2013 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2013 - 5/31/2014

HERD: BS201 - CLARKS FORK

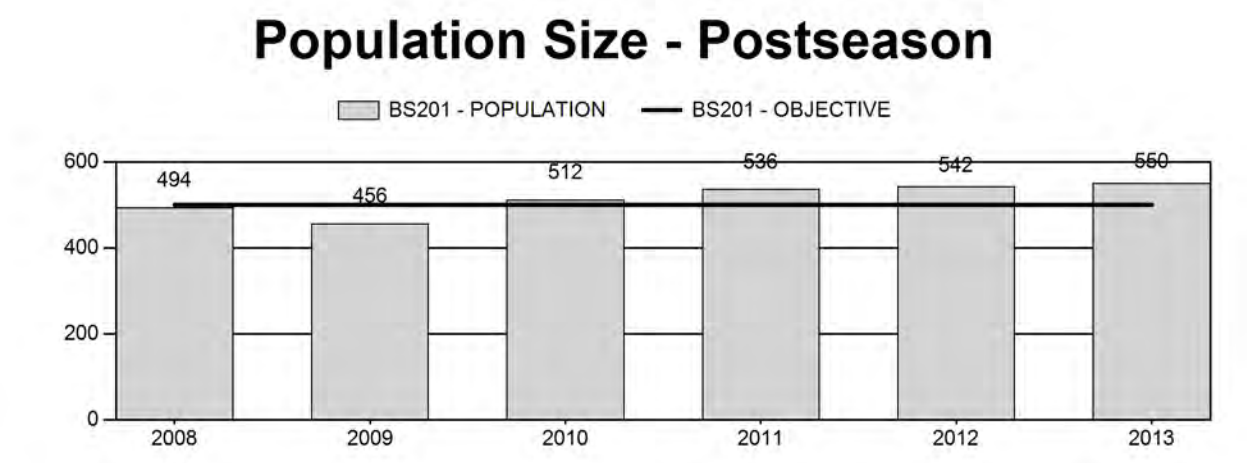
HUNT AREAS: 1
PREPARED BY: DOUG MCWHIRTER

	2008 - 2012 Average	2013	2014 Proposed
Population:	508	550	500
Harvest:	12	18	16
Hunters:	20	20	20
Hunter Success:	60%	90%	80%
Active Licenses:	20	20	20
Active License Percent:	60%	90%	80%
Recreation Days:	220	150	150
Days Per Animal:	18.3	8.3	9.4
Males per 100 Females	24	13	
Juveniles per 100 Females	32	50	

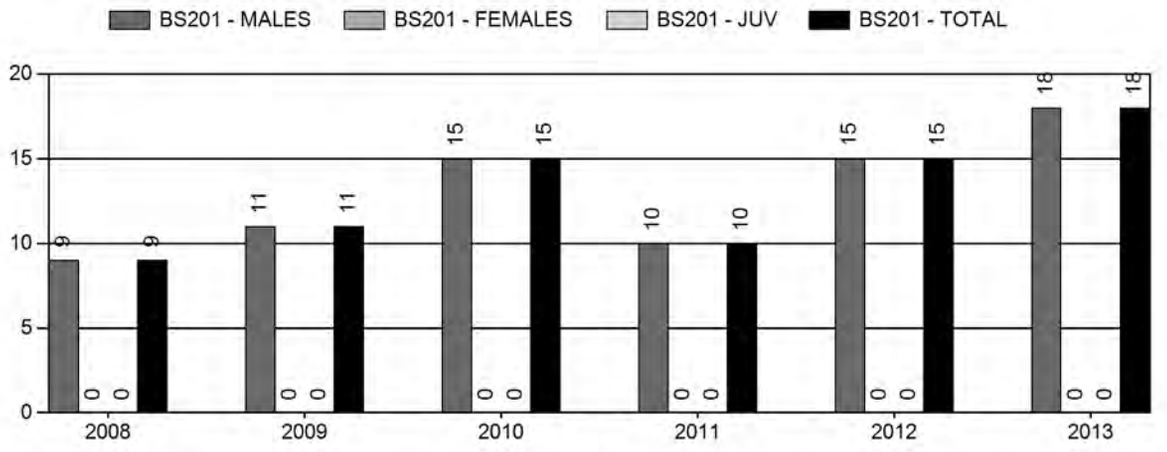
Population Objective:	500
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	10%
Number of years population has been + or - objective in recent trend:	3
Model Date:	2/13/2014

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

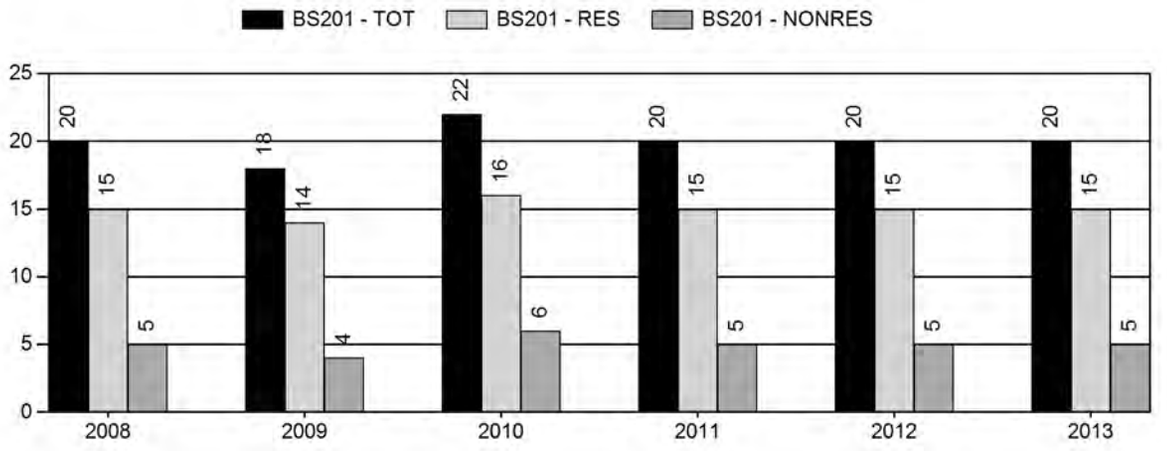
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	15.8%	17.8%
Juveniles (< 1 year old):	0%	0%
Total:	3.2%	3.1%
Proposed change in post-season population:	+1.7%	-10.2%



Harvest



Number of Hunters



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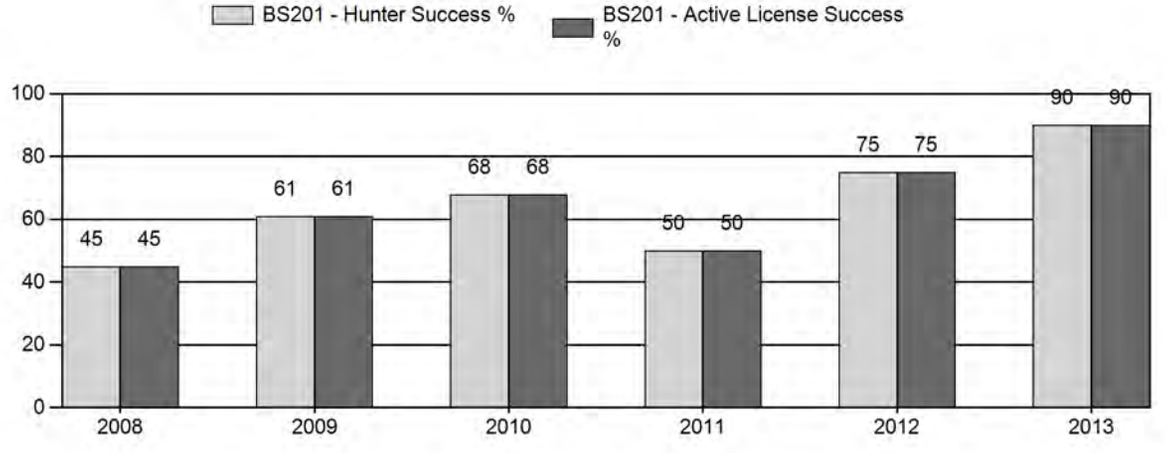
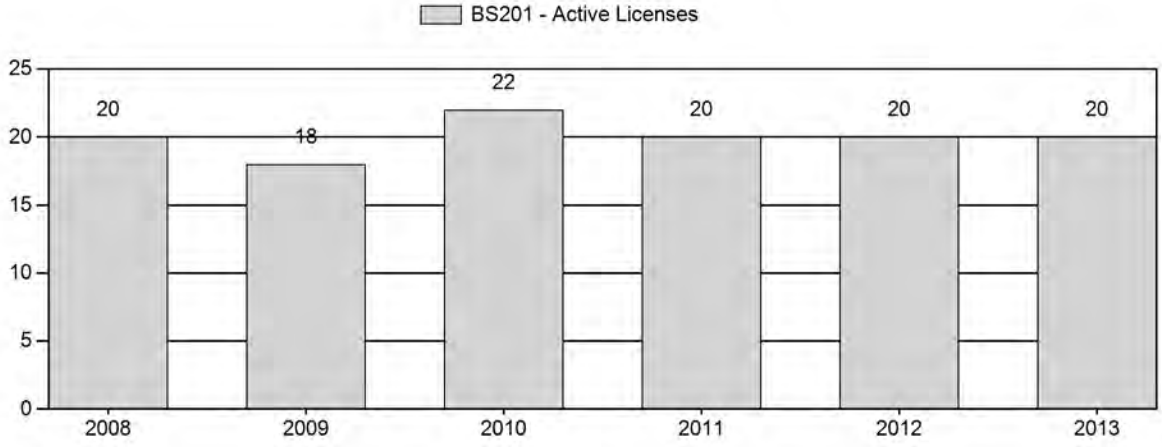
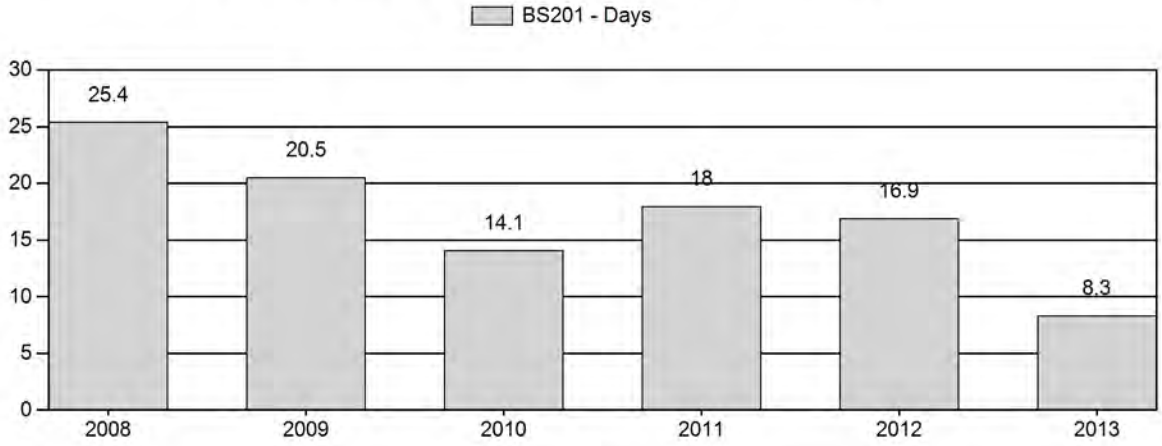


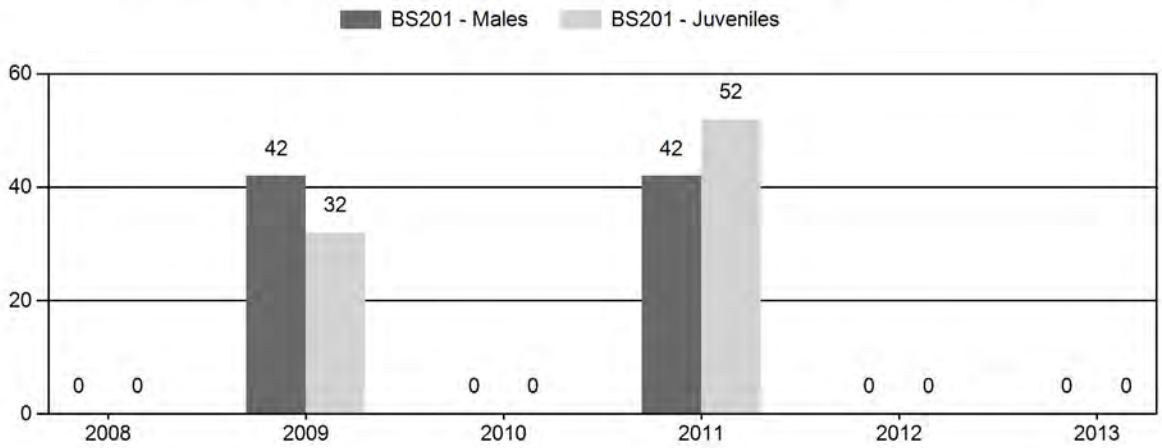
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



2008 - 2013 Preseason Classification Summary

for Bighorn Sheep Herd BS201 - CLARKS FORK

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Pre Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2008	504	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2009	468	5	94	99	24%	235	57%	75	18%	409	327	2	40	42	± 0	32	± 0	22
2010	529	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2011	547	0	85	85	22%	201	52%	104	27%	390	339	0	42	42	± 0	52	± 0	36
2012	558	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0
2013	571	0	0	0	0%	0	0%	0	0%	0	0	0	0	0	± 0	0	± 0	0

2014 HUNTING SEASONS
CLARKS FORK BIGHORN SHEEP HERD (BS201)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
1	1	Sept. 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 2013
		No Change
Total		**No Change**

Management Evaluation

Current Postseason Population Management Objective: 500
2013 Postseason Population Estimate: ~550
2014 Proposed Postseason Population Estimate: ~500

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 2013 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.

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 2013, 20 hunters took 18 rams for a success rate of 90.0%, which is among the better years seen since permits were increased to 20 in 2007. The average age of rams killed in 2013 was 7.4 years old, with 61.0% of the rams killed being 8 years old and older. One ram less than ¾ curl was killed in 2013.

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 2013 population is estimated to be approximately 550 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 2014 season. This should result in a postseason 2014 population of approximately 500 sheep.

Harvest parameters for the Clarks Fork Bighorn Sheep Herd Unit, 1968-2013 (Wyoming portion only).

	1968-72	1973-91	1992-97	1998-2002	2003-2006*	2007-2012*	2013*
Permits	20	24	20	16	16	20	20
Harvest	7.4	11.9	10.7	10.6	14.3	12.7	18
% Success	49.0%	53.5%	52.9%	67.7%	90.3%	63.8%	90.0%
Effort (days/ram)	6.8	16.7	17.7	16.7	10.3	19.8	8.3
Avg. Age	-	6.6	6.9	7.0	6.4	6.9	7.4
% Rams $\geq$ 8 Yrs	-	31.7%	26.7%	32.0%	21.1%	30.9%	61.0%
% Rams $\leq$ ¾ Curl	-	-	-	-	15.9%	6.5%	5.6%

* "any ram" regulation in place

INPUT	
Species:	Bighorn Sheep
Biologist:	Doug McWhirter
Herd Unit & No.:	Clarks Fork
Model date:	02/13/14

☐ 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**	1643	1652	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	43	203	☐ 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**	101	284	**384**				
2014	137	99	278	**513**	137	81	278	**495**	76	264	**339**				
2015	127	74	258	**460**	127	57	258	**442**							
2016															
2017															
2018															
2019															
2020															
2021															
2022															
2023															
2024															
2025															

Survival and Initial Population Estimates

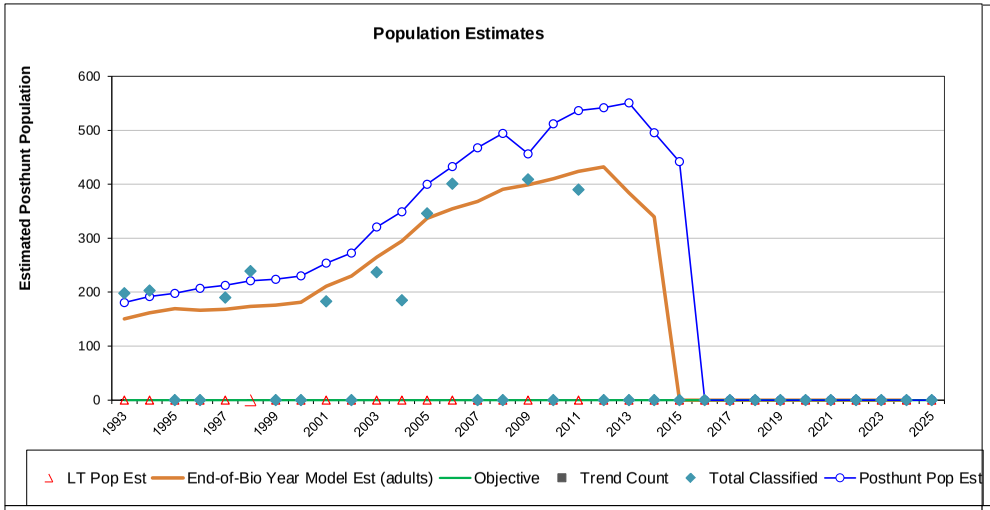
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.40			0.93		
1994	0.60			0.93		
1995	0.60			0.93		
1996	0.40			0.93		
1997	0.40			0.93		
1998	0.40			0.93		
1999	0.40			0.93		
2000	0.40			0.93		
2001	0.60			0.93		
2002	0.60			0.93		
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						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

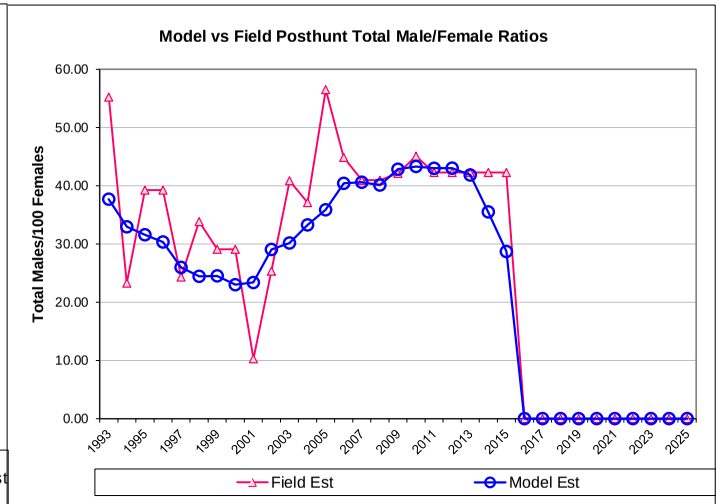
Parameters:	Optim cells
Adult Survival =	0.930
Initial Total Male Pop/10,000 =	0.004
Initial Female Pop/10,000 =	0.011

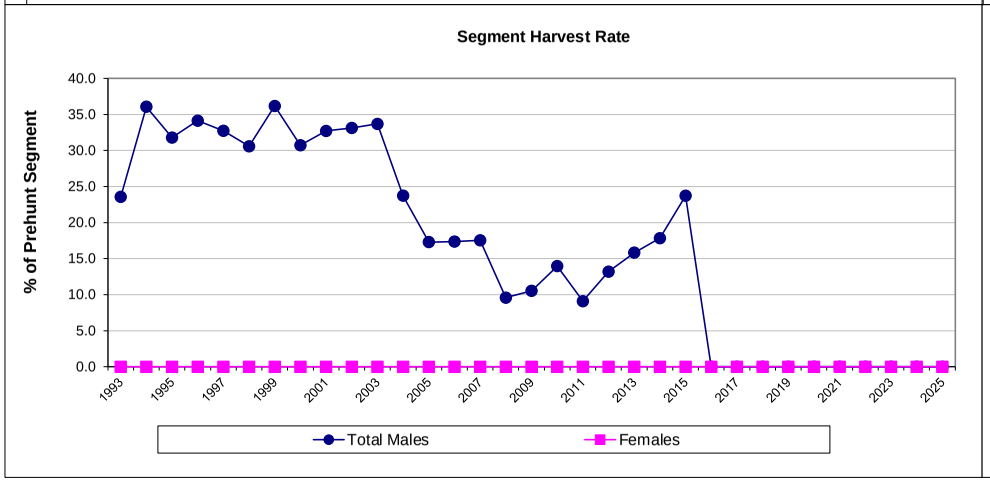
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%
Over-summer adult survival	98%

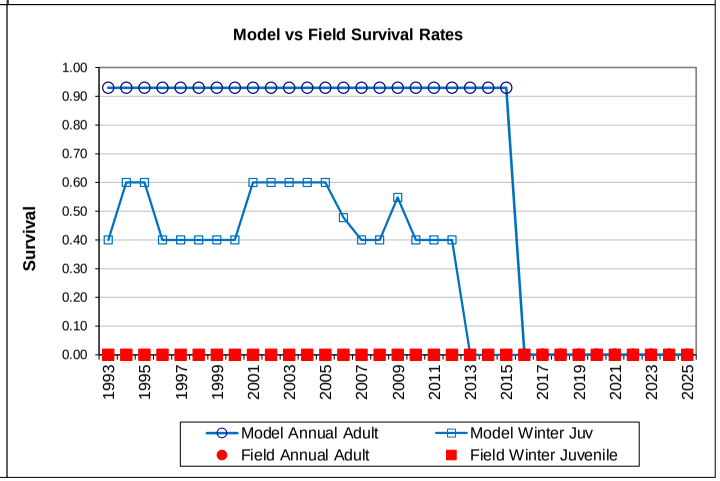
	Classification Counts						Harvest					
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		33.33	6.51	37.70	55.24	9.04	9	0	0	9	23.6	0.0
1994		51.72	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	35.52	42.28	5.94			0	16	17.8	0.0
2015		49.14	6.72	28.71	42.28	5.94			0	16	23.7	0.0
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES









Comments:

END

2013 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2013 - 5/31/2014

HERD: BS202 - TROUT PEAK

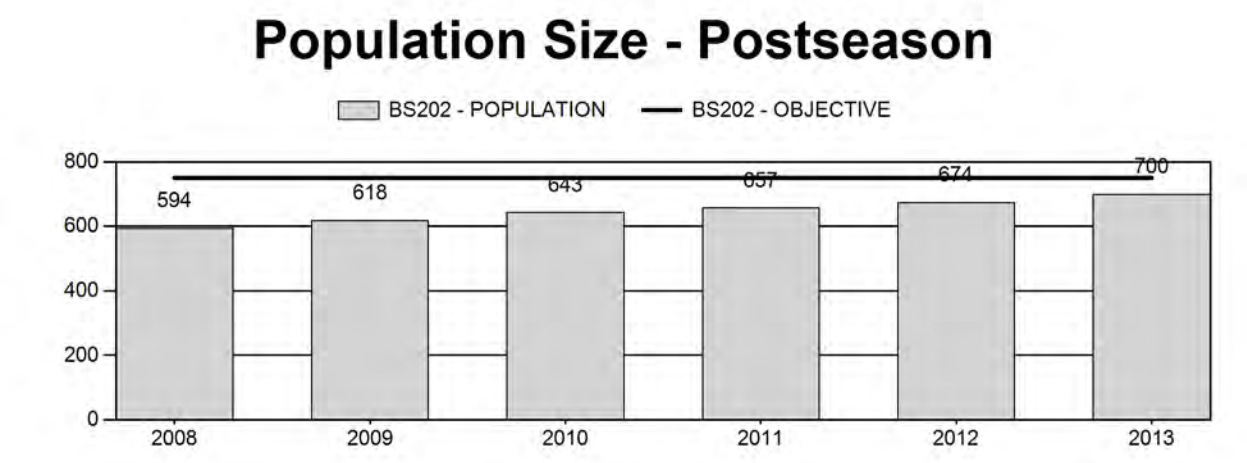
HUNT AREAS: 2
PREPARED BY: DOUG MCWHIRTER

	2008 - 2012 Average	2013	2014 Proposed
Population:	637	700	700
Harvest:	18	23	20
Hunters:	23	25	24
Hunter Success:	78%	92%	83%
Active Licenses:	23	25	24
Active License Percent:	78%	92%	83%
Recreation Days:	249	202	200
Days Per Animal:	13.8	8.8	10
Males per 100 Females	43	0	
Juveniles per 100 Females	25	0	

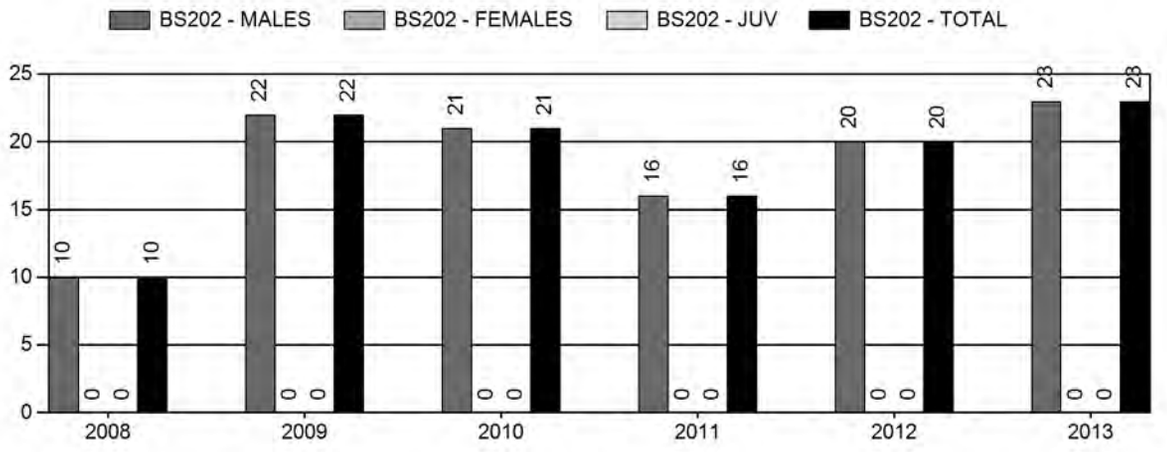
Population Objective:	750
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-6.7%
Number of years population has been + or - objective in recent trend:	9
Model Date:	2/13/2014

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

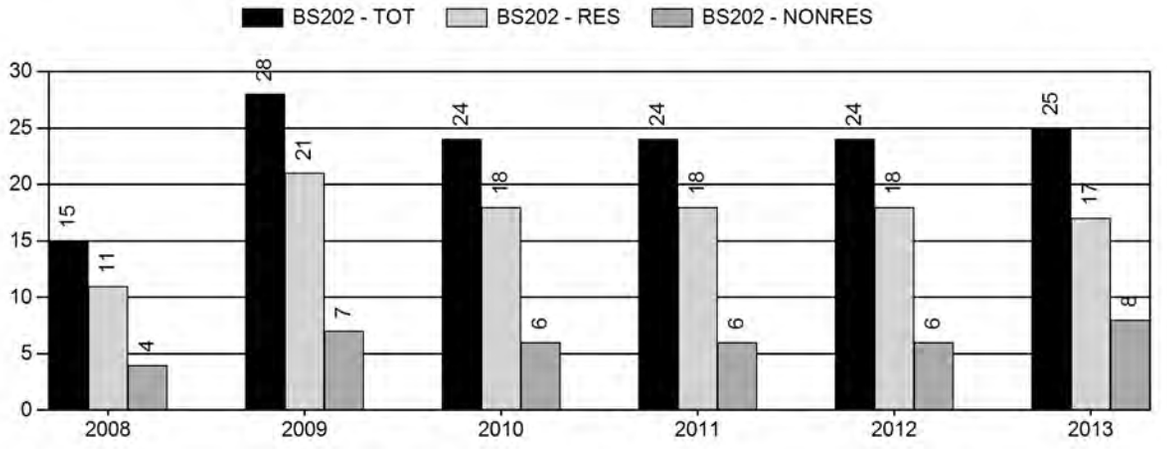
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	13.2%	11.3%
Juveniles (< 1 year old):	0%	0%
Total:	2.8%	2.7%
Proposed change in post-season population:	+2.0%	+2.6%



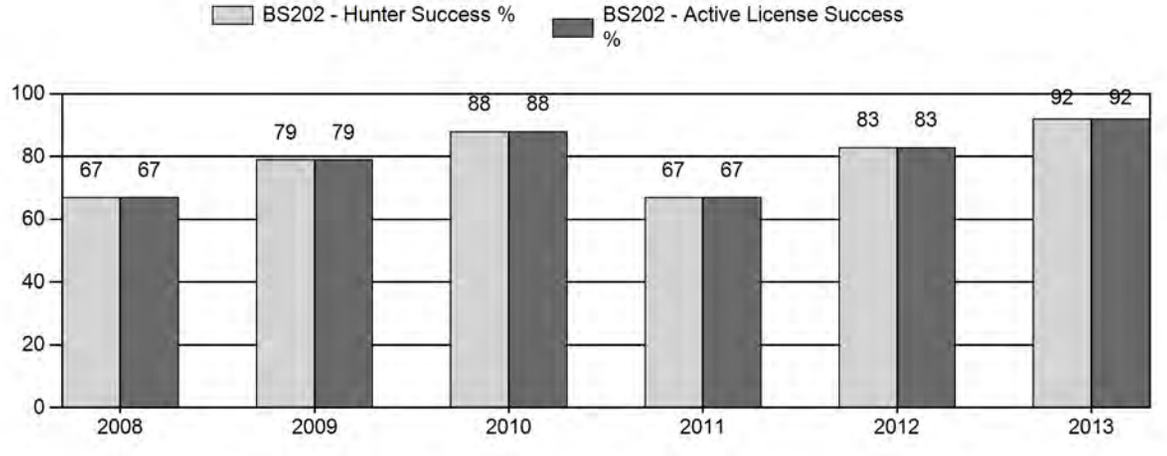
Harvest



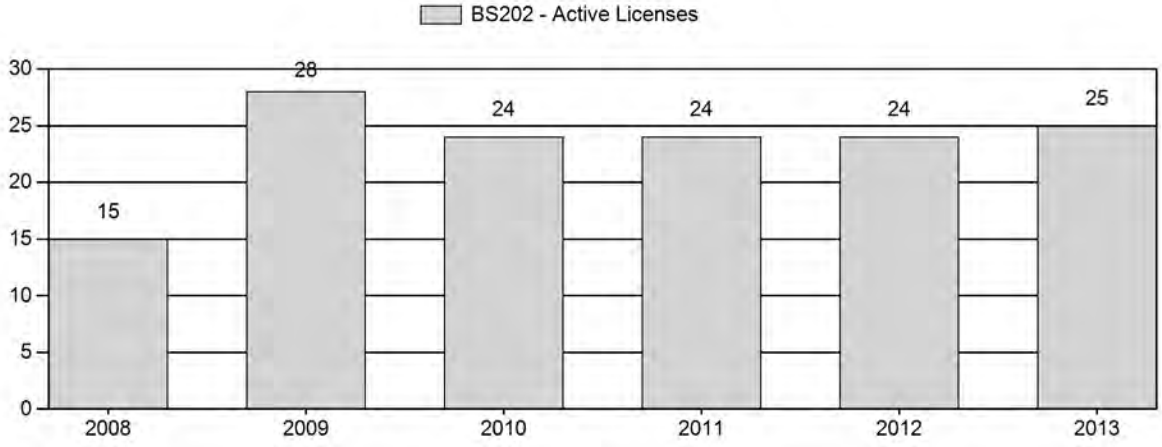
Number of Hunters



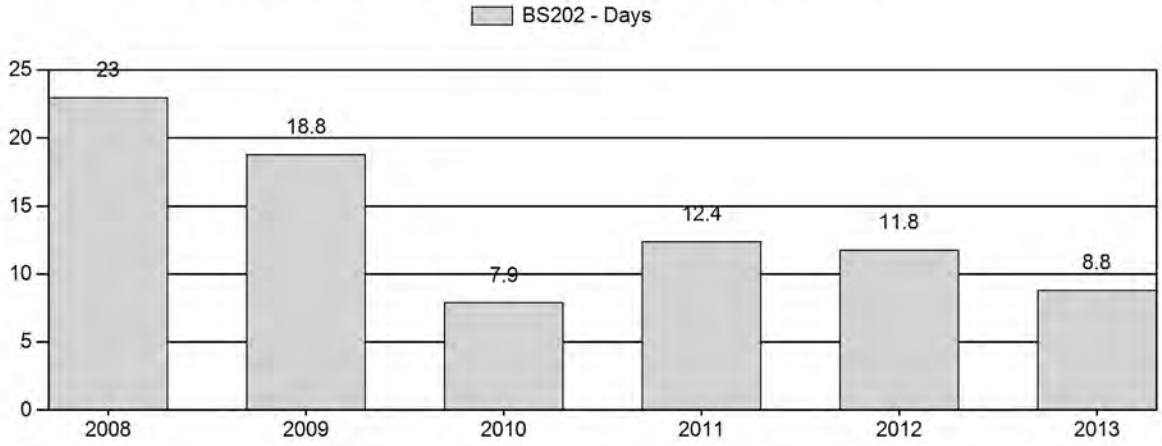
Harvest Success



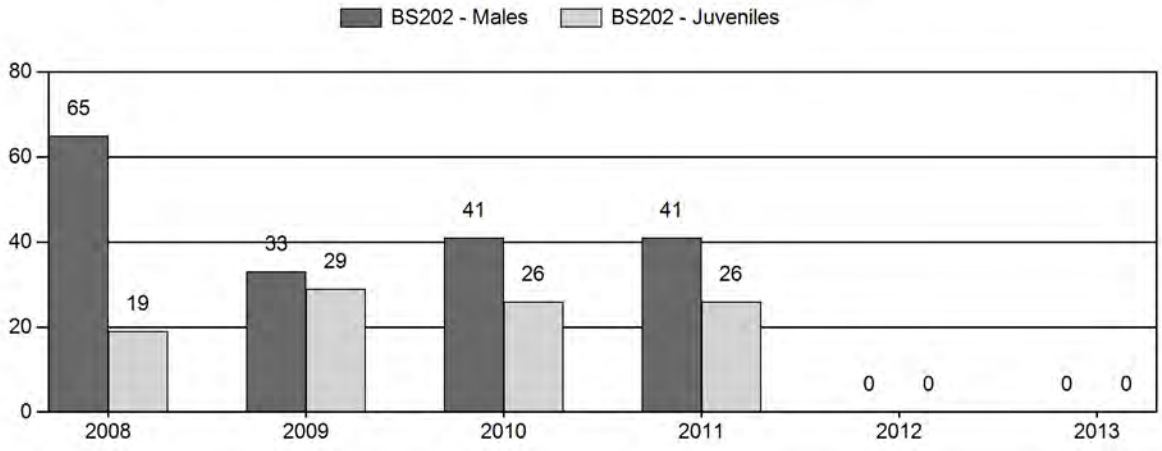
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 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
2008	594	8	94	102	35%	158	54%	30	10%	290	313	5	59	65	± 8	19	± 3	12
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 HUNTING SEASONS
TROUT PEAK BIGHORN SHEEP HERD (BS202)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
2	1	Sept. 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 2013
2		No Change
Total		**No Change**

Management Evaluation

Current Postseason Population Management Objective: 750
2013 Postseason Population Estimate: ~700
2014 Proposed Postseason Population Estimate: ~700

Herd Unit Issues

The Trout Peak Herd Unit possesses some of the most difficult 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 2013 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.

Habitat

No habitat monitoring data is collected in this herd unit.

Field Data

Seven surveys have been conducted over the last 10 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 2011 resulted in 465 sheep observed, representing one of the higher sample sizes obtained, even though the western portion of the hunt area was not surveyed. The lamb:ewe ratio for this sample was 26:100, which is slightly below the recent average. The ram:ewe ratio was 41:100 which is about average.

Harvest Data

In 2013, 25 hunters took 23 rams for a success rate of 92%, which is among the better years experienced by this sub-herd. The average age of rams killed in 2013 was 7.6 years old, with 39.0% of the rams killed being 8 years old and older. No rams less than ¾ curl was killed in 2013. 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 2013 population is estimated to be 700 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 2014 season. The postseason 2014 population is estimated to be approximately 700 sheep.

Harvest parameters for the Trout Peak Bighorn Sheep Herd, 1978-2013.

	1978-96	1997-2002	2003	2004-2012*	2013*
Permits	32	24	28	24+	25
Harvest	18.8	15.2	16	18.4	23
% Success	61.0%	63.8%	61.5%	77.2%	92%
Effort (days/ram)	18.2	16.0	25.1	12.8	8.8
Avg. Age	5.9	6.7	6.6	7.0	7.6
% Rams ≥ 8 Yrs	19.5%	25.6%	18.8%	30.2%	39.0%
% Rams ≤ ¾ Curl	-	-	-	4.9%	0.0%

*any ram regulation in place

+ 25 permits were issued in 2006, 2007, and 15 and 28 permits were issued in 2008 and 2009, respectively due to the Gunbarrel Fire

INPUT	
Species:	Bighorn Sheep
Biologist:	Doug McWhirter
Herd Unit & No.:	Trout Peak
Model date:	02/26/13

☐ 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	156	☐ 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				115	194	431	740	115	172	431	718	750
2015				107	160	401	668	107	138	401	646	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

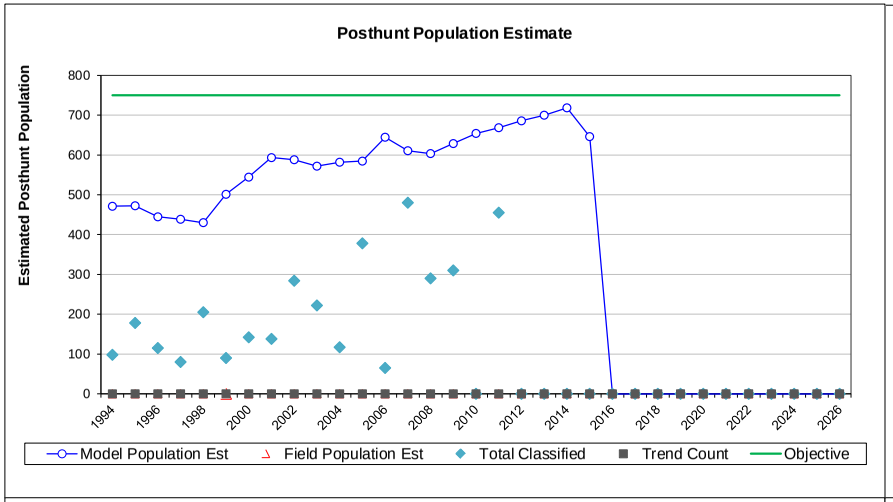
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1994	0.40			0.93		
1995	0.40			0.93		
1996	0.40			0.93		
1997	0.40			0.93		
1998	0.70			0.93		
1999	0.70			0.93		
2000	0.70			0.93		
2001	0.70			0.93		
2002	0.40			0.93		
2003	0.70			0.93		
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				0.93		
2015				0.93		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						
2026						

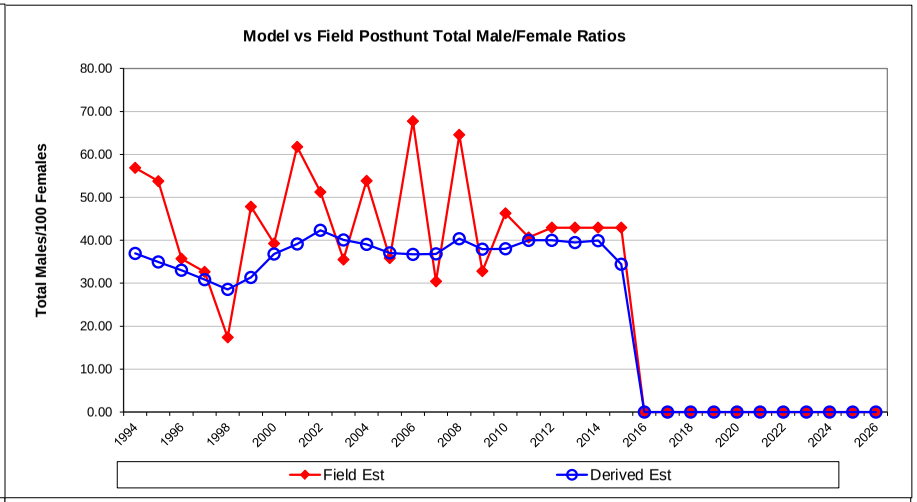
Parameters:	Optim cells
Adult Survival =	0.930
Initial Total Male Pop/10,000 =	0.010
Initial Female Pop/10,000 =	0.027

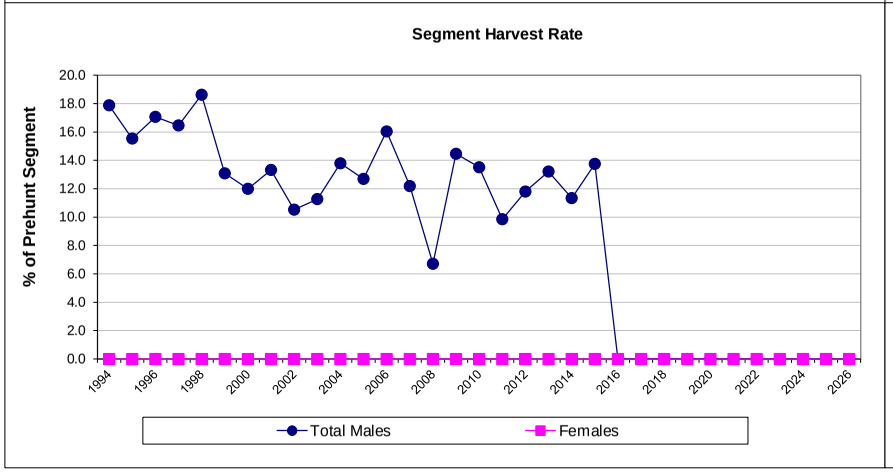
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

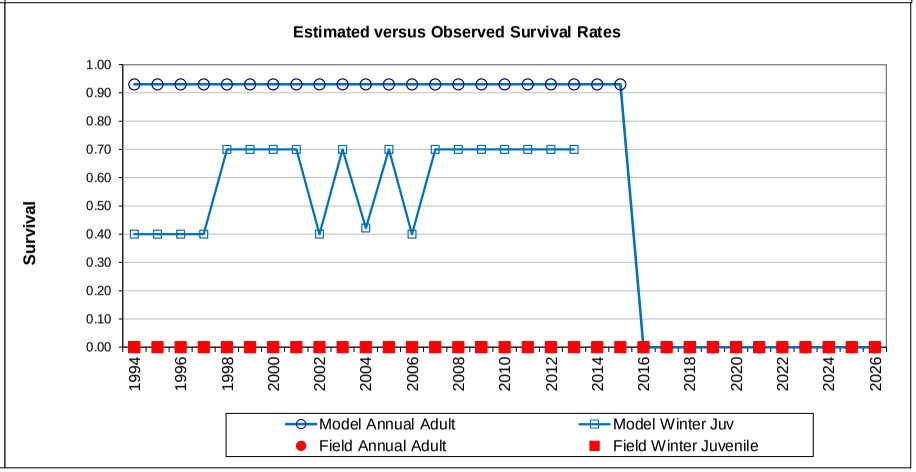
Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio			Harvest				Harvest: Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1994		35.29	9.68	36.93	56.86	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		26.79	4.25	39.90	42.95	5.85	0	20	0	20	11.3	0.0
2015		26.79	4.25	34.42	42.95	5.85	0	20	0	20	13.8	0.0
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												
2026												

FIGURES









Comments:

END

2013 - JCR Evaluation Form

SPECIES: Bighorn Sheep

PERIOD: 6/1/2013 - 5/31/2014

HERD: BS203 - WAPITI RIDGE

HUNT AREAS: 3

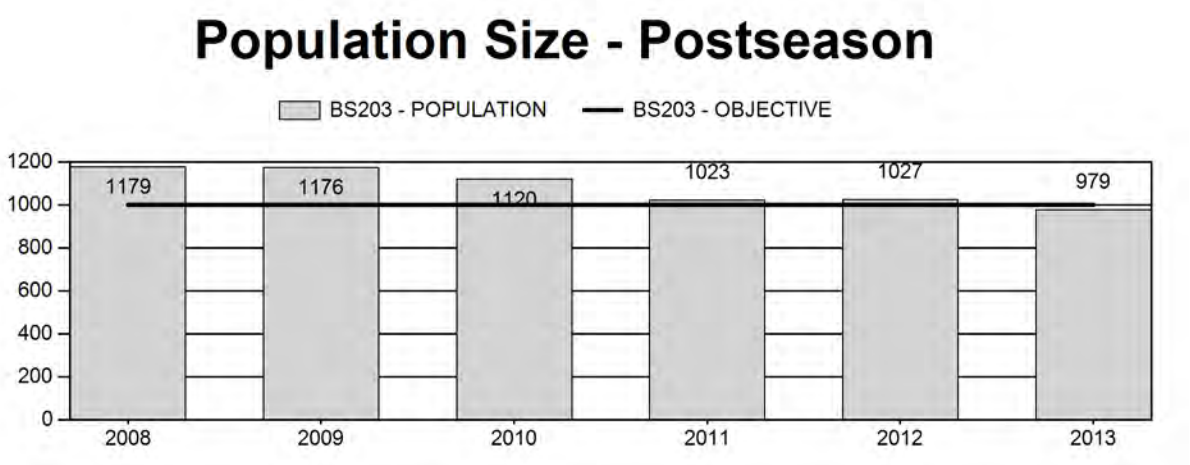
PREPARED BY: DOUG MCWHIRTER

	2008 - 2012 Average	2013	2014 Proposed
Population:	1,105	979	850
Harvest:	36	37	36
Hunters:	45	39	40
Hunter Success:	80%	95%	90%
Active Licenses:	45	39	40
Active License Percent:	80%	95%	90%
Recreation Days:	392	306	300
Days Per Animal:	10.9	8.3	8.3
Males per 100 Females	35	20	
Juveniles per 100 Females	26	23	

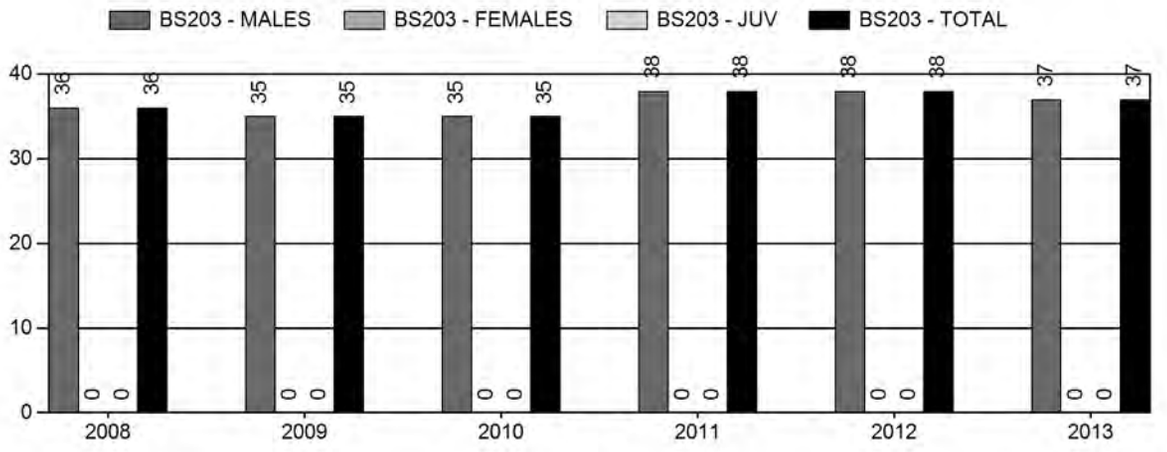
Population Objective:	1,000
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-2.1%
Number of years population has been + or - objective in recent trend:	0
Model Date:	6/13/2014

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

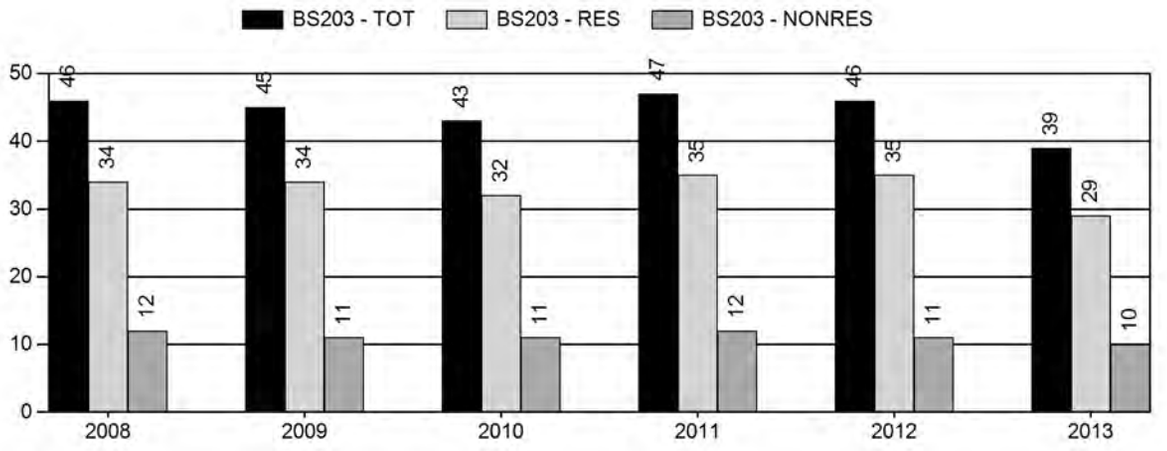
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	18.1%	23.8%
Juveniles (< 1 year old):	0%	0%
Total:	3.7%	4.2%
Proposed change in post-season population:	-6.5%	-14.0%



Harvest



Number of Hunters



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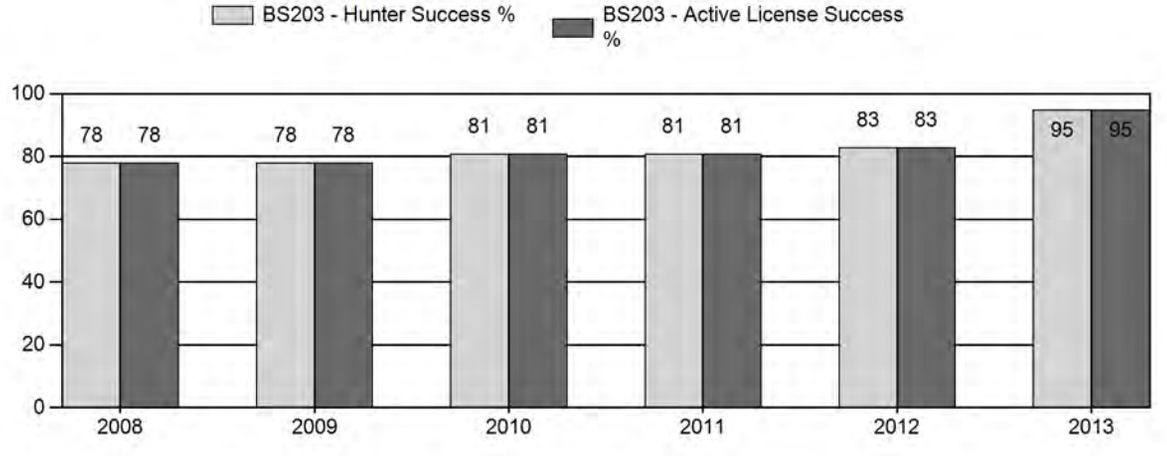
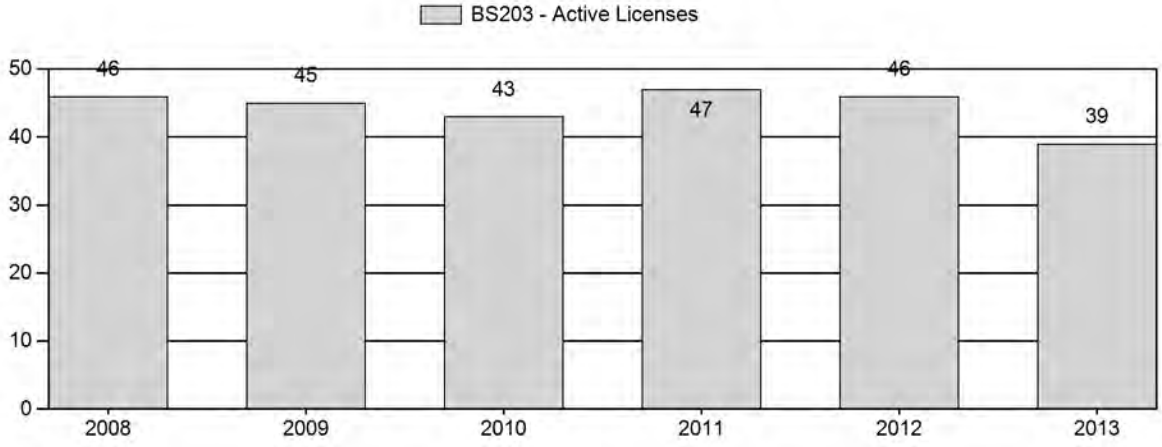
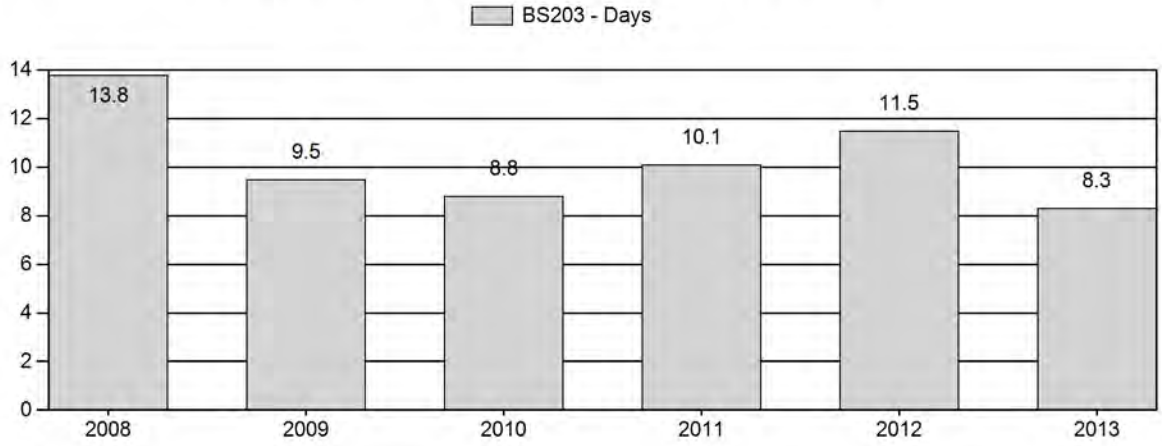


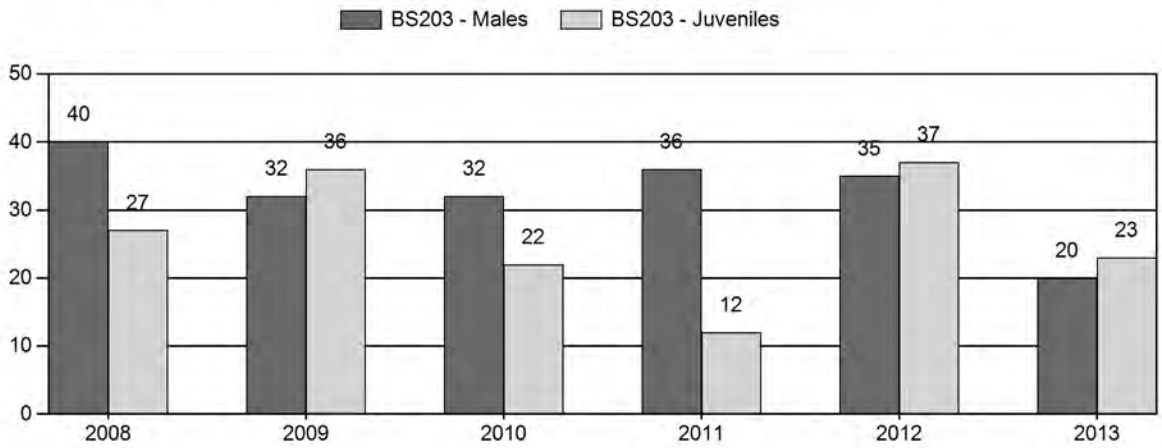
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 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
2008	1,179	25	154	179	24%	452	60%	120	16%	751	413	6	34	40	± 3	27	± 2	19
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	950	9	41	50	14%	246	70%	56	16%	352	378	4	17	20	± 3	23	± 3	19

2014 HUNTING SEASONS
WAPITI RIDGE BIGHORN SHEEP HERD (BS203)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	Limitations
3	1	Sept. 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 2013
3	1	0
Total	**1**	**0**

Management Evaluation
Current Postseason Population Management Objective: 1,000
2013 Postseason Population Estimate: ~1,000
2014 Proposed Postseason Population Estimate: ~850

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 2013 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.

Habitat

No habitat monitoring data is collected in this herd unit.

Field Data

Eight surveys have been conducted over the last 10 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 32:100 to 46:100. The most recent survey in 2013 resulted in 352 sheep observed, a lamb:ewe ratio of 23:100 (which is below the recent average), and a ram:ewe ratio of 20:100, which is below average for this herd unit.

Harvest Data

In 2013, 39 hunters took 37 rams for a success rate of 95%, which is above average for this sub-herd. The average age of rams killed in 2013 was 7.1 years old, with 46.0% of the rams killed being 8 years old and

older. Three rams less than ¾ curl were killed in 2013. Hunter effort was 8.3 days per ram harvested in 2012, 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 2013 population is estimated to be approximately 1,000 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.

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 season, and should remain so for the 2014 season. The postseason 2014 population is estimated to be approximately 850 sheep.

Harvest parameters for the Wapiti Ridge Bighorn Sheep Herd Unit, 1978-2013.

	1978-83	1984-85	1986-92	1993-1999	2000-04*	2005-12*	2013*
Permits	32	36	40	44	48	44+	40
Harvest	22.5	29.5	36.1	36.9	38.0	36.5	37
% Success	69.3%	81.2%	83.0%	79.0%	77.6%	81.4%	94.8%
Effort (days/ram)	11.3	9.3	8.6	9.0	9.8	10.3	8.3
Avg. Age	5.9	7.1	6.9	7.1	6.8	6.7	7.1
% Rams ≥ 8 Yrs	12.8%	49.2%	41.5%	35.1%	31.0%	29.3%	46.0%
% Rams ≤ ¾ Curl	-	-	-	-	8.4%	8.6%	8.1%

* "any ram" regulation in place

+ 46 licenses were issued in 2012 to achieve a 75:25 statewide split between residents and nonresidents

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**	12436	12445	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	8	123	☑ 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				303	420	942	1665	303	380	942	1625	1000
1994				349	404	911	1663	349	362	911	1621	1000
1995				176	396	891	1463	176	358	891	1425	1000
1996				103	358	839	1300	103	317	839	1260	1000
1997				225	307	778	1310	225	264	778	1267	1000
1998				263	317	781	1361	263	277	781	1321	1000
1999				305	342	797	1444	305	302	797	1403	1000
2000				269	379	825	1474	269	336	825	1431	1000
2001				296	397	839	1533	296	357	839	1492	1000
2002				151	425	861	1437	151	384	861	1395	1000
2003				226	399	830	1454	226	358	830	1414	1000
2004				242	402	828	1471	242	359	828	1429	1000
2005				138	373	795	1305	138	334	795	1267	1000
2006				287	350	766	1402	287	308	766	1360	1000
2007				219	335	748	1302	219	294	748	1261	1000
2008				191	309	719	1219	191	270	719	1179	1000
2009				246	282	687	1215	246	243	687	1176	1000
2010				152	303	704	1158	152	265	704	1120	1000
2011				85	292	688	1065	85	250	688	1023	1000
2012				240	255	650	1146	240	214	650	1104	1000
2013				145	241	635	1020	145	200	635	979	1000
2014				144	181	573	897	144	141	573	858	1000
2015				130	127	517	774	130	88	517	734	1000
2016												
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	0.68			0.90		
2010	0.70			0.90		
2011	0.70			0.90		
2012	0.40			0.90		
2013				0.90		
2014				0.90		
2015				0.90		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:	Optim cells
Adult Survival =	0.902
Initial Total Male Pop/10,000 =	0.038
Initial Female Pop/10,000 =	0.094

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		32.15	3.70	40.35	41.48	4.34	0	36	0	36	9.4	0.0
1994		38.29	4.88	39.73	44.14	5.35	0	38	0	38	10.4	0.0
1995		19.71	3.37	40.13	37.50	4.98	0	35	0	35	9.7	0.0
1996		12.27	2.50	37.78	36.36	4.75	0	37	0	37	11.4	0.0
1997		28.97	5.08	33.92	31.03	5.30	0	39	0	39	14.0	0.0
1998		33.65	4.62	35.52	31.75	4.45	0	36	0	36	12.5	0.0
1999		38.24	5.09	37.86	38.73	5.13	0	37	0	37	11.9	0.0
2000		32.64	3.35	40.69	43.26	4.01	0	39	0	39	11.3	0.0
2001		35.29	5.30	42.50	44.12	6.12	0	37	0	37	10.2	0.0
2002		17.54	2.17	44.57	43.05	3.75	0	38	0	38	9.8	0.0
2003		27.20	3.64	43.19	46.36	5.10	0	37	0	37	10.2	0.0
2004		29.19	2.87	43.43	45.53	3.80	0	39	0	39	10.7	0.0
2005		17.33	3.17	42.03	38.61	5.15	0	35	0	35	10.3	0.0
2006		37.44	4.85	40.22	44.29	5.40	0	38	0	38	12.0	0.0
2007		29.21	3.60	39.36	42.27	4.55	0	37	0	37	12.1	0.0
2008		26.55	2.73	37.54	39.60	3.50	0	36	0	36	12.8	0.0
2009		35.85	2.99	35.40	32.17	2.80	0	35	0	35	13.7	0.0
2010		21.54	4.49	37.63	31.54	5.65	0	35	0	35	12.7	0.0
2011		12.33	1.76	36.36	35.87	3.31	0	38	0	38	14.3	0.0
2012		36.94	6.75	32.84	35.14	6.54	0	38	0	38	16.4	0.0
2013		22.76	3.37	31.51	20.33	3.15	0	37	0	37	16.9	0.0
2014		25.09	3.11	24.60	36.29	3.96	0	36	0	36	21.9	0.0
2015		25.09	3.11	16.94	36.29	3.96	0	36	0	36	31.1	0.0
2016												
2017												
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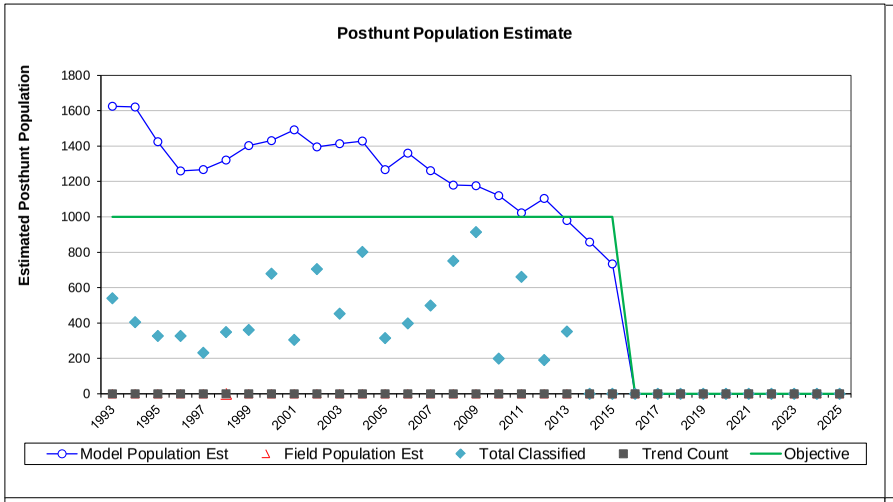
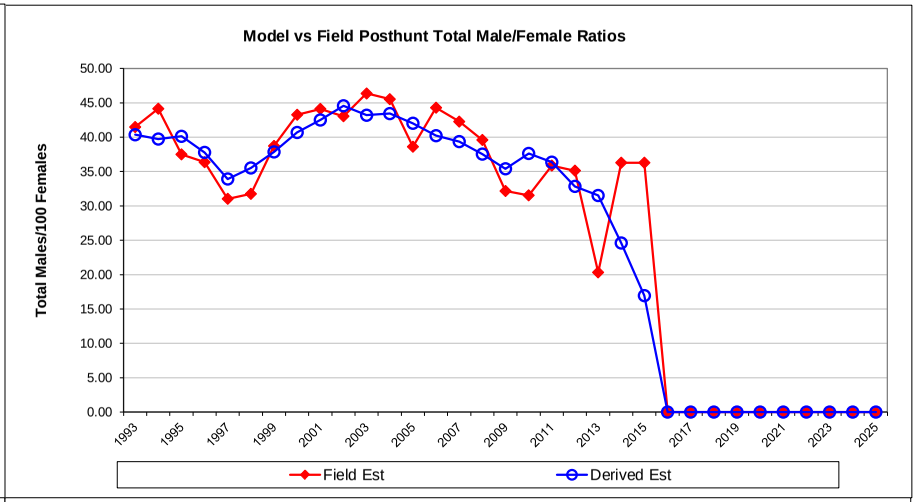
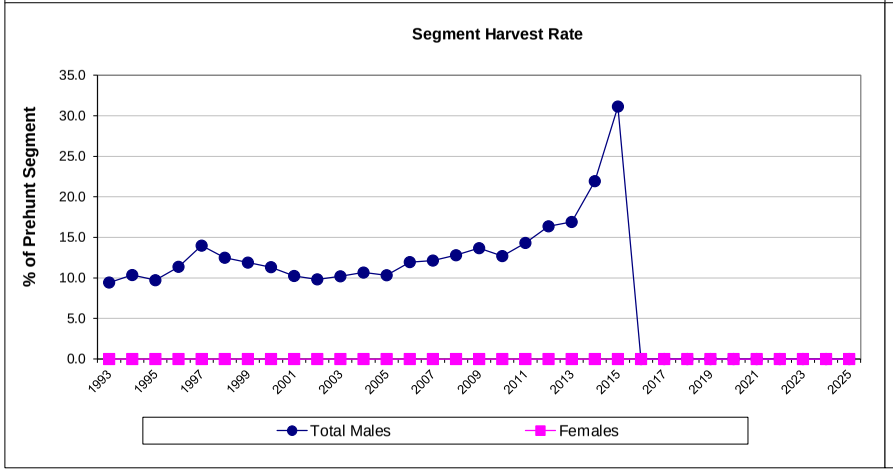
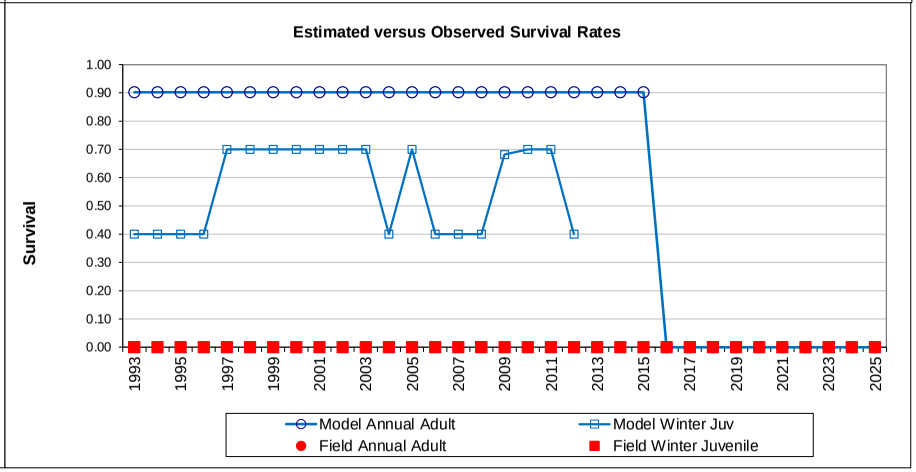
2021												
2022												
2023												
2024												
2025												

FIGURES









Comments:

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2013 - JCR Evaluation Form

SPECIES: Bighorn Sheep

PERIOD: 6/1/2013 - 5/31/2014

HERD: BS204 - YOUNTS PEAK

HUNT AREAS: 4

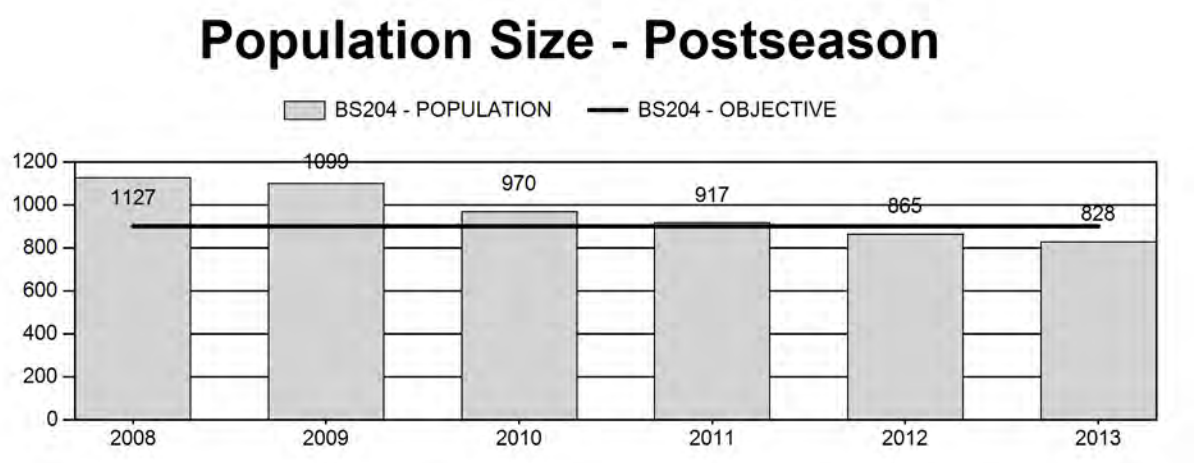
PREPARED BY: DOUG MCWHIRTER

	2008 - 2012 Average	2013	2014 Proposed
Population:	996	828	735
Harvest:	30	10	15
Hunters:	41	11	20
Hunter Success:	73%	91%	75%
Active Licenses:	41	11	20
Active License Percent:	73%	91%	75%
Recreation Days:	295	74	110
Days Per Animal:	9.8	7.4	7.3
Males per 100 Females	42	44	
Juveniles per 100 Females	20	23	

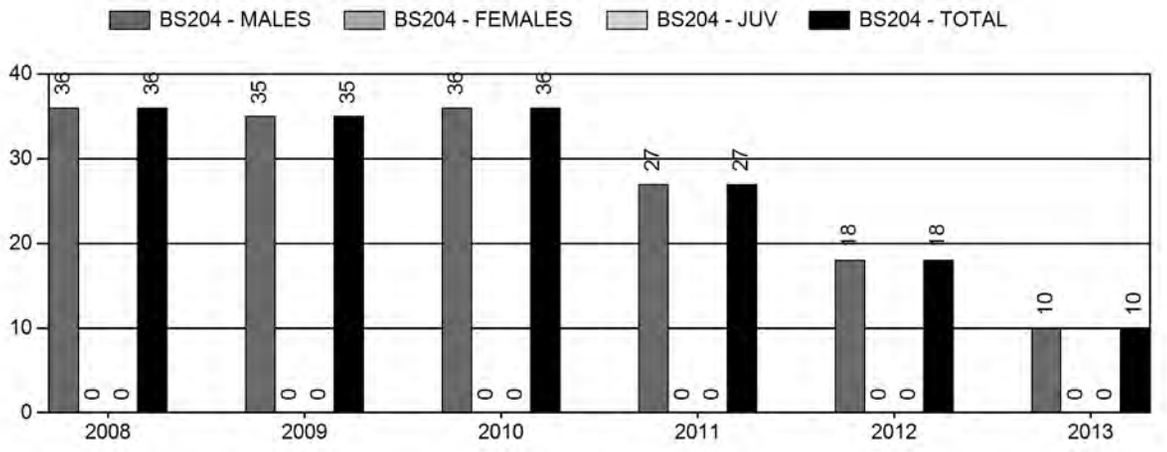
Population Objective:	900
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-8%
Number of years population has been + or - objective in recent trend:	5
Model Date:	6/13/2014

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

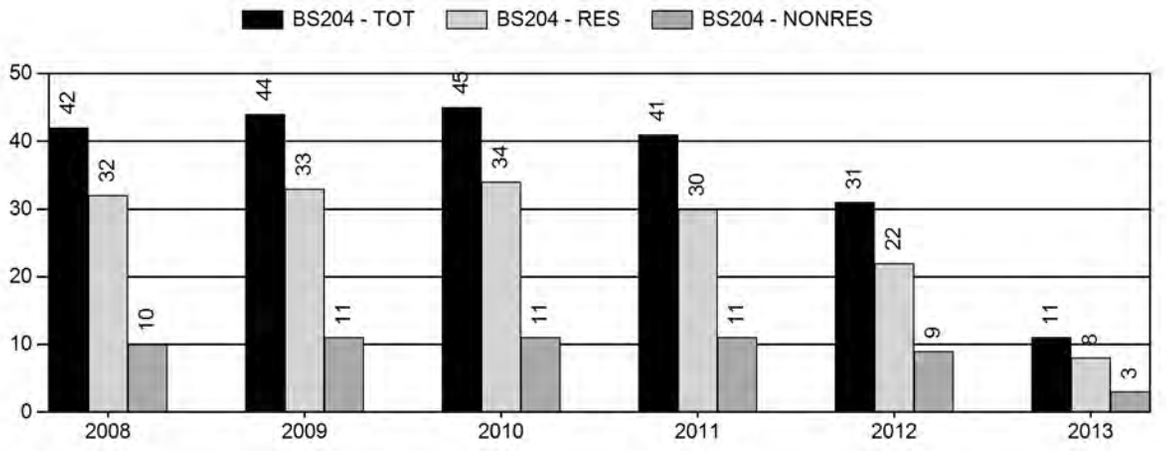
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	5.3%	9.4%
Juveniles (< 1 year old):	0%	0%
Total:	1.2%	2.0%
Proposed change in post-season population:	-3.1%	-12.3%



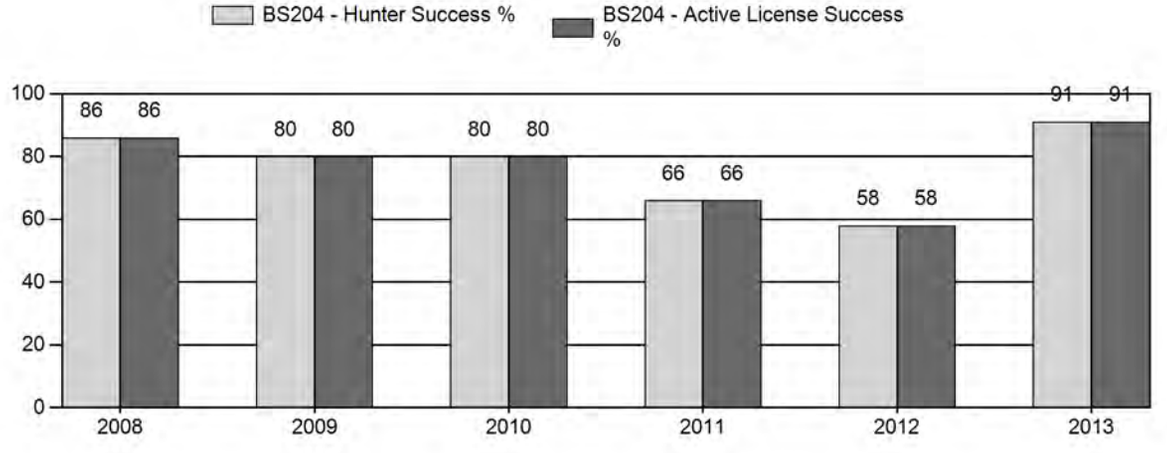
Harvest



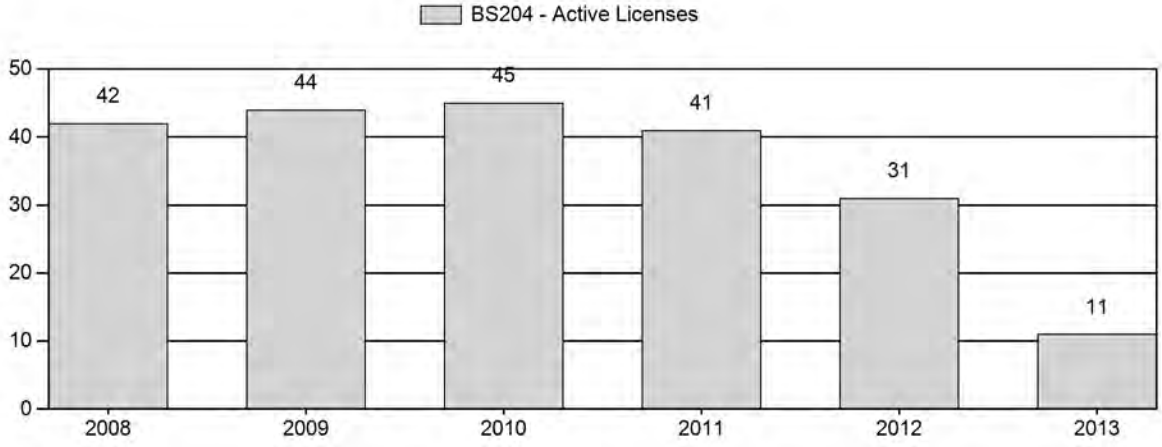
Number of Hunters



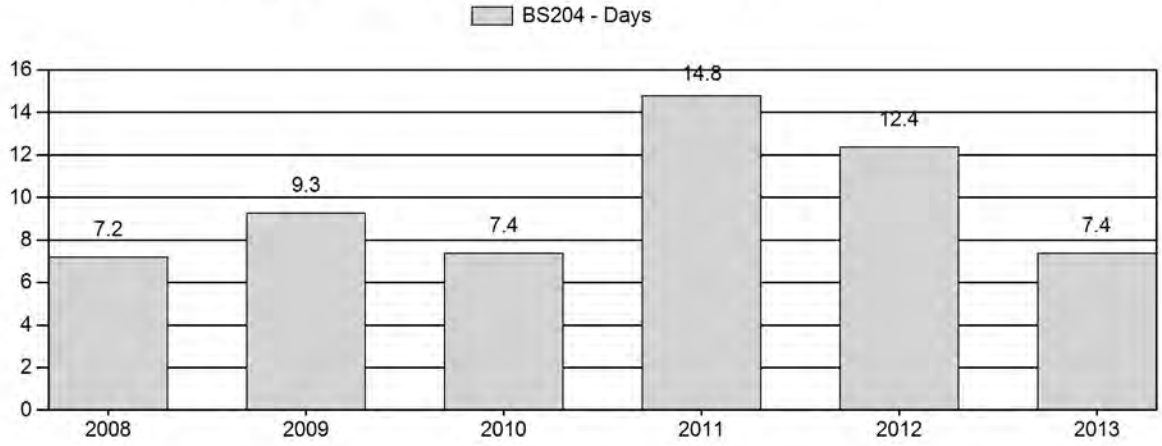
Harvest Success



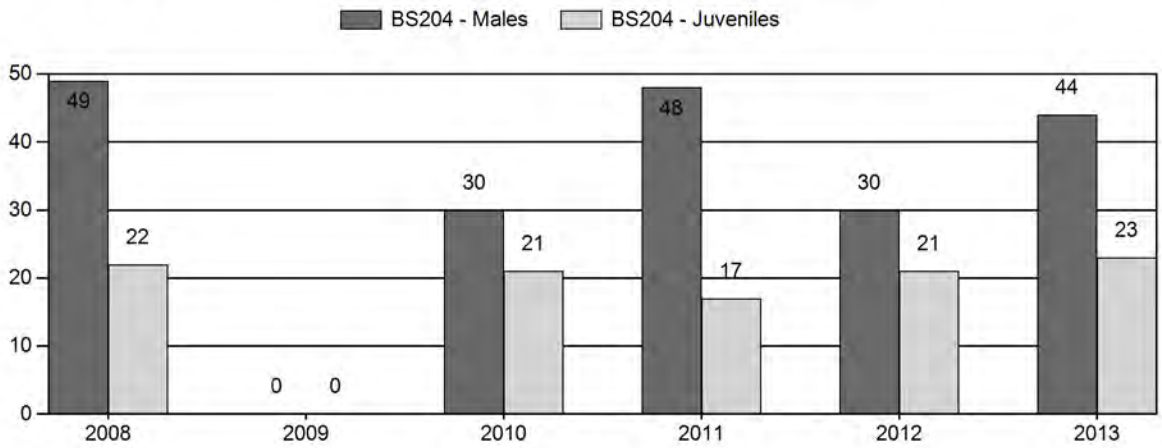
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 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
2008	1,127	3	149	152	29%	309	58%	69	13%	530	482	1	48	49	± 5	22	± 3	15
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 HUNTING SEASONS
YOUNTS PEAK BIGHORN SHEEP HERD (BS204)

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

Hunt Area	Type	Quota change from 2013
4	1	-8*
Total	**1**	**-8***

* to compensate for 9 carry-over hunters from 2013 to 2014

Management Evaluation

Current Postseason Population Management Objective: 900
2013 Postseason Population Estimate: ~850
2014 Proposed Postseason Population Estimate: ~750

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 2013 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

Five surveys have been conducted over the last 10 years, resulted in samples ranging from 233 to 567 classified sheep. Lamb:ewe ratios have ranged from 17:100 to 36:100 over this time, although 3 of these surveys produced lamb:ewe ratios of 17:100, 21:100, and 22:100. Ram:ewe ratios have varied from 30:100 to 54:100. The most recent complete survey in 2011 resulted in 505 sheep observed, a lamb:ewe ratio of 17:100 (which is well below the recent average), and a ram:ewe ratio of 48:100, which is slightly below average for this herd unit. Survey data from the Dubois portion of the herd unit in 2012 and 2013 yielded lamb:ewe ratios of 21:25 and 25:100, respectively and ram:ewe ratios of 30:100 and 45:100.

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, resulting in only 11 hunters in 2013. These 11 hunters took 10 rams in 2013 for a success rate of 91%. The average age of rams killed in 2013 was 8.0 years old, with 70.0% of the rams killed being 8 years old and older. One ram less than ¾ curl was killed in 2013. Hunter effort was 7.4 days per ram harvested in 2013. These figures represent a return to levels previously seen in this sub-herd, but came at the expense of significantly reducing hunter opportunity.

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 2013 population is estimated to be 850 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 season and will remain there for the 2014 season. Since there will be 9 carry-over hunters from 2013, only 11 licenses will be issued in 2014 in order to have 20 hunters in the field. The postseason 2014 population is estimated to be approximately 750 sheep.

Harvest parameters for the Younts Peak Bighorn Sheep Herd Unit, 1984-2013.

	1984-91	1992-95	1996-00*	2001-04*	2005-08*	2009-11*	2012*	2013*
Permits	60	48	32	36	40	44+	31	11
Harvest	33.1	28.3	22.6	32.3	34.0	32.7	18	10
% Success	59%	62%	74%	87%	83.3%	75.4%	58.1%	91%
Effort (days/ram)	18.6	15.0	8.4	7.9	8.2	10.5	12.4	7.4
Avg. Age	6.6	6.5	6.7	7.3	7.3	7.5	7.2	8.0
% Rams ≥ 8 Yrs	24.1%	17.5%	33.3%	44.1%	32.7%	47.6%	22.2%	70%
% Rams ≤ ¾ Curl	-	-	11.9%	15.0%	7.2%	5.9%	5.6%	10.0%

* "any ram" regulation in place

+ 46 permits were issued in 2010 and 2011.

INPUT	
Species:	Bighorn Sheep
Biologist:	Doug McWhirter
Herd Unit & No.:	Younts Peak
Model date:	06/02/14

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	**Constant Juvenile & Adult Survival**	77	86	☐ CJ,CA Model	
SCJ,SCA	**Semi-Constant Juvenile & Semi-Constant Adult Survival**	53	67	☐ SCJ,SCA Mod	
TSJ,CA	**Time-Specific Juvenile & Constant Adult Survival**	37	152	☑ 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				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				117	175	459	751	117	159	459	735	900
2015				105	142	412	658	105	126	412	642	900
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Survival and Initial Population Estimates

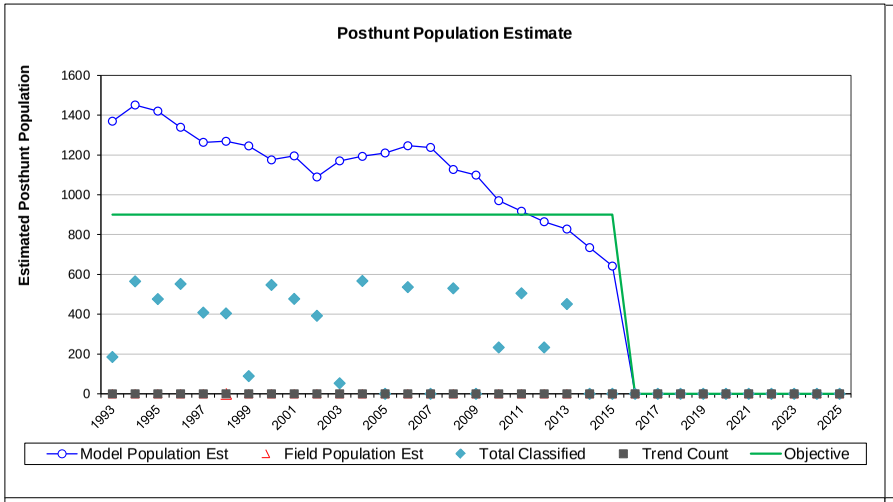
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.70			0.90		
1994	0.70			0.90		
1995	0.40			0.90		
1996	0.40			0.90		
1997	0.40			0.90		
1998	0.40			0.90		
1999	0.40			0.90		
2000	0.70			0.90		
2001	0.40			0.90		
2002	0.70			0.90		
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				0.90		
2014				0.90		
2015				0.90		
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

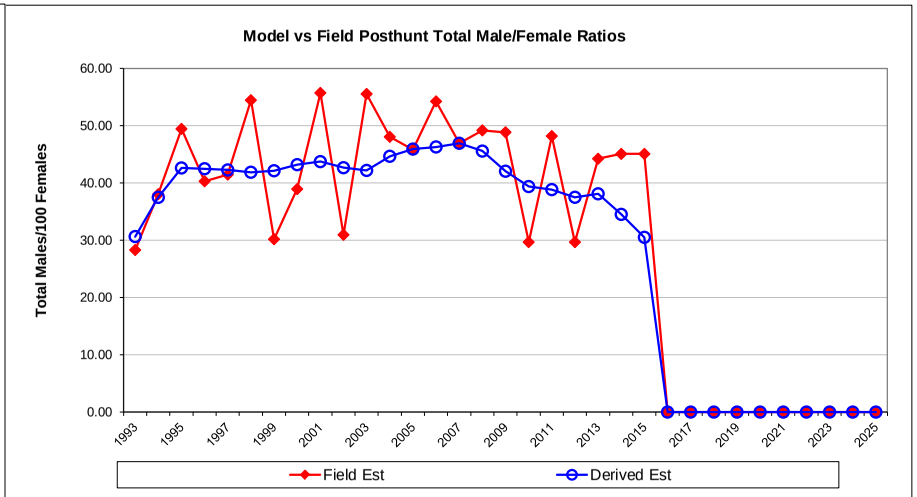
Parameters:	Optim cells
Adult Survival =	0.896
Initial Total Male Pop/10,000 =	0.024
Initial Female Pop/10,000 =	0.077

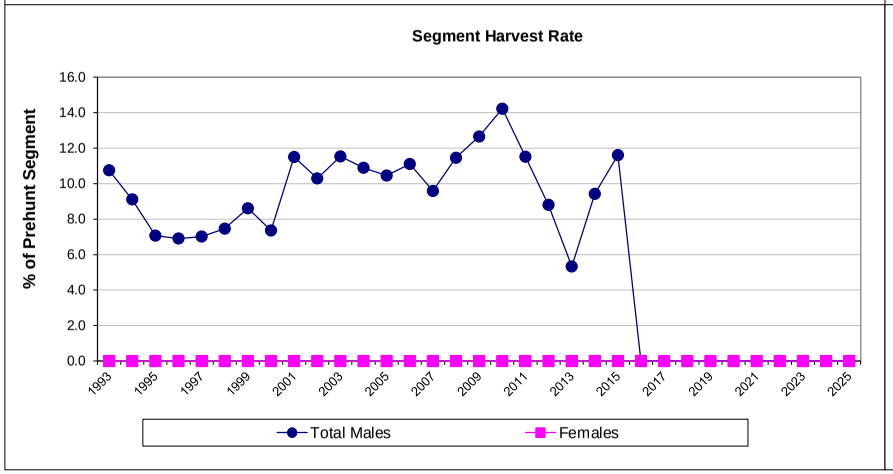
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

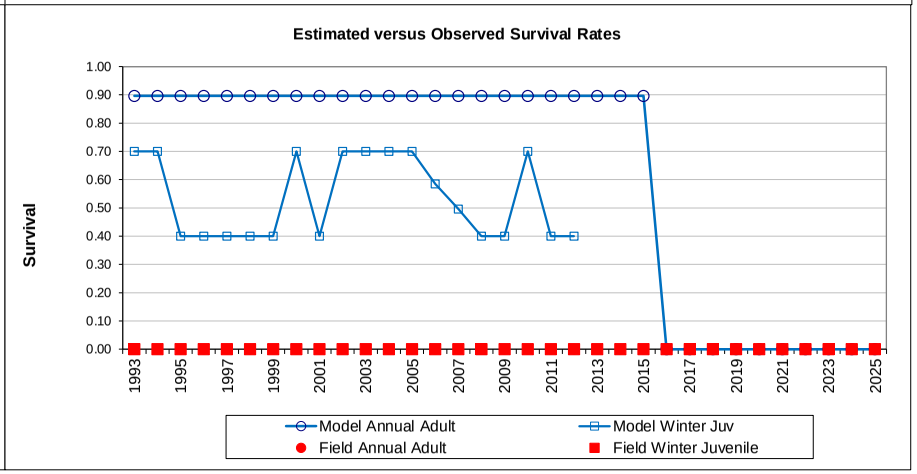
Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio			Harvest				Harvest: Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		46.23	7.99	30.65	28.30	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		25.41	5.11	34.52	45.08	7.32	0	15	0	15	9.4	0.0
2015		25.41	5.11	30.51	45.08	7.32	0	15	0	15	11.6	0.0
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES









Comments:

END

2013 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2013 - 5/31/2014

HERD: BS205 - FRANCS PEAK

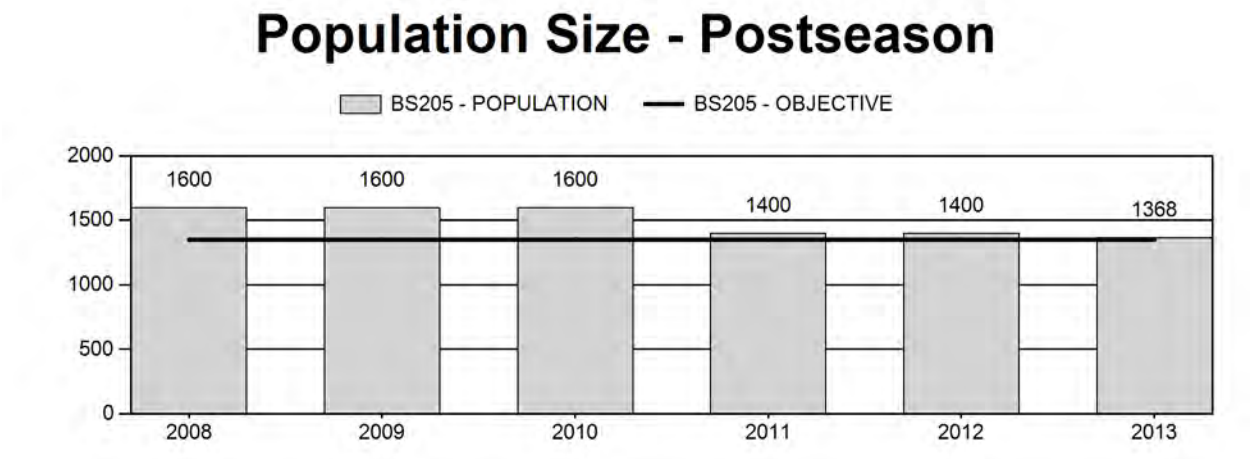
HUNT AREAS: 5, 22, 999
PREPARED BY: BART KROGER

	2008 - 2012 Average	2013	2014 Proposed
Population:	1,520	1,368	1,345
Harvest:	77	75	64
Hunters:	90	86	74
Hunter Success:	86%	87%	86%
Active Licenses:	90	86	74
Active License Percent:	86%	87%	86%
Recreation Days:	570	552	550
Days Per Animal:	7.4	7.4	8.6
Males per 100 Females	56	63	
Juveniles per 100 Females	27	29	

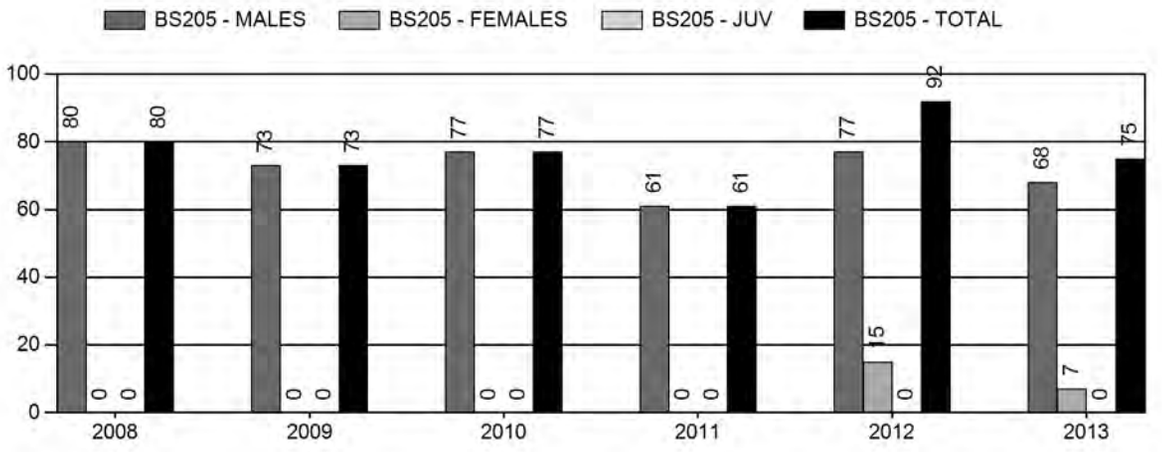
Population Objective:	1,350
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	1%
Number of years population has been + or - objective in recent trend:	20
Model Date:	2/24/2014

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

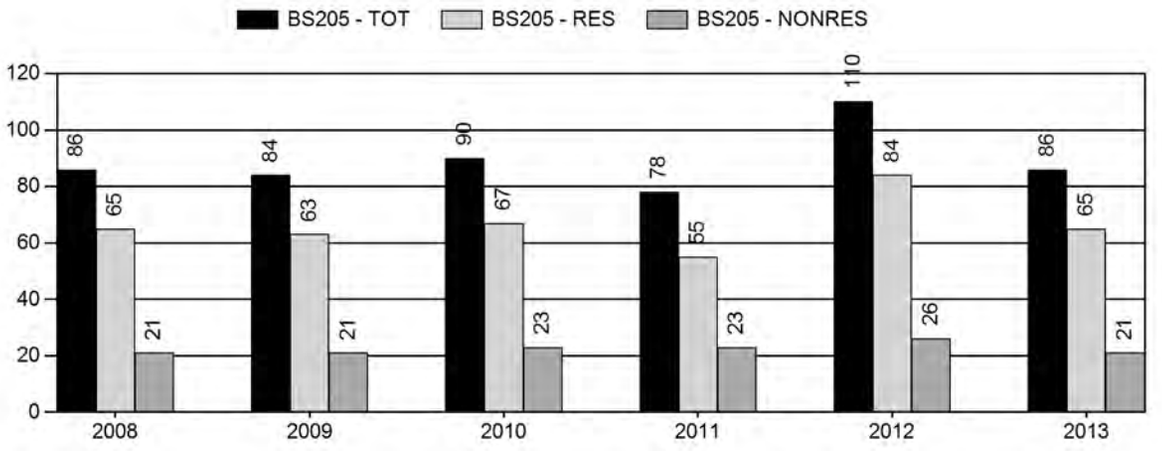
	JCR Year	Proposed
Females ≥ 1 year old:	1%	1%
Males ≥ 1 year old:	19.5%	17.7%
Juveniles (< 1 year old):	0%	0%
Total:	5%	5%
Proposed change in post-season population:	-1%	-1%



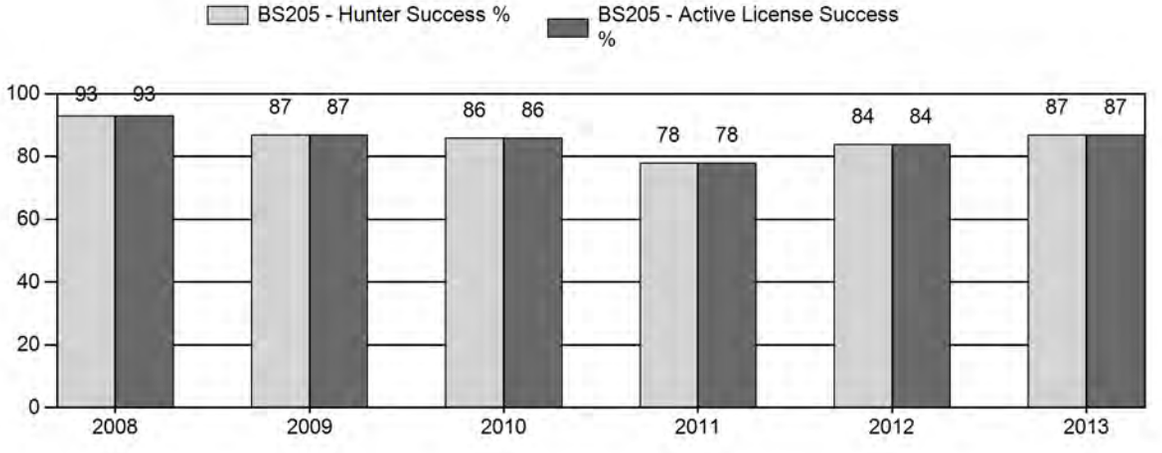
Harvest



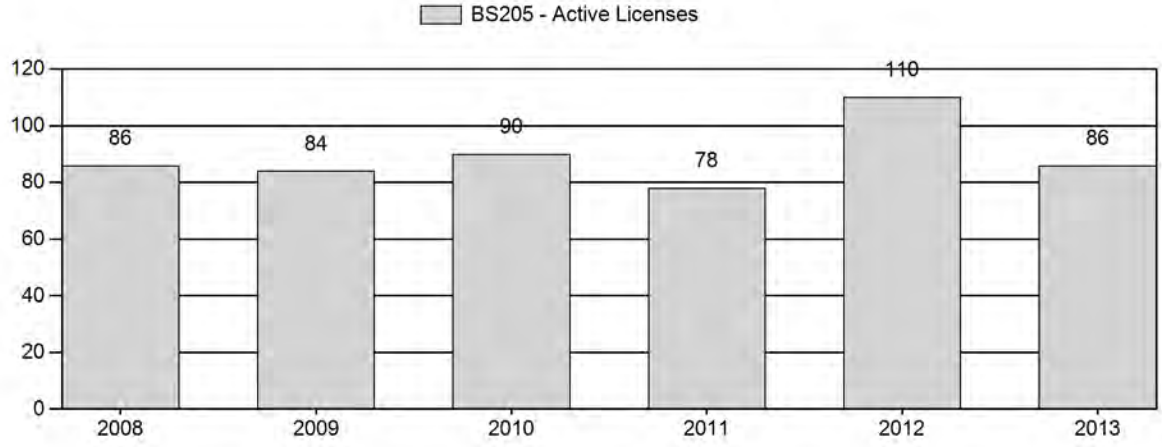
Number of Hunters



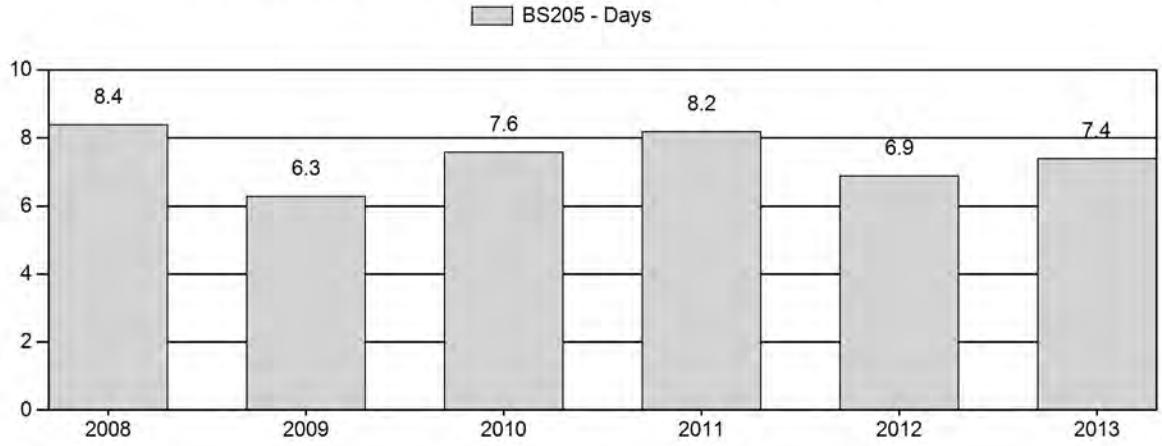
Harvest Success



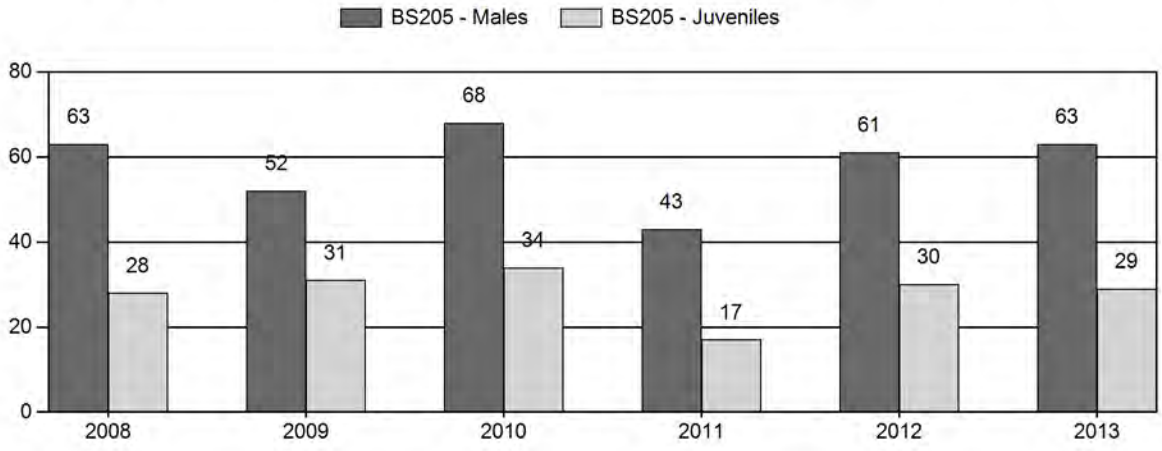
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 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
2008	1,567	0	0	217	33%	345	52%	97	15%	659	670	0	0	63	± 5	28	± 3	17
2009	1,556	0	0	221	28%	425	55%	131	17%	777	566	0	0	52	± 4	31	± 3	20
2010	1,600	0	153	153	34%	225	50%	76	17%	454	727	0	68	68	± 8	34	± 5	20
2011	1,449	0	0	172	27%	400	62%	68	11%	640	445	0	0	43	± 4	17	± 2	12
2012	1,401	0	140	140	32%	228	52%	68	16%	436	802	0	61	61	± 7	30	± 4	18
2013	1,212	0	144	144	33%	230	52%	66	15%	440	0	0	63	63	± 7	29	± 4	18

2014 HUNTING SEASONS
FRANCS PEAK BIGHORN SHEEP HERD (BS205)

Hunt Area	Type	Dates of Seasons Opens	Closes	Quota	License	Limitations
5	1	Sep. 1	Oct. 31	49	Limited quota	Any ram (36 residents, 13 nonresidents)
	6	Oct. 15	Oct. 31	4	Limited quota	Ewe or lamb valid in that portion of Area 5 within the Greybull River drainage of the Washakie Wilderness; also valid in the Jack Creek and Pickett Creek drainages
22	1	Sep. 1 Oct. 1	Oct. 31 Oct. 31	4	Limited quota	Any ram Unused Area 22 Type 1 licenses also valid in Area 5
WRIR	1	Sep. 10	Nov. 30	12		Limited quota; 12 licenses any ram
Archery		Aug. 15	Aug. 31			Refer to Section 3

Hunt Area	License Type	Quota change from 2013
5	1	-8
	6	-4
HU Total	**1**	**-8**
	6	**-4**

Management Evaluation

Current Postseason Population Management Objective: 1,350
Management Strategy: Avg. age of harvested rams from 6-8 years
2013 Postseason Population Estimate: 1,400
2014 Proposed Postseason Population Estimate: 1,300

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 in 2013. Using a population objective and model estimate for this sheep herd has always been questionable. 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 WRIR, bighorn sheep are found year round above 9,500'. For the most part, this sheep herd has remained mostly stable the past 7 years, with a slight decline starting to be noticed after the 2010/11 winter, when it appeared some winter die-off had occurred. In fact, since January 2011, over 150 ram pickup heads have been registered.

Weather
The winters of 2011/12 and 2012/13 were mild with low snowpack resulting in mostly good over winter survival. However, 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 distribution of sheep on their summer range, likely because of reduced forage production and condition. The winter of 2013/14 is appearing to be more severe than normal, with mainly deep snow at higher elevations.

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 will be favorable for spring green up.

Field Data
Aerial classifications surveys are used in obtaining post-season lamb and ram ratios for this sheep herd. On average about 600-700 sheep are classified annually, except for the past two years where the average has been a little over 400 sheep. Lamb:ewe ratios for the herd have remained favorable the past 6 years, with an average ratio of 30:100. Ram:ewe ratios typically exceed 50:100. A late winter flight in mid-April 2013 resulted in 350 sheep being observed, about 50 less than in January 2013, but with a similar number of rams being observed and only a slight decline in the lamb ratio.

Harvest Data
Annual hunter numbers in this herd unit have fluctuated since 2008, but on average Area 5 has about 70 hunters, Area 22 about 2-3 hunters, and the WRIR about 10-12 hunters. Annual harvest since 2008 has been about 75 rams for the herd unit, with roughly 65 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. 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 2013 ewe harvest in area 5 showed 7 ewes being harvested for a hunter success of 88%.

Population
The constant juvenile & constant adult survival (CJ, CA) spreadsheet model was chosen to represent this herd because it reflects a good recent year trend (2011-2013) in the population. However, the long-term trend contradicts field personnel perceptions, harvest data and classification sample sizes, which indicate a mostly stable population for at least the past 10 years. Because of this, the overall model is considered mostly unreliable and a poor representation of the herd. The model supported an AIC value of 155, which was not the lowest of the three models. This is why average age of harvested rams and hunter success are used mostly to manage this herd.

Management Summary
The low lamb ratio in 2011 (17:100) and the number of recent ram pickup heads (n=>150) possess some concerns for this sheep herd. Because of this, along with hunter/outfitter desires, the type 1 quota in area 5 will be reduced by 8 licenses. For the Type 6 season in area 5, we will reduce this quota by 4 licenses. The projected 2014 harvest for the herd unit is roughly 60 rams and 4 ewes. The 2014 post-season population estimate will again be around 1,300 sheep.

INPUT	
Species:	Bighorn Sheep
Biologist:	Bart Kroger
Herd Unit & No.:	Francs Peak, BS205
Model date:	02/24/14

☑ 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	114	123	☐ SCJ,SCA M	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	90	208	☐ 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				351	438	1062	1851	351	386	1062	1799	1360
1994				279	490	1071	1840	279	432	1071	1783	1360
1995				307	497	1047	1851	307	441	1047	1795	1360
1996				302	518	1038	1859	302	452	1038	1793	1360
1997				303	525	1029	1857	303	465	1029	1797	1360
1998				261	536	1021	1818	261	471	1021	1754	1360
1999				356	523	996	1875	356	475	996	1827	1360
2000				331	569	1017	1917	331	512	1017	1860	1360
2001				231	589	1023	1843	231	529	1023	1783	1360
2002				236	559	984	1779	236	497	984	1717	1360
2003				229	534	952	1715	229	472	952	1654	1360
2004				293	509	922	1724	293	438	922	1653	1360
2005				241	508	925	1675	241	440	925	1606	1360
2006				331	487	904	1722	331	428	904	1663	1360
2007				259	517	926	1702	259	429	926	1614	1360
2008				257	485	913	1655	257	397	913	1567	1360
2009				278	457	901	1636	278	377	901	1556	1360
2010				304	449	900	1653	304	364	900	1568	1360
2011				155	450	911	1516	155	383	911	1449	1360
2012				249	399	853	1501	249	317	835	1401	1360
2013				236	384	830	1451	236	310	823	1368	1360
2014				229	372	814	1415	229	306	809	1345	1360
2015												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	0.90			0.86		
1994	0.90			0.86		
1995	0.90			0.86		
1996	0.90			0.86		
1997	0.90			0.86		
1998	0.90			0.86		
1999	0.90			0.86		
2000	0.90			0.86		
2001	0.90			0.86		
2002	0.90			0.86		
2003	0.90			0.86		
2004	0.90			0.86		
2005	0.90			0.86		
2006	0.90			0.86		
2007	0.90			0.86		
2008	0.90			0.86		
2009	0.90			0.86		
2010	0.90			0.86		
2011	0.90			0.86		
2012	0.90			0.86		
2013	0.90			0.86		
2014	0.90			0.86		
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

Parameters:	Optim cells
Juvenile Survival =	0.900
Adult Survival =	0.860
Initial Total Male Pop/10,000 =	0.039
Initial Female Pop/10,000 =	0.106

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	36.30	42.45	3.97	0	48	0	48	12.0	0.0
1994		26.04	2.84	40.36	49.63	4.27	0	52	0	52	11.7	0.0
1995		29.32	3.08	42.16	41.10	3.81	0	51	0	51	11.3	0.0
1996		29.13	3.49	43.49	55.34	5.27	0	60	0	60	12.7	0.0
1997		29.43	3.22	45.20	52.32	4.66	0	54	0	54	11.3	0.0
1998		25.53	2.90	46.15	43.68	4.06	0	59	0	59	12.1	0.0
1999		35.79	3.58	47.75	33.68	3.44	0	43	0	43	9.0	0.0
2000		32.56	3.17	50.36	41.63	3.70	0	52	0	52	10.0	0.0
2001		22.55	2.51	51.68	42.14	3.69	0	55	0	55	10.3	0.0
2002		24.00	4.88	50.52	32.80	5.90	0	56	0	56	11.0	0.0
2003		24.06	2.83	49.57	40.37	3.89	0	56	0	56	11.5	0.0
2004		31.79	2.84	47.46	63.78	4.49	0	65	0	65	14.0	0.0
2005		26.09	2.26	47.58	35.71	2.74	0	62	0	62	13.4	0.0
2006		36.59	4.17	47.30	37.28	4.22	0	54	0	54	12.2	0.0
2007		27.98	2.49	46.27	54.06	3.79	0	80	0	80	17.0	0.0
2008		28.12	3.23	43.50	62.90	5.45	0	80	0	80	18.1	0.0
2009		30.82	3.08	41.83	52.00	4.31	0	73	0	73	17.6	0.0
2010		33.78	4.48	40.50	68.00	7.13	0	77	0	77	18.9	0.0
2011		17.00	2.23	42.07	43.00	3.92	0	61	0	61	14.9	0.0
2012		29.82	4.12	37.91	61.40	6.59	0	75	16	91	20.7	2.1
2013		28.70	4.01	37.63	62.61	6.65	0	68	7	75	19.5	0.9
2014		28.26	3.97	37.87	63.04	6.69	0	60	4	64	17.7	0.5
2015												
2016												
2017												
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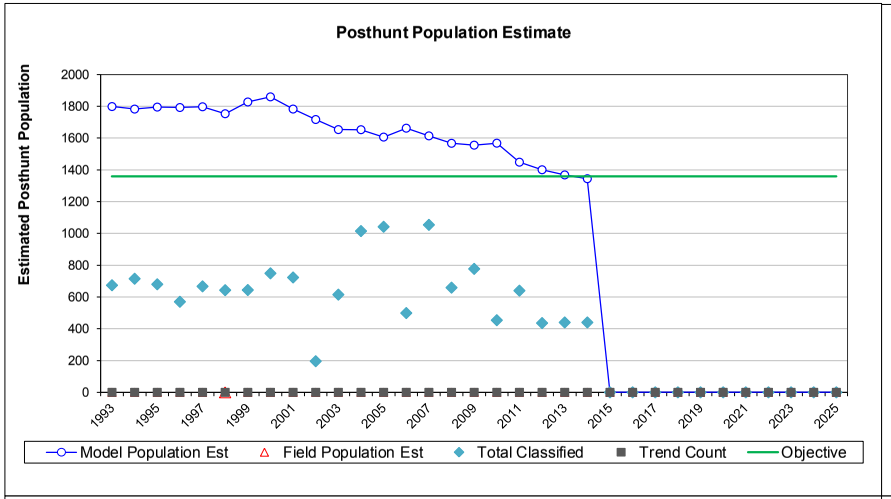
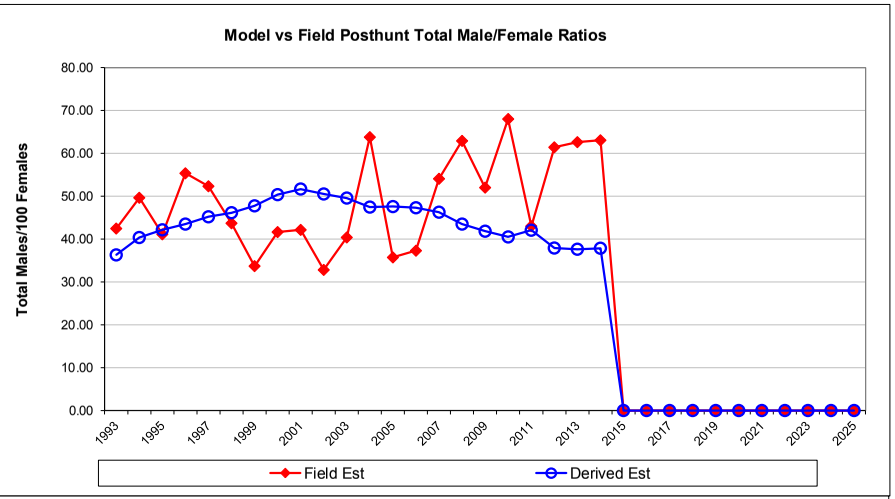
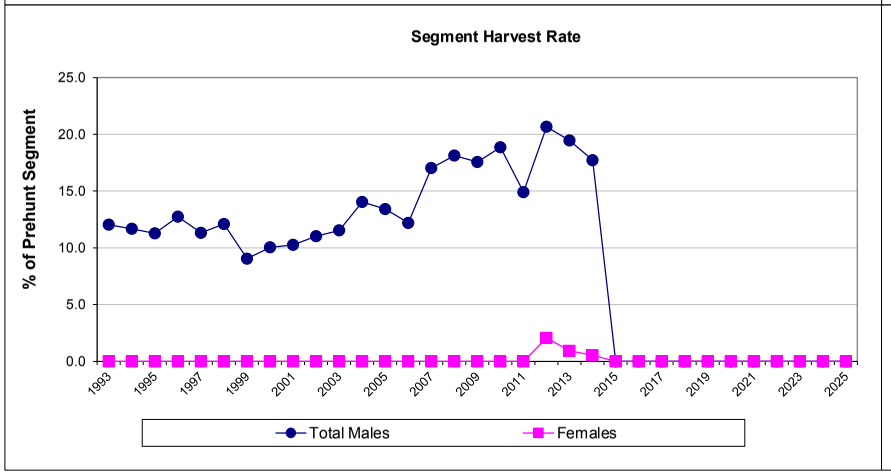
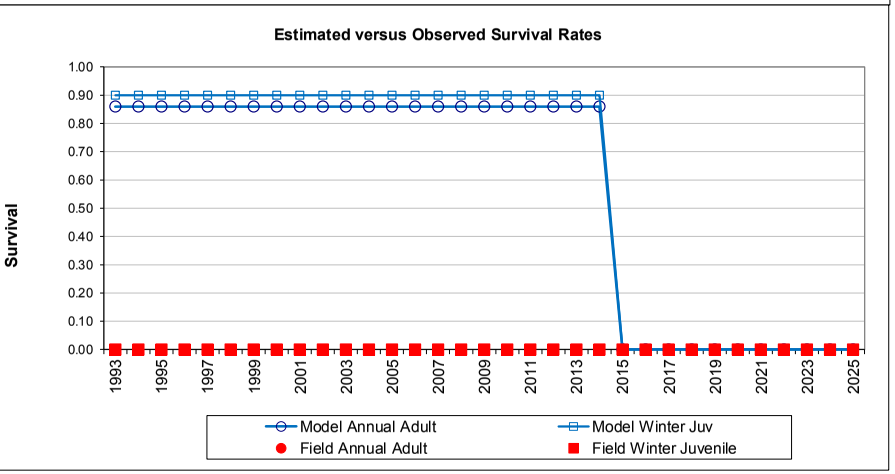
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES









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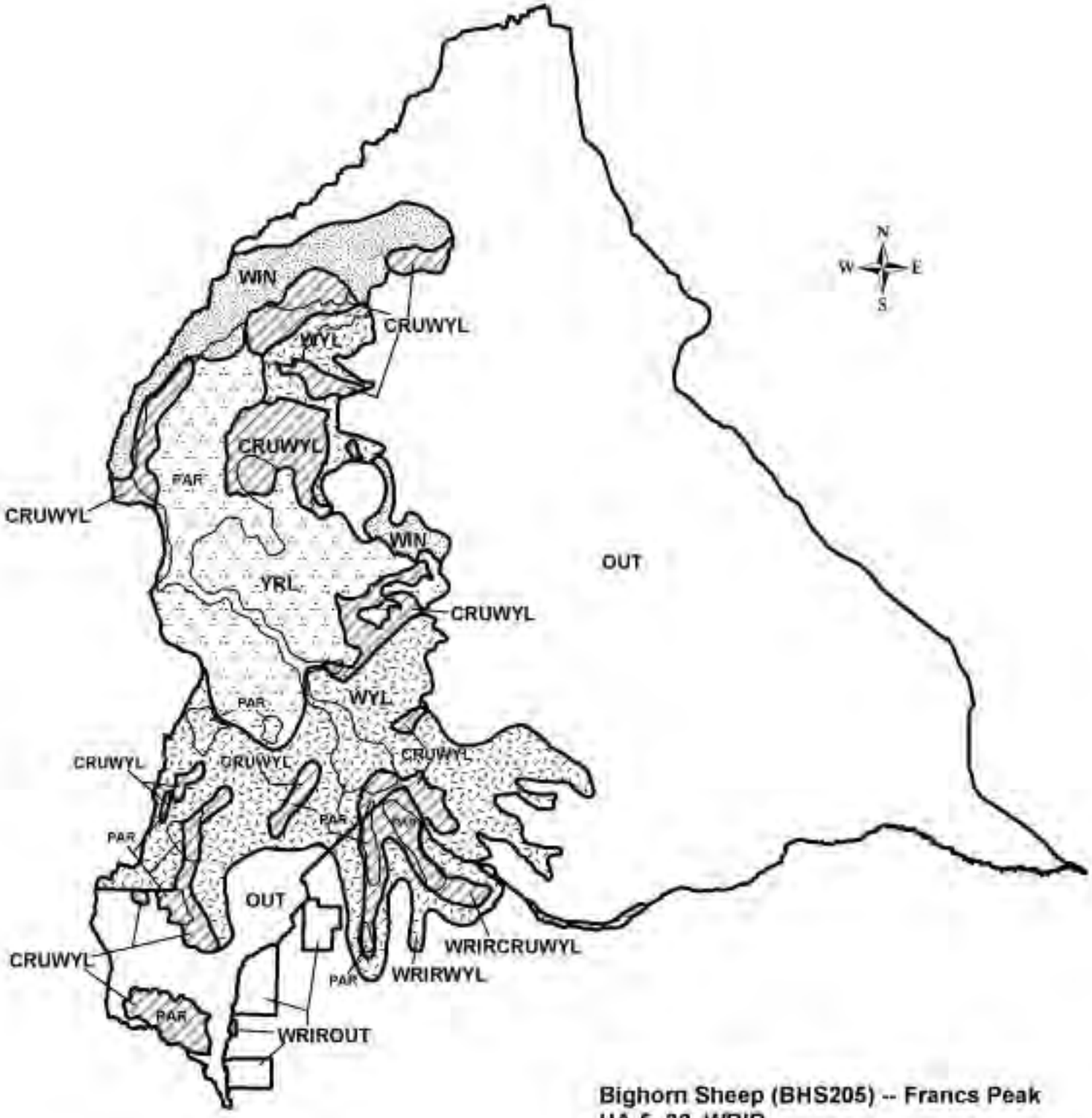


Bighorn Sheep (BHS205) -- Francs Peak
HA 5, 22, WRIR
Revised 9/2002

2013 - JCR Evaluation Form

SPECIES: Bighorn Sheep
PERIOD: 6/1/2013 - 5/31/2014

HERD: BS212 - DEVILS CANYON

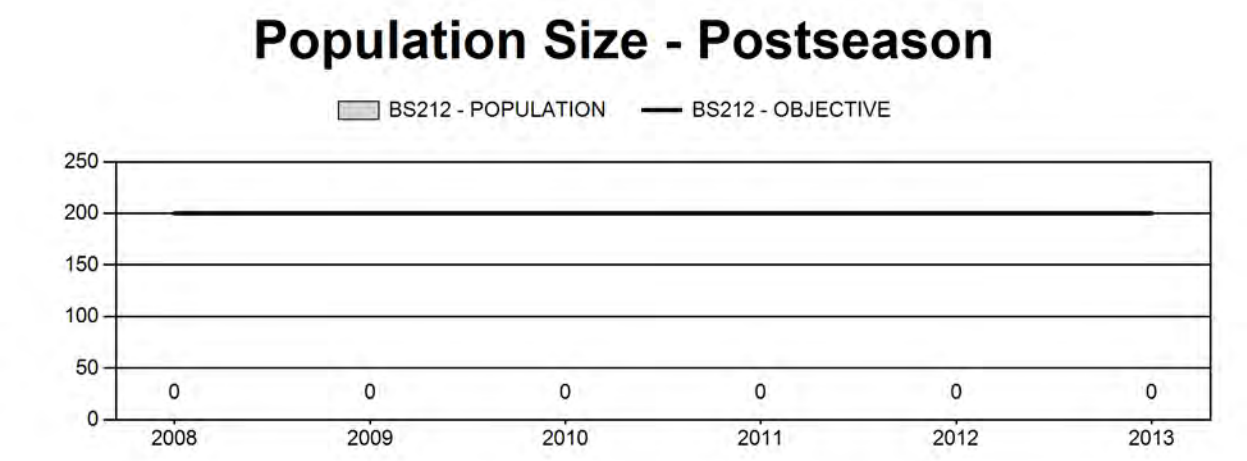
HUNT AREAS: 12
PREPARED BY: WOOLLEY/KROGER

	2008 - 2012 Average	2013	2014 Proposed
Population:	0	N/A	N/A
Harvest:	2	2	2
Hunters:	2	2	2
Hunter Success:	100%	100%	100%
Active Licenses:	2	2	2
Active License Percent:	100%	100%	100%
Recreation Days:	16	7	14
Days Per Animal:	8	3.5	7
Males per 100 Females	42	44	
Juveniles per 100 Females	55	63	

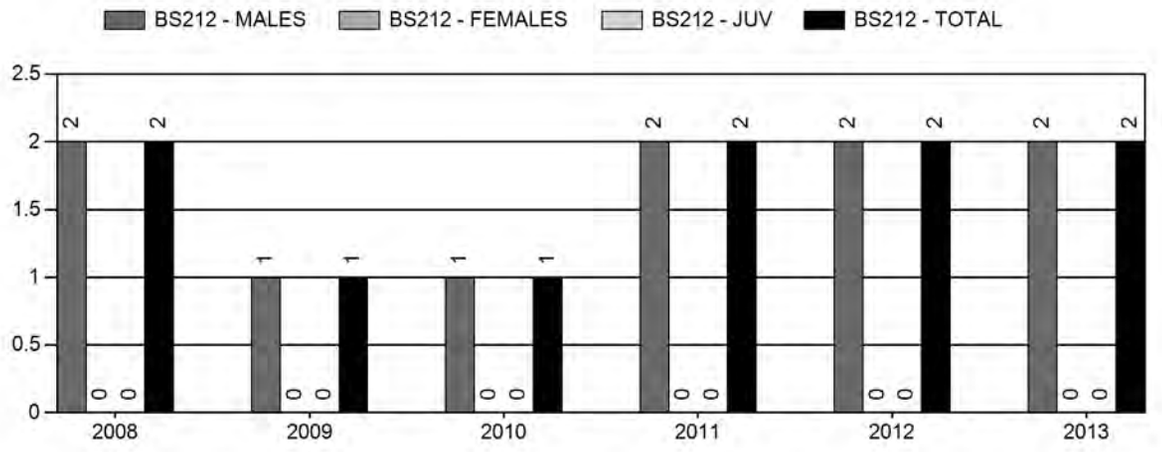
Population Objective:	200
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	N/A%
Number of years population has been + or - objective in recent trend:	8
Model Date:	5/31/2014

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

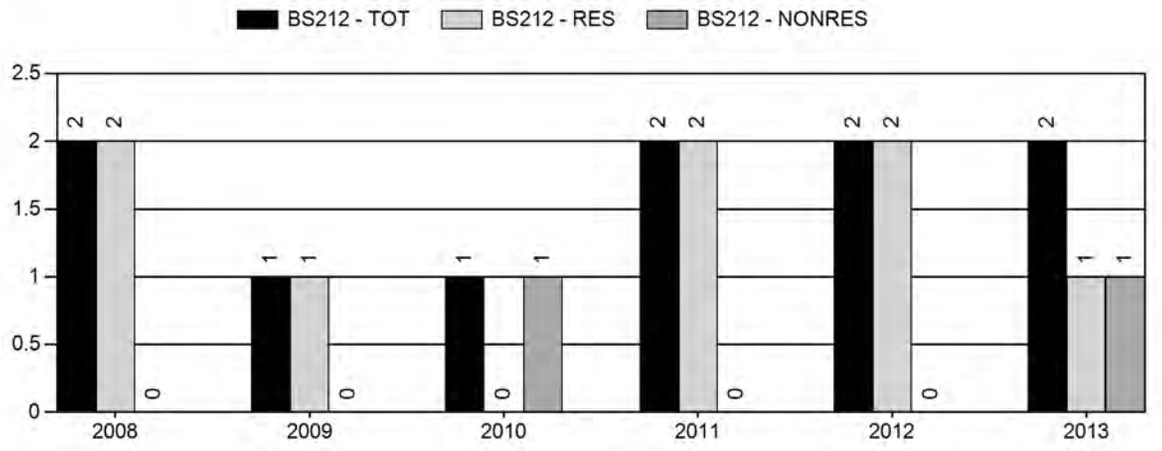
	JCR Year	Proposed
Females ≥ 1 year old:	na%	na%
Males ≥ 1 year old:	na%	na%
Juveniles (< 1 year old):	na%	na%
Total:	na%	na%
Proposed change in post-season population:	na%	na%



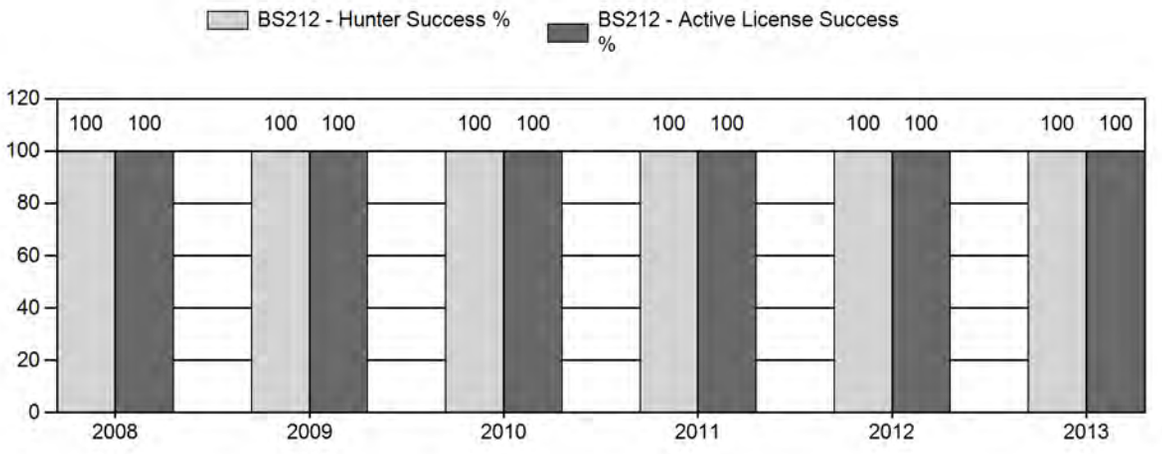
Harvest



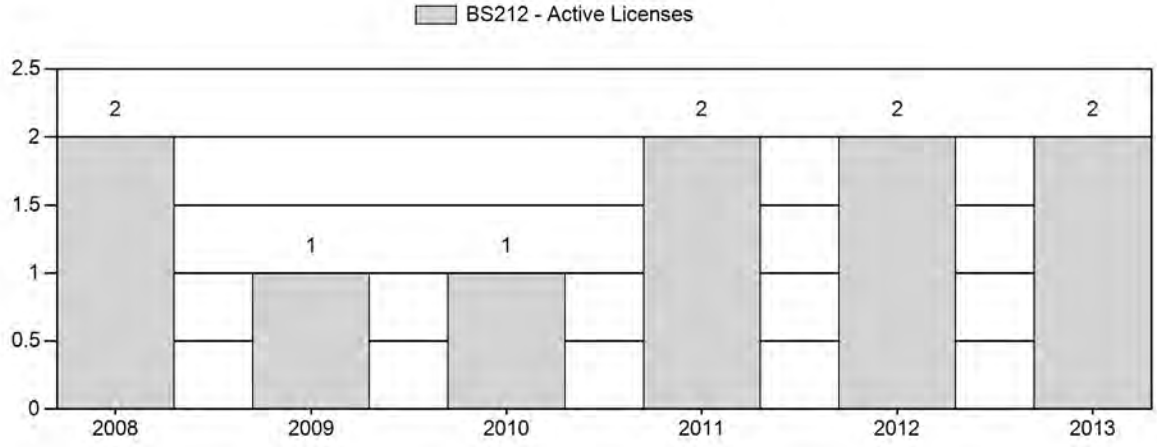
Number of Hunters



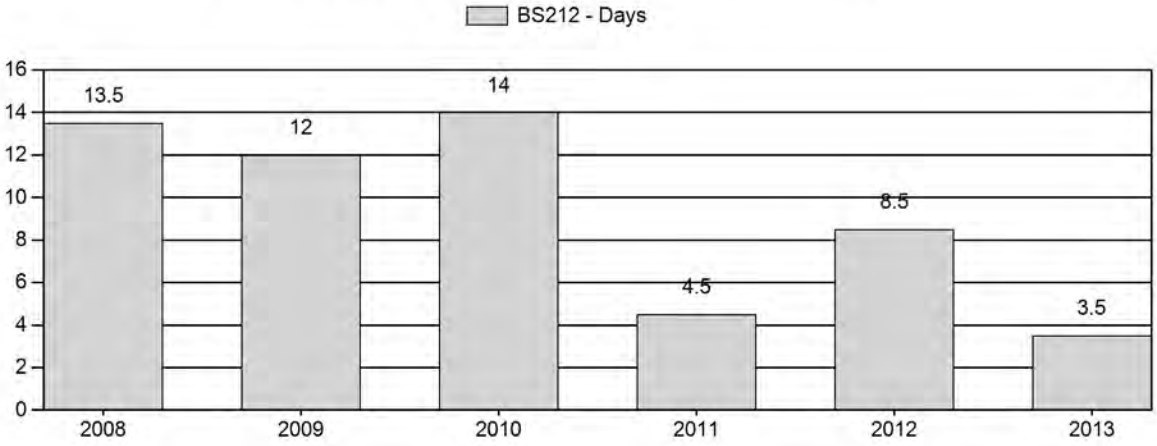
Harvest Success



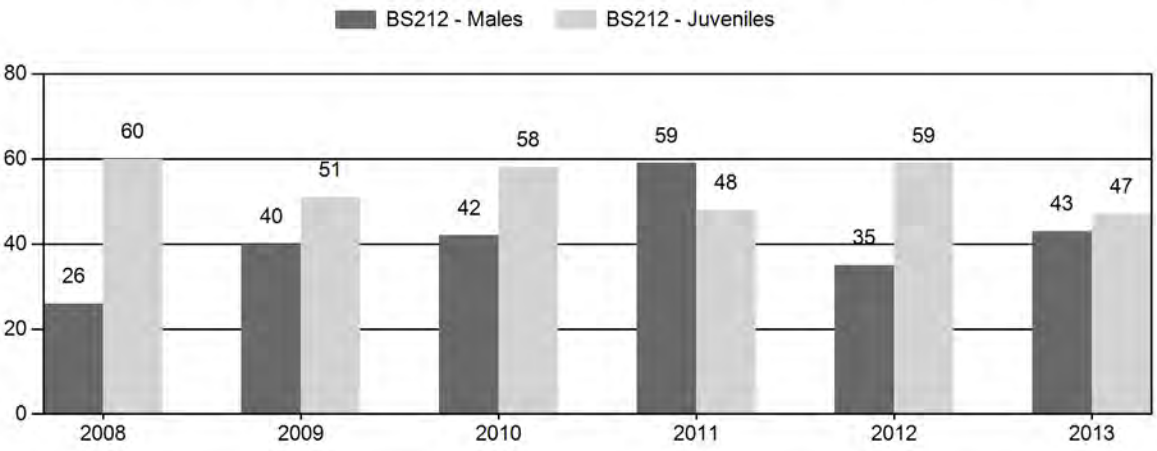
Active Licenses



Days Per Animal Harvested



Preseason Animals per 100 Females



Classification survey data for Devil's Canyon bighorn sheep herd unit, 2008-2013.

Year	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young per		
	Ylg	Adult	Total	%	Total	%	Total	%			Ylg	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2008	0	0	15	14%	57	54%	34	32%	106		0	0	26	± 0	60	± 0	47
2009	0	0	27	21%	67	52%	34	27%	128		0	0	40	± 0	51	± 0	36
2010	6	18	27	21%	64	50%	37	29%	128	142	9	28	42	± 0	58	± 0	41
2011	0	41	41	29%	69	48%	33	23%	143	141	0	59	59	± 0	48	± 0	30
2012	0	12	17	18%	49	52%	29	31%	95	142	0	24	35	± 0	59	± 0	44
2013	0	32	32	23%	74	52%	35	25%	141		0	43	43	± 0	47	± 0	33

2014 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	2	Limited quota; any ram (2 resident licenses)
Archery		Aug. 15	Aug. 31		Refer to Section 3 of this Chapter

Hunt Area	Type	Quota change from 2012
12	1	0
Total	1	0

Management Evaluation

Current Management Objective: 200
2013 Postseason Population Estimate: ~180
2014 Proposed Postseason Population Estimate: ~180

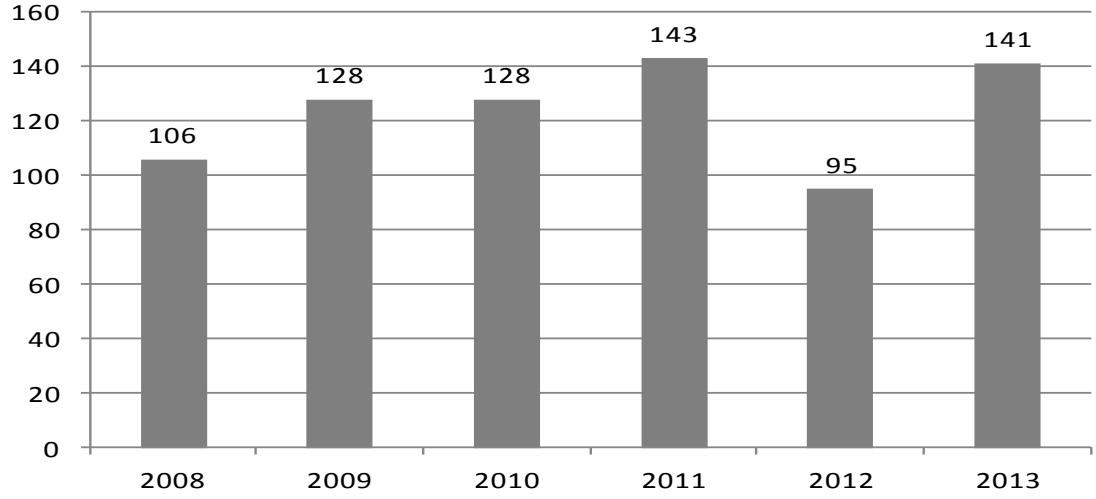
Prior to the first transplant (1973) into the Devil's Canyon area, a goal of 200 bighorn sheep was established. That population objective was carried over following the most recent transplants (2004, 2006). No population model/estimate has been developed for this small herd.

Climatic conditions probably have the most influence on productivity and survival of this population. Drought may have affected production of herbaceous vegetation. Cheatgrass has also become established and dominate on some sites. No human development (oil/gas, mining, housing) currently affect this population or their habitats. There is limited farming (irrigated pastures) on a small portion of private land. Bighorn are attracted to those pastures especially during drought years. The landowners have commented on the concentration of sheep on those pastures, but have not "complained".

Although drought conditions were documented during summer 2012 and 2013 across most of Wyoming, affects on this bighorn sheep herd appear to have been minimal. Distribution to irrigated pastures may have negated any negative effects. The lamb:ewe ratio observed in summer 2013 (47:100) was lower than during a survey in December (63:100), so no conclusions to lamb survival through summer can be drawn.

Total number of sheep observed during pre-season classification surveys may give the most consistent estimate of the trend in the population (Fig. 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. Three survey flights were conducted in 2013 (distribution flight in January, classification surveys in July and December) with 119, 141 and 115 bighorn observed, respectively. One of the hunters this fall believed he saw over 200 different bighorns over his 4 day hunt.

Figure 1. Total number of bighorn sheep observed during pre-season classification surveys of the Devil's Canyon herd unit, 2007-2013.



Harvest statistics will also provide little information about trend of this population. Only one or two licenses have been issued each year since 2008 and hunter success has been 100%. Recreation days and days per harvested animal vary depending on amount of time each hunter was able to allocate to his/her hunt. Average age of harvested rams also does not indicate a trend since only 1-2 rams were harvested each year. It was believed that the ram harvested in 2010 was incorrectly aged (10 years) based upon the hunter's comments and count of annual rings on photos. Also, genetics of rams 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.

In 2012, hunting season guidelines were drafted for this herd, but not officially adopted by the Department or Commission. Guidelines were developed based upon harvest management plans from other states (Table 1). Many states base the number of hunting licenses for a given year upon the number of mature (≥ ¾ curl) rams observed during the previous year's annual survey. Some states also included criteria for population size and ram:ewe ratios. As another management consideration, Montana Fish, Wildlife & Parks considers amount of time since a population was transplanted into a new area. They do not allow hunting until 10 (or more) years following transplant operations to allow the population to increase and stabilize. The Devil's Canyon herd was originally started in 1973 with supplemental transplants in 2004 and 2006.

Table 1. Guidelines for managing hunting of rams in the Devil's Canyon bighorn sheep herd.

When the herd has:			**Hunting season structure:**	**Number of Ram licenses is:**
Population size	Rams:100 ewes	% of rams ≥ ¾ curl		
> 10% below objective	< 40:100	< 30	Restrictive	Up to **10%** of ≥¾ curl rams
± 10% of objective	40-60:100	≥ 30	Standard	Up to **15%** of ≥¾ curl rams
> 10% above objective	>60:100	≥ 30	Liberal	Up to **20%** of ≥¾ curl rams

During the 2013 pre-season survey, 32 rams (4 class I rams, 2 class II rams, 5 class III rams, and 2 class IV rams) were observed, for a ratio of 43 rams:100 ewes. Fewer bighorn were observed during the December survey, but the ram:ewe ratio was about the same as observed during the July survey (44 rams:100 ewes). Only 26% of all observed rams were three-quarters curl or greater. Using the above criteria and 2013 survey data, the restrictive hunting season structure would be recommended or one license. We feel that those surveys were incomplete and more sheep and more rams do occur in the area.

One landowner (family corporation) controls access to this area even though they own only ~10% of the area. They do not wish to deal with more than two bighorn sheep hunters each year. They feel that more hunters would result in conflicts between hunters since these rams are highly visible and apparently not afraid of human activity (too vulnerable). Relations with the landowner were strained at one point, so efforts are still being made to repair that relationship and compromise on license numbers. In keeping with the landowner's desires, we have only proposed 2 licenses for the 2013 hunting season.

As the population increases, the landowners will realize more benefits (access fee) and may want to control the population more to minimize use of irrigated pastures. At that time, more ram licenses could be issued. This herd will be used as source herd for future transplants to new areas to assist with population control.