were favorable throughout the Absaroka Mountains, with normal to near normal precipitation to promote forage growth. However, adult and lamb survival could be adversely affected by the above average snow accumulations of the 2013-2014 winter.

Habitat. No habitat monitoring data is collected in this herd unit.

Field Data. Eleven surveys have been conducted over the last 15 years, resulted in samples ranging from 132 to 567 classified sheep. Lamb:ewe ratios have ranged from 17:100 to 36:100 over this time, and averaged 27.6 lambs:100 ewes. Ram:ewe ratios have varied from 28:100 to 54:100, and averaged 44.1 rams:100 ewes. The most recent complete survey in 2014 resulted in 461 sheep observed, a lamb:ewe ratio of 36:100 (which is much higher than it has been recently), and a ram:ewe ratio of 44:100, which is slightly below average for this herd unit.

Harvest Data. Due to the Hardluck Fire in the South Fork of the Shoshone River, the opportunity to carry-over sheep licenses to the 2014 was given to hunters in 2013. Nine hunters took advantage of this, and with 2 medical carry-overs from 2013 to 2014, there were only 11 hunters in 2013. These 11 hunters hunted in 2014 (although 1 took a medical carry-over), and with the 12 licenses issued in 2014 there were a total of 22 hunters in 2014. These 22 hunters took 15 rams for a success rate of 68%. The average age of rams killed in 2014 was 7.6 years old, with 53.3% of the rams killed being 8 years old and older. Two rams less than ¾ curl were killed in 2014, representing 13.3% of the total harvest. Hunter effort was 12.2 days per ram harvested in 2014. With the exception of the age of harvested rams, these figures represent difficult hunting conditions and a return to levels previously seen in this sub-herd in 2011-2012, immediately following a population decline.

Population. The "Time Specific Juvenile – Constant Adult Mortality Rate" (TSJCA) spreadsheet model was chosen to use for the post season population estimate of this herd. Although this model did not have the lowest relative AIC, the population trend is much more reasonable than other models. The postseason 2014 population is estimated to be 900 sheep. Efforts will continue to improve this model.

The 2010-2011 winter was essentially normal for most of the winter, but quickly began to accumulate and retain above far above average levels of snow in April, May, and June. Snow (snow depth only measured since 1998) is usually gone by June, but in June 2011 there was still 20 inches at the Younts Peak SnoTel site. The 2010-2011 winter obviously had impacts on this population, as evidenced by the lamb:ewe ratio of 12:100 seen in postseason 2011 surveys.

With the extremely poor lamb production experienced recently, it is likely that the availability of rams will not recover rapidly in this herd unit in coming years as lambs from these cohorts enter mature ram age classes. Maintenance of reduced ram hunting opportunities may be necessary in the near future to preserve or improve ram hunting opportunities. Ram:ewe ratios, average age of harvested rams, and the percentage of rams at least 8 years of age and older should be monitored closely to determine if such a situation is developing. License numbers were reduced to 20 for the 2013 and 2014 seasons and will remain there for the 2015 season. The postseason 2015 population is estimated to remain at approximately 900 sheep.

Harvest parameters for the Younts Peak Bighorn Sheep Herd Unit, 1984-2014.

	1984-91	1992-95	1996-00*	2001-04*	2005-08*	2009-11*	2012*	2013*	2014*
Permits	60	48	32	36	40	44^{+}	28	20	22
Harvest	33.1	28.3	22.6	32.3	34.0	32.7	18	10	15
% Success	59%	62%	74%	87%	83.3%	75.4%	58.1%	91%	68%
Effort (days/ram)	18.6	15.0	8.4	7.9	8.2	10.5	12.4	7.4	12.2
Avg. Age	6.6	6.5	6.7	7.3	7.3	7.5	7.2	8.0	7.6
% Rams $\geq$ 8 Yrs	24.1%	17.5%	33.3%	44.1%	32.7%	47.6%	22.2%	70%	53.3
% Rams $\leq$ ¾ Curl	-	-	11.9%	15.0%	7.2%	5.9%	5.6%	10.0%	13.3%

* "any ram" regulation in place

INPUT	
Species:	Bighorn Sheep
Biologist:	Doug McWhirter
Herd Unit & No.:	Younts Peak
Model date:	02/19/15

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	43	52	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	53	67	☐ SCJ,SCA Mode	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	37	217	☑ TSJ,CA Model	

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population				Predicted Posthunt Population				Objective
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	
1993				358	266	774	1398	358	237	774	1369	900
1994				325	338	819	1482	325	307	819	1451	900
1995				211	389	848	1448	211	361	848	1420	900
1996				196	366	802	1364	196	341	802	1339	900
1997				185	345	758	1288	185	320	758	1263	900
1998				252	324	716	1293	252	300	716	1269	900
1999				261	319	692	1273	261	292	692	1245	900
2000				212	314	673	1198	212	291	673	1175	900
2001				222	335	677	1234	222	296	677	1195	900
2002				160	310	651	1121	160	278	651	1089	900
2003				261	305	640	1205	261	270	640	1170	900
2004				232	333	665	1229	232	297	665	1193	900
2005				223	347	677	1246	223	311	677	1210	900
2006				245	356	684	1286	245	317	684	1246	900
2007				231	356	685	1272	231	321	685	1238	900
2008				150	345	671	1167	150	306	671	1127	900
2009				202	304	632	1137	202	266	632	1099	900
2010				125	278	606	1010	125	239	606	970	900
2011				102	258	587	947	102	228	587	917	900
2012				113	225	547	884	113	205	547	865	900
2013				120	206	512	839	120	195	512	828	900
2014				192	217	501	911	192	201	501	894	900
2015				131	247	517	895	131	231	517	878	900
2016				129	253	509	891	129	236	509	874	900
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.70			0.90		
1994	0.70			0.90		
1995	0.40			0.90		
1996	0.40			0.90		
1997	0.40			0.90		
1998	0.40			0.90		
1999	0.40			0.90		
2000	0.70			0.90		
2001	0.40			0.90		
2002	0.70			0.90		
2003	0.70			0.90		
2004	0.70			0.90		
2005	0.70			0.90		
2006	0.58			0.90		
2007	0.50			0.90		
2008	0.40			0.90		
2009	0.40			0.90		
2010	0.70			0.90		
2011	0.40			0.90		
2012	0.40			0.90		
2013	0.70			0.90		
2014	0.70			0.90		
2015	0.70			0.90		
2016	0.70			0.90		
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:	Optim cells
Adult Survival =	0.896
Initial Total Male Pop/10,000 =	0.024
Initial Female Pop/10,000 =	0.077

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

Classification Counts										Harvest	
Year	Juvenile/Female Ratio			Total Male/Female Ratio						Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		46.23	7.99	30.65	28.30	5.85	0	26	0	26	10.8	0.0
1994		39.62	4.17	37.50	38.05	4.06	0	28	0	28	9.1	0.0
1995		24.91	3.38	42.63	49.45	5.20	0	25	0	25	7.1	0.0
1996		24.48	3.02	42.49	40.30	4.11	0	23	0	23	6.9	0.0
1997		24.39	3.51	42.28	41.46	4.88	0	22	0	22	7.0	0.0
1998		35.21	4.73	41.88	54.46	6.28	0	22	0	22	7.5	0.0
1999		37.74	9.90	42.14	30.19	8.61	0	25	0	25	8.6	0.0
2000		31.46	3.59	43.20	38.94	4.11	0	21	0	21	7.4	0.0
2001		32.81	4.15	43.73	55.73	5.86	0	35	0	35	11.5	0.0
2002		24.60	3.49	42.67	30.95	4.01	0	29	0	29	10.3	0.0
2003		40.74	14.57	42.20	55.56	17.89	0	32	0	32	11.5	0.0
2004		34.84	3.89	44.67	48.06	4.79	0	33	0	33	10.9	0.0
2005		32.90	5.94	45.93	45.85	7.33	0	33	0	33	10.5	0.0
2006		35.82	4.15	46.30	54.26	5.45	0	36	0	36	11.1	0.0
2007		33.78	6.41	46.94	46.94	7.89	0	31	0	31	9.6	0.0
2008		22.33	2.97	45.57	49.19	4.87	0	36	0	36	11.5	0.0
2009		31.93	4.67	42.06	48.86	6.07	0	35	0	35	12.7	0.0
2010		20.65	4.01	39.38	29.68	4.98	0	36	0	36	14.2	0.0
2011		17.38	2.59	38.85	48.20	4.84	0	27	0	27	11.5	0.0
2012		20.65	4.01	37.51	29.68	4.98	0	18	0	18	8.8	0.0
2013		23.42	3.28	38.11	44.24	4.87	0	10	0	10	5.3	0.0
2014		38.36	8.53	40.01	45.21	9.48	0	15	0	15	7.6	0.0
2015		25.41	5.11	44.63	45.08	7.32	0	15	0	15	6.7	0.0
2016		25.41	5.11	46.39	45.08	7.32	0	15	0	15	6.5	0.0
2017												
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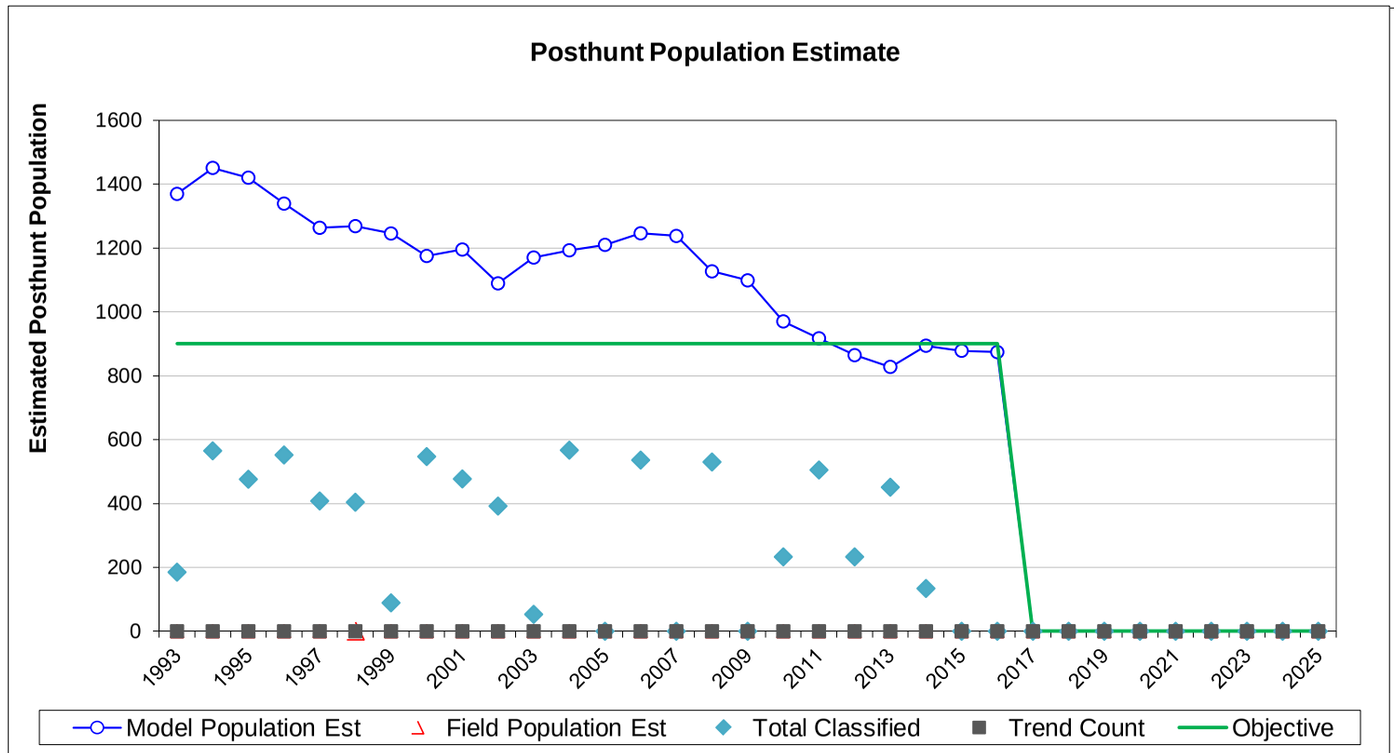
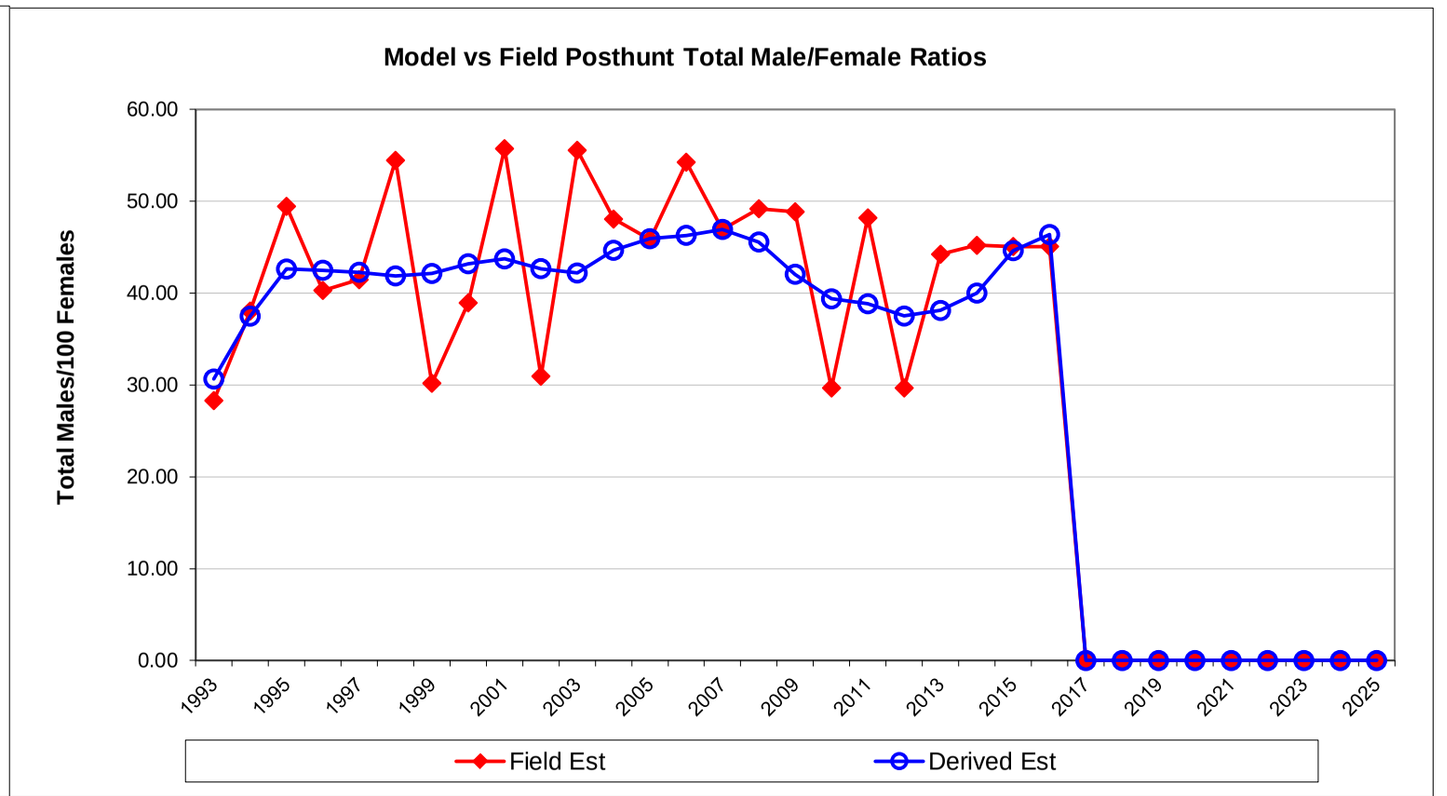
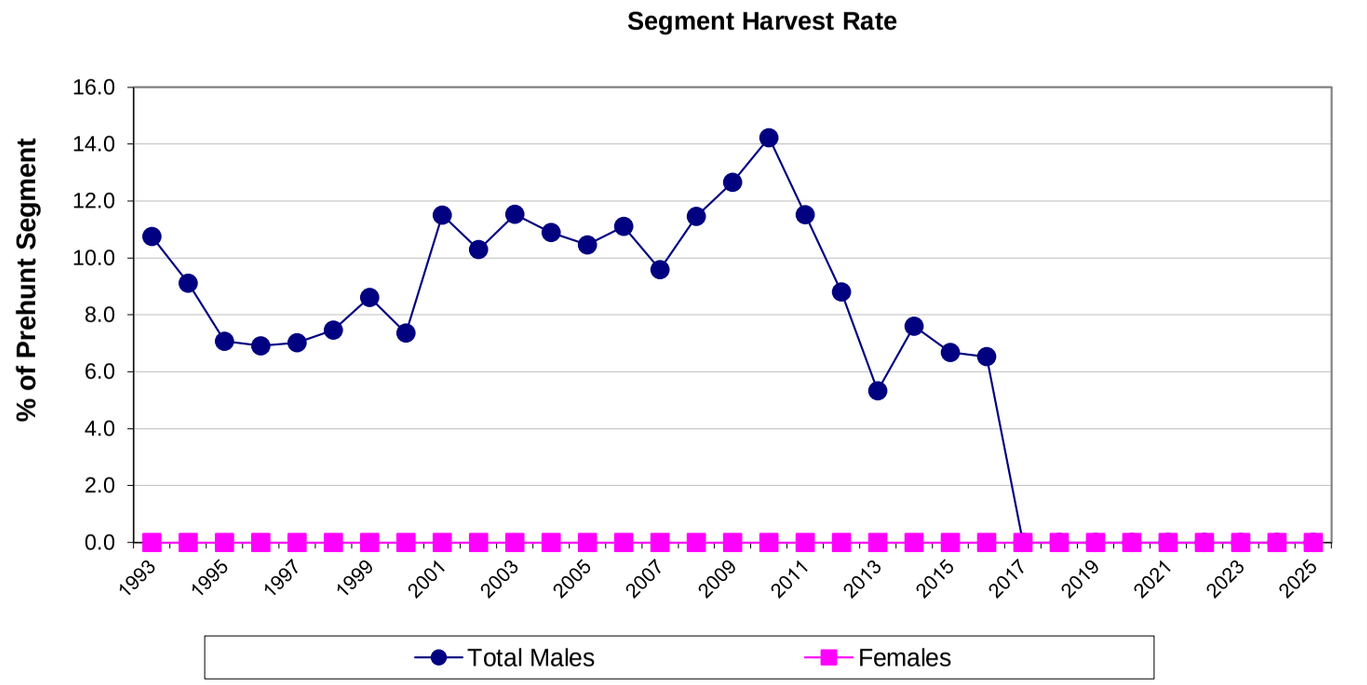
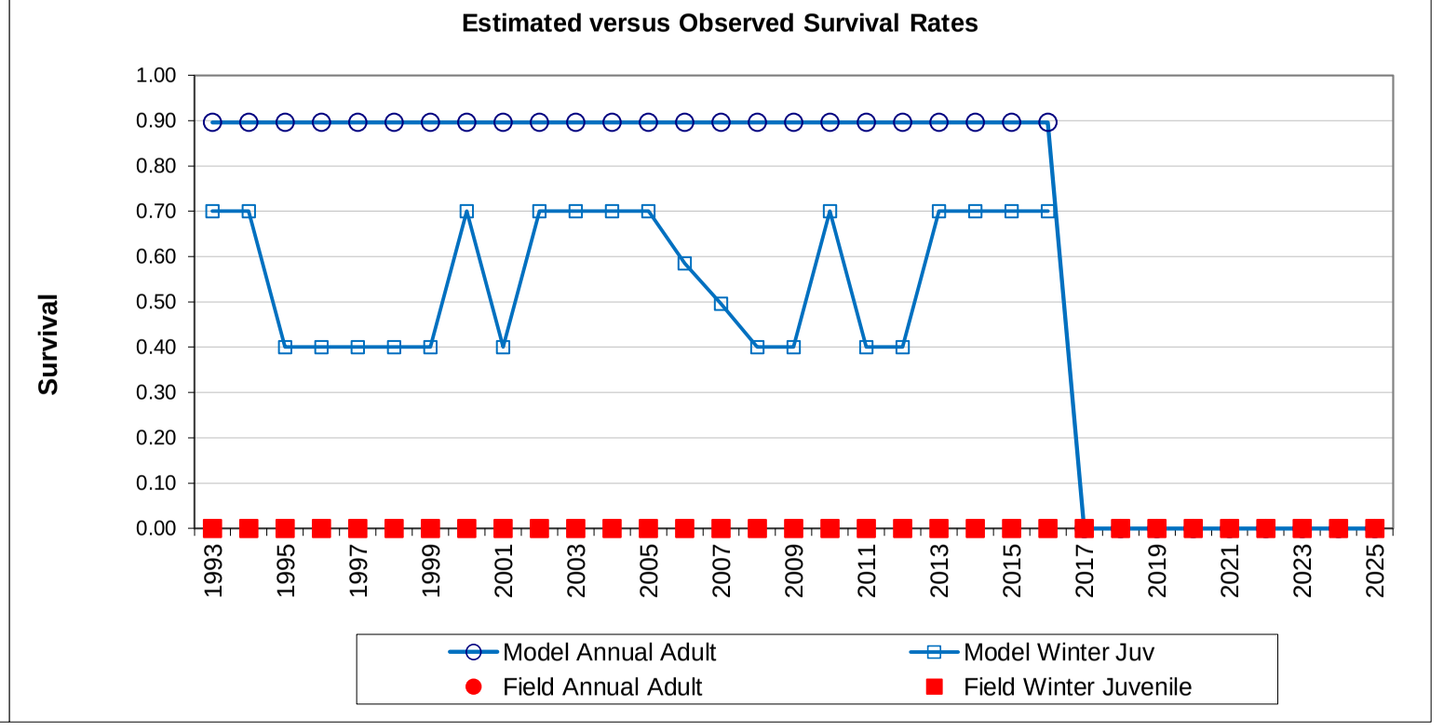
2024												
2025												

FIGURES









Comments:

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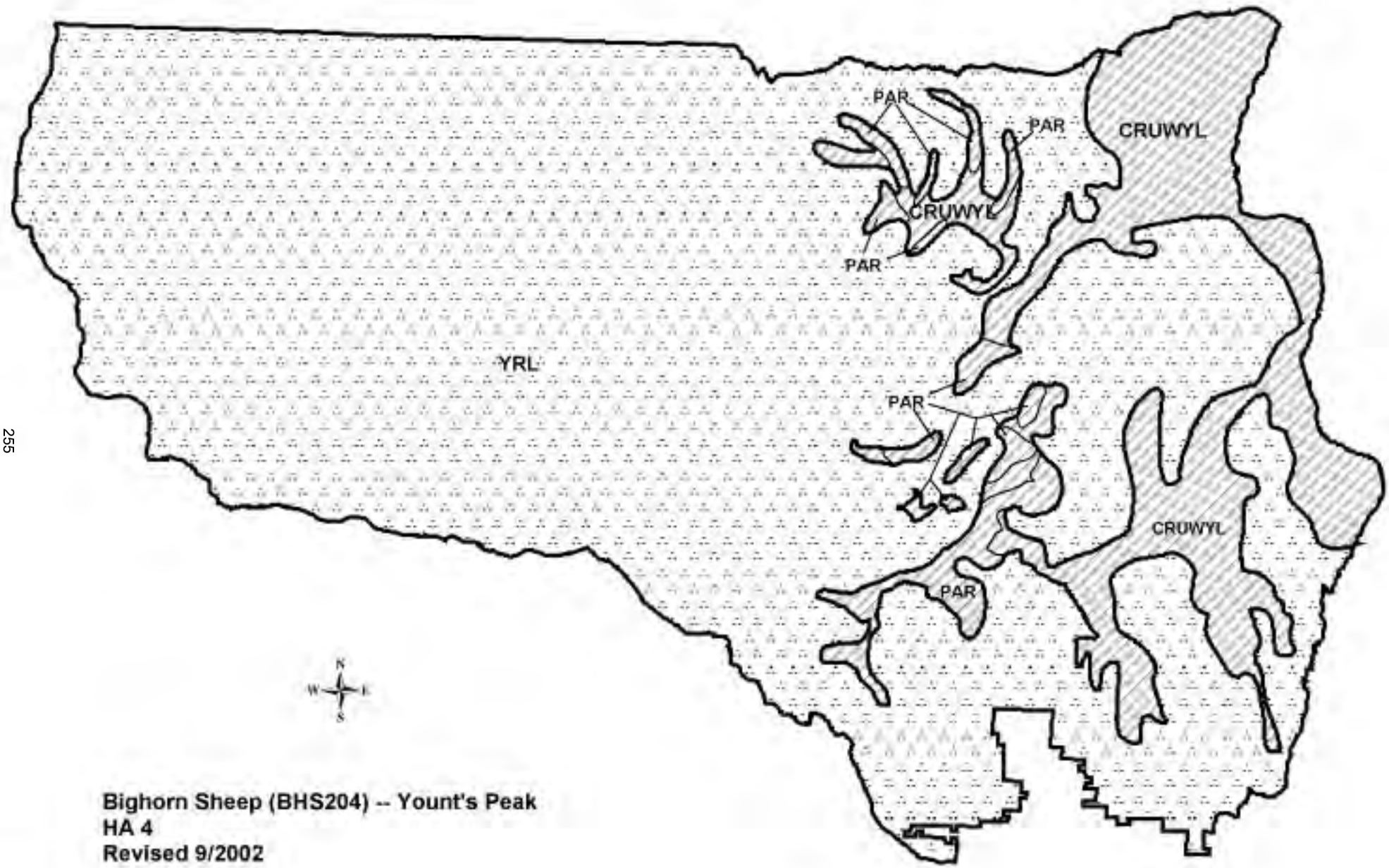


Bighorn Sheep (BHS204) -- Yount's Peak
HA 4
Revised 9/2002

2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2014 - 5/31/2015

HERD: BS205 - FRANCS PEAK

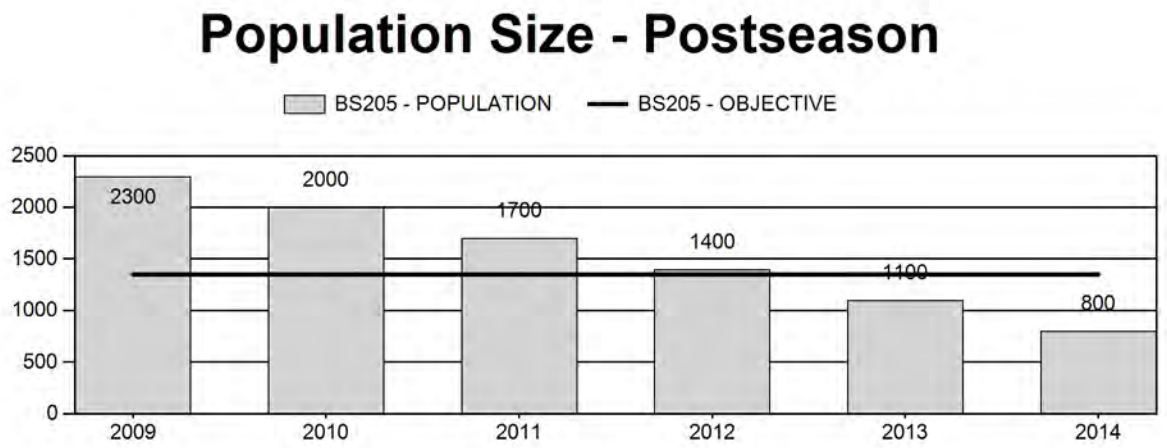
HUNT AREAS: 5, 22, 999
PREPARED BY: BART KROGER

	2009 - 2013 Average	2014	2015 Proposed
Population:	1,700	800	600
Harvest:	76	44	40
Hunters:	90	61	45
Hunter Success:	84%	72%	89 %
Active Licenses:	90	61	45
Active License Success:	84%	72%	89 %
Recreation Days:	546	601	500
Days Per Animal:	7.2	13.7	12.5
Males per 100 Females	55	68	
Juveniles per 100 Females	27	20	

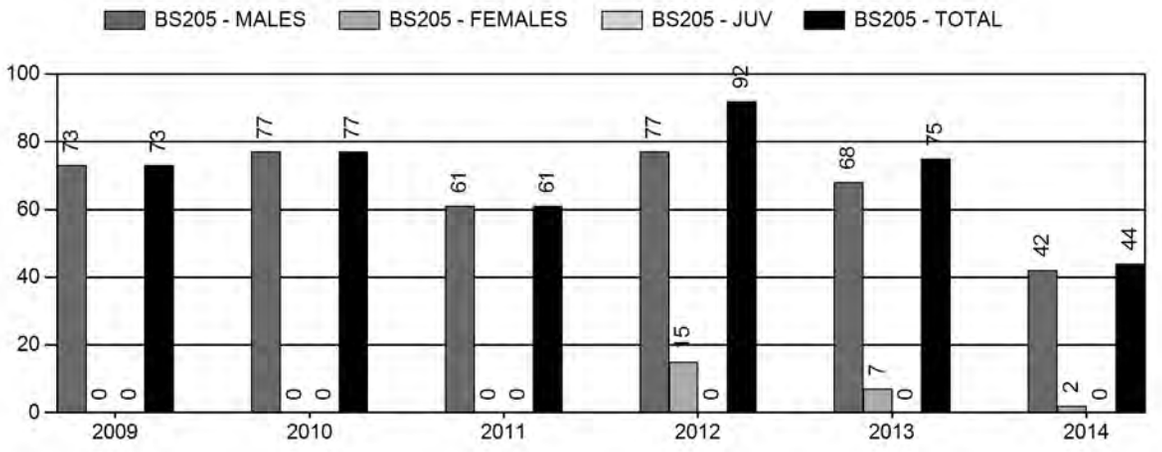
Population Objective (± 20%) :	1350 (1080 - 1620)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-40.7%
Number of years population has been + or - objective in recent trend:	2
Model Date:	2/23/2015

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

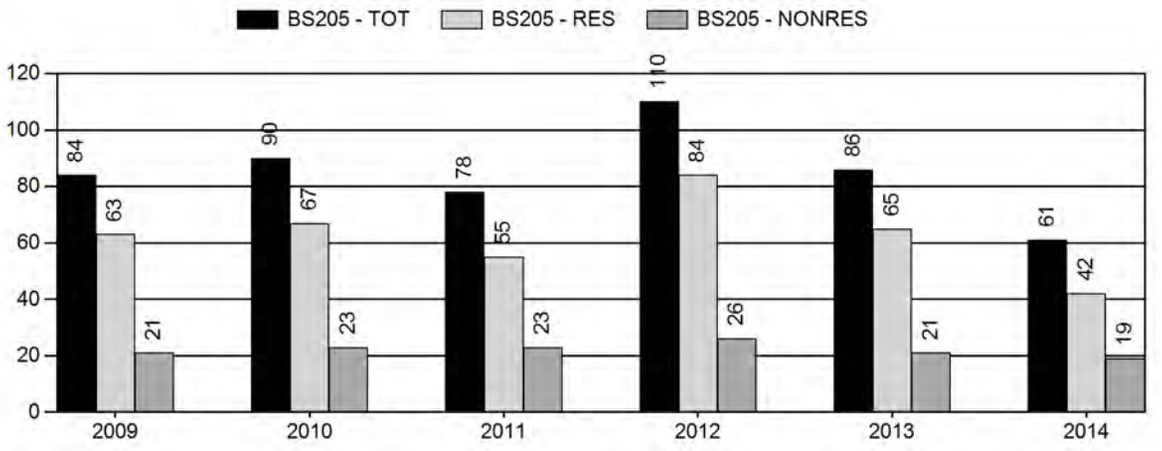
	JCR Year	Proposed
Females ≥ 1 year old:	0.4%	0%
Males ≥ 1 year old:	21%	29%
Juveniles (< 1 year old):	0%	0%
Total:	5%	7%
Proposed change in post-season population:	-29%	-16%



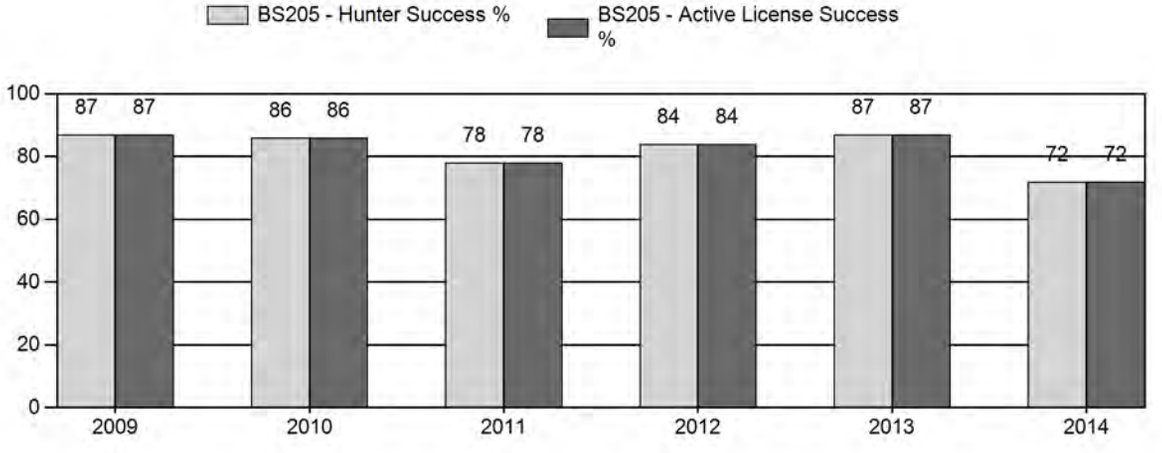
Harvest



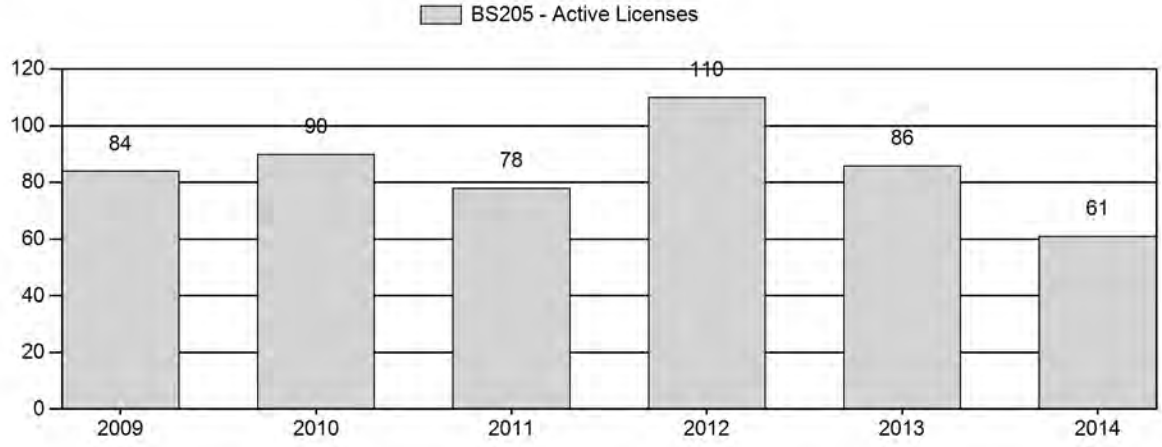
Number of Hunters



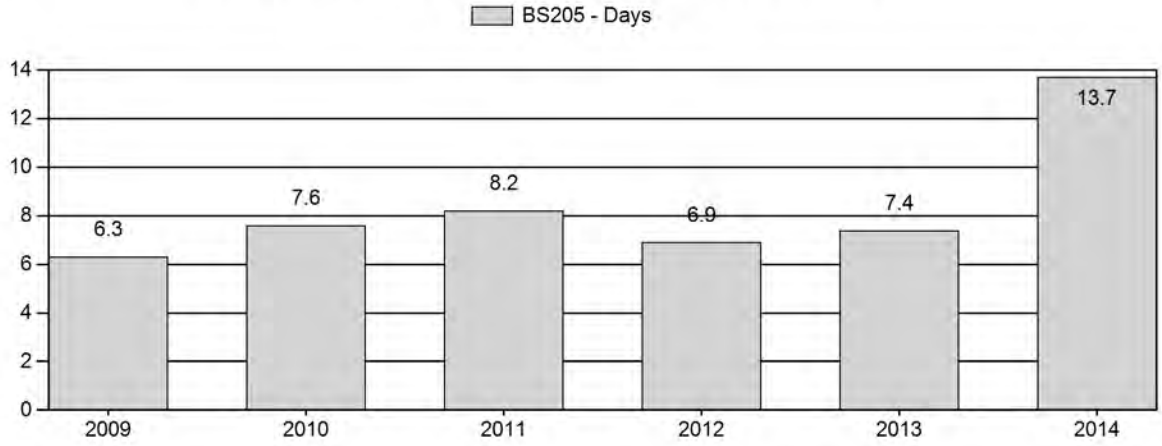
Harvest Success



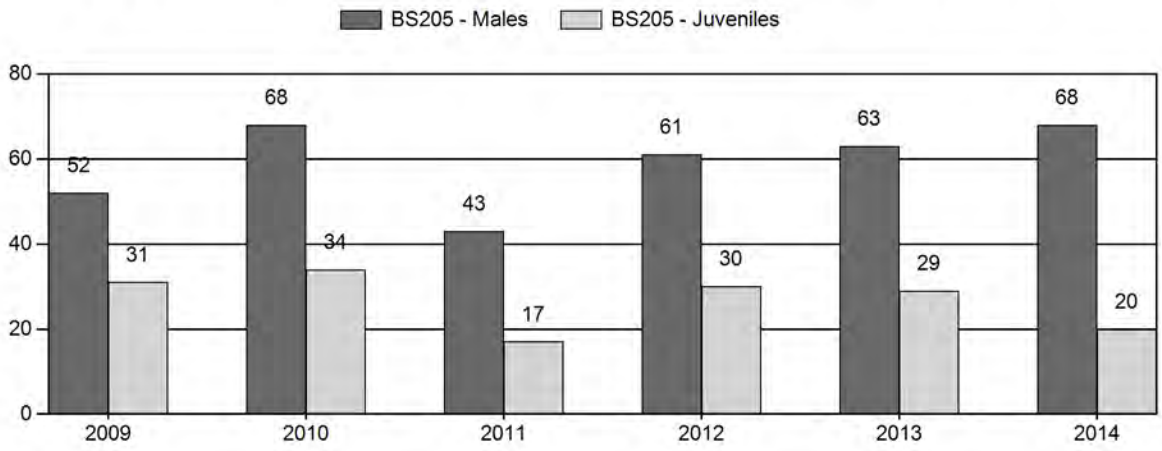
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2009 - 2014 Postseason Classification Summary

for Bighorn Sheep Herd BS205 - FRANCS PEAK

		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
2009	2,300	0	0	221	28%	425	55%	131	17%	777	566	0	0	52	± 4	31	± 3	20
2010	2,000	0	153	153	34%	225	50%	76	17%	454	727	0	68	68	± 8	34	± 5	20
2011	1,700	0	0	172	27%	400	62%	68	11%	640	445	0	0	43	± 4	17	± 2	12
2012	1,400	0	140	140	32%	228	52%	68	16%	436	802	0	61	61	± 7	30	± 4	18
2013	1,100	0	144	144	33%	230	52%	66	15%	440	584	0	63	63	± 7	29	± 4	18
2014	800	0	135	135	36%	200	53%	41	11%	376	490	0	68	68	± 7	20	± 3	12

2015 HUNTING SEASONS
FRANCS PEAK BIGHORN SHEEP HERD (BS205)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
5	1	Sep. 1	Oct. 31	32	Limited quota; any ram (24 residents, 8 nonresidents)
22	1	Sep. 1	Oct. 31	4	Limited quota; any ram
		Oct. 1	Oct. 31		Unused Area 22 Type 1 licenses also valid in Area 5
Archery		Aug. 15	Aug. 31		Refer to Section 3

Hunt Area	Type	Quota change from 2014
5	1	-17
	6	-4
HU Total	**1**	**-17**
	6	**-4**

Management Evaluation

Current Postseason Population Management Objective: 1,350
Management Strategy: Special
2014 Postseason Population Estimate: 800
2015 Proposed Postseason Population Estimate: 600

Herd Unit Issues - The management strategy for this sheep herd is to maintain an average age of harvested rams between 6-8 years old, along with a hunter success of >80%. The herd objective and management strategy was revised and approved in 2013. Lamb ratios are also monitored closely to anticipate potential changes in age classes of rams. In Hunt Area 5, much of the occupied habitat occurs at alpine elevations, whereas in Hunt Area 22 a number of sheep occupy the badlands north of the Wind River, with some sheep spending time on irrigated meadows on the Fish Ranch. In the Owl Creek Mountain's of the Wind River Reservation (WRR), bighorn sheep are found year round above 9,500'. After the 2010/11 winter, this population started showing declines, and has continued to decline the past four years. It's likely disease issues have caused these declines. Since January 2011, 163 ram pickup heads have been registered from area 5. Hunter success dropped to 72% in 2014, the lowest since 2000. As of May 2015, no final harvest results had been received from the WRR.

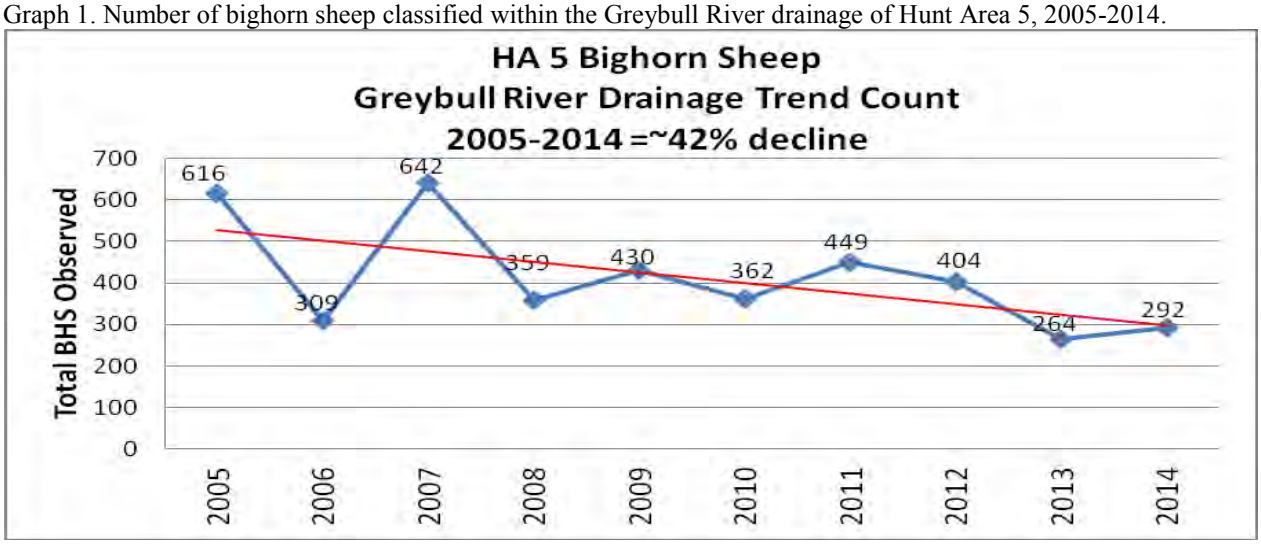
Weather - The winter of 2010/11 appeared to have been severe enough to cause some die-off as well as reduced lamb production. The extreme dry conditions of 2012 resulted is some changes to the distribution of sheep on their summer range, likely because of reduced forage production and condition. The winter of 2013/14 was more severe than normal, with mainly deep snow at higher elevations. The summer of 2014 was exceptional for moisture, and so far the 2014/15 winter is appearing to be mostly normal.

Habitat - Habitat conditions for the most part are considered good to excellent in this herd unit. The Little Venus fire in 2006 and the Norton Point fire in 2011 improved overall forage

availability and production in Hunt Area 5. The drought conditions in 2012 did cause lower than normal forage production. Higher than normal precipitation in 2013 and 2014 were favorable for spring green up and winter forage.

Field Data - Aerial classifications surveys are used in obtaining post-season lamb and ram ratio for this sheep herd. On average about 600-700 sheep are classified annually, except for the past two years where the average has been about 400 sheep. Lamb:ewe ratios for the herd have remained favorable, with an average ratio of 27:100. Ram:ewe ratios typically exceed 50:100. An early spring flight in May 2014 resulted in 380 sheep being observed. Since 2005, a commonly flown flight path has been used during classification surveys within the Greybull River drainage. The number of sheep observed on these annual flights has been used to track population trends. Over the past 10 years the number of sheep observed on average has declined by 42% (Graph 1).

Graph 1. Number of bighorn sheep classified within the Greybull River drainage of Hunt Area 5, 2005-2014.



Harvest Data - Annual harvest since 2008 has been about 70 rams for the herd unit, with roughly 60 from area 5, 1-2 from area 22, and about 6-8 from the WRIR. Hunter success is typically about 85-90%, with hunter effort at about 6-8 days/animal harvested. However, in 2014 hunter success dropped to 72% and hunter days increased to 13.7. In Hunt Area 5 since 2008, the age of harvested rams has averaged about 7.8 years. The percent of harvested rams $\geq$ 8 years of age has averaged about 45%. The 2014 ewe harvest in area 5 showed 2 ewes being harvested for a hunter success of 50%. Of 12 hunters on the WRIR in 2014, only 4 rams were reported harvested.

Population - The semi-constant juvenile & semi-constant adult survival (SCJ, SCA) spreadsheet model was chosen to represent this herd because it reflects a good recent year trend (2010-2014) in the population. The model supports the lowest AIC value at 134. Because of this, the overall model is considered mostly reliable, at least for the last 4 year trend. The model also reflects trends in past year observations of sheep numbers during classification surveys. On average for the herd unit, the number of sheep classified has declined by about 40% in recent years.

Management Summary - The low lamb ratios in 2011 (17:100) and 2014 (20:100), the number of ram pickup heads (n=>200) since 2009, a drop in hunter success, an increase in days/animal, and the overall declines in observed sheep during classification flights (>40%) warrants some

concern for this sheep herd. We feel there has been a significant mortality event in Hunt Area 5, specifically on the northern portion of the herd unit, based on these data as well as hunter and field personnel observations. Because of these declines the Type 1 quota in Area 5 will be reduced by 17 licenses, and the Type 6 season in Area 5 will be closed. The Type 6 hunters in 2014 only experienced a 50% hunter success. No season change will occur in Hunt Area 22. As of May 2015, no season proposal had been received from the WRR. The projected 2015 harvest for the herd unit is roughly 40 rams. The 2015 post-season population estimate will be around 600 sheep.

INPUT	
Species:	Bighorn Sheep
Biologist:	Bart Kroger
Herd Unit & No.:	Francs Peak, BS205
Model date:	02/23/15

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	146	155	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	125	134	☑ SCJ,SCA M	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	113	239	☐ TSJ,CA Model	

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population				Predicted Posthunt Population				Objective
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	
1993				422	538	1275	2234	422	485	1275	2181	1360
1994				337	584	1295	2216	337	527	1295	2159	1360
1995				376	592	1283	2252	376	536	1283	2196	1360
1996				375	614	1287	2275	375	548	1287	2209	1360
1997				379	624	1289	2293	379	565	1289	2234	1360
1998				330	641	1293	2264	330	576	1293	2199	1360
1999				458	634	1279	2371	458	587	1279	2324	1360
2000				427	689	1311	2427	427	631	1311	2370	1360
2001				300	718	1330	2347	300	657	1330	2287	1360
2002				312	696	1302	2311	312	635	1302	2249	1360
2003				308	681	1281	2270	308	619	1281	2208	1360
2004				401	665	1261	2327	401	594	1261	2255	1360
2005				333	674	1275	2282	333	606	1275	2214	1360
2006				462	662	1264	2388	462	603	1264	2329	1360
2007				364	704	1299	2367	364	616	1299	2279	1360
2008				365	682	1297	2343	365	594	1297	2255	1360
2009				399	662	1295	2356	399	582	1295	2275	1360
2010				390	585	1155	2131	390	500	1155	2046	1360
2011				177	517	1041	1736	177	450	1041	1669	1360
2012				256	405	877	1538	256	322	860	1438	1360
2013				189	290	666	1144	189	215	658	1062	1360
2014				104	198	508	809	104	143	506	752	1360
2015				86	140	431	657	86	112	431	629	1360
2016												1360
2017												1360
2018												1360
2019												1360
2020												1360
2021												1360
2022												1360
2023												1360
2024												1360
2025												1360

Survival and Initial Population Estimates

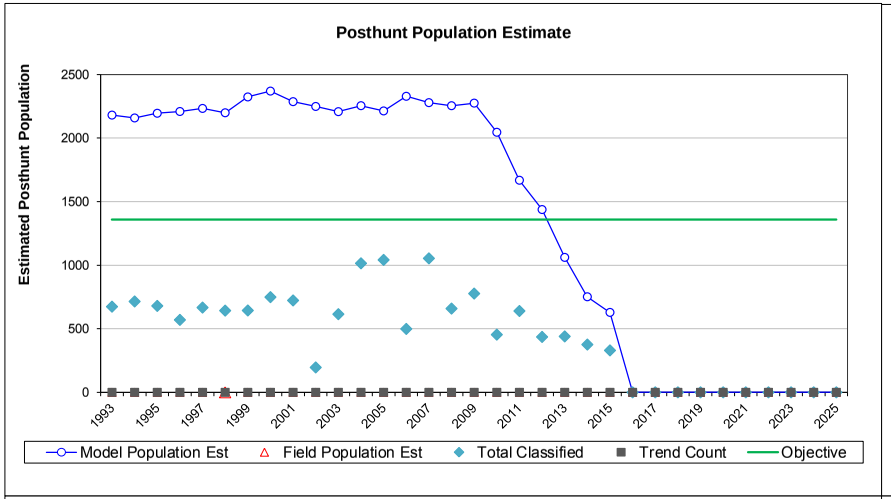
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.70			0.90		
1994	0.70			0.90		
1995	0.70			0.90		
1996	0.70			0.90		
1997	0.70			0.90		
1998	0.70			0.90		
1999	0.70			0.90		
2000	0.70			0.90		
2001	0.70			0.90		
2002	0.70			0.90		
2003	0.70			0.90		
2004	0.70			0.90		
2005	0.70			0.90		
2006	0.70			0.90		
2007	0.70			0.90		
2008	0.70			0.90		
2009	0.60			0.80		
2010	0.60			0.80		
2011	0.50			0.80		
2012	0.50			0.70		
2013	0.50			0.70		
2014	0.50			0.80		
2015	0.50			0.80		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

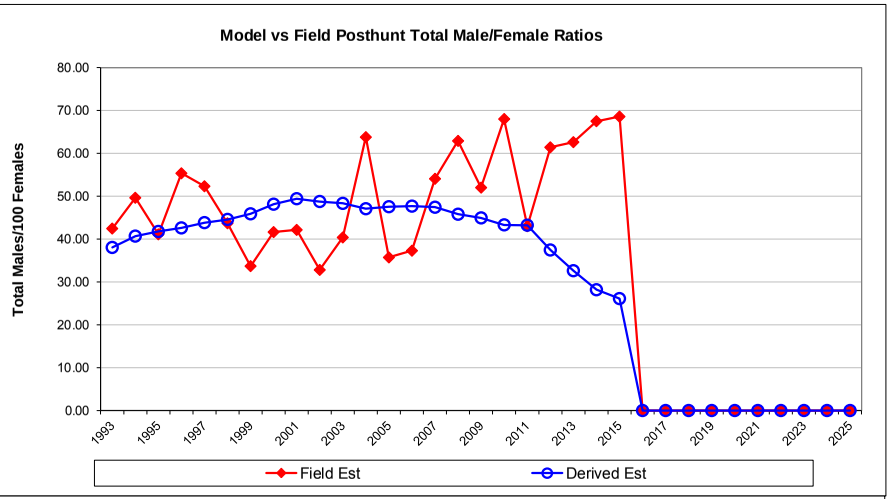
Parameters:	Optim cells
Juvenile Survival =	0.650
Adult Survival =	0.800
Initial Total Male Pop/10,000 =	0.048
Initial Female Pop/10,000 =	0.127

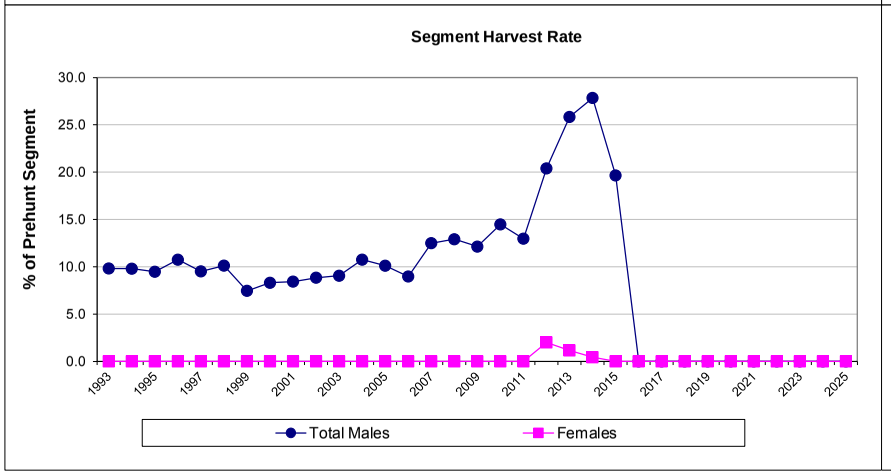
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

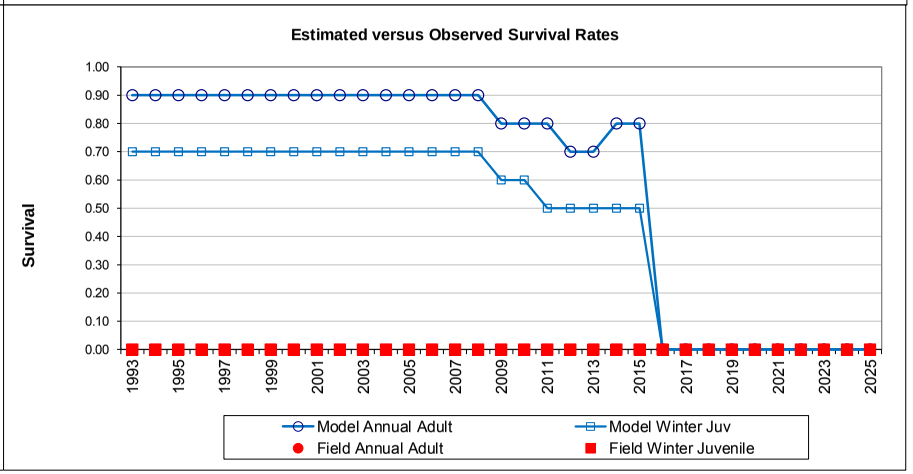
Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio			Harvest				Harvest: Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		33.07	3.39	38.05	42.45	3.97	0	48	0	48	9.8	0.0
1994		26.04	2.84	40.69	49.63	4.27	0	52	0	52	9.8	0.0
1995		29.32	3.08	41.77	41.10	3.81	0	51	0	51	9.5	0.0
1996		29.13	3.49	42.60	55.34	5.27	0	60	0	60	10.7	0.0
1997		29.43	3.22	43.84	52.32	4.66	0	54	0	54	9.5	0.0
1998		25.53	2.90	44.58	43.68	4.06	0	59	0	59	10.1	0.0
1999		35.79	3.58	45.89	33.68	3.44	0	43	0	43	7.5	0.0
2000		32.56	3.17	48.14	41.63	3.70	0	52	0	52	8.3	0.0
2001		22.55	2.51	49.42	42.14	3.69	0	55	0	55	8.4	0.0
2002		24.00	4.88	48.76	32.80	5.90	0	56	0	56	8.8	0.0
2003		24.06	2.83	48.33	40.37	3.89	0	56	0	56	9.0	0.0
2004		31.79	2.84	47.08	63.78	4.49	0	65	0	65	10.8	0.0
2005		26.09	2.26	47.55	35.71	2.74	0	62	0	62	10.1	0.0
2006		36.59	4.17	47.68	37.28	4.22	0	54	0	54	9.0	0.0
2007		27.98	2.49	47.43	54.06	3.79	0	80	0	80	12.5	0.0
2008		28.12	3.23	45.80	62.90	5.45	0	80	0	80	12.9	0.0
2009		30.82	3.08	44.94	52.00	4.31	0	73	0	73	12.1	0.0
2010		33.78	4.48	43.31	68.00	7.13	0	77	0	77	14.5	0.0
2011		17.00	2.23	43.24	43.00	3.92	0	61	0	61	13.0	0.0
2012		29.82	4.12	37.45	61.40	6.59	0	75	16	91	20.4	2.0
2013		28.70	4.01	32.62	62.61	6.65	0	68	7	75	25.8	1.2
2014		20.50	3.51	28.18	67.50	7.52	0	50	2	52	27.8	0.4
2015		20.00	3.70	26.11	68.57	8.13	0	25	0	25	19.7	0.0
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES









Comments:

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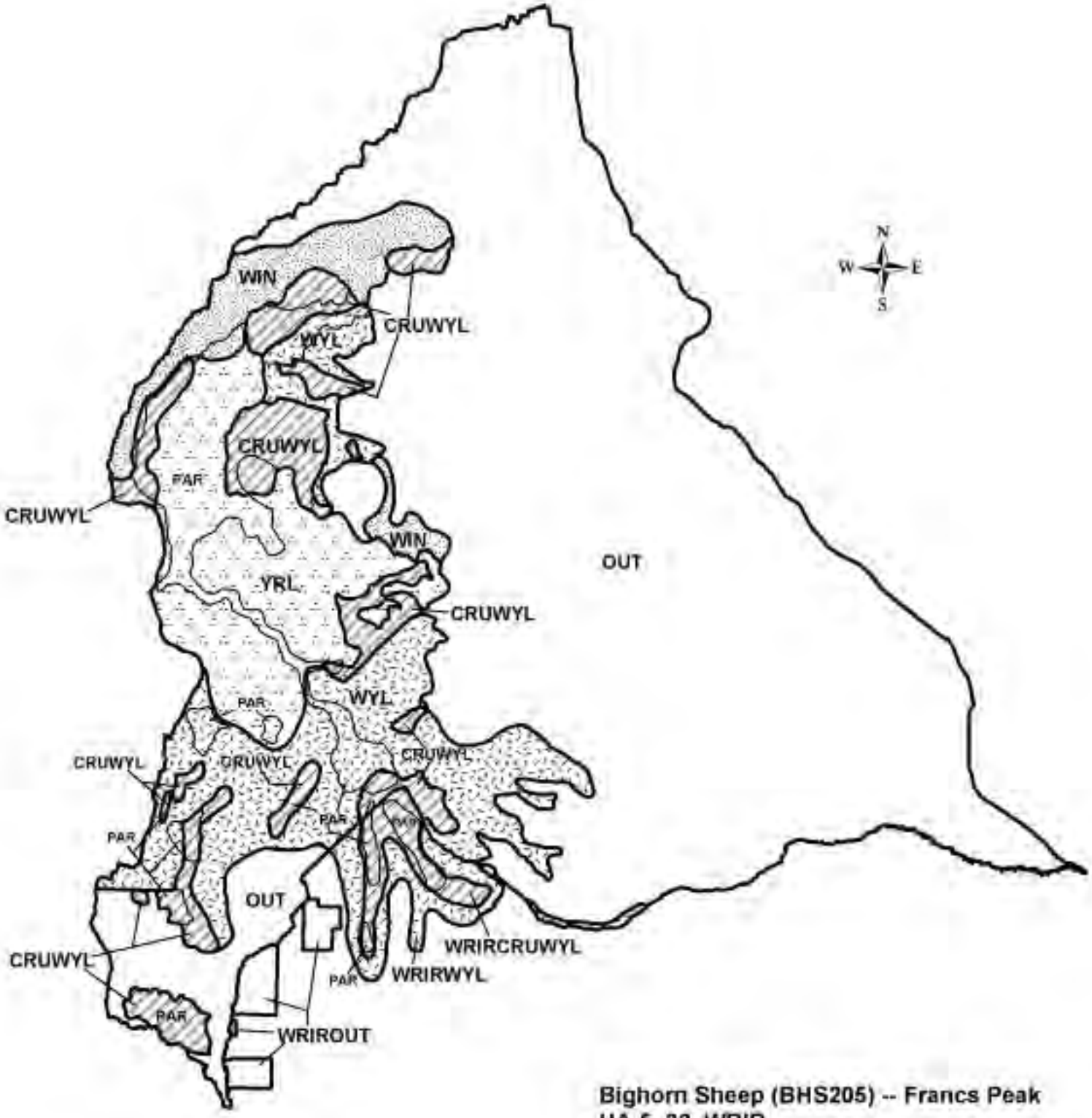


Bighorn Sheep (BHS205) -- Francs Peak
HA 5, 22, WRIR
Revised 9/2002

2014 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2014 - 5/31/2015

HERD: BS212 - DEVIL'S CANYON

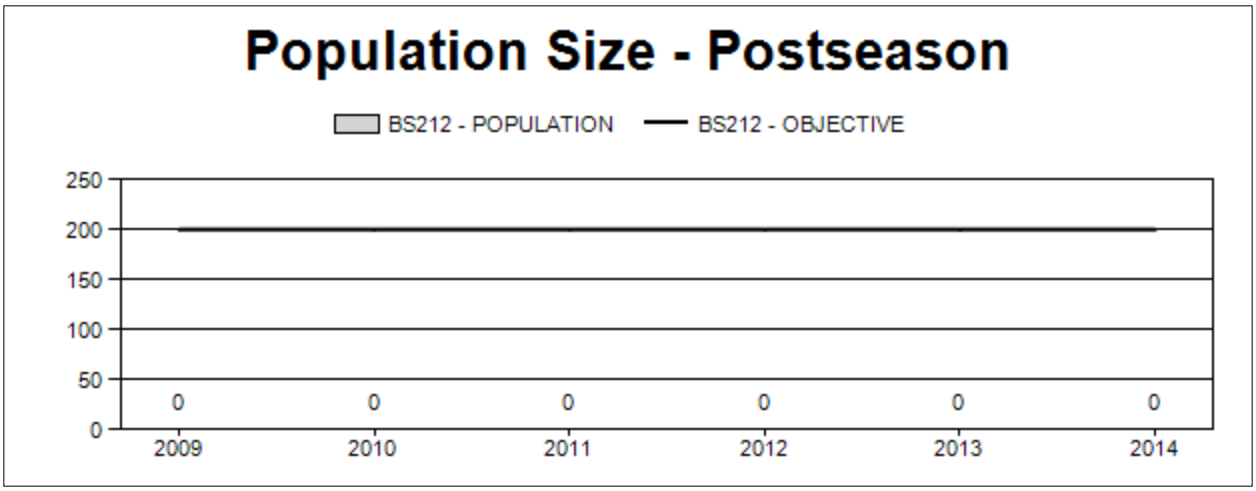
HUNT AREAS: 12
PREPARED BY: LESLIE SCHREIBER

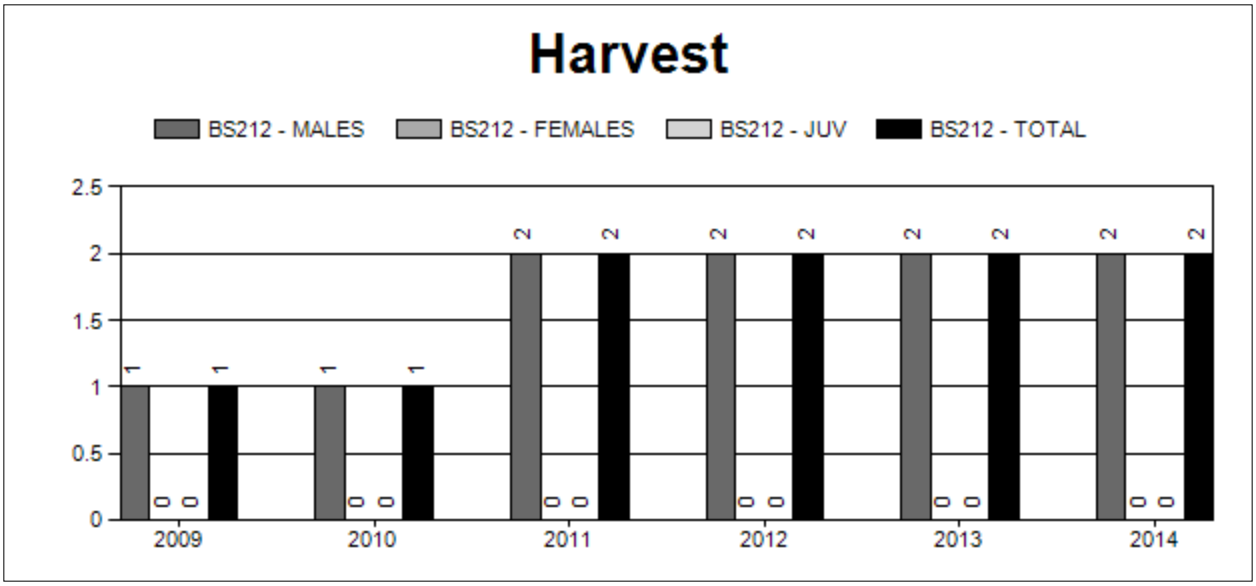
	2009 - 2013 Average	2014	2015 Proposed
Population:	0	N/A	N/A
Harvest:	2	2	4
Hunters:	2	2	4
Hunter Success:	100%	100%	100%
Active Licenses:	2	2	4
Active License Success:	100%	100%	100%
Recreation Days:	12	8	10
Days Per Animal:	6	4	2.5
Males per 100 Females	44	83	
Juveniles per 100 Females	63	48	

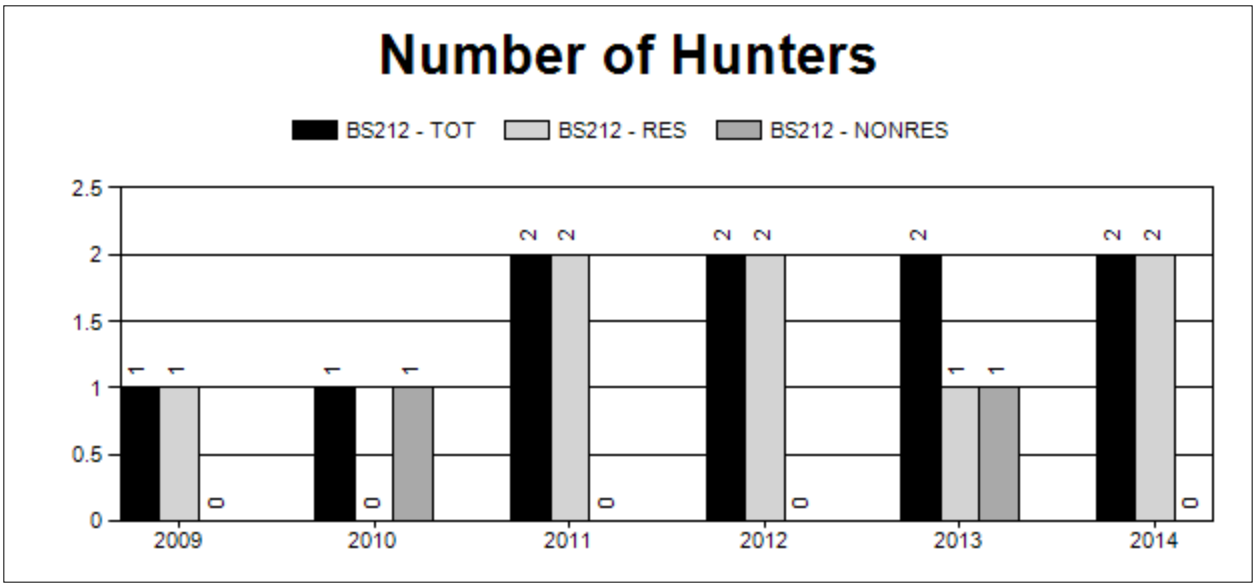
Population Objective (± 20%) :	200 (160 - 240)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	0
Model Date:	None

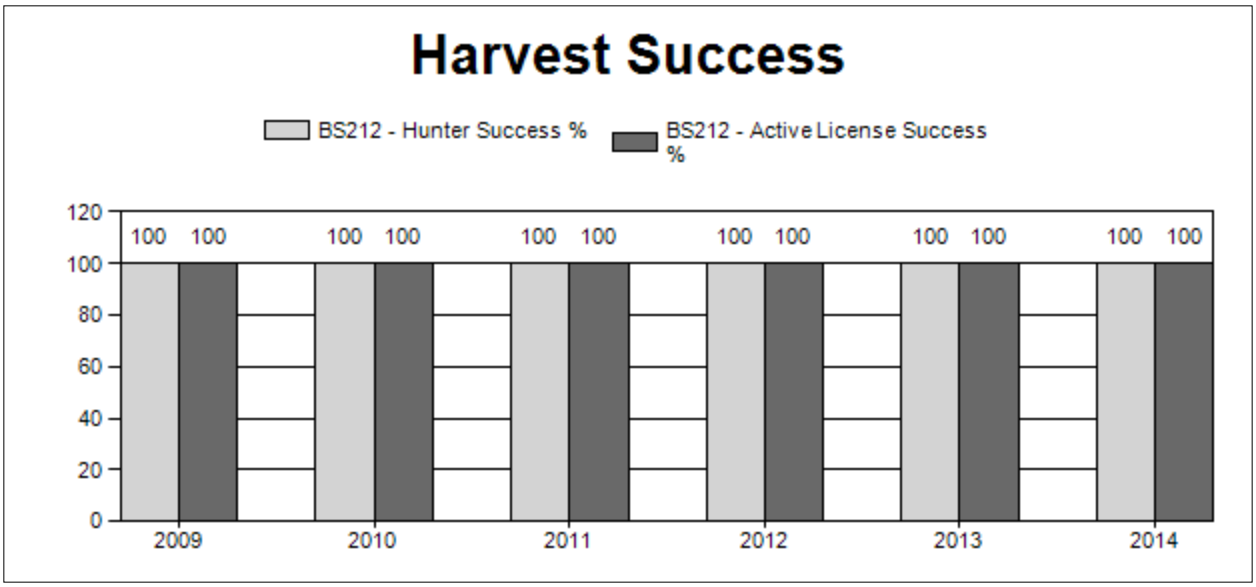
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

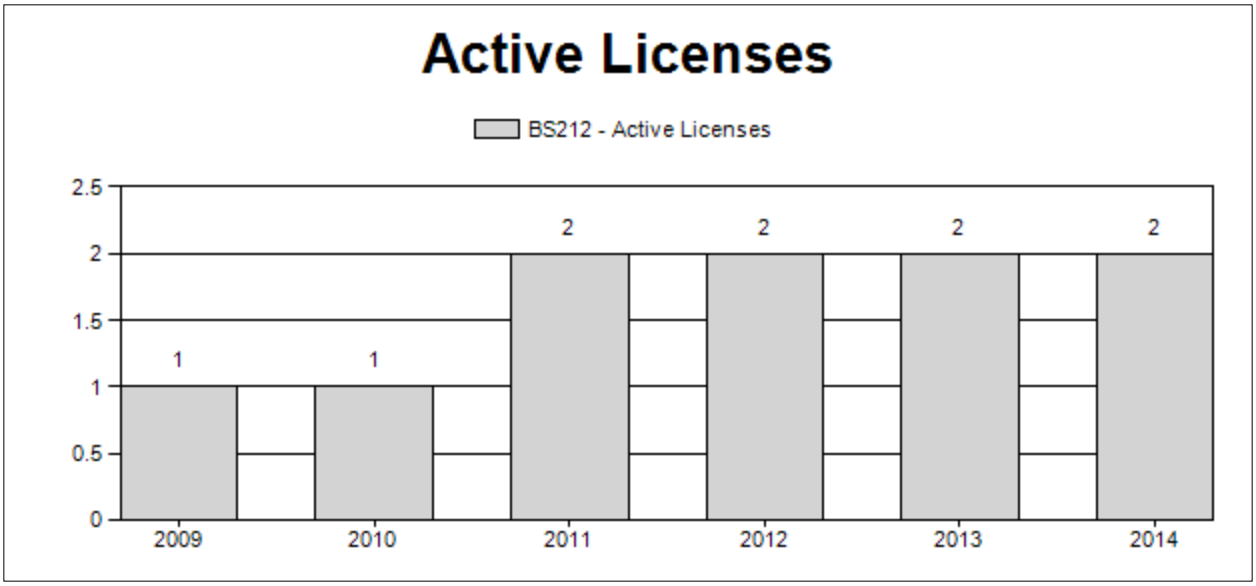
	JCR Year	Proposed
Females ≥ 1 year old:	na%	na%
Males ≥ 1 year old:	na%	na%
Juveniles (< 1 year old):	na%	na%
Total:	na%	na%
Proposed change in post-season population:	na%	na%

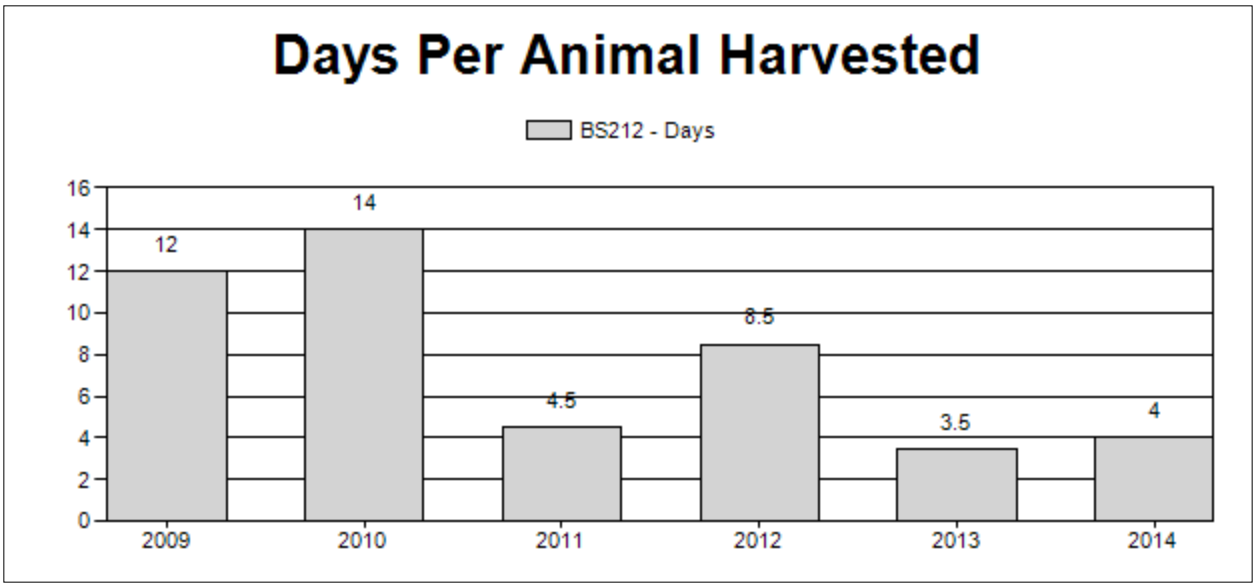

Population Size - Postseason
BS212 - POPULATION
BS212 - OBJECTIVE
250
200
150
100
50
0
0 0 0 0 0 0
2009 2010 2011 2012 2013 2014

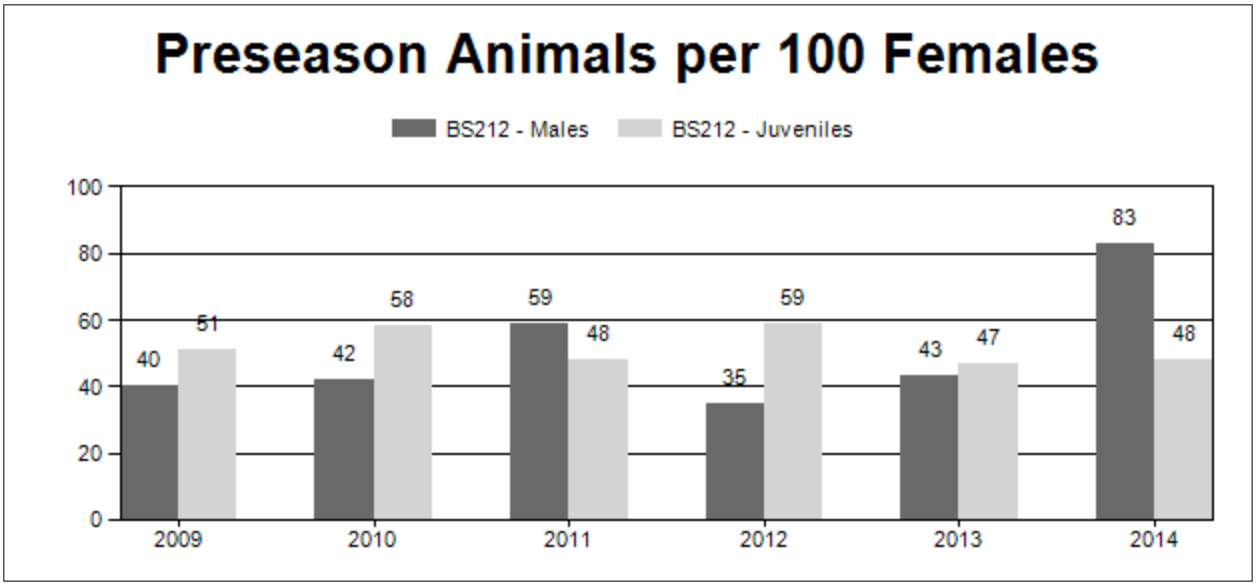

Harvest
BS212 - MALES
BS212 - FEMALES
BS212 - JUV
BS212 - TOTAL
2.5
2
1.5
1
0.5
0
1 0 0 1 1 0 0 1 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2 2 0 0 2
2009 2010 2011 2012 2013 2014


Number of Hunters
BS212 - TOT
BS212 - RES
BS212 - NONRES
2.5
2
1.5
1
0.5
0
1 1 0 1 0 1 2 2 0 2 2 0 2 0 1 1 2 2 0
2009 2010 2011 2012 2013 2014


Harvest Success
BS212 - Hunter Success %
BS212 - Active License Success %
120
100
80
60
40
20
0
100 100 100 100 100 100 100 100 100 100 100 100
2009
2010
2011
2012
2013
2014


Active Licenses
BS212 - Active Licenses
2.5
2
1.5
1
0.5
0
1 1 2 2 2 2
2009
2010
2011
2012
2013
2014


Days Per Animal Harvested
BS212 - Days
16
14
12
10
8
6
4
2
0
12
14
4.5
8.5
3.5
4
2009
2010
2011
2012
2013
2014


Preseason Animals per 100 Females
BS212 - Males
BS212 - Juveniles
100
80
60
40
20
0
40
51
42
58
59
48
35
59
43
47
83
48
2009
2010
2011
2012
2013
2014

2009 - 2014 Preseason Classification Summary

for Bighorn Sheep Herd BS212 - DEVIL'S CANYON

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	0	0	0	27	21%	67	52%	34	27%	128	0	0	0	40	± 0	51	± 0	36
2010	0	6	18	27	21%	64	50%	37	29%	128	142	9	28	42	± 0	58	± 0	41
2011	0	0	41	41	29%	69	48%	33	23%	143	141	0	59	59	± 0	48	± 0	30
2012	0	0	12	17	18%	49	52%	29	31%	95	142	0	24	35	± 0	59	± 0	44
2013	0	0	32	32	23%	74	52%	35	25%	141	0	0	43	43	± 0	47	± 0	33
2014	0	0	76	76	36%	92	43%	44	21%	212	0	0	83	83	± 0	48	± 0	26

2015 Hunting Seasons
Devil's Canyon Bighorn Sheep Herd Unit (BS212)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
12	1	Sept. 1	Oct. 15	4	Limited quota; any ram
Archery		Aug. 15	Aug. 31		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2014
12	1	+2
Total		+2

Management Evaluation
Current Management Objective: 200 (trend)
2014 Postseason Population Estimate: none
2015 Proposed Postseason Population Estimate: 175

Herd Unit Issues. Prior to the first transplant (1973) into the Devil's Canyon area, a goal of 200 bighorn sheep was informally established. That population objective was carried over following the most recent transplants in 2004 and 2006 and no population model/estimate has been developed for this small herd. This herd is currently undergoing a public herd unit review where we are proposing an aerial summer trend count objective of 175 sheep based on a 3 year running average.

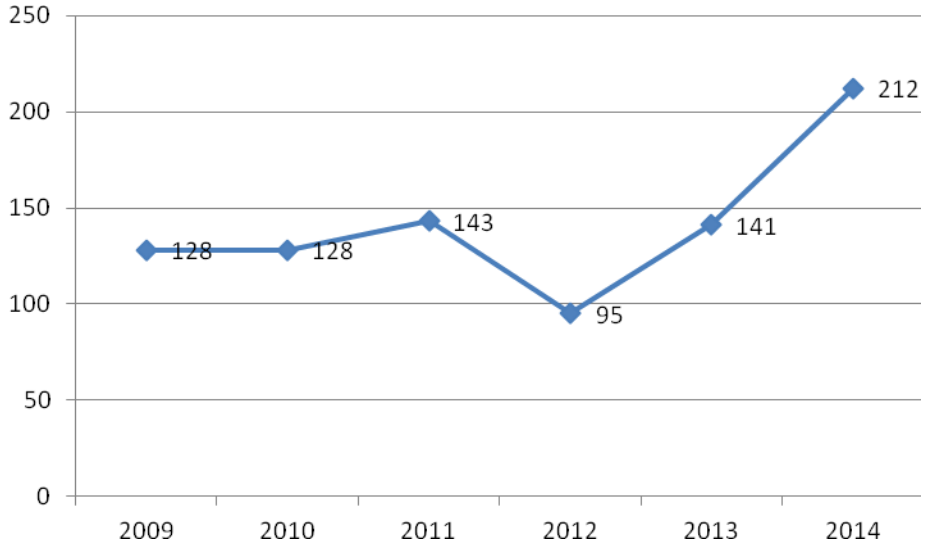
Weather. Climatic conditions probably have the most influence on productivity and survival of this population. Cheatgrass has become established on some sites. There is limited farming (irrigated pastures) on a small portion of private land and bighorn sheep are attracted to those pastures especially during drought years. Although drought conditions were documented during summer 2012 and 2013 across most of Wyoming, effects on this bighorn sheep herd appear to have been minimal. Distribution of ewes to irrigated pastures probably negated any adverse effects.

Habitat. There are no habitat transects in this herd unit for monitoring bighorn habitat. In conjunction with the BLM, a prescribed burn, water development and pipeline was completed south of Devil's Canyon for bighorns.

Field Data/Population. Total number of sheep observed during pre-season classification surveys provides the most consistent estimate of the trend in the population (Figure 1); however, some surveys were not conducted across all areas used by bighorns and effort (flight time, aerial vs. ground) has not been consistent across years. During the July 2014 classification survey, personnel counted a total of 212 bighorn sheep; the highest count ever recorded for this herd. We observed 76 rams (22 class I rams, 28 class II rams, 19 class III rams, and 7 class IV rams)

for a ratio of 83 rams:100 ewes. We observed 44 lambs for a ratio of 48 lambs:100 ewes. Flight time and area surveyed did not differ greatly from previous years.

Figure 1. Total number of bighorn sheep observed during pre-season classification surveys of the Devil's Canyon herd unit, 2009-2014.



Harvest Data. Harvest statistics provide little information about this population's trend. Only 1-2 licenses were issued each year since 2008 with 100% hunter success. Recreation days and days per harvested animal vary depending on the amount of time each hunter allocated to his/her hunt. Similarly, average age of harvested rams does not indicate a trend, because only 1-2 rams were harvested each year. It is possible that the ram harvested in 2010 was incorrectly aged to 10 years, based on the hunter's comments and the count of annual rings shown in photos. Also, ram genetics from the recent transplants allowed for more growth of young rams. For example, one ram from Missouri River breaks (Montana) was harvested as a 6-year old (scored >180). Thus, average age of harvested rams could decrease even though larger rams are being harvested.

One landowner, a family corporation, controls access to the area where most bighorn sheep are observed, but own only ~10% of the area. Typically, the landowner did not want to deal with more than two bighorn sheep hunters each year. The landowner felt that more hunters would result in conflicts between hunters, because these rams are highly visible and apparently not afraid of human activity, making them quite vulnerable. Department personnel met with the landowner and explained the high number of sheep observed during the pre-season classification survey. The landowner agreed to 4 bighorn sheep hunters, with the stipulation that all 4 hunters are not in the area at the same time. Department personnel are calling the 4 hunters who drew a license for the 2015 hunt to explain the timing situation. For the 2016 hunt, we are tentatively planning on having a split season with 2 licenses per license type.

Management Summary. Through previous disease surveillance efforts, this herd has been found to be free of known disease pathogens, making them the best source for in-state transplant efforts. In March 2015, 25 bighorn sheep (3 rams, 1 ram lamb, 21 ewes) were captured,

sampled, fitted with radio-collars and released in the Seminoe Mountains. This transplant will assist in bringing the Devil's Canyon herd back down to objective. Depending on the number of sheep observed during the 2015 summer classification survey, another transplant may take place in spring 2016.

Date: July 15, 2014
Observer: Hobbs, Kroger
Species: Bighorn Sheep
Survey Type: Classification/trend
Air Service: SKY Aviation
Aircraft: Jet Ranger Helicopter
Conditions: High thin clouds, mostly calm, 45-65º
Flight duration: 1.3 hours ferry, 4.0 hours survey

Below are the classification/trend survey results flown for bighorn sheep hunt area 12, on July 15, 2014. Total number of sheep observed and classified was 212. Locations of these observations can be viewed on the attached Google Earth map. There were a total of 14 groups of sheep that were found. Of these 14 groups, 10 were located on BLM, 2 on private and 2 across the border in Montana. The highest concentrations of ewe/lamb groups were found along the first ledges below the canyon edge in both Trout Creek and Porcupine Creek. The majority of rams were found on the benches between Deer Creek and Porcupine Creek, with the largest group of 48 rams at the very head of Spring Creek. Rams were classified based on horn curl/mass. There were some very impressive rams seen, with at least a few pushing the 180 class.

ewes	lambs	C1 ram Yrl - ½ curl	C2 ram ½ - ¾ curl	C3 ram ¾ - full curl	C4 rams ≥ full	Total rams	Total sheep	Lamb ratio	Ram ratio
92	44	22	28	19	7	76	212	48:100	83:100