

2011 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2011 - 5/31/2012

HERD: MD534 - GOSHEN RIM

HUNT AREAS: 15-16, 55, 57

PREPARED BY: MARTIN HICKS

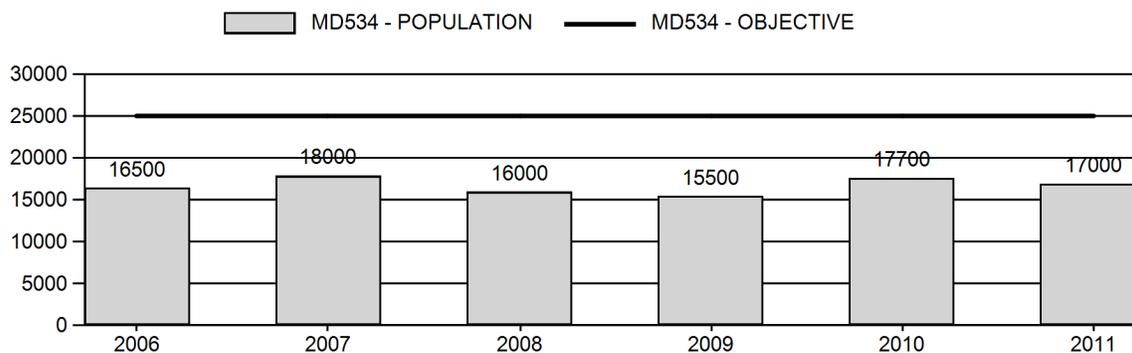
	2006 - 2010 Average	2011	2012 Proposed
Population:	16,740	17,000	17,000
Harvest:	774	804	775
Hunters:	1,570	1,781	1,750
Hunter Success:	49%	45%	44%
Active Licenses:	1,623	1,839	1,800
Active License Percent:	48%	44%	43%
Recreation Days:	6,001	6,829	6,700
Days Per Animal:	7.8	8.5	8.6
Males per 100 Females	33	33	
Juveniles per 100 Females	58	65	

Population Objective:	25,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-32%
Number of years population has been + or - objective in recent trend:	21
Model Date:	02/29/2012

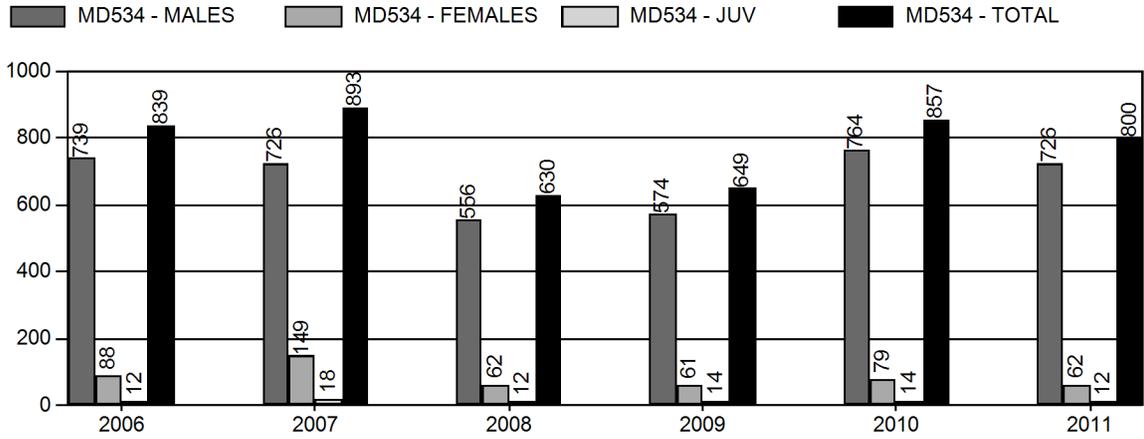
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	.7%	.7%
Males ≥ 1 year old:	18.3%	18.9%
Juveniles (< 1 year old):	.2%	.3%
Total:	4.5%	4.4%
Proposed change in post-season population:	-4%	0%

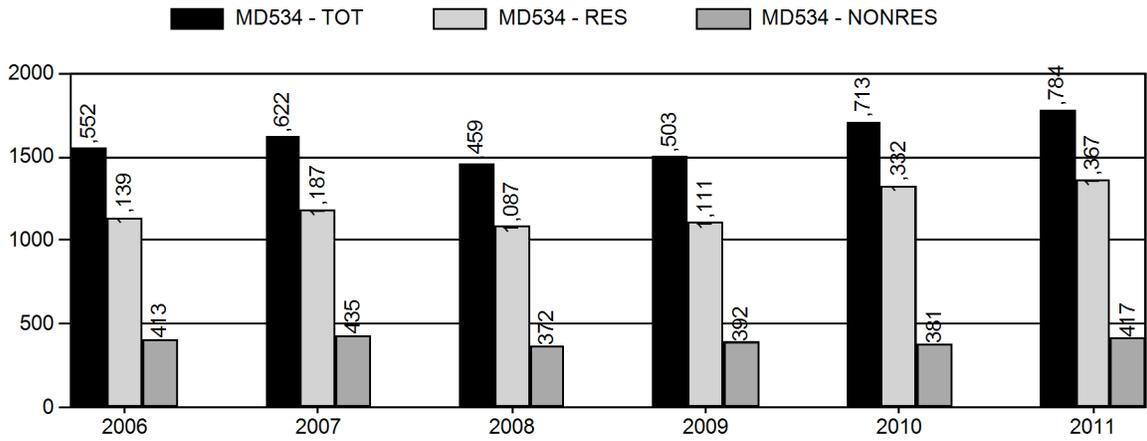
Population Size - Postseason



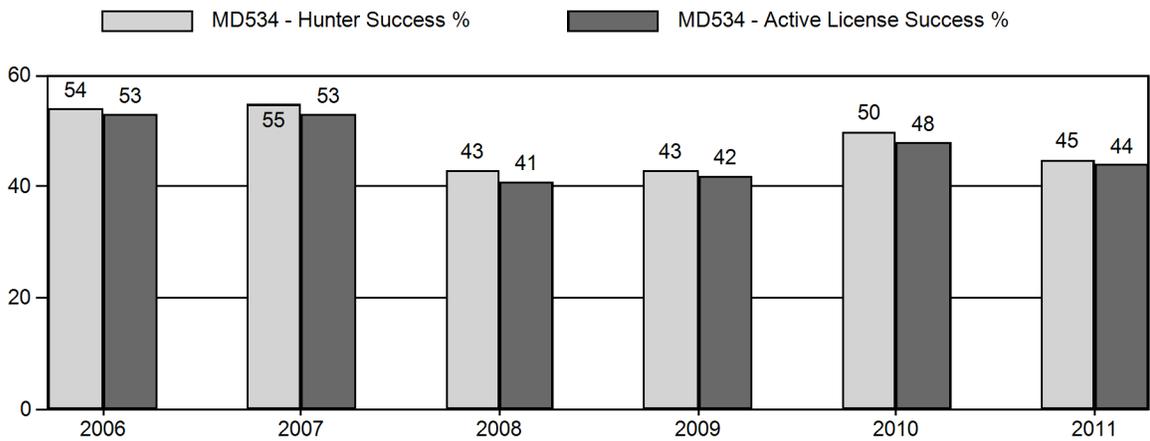
Harvest



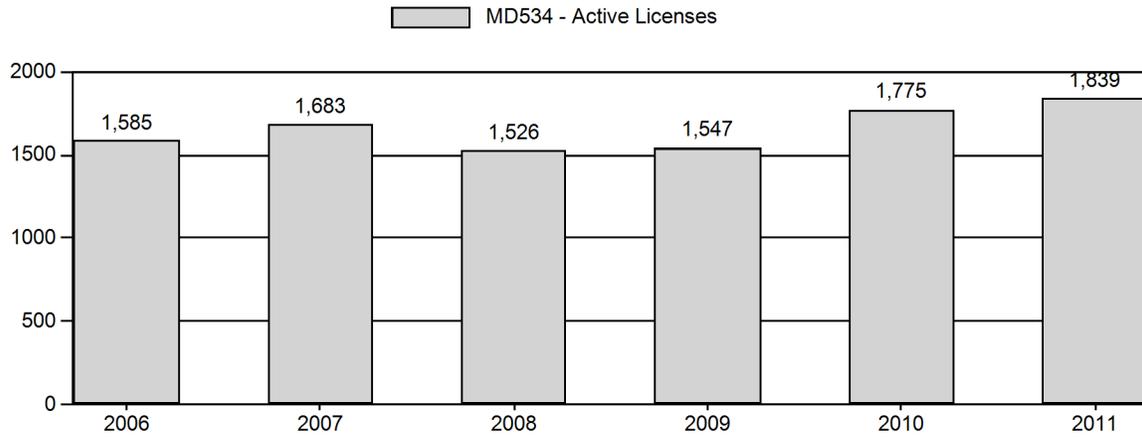
Number of Hunters



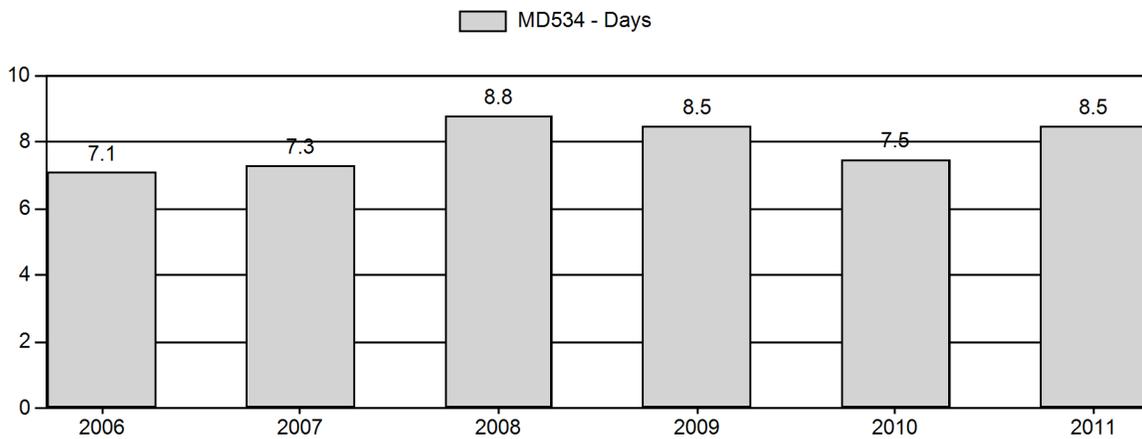
Harvest Success



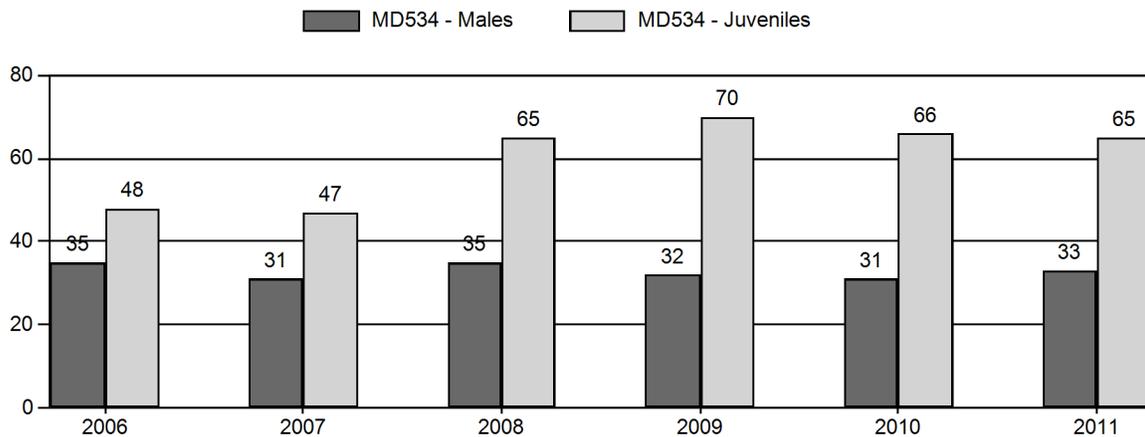
Active Licenses



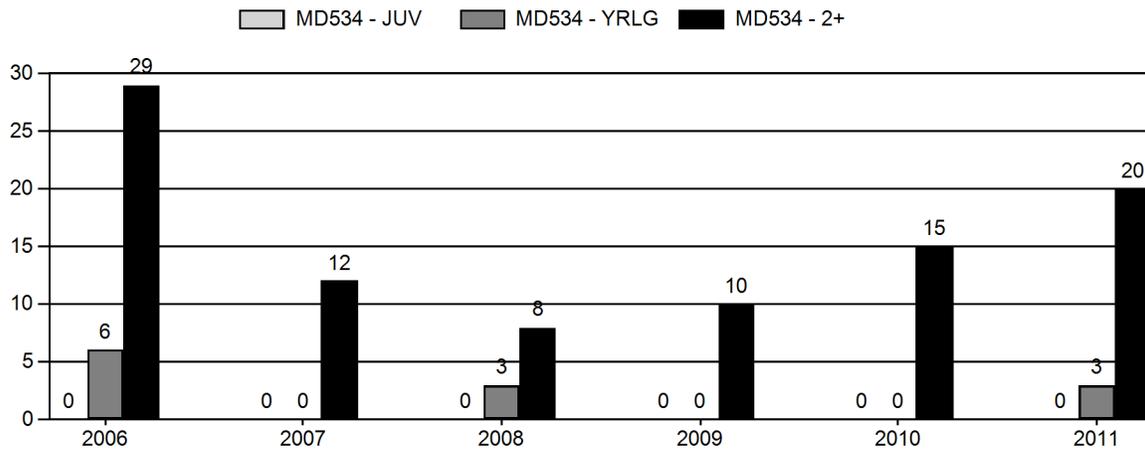
Days per Animal Harvested



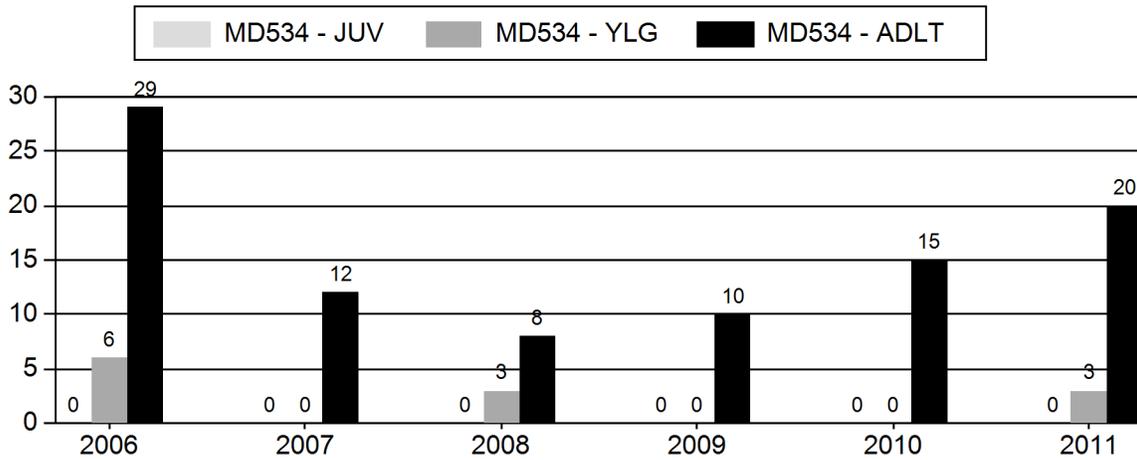
Postseason Animals per 100 Females



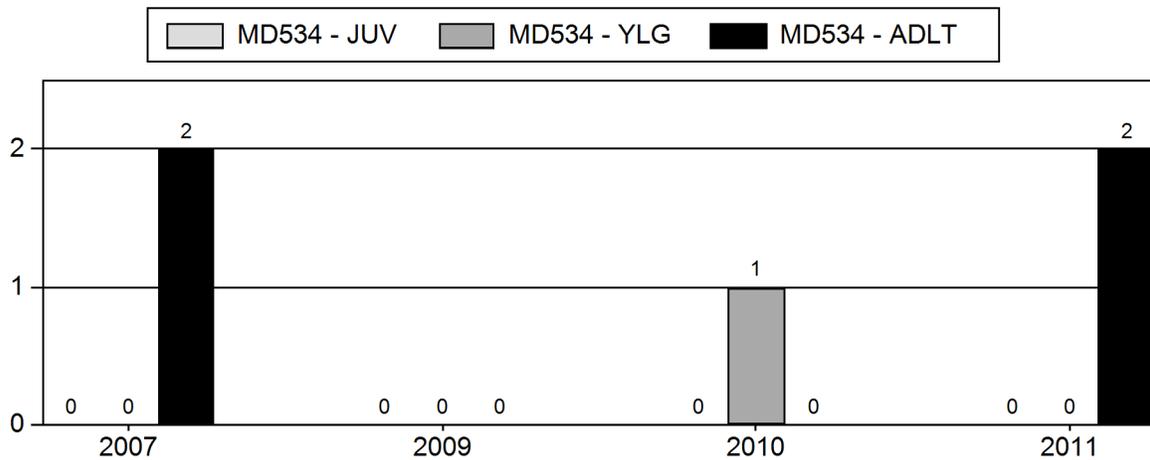
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



GOSHEN RIM MULE DEER
(MD534)
Hunt Areas 15, 16, 55, 57
2009-2011 Biological Years (6/1/2009-5/31/2012)

INTRODUCTION

The 2011 post season estimate for the Goshen Rim Mule Deer Herd Unit is 17,000 mule deer, 32% below the objective of 25,000. This herd unit is managed for recreational buck ratios within the range of 20-29 bucks:100 does observed during post-season classifications.

The 2011 post-season buck ratios (33bucks:100 does) were the same as the five-year average, but there appears to be a slight decline in trend. Juvenile ratios in 2011 (65 fawns:100 does) were well above the five-year average of 58 fawns:100does, but still below the adequate level (Unsworth et al. 1999) to maintain or increase the population.

In 2011 the season length for Hunt Areas 55 and 57 were decreased from 14 days to 11 days based on decreased success and increased effort statistics.

Chronic Wasting Disease (CWD) continues to impact this herd unit, but to what extent is unknown. In 2011 there were 21 mule deer tested throughout the herd unit, with 6 positives for a prevalence rate of 28%, which is significantly higher than the long-term average of 9%.

For extensive background information on the Goshen Rim Mule Deer Herd, the reader is referred to the 2002 Job Completion Report.

WEATHER

A state-wide weather report from Biological Services was not available for this reporting period. However, a memo was sent to Wildlife Division from the Laramie Region summarizing weather data in southeast Wyoming from October 2011 to April 2012 (Appendix A). Basically this past winter was very mild and most likely there was little winter mortality on mule deer. Since April 2012 the area has experience little to no precipitation resulting in a drastic decrease in herbaceous production. Most recently the largest impact to the environment from this drought is four major wildfires totaling over 110,000 acres. The majority of fires have been in the Laramie Range, but there was one fire north of Guernsey, WY that burned 2,600 acres. Perennial streams are drying up, reservoirs have been depleted and landowners are de-stocking cattle herds because of lack of grass throughout southeast Wyoming.

Weather conditions from 2010-2011 were the complete opposite compared to 2012. Winters were more severe and spring/summer precipitation was well above average. Major flooding events occurred, reservoirs were filled and grass/forb/shrub production increased compared to long term averages.

Juvenile mortality during the 2010 and 2011 winters appeared normal to excessive based on ratios throughout the herd units. During the mild winter of 2011/12 juvenile mortality was likely negligible. Neonate mortality during the Spring of 2012 appears to be excessive based on few fawns observed due to drought and fire conditions. It is expected that female mule deer will go into the winter of 2012/13 in poor condition resulting in below average birth rates for the 2013 biological year and herd units will most likely experience a decrease in population.

HABITAT CONDITIONS/ASSESSMENT

The reader is referred to Appendix A for a full habitat report containing vegetation sampling within the Goshen Rim Mule Deer Herd Unit. Survey efforts have waned over the past several years within this herd unit. There is very little opportunity to treat old, decadent shrub stands based on topography and land ownership patterns. Based on the small sample size of habitat data, it is evident that the mixed mountain shrubs (mountain mahogany, antelope bitterbrush, and skunkbush sumac) are in poor condition and provide very little nutrients for wintering mule deer.

POPULATION

Table 1. Postseason Classification Data, MD534, 2006-2011.

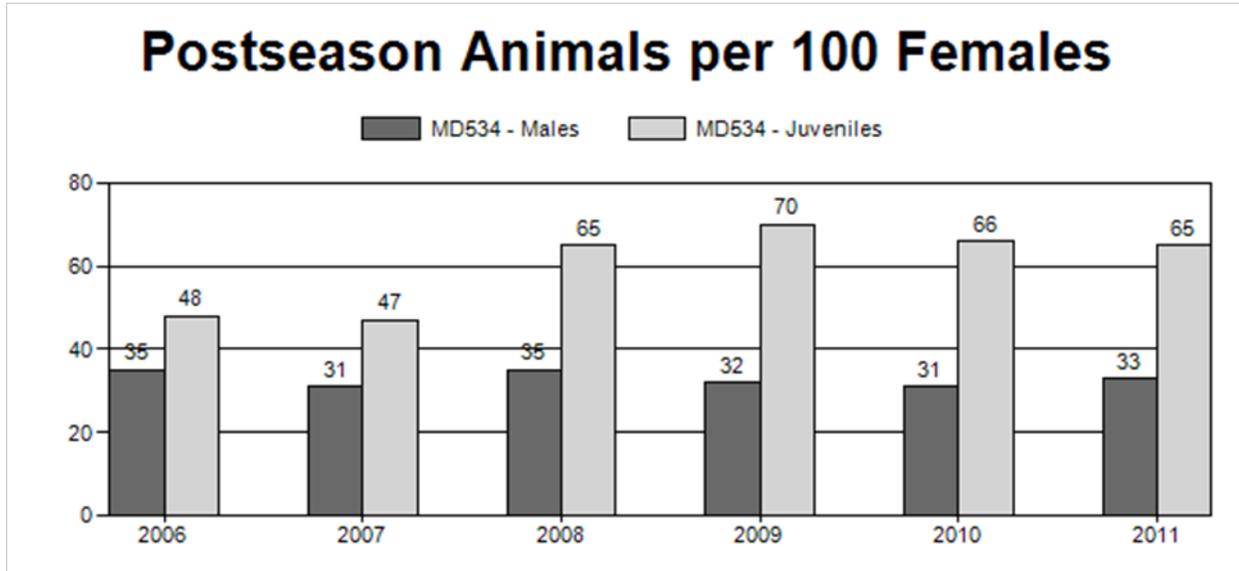
Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2006	16,500	94	129	223	19%	642	55%	306	26%	1,171	1,325	15	20	35	± 0	48	± 0	35
2007	18,000	57	118	175	17%	566	56%	267	26%	1,008	1,016	10	21	31	± 0	47	± 0	36
2008	16,000	57	106	163	18%	462	50%	299	32%	924	1,143	12	23	35	± 4	65	± 6	48
2009	15,500	44	98	142	16%	442	49%	311	35%	895	1,210	10	22	32	± 4	70	± 6	53
2010	17,700	80	125	205	16%	668	51%	440	34%	1,313	1,123	12	19	31	± 0	66	± 0	50
2011	17,000	116	226	342	17%	1,031	51%	665	33%	2,038	1,364	11	22	33	± 2	65	± 4	48

Adequate samples size for the postseason classification surveys were above the objective (80% C.L.) two out of the six reporting years (Table 1). Buck ratios fluctuated around 33bucks:100does with the highest recorded in 2006 and 2008. All six years fall above the upper end of the recreational management guidelines (20-29 bucks:100 does). These inflated ratios are most likely a result of limited access throughout the herd unit. However, landowners and hunters have expressed concerns about buck numbers for the past several years.

Fawn ratios have fluctuated around 58 fawns:100 does for the past five years, and experienced a increase in 2011 (Table 1). However, these rates are still below 66 fawns:100does needed to increase a population (Unsworth et al. 1999). Fawn ratios

appear to fluctuate well with precipitation levels but still not to the level to increase the population towards the objective of 25,000.

Graph1. Postseason Classification MD534, 2006-2011.



Juvenile ratios appear to have an increasing trend (Graph 1) over the last six years while male ratios appear to have a stable to slightly decreasing trend (Graph 1).

The population is anchored to juvenile ratios and simulated above yearling buck, 2+male and adult male ratios using POP II. Simulations are tightly aligned with adult male ratios; since this is most likely the best data collected during post-season herd composition surveys. Yearling males can be misclassified and 2+ males can be missed. Decreasing buck ratios coupled with inadequate fawn ratios contributed to a decrease in the overall population. Harvest statistics appears to support this theory with a decreasing trend in success and an increasing trend in effort, indicating deer are becoming harder to find. Seasons have been adjusted to focus effort on the male segment with little pressure placed on the female segment to try and increase the herd. However, this harvest prescription has been in place for several years and the population has not responded positively. Drought, chronic wasting disease and poor habitat conditions have all played a role in suppressing this population.

The WGFD will change the way ungulate populations are estimated starting biological year 2012. POP II will be replaced by Spreadsheet Models that were developed by G. White and B. Lubow, of the Colorado Division of Wildlife. Based on input from T. Morrison of the Wyoming Cooperative Fish and Wildlife Research Unit, the Spreadsheet Model provides a more statistically rigorous way to estimate population sizes and to compare different models (Morrison, 2012).

HUNTING SEASON

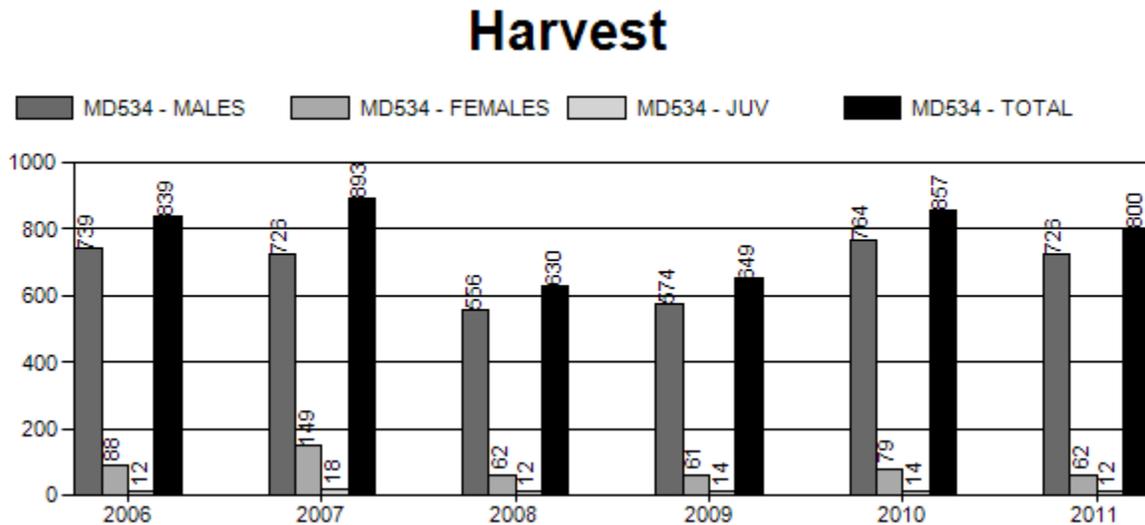
**GOSHEN RIM MULE DEER (MD534)
HUNT AREAS 15, 16, 55, 57
2011 HUNTING SEASONS**

HUNT AREA	TYPE	OPENS	CLOSES	LIMITATIONS
*15 *CWD Area	GEN	OCT. 1	OCT. 15	General license; antlered mule deer or any white-tailed deer.
	6	OCT. 1	OCT. 15	L.Q.; 25 licenses doe or fawn
*16 *CWD Area	GEN	OCT. 1	OCT. 14	General license; antlered mule deer or any white-tailed deer
	2	NOV. 1	DEC. 15	L.Q. 50 licenses any deer valid in that portion of Area 16 east of U.S. Highway 85 and south of the Tea Kettle Road (Goshen County Road 92B) and Goshen County Road 94
	6	NOV. 1	DEC. 15	L.Q. 50 licenses doe or fawn deer valid in that portion of Area 16 east of U.S. Highway 85 and south of the Tea Kettle Road (Goshen County Road 92B) and Goshen County Road 94
*55 *CWD Area	GEN	OCT. 1	OCT. 11	General license; antlered mule deer or any white-tailed deer.
	6	OCT. 1	DEC. 15	L.Q.; 50 licenses doe or fawn valid in that portion of Area 55 in Goshen County and north of the Laramie river in Platte county.
*57 *CWD Area	GEN	OCT. 1	OCT. 11	General license; antlered mule deer or any white-tailed deer.
	6	Oct. 1	NOV. 30	L.Q.; 50 licenses doe or fawn deer
ARCHERY				
15, 16, 55, 57		SEPT. 1	SEPT. 30	Refer to Section 3 of this Chapter

Table 2. 2011 Harvest, MD534

Area	Type	Active Lic/Htrs	Buck	Doe	Fawn	Total	Success	Days/Harvest	Days	Licenses Sold
2011										
15 SOUTH KELINE										
	General	208	97	0	0	97	46.60%	7.9	766	
	Type 6	23	0	7	2	9	39.10%	7.6	68	25
	Pooled Total	218 (231)*	97	7	2	106	48.60%	7.9	834	
	Pooled Resident	140	52	3	2	57	40.70%	9	512	
	Pooled Nonresident	78	45	4	0	49	62.80%	6.6	322	
16 JAY EM										
	General	501	239	0	0	239	47.70%	8.2	1965	
	Type 2	44	17	4	0	21	47.70%	6.2	131	51
	Type 6	37	0	28	2	30	81.10%	3.5	104	50
	Pooled Total	568 (582)*	256	32	2	290	51.10%	7.6	2200	
	Pooled Resident	416	182	19	2	203	48.80%	8.4	1705	
	Pooled Nonresident	152	74	13	0	87	57.20%	5.7	495	
55 ROCK EAGLE										
	General	653	202	0	0	202	30.90%	10.7	2168	
	Type 6	34	0	12	2	14	41.20%	8.3	116	50
	Pooled Total	672 (687)*	202	12	2	216	32.10%	10.6	2284	
	Pooled Resident	515	124	10	2	136	26.40%	12.9	1756	
	Pooled Nonresident	157	78	2	0	80	51.00%	6.6	528	
57 SOUTHEAST										
	General	424	171	0	0	171	40.30%	8.2	1397	
	Type 6	31	0	11	6	17	54.80%	9.6	163	50
	Pooled Total	439 (455)*	171	11	6	188	42.80%	8.3	1560	
	Pooled Resident	365	119	3	6	128	35.10%	9.8	1251	
	Pooled Nonresident	74	52	8	0	60	81.10%	5.2	309	
2011 Hunt Area										
	Total	1897 (1955)*	726	62	12	800	42.20%	8.6	6878	226
	2011 Herd Total	1784 (1842)*	726	62	12	800	44.80%	8.6	6878	226
*Active Licenses										

Graph 2. MD534 Harvest Data, 2006-2011.

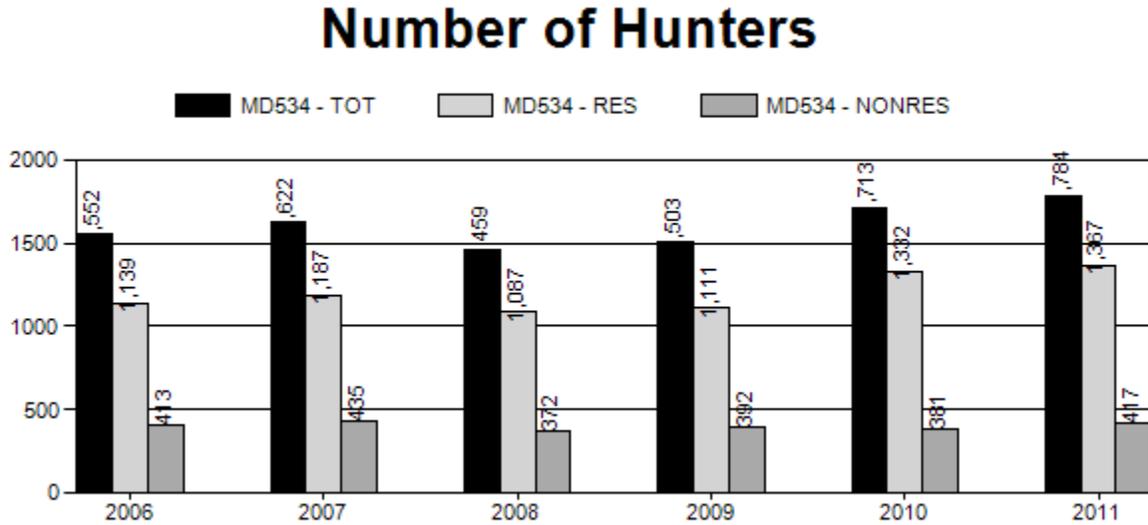


The 2011 season was designed to increase the population, while focusing harvest efforts on isolated damage areas, particularly in Hunt Areas 16 and 55. Based on harvest statistics, hunters were having a harder time finding a mature buck in Hunt Areas 55 and 57; therefore the season length was decreased by 4 days. A total of 800 mule deer (Table 2 and Graph 2), were harvested in 2011, which is slightly higher than the five year average of 773 mule deer. From 2008-2009, there was a significant decrease in harvest. This is most likely due to a slight decrease in buck ratios and unusually hot temperatures during the opening weekend of the season. Doe/fawn harvest rate comprises 1% of the total population, which is very minimal and does not affect population growth.

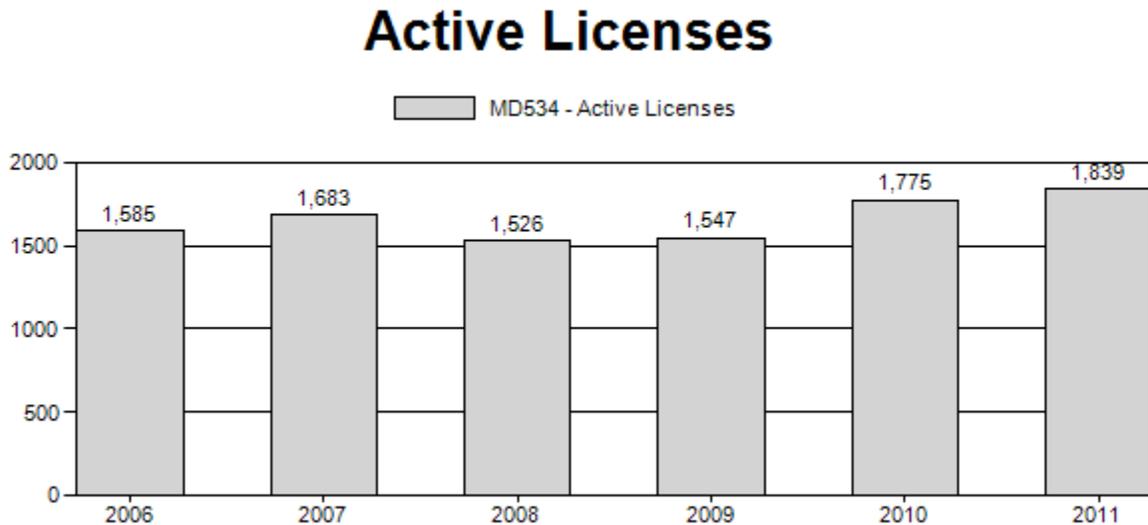
Type 6 licenses (n=175) only comprise 9% of the total license sales, which has little impact in population reduction. These licenses are designed to focus harvest pressure on isolated damage issues around La Grange, Lingle, Yoder and north of the Laramie River in Platte County.

HARVEST

Graph 3. MD534 Hunter Data, 2006-2011.

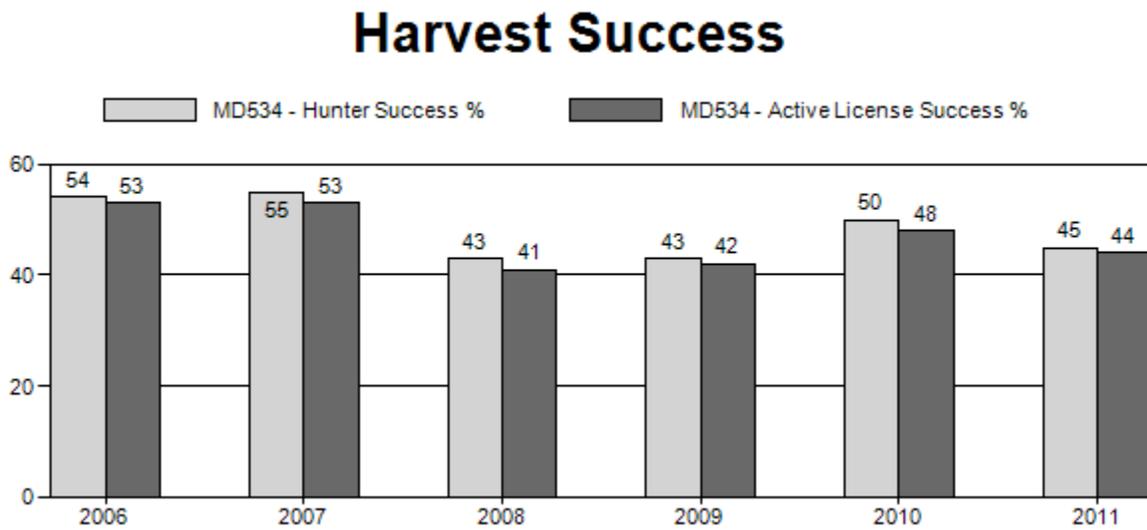


Graph 4. MD534 Active Licenses, 2006-2011.

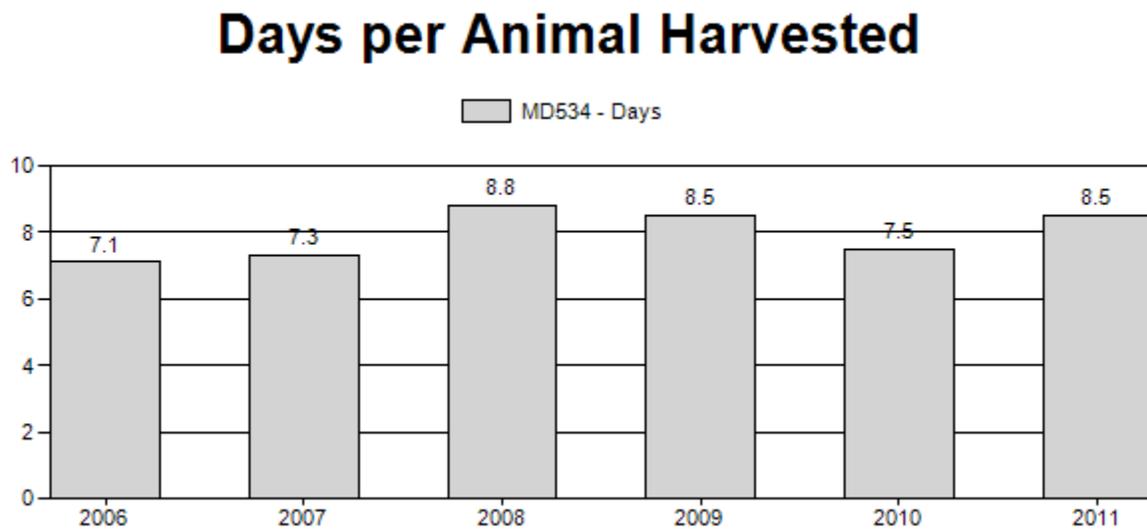


Hunter numbers took a dip from 2008-2009 then increased back to the highest observed in 2011 (Graph 3). Active licenses followed the same trend, and were only slightly higher than hunter numbers due to the limited number of Type 6 licenses hunters could obtain in addition to a general deer license (Hunters in Hunt Areas 15,16,55,57 may obtain up to two Type 6 licenses after the initial draw). Hunter numbers most likely increased from 2009-2011 as a result of the Department's Private Lands Public Wildlife Program that increased the number of Walk-In Areas and Hunter Management acres. Opening weekend temperatures also remained somewhat mild to help facilitate hunters going to the field.

Graph 5. MD534 Harvest Success Data, 2006-2011.

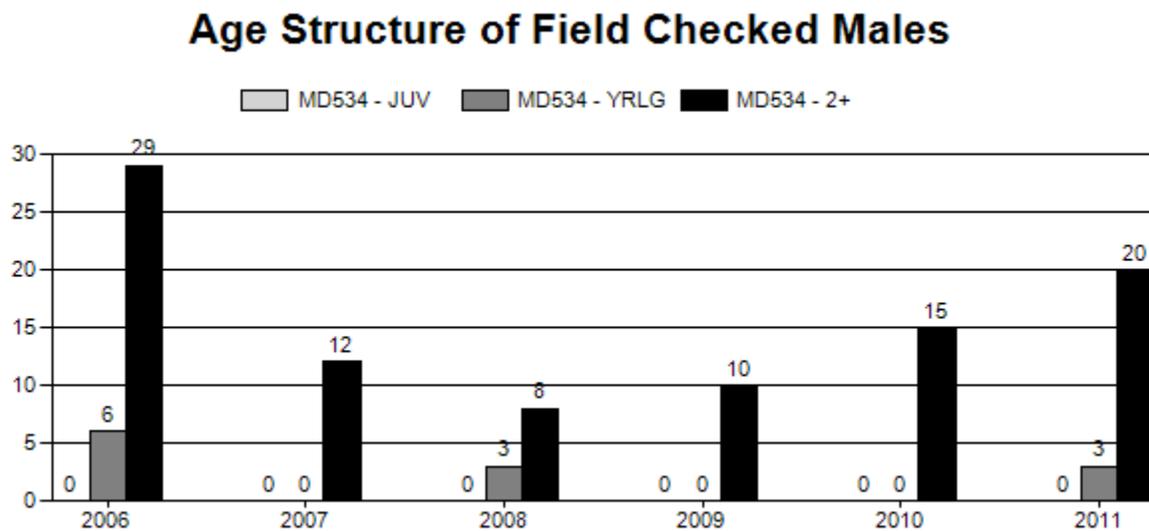


Graph 6. MD534 Days per Animal Harvested, 2006-2011.

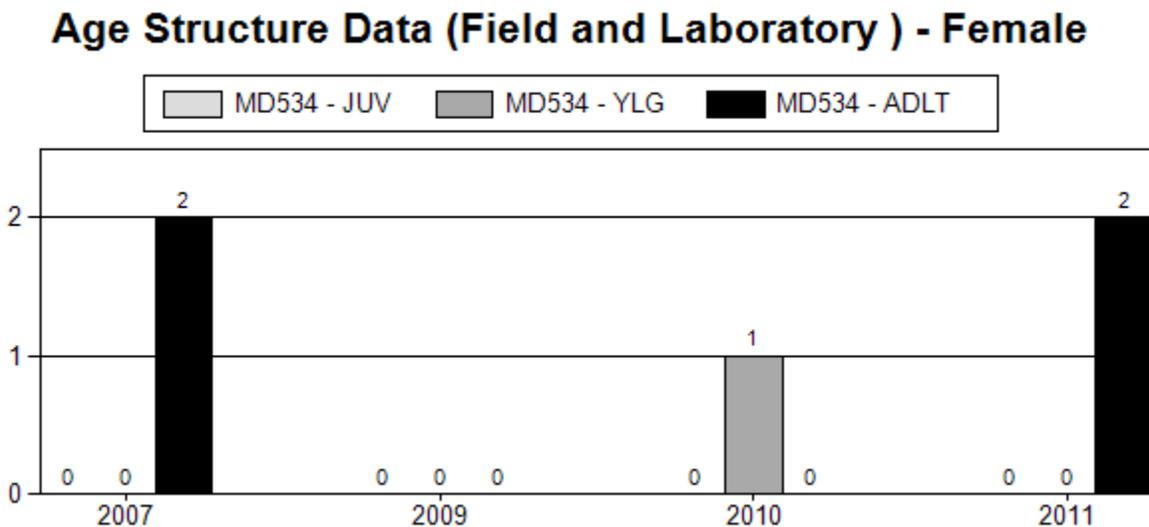


Harvest statistics support population simulations that the herd has been decreasing for a number of years. Success (Graph 5) has been decreasing and effort (Graph 6) has been increasing over the last six years indicating mule deer have been difficult to find. Poor recruitment, difficult access, drought, poor habitat conditions and CWD have all played a major role in the decrease in deer numbers.

Graph 7. MD534 Hunter Field Checked Males, 2006-2011.



Graph 8. MD534 Hunter Field Checked Females, 2006-2011.



It is not possible to draw conclusions about the female age structure due to the small sample size of field checked females (Graph 8). Based on the field checked males the ten-year average percentage of adult males is 17%, and the five-year average number of yearling males classified is 35%. This indicates that hunters are most likely selecting 2+ male deer to harvest. This appears logical since the majority of hunting occurs on private land, where hunters are either paying a trespass or outfitter fee, and as a result are selecting for older age class male deer.

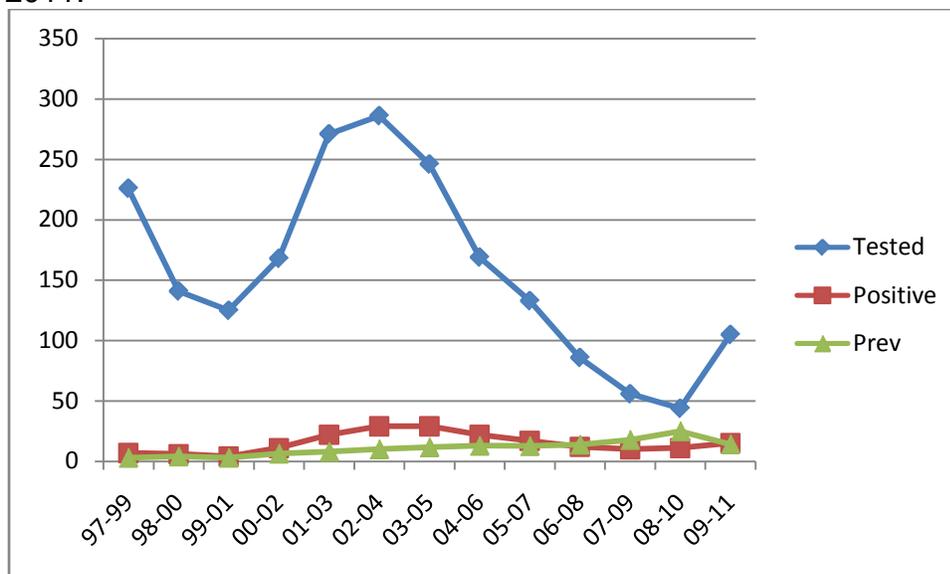
OTHER MANAGEMENT ISSUES

Chronic Wasting Disease

An intensive effort began during the 1997 hunting season to determine the prevalence of chronic wasting disease (CWD), a transmissible spongeform encephalopathy that is fatal to members of the deer family (Williams, 2005). Efforts were increased in 2003 by established check stations in Wheatland, Cheyenne, Torrington and Lingle for the first five days of the season and collecting lymph nodes to be tested for CWD, harvest location, age, and fat deposition. Subsequent stations were set up during the 2004-05 seasons, then efforts were decreased (Graph 9) and focused on other herd.

Prevalence rates increased from 3% during 1997-99 up to 25% from 2008-10. This increase is likely real but may also have resulted from testing more deer. Prevalence rates are not as high as adjacent herd units (Laramie Mountains and South Converse), but continue to remain around 12%. CWD positive mule deer have now been found in all four hunt areas. Area 55 continues to have the highest number of deer tested and the highest prevalence of positive cases in the herd unit.

Graph 9. Three-year running averages for CWD prevalence rates in MD534, 1997-2011.



HABITAT

There are no ongoing or completed projects at this time.

Currently the habitat issues within the Goshen Rim Mule Deer Herd unit are associated with poor habitat conditions existing in shrub stands. Many stands are old and decadent resulting in poor nutrient quality for pregnant and lactating does as well as wintering deer. The majority of deer rely upon agricultural crops for their year round nutrient requirements. This can cause consternation with landowners at times. Attempts to treat shrub stand has met with little success. Typically these stands are adjacent to farmsteads or subdivisions and treatment efforts elicit opposition from the public. In addition they are also within topography that does not tend to carry a flame without leaving some residue from the previous growing season.

MANAGEMENT RECOMMENDATIONS

1. Surveillance for chronic wasting disease should be continued for the 2012 season.
2. The Department should continue to work with the Farm Service Agency and the Natural Resources Conservation Service to improve grass stands enrolled into the 2012 Conservation Reserve Program (CRP). The majority of existing CRP stands have been in the program for over 20 years, with several extensions placed on after expiration with no enhancements. These stands are in need of some type of rejuvenation through complete re-seeding or stands enhancement to improve existing wildlife habitat. Stands have become monoculture grass stands that offer little in wildlife habitat. Incentives are available to landowners to improve these stands through the Commodity Credit Corporation, the Department's Private Lands Public Wildlife Program (PLPW) or non government organizations. Stand improvement can occur while they are still under contract or prior to enrollment into the program. There appears to be a sufficient number of stands enrolled into the PLPW program, manipulations of those stands to improve habitat components for all wildlife species should now be the priority.
3. Data collection is critical in management of Wyoming's deer herds. However, management of this herd unit continues to be difficult due to landownership and lack of access for hunters. Harvest field check data collection in the past has been marginal at best and has not greatly impacted the management of this herd. Efforts should be extended to areas where actual management is applicable (i.e. Laramie Mountains). These validated data could then be used to assist in herds where management is more restrictive.

REFERENCES

Morrison, T. 2012. User Guide: Spreadsheet Model for Ungulate Population Data, Wyoming Cooperative Fish and Wildlife Research Unit, 4.

Unsworth, JW, Pac DF, White GC, and Bartmann BC: Mule deer survival in Colorado, Montana, and Idaho. *J. Wildl. Manage.* 63(1):315-326, 1999

Williams ES: Review Article, Chronic Wasting Disease. *Vet Pathology* 42:530-549, 2005

GOSHEN RIM MULE DEER (MD534)
HUNT AREAS 15, 16, 55, 57
2012 PROPOSED HUNTING SEASONS

HUNT AREA	TYPE	OPENS	CLOSES	LIMITATIONS
*15 *CWD Area	GEN	OCT. 1	OCT. 15	General license; antlered mule deer or any white-tailed deer.
	6	OCT. 1	OCT. 15	L.Q.; 25 licenses doe or fawn
*16 *CWD Area	GEN	OCT. 1	OCT. 14	General license; antlered mule deer or any white-tailed deer
	2	NOV. 1	DEC. 15	L.Q. 50 licenses any deer valid in that portion of Area 16 east of U.S. Highway 85 and south of the Tea Kettle Road (Goshen County Road 92) and Goshen County Road 94
	6	NOV. 1	DEC. 15	L.Q. 50 licenses doe or fawn deer valid in that portion of Area 16 east of U.S. Highway 85 and south of the Tea Kettle Road (Goshen County Road 92) and Goshen County Road 94
*55 *CWD Area	GEN	OCT. 1	OCT. 11	General license; antlered mule deer or any white-tailed deer.
	6	OCT. 1	DEC. 15	L.Q.; 50 licenses doe or fawn valid in that portion of Area 55 in Goshen County and north of the Laramie river in Platte county.
*57 *CWD Area	GEN	OCT. 1	OCT. 11	General license; antlered mule deer or any white-tailed deer.
	6	Oct. 1	NOV. 30	L.Q.; 50 licenses doe or fawn deer
ARCHERY				
15, 16, 55, 57		SEPT. 1	SEPT. 30	Refer to Section 3 of this Chapter

PROPOSED CHANGES FOR 2012

- There are no proposed changes for 2012
- Region T Licenses are proposed to stay the same at 500

2012 Season Proposal

- The postseason population of 17,000 is 32% below objective of 25,000

- The season is designed to maintain small percentage of doe harvest in areas with chronic damage concerns.
- In Hunt Areas 55 and 57 harvest success continues to decrease and effort increases. These harvest statistics combined with declining buck ratios warrant a eleven day general deer season.
- Fawn ratios continue to run below recommended ratio of 66 fawns:100 does to maintain or increase the population.
- In 2011 the CWD prevalence rate was 26%, which is
- Given average buck:100doe:fawn ratios and a harvest of 775 mule deer, the 2012 post-season population should be around 17,000 mule deer.
- 2012 Region T Nonresident Proposed Licenses: Nonresident Region T Licenses continue to go unsold (396 in 2011). Given the lack of sales and the restricted access we propose to keep the Region T permits at 500 for the 2012 season.

Goshen Rim Mule Deer 2007

Data from 1990 to 2012

Simulation from 2001 to 2012

Age Class	Init Pop. Prop.		Presn Mort%		Postsn Mort%		Effort Set 1		Effort Set 2	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	125.0	125.0	50.0	50.0	55.0	45.0	1.00	1.00	1.00	1.00
1	30.0	30.0	2.0	2.0	3.0	5.0	0.45	1.00	1.50	1.00
2	15.0	23.0	2.0	2.0	3.0	5.0	1.00	1.00	1.00	1.00
3	10.0	22.0	2.0	2.0	3.0	5.0	1.00	1.00	1.00	1.00
4	8.0	21.0	2.0	2.0	3.0	5.0	1.00	1.00	1.00	1.00
5	6.0	20.0	2.0	2.0	3.0	5.0	1.00	1.00	1.00	1.00
6	5.0	18.0	2.0	2.0	20.0	10.0	1.00	1.00	1.00	1.00
7	4.0	16.0	2.0	2.0	40.0	20.0	1.00	1.00	1.00	1.00
8	3.0	14.0	2.0	2.0	60.0	30.0	1.00	1.00	1.00	1.00
9	2.0	12.0	2.0	2.0	80.0	40.0	1.00	1.00	1.00	1.00
10	1.0	10.0	2.0	2.0	100.0	50.0	1.00	1.00	1.00	1.00
11	0.0	5.0	2.0	2.0	100.0	60.0	1.00	1.00	1.00	1.00
12	0.0	3.0	2.0	2.0	100.0	75.0	1.00	1.00	1.00	1.00
13	0.0	1.0	2.0	2.0	100.0	100.0	1.00	1.00	1.00	1.00
Sum =		529.0	Estimated Sum =		30500		Subadults: Ages 0 to 0			

Bio-Year	Preseason MSI	MSI Function is Linear			Postseason MSI	Effort & Wound Set Used
		Harvest Subadults#	Des. Pop Males#	Size in NA Females#		
1990	1.00	13	916	234	1.05	2
1991	1.00	40	1434	422	1.00	1
1992	1.04	42	1363	788	1.00	2
1993	1.15	77	1575	822	1.00	1
1994	1.19	72	807	844	1.00	1
1995	1.02	48	918	411	1.00	1
1996	0.96	0	823	106	1.35	2
1997	1.05	4	661	161	1.00	2
1998	1.06	2	734	164	1.00	1
1999	0.90	29	978	205	1.00	1
2000	0.99	18	913	298	1.40	1
2001	1.27	29	759	253	1.00	1
2002	1.28	9	570	174	1.00	2
2003	1.06	37	586	217	1.10	1
2004	1.24	23	594	244	0.90	1
2005	0.97	15	708	116	1.20	1
2006	1.36	13	761	87	1.20	0
2007	1.40	18	726	149	0.90	1
2008	1.15	12	556	62	1.20	2
2009	1.06	15	566	54	1.10	1
2010	1.09	14	764	79	1.20	1
2011	1.12	12	729	63	1.20	1
2012	1.10	15	700	60	1.20	1
Set 1	Wounding Loss	10.0%	10.0%	10.0%	Yearling Male	10.0%
Set 2	Wounding Loss	10.0%	10.0%	10.0%	Yearling Male	10.0%

Bio- Year	Young/100 Fems Age 1 - 1	Young/100 Fems Age 2 - 13	Young/100 Fems Disabled	Sex Ratio: 50 : 50
1991	0.0	170.0	0.0	
1992	0.0	170.0	0.0	
1993	0.0	170.0	0.0	
1994	0.0	170.0	0.0	
1995	0.0	170.0	0.0	
1996	0.0	170.0	0.0	
1997	0.0	170.0	0.0	
1998	0.0	170.0	0.0	
1999	0.0	170.0	0.0	
2000	0.0	170.0	0.0	
2001	0.0	170.0	0.0	
2002	0.0	170.0	0.0	
2003	0.0	170.0	0.0	
2004	0.0	170.0	0.0	
2005	0.0	170.0	0.0	
2006	0.0	170.0	0.0	
2007	0.0	170.0	0.0	
2008	0.0	170.0	0.0	
2009	0.0	170.0	0.0	
2010	0.0	170.0	0.0	
2011	0.0	170.0	0.0	
2012	0.0	170.0	0.0	
2013	0.0	0.0	0.0	

Table 1. Population Size During Bio-Year for MD534 2012ten year.gn1 02/29/2012 04:44 pm

Bio-Year	Start	Pre-Season	Post Season	End	%Growth
2001	30500	20939	19793	15075	-0.5
2002	30338	20184	19356	14856	-3.3
2003	29327	21343	20419	14960	-1.8
2004	28805	19850	18903	15243	1.8
2005	29332	22203	21280	15141	-1.4
2006	28910	19135	18188	13843	-4.5
2007	27599	17582	16600	13546	-3.1
2008	26756	18849	18156	13060	-4.0
2009	25678	18714	18015	13267	0.2
2010	25738	18652	17709	12675	-2.6
2011	25073	17846	16962	12134	-3.4
2012	24209	17301	16448	11729	-51.6

Table 2. Preseason Natural Mortality for MD534 2012ten year.gn1 02/29/2012 04:44 pm

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2001	9153	123	286	9561	31.3
2002	9769	119	267	10155	33.5
2003	7670	103	212	7985	27.2
2004	8584	127	244	8955	31.1
2005	6833	105	191	7129	24.3
2006	9363	146	266	9775	33.8
2007	9629	133	255	10017	36.3
2008	7596	105	207	7907	29.6
2009	6687	92	185	6964	27.1
2010	6797	97	192	7086	27.5
2011	6943	91	193	7226	28.8
2012	6642	83	184	6909	28.5

Table 3. Harvest Mortality for MD534 2012ten year.gn1 02/29/2012 04:44 pm

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2001	29	759	253	1041	5.0
2002	9	570	174	753	3.7
2003	37	586	217	840	3.9
2004	23	594	244	861	4.3
2005	15	708	116	839	3.8
2006	13	761	87	861	4.5
2007	18	726	149	893	5.1
2008	12	556	62	630	3.3
2009	15	566	54	635	3.4
2010	14	764	79	857	4.6
2011	12	729	63	804	4.5
2012	15	700	60	775	4.5

Table 4. Harvest Percentages for MD534 2012ten year.gn1 02/29/2012 04:44 pm

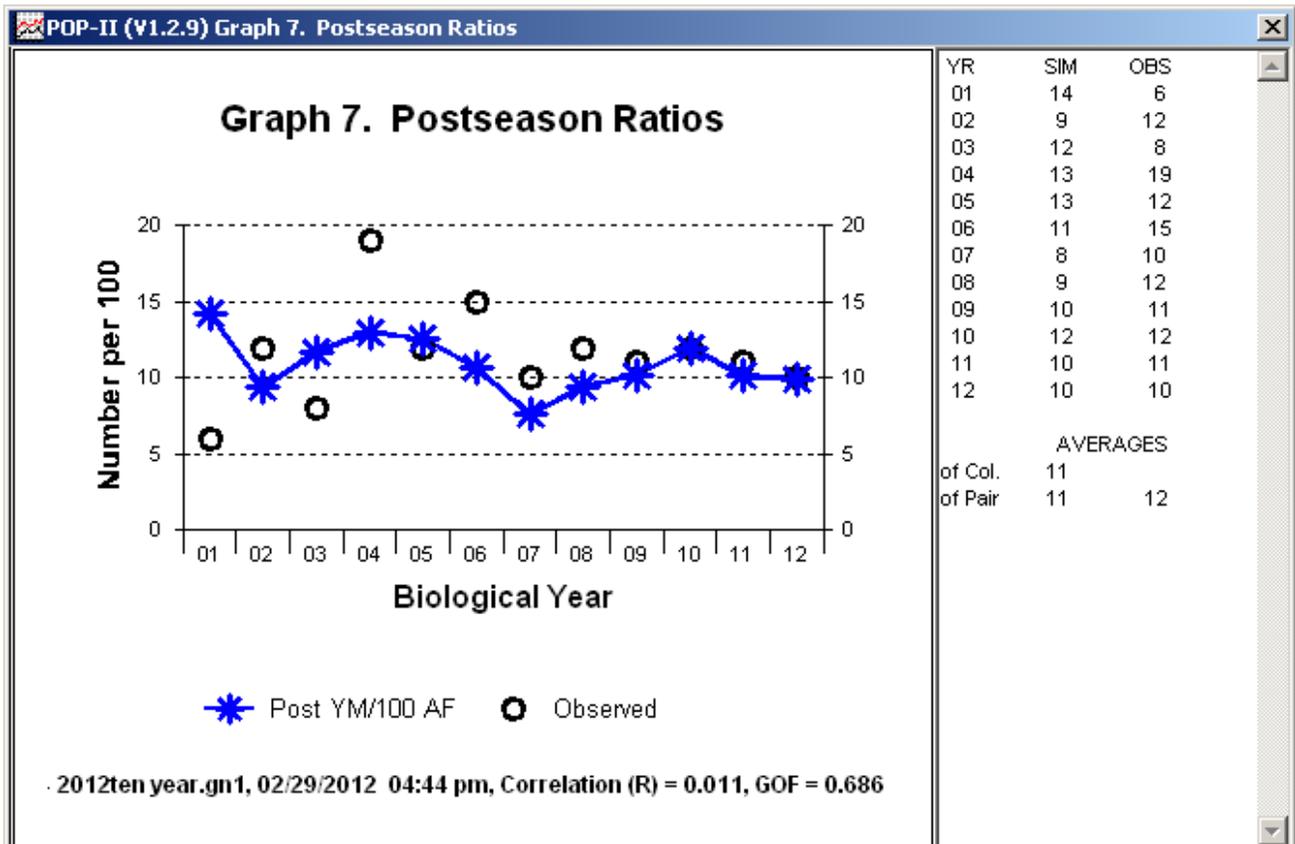
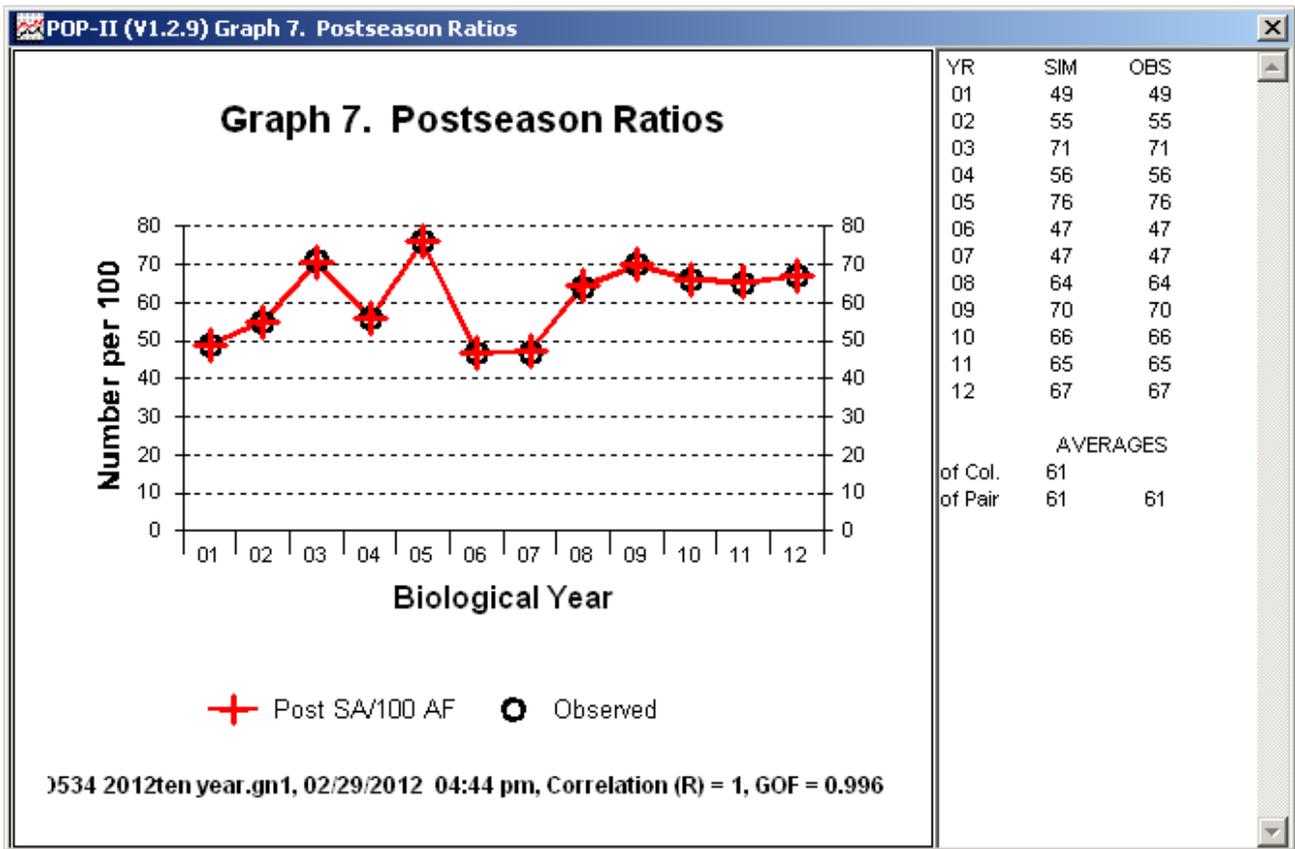
Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	Yearling Males
2001	0.6	16.1	2.3	4.97	20.0
2002	0.2	12.6	1.7	3.73	33.6
2003	0.5	12.4	2.2	3.94	13.4
2004	0.4	11.9	2.5	4.34	13.7
2005	0.2	13.4	1.2	3.78	12.7
2006	0.3	14.6	0.9	4.50	22.9
2007	0.4	15.8	1.7	5.08	7.8
2008	0.2	12.5	0.7	3.34	30.7
2009	0.3	13.3	0.6	3.39	11.2
2010	0.2	17.6	0.9	4.59	13.8
2011	0.2	18.3	0.7	4.51	12.2
2012	0.3	18.9	0.7	4.48	12.7

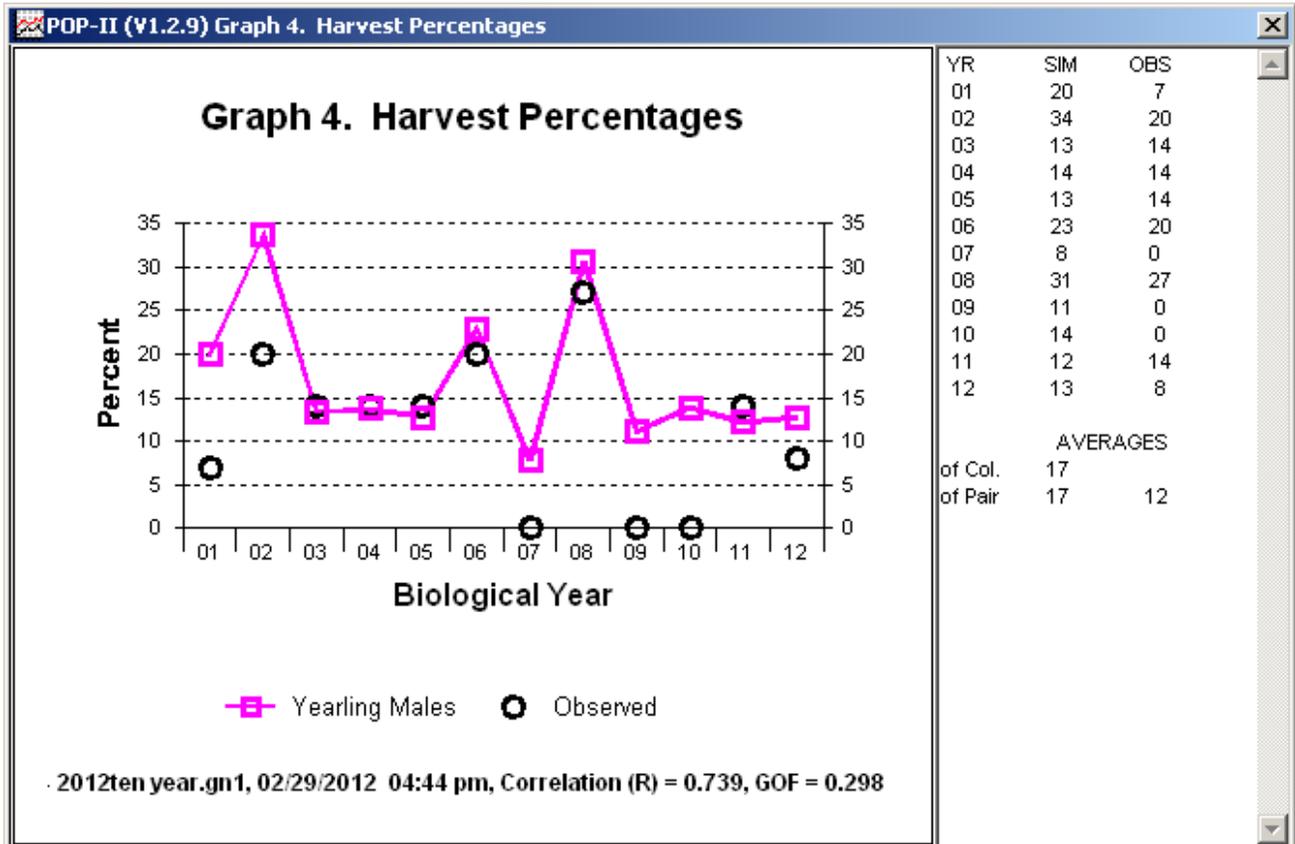
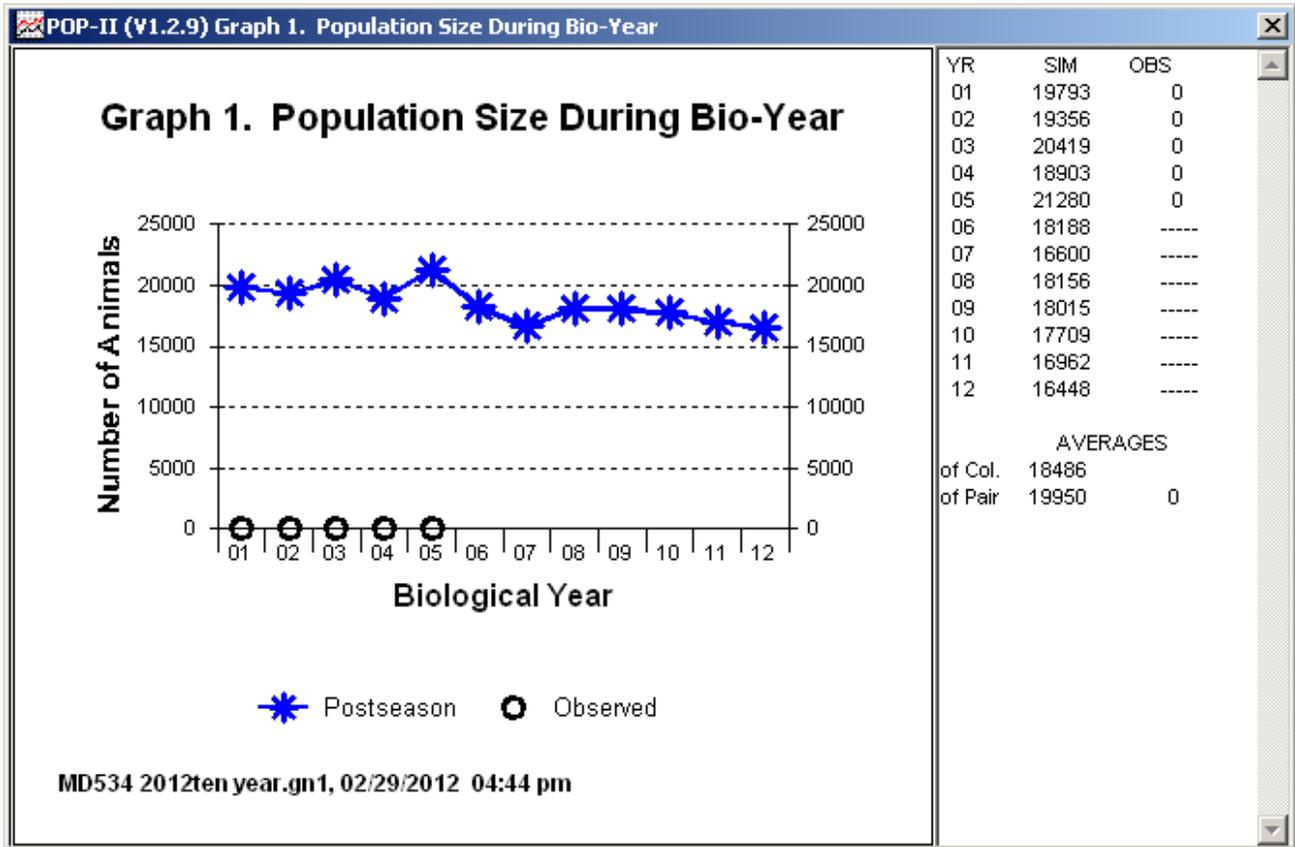
Table 5. Postseason Natural Mortality for MD534 2012ten year.gn1 02/29/2012 04:44 pm

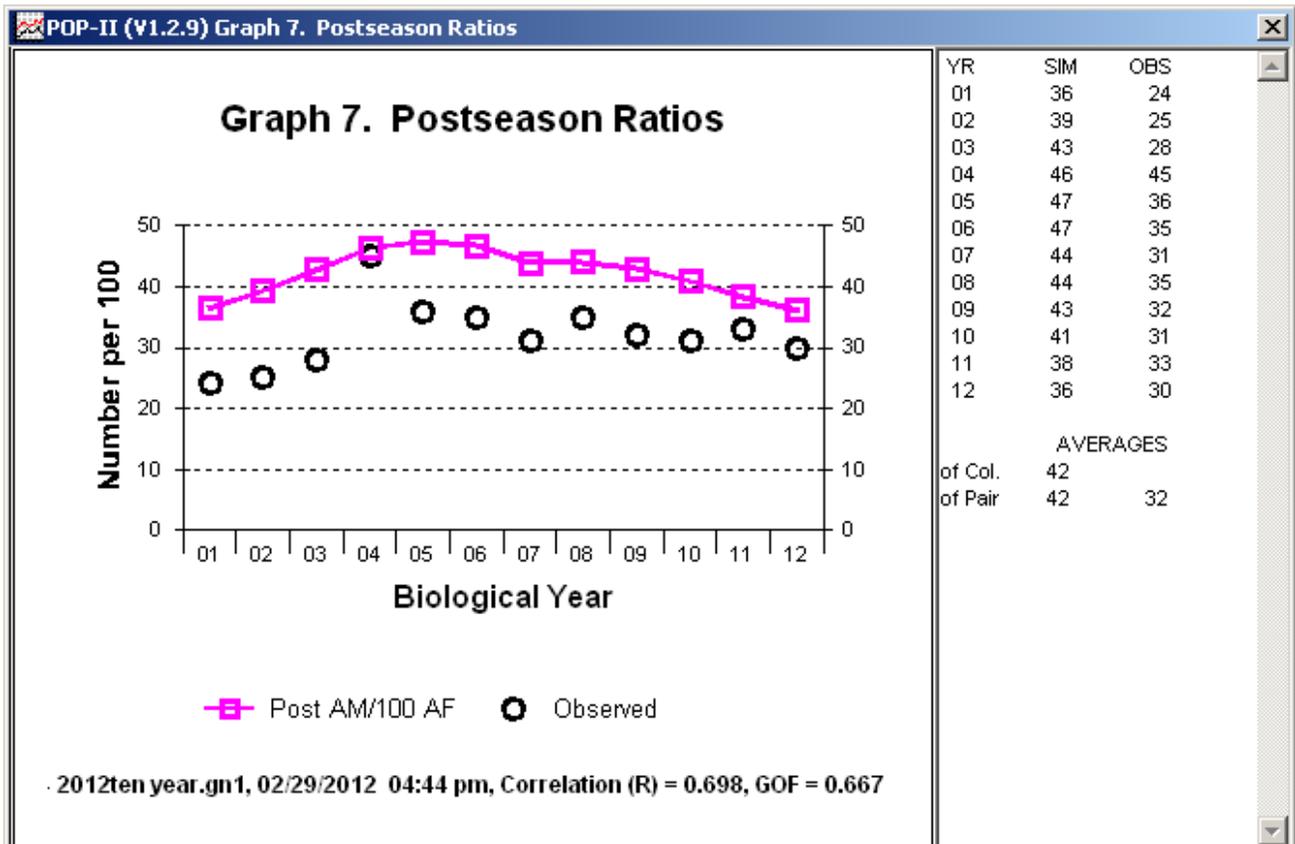
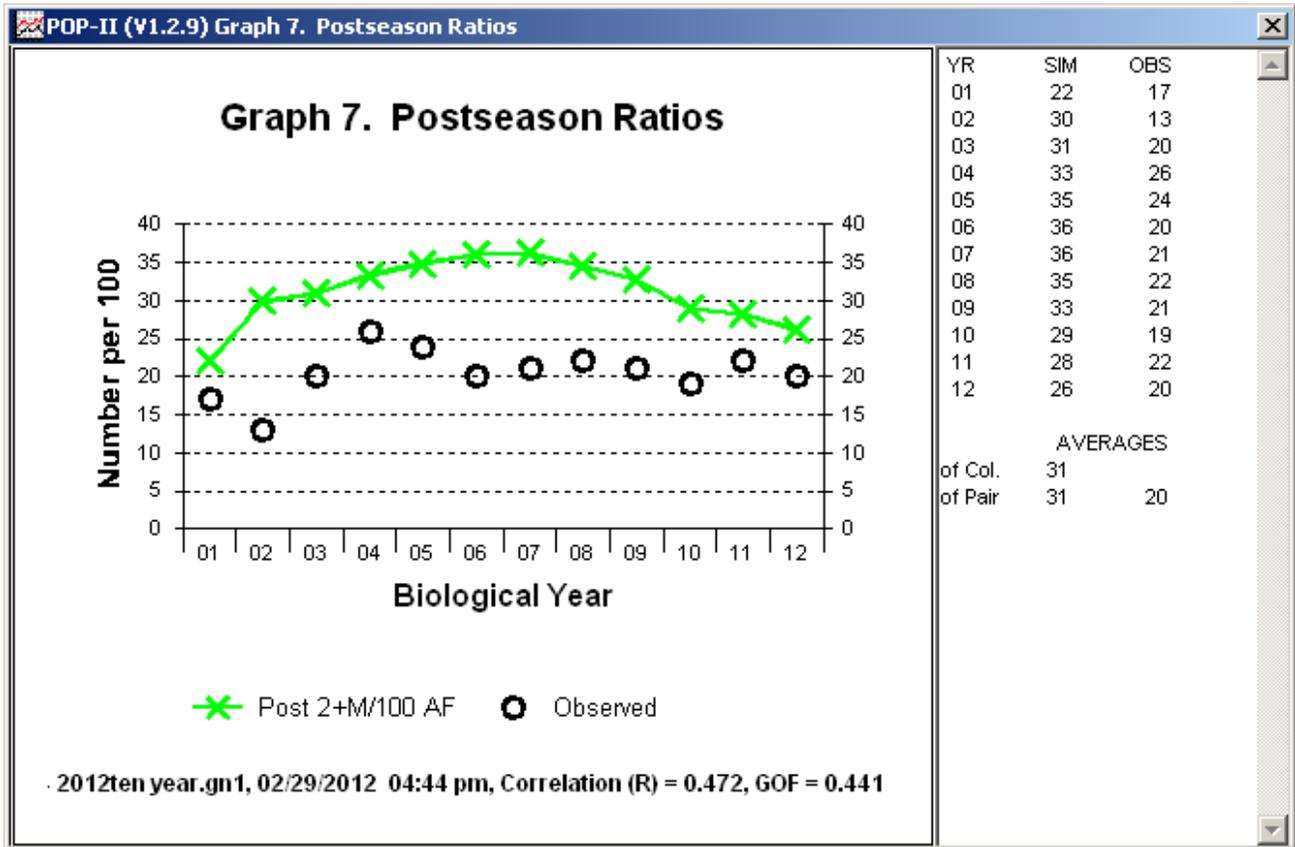
Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2001	2615	404	1700	4719	23.8
2002	2743	310	1446	4499	23.2
2003	3718	316	1425	5459	26.7
2004	2356	253	1051	3660	19.4
2005	4344	368	1427	6139	28.9
2006	2635	399	1312	4345	23.9
2007	1848	292	913	3054	18.4
2008	3361	440	1295	5095	28.1
2009	3253	365	1131	4748	26.4
2010	3395	382	1257	5034	28.4
2011	3265	334	1229	4828	28.5
2012	3251	275	1194	4719	28.7

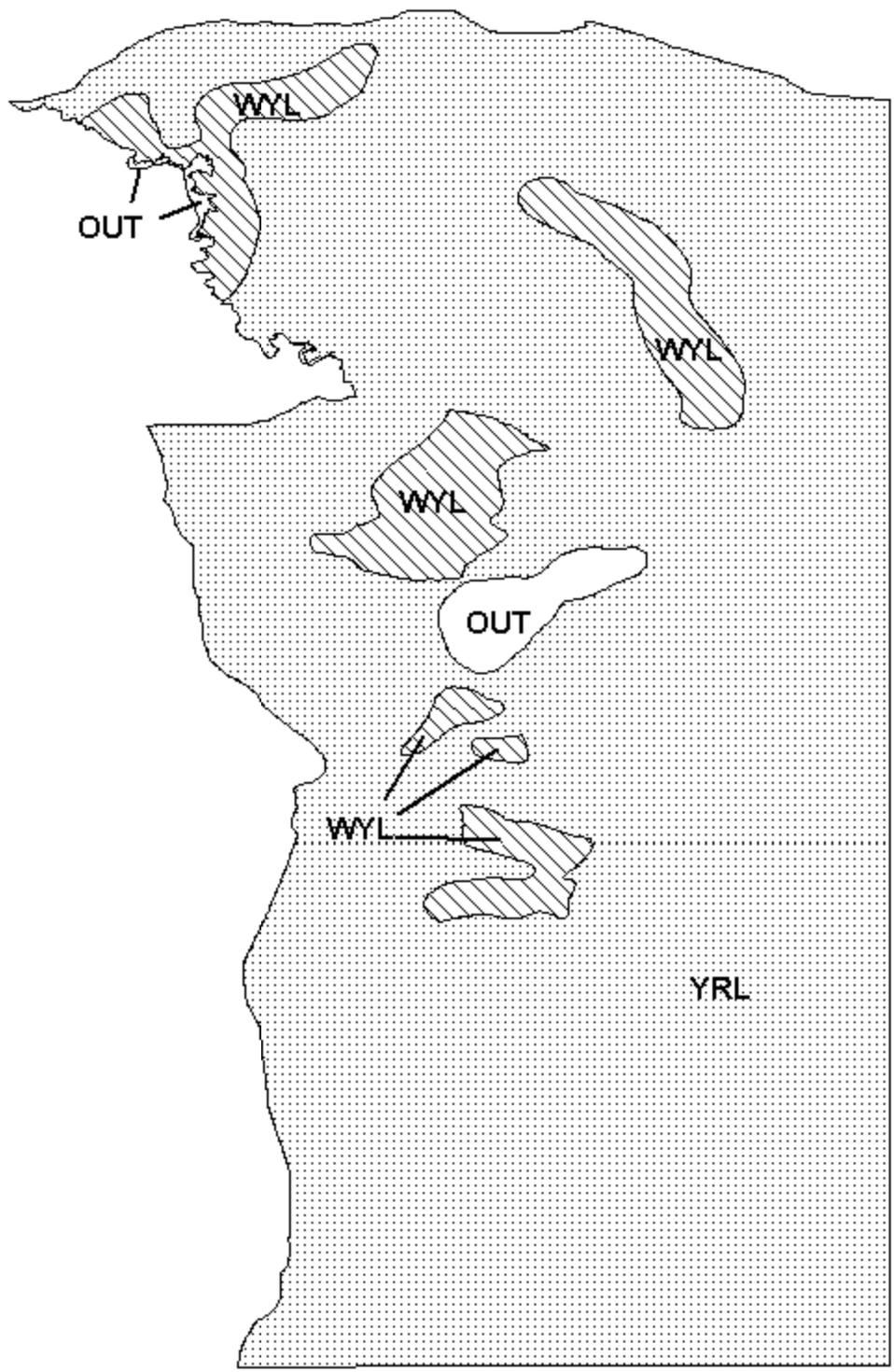
Table 7. Postseason Ratios for MD534 2012ten year.gn1 02/29/2012 04:44 pm

Bio-Year	Subadults /100 1+F	2+ Males /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2001	49.0	22.2	14.2	36.4
2002	55.1	29.9	9.4	39.3
2003	70.6	31.0	11.7	42.7
2004	56.1	33.4	13.0	46.3
2005	76.0	34.8	12.6	47.4
2006	46.7	36.0	10.7	46.7
2007	47.3	36.2	7.6	43.9
2008	64.3	34.6	9.5	44.0
2009	69.9	32.8	10.2	42.9
2010	66.2	28.9	12.0	40.9
2011	65.3	28.1	10.1	38.3
2012	66.8	26.1	10.0	36.1









Mule Deer (MD534) - Goshen Rim
HA 15, 16, 55, 57
Revised - 97



2011 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2011 - 5/31/2012

HERD: MD537 - LARAMIE MOUNTAINS

HUNT AREAS: 59-60, 62-64, 73

PREPARED BY: MARTIN HICKS

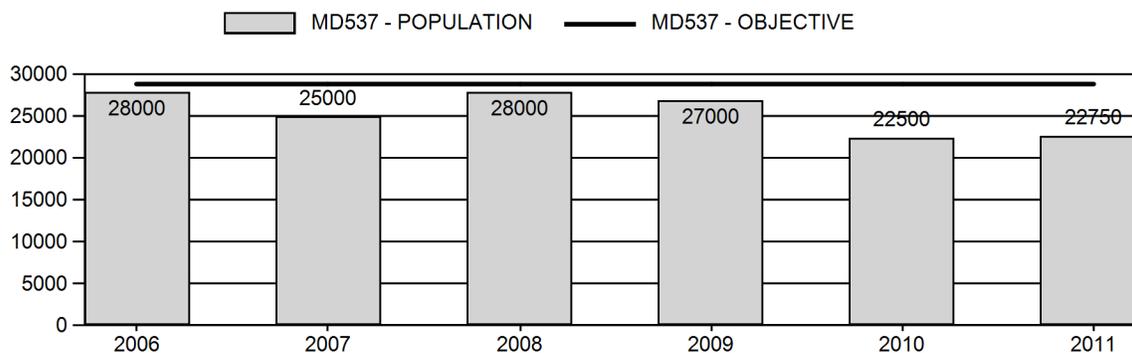
	2006 - 2010 Average	2011	2012 Proposed
Population:	26,100	22,750	20,000
Harvest:	1,415	1,194	1,000
Hunters:	2,352	2,232	1,900
Hunter Success:	60%	53%	53 %
Active Licenses:	2,438	2,297	1,950
Active License Percent:	58%	52%	51 %
Recreation Days:	10,319	10,599	9,500
Days Per Animal:	7.3	8.9	9.5
Males per 100 Females	40	35	
Juveniles per 100 Females	61	51	

Population Objective:	29,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-21.6%
Number of years population has been + or - objective in recent trend:	17
Model Date:	02/29/2012

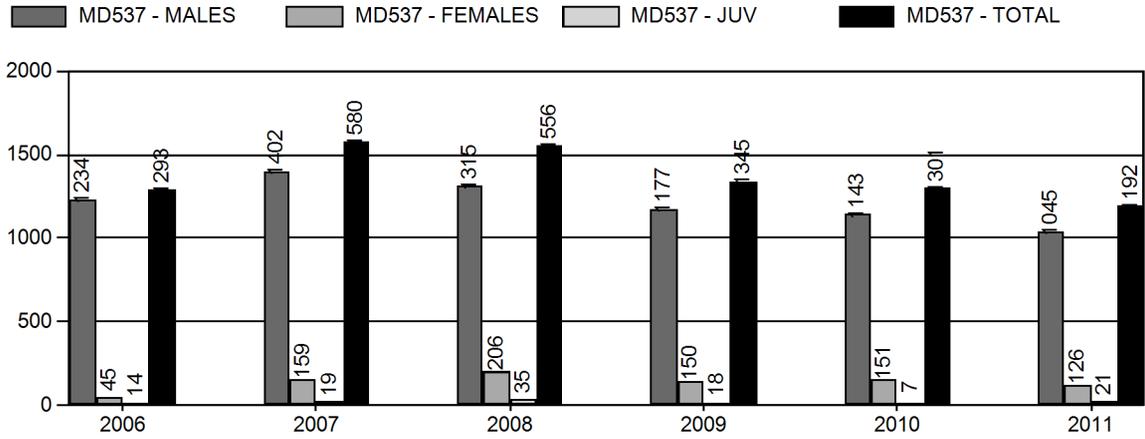
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	1.1%	1.2%
Males ≥ 1 year old:	16.3%	19.4%
Juveniles (< 1 year old):	.4%	.3%
Total:	4.9%	5.6%
Proposed change in post-season population:	-9%	-13%

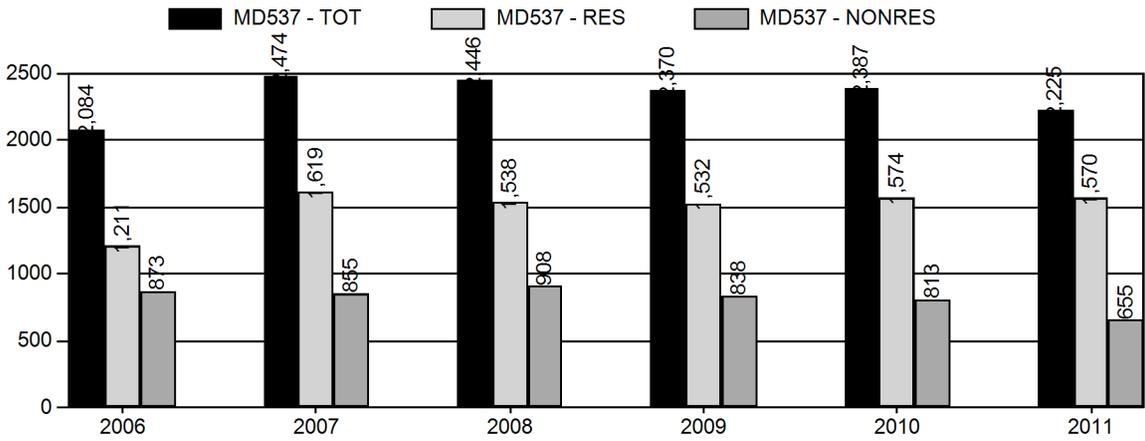
Population Size - Postseason



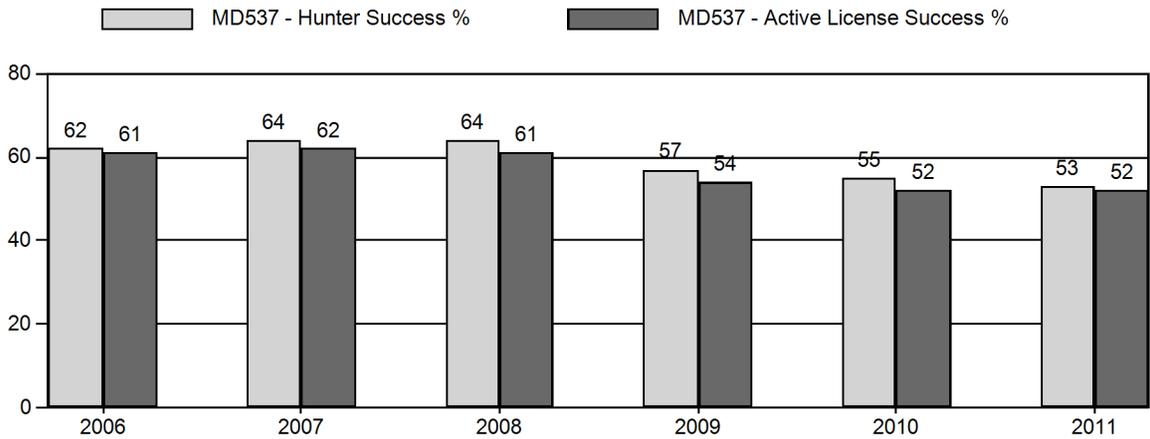
Harvest



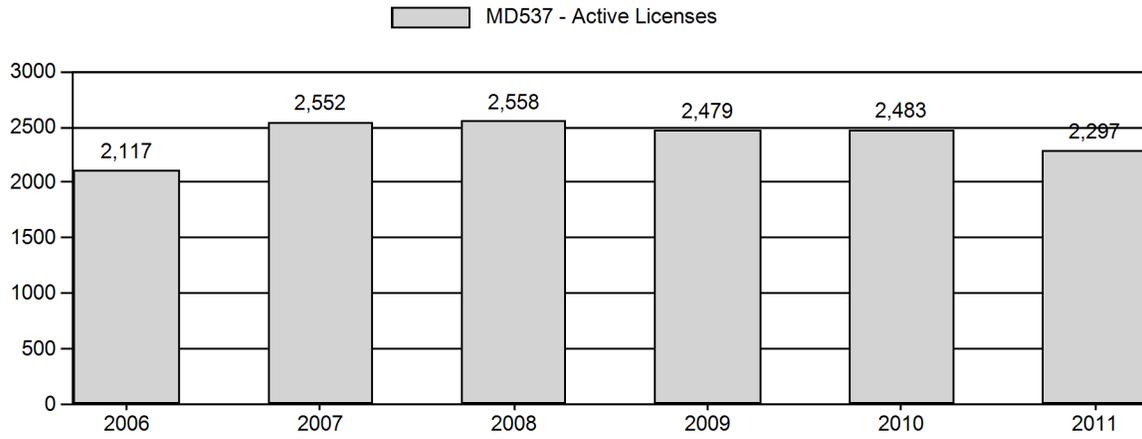
Number of Hunters



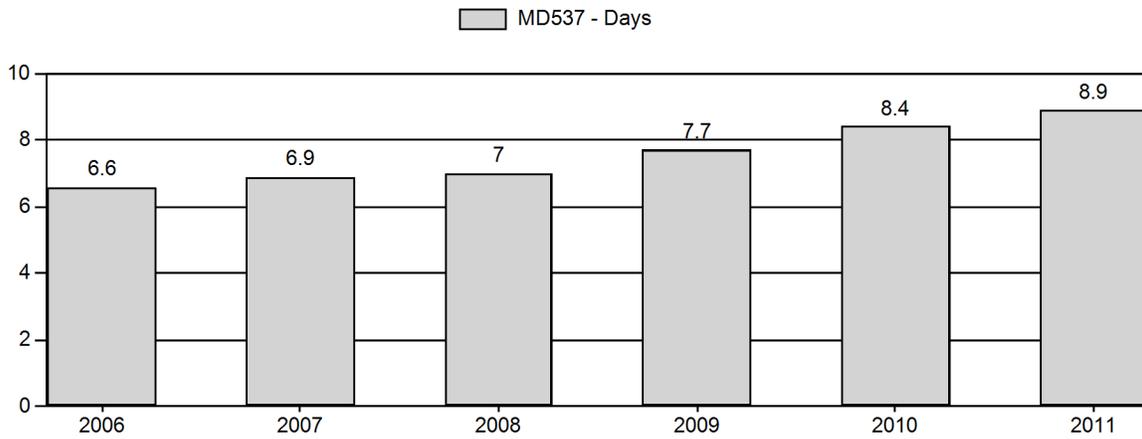
Harvest Success



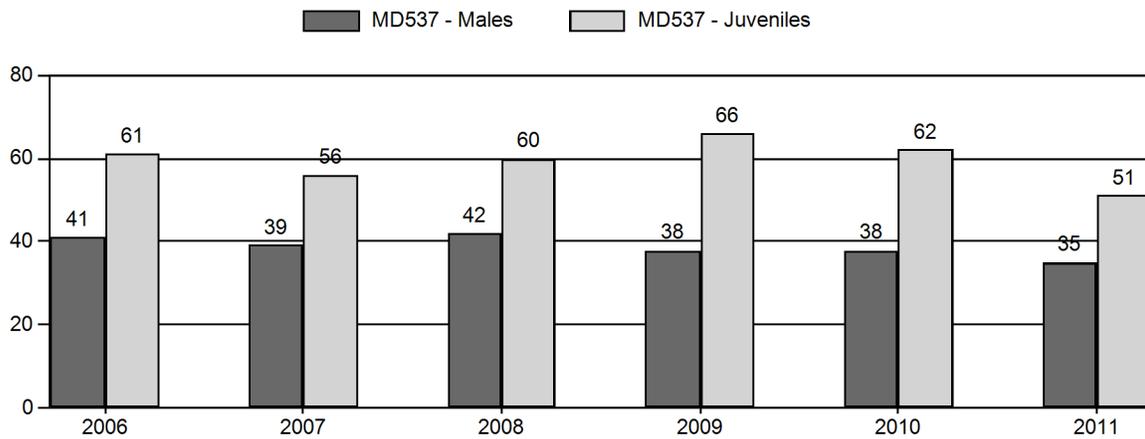
Active Licenses



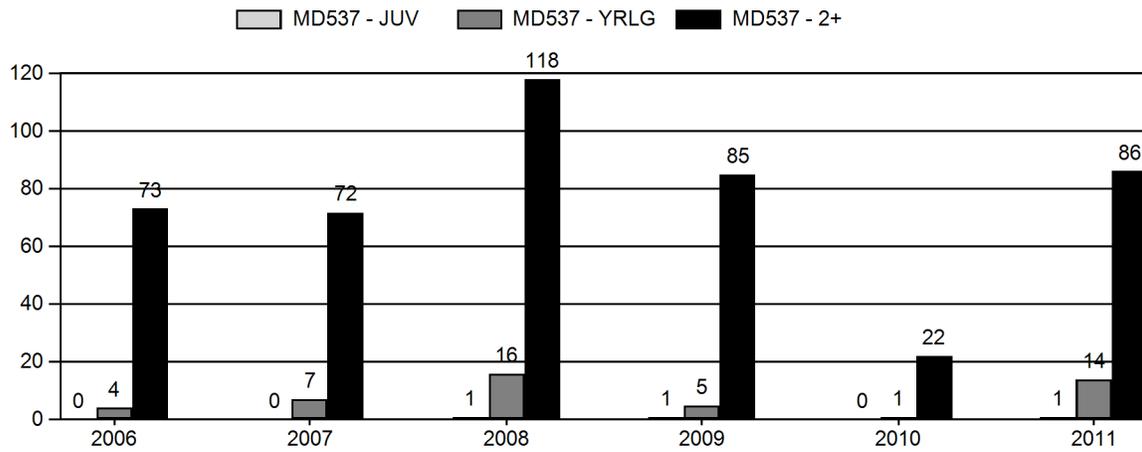
Days per Animal Harvested



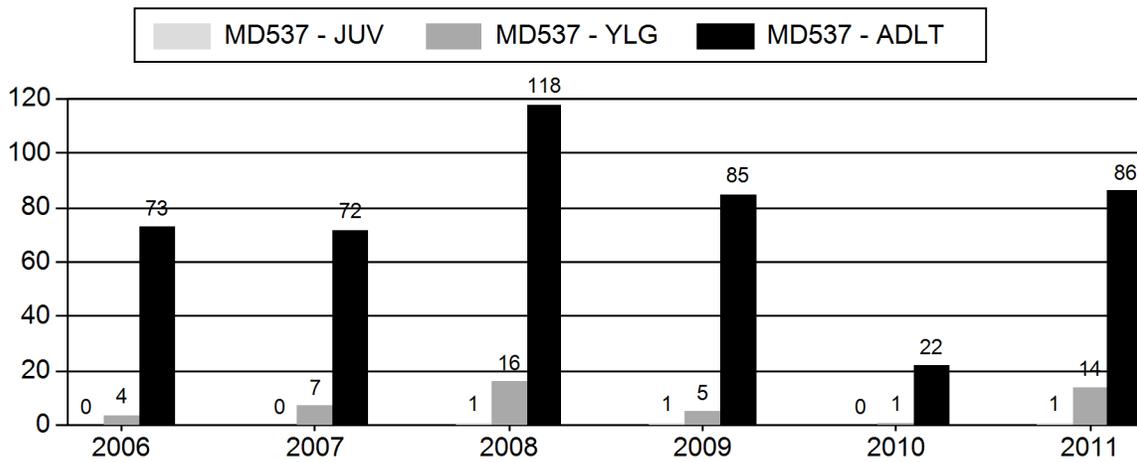
Postseason Animals per 100 Females



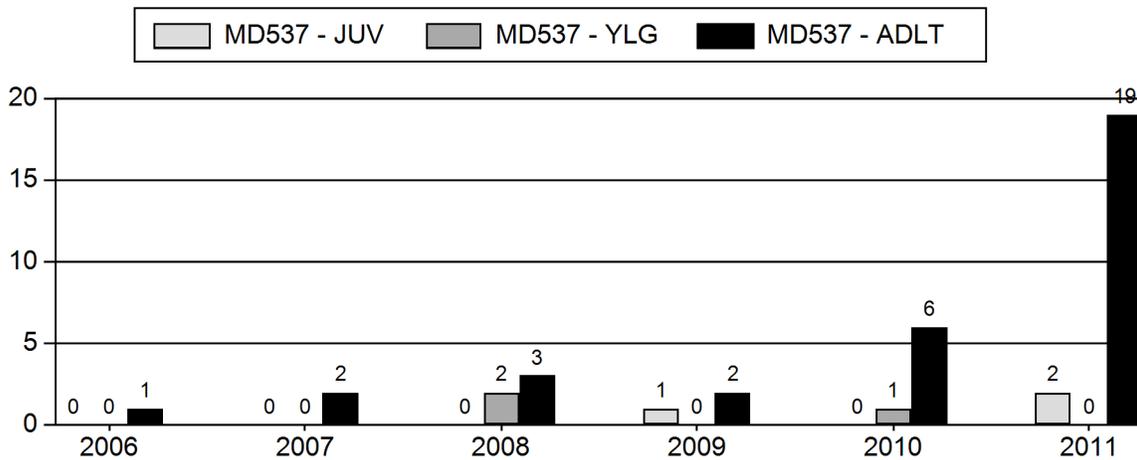
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



LARAMIE MOUNTAINS MULE DEER
(MD537)
Hunt Areas 59,60,62-64,73
2009-2011 Biological Years (6/1/2009-5/31/2012)

INTRODUCTION

The post-season population estimate for the Laramie Mountains Mule Deer Herd Unit is 22,000 mule deer, 24% below the objective of 29,000. POP II was used to simulate the herd's performance by anchoring to fawn ratios and yearling male harvest percentages while simulating yearling buck, 2+ bucks, mature bucks ratios at levels higher than observed. Simulations appear to track observed ratios adequately providing confidence to the population estimate.

Buck ratios have slowly decreased the past five years, causing a management change to the general license deer season by decreasing the season length from 16 days to 10 days for the 2012 season. The five-year average is 39 buck:100 does and the 2011 post-season ratio was 35 bucks:100 does. This is still well above the recreational management guidelines of 20-29 bucks:100 does, but has caused concern with managers on buck quantity and quality available to the public.

Fawn ratios decreased in 2011 (51 fawns:100 does) compared to the five-year average of 61 fawns:100 does. Recruitment is well below the adequate level needed to increase the population (Unsworth et al. 1999).

Chronic Wasting Disease (CWD) continues to impact this population. In 2012 104 mule deer were tested with a prevalence rate of 28%, which is significantly higher than the long-term average (1997-2010) of 19%. The long-term average of Hunt Area 65 (31%) is slightly lower, but well below the 2011 prevalence rate of 56%. Currently there is a mule deer survivability study on going in Hunt Area 65 to determine the impact of CWD on the population. Results should be available within the next two biological years.

This herd is managed under recreational criteria. The 2011 season is designed to take advantage of a surplus number of bucks and focus effort on the female segment in isolated areas where damage is a concern. Efforts to increase the population of this herd to the management objective are confounded by the ongoing effects of CWD and a decadent shrub community. At this time there is no way to mitigate the impact of CWD but the occurrence of large-scale wildfires should eventually improve the health and nutritional status of the shrub community.

For extensive background information on the Laramie Mountains Mule Deer Herd, the reader is referred to the 2002 Job Completion Report.

WEATHER

A state-wide weather report from Biological Services was not available for this reporting period. However, a memo was sent to Wildlife Division from the Laramie Region summarizing weather data in southeast Wyoming from October 2011 to April 2012 (Appendix A). Basically this past winter was very mild and most likely resulted in little winter mule deer mortality. Since April 2012 this area has experience little to no precipitation resulting in a drastic decrease in herbaceous production. Most recently the largest impact to the environment from this drought is four major wildfires totaling over 110,000 acres. Three of the wild fires have occurred within the Laramie Mountains: 1) Cow Camp Fire- 8,500 acres, 2) Russell Camp Fire- 5,400 acres, 3) Arapahoe Fire- 97,000 acres. These fires burned a majority of mule deer crucial winter range. Long-term affects remain to be seen, but overall should improve ecosystem health. Short-term effects include noxious weed outbreaks, loss of mixed mountain shrub communities, and loss of thermal, fawning and security cover. Initial reports indicate there was direct mortality on mule deer, but to what extent is unknown. Managers plan to work with state, federal and private land managers to provide technical assistance for habitat rehabilitation.

Drought conditions have also affected perennial streams. The North Platte River at North Gate is flowing at 150 cfs, the 98-year average is 800 cfs. The Laramie River at Bosler, WY is flowing at 5 cfs, the 98-year average is 200 cfs. The North Laramie River, Horseshoe Creek and Cottonwood Creek are dry as they cross Interstate Highway 25. Landowners have started to de-stock cattle herds because of lack of grass throughout southeast Wyoming.

Weather conditions from 2010-2011 were the complete opposite when compared to 2012. Winters were more severe and spring/summer precipitation was well above average. Major flooding events occurred during 2010-2011, reservoirs were filled and grass/forb/shrub production increased compared to long term averages.

Juvenile mortality during the 2010 and 2011 winters appeared normal to excessive based on ratios throughout southeast Wyoming Mule Deer Herd Units compared to the five-year average (Table 1). During the mild winter of 2011/12 juvenile mortality was likely negligible. Neonate mortality for 2012 appears to be excessive based on few fawns observed due to excessive drought and fire conditions. It is expected that female mule deer will go into the winter of 2012/13 in poor condition resulting in below average birth rates for the 2013 biological year and herd units will experience a decrease in population.

Table 1. Southeast Wyoming Mule Deer Fawn Ratio comparisons.

Mule Deer Herd Unit	2011 Fawn Ratios:100 Does	Five-Year Average Fawn Ratio
Laramie Mountains Herd Unit	50 Fawns: 100 Does	57 Fawns: 100 Does
Shirley Mountains Herd Unit	58 Fawns: 100 Does	61 Fawns: 100 Does
Sheep Mountain Herd Unit	55 Fawns: 100 Does	60 Fawns: 100 Does

HABITAT CONDITIONS/ASSESSMENT

The reader is referred to Appendix B for a full habitat report containing vegetation sampling within the Laramie Mountains Mule Deer Herd Unit. Based on samples taken within the Richeau Hills in 2001 and 2003, shrub conditions continue to fluctuate with spring/summer precipitation events, while at the same time nutrient levels remain below adequate levels in shrub stands that have not been treated either mechanically or with fire. Protein content averaged around 8% in the fall.

Typically females need a diet with 13-14 % protein to produce healthy offspring. Female mule deer going into winter relying on a diet with low energy and protein were less likely to provide the required nutrients for their fawns and experienced higher mortality rates the first 48 hours following parturition (deVos et al. 2003).

The 2012 fire season will result in the removal of thousands of acres of climax vegetation. This will provide early successional communities favored by mule deer in forest habitats by increasing the amount and quality of forage (deVos et al. 2003). Fire typically improves protein content in young forbs, grasses and shrubs and greatly enhances in vitro digestible organic matter in winter diets (deVos et al. 2003).

POPULATION

Table 2. Postseason Classification Data, MD537, 2006-2011.

2006 - 2011 Postseason Classification Summary

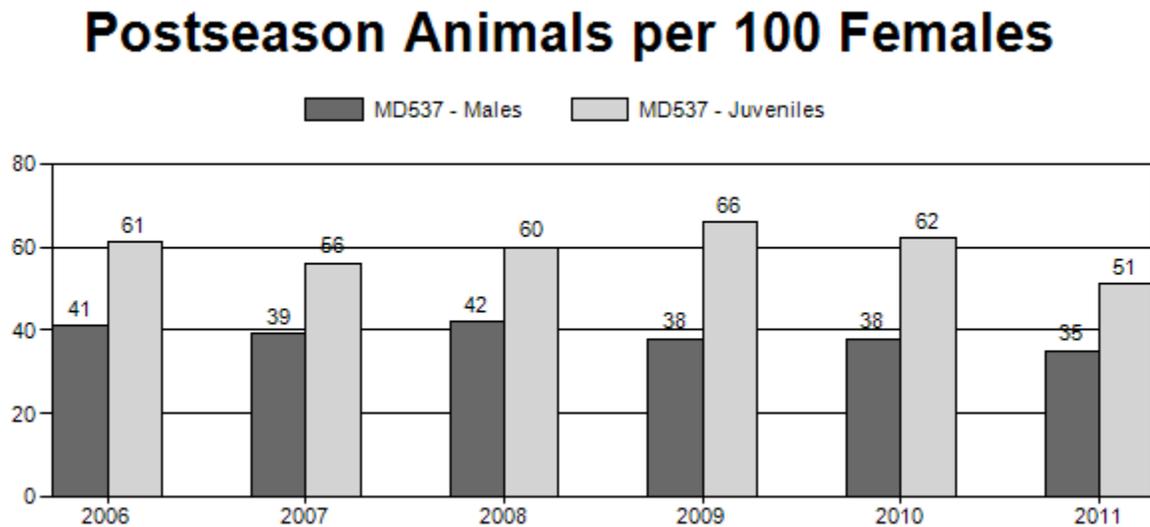
for Mule Deer Herd MD537 - LARAMIE MOUNTAINS

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	CIs Obj	Males to 100 Females				Young to		
		YIng	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2006	28,000	170	359	529	20%	1,278	49%	781	30%	2,588	1,375	13	28	41	± 0	61	± 0	43
2007	25,000	96	356	452	20%	1,166	51%	657	29%	2,275	1,214	8	31	39	± 0	56	± 0	41
2008	28,000	101	335	436	21%	1,034	49%	623	30%	2,093	1,180	10	32	42	± 3	60	± 4	42
2009	27,000	155	395	550	19%	1,433	49%	952	32%	2,935	1,245	11	28	38	± 0	66	± 0	48
2010	22,500	205	425	630	19%	1,639	50%	1,015	31%	3,284	1,202	13	26	38	± 0	62	± 0	45
2011	22,750	102	296	398	19%	1,122	54%	570	27%	2,090	1,263	9	26	35	± 3	51	± 3	38

Sample size for the postseason classification data was met during all six report years (Table 2). Classification data was obtained using a combination of aerial surveys (Bell Jet Ranger~ 12 hours survey time) and approximately 40-50 hours ground time. Buck ratios were well above the recreational management range of 20-29 bucks:100 does. However, they have declined over the last six years, prompting concern among managers over deer quality and quantity.

For the past five years, fawn ratios have remained below the level identified by Unsworth et al. (1999) that are needed to increase the population and this ratio decreased further in 2011. The assumption was made that increased precipitation levels during the springs of 2010 and 2011 would translate to increased fawn production. However, wet springs coupled with severe winter conditions and old, decadent shrubs which supply below adequate nutrient requirements for lactating does resulted in poor fawn recruitment.

Graph 1. MD537 Post-season Classification Data, 2006-2011



Fawn and buck ratios trended downward from 2006-2011 (Graph 1). Buck ratios most likely decreased due to poor winter range shrub condition coupled with the severe winters of 2009/10 and 2010/11.

The population simulation using POP II is anchored to observed juvenile ratios and yearling harvest percentages while simulating yearling buck, 2+ bucks, mature bucks ratios at levels higher than observed. Simulations appear to track observed ratios adequately providing reasonable population estimation.

The WGFD will change the way ungulate populations are estimated starting biological year 2012. POP II will be replaced by Spreadsheet Models that were developed by G. White and B. Lubow, of the Colorado Division of Wildlife. Based on input from T. Morrison of the Wyoming Cooperative Fish and Wildlife Research Unit, the Spreadsheet Model provides a more statistically rigorous way to estimate population sizes and to compare different models (Morrison, 2012).

HUNTING SEASON

LARAMIE MOUNTAINS MULE DEER HERD (MD537)
HUNT AREAS 59, 60, 62, 63, 64, 73
2011 HUNTING SEASONS

HUNT AREA	TYP E	OPENS	CLOSES	LIMITATIONS
*59,*62,*63 *CWD Area	GEN	OCT. 15	OCT. 31	General license; antlered deer, except the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Research Center at Sybille shall be closed
*59 *CWD Area	6	OCT. 15	NOV. 30	L.Q.; 25 10 licenses doe or fawn valid south of Laramie County Road 237.
*62,*63,*64 *CWD Area	6	OCT. 15	OCT. 31	L.Q.; 200 licenses doe or fawn, valid on private land
		NOV. 1	DEC. 15	Unused Area 62, 63, 64 Type 6 licenses valid for doe or fawn white-tailed deer
*60 *CWD Area	1	OCT. 20	NOV. 5	L.Q.; 100 licenses antlered deer on national forest, any deer off national forest; All lands within Curt Gowdy State Park, archery only
	2	OCT. 20	NOV. 5	L.Q.; 150 licenses any deer off national forest; all lands within Curt Gowdy State Park, archery only
		NOV. 6	NOV. 30	Unused Area 60 Type 1 and Type 2 licenses valid for doe or fawn white-tailed deer off national forest; all lands within Curt Gowdy State Park, archery only
	6	OCT. 20	NOV. 5	L.Q.; 50 licenses doe or fawn valid in that portion of Area 60 in Laramie County; all lands within Curt Gowdy State Park, archery only
		NOV. 6	NOV. 30	Unused Area 60 Type 6 licenses valid for doe or fawn white-tailed deer; all lands within Curt Gowdy State Park, archery only
*64 *CWD Area	GEN	OCT. 15	OCT. 31	General license; antlered deer, except the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Habitat Management Area and the Laramie Peak Wildlife Habitat Management Area north of the Tunnel Road (Albany County Rd 727), shall be closed
	2	OCT. 15	OCT. 31	L.Q.; 150 licenses antlered deer
*73 *CWD Area	GEN	OCT. 15	OCT. 31	General license; antlered deer
ARCHERY 59-64,73		SEPT. 1	SEPT. 30	Refer to Section 3 of this Chapter

The 2011 season is designed to take advantage of a surplus number of bucks and focus effort on the females segment in isolated areas. There were a total of 260 type 6 licenses available, which was 11% of total license sales. The population is currently

24% below the objective so the focus is to try and increase the population by implementing a restrictive doe season.

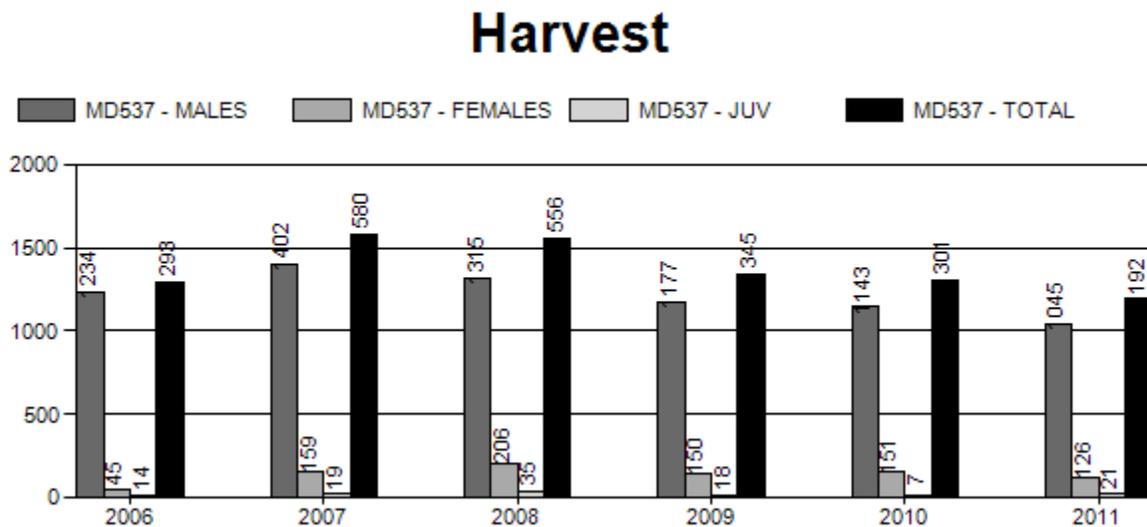
HARVEST

Table 3. MD537 Harvest Data, 2011.

Area	Type	Active Lic/Htrs	Buck	Doe	Fawn	Total	Success	Days/Harvest	Licenses Sold
2011									
59 LITTLE BEAR									
	General	129	54	0	0	54	41.90%	7.8	
	Type 6	7	0	4	0	4	57.10%	4	10
	Pooled Total	136	54	4	0	58	42.60%	7.6	
	Pooled Resident	101	39	0	0	39	38.60%	8.1	
	Pooled Nonresident	35	15	4	0	19	54.30%	6.4	
60 POLE MOUNTAIN									
	Type 1	86	42	2	0	44	51.20%	13	103
	Type 2	121	62	28	4	94	77.70%	5.1	153
	Type 6	23	0	16	2	18	78.30%	6.2	52
	Pooled Total	214	104	46	6	156	72.90%	7.4	
	Pooled Resident	168	67	46	6	119	70.80%	8.1	
	Pooled Nonresident	46	37	0	0	37	80.40%	5.4	
62 IRON MOUNTAIN									
	General	114	59	0	0	59	51.80%	7.5	
	Type 6	13	0	3	3	6	46.20%	15.7	200
	Pooled Total	124	59	3	3	65	52.40%	8.2	
	Pooled Resident	75	33	0	0	33	44%	8.9	
	Pooled Nonresident	49	26	3	3	32	65.30%	7.5	
63 RICHEAU									
	General	245	159	4	0	163	66.50%	6	
	Type 6	19	0	14	3	17	89.50%	1.6	0
	Pooled Total	258	159	18	3	180	69.80%	5.6	
	Pooled Resident	164	91	15	0	106	64.60%	5.7	
	Pooled Nonresident	94	68	3	3	74	78.70%	5.4	
64 LARAMIE PEAK									
	General	1208	552	15	0	567	46.90%	9.7	

Type 2	129	61	0	0	61	47.30%	13.6	153
Type 6	75	0	40	9	49	65.30%	4.7	0
Pooled Total	1377	613	55	9	677	49.20%	9.7	
Pooled Resident	998	430	34	6	470	47.10%	10.2	
Pooled Nonresident	379	183	21	3	207	54.60%	8.7	
73 BOSWELL								
General	201	56	0	0	56	27.90%	15.9	
Pooled Total	201	56	0	0	56	27.90%	15.9	
Pooled Resident	135	34	0	0	34	25.20%	18	
Pooled Nonresident	66	22	0	0	22	33.30%	12.8	
2011 Hunt Area								
Total	2310	1045	126	21	1192	51.60%	8.9	671
2011 Herd Total	2225	1045	126	21	1192	53.60%	8.9	671
*Active Licenses								

Graph 2. MD537 Harvest Data, 2006-2011

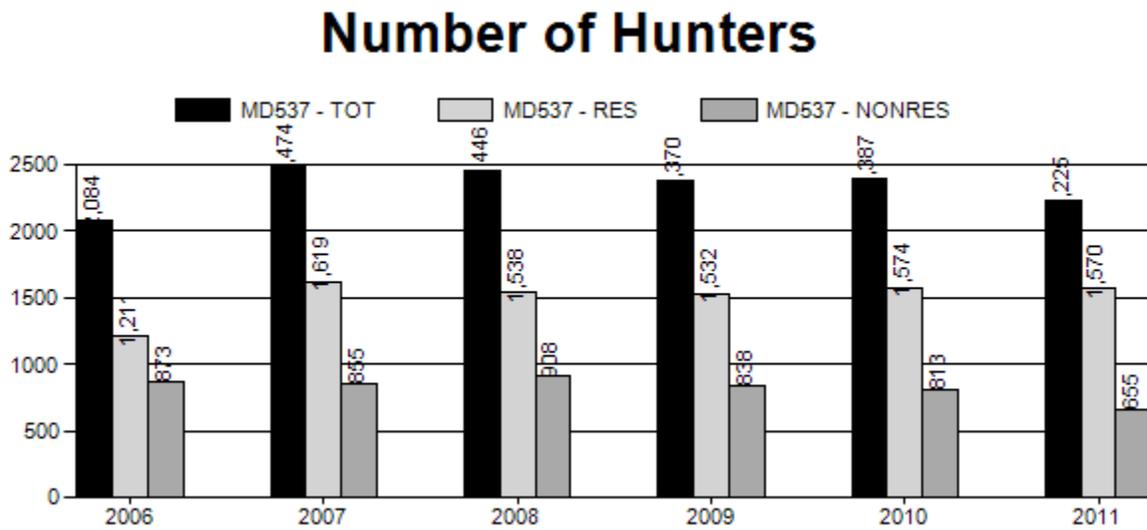


In 2011 mule deer harvest decreased compared to both 2010 data and the five-year average of 1,415 (Graph 2). Doe and fawn harvest made up a very small percentage of the overall harvest (~10%) and was determined by the number of Type 6 licenses issued. Buck harvest in 2011 followed total deer harvest trends and decrease compared to both 2010 results and the five-year average of 1,254 (Graph 2). The same season structure has been in place since 2007 (in 2006 there were more male deer harvested than the 16 day season in 2011) so season length was not an issue. Given 2011 post-season buck ratios decreased compared to the five-year average, fewer male deer harvested seems plausible. It cannot be determined if this decreased buck harvest

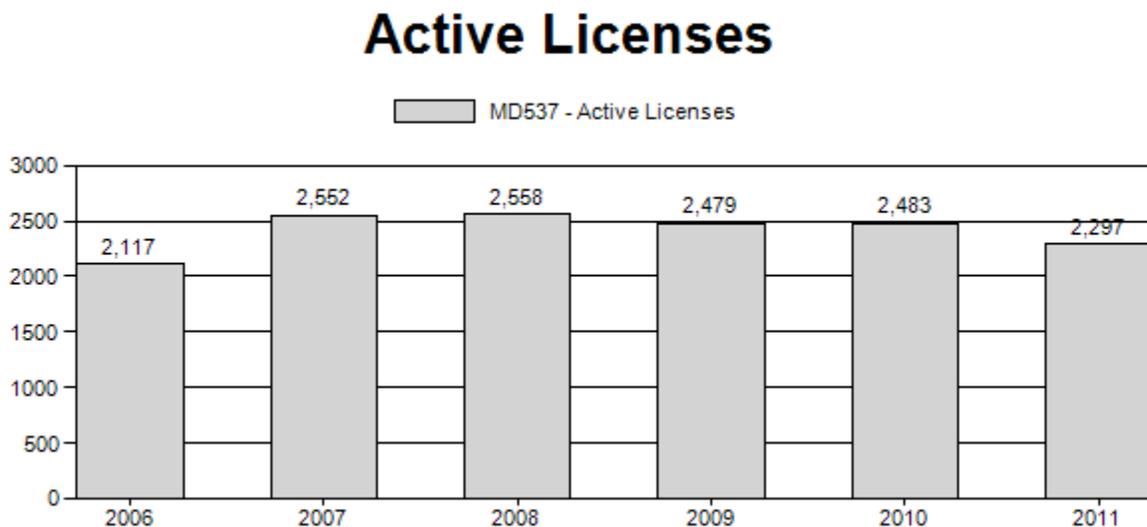
is the result of a decline in the number of males or is a result of abnormally warm temperatures during the season.

In 2011 Hunt Area 63 had the highest success and Hunt Area 64 had the highest harvest (58% of the herd unit), while Hunt Area 73 had the lowest success and Hunt Area 59 had the lowest harvest (Table 3). Hunt Area 73 has very low deer densities, (typically only 5-10% of the post-season classification sample size) and Hunt Area 59 is predominately private land with low deer densities in the eastern half.

Graph 3. MD537 Active License Hunters, 2006-2011.

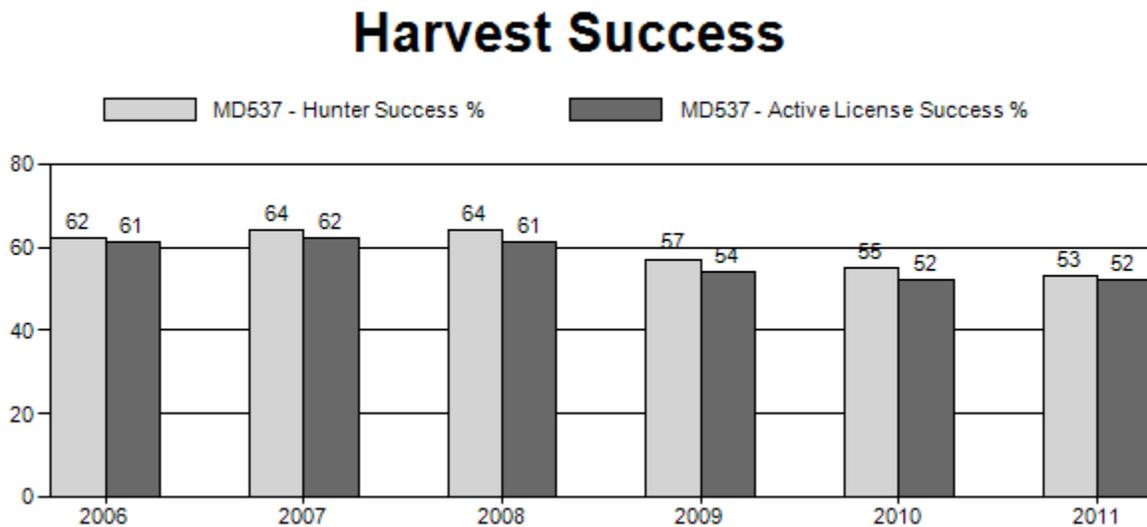


Graph 4. MD537 Hunter Numbers, 2006-2011.

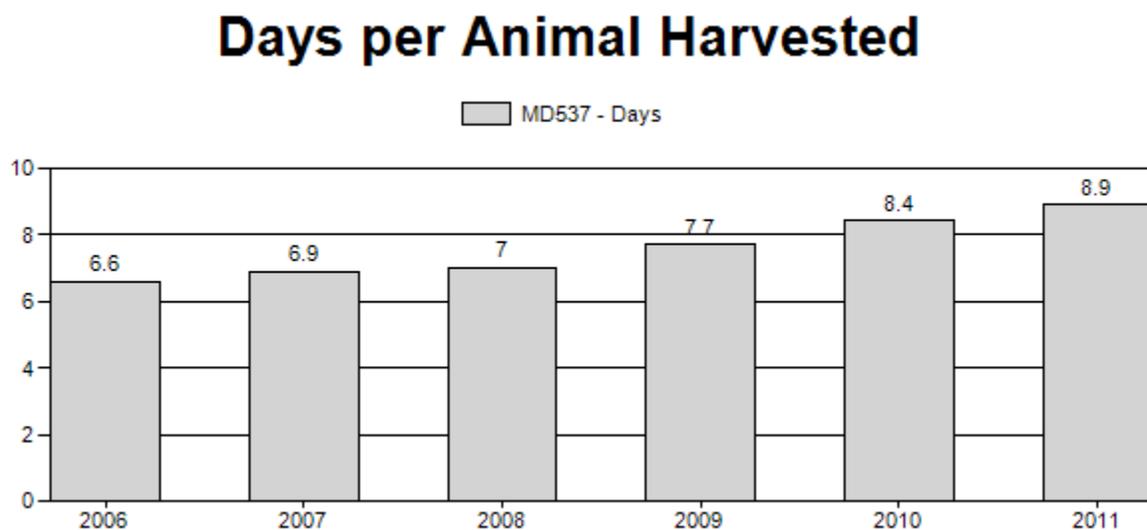


The number of active licenses is slightly higher than hunter numbers due to the small numbers of Type 6 licenses available in conjunction with a general deer license (Graphs 3 and 4). Deer hunters could only obtain a total of two Type 6 licenses in conjunction with a general deer license after the initial draw. Hunter and active license numbers have slowly decreased in the last five years (Graphs 3 and 4). This decrease is most likely a result of loss of access, decreased buck ratios, poor weather conditions comprised of hot and dry weather.

Graph 5. MD537 Success Data, 2006-2011.



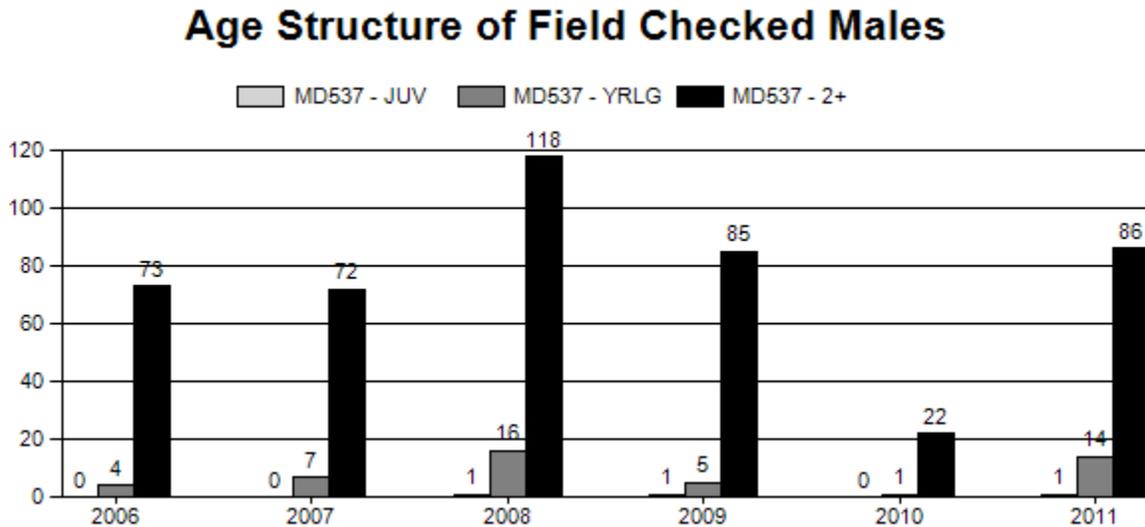
Graph 6. MD537 Days per Animal Harvested Data, 2006-2011.



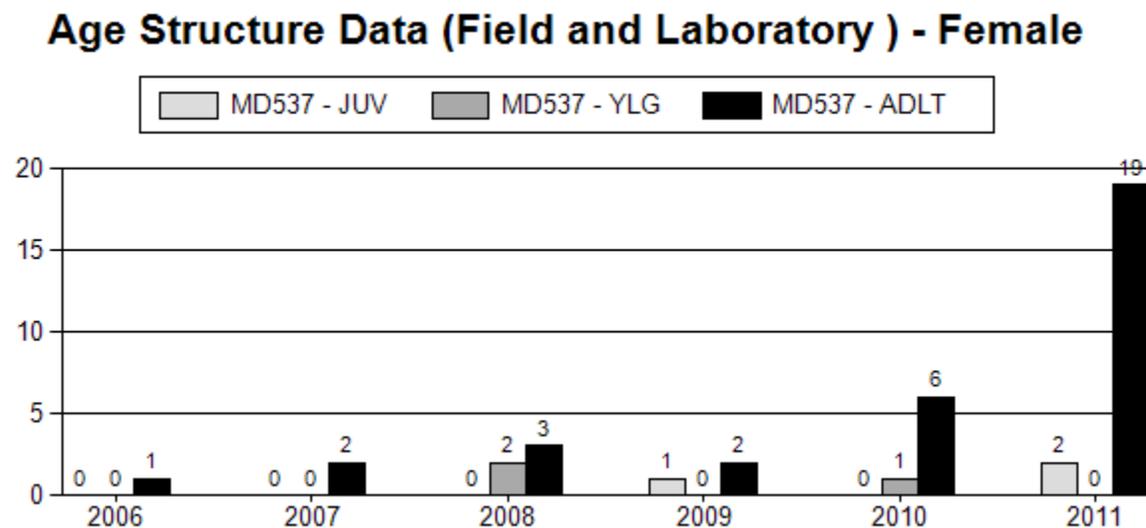
Harvest data clearly indicates that hunters have been having a more difficult time finding mule deer. Success has decreased (Graph 5) while effort has an increased (Graph 6).

These statistics support population simulations along with decreases in observed buck and fawn ratios. There are numerous parameters affecting mule deer within the Laramie Mountains. Drought and poor habitat conditions have resulted in poor fawn survival, which correlates to poor buck recruitment. Chronic Wasting Disease has increased from a prevalence rate of 14% in 1997 to 28% in 2011. However, the actual impact of this increase in CWD prevalence is unknown.

Graph 7. MD537 Hunter Field Checked Males, 2006-2011



Graph 8. MD537 Hunter Field Checked Females, 2006-2011.



The majority of field checked males are greater than two years old, 86% in 2011 and five-year average slightly lower at 8% (Graph 7). Compared to classification data this is

significantly lower than 2011 (32%) and the five-year average of 27% (Table 2). This inconsistency is most likely due to the fact that the majority of hunting occurs on private land where hunters are more selective for older age deer. Check stations are set up on main thoroughfares from public lands. However, many of the deer that are checked also come from private land, as well as outfitter camps. There are very few females checked in the field (Graph 8) due to conservative seasons with very few Type 6 licenses available (n=260, 11% of license sales).

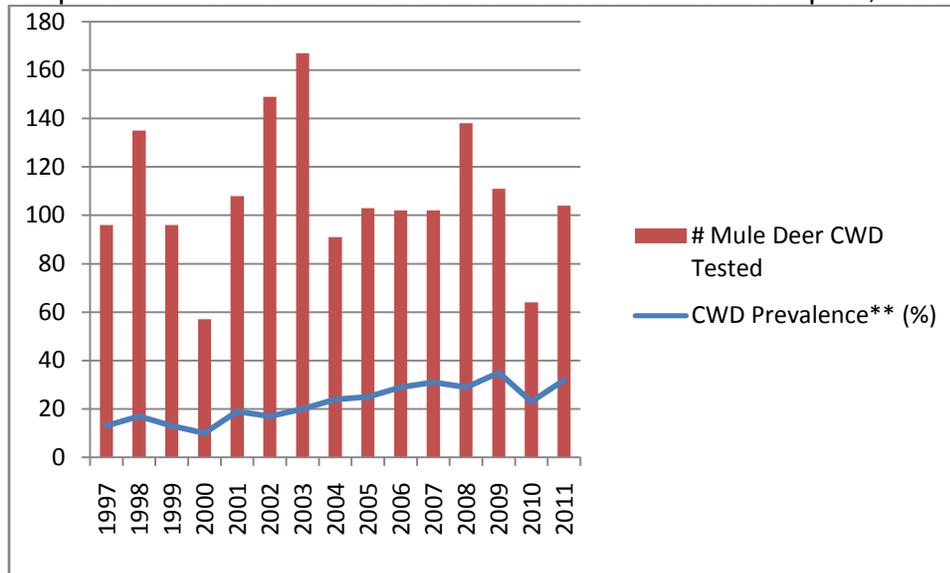
OTHER MANAGEMENT ISSUES

Chronic Wasting Disease

An intensive effort began during the 1997 hunting season to determine the prevalence of chronic wasting disease (CWD), a transmissible spongiform encephalopathy that is fatal to members of the deer family (Williams, 2005). Efforts were increased in 2003 by established check stations in Wheatland, Cheyenne, Tunnel Road and Medicine Bow for the first five days of the season collecting lymph nodes to be tested for CWD, and harvest data. Subsequent check stations were set up during the 2004-11 seasons. Efforts were reduced in 2005 by eliminating the Cheyenne check station and reducing staffing on the remaining check stations to two days.

The prevalence rate of CWD has increased since 2000. This increase may be a reflection of increased testing effort rather than a substantial increase in actual prevalence. The cumulative prevalence rate for this Herd Unit is around 19% (Graph 9). All six hunt areas now have at least one documented CWD positive deer. Area 64 continues to have the highest number of deer tested and also the highest CWD prevalence in the herd unit (28% in 2011). The number of animals tested dropped after 2003 due to the focus of surveillance efforts shifting to other areas of the state. With the exception of 2010 sample submission has remained at around 100 animals. Testing decreased in 2010 due to a lack a biologist presence.

Graph 9. MD537 CWD Prevalence Rates and Deer Samples, 1997-2011



There are two research projects taking place at this time to study the effects of CWD on mule deer population performance. One study is occurring on the front range of Colorado, the other is taking place in the South Converse Mule Deer Herd Unit. The overall objective of the South Converse Mule Deer Herd Unit five year study is to determine if and how chronic wasting disease (CWD) impacts mule deer at the population level. CWD-positive and CWD-negative mule deer (*Odocoileus hemionus*) will be monitored in a geographic area of Wyoming with very high (>40%) CWD prevalence to determine the following parameters among the two sub-populations: a) disease status (at capture, annually, and/or at death); b) survival rate; c) fecundity/recruitment; d) finite rate of population growth; e) condition indices; f) home range size and habitat use; g) dispersal rates; and h) genetic susceptibility to CWD.

HABITAT

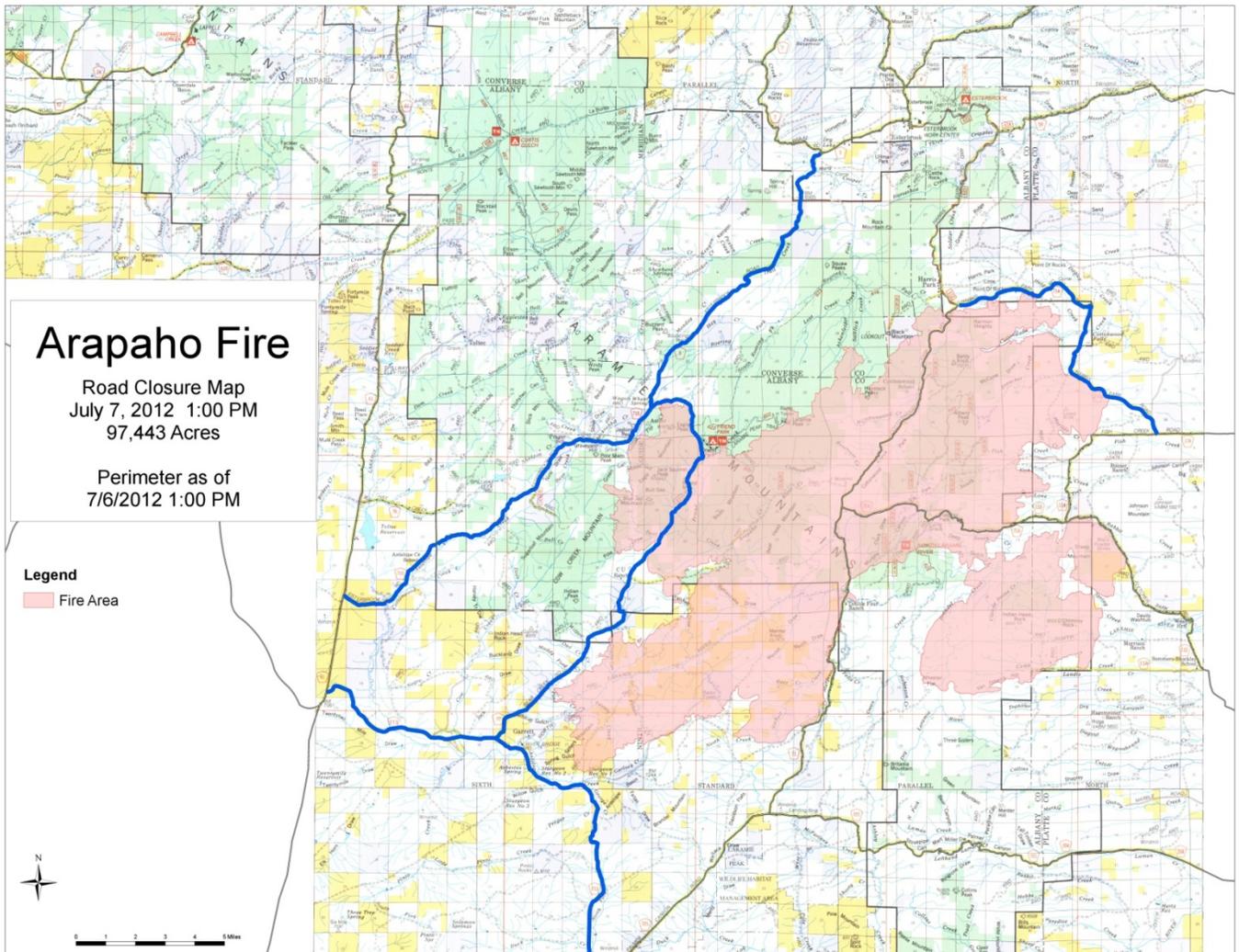
There is currently one habitat project within the Laramie Mountains Mule Deer Herd Unit. This is the Iron Mountain Prescribed Burn Project (Attachment A). Phase 1 has been completed and phase 2 is scheduled for fall of 2012. Total acres burned in the Laramie Mountains since 1997 are approximately 7,500.

In addition there have been approximately 130,000 acres burned by wildfires since 2011. Approximately 12,000 acres burned in 2011 in Hunt Area 64. Areas that burned include Poe Mountain and Squaw Mountain. Tentatively a portion of those areas are scheduled for cheatgrass (*Bromus tectorum*) control aerial treatment fall of 2012.

The wildfires during 2012 have so far all burned in Hunt Area 64, which includes: 1) Arapahoe Fire~100,000 acres (Figure 1), 2) Cow Camp Fire~8,500 acres, 3) Russell Camp Fire~5,400 acres. A majority of mule deer occupied habitat burned in these fires. Mule deer mortality was also noted by fire fighters but to what extent is unknown.

Long-term effects will be positive by setting climax plant communities back to early seral stages. Nutrient and digestibility will greatly be enhanced. Short-term effects will be loss of thermal/security/fawning cover and winter browse. Increased noxious weed outbreaks will most likely occur in areas that burned intensely. Vegetation rehabilitation plans will be cooperatively designed with federal, state and private land managers.

Figure 1. Arapahoe Fire, July, 2012



RECOMMENDATIONS

1. Continue to monitor CWD for the 2012 season. Apply any data resulting from the Colorado and South Converse Mule Deer Studies.
2. Continue to use prescribed fire as a tool to set back shrub communities to early successional plant communities to improve overall habitat conditions. Work with federal, state and private land managers to rehabilitate areas burned from 2011 and 2012 wild fires.
3. Increase data collection throughout the herd unit in order to use it as a benchmark for other similar herd units where there is little management ability and lacking data.
4. Work with non-government organizations and private landowners to establish conservation easements on private land to preclude development and conserve wildlife habitat.

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Unsworth, JW, Pac DF, White GC, and Bartmann BC: Mule deer survival in Colorado, Montana, and Idaho. J. Wildl. Manage. 63(1):315-326, 1999

Williams ES: Review Article, Chronic Wasting Disease. Vet Pathology 42:530-549, 2005

Iron Mountain Prescribed Burn

Project Description

The project is a prescribed fire treatment in the central portion of the Iron Mountain allotment. The burn is planned to be apply in two phases, Phase 1 treatment contains approximately 2,200 acres and Phase 2 approximately 1,500 acres (Table 1). The first phase will be conducted in the spring or fall of 2009 and/or in later years whenever conditions, funding, and manpower allow implementation. Once Phase 1 is completed and has been determined to meet the burn objectives then Phase 2 will be implemented to the north. Ignitions will be accomplished primarily by use of a vehicle-mounted terra-torch from existing roads and two-tracks and by hand carried drip-torches in areas where more close control of lighting operations is required.

Phase 1- Completed

Treat (blacken) 1,320 to 2,200 acres (or 60 to 100%) of the dense mountain mahogany and bitter brush communities with 40% or higher canopy cover. This Phase contains a much higher percentage of mountain mahogany to bitterbrush as compared to the Phase 2 site. The prescribed burn perimeter is bordered by two-track or improved roads on all sides. The north border follows a pasture fence and two-track road.

Phase 2- Scheduled for Fall of 2012

Treat (blacken) 900 to 1,500 acres (or 60 to 100%) of the dense mountain mahogany and bitter brush communities with 40% or higher canopy cover. As a result of the increase amount of bitterbrush in this phase, resource objectives would include minimal soil heating. This would improve bitterbrush resprouting post burning. The south and east sides of this phase are bordered by two tracts and/or improved roads on the west side. The east side is also bounded by Spring Creek. The north side is bordered by lighter fuels but does not have a road as a boundary.

Table 1 below lists the land status for the project area.

Table 2	BLM acres	Private Acres	Totals
Total Burn Acres	1,129	2,473	3,602
Phase1	676	1,451	2127
Phase2	453	1,022	1475
% of total project	31%	69%	
% of Phase 1	32%	68%	
% of Phase 2	31%	69%	

Goals

The proposed action would treat vegetation by prescribed burning to achieve a more natural mixture of grasses and shrubs, as well as stratifying successional stages of upland shrub communities measured by overall shrub composition, density, aerial cover, and age class structure.

The primary goals of this project are to: 1) Reduce fuel loading and reintroduce fire into a fire dependant ecosystem 2) increase the quality of true mountain mahogany communities available to mule deer on crucial winter ranges; 3) increase the quantity and quality of herbaceous forages available to mule deer on crucial winter ranges; 4) setback succession in true mountain mahogany communities allowing for recruitment of young plants and creating uneven aged stands across the landscape; 4) improve habitat diversity for other wildlife species (i.e., small game, upland gamebirds, etc.); and 5) improve livestock grazing distribution by increasing the quality, quantity and availability of herbaceous forage 6) increase vigor of mountain mahogany, bitterbrush, and mountain shrubs and to improve the composition of grasses and forbs, leading to an increase in vigor and cover of the entire plant community.

The canopy cover in sites most likely to carry fire varies from 40 to 50% shrub cover, with an increase in cover towards the upper slopes near the rim. Pre-treatment conditions have been documented and post-treatment succession will be monitored through photo-points and transects.

In order to improve area that is used by big game, the burn plan would call for burning in a mosaic pattern leaving areas of unburned mountain mahogany and bitterbrush, and providing for a natural edge effect between treated and untreated polygons.

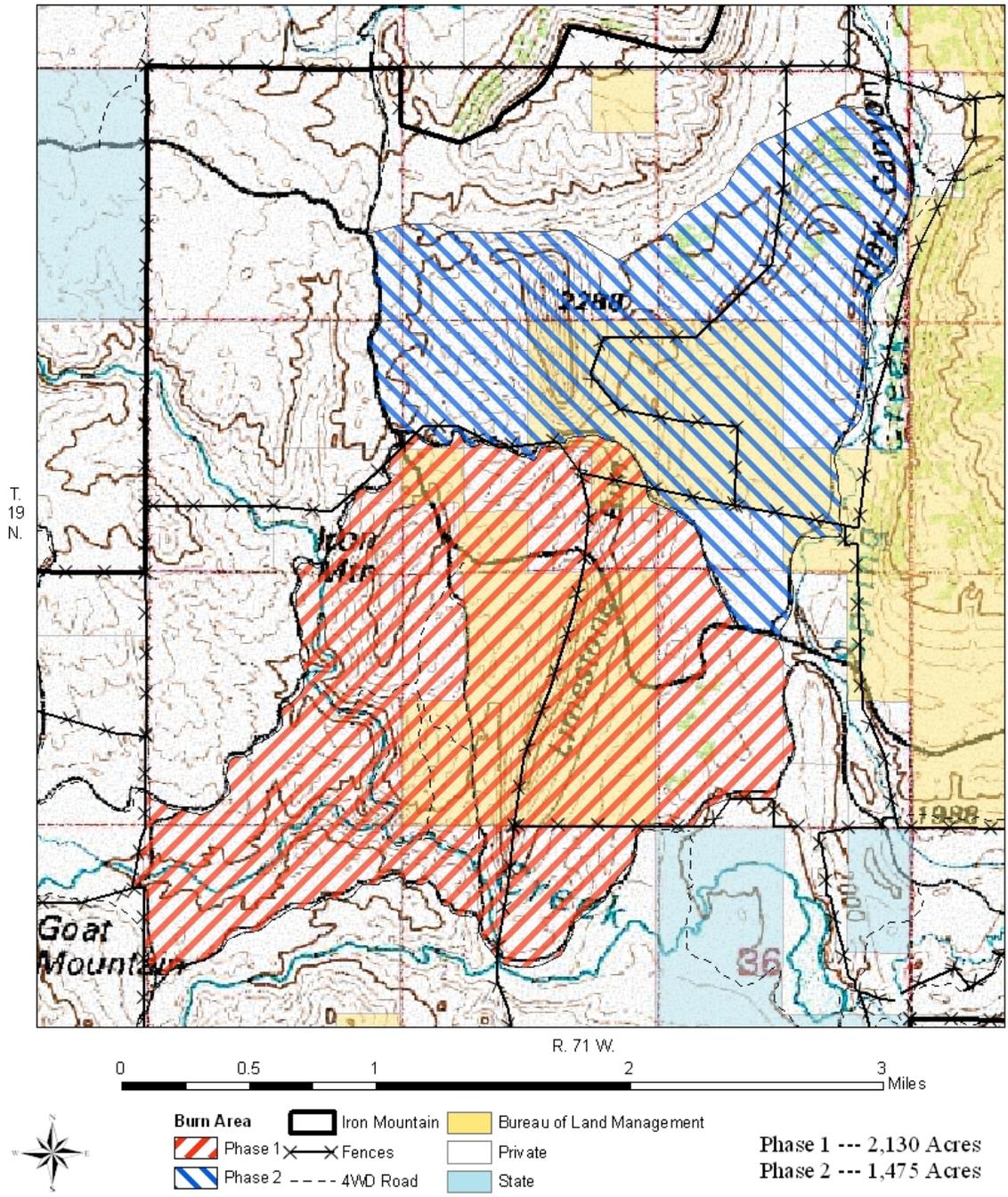
Special management constraints:

- 1) *Minimize smoke impacts or other safety considerations to the town of Chugwater.*
- 2) *Mitigate the safety concerns for one aerial powerline that cross through the project.*

Post-treatment livestock grazing will be authorized following current State guidance to provide for two growing seasons deferment. Livestock grazing use would not be authorized prior to August 1 or when seed set of upland grasses has occurred. Livestock grazing use would be authorized in the Phase 1 project area prior to burning, with the stipulation that livestock grazing would be managed to allow for enough of the fine fuel to be in place once livestock are removed. Livestock use will be shifted to other pastures or allotments to ensure rest from grazing post treatment. This practice may be continued for a third year or longer if needed to provide vegetative recovery of burned locations. Livestock use of the treated pasture within the two grazing seasons following treatment would be warranted during dormant season in this instance by the desire to stimulate mountain shrub regeneration, while precluding adverse impacts to herbaceous vegetation and overall watershed health.

The proposed action would be monitored by the range/wildlife and fuels staff of the Rawlins Field Office and the livestock operator. Monitoring includes pre-burn shrub canopy cover and mountain shrub density transects and post-burn vegetation response. Photo-points have been established to help document baseline information and future changes following treatment.

Map 1 Iron Mountain Prescribed Burn



LARAMIE MOUNTAINS MULE DEER HERD (MD537)
HUNT AREAS 59, 60, 62, 63, 64, 73
2012 HUNTING SEASONS

HUNT AREA	TYPE	OPENS	CLOSES	LIMITATIONS
*59, *62, *63 *CWD Area	GEN	OCT. 15	OCT. 31 25	General license; antlered mule deer or any white-tailed deer, except the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Research Center at Sybille shall be closed
*59 *CWD Area	6	OCT. 15	NOV. 30	L.Q.; 25-10 licenses doe or fawn valid south of Laramie County Road 237.
*62, *63, *64 *CWD Area	6	OCT. 15	OCT. 31	L.Q.; 200 150 licenses doe or fawn, valid on private land
		NOV. 1	DEC. 15	Unused Area 62, 63, 64 Type 6 licenses valid for doe or fawn white-tailed deer
*60 *CWD Area	1	OCT. 20	NOV. 5	L.Q.; 100 licenses antlered deer on national forest, any deer off national forest; All lands within Curt Gowdy State Park, archery only
	2	OCT. 20	NOV. 5	L.Q.; 150 licenses any deer off national forest; all lands within Curt Gowdy State Park, archery only
		NOV. 6	NOV. 30	Unused Area 60 Type 1 and Type 2 licenses valid for doe or fawn white-tailed deer off national forest; all lands within Curt Gowdy State Park, archery only
	6	OCT. 20	NOV. 5	L.Q.; 50 licenses doe or fawn valid in that portion of Area 60 in Laramie County; all lands within Curt Gowdy State Park, archery only
		NOV. 6	NOV. 30	Unused Area 60 Type 1, Type 2 and Type 6 licenses valid for doe or fawn white-tailed deer; all lands within Curt Gowdy State Park, archery only
*64 *CWD Area	GEN	OCT. 15	OCT. 31 25	General license; antlered mule deer or any white-tailed deer, except the Wyoming Game and Fish Commission's Tom Thorne/Beth Williams Wildlife Habitat Management Area and the Laramie Peak Wildlife Habitat Management Area north of the Tunnel Road (Albany County Rd 727), shall be closed to general license hunters
	2	OCT. 15	OCT. 31 25	L.Q.; 450 100 licenses antlered deer
*73 *CWD Area	GEN	OCT. 15	OCT. 31 25	General license; antlered deer
ARCHERY 59-64,73		SEPT. 1	SEPT. 30	Refer to Section 3 of this Chapter

CHANGES FOR 2012

- Eliminate Hunt Area 59 Type 6 Licenses
- Decrease season length in General Hunt Areas 59, 62, 63, 64, 73 and Hunt Area 64 Type 2 from Oct. 15 – Oct. 31 to Oct. 15 - Oct 25
- Decrease Hunt Area 64 Type 2 licenses from 150 to 100
- Have a any white-tailed deer season in Genera Hunt Areas 59, 62, 63, 64
- Decrease the Region J Licenses from 1,800 to 1,000

Hunt Area	License Type	Proposed Change
59,62,63,64,73	General License	Decrease season closing date from Oct. 31 to Oct. 25
59	6	Remove license type
64	2	-50 licenses; decrease season closing date from Oct. 31 to Oct. 25
62-64	6	-50 licenses
Region J	Nonresident General	-800 licenses

2012 Season

- The 2011 post-season population of 22,750 is 22% below objective of 29,000.
- Buck ratios have decreased since 2006.
- Herd Unit Success and effort have mimicked Hunt Area 64, which has 50% of the harvest, hunters and majority of access. These harvest statistics indicate the population has decreased with an increase in effort and a decrease in success over a five-year period.
- Continue to have a limited number of doe/fawn licenses available in areas where there is crop damage
- CWD continues to affect this population (five-year average prevalence rate of 29% and in 2011 it was 32%), but to what extent is unknown. There are two CWD studies going on at this time, one in northern Colorado and the second in hunt area 65 that should shed light on CWD prevalence rates and how the disease is affecting the population.
- Reduce regulation confusion by adding “to general license hunters” at the end of the limitations portion of Hunt Area 64 General license.
- Region J licenses; We propose to reduce the Region J licenses from 1,800 to 1,000. Regions A, B and D are proposed to reduce their quotas. Anticipating hunters that are unsuccessful in the license draw for Regions A, B and D will pick up a Region J license, thus increasing hunting pressure on public lands, where we are proposing to reduce pressure with a earlier season. Licenses sales since 2007 are the following: **2007**-1,360, **2008**-1,393, **2009**-1,225, **2010**-1188, **2011**-949.
- The 2012 proposed season is expected to harvest around 955 bucks, 125 does, and 20 fawns for a total of 1,100 mule deer in 2012, with a post-season population estimate around 20,000 mule deer.

Laramie Mountians Mule Deer Model

Data from 1990 to 2012

Simulation from 2002 to 2012

Age Class	Init Pop. Prop.		Presn Mort%		Postsn Mort%		Effort Set 1		Effort Set 2	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	142.0	142.0	50.0	50.0	35.0	35.0	1.00	1.00	1.00	1.00
1	45.0	45.0	2.0	2.0	5.0	5.0	0.35	1.00	1.40	1.00
2	30.0	40.0	2.0	2.0	6.0	5.0	1.00	1.00	1.00	1.00
3	20.0	25.0	2.0	2.0	6.0	5.0	1.00	1.00	1.00	1.00
4	15.0	20.0	2.0	2.0	6.0	5.0	1.00	1.00	1.00	1.00
5	10.0	19.0	2.0	2.0	10.0	5.0	1.00	1.00	1.00	1.00
6	8.0	18.0	2.0	2.0	15.0	10.0	1.00	1.00	1.00	1.00
7	6.0	16.0	2.0	2.0	25.0	20.0	1.00	1.00	1.00	1.00
8	4.0	14.0	2.0	2.0	40.0	30.0	1.00	1.00	1.00	1.00
9	2.0	12.0	2.0	2.0	65.0	40.0	1.00	1.00	1.00	1.00
10	1.0	10.0	2.0	2.0	80.0	50.0	1.00	1.00	1.00	1.00
11	0.0	5.0	2.0	2.0	95.0	60.0	1.00	1.00	1.00	1.00
12	0.0	3.0	2.0	2.0	100.0	75.0	1.00	1.00	1.00	1.00
13	0.0	1.0	2.0	2.0	100.0	100.0	1.00	1.00	1.00	1.00
Sum =		653.0	Estimated Sum = 31000		Subadults: Ages 0 to 0					

Bio-Year	Preseason MSI	MSI Function is Linear			Postseason MSI	Effort & Wound Set Used
		Harvest Subadults#	Des. Pop Males#	Size in NA Females#		
1990	0.86	48	1614	679	0.80	0
1991	1.11	44	1891	643	1.00	1
1992	1.21	74	1737	1041	2.00	1
1993	1.46	43	1344	758	1.00	1
1994	1.40	0	1188	194	1.00	1
1995	1.20	5	963	38	1.00	2
1996	1.22	7	824	20	0.80	1
1997	1.00	3	714	18	0.80	0
1998	0.97	0	890	18	1.00	1
1999	1.03	0	1386	12	2.00	1
2000	1.06	2	1170	18	0.10	2
2001	1.16	0	1013	37	1.50	1
2002	1.40	0	929	27	2.00	2
2003	1.06	0	1002	29	1.50	2
2004	1.12	13	1010	103	0.02	0
2005	0.97	3	1109	49	1.00	1
2006	1.13	14	1244	45	1.30	1
2007	1.24	19	1402	159	1.10	1
2008	1.19	35	1315	206	1.10	1
2009	1.10	17	1192	156	1.10	1
2010	1.14	7	1143	151	1.40	1
2011	1.31	21	1049	124	1.90	1
2012	1.26	20	955	125	1.70	1
Set 1	Wounding Loss	10.0%	10.0%	10.0%	Yearling Male	10.0%
Set 2	Wounding Loss	10.0%	10.0%	10.0%	Yearling Male	10.0%

Bio- Year	Young/100 Fems Age 1 - 1	Young/100 Fems Age 2 - 13	Young/100 Fems Disabled	Sex Ratio: 50 : 50
1991	0.0	170.0	0.0	
1992	0.0	170.0	0.0	
1993	0.0	170.0	0.0	
1994	0.0	170.0	0.0	
1995	0.0	170.0	0.0	
1996	0.0	170.0	0.0	
1997	0.0	170.0	0.0	
1998	0.0	170.0	0.0	
1999	0.0	170.0	0.0	
2000	0.0	170.0	0.0	
2001	0.0	170.0	0.0	
2002	0.0	170.0	0.0	
2003	0.0	170.0	0.0	
2004	0.0	170.0	0.0	
2005	0.0	170.0	0.0	
2006	0.0	170.0	0.0	
2007	0.0	170.0	0.0	
2008	0.0	170.0	0.0	
2009	0.0	170.0	0.0	
2010	0.0	170.0	0.0	
2011	0.0	170.0	0.0	
2012	0.0	170.0	0.0	
2013	0.0	0.0	0.0	

Table 1. Population Size During Bio-Year for MD537 2012 ten year graph.GN1
02/29/2012 11:17 am

Bio-Year	Start	Pre-Season	Post Season	End	%Growth
2002	31000	21072	20020	13324	-15.1
2003	26316	19148	18014	13119	-5.8
2004	24799	17965	16726	16668	22.1
2005	30278	23354	22077	18073	11.1
2006	33644	24438	23005	17795	1.1
2007	34020	23519	21781	17729	0.3
2008	34117	23944	22233	17990	1.1
2009	34481	25015	23514	18960	4.2
2010	35923	25822	24391	18571	-0.6
2011	35720	24001	22688	15821	-11.6
2012	31593	21258	20048	14331	-54.6

Table 2. Preseason Natural Mortality for MD537 2012 ten year graph.GN1
02/29/2012 11:17 am

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2002	9438	187	303	9928	32.0
2003	6886	108	175	7169	27.2
2004	6541	107	186	6835	27.6
2005	6601	119	205	6924	22.9
2006	8797	150	258	9206	27.4
2007	10059	159	282	10501	30.9
2008	9751	148	274	10173	29.8
2009	9070	138	258	9466	27.5
2010	9669	153	279	10101	28.1
2011	11233	174	313	11719	32.8
2012	9937	140	259	10335	32.7

Table 3. Harvest Mortality for MD537 2012 ten year graph.GN1 02/29/2012 11:17 am

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2002	0	929	27	956	4.5
2003	0	1002	29	1031	5.4
2004	13	1010	103	1126	6.3
2005	3	1109	49	1161	5.0
2006	14	1244	45	1303	5.3
2007	19	1402	159	1580	6.7
2008	35	1315	206	1556	6.5
2009	17	1192	156	1365	5.5
2010	7	1143	151	1301	5.0
2011	21	1049	124	1194	5.0
2012	20	955	125	1100	5.2

Table 4. Harvest Percentages for MD537 2012 ten year graph.GN1 02/29/2012 11:17 am

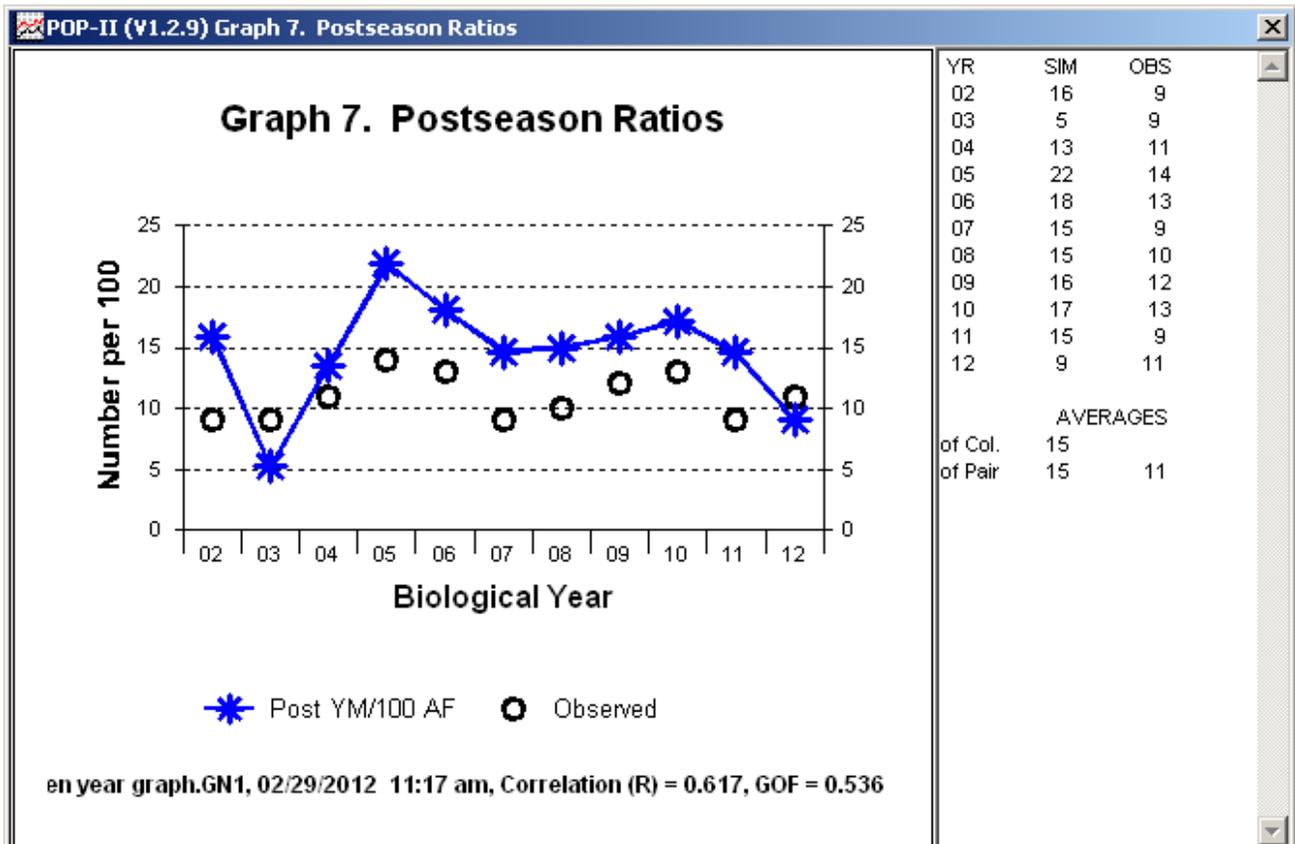
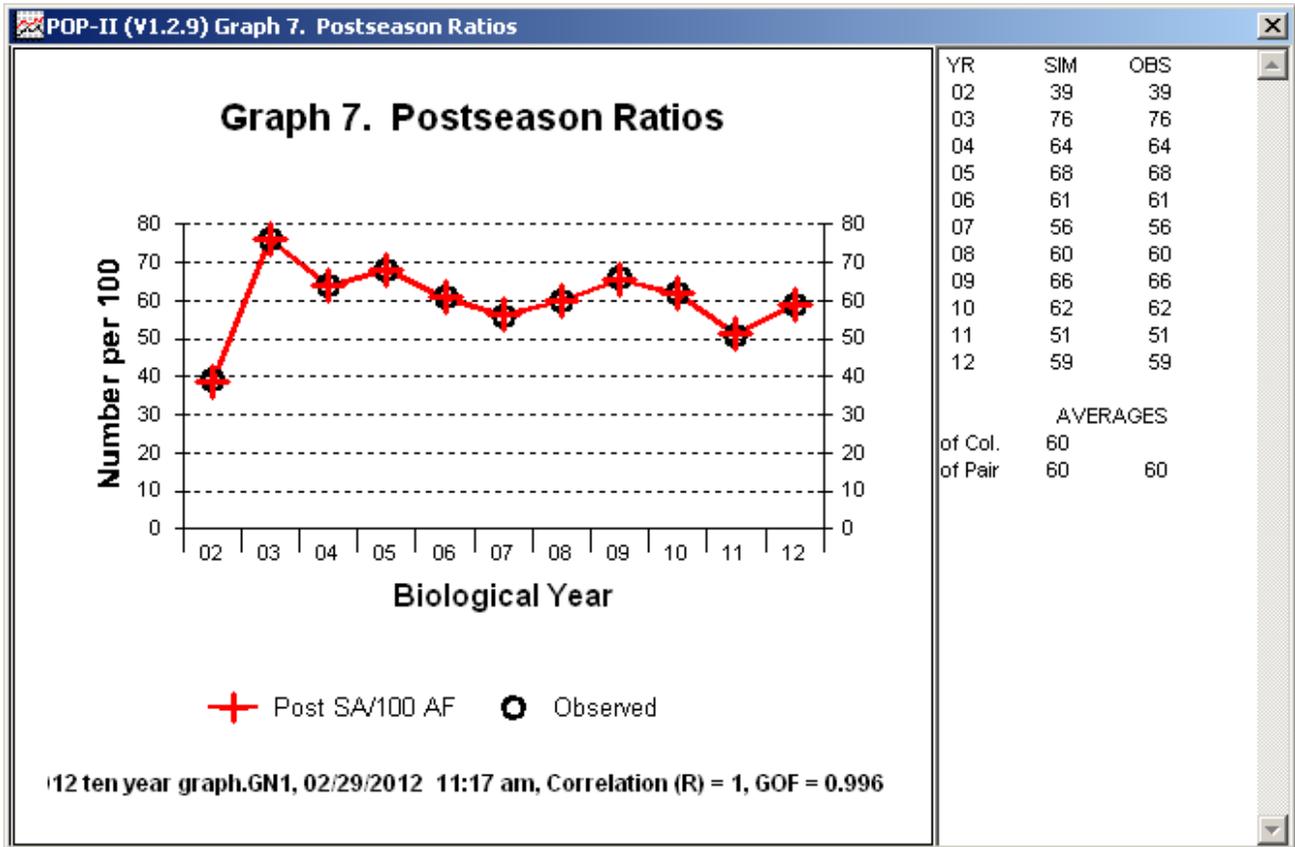
Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	Yearling Males
2002	0.0	14.3	0.3	4.54	39.6
2003	0.0	20.2	0.4	5.38	16.0
2004	0.3	21.5	1.3	6.27	30.2
2005	0.0	18.5	0.5	4.97	20.0
2006	0.2	19.2	0.4	5.33	15.5
2007	0.3	22.4	1.4	6.72	12.4
2008	0.5	21.7	1.8	6.50	13.3
2009	0.2	19.5	1.4	5.46	14.4
2010	0.1	17.4	1.3	5.04	15.2
2011	0.4	16.3	1.1	4.97	12.0
2012	0.3	17.6	1.2	5.17	7.0

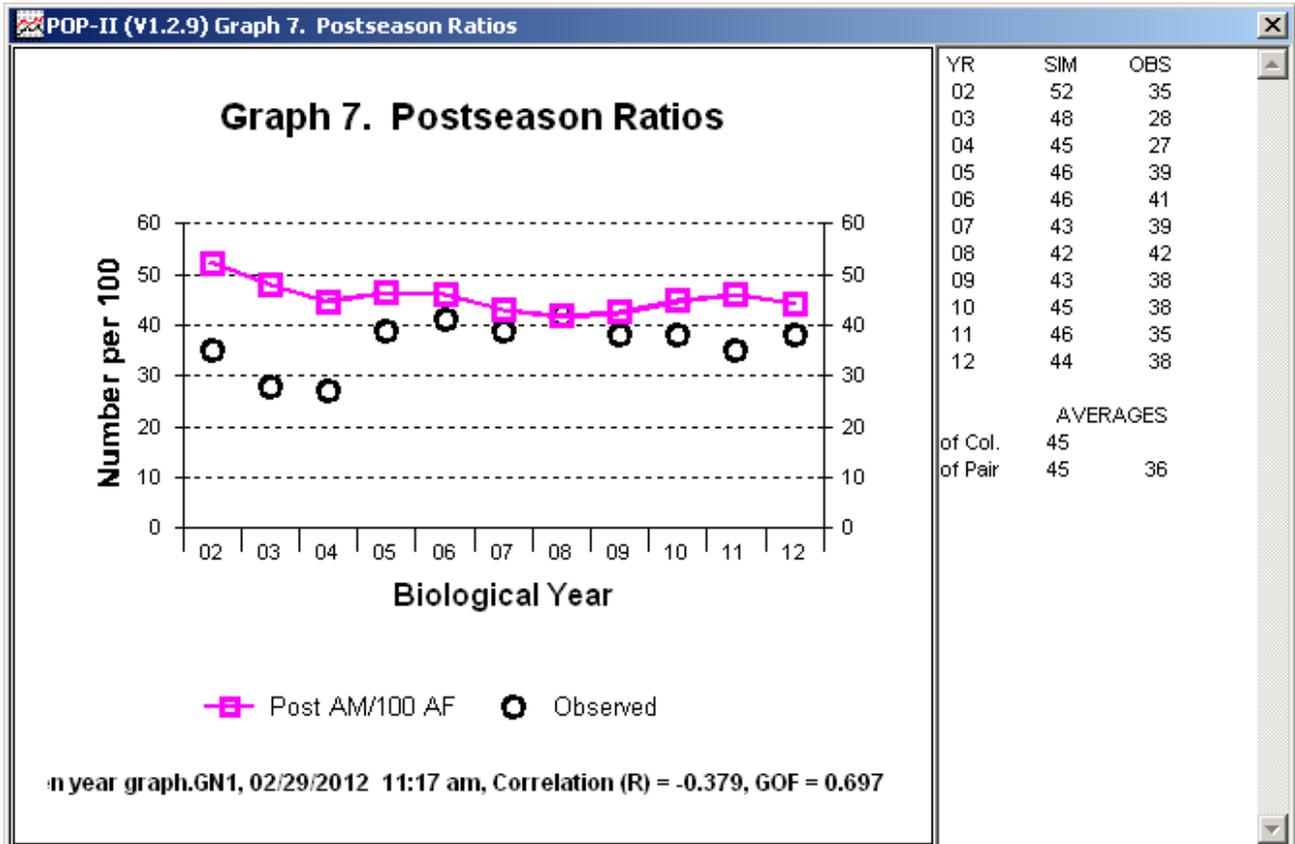
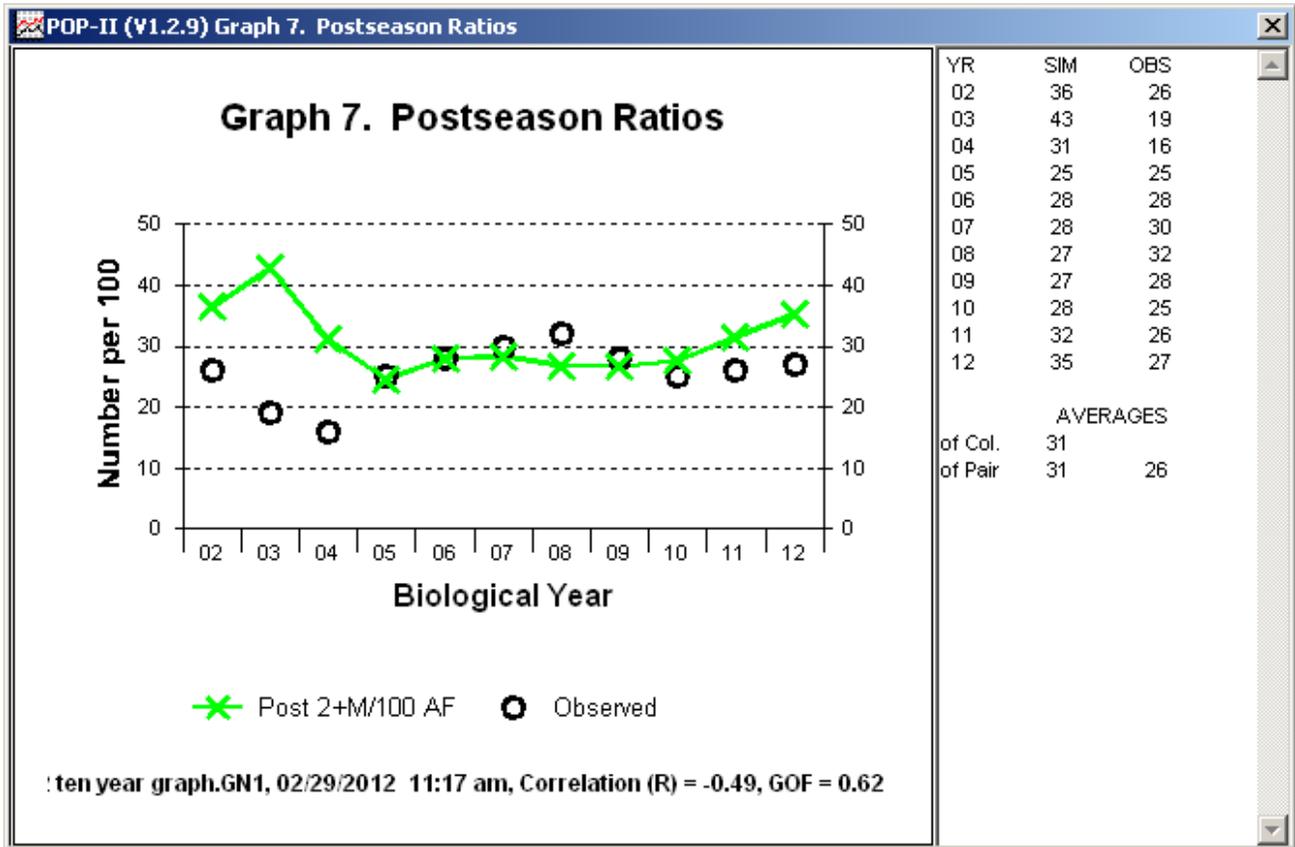
Table 5. Postseason Natural Mortality for MD537 2012 ten year graph.GN1 02/29/2012 11:17 am

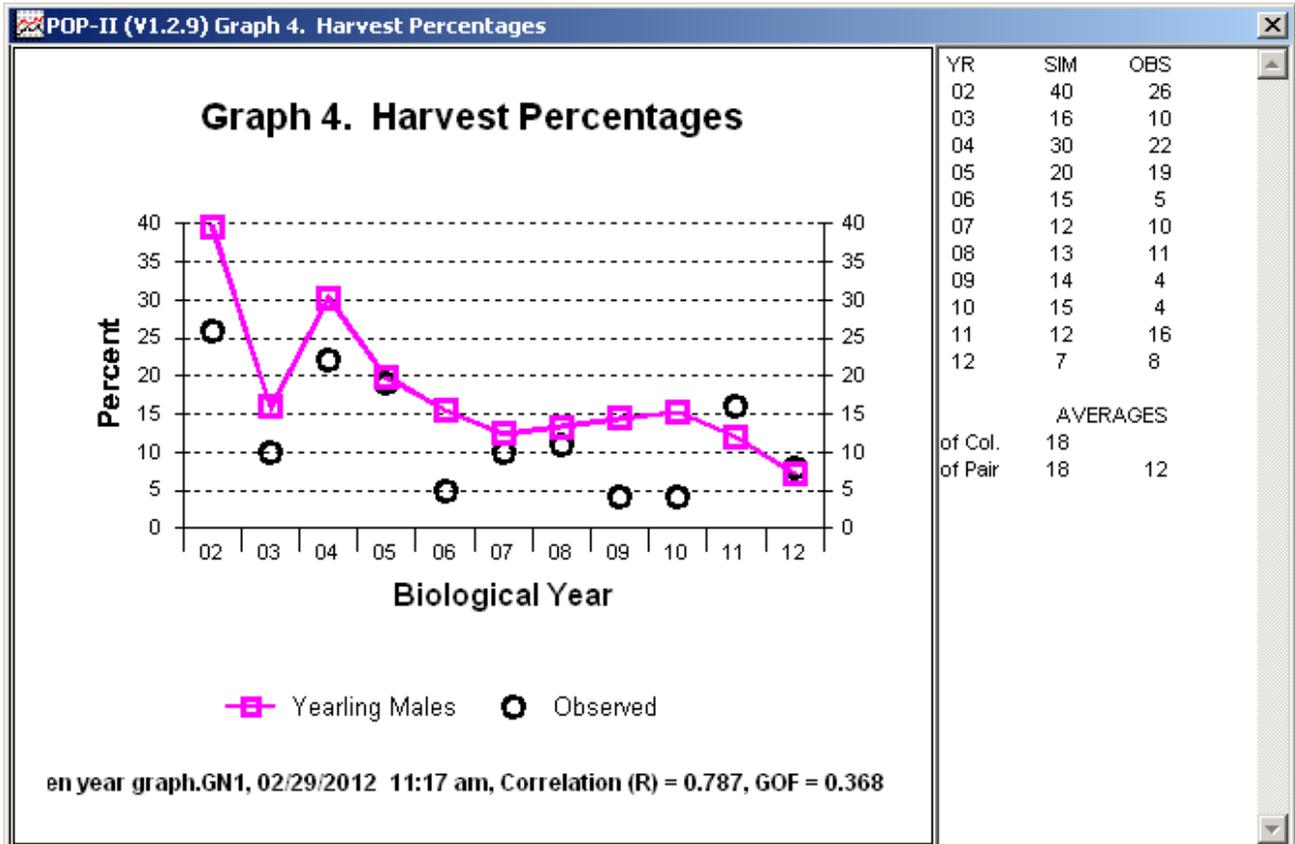
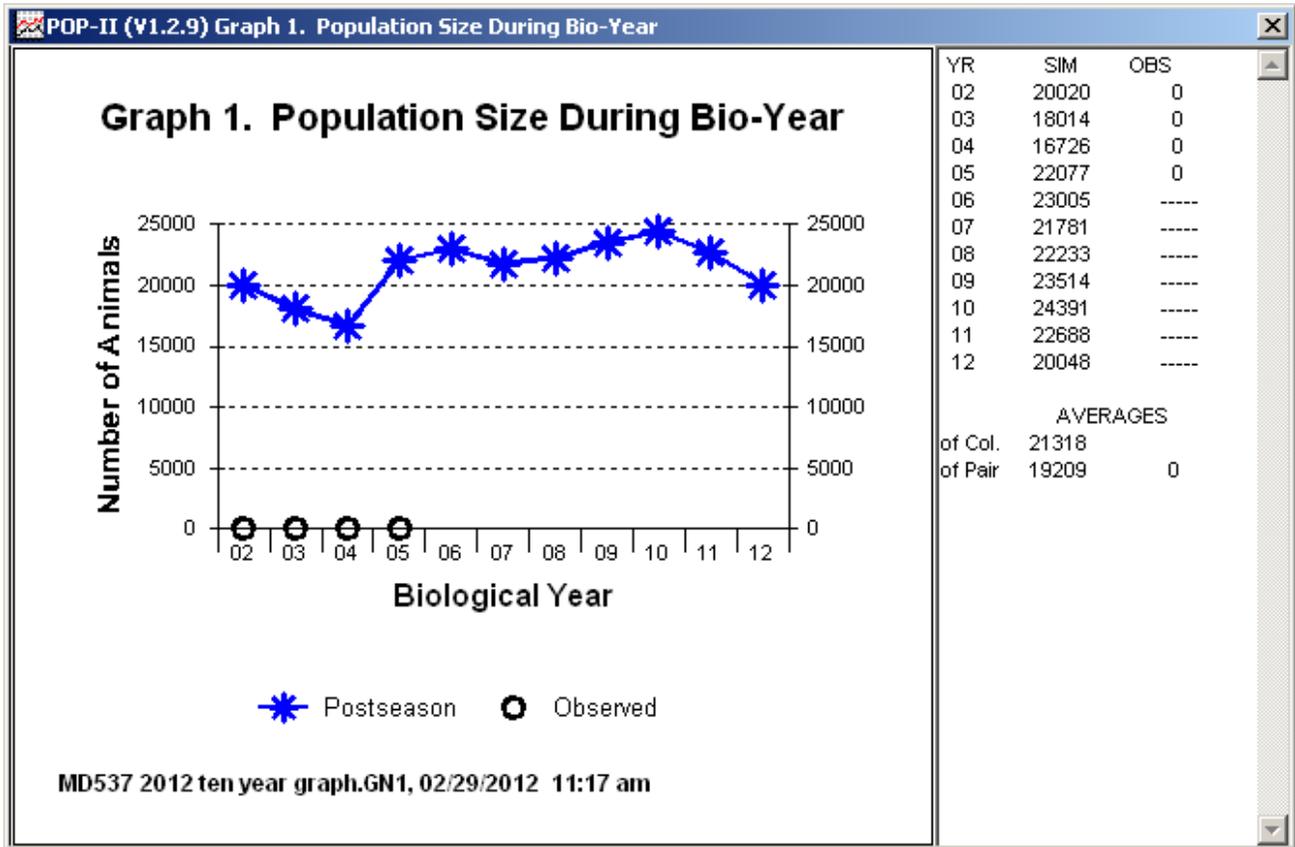
Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2002	2831	1017	2848	6697	33.4
2003	3206	516	1172	4894	27.2
2004	36	6	16	58	0.3
2005	2452	419	1133	4003	18.1
2006	3075	551	1584	5210	22.6
2007	2366	398	1288	4052	18.6
2008	2540	375	1328	4243	19.1
2009	2850	382	1322	4554	19.4
2010	3570	528	1721	5820	23.9
2011	3919	729	2218	6867	30.3
2012	3459	572	1685	5717	28.5

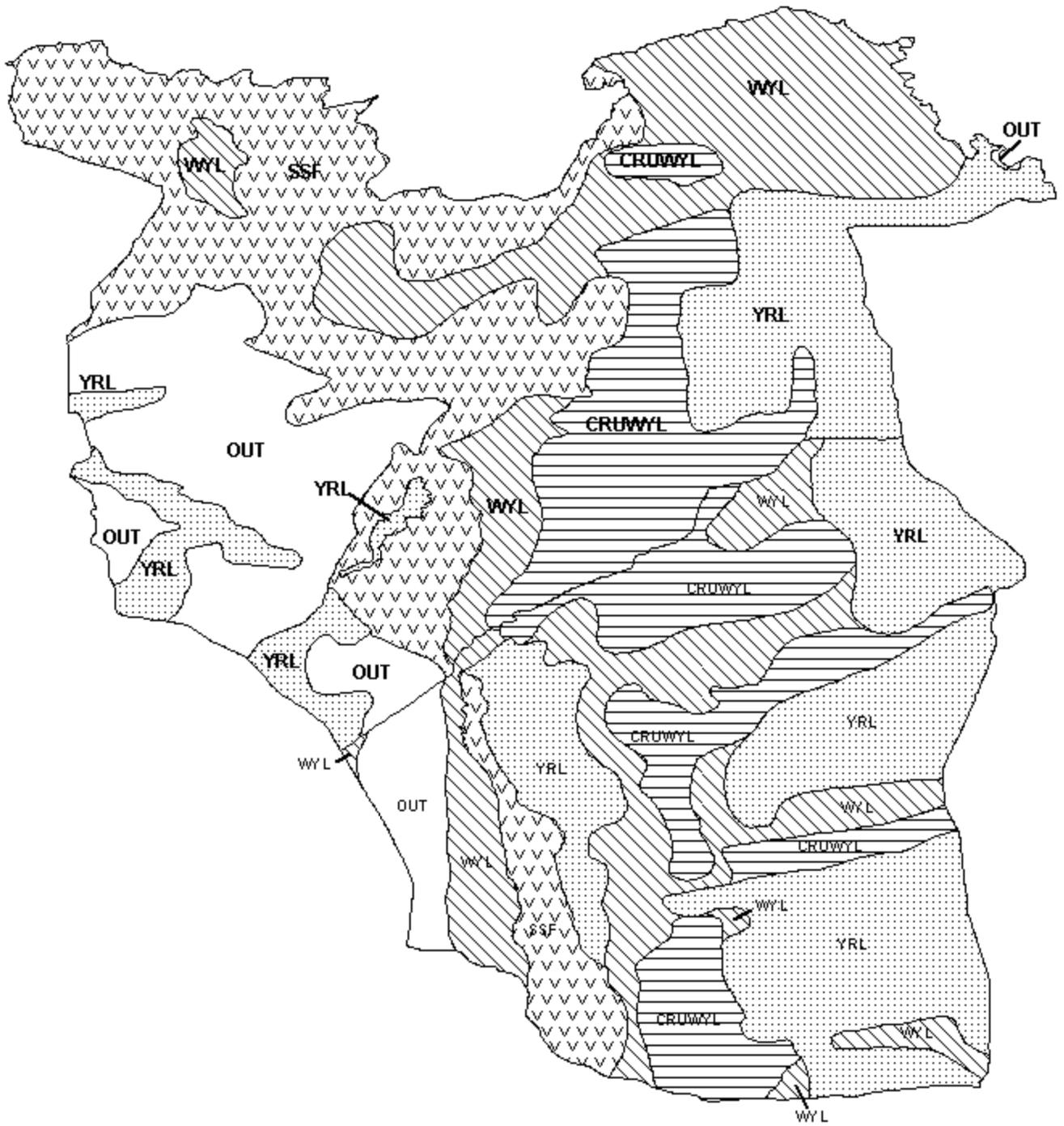
Table 7. Postseason Ratios for MD537 2012 ten year graph.GN1 02/29/2012 11:17 am

Bio-Year	Subadults /100 1+F	2+ Males /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2002	38.6	36.3	15.9	52.3
2003	75.9	42.9	5.2	48.0
2004	63.9	31.1	13.5	44.6
2005	68.1	24.6	21.9	46.4
2006	60.7	27.9	18.1	46.0
2007	56.2	28.4	14.7	43.1
2008	59.8	26.8	15.0	41.8
2009	65.5	26.7	15.9	42.6
2010	61.7	27.6	17.2	44.8
2011	51.3	31.5	14.5	46.1
2012	58.9	35.2	9.0	44.2









Mule Deer (MD537) - Laramie Mountains
 HA 59, 60, 62-64, 73
 Revised - 3/04



2011 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2011 - 5/31/2012

HERD: MD539 - SHEEP MOUNTAIN

HUNT AREAS: 61, 74-77

PREPARED BY: LEE KNOX

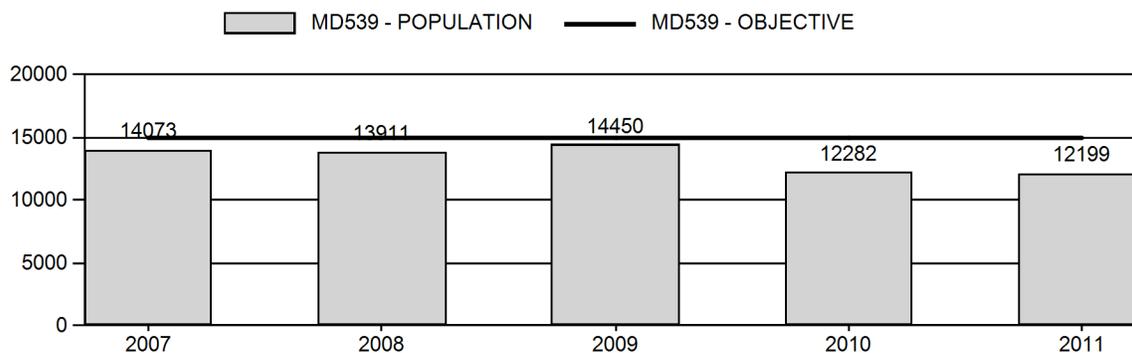
	2006 - 2010 Average	2011	2012 Proposed
Population:	13,655	12,199	13,408
Harvest:	560	328	175
Hunters:	1,999	1,827	1,600
Hunter Success:	28%	18%	11%
Active Licenses:	1,999	1,827	1,600
Active License Percent:	28%	18%	11%
Recreation Days:	9,600	8,768	4,500
Days Per Animal:	17.1	26.7	25.7
Males per 100 Females	29	30	
Juveniles per 100 Females	62	55	

Population Objective:	15,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-18.7%
Number of years population has been + or - objective in recent trend:	11
Model Date:	03/02/2012

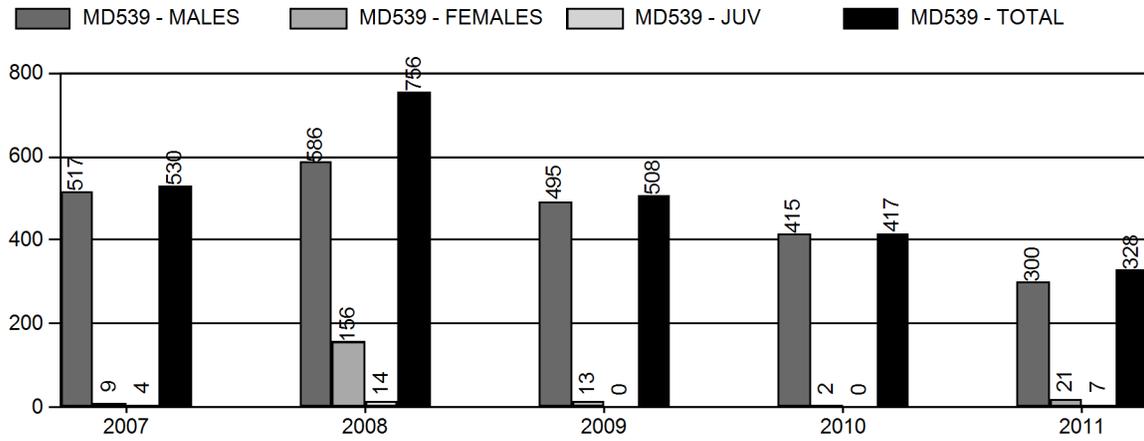
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0.0%	0.1%
Males ≥ 1 year old:	13.3%	6.8%
Juveniles (< 1 year old):	0.0%	0.0%
Total:	2.45%	1.32%
Proposed change in post-season population:	1.7%	5.3%

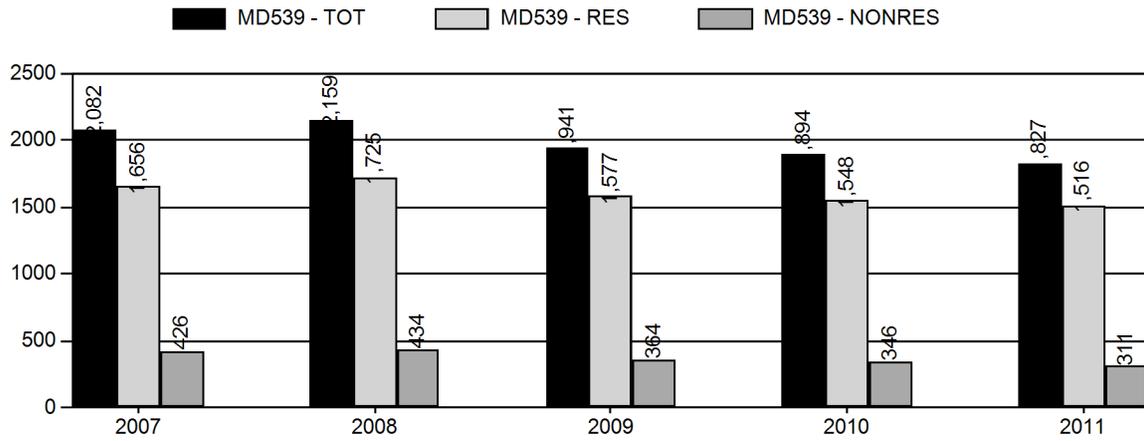
Population Size - Postseason



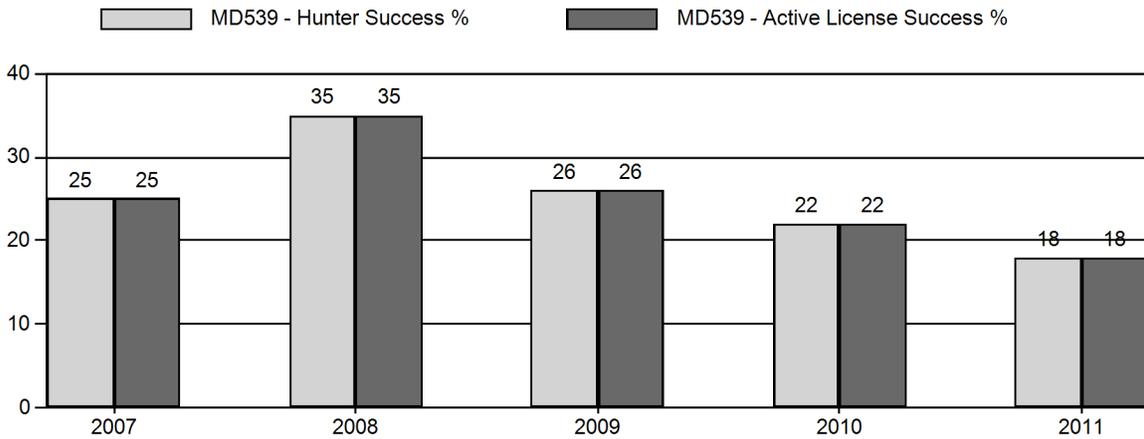
Harvest



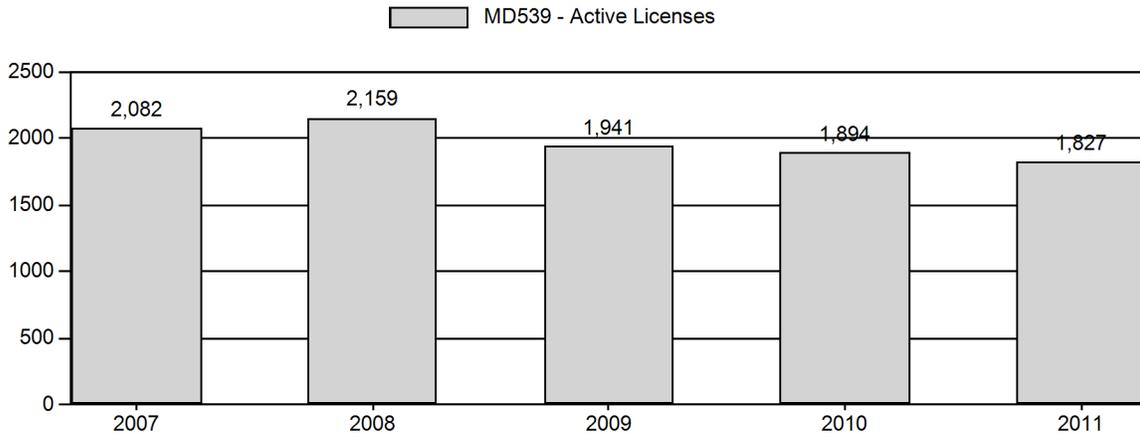
Number of Hunters



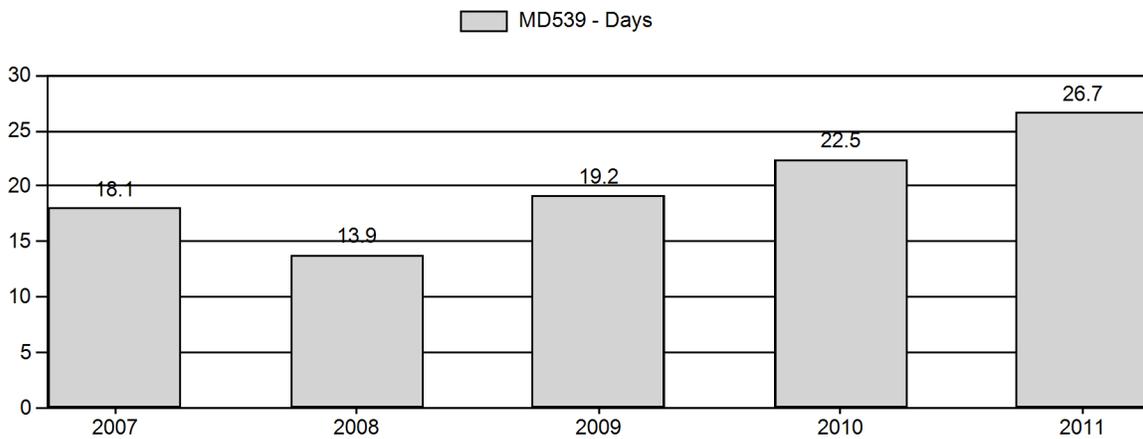
Harvest Success



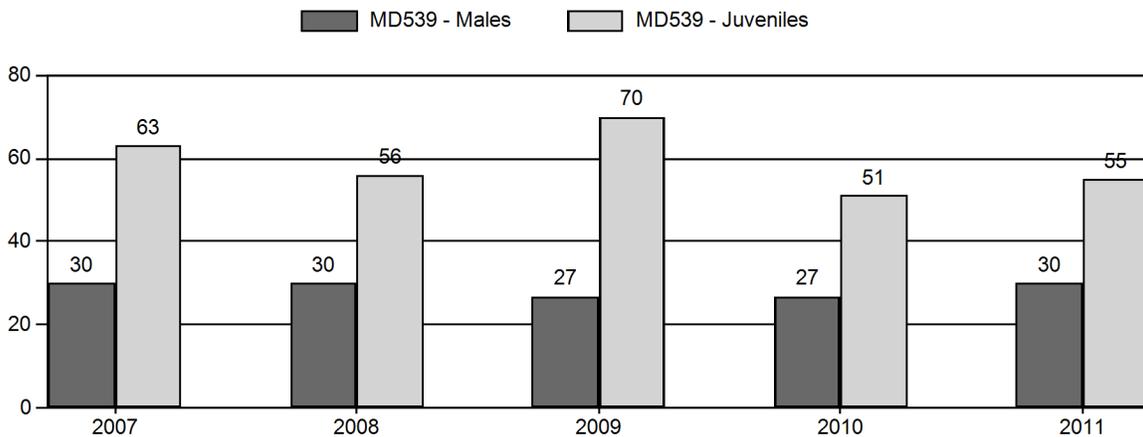
Active Licenses



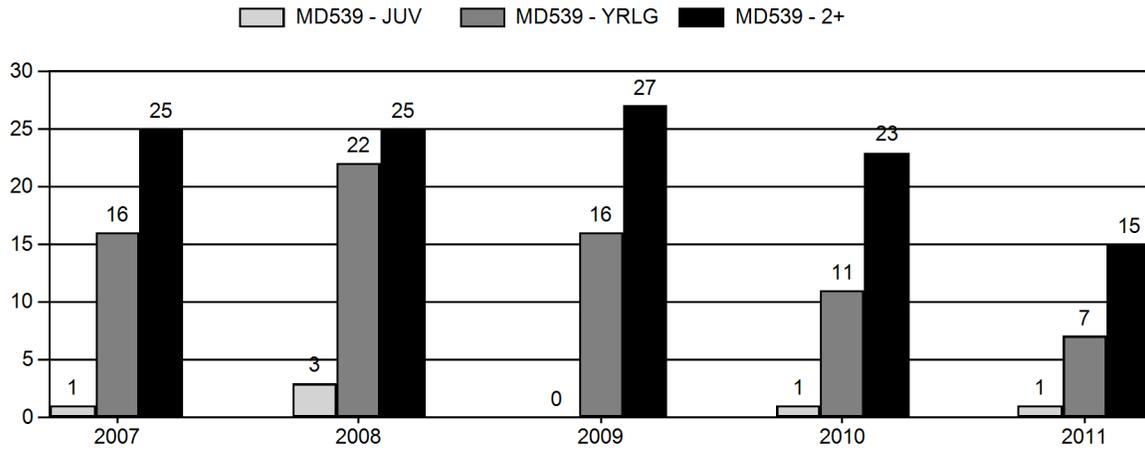
Days per Animal Harvested



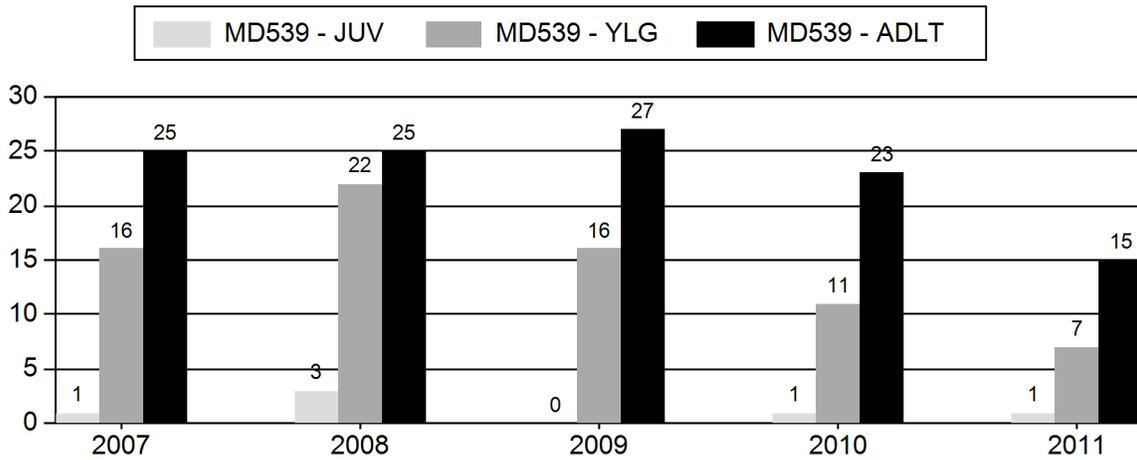
Postseason Animals per 100 Females



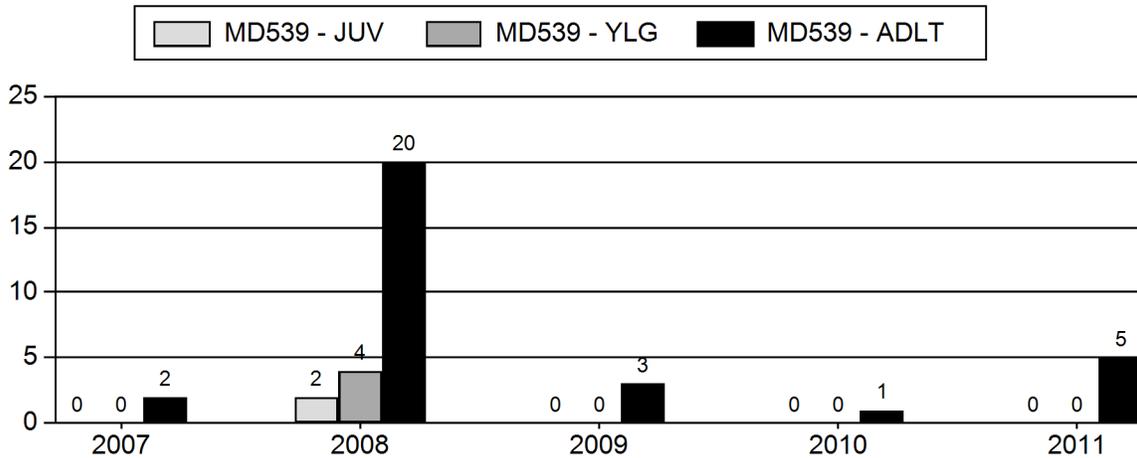
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



INTRODUCTION

The Sheep Mountain Mule Deer Herd (MD539) is managed under recreational guidelines and includes Deer Hunt Areas 61, 74, 75, 76 and 77. The Sheep Mountain Herd is located in Southeastern Wyoming ranging from the east slope of the Snowy Range to U.S. Highway 30, Interstate Highway 80 (I-80) and Interstate Highway 25 at Cheyenne. It extends north from the Wyoming-Colorado line to the town of Medicine Bow. The herd occupies about 2,253 square miles within this area. Segments of this deer herd are also part of the Poudre Herd of Colorado.

The 2009 - 2011 post season population average of 12, 977 is down from the previous 3 year average of 13,800. Poor forage production and severe winter conditions reduced the herd in 2010 and again in 2011. During the period between 2009 and 2011 hunter numbers averaged 1,887 with an average success of 22% and 23 days per harvest. Buck and fawn ratios averaged 28 per 100 does and 59 per 100 does respectively.

The reduced quality of important seasonal habitats appears to be the major factor limiting the growth of this population. Other management issues in the Sheep Mountain Herd include nonhunting mortalities from road kill and loss of migration routes due to major highways and interstates creating barriers. Subdivisions have expanded on winter ranges, particularly south of Laramie in Area 61, the Sheep Mountain, Woods Creek, and Centennial Valley in Areas 75 and 76, and near Jelm and Boulder Ridge in Area 77. Wind energy, gravel pits, mining, and oil and gas development have also caused loss of winter range habitat within the herd unit. CWD was first documented in the Sheep Mountain Mule Deer Herd through hunter harvest in 2002. The Sheep Mountain Mule Deer Herd ranges from 1.1% in hunt area 76 to 3.4% in hunt area 77 with a mean of 2.5%. This is a cooperatively low prevalence and likely has a limited impact on this deer herd on a population level.

WEATHER

No data was collected for this reporting period

HABITAT CONDITIONS/ASSESSMENT

Procedures for habitat monitoring were described in the 2002 Annual Report in some detail. Readers are referred to that discussion and to Appendix A of this and previous Laramie Region Big Game Completion Reports for more background on monitoring goals, data collection and analyses. The monitoring focuses on key browse species representative of certain locations within the herd. Data for some transects in the Sheep Mountain Mule Deer Herd are incomplete due to changes in personnel and other assignments.

Appendix A includes tables summarizing habitat assessments from transects on important ranges for the Sheep Mountain Herd. Utilization data cover the 2005/2006 through 2010/2011 winters and production data range from 2004 through 2011.

We have been concerned about the age structure, condition and vigor of browse stands on winter ranges. Overutilization of important shrub species appears to be more prevalent in the northern part of the Sheep Mountain Herd, and along the Wyoming Highway 230 corridor along Woods Creek. Some habitat treatments have been conducted within the herd to improve habitat quality. Observed fawn:doe ratios suggest recruitment is declining. Although the herd is below objective, there is some concern that wintering deer densities are higher than what the habitat can currently support.

POPULATION

Classification Data

During the 2009-2011 period sample sizes varied among hunt areas and among years, based upon deer distributions and sampling effort (Table 1). We did find some differences in proportions of the herd's sample among hunt areas (Table 2). Hunt Area 74, which maintains higher ratios than the rest of the herd, consists of 49% of the classification data in 2011. In some years, large samples are collected in Areas 76 and 77 and normally few deer are classified in Area 61 as most winter in Colorado. Buck to doe ratios have remained near 27 per 100 except in 2011 when they were 30 per 100 (figure 1.). Fawn to doe ratios decreased from 63 per 100 in 2009 to 51 per 100 in 2010 and remained low in 2011 with 55 per 100, due to poor forage and harsh winter conditions.

2007 - 2011 Postseason Classification Summary

for Mule Deer Herd MD539 - SHEEP MOUNTAIN

Year	Post Pop	MALES				FEMALES		JUVENILES		Tot Cls	Cls Obj	Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%			Ylg	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	14,073	76	147	223	15%	754	52%	472	33%	1,449	1,162	10	19	30	± 3	63	± 4	48
2008	13,911	38	93	131	16%	441	54%	247	30%	819	993	9	21	30	± 4	56	± 6	43
2009	14,450	91	134	225	14%	843	51%	593	36%	1,661	1,391	11	16	27	± 0	70	± 0	56
2010	12,282	63	63	126	15%	474	56%	243	29%	843	840	13	13	27	± 0	51	± 0	40
2011	12,199	48	98	146	16%	480	54%	263	30%	889	1,087	10	20	30	± 4	55	± 5	42

Table 1. Postseason classification summary in the Sheep Mountain Mule Deer Herd, 2009-2011.

Hunt Area	2009		2010		2011	
	Number	%	Number	%	Number	%
61	33	2	10	1	0	0
74	725	44	225	26	435	49
75	94	6	39	5	26	3
76	604	36	443	53	239	27
77	205	12	126	15	189	21
<i>Total</i>	<i>1661</i>	<i>100</i>	<i>843</i>	<i>100</i>	<i>889</i>	<i>100</i>

Table 2. Distribution of classification samples among Hunt Areas in the Sheep Mountain Mule Deer Herd, 2009-2011.

Postseason Animals per 100 Females

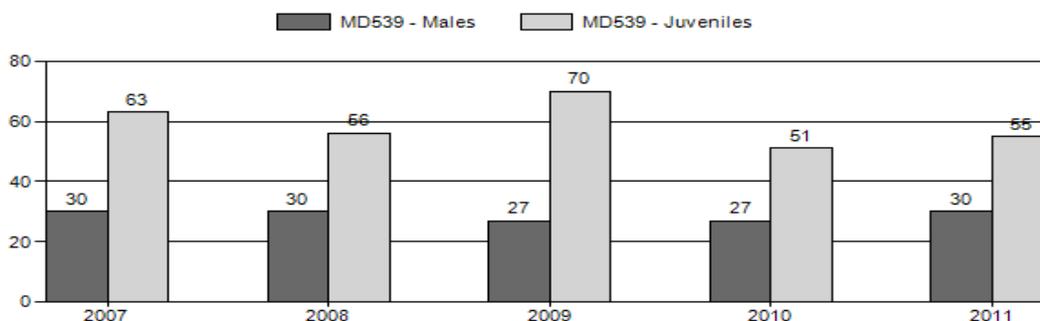


Figure 1. Animals per 100 Females Postseason, Sheep Mountain Mule Deer Herd, 2009-2011.

Population Modeling

The current postseason population objective for the Sheep Mountain Mule Deer Herd is 15,000 deer. The herd has remained below the population objective for over 21 years and is currently estimated at 12,199 (Figure 2.). The 2009 post season population estimate was 14,450. It appears that each time this herd grows near the objective the population declines shortly after. It is questionable with the current state of habitat quality, if a population of 15,000 can be obtained or if it is sustainable without irreparable damage to the habitat. Others issues with modeling this herd include a segment of deer in Hunt Area 61 winter in Colorado and are not in Wyoming during classifications. Conversely a large segment of deer from Colorado winter in Wyoming in Hunt Area 76 and 77 are present during classifications but not during the fall.

All information regarding population modeling was derived using the program POP II. The 2011 JCR will be the last year the Wyoming Game and Fish Department uses POP II and will be switching to a spread sheet model for 2012.

Population Size - Postseason

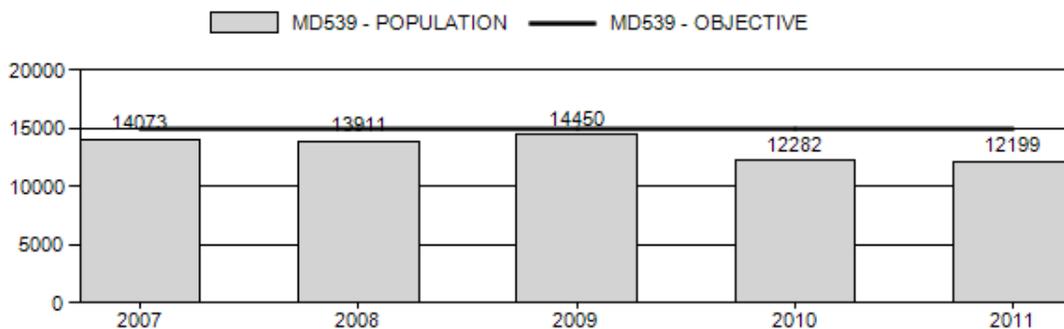


Figure 2. Population Postseason Sheep Mountain Mule Deer Herd, 2009-2011.

HUNTING SEASON

2011 HUNTING SEASONS

MD539 - SHEEP MOUNTAIN

<u>Hunt Area</u>	<u>Add'l Hunt Areas</u>	<u>Type</u>	<u>Quota</u>	<u>Season Dates</u>	<u>Limitations</u>
61	74,75,76,77	ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
61		GEN		10/01 - 10/14	any deer
74	75,76,77	GEN		10/01 - 10/14	antlered mule deer or any white-tailed deer

The 2009-2011 hunting seasons have been fairly consistent offering antlered only deer hunting on general license for 14 days in Hunt Areas 74,75,76,77 in an attempt to increase the herd towards objective. Area 61 remained any deer to increase CWD sampling along the Colorado border but few deer were harvested in 61 due to the area being predominately private with little public access and few samples were gathered.

Harvest

Mule deer harvests in the Sheep Mountain Herd are somewhat dependent upon weather and habitat conditions during the hunting season, and the willingness of hunters to hunt on foot away from roads. Hunt Areas 75 and 76 contain the majority of the accessible public land in the herd unit and had 66% of the hunters with 54% of the harvest and a success rate of 12% in 2011. Throughout the Sheep Mountain Herd unit buck harvests have been declining with a total of 495 bucks harvested in 2009, 415 in 2010, and 300 in 2011 (Figure 3). Doe harvest was minimal with fewer than 25 does taken annually with the majority harvested in Area 61.

Area	Type	Active Lic/Htrs	Buck	Doe	Fawn	Total	Success		Days/Harvest	Days	Licenses Sold
2011											
61 HARRIMAN											
	General	263	57	21	7	85	32.30%		10.1	858	
	Pooled Total	263 (263)*	57	21	7	85	32.30%	(32.3%)*	10.1	858	
	Pooled Resident	243	46	21	7	74	30.50%		10.5	779	
	Pooled Nonresident	20	11	0	0	11	55%		7.2	79	
74 KYLE											
	General	215	54	0	0	54	25.10%		14.7	796	
	Pooled Total	215 (215)*	54	0	0	54	25.10%	(25.1%)*	14.7	796	
	Pooled Resident	171	41	0	0	41	24.00%		15.5	637	
	Pooled Nonresident	44	13	0	0	13	29.50%		12.2	159	
75 FOUR MILE											
	General	627	81	0	0	81	12.90%		39.1	3170	
	Pooled Total	627 (627)*	81	0	0	81	12.90%	(12.9%)*	39.1	3170	
	Pooled Resident	516	54	0	0	54	10.50%		47.7	2578	
	Pooled Nonresident	111	27	0	0	27	24.30%		21.9	592	
76 SHEEP MOUNTAIN											
	General	704	80	0	0	80	11.40%		36.9	2950	
	Pooled Total	704 (704)*	80	0	0	80	11.40%	(11.4%)*	36.9	2950	
	Pooled Resident	580	50	0	0	50	8.60%		46.3	2316	
	Pooled Nonresident	124	30	0	0	30	24.20%		21.1	634	
77 BOULDER RIDGE											
	General	205	28	0	0	28	13.70%		35.5	994	
	Pooled Total	205 (205)*	28	0	0	28	13.70%	(13.7%)*	35.5	994	
	Pooled Resident	161	15	0	0	15	9.30%		53.9	809	
	Pooled Nonresident	44	13	0	0	13	29.50%		14.2	185	
	2011 Hunt Area Total	2014 (2014)*	300	21	7	328	16.30%	(16.3%)*	26.7	8768	0
	2011 Herd Total	1827 (1827)*	300	21	7	328	18.00%	(18.0%)*	26.7	8768	0

Table 3. Harvest in the Sheep Mountain Herd Unit by Hunt Area, 2011.

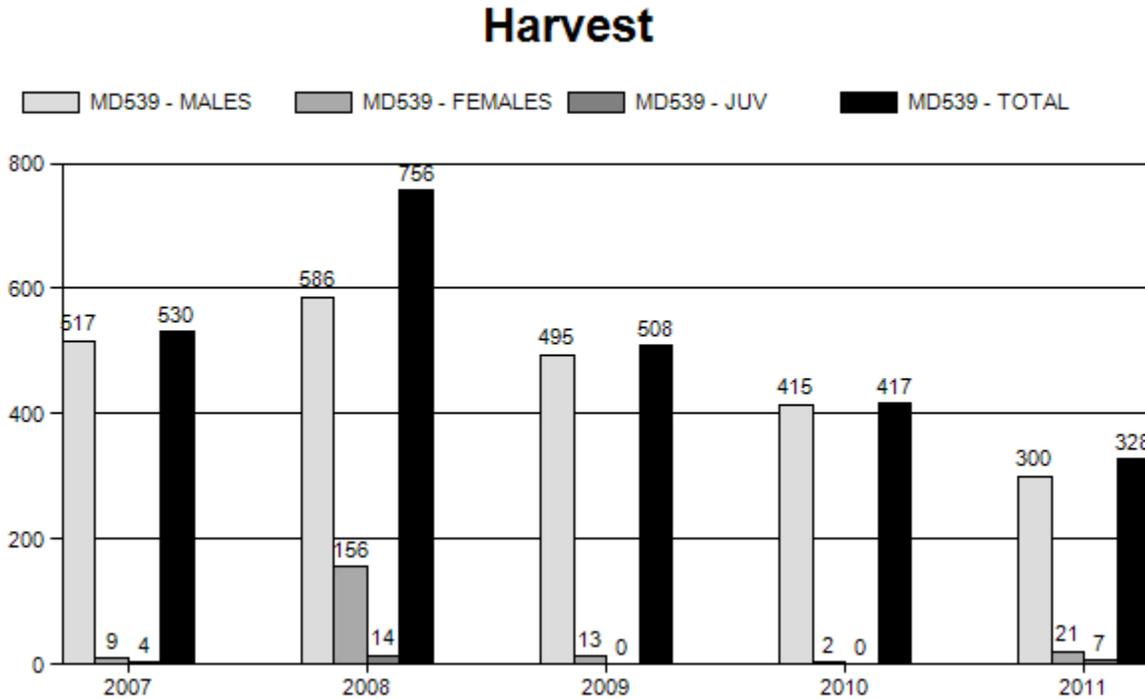


Figure 3. Sheep Mountain Mule Deer Harvest, Wyoming 2007-2011

Harvest Statistics

Hunter numbers declined from 2009 to 2011 by 140 resident hunters and 115 nonresident hunters for a total loss of 255 hunters (Figure 5). This decline may be attributed to fewer nonresident wanting to travel due to the economy or the low success rates the last few years. Success in the Sheep Mountain Herd declined from 26 % in 2009 to 18 % in 2011. Days per animal harvested went from 19 days in 2007 to 28 days in 2011. A 3 day any deer season was implemented in 2008 and is most likely the reason success increased as well as days per harvest decreased that year.

Active Licenses

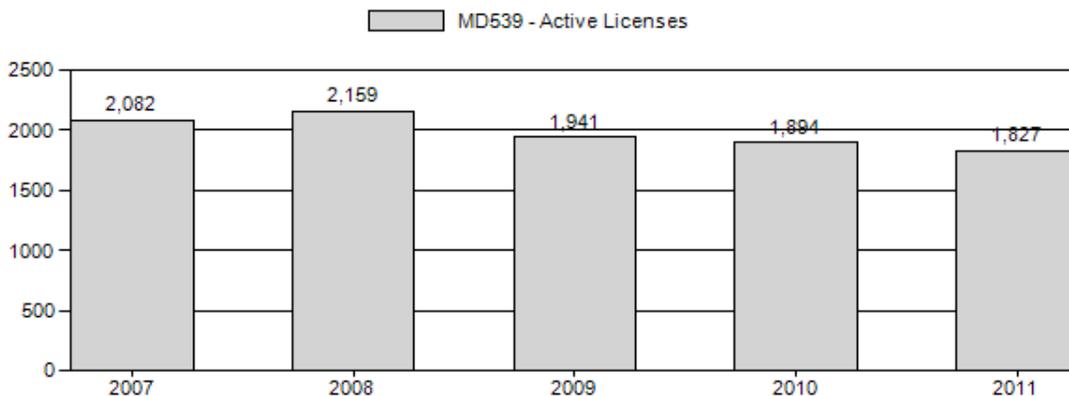
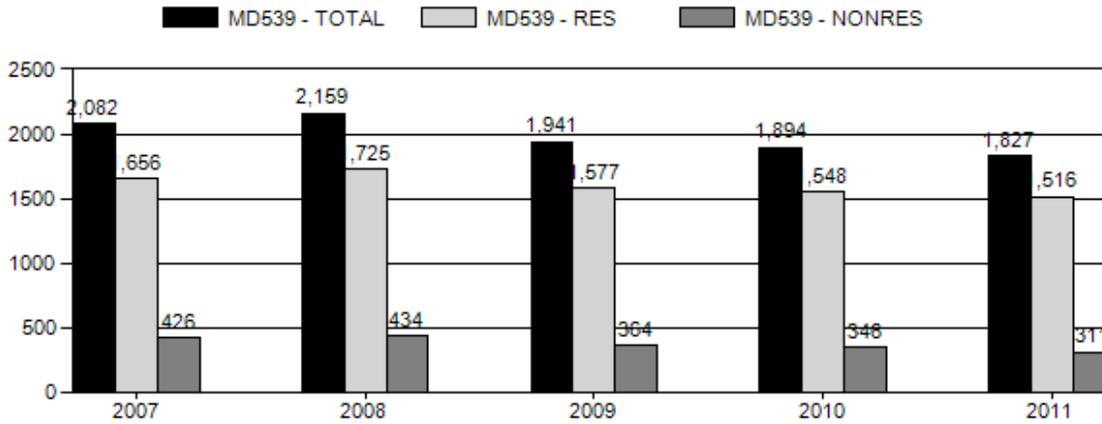


Figure 4. Active licenses in the Sheep Mountain deer herd, Wyoming 2007-2011

Number of Hunters



(Figure 5.) Number of hunters in the Sheep Mountain Herd Unit, 2007-2011

Harvest Success

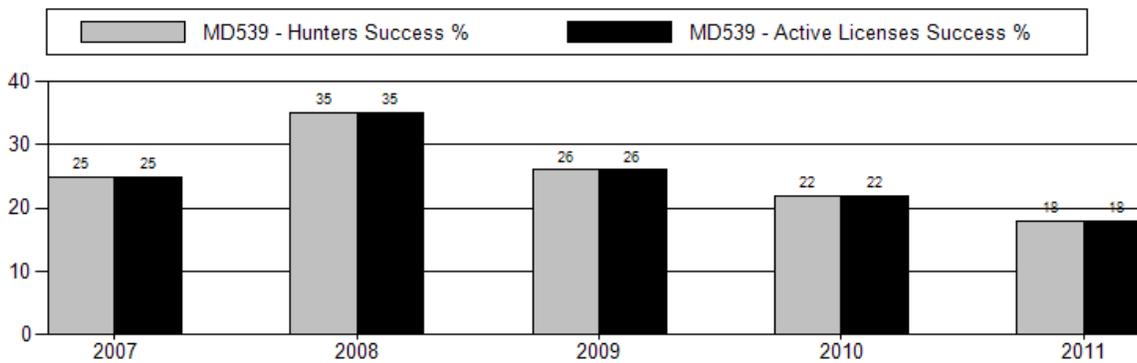


Figure 6. Harvest Success in the Sheep Mountain Herd Unit, 2007-2011

Days Per Animal Harvested

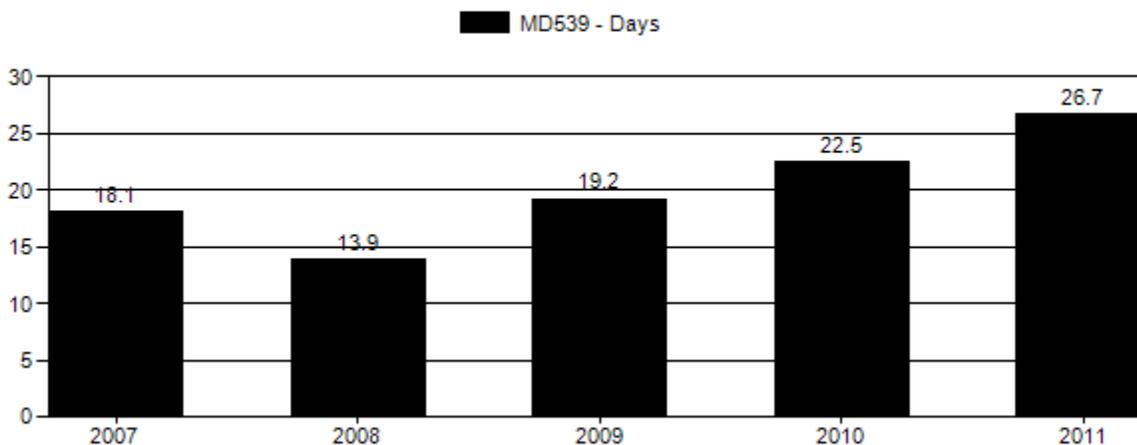


Figure 7. Days per animal harvested in the Sheep Mountain Herd Unit, 2007-2011

Hunter Field Checks

Obtaining a large sample size in this herd unit is difficult due to areas 74, 77 and 61 being predominately private with limited access. Samples size for field checked males was consistent from 2007 to 2010 with around 25 mature males checked. The drop in 2011 to 15 is reasonable considering the low hunter success but may also be contributed to change in personnel at that time. Yearling buck harvest appears proportional to the mature buck harvest except in 2008 when it was almost equal.

Age Structure of Field Checked Males

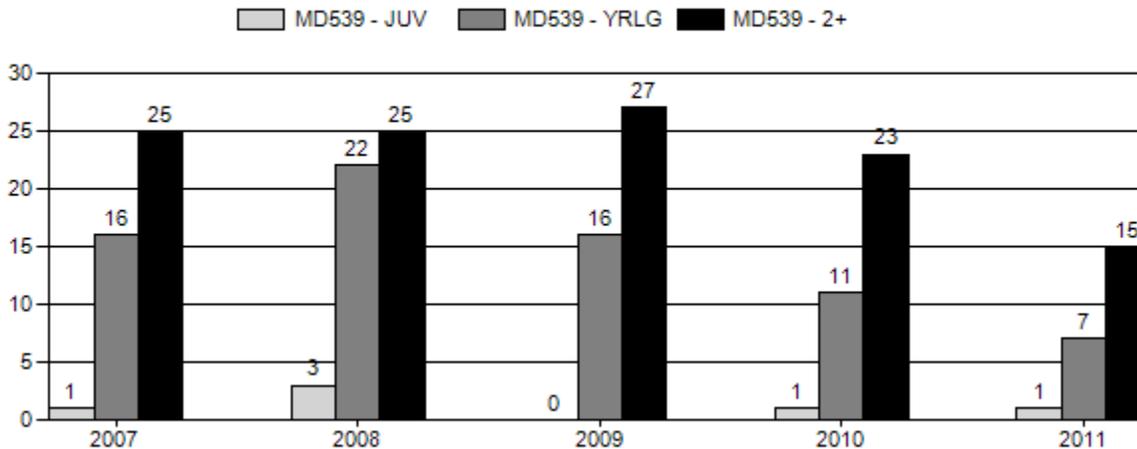


Figure 8. Age Structure of field checked males in the Sheep Mountain Herd Unit, 2007-2011

Age Structure Data (Field and Laboratory) - Male

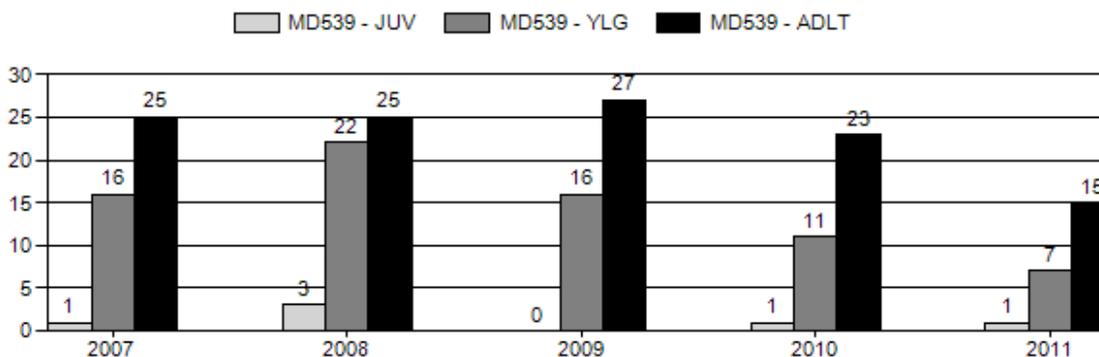


Figure 9. Combined Field and Laboratory age structure of male deer in the Sheep Mountain Herd Unit 2007-2011

OTHER MANAGEMENT ISSUES

Management of the Sheep Mountain Mule Deer Herd is affected by several management issues. These include but are not limited to increased motorized and non-motorized recreation, grazing, logging, highways, fences, gravel quarrying, subdivisions, poaching, energy development (coal mining, oil and gas, and wind farms) and other land use changes which cumulative result in a substantial impact on the deer herd.

This is an interstate herd. The Department has discussed development of compatible management strategies, monitoring and hunting seasons for this interstate population with the Colorado Division of Wildlife. Chronic

Wasting Disease occurs throughout the population. With an average prevalence of 2.5% it is unlikely that CWD poses a population level threat to this deer herd.

Harvest management is complicated by increased crowding on public lands with reduced access on private lands. Hunters seem less willing to hunt remote areas on foot. One difficulty is the lack of reliable, independent population assessment techniques to better determine the status of the herd. Obtaining adequate herd composition samples is another problem that limits simulation performance. Despite the concerns about habitat, the public is less interested in increasing harvest to reduce pressure on the important winter ranges and other seasonal habitats.

HABITAT

ON-GOING/COMPLETED PROJECTS

Currently, no new, major habitat projects are underway. We are currently meeting with the USFS on improving mule deer habitat in the Snowy Range.

ISSUES DISCUSSION

We have concerns about the habitat conditions on important ranges within the Sheep Mountain Mule Deer Herd. The age structure, condition, and productivity of key browse species on winter and transitional ranges are less than desired to support the herd at the desired level. The situation is worsened by drought and climatic change. It remains to be seen how deer will be impacted by the mountain pine beetle epidemic running through the Snowy Range. Encroachment by subdivisions and wind farms are some of the major issues threatening mule deer habitat within the herd.

MANAGEMENT RECOMMENDATIONS

1. The spreadsheet model should be validated to determine if it is a reasonable simulation of the assumed dynamics of this herd. Techniques for independently validating model predictions such as quadrat sampling, sightability models, mark-resight, or catch-effort should be evaluated.
2. The Department should promote the long-term habitat treatments among the general public, land management agencies and private landowners. Efforts should be increased to educate the public on the role the need for large-scale efforts to rejuvenate habitats and increase the age class diversity of vegetative stands on important deer habitats. Treatments should be monitored to assure that desired goals are achieved.
3. The Department should encourage responsible use of ATVs and greater enforcement of existing land use regulations. ATV use is becoming a greater issue in maintaining quality hunting opportunities.
4. The Department should find more effective ways to promote conservation of wildlife habitats on private and public lands.
5. The Department should continue efforts to educate the public on managing herds within the capacity of their habitats.

SPECIAL STUDIES

FINAL REPORTS/ON-GOING PROJECTS

Currently, no new or recent investigations have been completed or other projects are underway.

**Sheep Mountain Mule Deer
(MD539)
Hunt Areas 61, 74, 75, 76, 77
2012 Hunting Seasons**

Hunt Area	Type	Date of Seasons		Limitations
		Opens	Closes	
*61 *CWD Area		Oct. 1	Oct 7	General license; antlered mule deer or any white-tailed deer
*74, *75, *76, *77 *CWD Area		Oct. 1	Oct 7	General license; antlered mule deer or any white-tailed deer
Archery		Sept. 1	Sept 30	Refer to Section 3 of this Chapter

Changes for 2012

- End dates in all hunt areas shortened by 7 days to address low recruitment and low hunter success.
- Changed Area 61 from any deer to antlered mule deer or any white-tailed deer

Management Evaluation

The Sheep Mountain Mule Deer Herd is managed under recreation management guidelines. The herd has remained below objective. Although the herd has shown a slight increase in recent years, it declined slightly in 2010 and continued to decline in 2011. Harsh winter conditions the last two years that have lasted late into spring have increased winter mortalities in fawns and some adult age classes. Drought and reduced habitat productivity have also contributed to the slow growth of this herd. For 2012, we will maintain the antlered mule deer hunt in 74-77 and extend this regulation to Area 61. Doe harvest was allowed in Area 61 to increase CWD sampling on the Colorado border but it is not longer warranted. For 2012 we are reducing the season length to 7 days herd unit wide to mirror season dates in adjacent herd units. This will alleviate increased hunting pressure from displaced hunters later in the season.

Population: The Sheep Mountain Mule Deer Herd was simulated at 12,199 animals following the 2011 hunt. Reduced fawn recruitment coupled with somewhat harsher winter and spring weather contributed to the decline. With the proposed conservative season, the herd is projected

to increase slightly to 13,408 after the 2012 season, if normal conditions return. The buck:doe ratio of 30:100 is in line with the 5 year average and is at the top end of the recreational management threshold, however hunter success is extremely low. The 2011 fawn:doe ratio is 55:100. Doe:fawn ratios have declined during the past 2 years and the five year average remains below 65:100. Current weather and habitat conditions seem to limit the herd's ability to reach objective. The winters of 2007-2008 and 2010-2011 were harsher than previous winters with more persistent and deeper snow cover and extended periods of extreme cold and high winds. The 2011-2012 winter and spring was mild overall with high survival and deer moving to transition ranges in good condition. However, extreme drought and associated wildfires during the summer of 2012 will have a negative impact on the habitat in all seasonal ranges.

Harvest: A total of 1800 hunters harvested 333 deer in 2011 for an overall success rate of 18%. Harvest, hunter numbers and success have been decreasing in recent years even though buck ratios appear to be high. Weather conditions have been warm and dry and have been less favorable for harvest as well. National economic conditions are probably also impacted hunting. Harvest in 2012 should decline due to the shortened season.

Table 1. Population Size During Bio-Year for MD539_10.GN1 03/02/2012 06:39 am

Bio-Year	Start	Pre-Season	Post Season	End	%Growth
2000	20000	15412	14747	9043	-10.0
2001	18008	12132	11500	9489	5.6
2002	19014	13418	12700	9761	2.9
2003	19559	13650	12658	9798	0.4
2004	19635	12935	11853	9615	-0.3
2005	19568	12073	11068	9627	1.1
2006	19792	13778	13127	10048	2.0
2007	20194	14234	13625	10510	4.6
2008	21128	14339	13522	9951	-3.2
2009	20462	14680	14121	9819	-2.1
2010	20034	13139	12708	9128	-3.9
2011	19246	12536	12199	9585	1.7
2012	19563	13606	13408	10396	5.3

Table 2. Preseason Natural Mortality for MD539_10.GN1 03/02/2012 06:39 am

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2000	4391	59	138	4588	22.9
2001	5648	67	161	5876	32.6
2002	5382	62	152	5596	29.4
2003	5683	64	163	5909	30.2
2004	6443	73	184	6700	34.1
2005	7216	78	201	7495	38.3
2006	5794	60	159	6014	30.4
2007	5732	63	165	5960	29.5
2008	6529	72	186	6788	32.1
2009	5571	57	154	5782	28.3
2010	6640	68	187	6895	34.4
2011	6475	60	173	6709	34.9
2012	5737	60	160	5958	30.5

Table 3. Harvest Mortality for MD539_10.GN1 03/02/2012 06:39 am

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2000	0	594	11	605	3.9
2001	0	564	11	575	4.7
2002	0	645	8	653	4.9
2003	33	599	269	901	6.6
2004	62	639	283	984	7.6
2005	17	666	231	914	7.6
2006	0	588	4	592	4.3
2007	5	542	7	554	3.9
2008	14	579	150	743	5.2
2009	0	495	13	508	3.5
2010	0	389	3	392	3.0
2011	0	305	2	307	2.4
2012	0	175	5	180	1.3

Table 4. Harvest Percentages for MD539_10.GN1 03/02/2012 06:39 am

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	Yearling Males
----------	------------	-------------	---------------	-------	----------------

2000	0.0	19.2	0.2	3.93	52.6
2001	0.0	21.8	0.2	4.74	30.5
2002	0.0	23.9	0.1	4.87	38.3
2003	0.8	22.3	3.9	6.60	39.9
2004	1.8	23.5	4.1	7.61	38.8
2005	0.6	25.4	3.4	7.57	48.0
2006	0.0	22.8	0.1	4.30	36.9
2007	0.1	20.0	0.1	3.89	41.8
2008	0.3	20.2	2.0	5.18	39.7
2009	0.0	18.7	0.2	3.46	32.1
2010	0.0	15.2	0.0	2.98	35.1
2011	0.0	13.3	0.0	2.45	26.5
2012	0.0	6.8	0.1	1.32	36.9

Table 5. Postseason Natural Mortality for MD539_10.GN1 03/02/2012 06:39 am

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2000	3183	533	1987	5704	38.7
2001	1194	207	609	2011	17.5
2002	1865	267	807	2939	23.1
2003	1835	264	761	2860	22.6
2004	1347	230	661	2238	18.9
2005	795	161	485	1441	13.0
2006	1967	259	853	3079	23.5
2007	1984	269	862	3114	22.9
2008	2199	338	1034	3571	26.4
2009	2890	348	1065	4303	30.5
2010	2172	355	1053	3580	28.2
2011	1639	245	729	2613	21.4
2012	1908	313	791	3012	22.5

Table 6. Preseason Ratios for MD539_10.GN1 03/02/2012 06:39 am

Bio-Year	Subadults /100 1+F	2+ Males /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2000	69.5	26.2	16.2	42.4
2001	53.3	29.8	11.9	41.6
2002	63.0	26.2	14.8	41.0
2003	60.1	24.5	14.8	39.3
2004	49.7	25.2	14.5	39.8
2005	40.7	25.8	13.2	39.0
2006	64.0	24.7	13.1	37.8
2007	62.0	23.0	15.0	38.0
2008	55.4	24.3	14.6	38.9
2009	69.7	26.2	11.2	37.4
2010	51.0	24.5	12.0	36.5
2011	55.2	26.2	8.6	34.7
2012	62.3	24.6	13.1	37.7

Table 7. Postseason Ratios for MD539_10.GN1 03/02/2012 06:39 am

Bio-Year	Subadults /100 1+F	2+ Males /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2000	69.6	22.0	11.5	33.5
2001	53.4	22.9	8.8	31.7
2002	63.1	19.6	10.7	30.2
2003	62.3	19.6	11.4	31.0
2004	51.0	19.8	11.1	30.9
2005	42.1	20.9	8.3	29.2

2006	64.1	18.7	9.6	28.4
2007	62.0	18.2	11.5	29.7
2008	56.4	19.6	11.4	30.9
2009	69.8	21.0	8.8	29.8
2010	51.0	20.5	9.9	30.4
2011	55.2	22.4	7.2	29.7
2012	62.4	22.8	12.0	34.9

Table 8. End of Year Ratios for MD539_10.GN1 03/02/2012 06:39 am

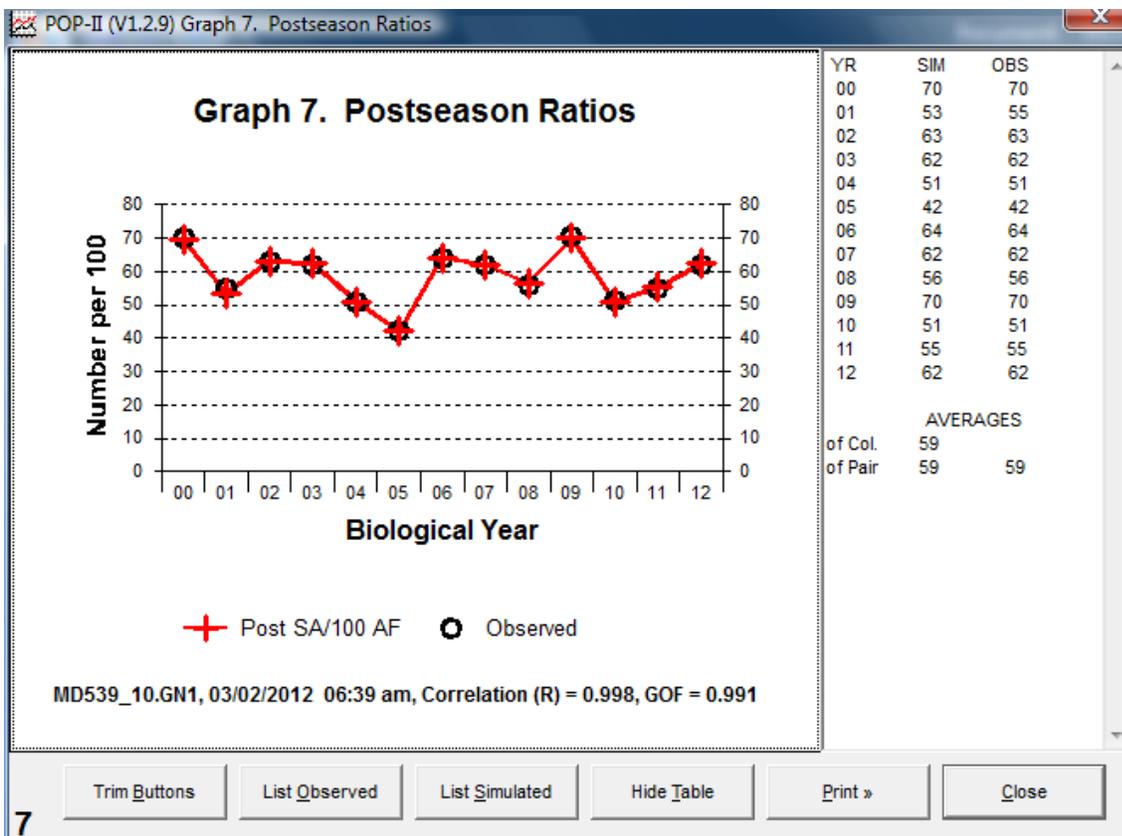
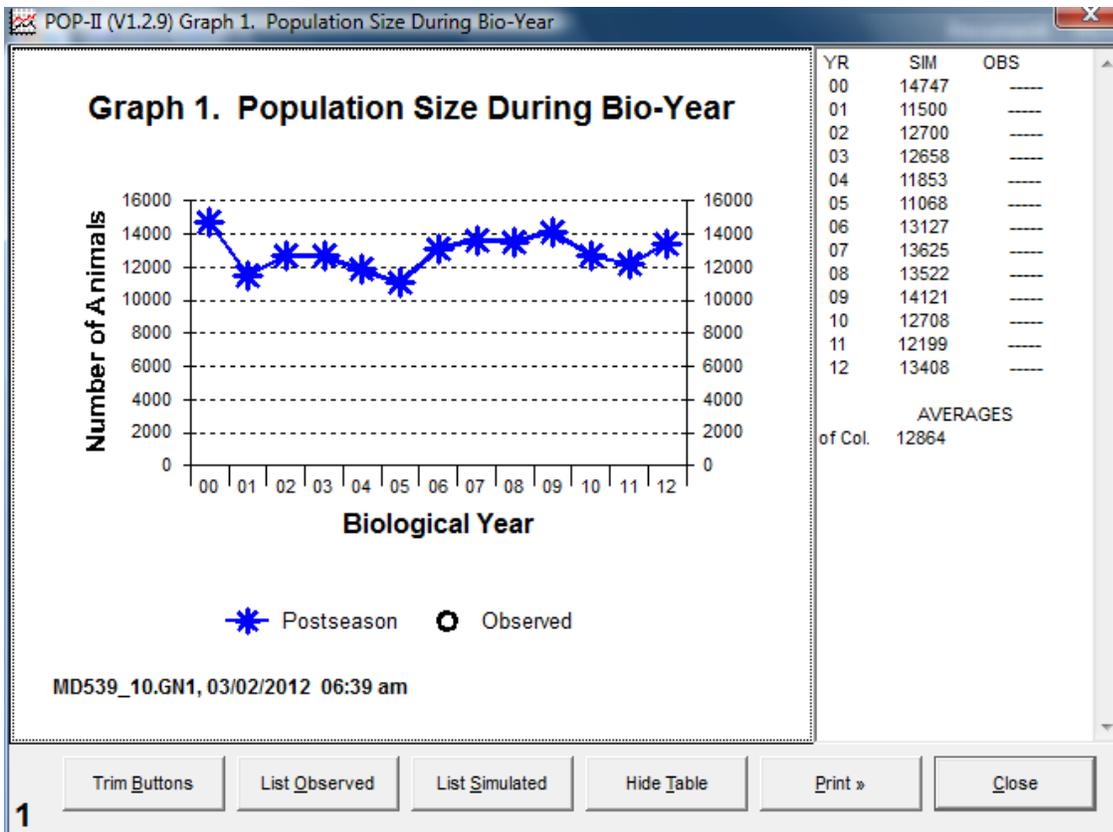
Bio-Year	Subadults /100 Adlts	Subadults /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2000	26.1	35.4	13.6	36.0
2001	28.8	37.9	9.0	31.5
2002	30.5	39.5	10.9	29.8
2003	29.7	38.8	11.7	30.6
2004	25.9	33.8	11.2	30.4
2005	25.0	32.2	8.4	28.8
2006	31.5	40.3	9.9	28.1
2007	30.0	38.8	11.8	29.5
2008	23.2	30.3	11.7	30.7
2009	26.4	34.1	9.0	29.3
2010	18.2	23.6	10.1	29.8
2011	26.4	34.1	7.3	29.2
2012	28.9	38.8	12.3	34.3

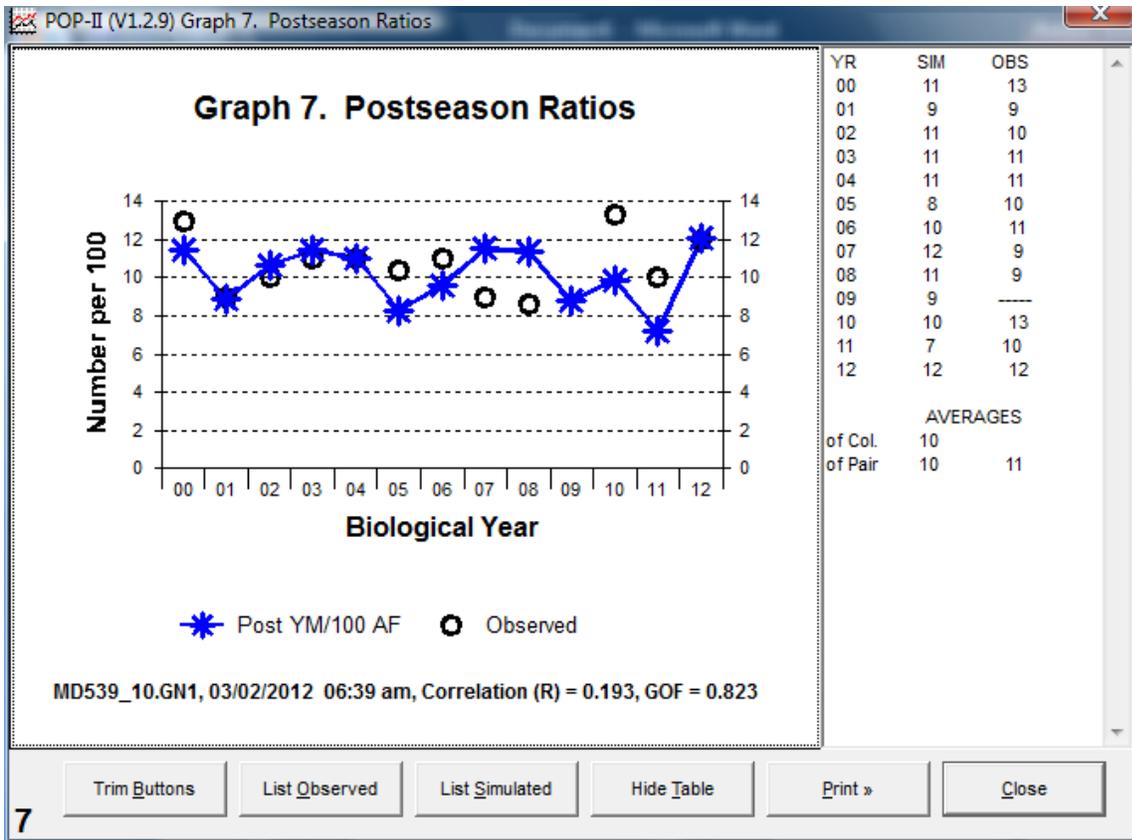
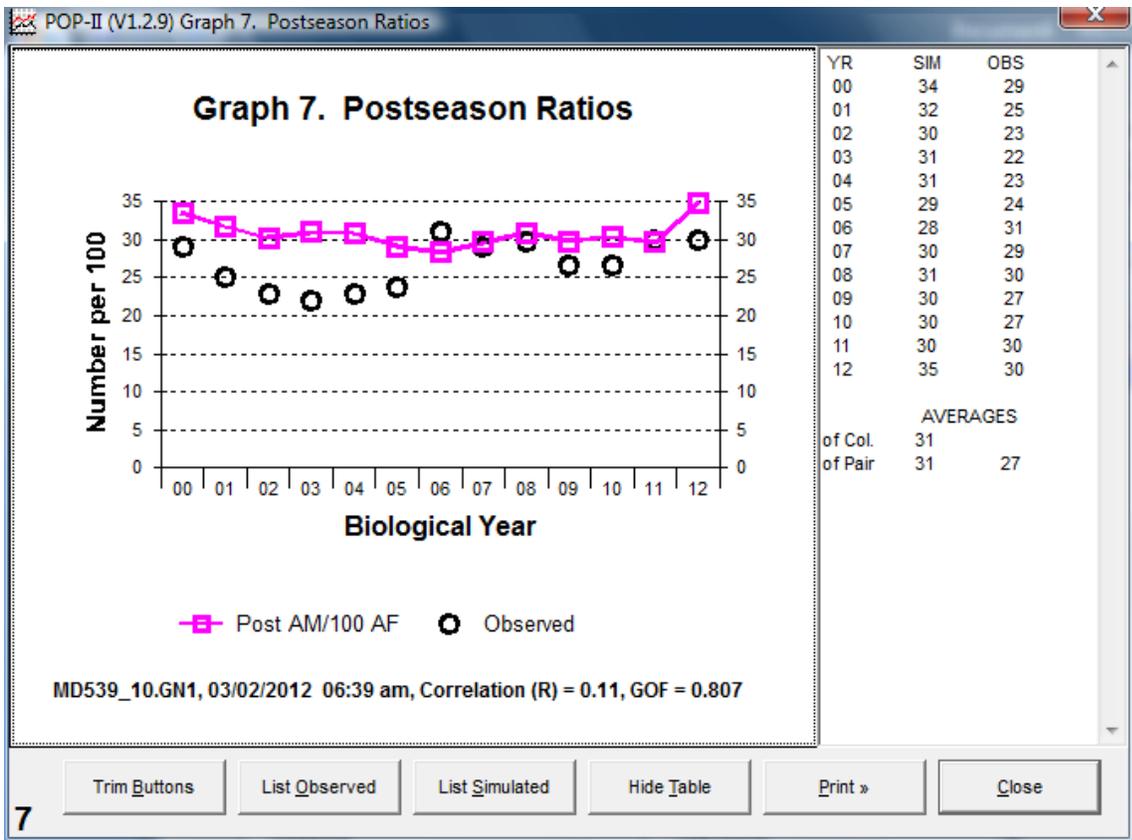
Table 9. Reproduction at Start of Bio-Year for MD539_10.GN1 03/02/2012 06:39 am

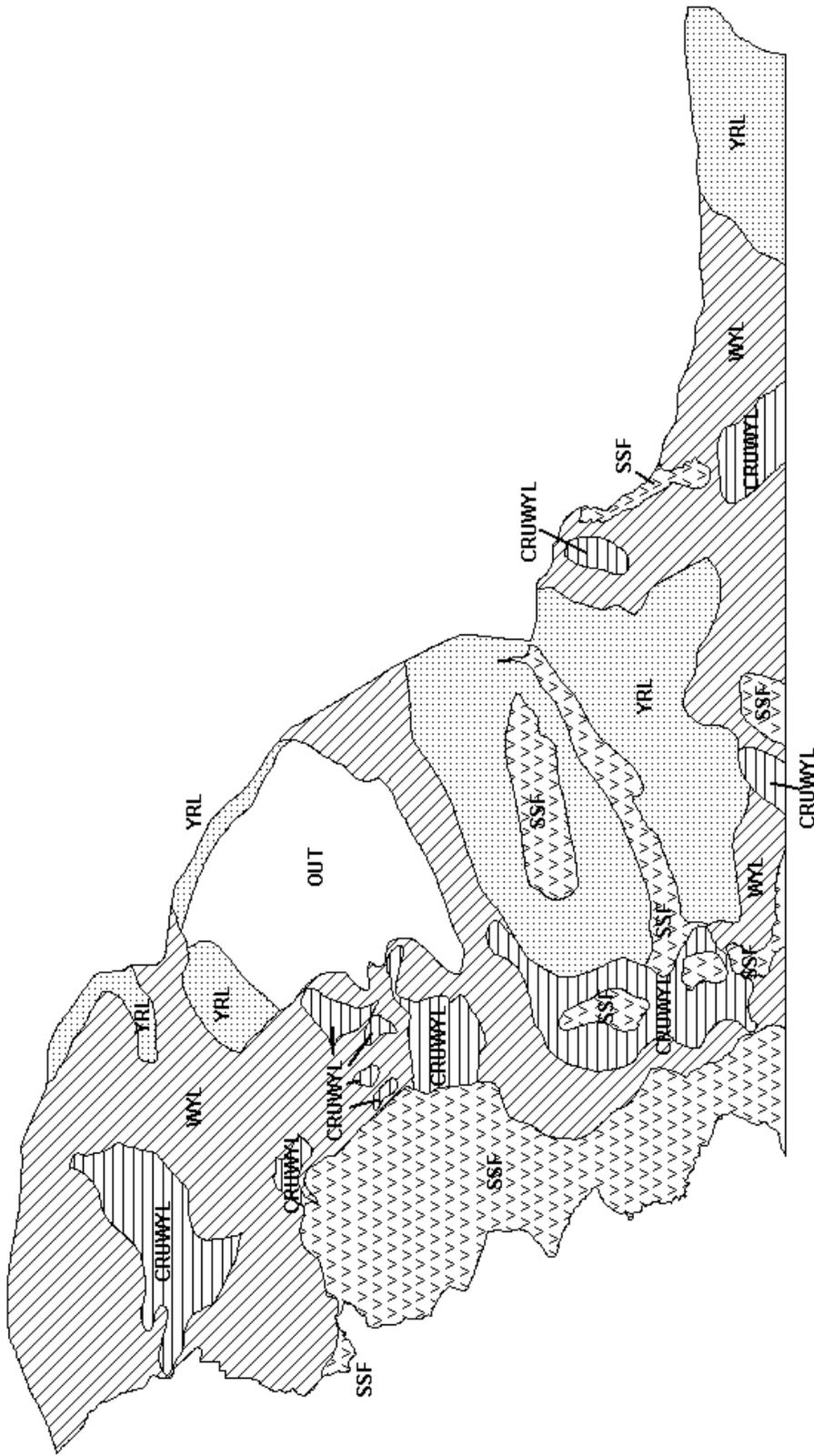
Bio-Year	Young / 100 AF 1 +	Sub-Ad. / 100 AF 1 +	Total Young	Total Sub- Adult	Total Females 1 +
2000	127	127	9444	9444	7411
2001	140	140	8965	8965	6385
2002	142	142	9525	9525	6731
2003	140	140	9798	9798	7006
2004	140	140	9837	9837	7010
2005	144	144	9953	9953	6919
2006	146	146	10165	10165	6985
2007	139	139	10146	10146	7280
2008	140	140	10617	10617	7568
2009	145	145	10511	10511	7242
2010	142	142	10215	10215	7195
2011	149	149	10118	10118	6774
2012	143	143	9978	9978	6962

Table A. Intra-Annual Natural Survival(%) for MD539_10.GN1 03/02/2012 06:39 am

Bio-Years	Sub Adults	Adult Males	Adult Females	Overall Survival
2000-2001	36.07	76.11	70.80	59.78
2001-2002	62.55	87.45	88.15	80.65
2002-2003	53.72	84.53	85.69	75.08
2003-2004	53.56	84.74	86.06	75.38
2004-2005	57.77	85.99	87.25	78.77
2005-2006	69.14	89.35	90.39	85.00
2006-2007	53.76	84.66	85.51	74.81
2007-2008	53.65	85.12	85.71	75.25
2008-2009	45.02	83.05	83.86	72.03
2009-2010	40.42	81.32	82.74	67.72
2010-2011	38.25	81.17	82.80	69.99
2011-2012	53.73	85.47	86.91	76.77







Mule Deer (MD539) - Sheep Mountain
 HA 61, 74-77
 Revised - 8/88

2011 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2011 - 5/31/2012

HERD: MD540 - SHIRLEY MOUNTAIN

HUNT AREAS: 70

PREPARED BY: WILL SCHULTZ

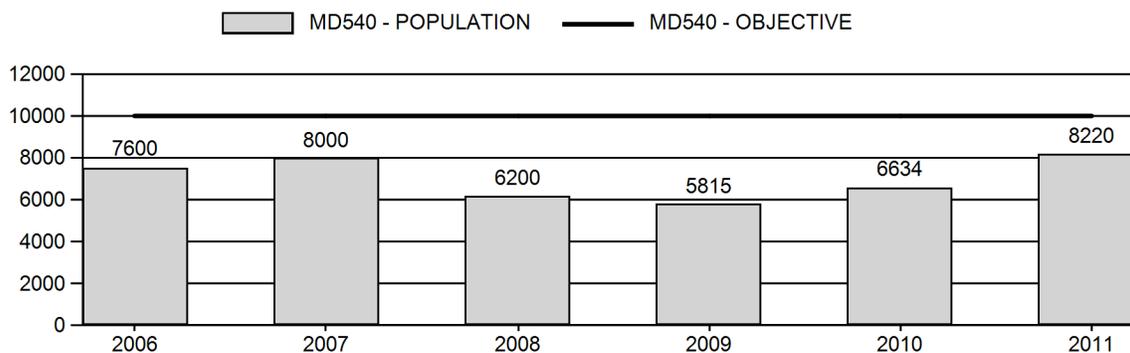
	2006 - 2010 Average	2011	2012 Proposed
Population:	6,850	8,220	8,288
Harvest:	461	353	300
Hunters:	850	806	800
Hunter Success:	54%	44%	38%
Active Licenses:	877	812	800
Active License Percent:	53%	43%	38%
Recreation Days:	3,220	3,657	3,500
Days Per Animal:	7.0	10.4	11.7
Males per 100 Females	27	41	
Juveniles per 100 Females	60	58	

Population Objective:	10,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-17.8%
Number of years population has been + or - objective in recent trend:	25
Model Date:	03/02/2012

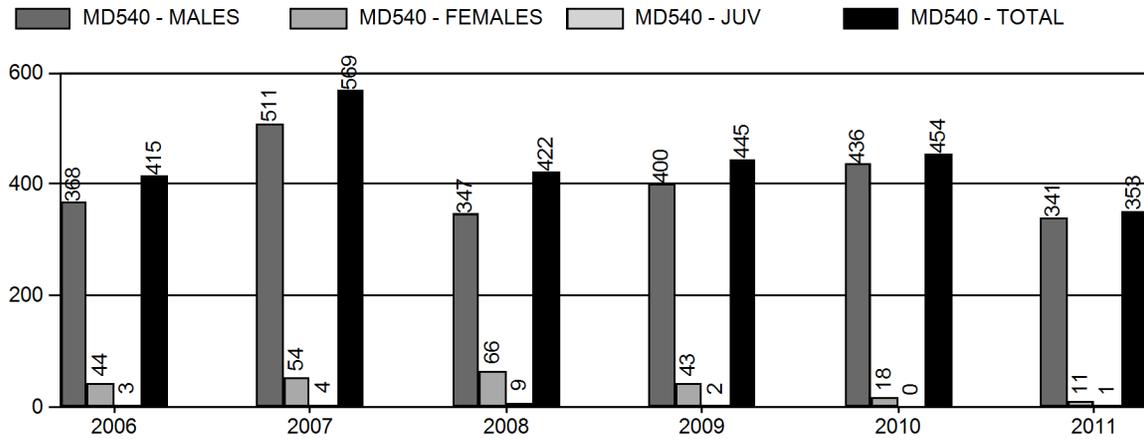
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
Females ≥ 1 year old:	0.3%	0.0%
Males ≥ 1 year old:	18.1%	15.9%
Juveniles (< 1 year old):	0.0%	0.0%
Total:	5.98%	3.48%
Proposed change in post-season population:	-4.4%	-3.8%

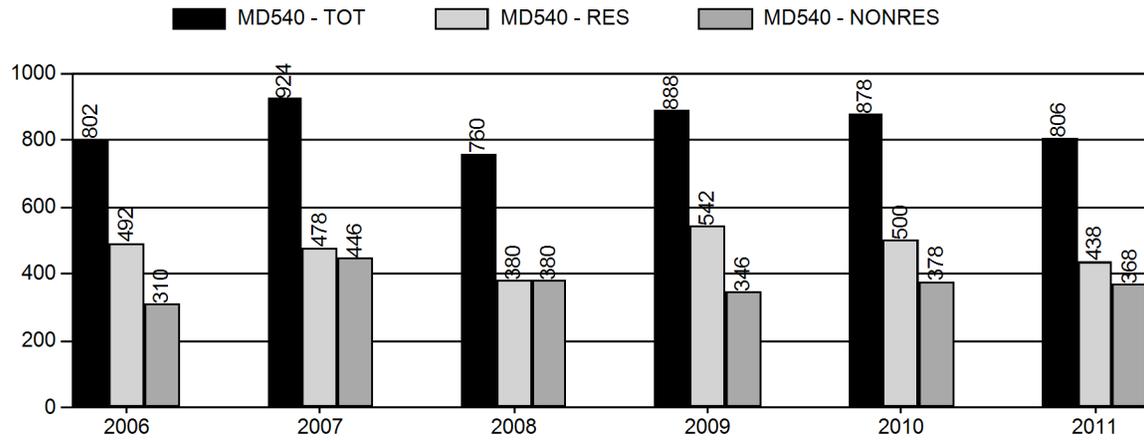
Population Size - Postseason



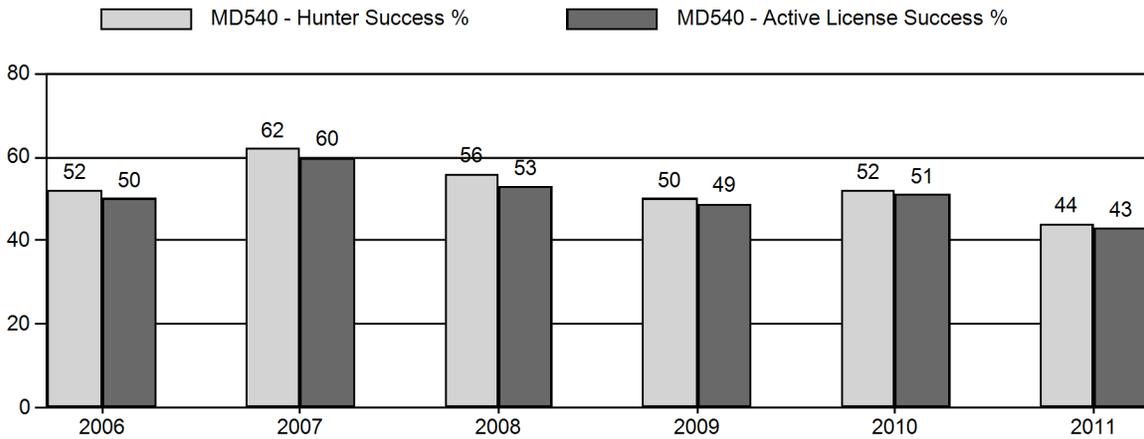
Harvest



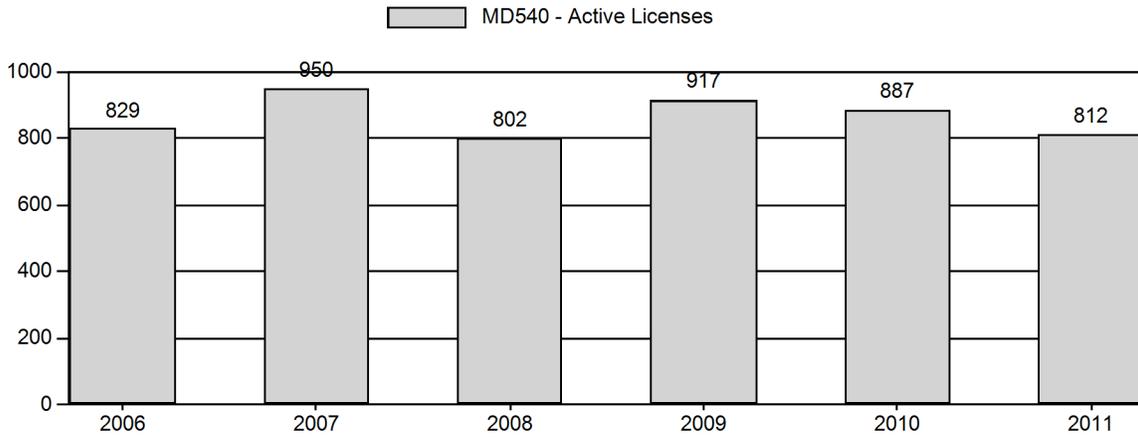
Number of Hunters



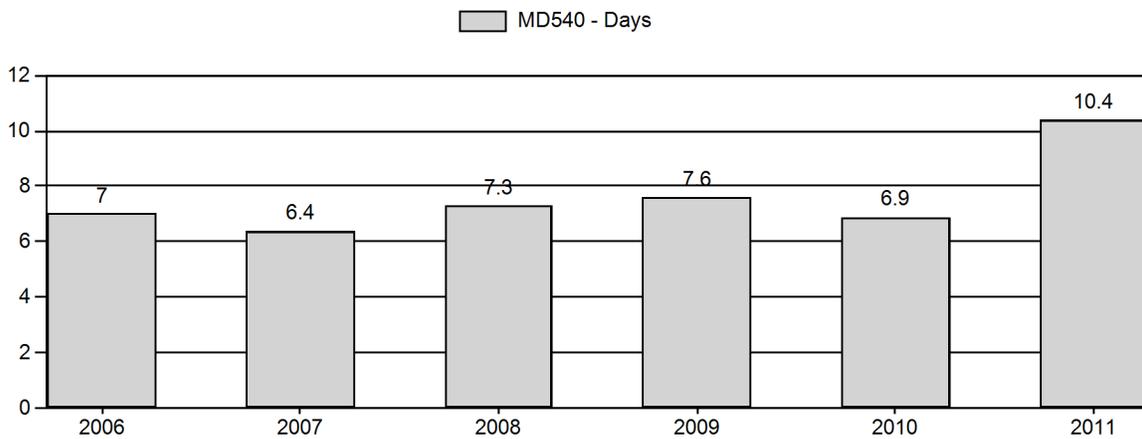
Harvest Success



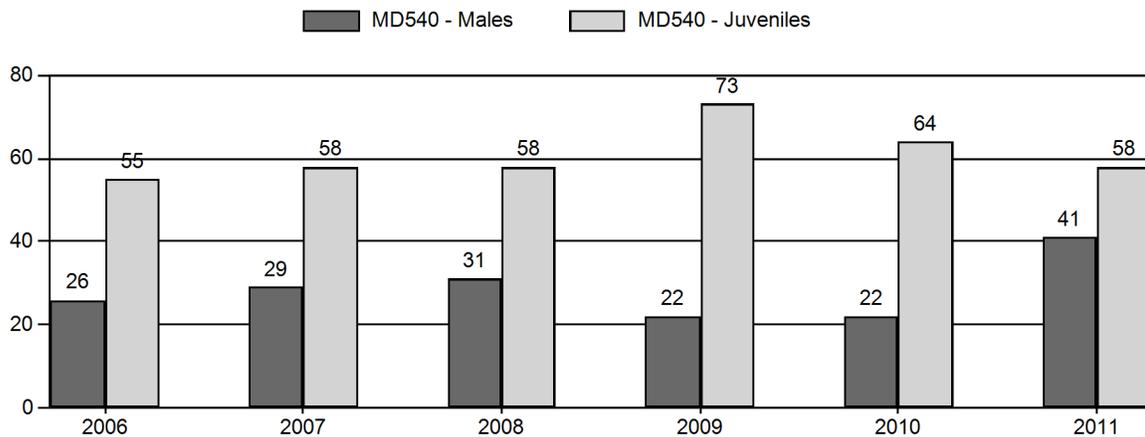
Active Licenses



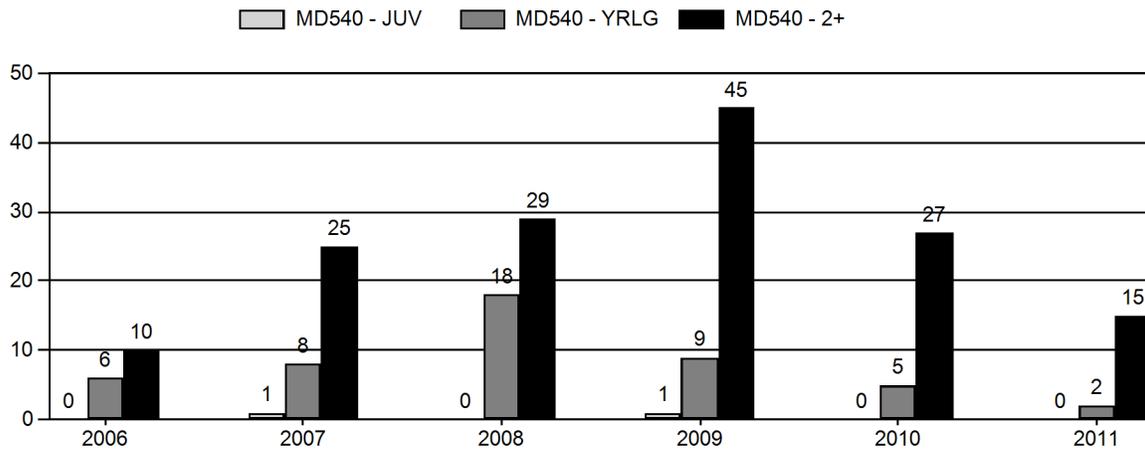
Days per Animal Harvested



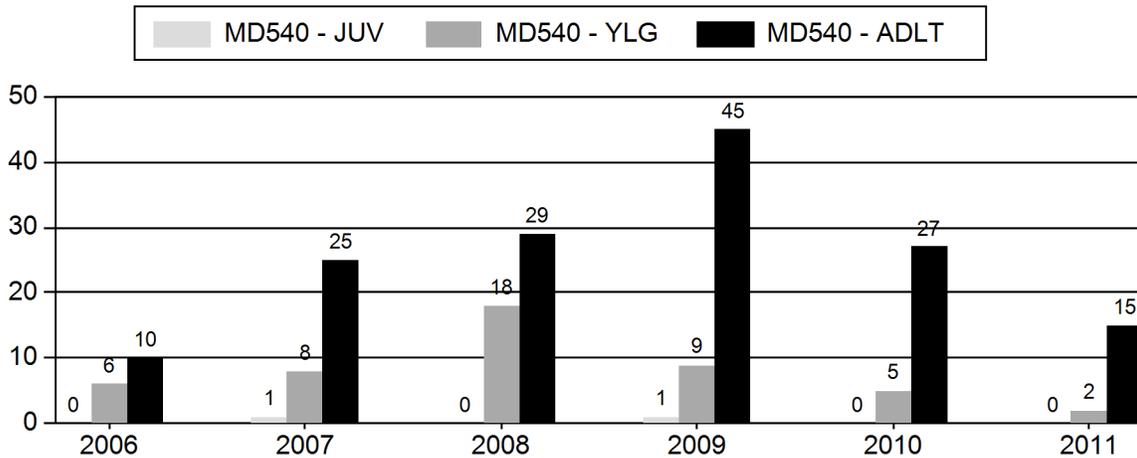
Postseason Animals per 100 Females



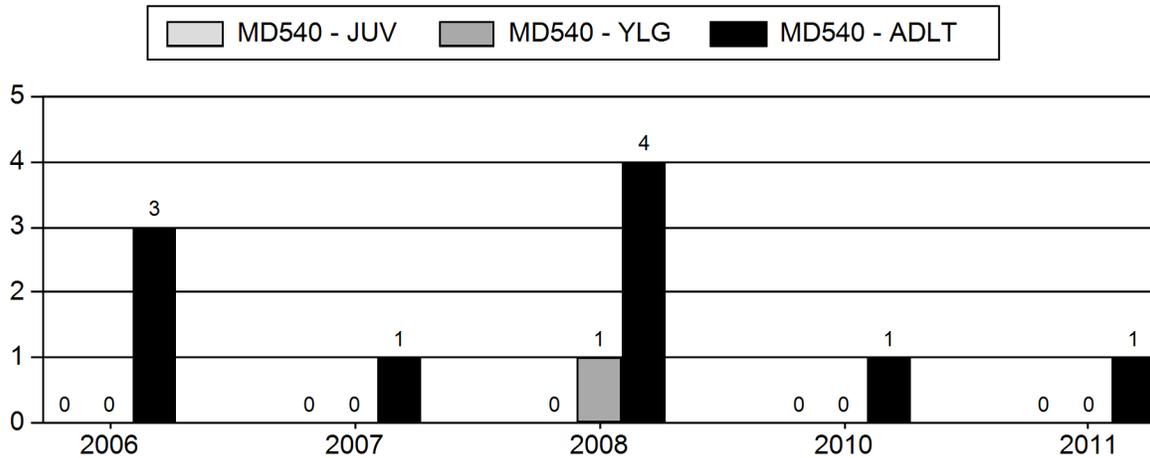
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



INTRODUCTION

This report focuses on the management of the Shirley Mountain Mule Deer Herd Unit (MD540) during the bio-years of 2009 through 2011. It is intended to provide the reviewer with information regarding the habitat, population and hunting status for this herd unit. Additionally, future management recommendations and the 2009 hunting season proposal for this herd unit are also included in this report.

During the period of 2006-2008 drought conditions subsided somewhat in the Shirley Mountain Mule Deer Herd Unit allowing for a slight increase in forage production for most shrub communities within the traditional winter ranges. During this period, the estimated postseason population averaged approximately 6,890 deer. Between 2009 and 2011 hunter numbers and harvest success averaged 857 and 49% respectively. Postseason classification ratios averaged 28 bucks and 65 fawns per 100 does from surveys with less than adequate sample sizes. Surveillance for Chronic Wasting Disease (CWD) continued with limited sampling effort and a low prevalence rate (3.9%) was observed. The construction of a wind farm occurred with more wind energy development being proposed within this herd unit and the surrounding areas.

BACKGROUND

The Shirley Mountain Mule Deer Herd Unit consists of Hunt Area 70, which lies north of U. S. Highway 30, west of Wyoming Highway 487 and east of the North Platte River. Hunt Areas 70, 71, and 72 were combined into Hunt Area 70 in 1999. The eastern boundary of this herd unit and the Region D boundary were changed from the Fetterman Road to Highway 487 in 1999. The Herd contains the Shirley, Bennett (Seminole), Freezeout, and Pedro Mountains. Elevation ranges from approximately 5,900 feet to over 8,800 feet. Habitats include montane forests (primarily lodgepole pine), aspen, mountain shrub, sagebrush-grasslands, grasslands, riparian, agricultural croplands, and reclaimed mine lands. Topographic relief can be dramatic and can offer quality hiding and escape terrain for mule deer.

The Shirley Mountain Herd Unit encompasses 1,442.6 square miles of occupied mule deer habitat. Land ownership consists of 48% private, 9% state lands, and 43% mixed federal lands, primarily BLM lands managed by the Rawlins Field Office. The southern half of the herd unit is mostly a checkerboard of private, state, and BLM lands as a result of land grants to railroads in the 1800's. The northern half contains more single owner blocks of land with large areas of accessible public land. In recent years, one ranch corporation has purchased an extensive amount of private land in and around the Shirley Mountains, and controls access to a substantial amount of the mule deer habitat.

The population objective for the Shirley Mountain herd unit is 10,000 mule deer. A recreational management strategy has been prescribed for this herd unit. This strategy attempts to maintain postseason buck ratios at 20-29 bucks per 100 does (WGFD 2007).

Past management of this herd has been inconsistent (WGFD 2005). Management fluctuated between attempting to increase deer numbers and then trying to reduce deer causing damage to alfalfa crops. Most landowners, including several who sustain damage, as well as the general public, would like to see deer numbers increase for this herd unit. Some landowners support point restriction or limited quota season strategies. This population has declined in recent years due to reduced fawn production and recruitment. Restrictive seasons have been recommended to allow habitat conditions, fawn production, and natural mortality to determine the increase of this herd towards objective. However, old aged browse strands,

drought and foraging pressure from other herbivores raise concern over the habitat's long term ability to sustain higher numbers of deer.

The Nonresident Region D boundary was modified in 2006 to exclude the west slope of the Sierra Madres. This action was made in response to hunter crowding issues on the west side of the Continental Divide. This change has resulted in an increase in the number of nonresident Region D hunters that have chosen to hunt in the Shirley Mountain Herd Unit.

WEATHER

Weather data for Upper Platte Climatic Division 10 which is normally appended to this report was unavailable this year. Generally, precipitation increased during this period. The average high temperatures also increased. Severe winter weather was experienced in this area during the winter of 2010-2011, and may have negatively influenced over-winter survival for mule deer.

HABITAT CONDITIONS

Production/utilization transects data for this herd unit which is normally appended to this report was unavailable this year. The Habitat Branch has established 3 production/utilization transects to represent 1,442.6 square miles of occupied mule deer habitat in this herd unit. The limited production/utilization data available for this herd unit limits any inferences regarding the condition status of the Shirley Mountain Herd Unit habitat. Generally, production improved slightly during this period due to an increase in precipitation. Utilization still appeared to be excessive due to high densities of mule deer and other ungulates in the vicinity of the production/utilization transects.

POPULATION

CLASSIFICATION DATA

Observed buck ratios increased over the 2009-2011 period (Figure 1). The postseason fawn ratio increased in 2009 and 2010, and then declined in 2011. The winter of 2010-2011 was quite severe in much of this herd unit and may have contributed to reducing fawn ratios in 2011 back to the high fifties observed during the last decade.

Postseason classifications were conducted from the ground during this period. Since the same personnel conducted the surveys for the period of 2009-2011 as in the past reporting period, it could be assumed that the knowledge of deer distribution should have resulted in a similar sample sizes for 2009-2011. However, although deer distribution appeared similar to that observed during the 2006-2008 surveys, observations of individual group sizes were noticeably smaller in 2009 through 2011. Again, these smaller sample sizes were attributed to a decrease in the population due to reduced over-winter survival due to winter severity.

The classifications surveys prior to 2005 were conducted from the ground with very inadequate sample sizes being collected (Table1). The 2005 classification survey was conducted from a helicopter with a better sample size being obtained. Postseason classifications were again conducted from the ground in late November for the period of 2006-2008. Overall, sample sizes were improved even more during this period. However, the sample sizes were still below the classification objective required for an adequate sample at the 80% confidence level. During the 2009-2011 period this trend in below adequate sample sizes continued.

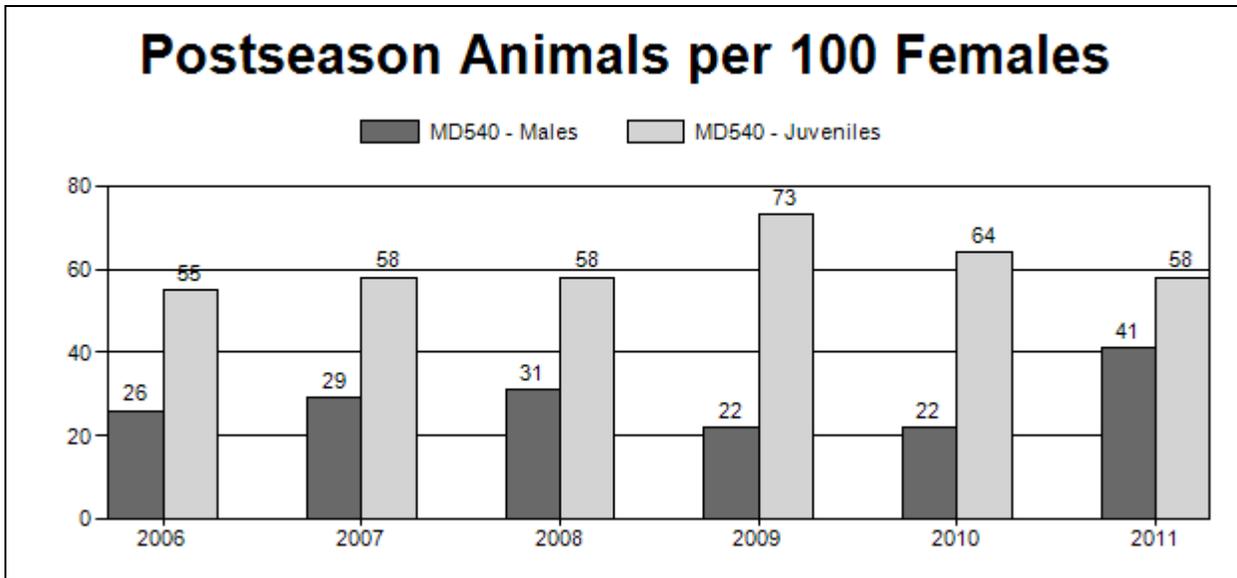


Figure 1. Shirley Mountain Mule Deer Postseason Animals per 100 Female, Wyoming, 2006-2011.

Year	Post Pop	MALES				FEMALES				JUVENILES				Males to 100 Females				Young to		
		Ylg	Adult	Total	%	Total	%	Total	%	Tot CIs	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult		
2006	7,600	48	68	116	14%	454	56%	248	30%	818	884	11	15	26	± 3	55	± 5	44		
2007	8,000	45	74	119	15%	410	53%	239	31%	768	995	11	18	29	± 4	58	± 6	45		
2008	6,200	26	60	86	17%	276	53%	159	31%	521	963	9	22	31	± 5	58	± 7	44		
2009	5,815	10	38	48	11%	216	51%	157	37%	421	913	5	18	22	± 4	73	± 9	59		
2010	6,634	24	18	42	12%	190	54%	122	34%	354	958	13	9	22	± 5	64	± 9	53		
2011	8,220	29	37	66	20%	162	50%	94	29%	322	1,079	18	23	41	± 7	58	± 9	41		

Table 1. Shirley Mountain Mule Deer Postseason Summary, Wyoming, 2006-2011.

POPULATION MODELING

The lack of adequate classification sample sizes and harvest information for this herd unit has hindered the ability of managers to develop POP-II population models that provide consistent trends between the observed and simulated ratios. Because the classification data collected prior to 2005 was derived from very small sample sizes, a revised POP-II simulation has been developed excluding these earlier data in an attempt to produce a simulation that is uninfluenced by the extreme swings in observed values during the earlier portion of this decade.

The POP-II simulation presented later in this report was constructed using only the observed values for bio-years 2005 through 2011, and is projected through 2013 with those projections based on averages of the observed values from 2005-2011. Traditionally, managers have aligned the simulated fawn ratios precisely with the observed fawn ratio, and aligned the buck ratio simulation at a level well above the observed ratio. This is done because of an assumption that mature bucks will be under represented in the survey and that observers will misclassify yearlings bucks as does. However, this current model attempts to align the simulated buck ratios in close proximity to the observed values in an effort to minimize biases introduced into the model from the potential overestimation of bucks. The current model's postseason population

estimate for 2011 is higher (19%) than that produced with previous POP-II model revisions (Figure 2). The 2011 postseason estimate of 8,220 deer is questionable. Fewer deer are observed in this herd unit than previously. However, this higher suspect estimate is required in order to simulate a population level needed to support the harvest and the subsequent ratio of bucks observed in classification for this herd unit.

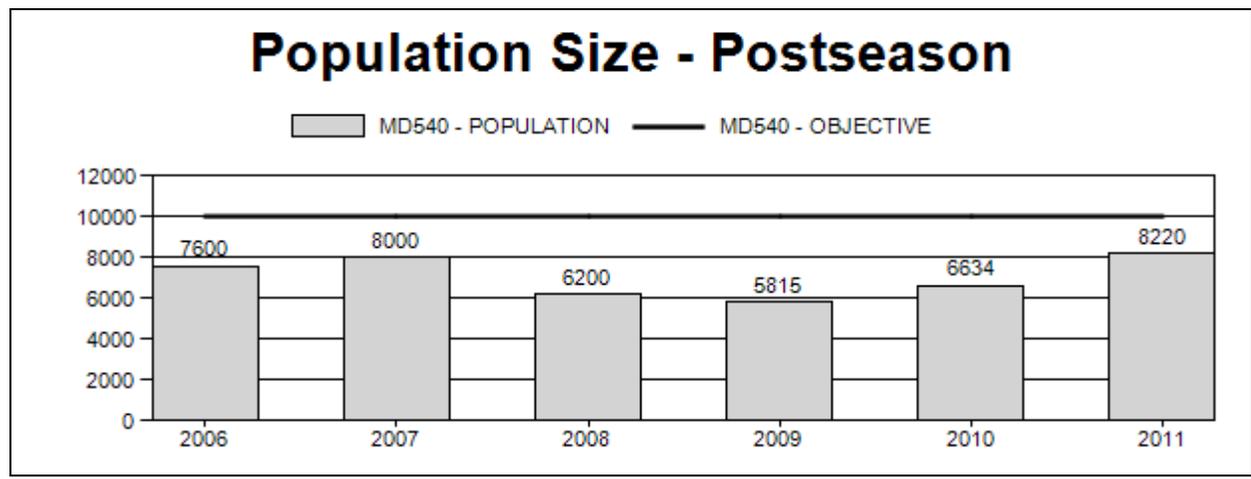


Figure 2. Shirley Mountain Mule Deer Population Size - Postseason, Wyoming, 2006-2011.

HUNTING SEASON

The 2011 hunting season structure is described in Figure 3.

<u>Hunt Area</u>	<u>Add'l Hunt Areas</u>	<u>Type</u>	<u>Quota</u>	<u>Season Dates</u>	<u>Limitations</u>
70		GEN		10/15 - 10/21	antlered mule deer or any white-tailed deer
70		Type 6	25	10/15 - 11/30	valid on private land

Figure 3. Shirley Mountain Mule Deer 2011 Hunting Season, Wyoming.

HARVEST

Antlered only General hunting seasons have been implemented the Shirley Mountain herd unit since 1994. In 2004, antlerless harvest was re-instituted for the first time since the 1993 season with the issuance of a reduced price doe or fawn license type. This license continued to be offered through the period of 2009-2011. The doe/fawn harvest was focused locally, by limitation, in the Leo area to reduce depredation on alfalfa crops and to improve shrub health in the Sage Creek basin.

HUNTER STATISTICS

As illustrated in Figure 3, hunters harvested 400, 436 and 341 bucks during the hunting seasons of 2009, 2010 and 2011 respectively. The harvest of 341 bucks in 2011 was the lowest number reported in this herd unit since 2005. In Table 2, the difference between the numbers listed in the Licensed Hunters column and

the numbers listed in parentheses in the following column represented the number of hunters who actually hunted both the General season and also hunted in the doe/fawn season. Figure 4 illustrates the active licensed hunter numbers for this herd unit. For years 2006-2011, the number of Active Licenses increased slightly over the Hunter numbers because many of the General licensed hunters also hunted with reduced priced doe/fawn licenses in this herd unit.

Since 2006 the number of nonresident Region D Licensed hunters that chose to hunt in this herd unit remained fairly consistent in proportion to the resident hunter numbers (Figure 5). The overall quota for nonresident hunters in Region D was reduced from 2,500 licenses in 2008, to 2,200 in 2009, and to 2,100 in 2010.

General license harvest success for bucks has typically been good in this herd unit. During the past 3 years buck harvest has ranged from a low of 43% in 2011 to the high of 51% in 2010 (Figure 6). Harvest success for the reduced price doe/fawn license was approximately 60%, which is typical for this license type. Although the doe/fawn harvest has not significantly impacted the overall population of this herd unit, it has aided in reducing damage to alfalfa crops and appeasing the landowners in the Leo area.

The hunting season length was 11 days in 2009; 8 days in 2010; and 7 days in 2011. This reduction in days was implemented to reduce overall buck harvest. The days per animal harvested increased in 2011 to a high of 10.3 days (Figure 7). This was attributed to not only an assumed lower over-winter survival in 2010-2011, but also to very mild harvest conditions.

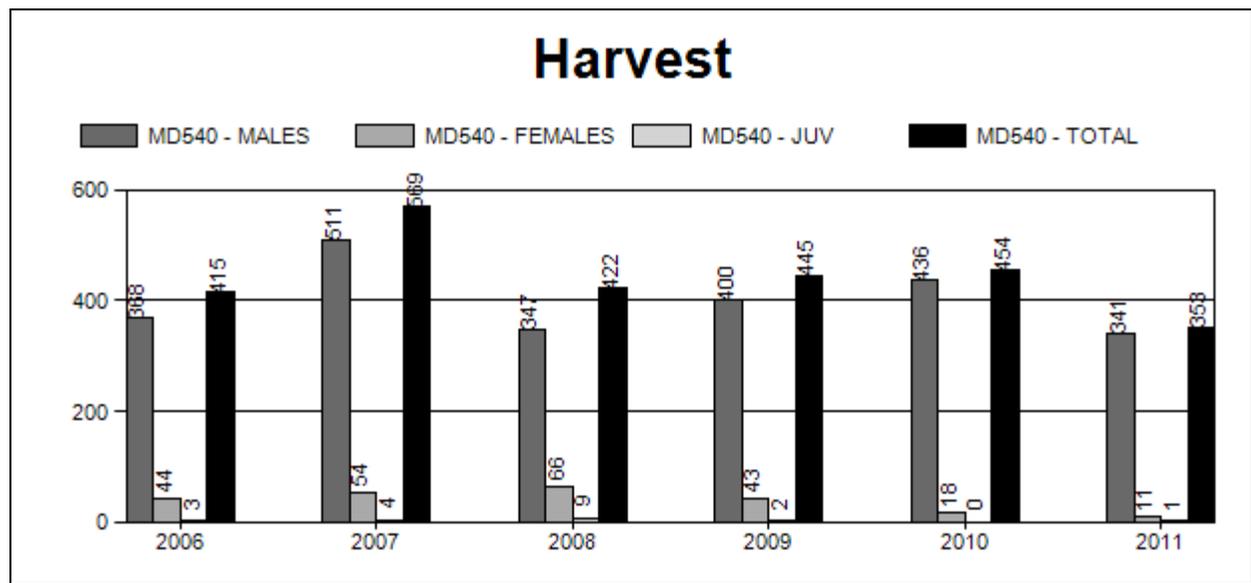


Figure 4. Shirley Mountain Mule Deer Harvest, Wyoming, 2006-2011.

Area	Type	Active Lic/Htrs	Buck	Doe	Fawn	Total	Success		Days/ Harvest	Days	Licenses Sold
2011											
70 SHIRLEY MOUNTAIN											
	General	799	341	0	0	341	42.7%		10.7	3637	
	Type 6	13	0	11	1	12	92.3%		1.7	20	25
	Pooled Total	806	(812)*	341	11	1	353	43.8%	(43.5%)*	10.4	3657
	Pooled Resident	438		143	11	1	155	35.4%		11.9	1852
	Pooled Nonresident	368		198	0	0	198	53.8%		9.1	1805
2011	Hunt Area										
Total		806	(812)*	341	11	1	353	43.8%	(43.5%)*	10.4	3657 25

*Active Licenses

Table 2. Shirley Mountain Mule Deer Harvest by Hunt Area Summary, Wyoming, 2011.

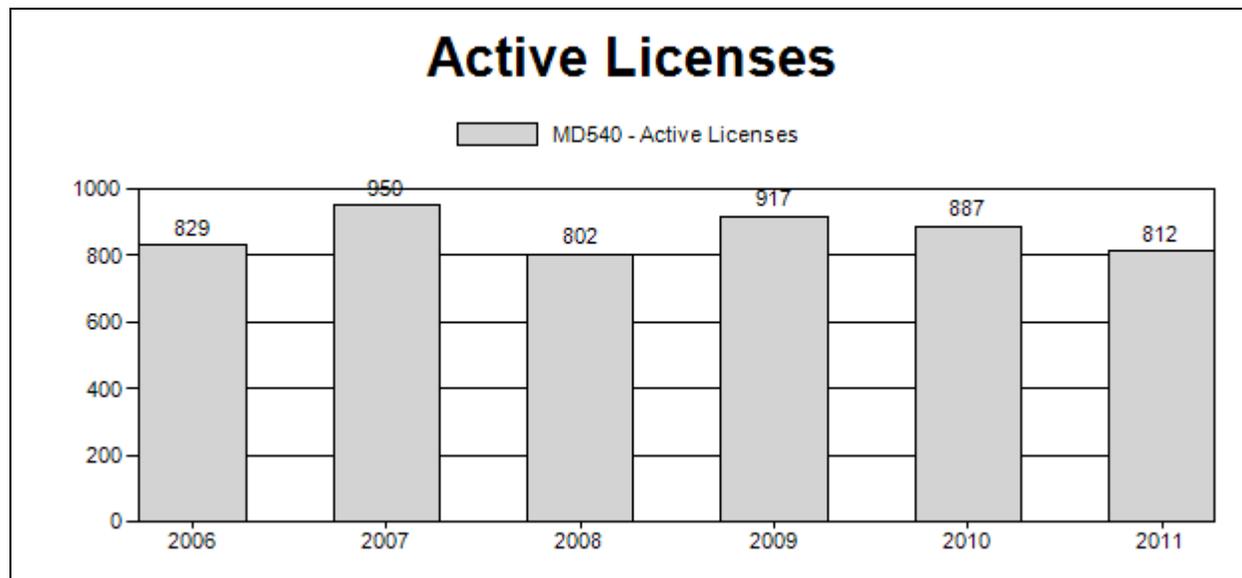


Figure 5. Shirley Mountain Mule Deer Active Licenses, Wyoming, 2006-2011.

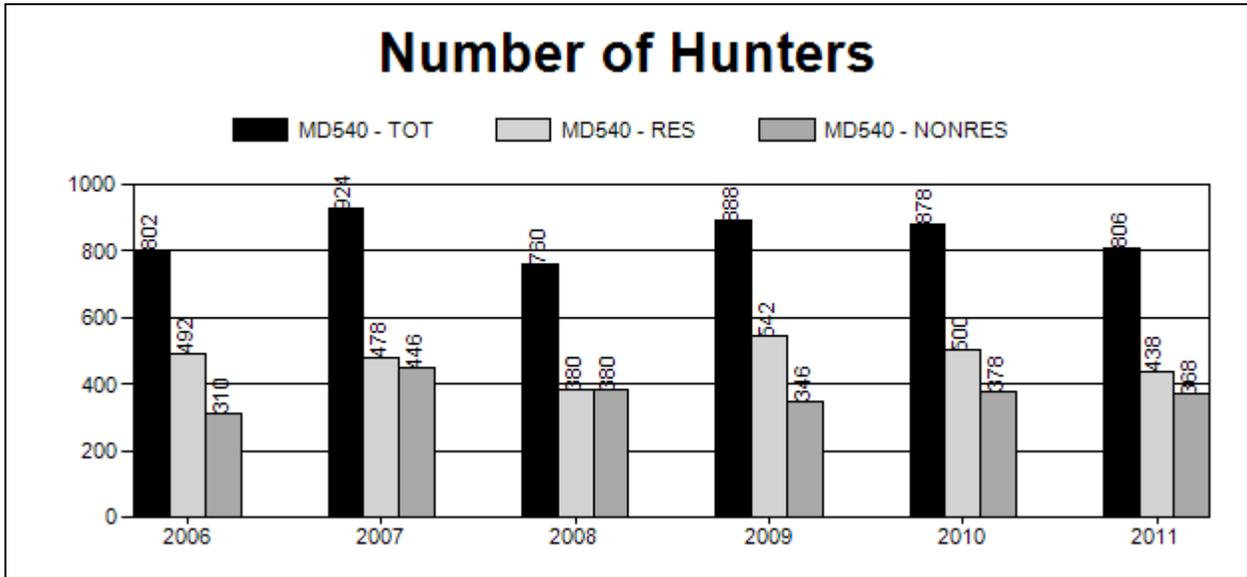


Figure 6. Shirley Mountain Mule Deer Number of Hunters, Wyoming, 1999-2008.

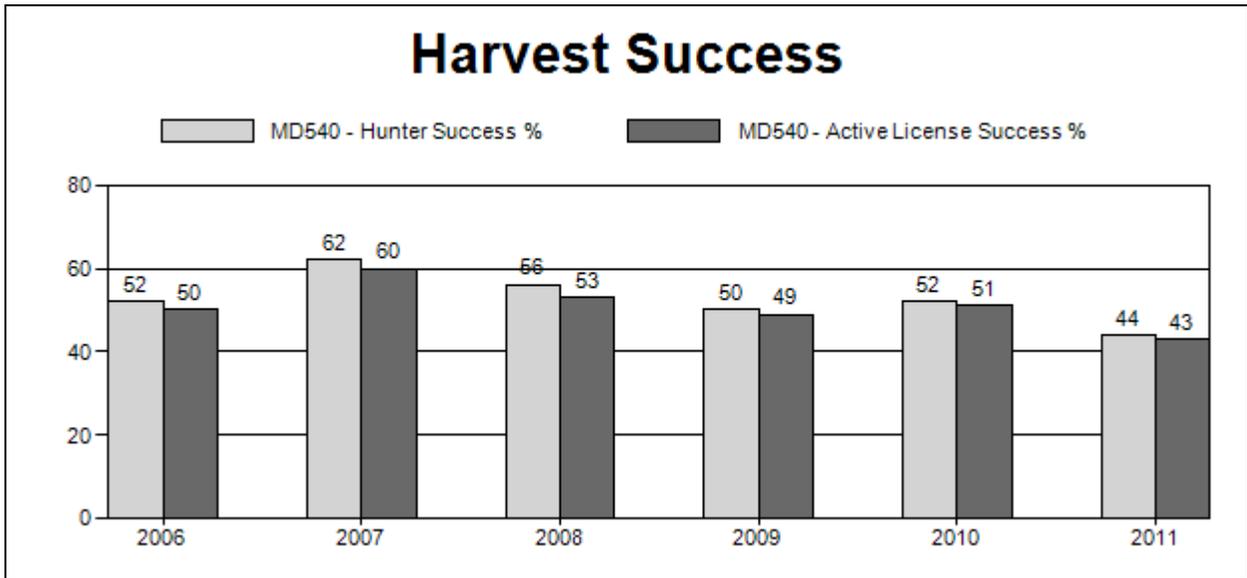


Figure 7. Shirley Mountain Mule Deer Harvest Success, Wyoming, 2006-2011.

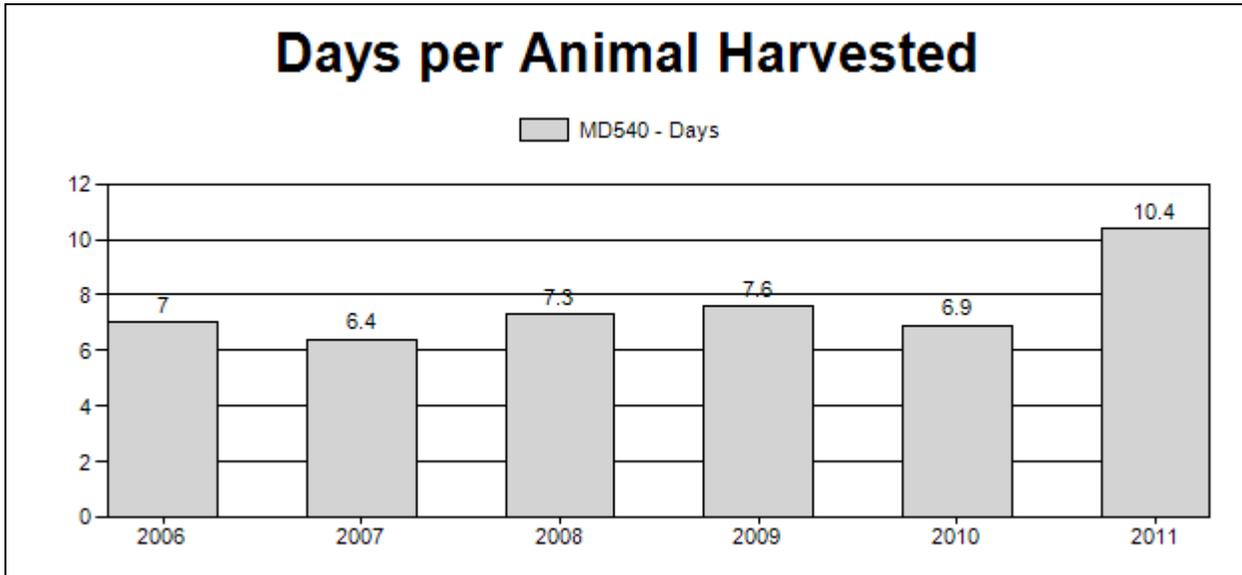


Figure 8. Shirley Mountain Mule Deer Days Per Animal Harvested, Wyoming, 2006-2011.

HUNTER FIELD CHECKS

Figures 8 and 9 indicate that all age structure data for males was collected from field checks. The highest percentage (10%) of total buck harvest checked for age occurred in 2009 and can be directly attributed to setting up a temporary check station in Medicine Bow in an effort to increase CWD surveillance in this area. Otherwise field check efforts in this herd unit have been poor. Figure 10 indicates female deer were seldom checked in this herd unit. Despite the poor sample sizes reported, yearling buck harvest appeared to be consistent with other herd units in Wyoming with similar postseason fawn ratios. Since the age data presented in this report is not specific beyond the age of 1 year, no inferences about the adult age structure for deer harvested in this herd unit can be determined.

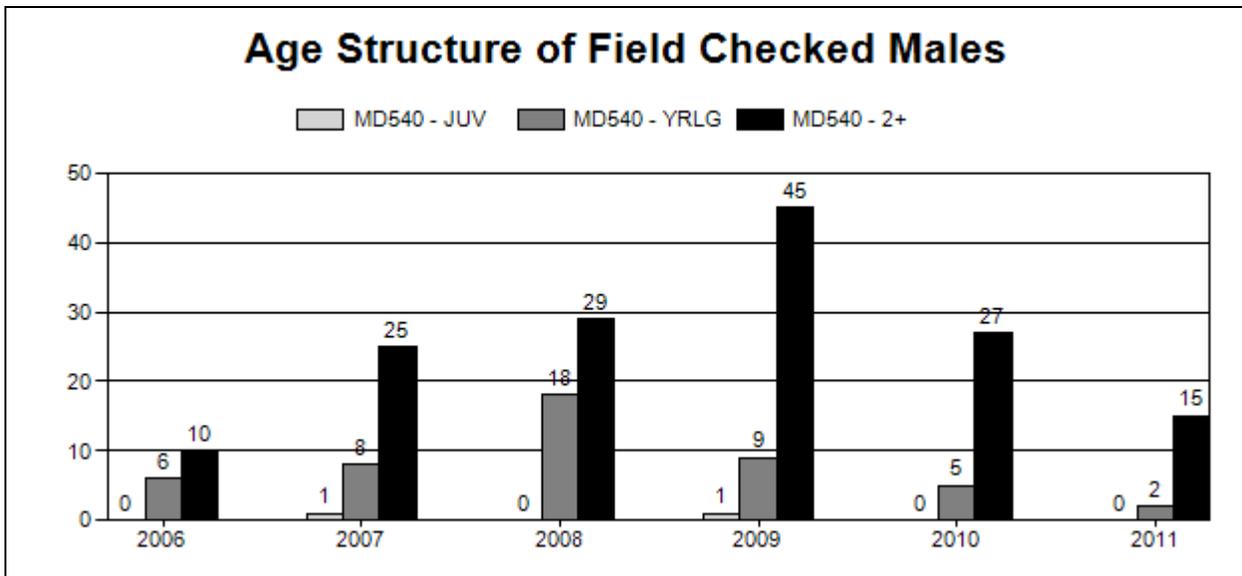


Figure 9. Shirley Mountain Mule Deer Age Structure of Field Check Males, Wyoming, 2006-2011.

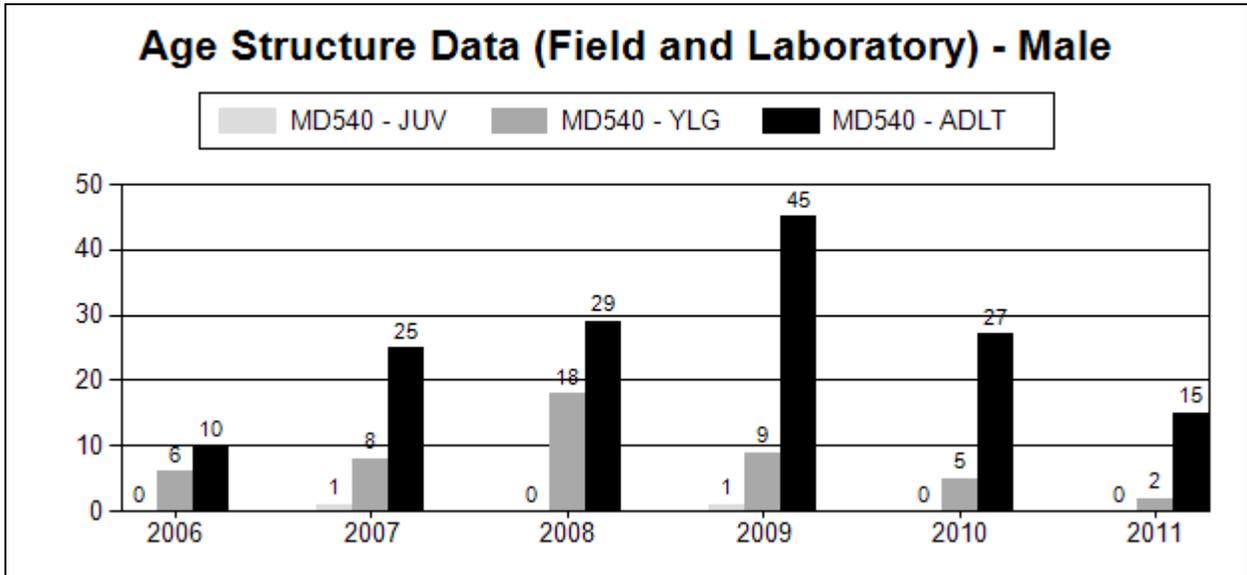


Figure 10. Shirley Mountain Mule Deer Age Structure Data (Field and Laboratory) - Male, Wyoming, 2006-2011.

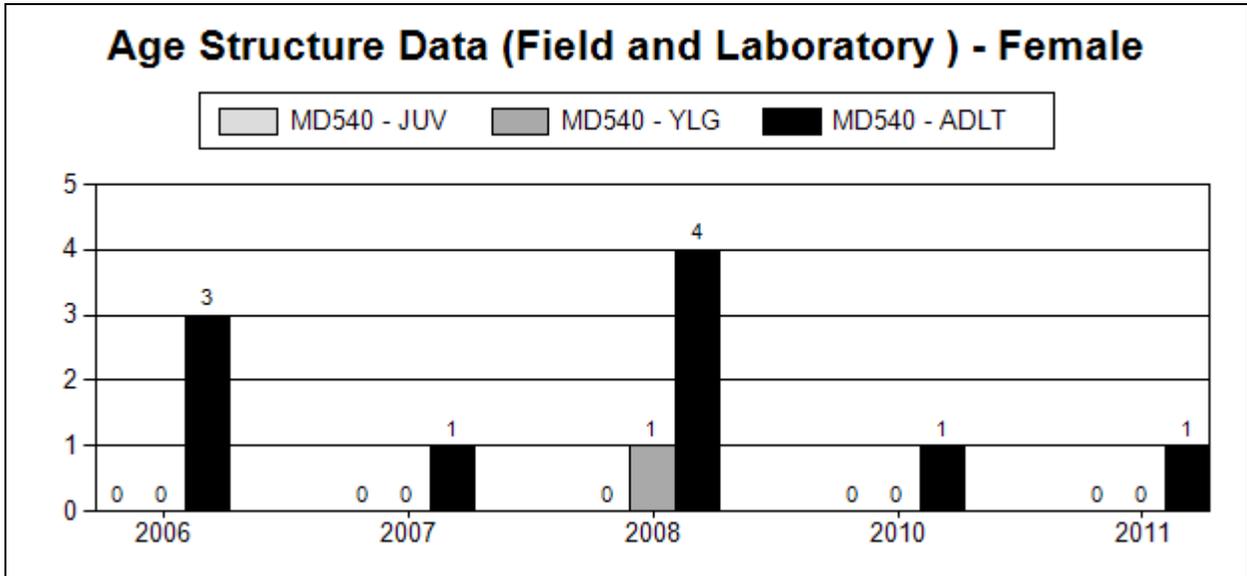


Figure 11. Shirley Mountain Mule Deer Age Structure Data (Field and Laboratory) - Female, Wyoming, 2006-2011.

OTHER MANAGEMENT ISSUES

Since 1999, CWD surveillance efforts have resulted in 284 mule deer from this herd unit being tested for the disease. CWD was first detected in this herd unit in 2003. Of those 284 deer that were tested, 11 were positive for CWD, yielding a prevalence rate of 3.9%. In 2006, CWD was first detected in an elk from this same herd unit.

Year	Harvested Sampled	Harvested Positive	Targeted Sampled	Targeted Positive
1999	7	0	0	0
2000	3	0	0	0
2001	24	0	0	0
2002	28	0	0	0
2003	54	1	0	0
2004	24	1	0	0
2005	25	2	0	0
2006	26	0	1	1
2007	10	0	1	0
2008	19	0	1	0
2009	27	2	0	0
2010	21	3	0	0
2011	13	1	0	0
Total	281	10	3	1

Table 3. Shirley Mountain Mule Deer CWD Surveillance, Wyoming, 1999-2011.

HABITAT

ON-GOING/COMPLETED PROJECTS

No significant habitat projects occurred in this herd unit during this period.

ISSUES DISCUSSION

Habitat quality has been exacerbated by continued drought conditions sustained during this past decade. Although shrub leader growth improved during this period, heavy utilization appeared to continue on most of the preferred winter range. Elk are assumed to compete with mule deer on much of their overlapping ranges in and around the Shirley and Freezeout Mountains. Efforts have continued to reduce the Shirley Mountain Elk Herd towards their management objective but progress in accomplishing this task has been slow.

During this period, energy development in the form of wind farms began in this herd unit. The potential for wind energy in this herd unit is excellent and the future construction of additional wind farms here appears to be inevitable with several projects currently being proposed. The impacts that wind farm development, either direct or cumulative, will have on mule deer and their habitat is unknown. However, one could assume that the impacts to mule deer could be similar, and as negative, as those experienced in areas where high-density oil and gas development has occurred elsewhere in Wyoming.

MANAGEMENT RECOMMENDATIONS

1. Complete postseason classification survey using a helicopter to obtain an adequate survey sample size.
2. Implement hunting season strategies which will maintain or improve harvest success and hunter satisfaction.
3. Increase CWD surveillance in order to accurately assess the prevalence rate for this herd unit.
4. Identify and implement habitat improvement projects that benefit mule deer in this herd unit.
5. Review the management objective to better align mule deer densities with the sustainability of current habitat conditions in this herd unit.
6. Encourage land management agencies to monitor and mitigate the impacts from energy development to mule deer.

SPECIAL STUDIES

FINAL REPORTS/ON-GOING PROJECTS

(The following report was submitted to the Carbon County Predator Management District on the completion of a predator control project for the benefit of mule deer in the Shirley Mountain herd unit.)

SHIRLEY MOUNTAIN MULE DEER HERD UNIT (MD540) MULE DEER POPULATION MONITORING SUMMARY

Date: 14 May 2010

Prepared by: Will Schultz, Saratoga District Wildlife Biologist,
Wyoming Game and Fish Department

INTRODUCTION

The Shirley Mountain Mule Deer Herd Unit (MD540) management objective has been 10,000 mule deer since 1987. In recent years, post-season population estimates for MD540 have been consistently below the management objective (Table 1.). Mule deer fawn ratios have been less than 65/100 does since 2004 (Table 1). These data indicate MD540 met the criteria established by the Wyoming Game and Fish Commission (Policy No. VII R) for consideration of predatory animal control for the benefit of wildlife.

Table 1. 2000-2009 Population estimates and post-season fawn ratios for the Shirley Mountain Mule Deer Herd Unit, Wyoming.

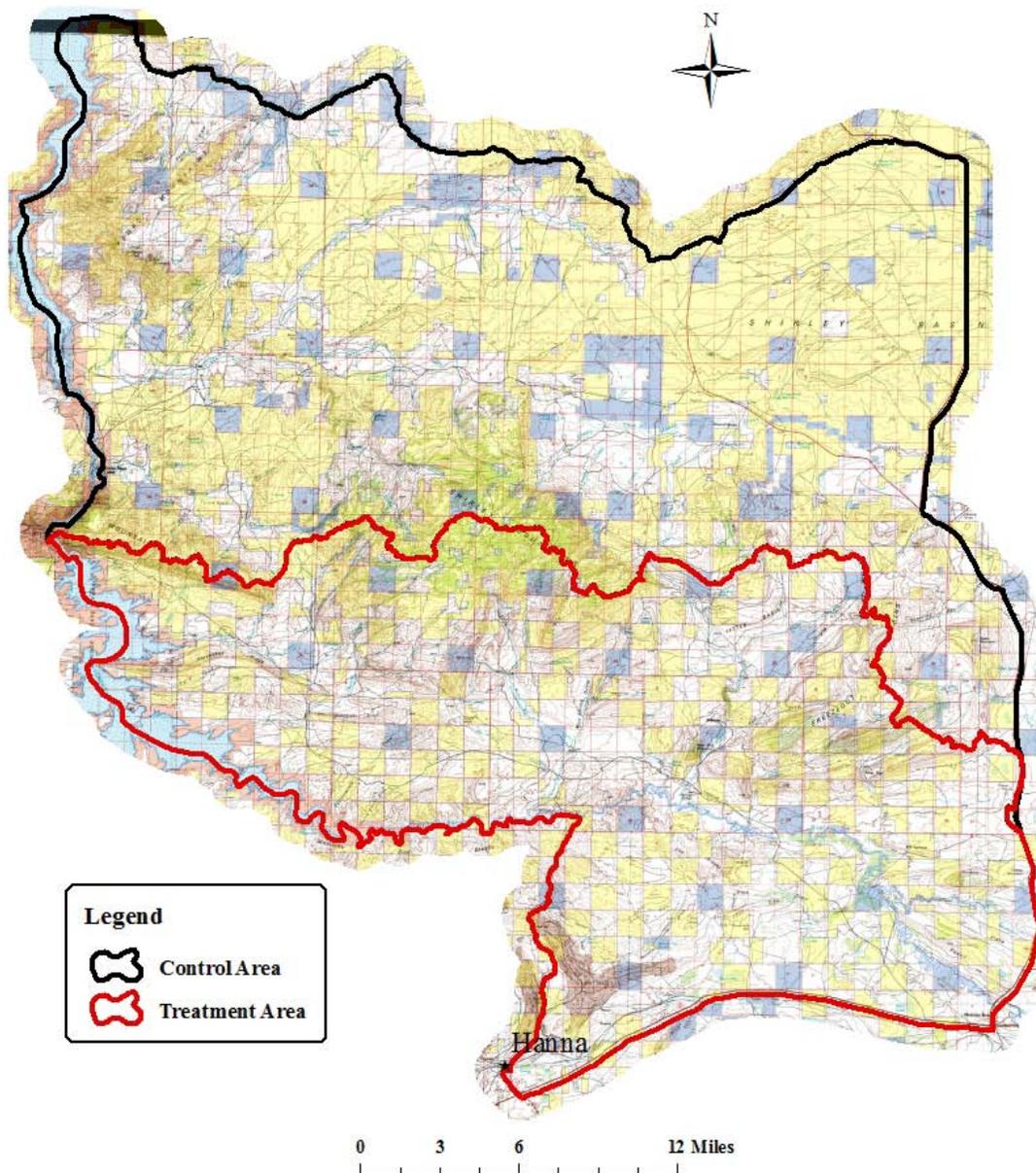
MD540	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Population Estimate	6,465	6,246	6,838	7,162	7,635	7,175	7,600	6,500	6,169	5,815
Fawns/100 Does	61	51	68	66	67	47	53	58	58	75

In February 2008, Wyoming Game and Fish Department Wildlife Biologist, Will Schultz, met with USDA/APHIS Wildlife Services' personnel, Rod Merrell, Dan Braig and Tracy Villwok to discuss the implementation of a coyote control project for the benefit of mule deer in MD540. Wildlife Services' proposed, in addition to the coyote control efforts currently implemented in MD540 for livestock protection, their agency would also implement enhanced coyote control in a portion of MD540 for the benefit of mule deer. This project would be funded through the Carbon County Predator Management District's allocation of funding to Wildlife Services for the benefit of wildlife in Carbon County. This summary was developed to provide Wildlife Services and the Carbon County Predator Management District with mule deer population data for MD540 thus far, to review with regard to their efforts of providing coyote control to benefit mule deer.

AREA

MD540 is located, east of the North Platte River and west of Wyoming Highway 487, in northeast Carbon County, Wyoming. MD540 is contained entirely within mule deer Hunt Area 70. Due to mule deer damage concerns in the northwest portion of MD540, the "treatment area" selected by Wildlife Services to perform enhanced coyote control was confined to the southern portion of the herd unit. The treatment area consists of that 441 mi² area in MD540 which is part of the Medicine Bow River drainage (Figure 1). The northern 568 mi² portion of MD540 outside the Medicine Bow River drainage was to receive no enhanced coyote control for the benefit of mule deer. However, coyote control efforts for livestock protection were to be continued in the control area as required. The northern portion was to be referred to as a "control area", providing Wildlife Services with an area of reference to compare with the treatment area.

Figure 1. Treatment Area and Control Areas for the Shirley Mountain Mule Deer Herd Unit, Wyoming.

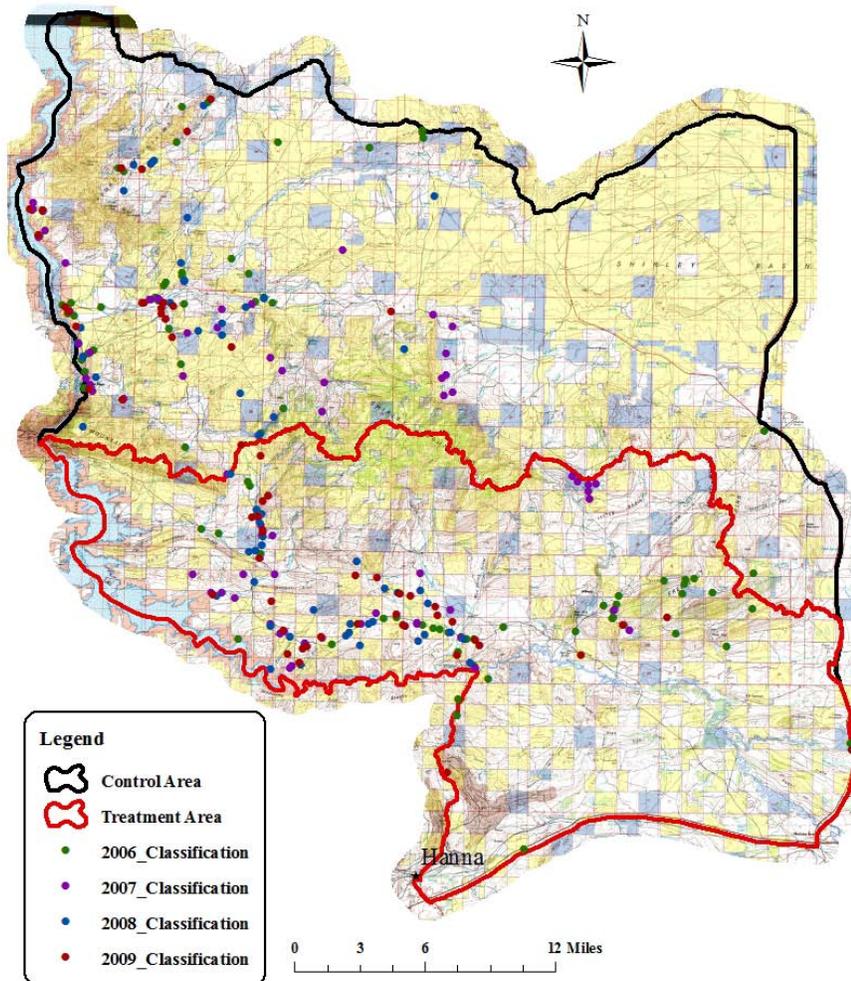


METHODS

Wildlife Services' began enhanced coyote control in the treatment area during the spring of 2008. The 2006-2009 post-season mule deer classification data in MD540 was collected from ground surveys completed by Wyoming Game and Fish Department personnel. As agreed upon, Wyoming Game and Fish Department would provide Wildlife Services with population data for MD540 for the duration of the project. Classification data was entered annually in the Wyoming Game and Fish Department's Wildlife Observation

System. GIS analysis of the Wildlife Observation System data was completed to determine the sex and age ratios for the 1.) treatment area, 2.) control area, and 3.) the entire herd unit. GIS was also used to map mule deer group observation locations recorded during the annual post-season classification surveys (Figure 2).

Figure 2. 2006-2009 Post-season mule deer classification locations for the Shirley Mountain Mule Deer Herd Unit, Wyoming.



RESULTS

The results of the annual post-season mule deer classification surveys are described in Table 2. Fawn and total buck ratios in the treatment area were less than the control area in 2006 and 2007 (Figures 3 and 4). Fawn and total buck ratios in the treatment area were greater than the control area in 2008 and 2009.

Table 2. 2006-2009 Post-season classification survey ratios for the Shirley Mountain Mule Deer Herd Unit, Wyoming.

Year	Area	Bucks/100 Does	Fawns/100 Does	Sample Size
2006	Herd Unit Total	23	53	754
	Control Area	25	56	374
	Treatment Area	22	51	380
2007	Herd Unit Total	31	57	587
	Control Area	31	59	279
	Treatment Area	31	55	308
2008	Herd Unit Total	31	58	521
	Control Area	31	55	274
	Treatment Area	31	60	247
2009	Herd Unit Total	23	75	402
	Control Area	17	71	191
	Treatment Area	30	79	211

Figure 3. 2006-2009 Post-season classification survey results for fawn ratios in the Shirley Mountain Mule Deer Herd Unit, Wyoming.

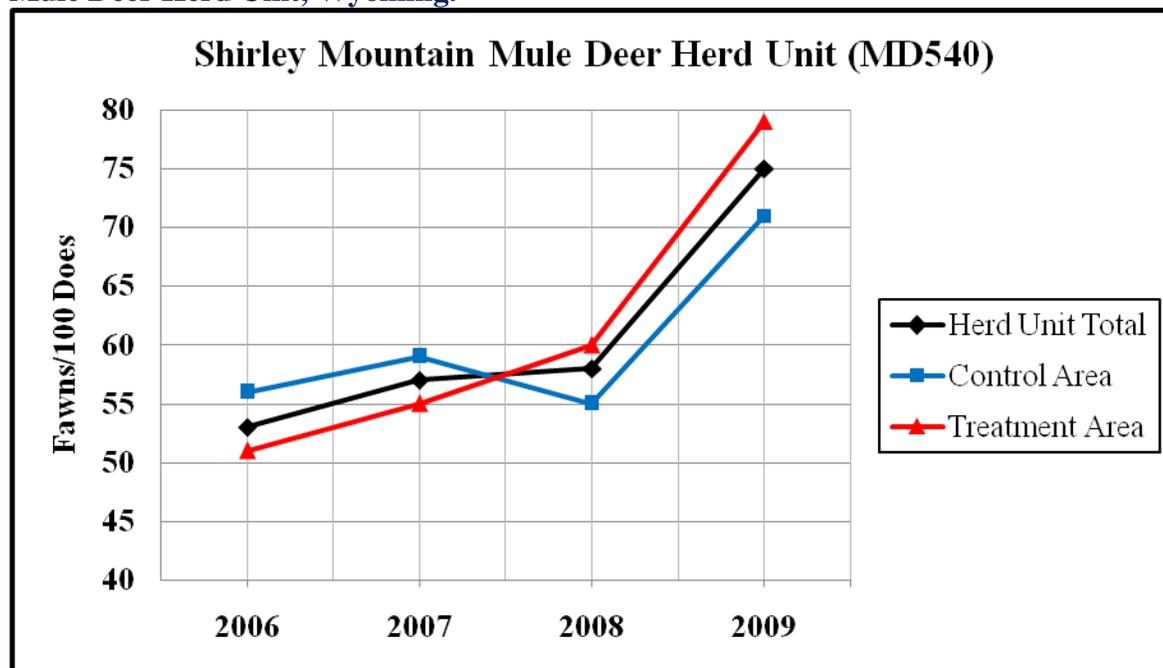
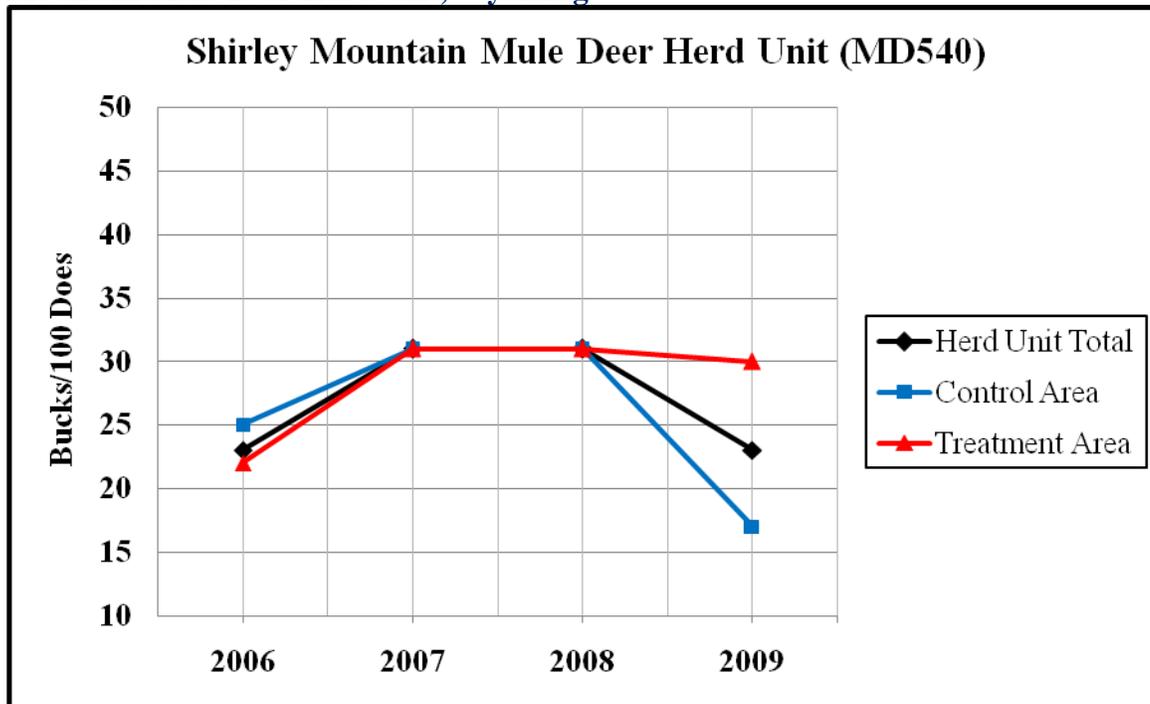


Figure 4. 2006-2009 Post-season classification survey results for total buck ratios in the Shirley Mountain Mule Deer Herd Unit, Wyoming.



COMPLETED STUDIES AND PROJECTS LIST

McDaniel G. W., F. G. Lindzey. 1991. Seasonal Movements, Population Characteristics and Habitat Use of Mule Deer in the Shirley Mountain Area, Central Wyoming. Wyoming Cooperative Fishery and Wildlife Research Unit. University of Wyoming, Laramie. 64 pp.

LITERATURE CITED

Wyoming Game and Fish Dept. 2005. Shirley Mountain Mule Deer Herd Unit Job Completion Report., Wyoming Game and Fish Department, Laramie. 37 pp.

Wyoming Game and Fish Dept. 2007. Big Game Management Parameter Update – ‘Recreational’ vs. ‘Special’ Management. Memorandum. Wyoming Game and Fish Department, Cheyenne. 3 pp.

Shirley Mountain Mule Deer (MD540)
Hunt Area 70
2012 Season Recommendations

Hunt Area	Type	Date of Seasons		Limitations
		Opens	Closes	
*70	6	Oct. 15	Oct. 21	General license; antlered mule deer or any white-tailed deer
		Oct. 15	Nov. 30	Limited quota; 25 licenses doe or fawn valid on private land
Archery		Sept. 1	Sept. 30	Refer to Section 4 of this Chapter

Summary of Proposed Changes in License Numbers

Hunt Area	Type	Change From 2011
70	6	-25

Management Evaluation

Postseason classifications were conducted from the ground and produced ratios of 41 bucks and 58 fawns/100does, from a sample size of 322 mule deer. The 2011 buck ratio improved 56% and the fawn ratio declined 9% from 2010. Classification data has been collected from the ground for the past 6-years. Sample sizes from classification surveys conducted from the ground have incrementally decreased over the past 5 years. Use of a helicopter should be considered in 2012 in an attempt to collect an adequate sample size for the postseason classification data.

The 2011 postseason POP-II population model estimate was 8,220 mule deer. Estimates are derived from observed changes in the annual sex and age ratios. Due to the less than adequate classification sample sizes, a decrease in harvest success, and the noted increase in the in hunter effort, it should be assumed the 2011 population estimate was not accurate. Adequate postseason classification sample sizes have not been collected in over 20 years. Specific survival rates and independent population estimates are not available for this herd unit. Harvest rates for this herd unit may also be overestimated, contributing to an over estimation of the population size by the POP-II population model in order to support both a higher harvest rate and observed postseason buck ratios.

Harvest

The preliminary harvest report indicated 799 hunters harvested 346 mule deer in 2011 for an overall success rate of 43%. General license buck harvest decreased 23%. General license hunter numbers decreased 10%, as compared to the 2010 season. The Type 6 licensed hunters continued to experience greater than 90% harvest success. The General hunting season length was reduced by 1 day in 2011, to 6 days, in an effort to slow the rate of decline in buck ratios. This reduction in season length appeared to be successful in maintaining buck ratios within the recreational strategy parameters

2012 Season Proposal

The 2012 hunting season proposal includes 7 days of General license antlered mule deer or any white-tailed deer hunting. A shorter season could arguably be justified in an attempt to reduce hunting pressure. However, if season length were shortened further, it would preclude the weekend and reduce youth participation. The Type 6 licenses were discontinued due to a lack of deer damage complaints in this herd unit.

MD540_2012_SEASON

Data from 2005 to 2013

Simulation from 2005 to 2013

Age Class	Init Pop. Prop.		Presn Mort%		Postsn Mort%		Effort Set 1		Effort Set 2	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	71.5	71.5	50.0	50.0	50.0	50.0	1.00	1.00	1.00	1.00
1	18.3	19.8	2.0	2.0	10.0	5.0	1.50	1.00	1.00	1.00
2	11.0	16.1	2.0	2.0	10.0	5.0	1.00	1.00	1.00	1.00
3	6.6	13.0	2.0	2.0	10.0	5.0	1.00	1.00	1.00	1.00
4	4.0	10.5	2.0	2.0	10.0	5.0	1.00	1.00	1.00	1.00
5	2.4	8.5	2.0	2.0	10.0	5.0	1.00	1.00	1.00	1.00
6	1.4	6.9	2.0	2.0	15.0	10.0	1.00	1.00	1.00	1.00
7	0.9	5.6	2.0	2.0	20.0	20.0	1.00	1.00	1.00	1.00
8	0.5	4.5	2.0	2.0	30.0	30.0	1.00	1.00	1.00	1.00
9	0.3	3.7	2.0	2.0	40.0	40.0	1.00	1.00	1.00	1.00
10	0.2	3.0	2.0	2.0	50.0	50.0	1.00	1.00	1.00	1.00
11	0.1	2.4	2.0	2.0	60.0	60.0	1.00	1.00	1.00	1.00
12	0.1	2.0	2.0	2.0	75.0	75.0	1.00	1.00	1.00	1.00
13	0.0	1.6	2.0	2.0	85.0	85.0	1.00	1.00	1.00	1.00
14	0.0	1.3	2.0	2.0	90.0	95.0	1.00	1.00	1.00	1.00
15	0.0	1.0	2.0	2.0	100.0	100.0	1.00	1.00	1.00	1.00

Sum = 288.7 Estimated Sum = 8320 Subadults: Ages 0 to 0

Bio-Year	Preseason MSI	MSI Function is Linear			Postseason MSI	Effort & Wound Set Used
		Harvest Subadults#	Des. Pop Size in NA Males#	Females#		
2005	1.37	2	339	26	0.28	1
2006	1.23	3	368	44	0.34	1
2007	1.17	4	511	67	1.04	1
2008	1.24	9	347	66	1.31	1
2009	1.07	2	400	43	0.61	1
2010	1.07	0	436	18	0.17	1
2011	1.13	1	334	11	1.00	1
2012	1.21	0	300	0	1.05	1
2013	1.21	0	250	0	1.00	1

Set 1	Wounding Loss	10.0%	10.0%	10.0%	Yearling Male	10.0%
Set 2	Wounding Loss	0.0%	0.0%	0.0%	Yearling Male	0.0%

Bio- Year	Young/100 Fems Age 1 - 1	Young/100 Fems Age 2 - 13	Young/100 Fems Age 14 - 15	Sex Ratio: 50 : 50
2006	0.0	170.0	0.0	
2007	0.0	170.0	0.0	
2008	0.0	170.0	0.0	
2009	0.0	170.0	0.0	
2010	0.0	170.0	0.0	
2011	0.0	170.0	0.0	
2012	0.0	170.0	0.0	
2013	0.0	170.0	0.0	
2014	0.0	170.0	0.0	

POP-II (V1.2.9) Simulation Output Tables for MD540_2012_SEASON.GN1, 03/02/2012 07:14 pm

Table 1. Population Size During Bio-Year for MD540_2012_SEASON.GN1 03/02/2012 07:14 pm

Bio- Year	Start	Pre- Season	Post Season	End	%Growth
2005	8320	5382	4978	4623	8.0
2006	8986	6189	5733	5234	11.8
2007	10045	7108	6468	4800	-3.0
2008	9744	6559	6095	4244	-8.4
2009	8927	6331	5841	4938	8.1
2010	9652	7025	6525	6255	24.0
2011	11972	8600	8220	6273	5.2
2012	12593	8618	8288	6243	-0.7
2013	12506	8566	8291	6362	0.7

Table 2. Preseason Natural Mortality for MD540_2012_SEASON.GN1 03/02/2012 07:14 pm

Bio- Year	Sub- Adults	Adult Males	Adult Females	Total	% of Pop
2005	2823	36	79	2938	35.3
2006	2683	35	78	2797	31.1
2007	2815	39	84	2937	29.2
2008	3065	35	84	3184	32.7
2009	2505	25	66	2596	29.1
2010	2522	30	76	2628	27.2
2011	3230	43	99	3371	28.2
2012	3824	47	105	3976	31.6
2013	3789	48	104	3940	31.5

Table 3. Harvest Mortality for MD540_2012_SEASON.GN1 03/02/2012 07:14 pm

Bio- Year	Sub- Adults	Adult Males	Adult Females	Total	% of Pop
2005	2	339	26	367	6.8
2006	3	368	44	415	6.7
2007	4	511	67	582	8.2
2008	9	347	66	422	6.4
2009	2	400	43	445	7.0
2010	0	436	18	454	6.5
2011	1	334	11	346	4.0
2012	0	300	0	300	3.5
2013	0	250	0	250	2.9

Table 4. Harvest Percentages for MD540_2012_SEASON.GN1 03/02/2012 07:14 pm

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	Yearling Males
2005	0.2	26.4	0.9	6.82	50.0
2006	0.2	26.2	1.4	6.71	48.7
2007	0.2	31.6	1.9	8.19	52.1
2008	0.5	25.3	2.0	6.43	43.5
2009	0.1	35.0	1.4	7.03	36.4
2010	0.0	31.6	0.5	6.46	63.4
2011	0.0	18.1	0.3	4.02	63.0
2012	0.0	15.9	0.0	3.48	41.6
2013	0.0	13.0	0.0	2.92	39.3

Table 5. Postseason Natural Mortality for MD540_2012_SEASON.GN1 03/02/2012 07:14 pm

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2005	181	29	145	355	7.1
2006	285	39	175	499	8.7
2007	1036	125	507	1668	25.8
2008	1224	147	480	1851	30.4
2009	663	49	190	903	15.5
2010	186	17	67	270	4.1
2011	1243	165	539	1947	23.7
2012	1311	182	551	2045	24.7
2013	1237	184	509	1929	23.3

Table 6. Preseason Ratios for MD540_2012_SEASON.GN1 03/02/2012 07:14 pm

Bio-Year	Subadults /100 1+F	2+ Males /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2005	46.4	27.5	18.3	45.8
2006	54.1	27.7	17.5	45.2
2007	57.1	26.8	19.4	46.3
2008	56.8	27.4	14.1	41.5
2009	72.3	27.5	10.5	38.0
2010	63.5	18.5	21.4	39.9
2011	58.2	20.2	22.9	43.1
2012	58.9	30.2	14.3	44.5
2013	59.3	32.1	13.9	45.9

Table 7. Postseason Ratios for MD540_2012_SEASON.GN1 03/02/2012 07:14 pm

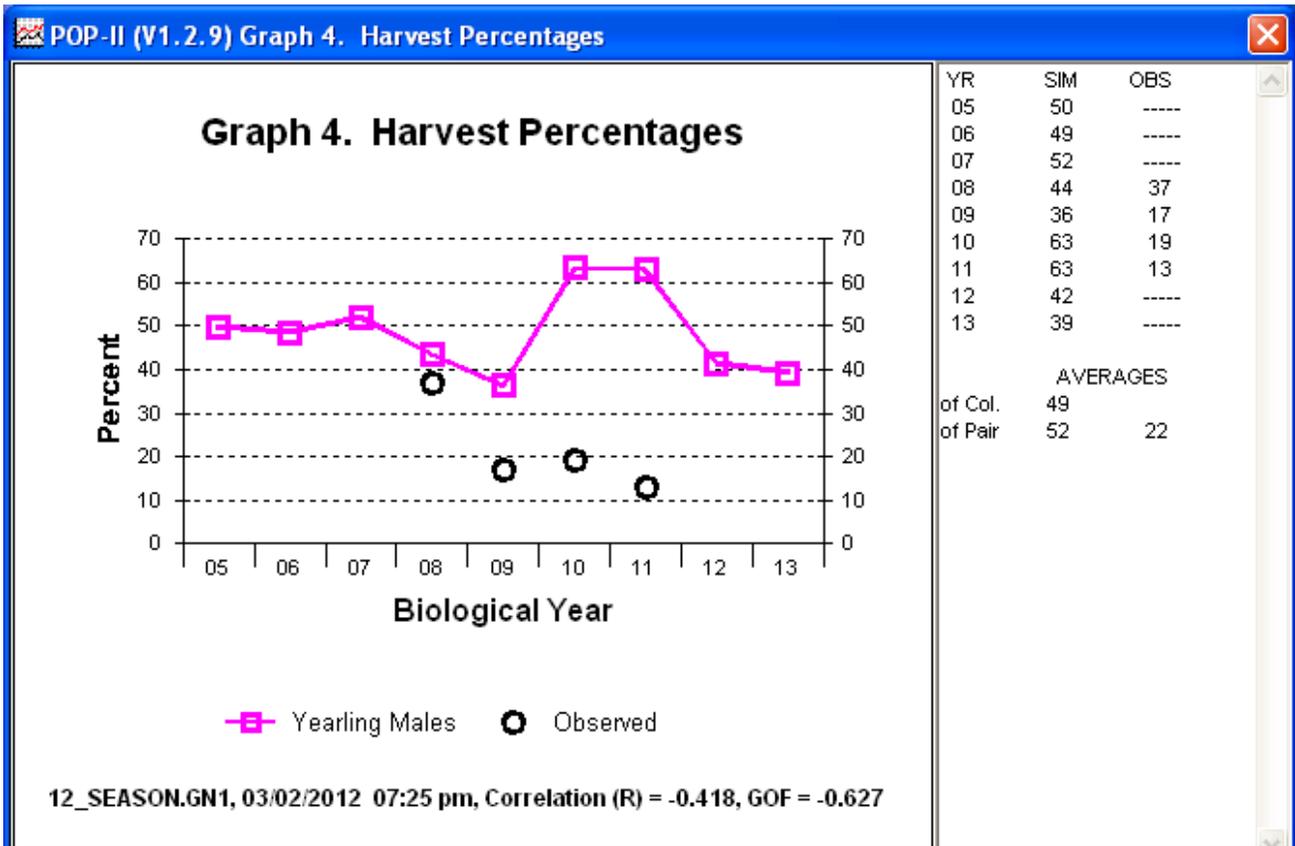
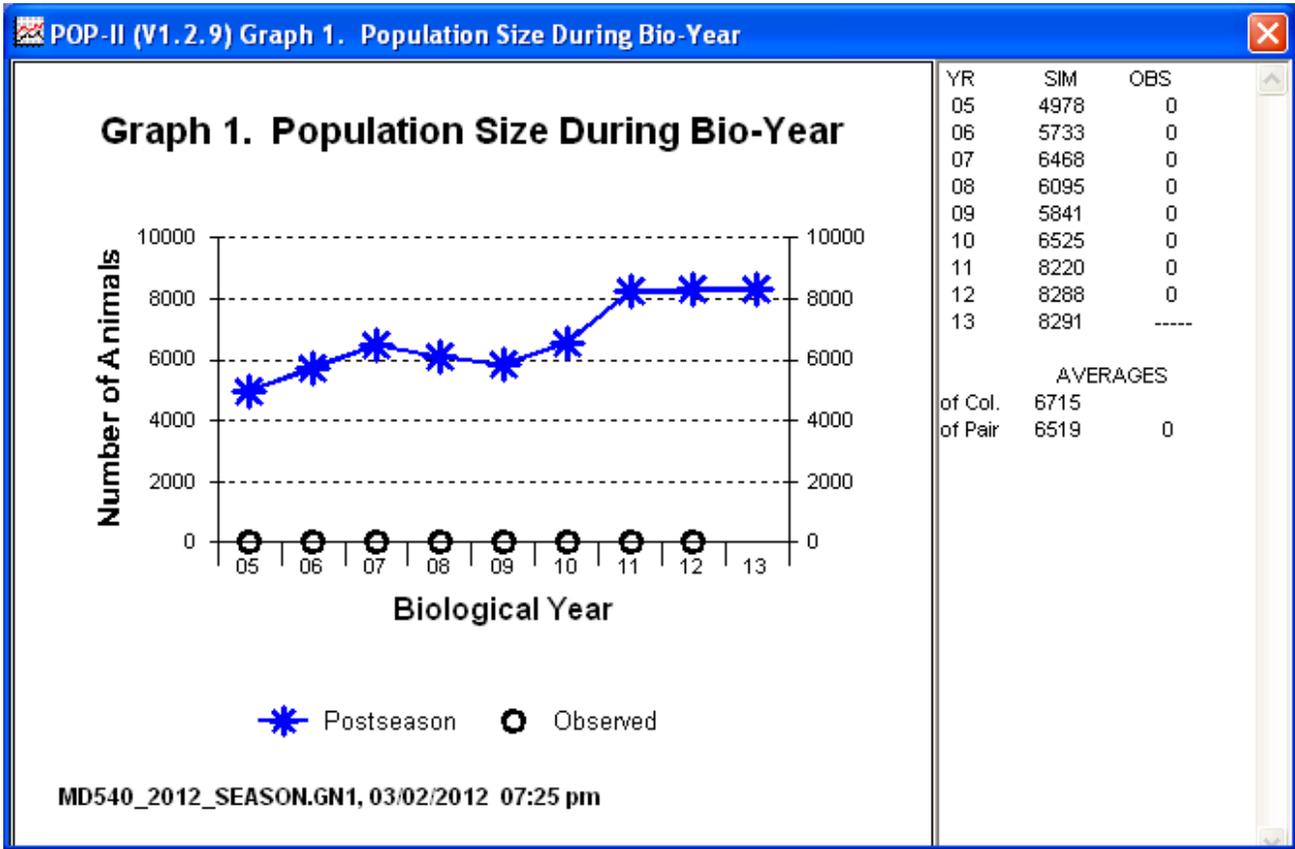
Bio-Year	Subadults /100 1+F	2+ Males /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2005	46.8	21.1	11.8	32.9
2006	54.8	21.3	11.3	32.7
2007	58.2	19.5	11.3	30.9
2008	57.8	21.4	9.3	30.7
2009	73.4	18.5	5.2	23.7
2010	63.8	13.5	12.7	26.2
2011	58.4	17.1	17.6	34.6
2012	58.9	25.6	11.1	36.7
2013	59.3	28.1	11.3	39.4

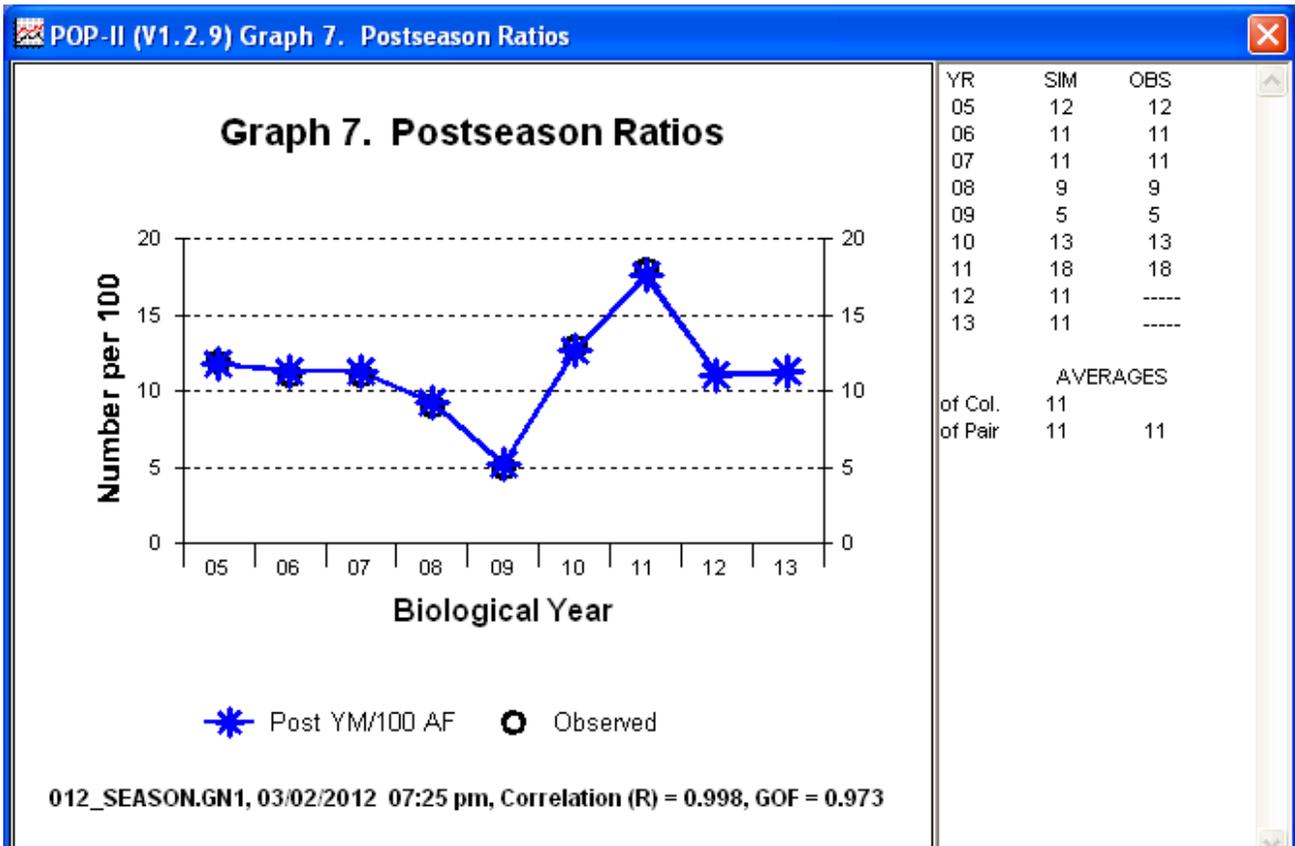
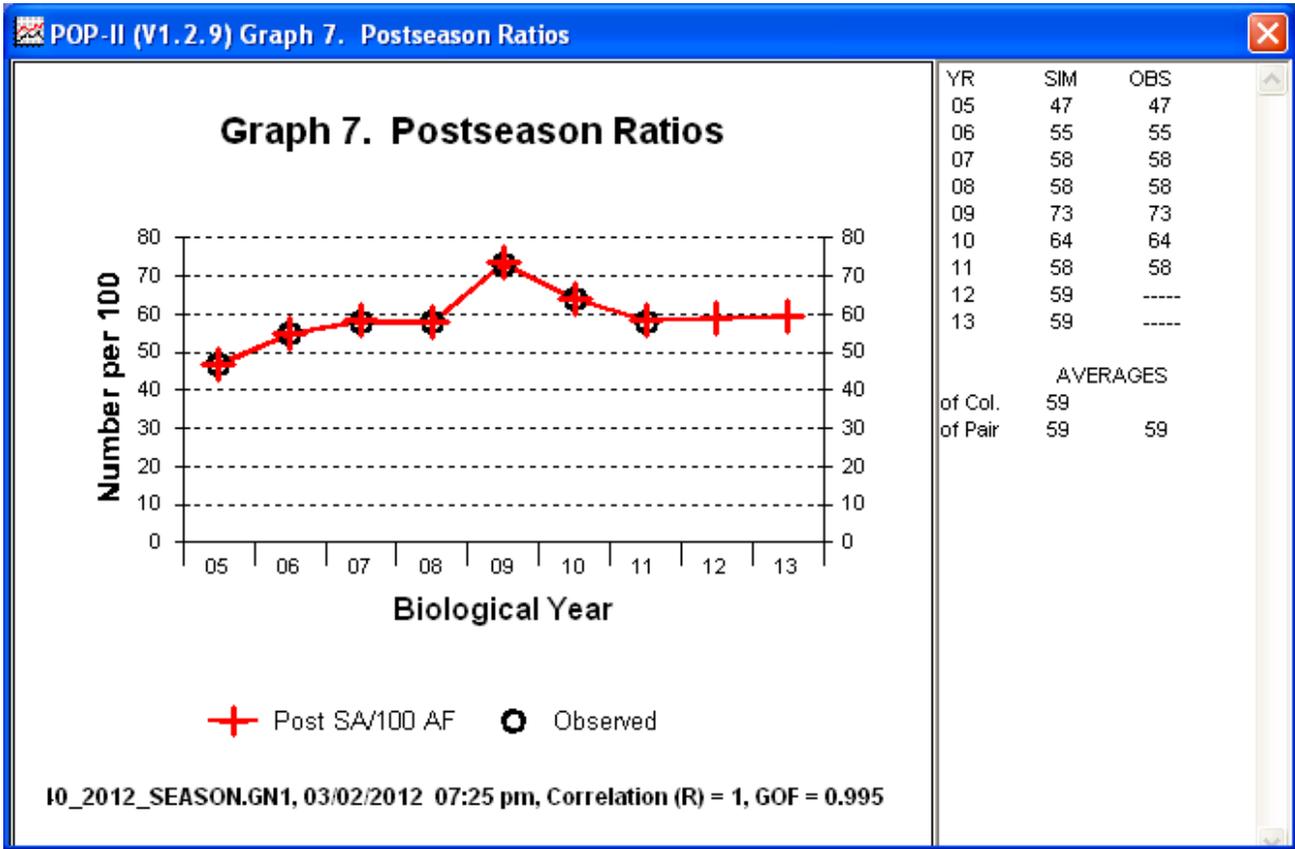
Table 8. End of Year Ratios for MD540_2012_SEASON.GN1 03/02/2012 07:14 pm

Bio-Year	Subadults /100 Adlts	Subadults /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2005	31.8	42.4	12.1	33.6
2006	36.2	48.3	11.6	33.3
2007	24.9	32.8	11.9	31.9
2008	17.9	23.4	9.5	30.7
2009	44.1	54.5	5.3	23.6
2010	47.2	59.6	12.7	26.2
2011	24.7	33.4	18.1	35.2
2012	23.4	32.2	11.4	37.3
2013	24.1	33.7	11.6	39.8

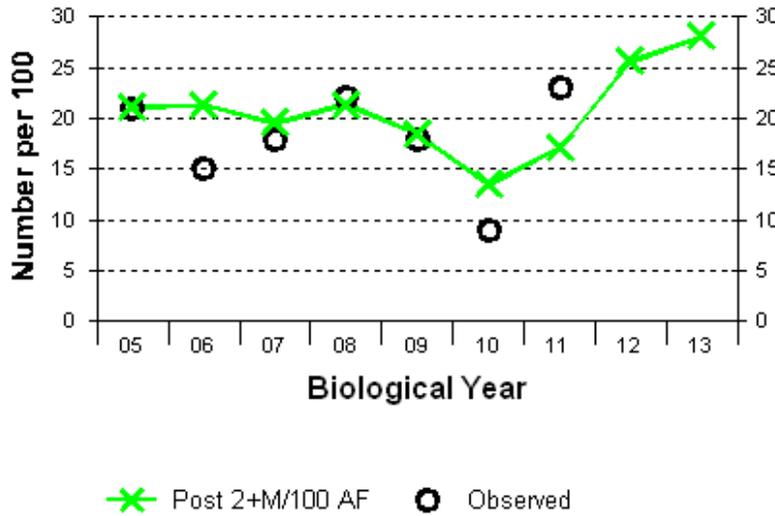
Table 9. Reproduction at Start of Bio-Year for MD540_2012_SEASON.GN1 03/02/2012 07:14 pm

Bio-Year	Young / 100 AF 1 +	Sub-Ad. / 100 AF 1 +	Total Young	Total Sub- Adult	Total Females 1 +
2005	143	143	4121	4121	2879
2006	137	137	4363	4363	3184
2007	134	134	4811	4811	3578
2008	146	146	4944	4944	3391
2009	152	152	4682	4682	3077
2010	134	134	4714	4714	3529
2011	131	131	5717	5717	4370
2012	146	146	6320	6320	4341
2013	146	146	6263	6263	4278





Graph 7. Postseason Ratios

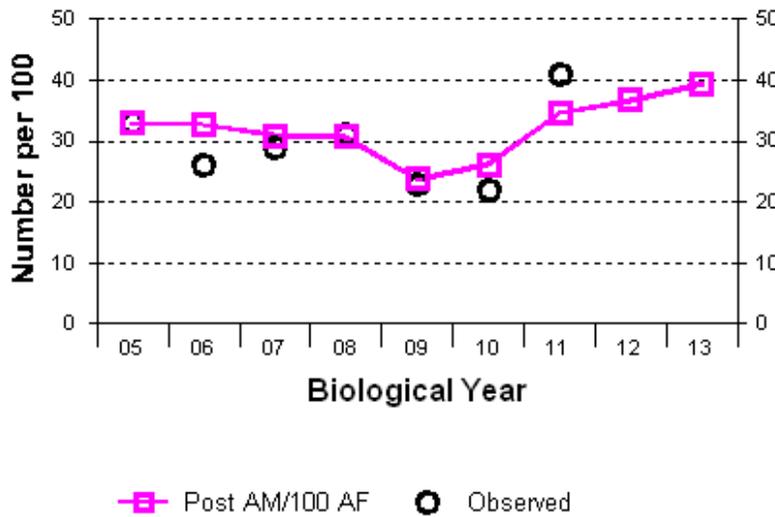


YR	SIM	OBS
05	21	21
06	21	15
07	20	18
08	21	22
09	18	18
10	14	9
11	17	23
12	26	----
13	28	----

AVERAGES		
of Col.	21	
of Pair	19	18

012_SEASON.GN1, 03/02/2012 07:25 pm, Correlation (R) = 0.579, GOF = 0.791

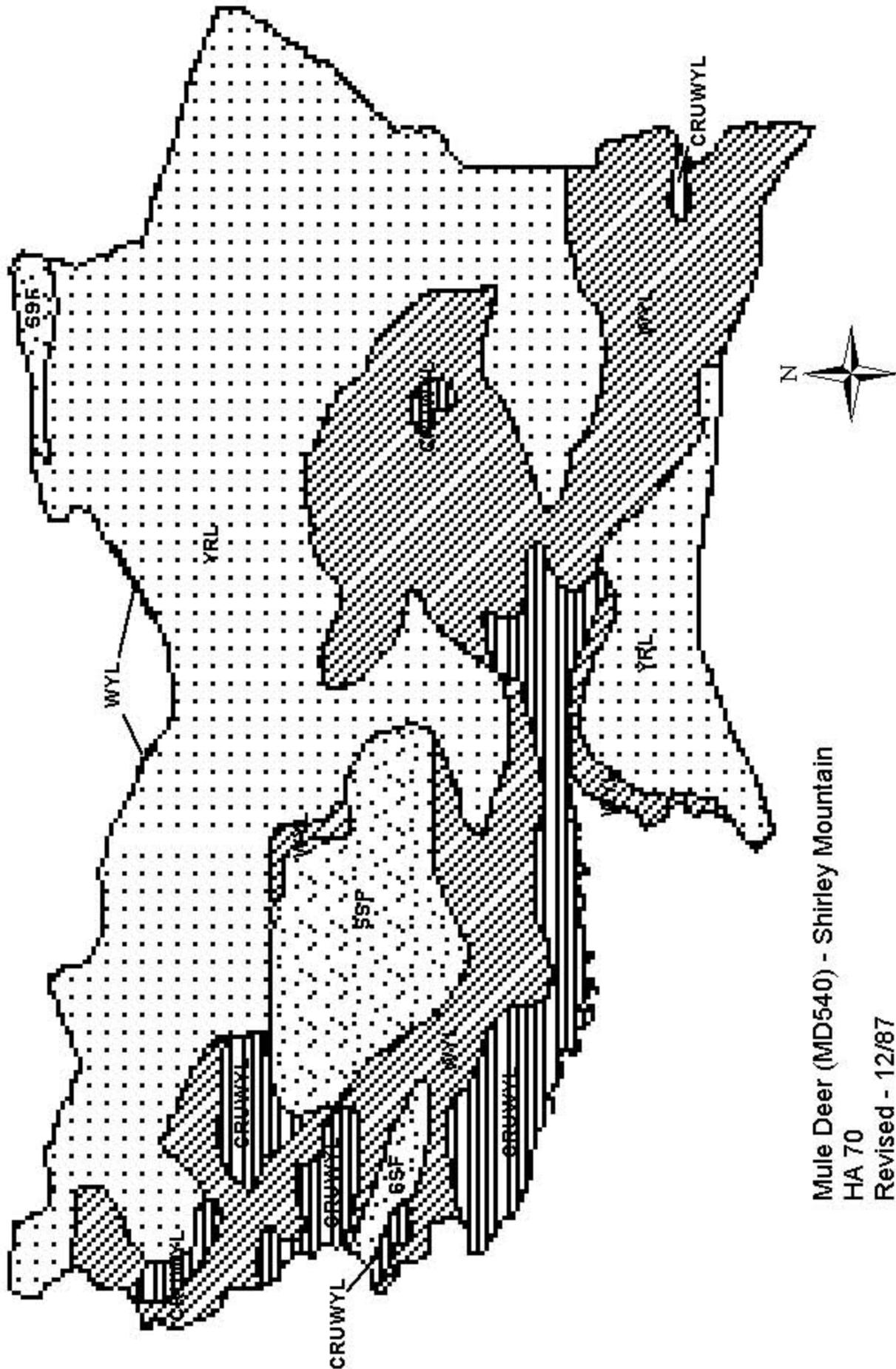
Graph 7. Postseason Ratios



YR	SIM	OBS
05	33	33
06	33	26
07	31	29
08	31	31
09	24	23
10	26	22
11	35	41
12	37	----
13	39	----

AVERAGES		
of Col.	32	
of Pair	30	29

012_SEASON.GN1, 03/02/2012 07:25 pm, Correlation (R) = 0.809, GOF = 0.867



Mule Deer (MD540) - Shirley Mountain
 HA 70
 Revised - 12/87

2011 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2011 - 5/31/2012

HERD: MD541 - PLATTE VALLEY

HUNT AREAS: 78-81, 83, 161

PREPARED BY: WILL SCHULTZ

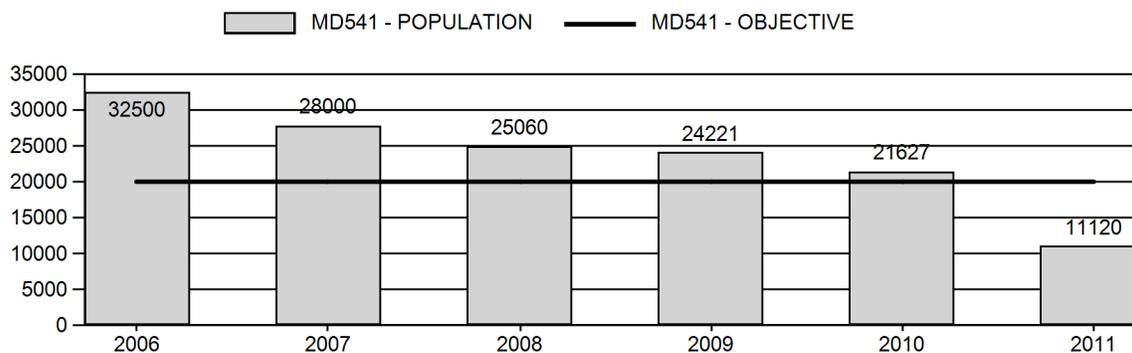
	2006 - 2010 Average	2011	2012 Proposed
Population:	26,282	11,120	12,000
Harvest:	1,459	540	400
Hunters:	3,780	2,654	2,000
Hunter Success:	39%	20%	20%
Active Licenses:	3,883	2,674	2,000
Active License Percent:	38%	20%	20%
Recreation Days:	20,056	14,397	10,000
Days Per Animal:	13.7	26.7	25
Males per 100 Females	30	26	
Juveniles per 100 Females	56	50	

Population Objective:	20,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-44.4%
Number of years population has been + or - objective in recent trend:	5
Model Date:	02/27/2012

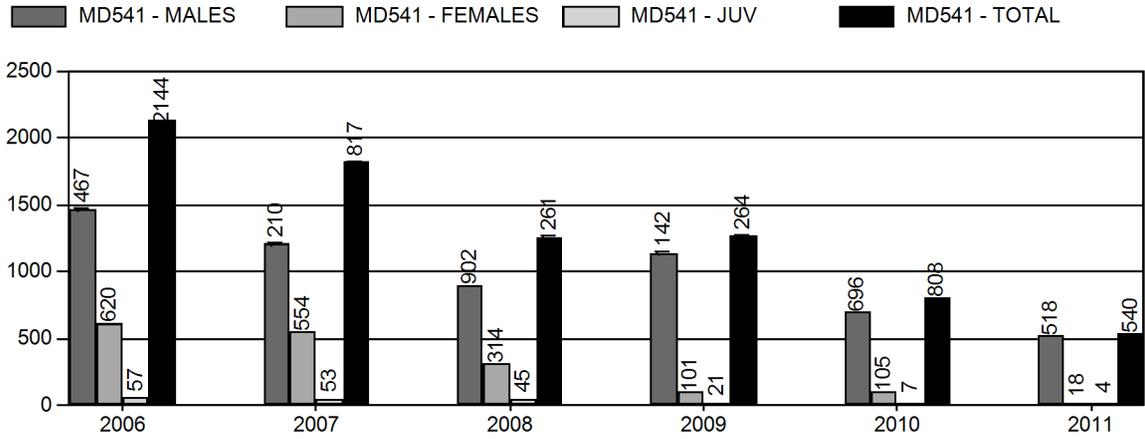
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	<u>JCR Year</u>	<u>Proposed</u>
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%

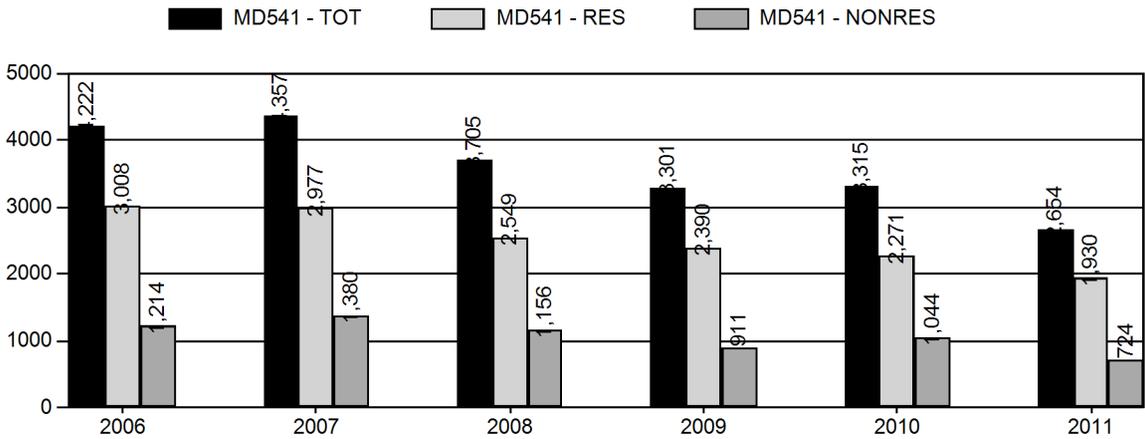
Population Size - Postseason



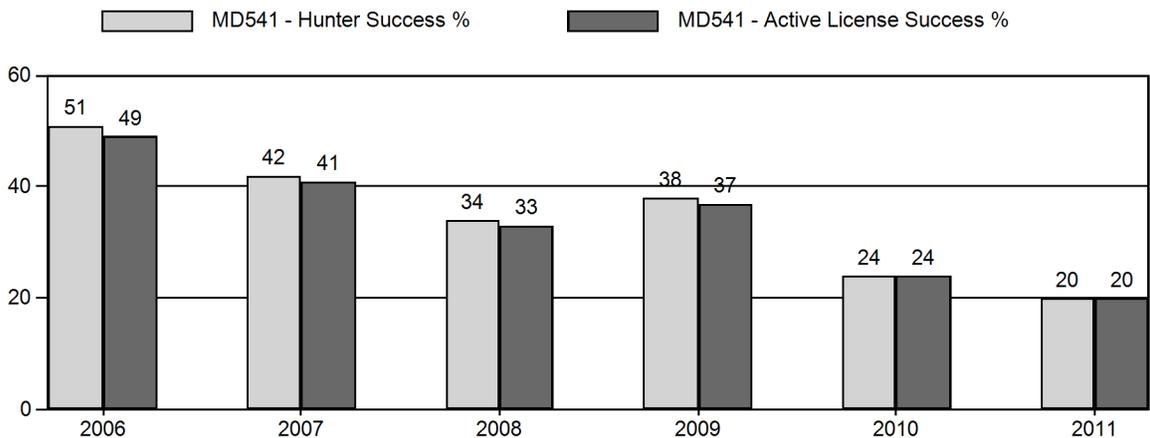
Harvest



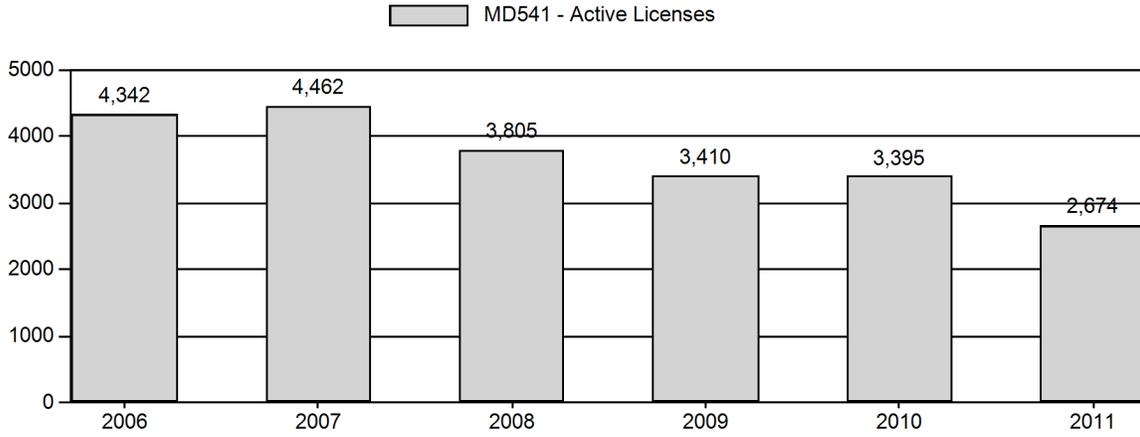
Number of Hunters



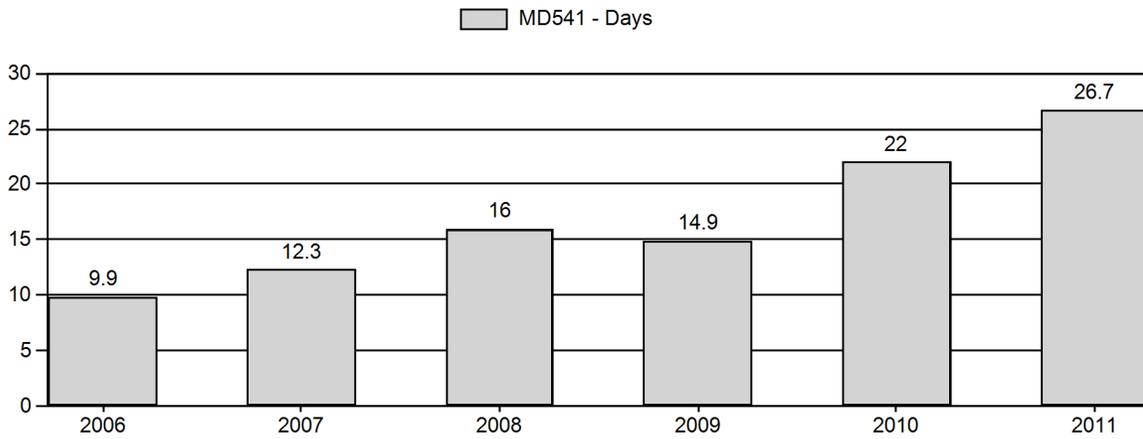
Harvest Success



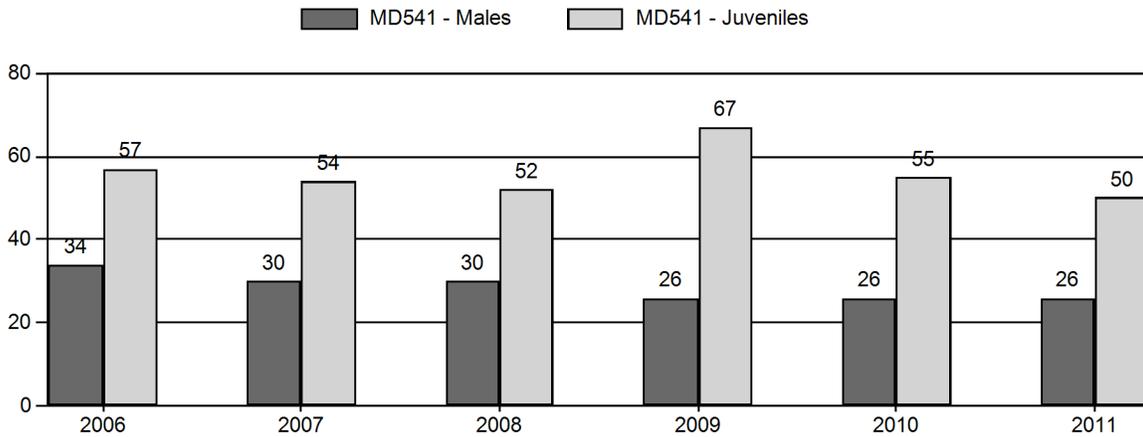
Active Licenses



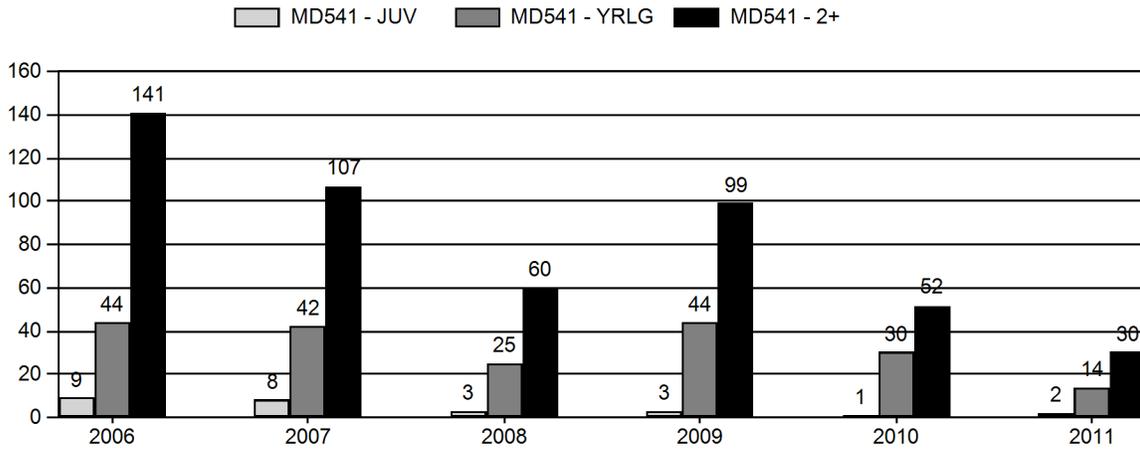
Days per Animal Harvested



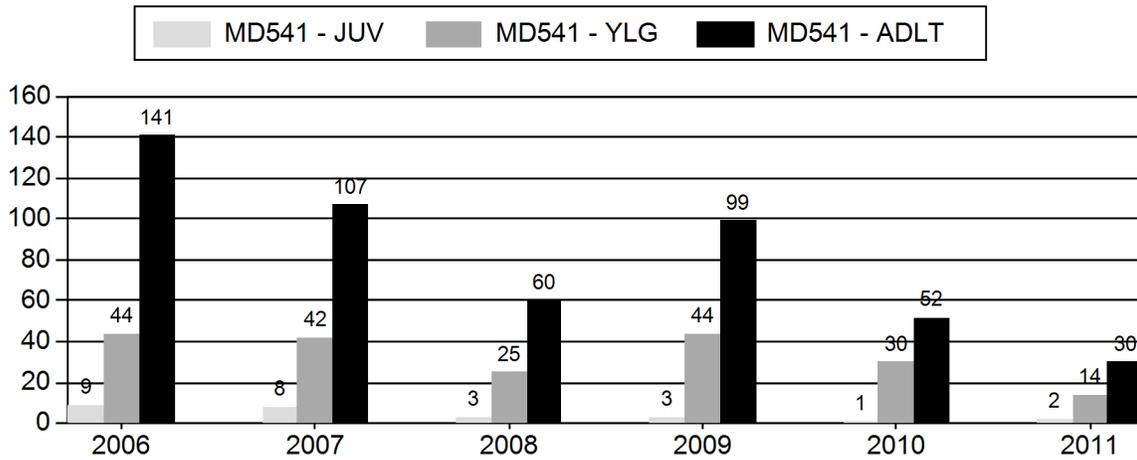
Postseason Animals per 100 Females



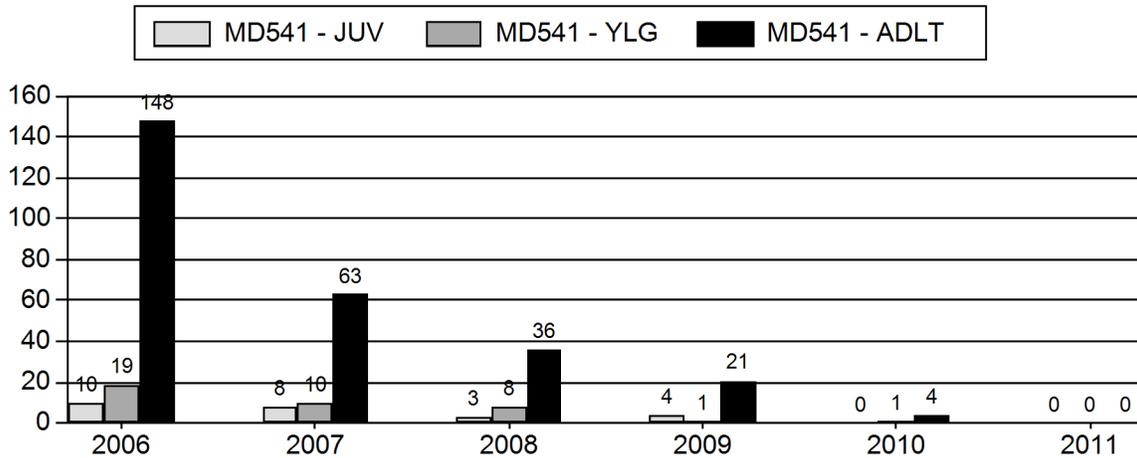
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



INTRODUCTION

This report focuses on the management of the Platte Valley Mule Deer Herd Unit (MD541) during biological years 2009, 2010, and 2011. It is intended to provide the reviewer with information regarding the habitat, population and hunting status for this herd unit. Additionally, future management recommendations and the 2012 hunting season proposal for this herd unit are also included in this report.

The population objective for the Platte Valley herd unit is 20,000 mule deer. A recreational management strategy has been prescribed for this herd unit. This strategy attempts to maintain postseason buck ratios at 20-29 bucks per 100 does (WGFD 2007).

During the period of 2009-2011 extreme drought conditions subsided somewhat in the Platte Valley Mule Deer Herd Unit. Precipitation occurred primarily during winter and spring periods. During this period, POP-II models estimated an average postseason population of approximately 21,600 deer. Sightability surveys continued during this time period and produced an average population estimate of 14,000 wintering deer. Between 2009 and 2011 hunter numbers and harvest success averaged 3,090 and 27% respectively, and was in decline. Postseason classification ratios averaged 26 bucks and 57 fawns per 100 does from surveys with more than adequate sample sizes. Surveillance for Chronic Wasting Disease continued with an overall prevalence rate of 1.3%. The exotic louse, *Bovicola tibialis*, was documented on at least 2 more mule deer in the Platte Valley Herd Unit.

Several components of the Wyoming Mule Deer Initiative were implemented in this herd unit during this period under what has become to be known as the Platte Valley Mule Deer Initiative. A multifaceted research project was initiated with the Wyoming Cooperative Fish and Wildlife Research Unit to evaluate sightability surveys and improve management of mule deer in this herd unit. A large public involvement process was also initiated to engage all stakeholders in developing an overall management plan for this herd unit. A derivative of this process was the formation of the Platte Valley Habitat Partnership to address mule habitat issues in the Platte Valley Herd Unit.

BACKGROUND

The Platte Valley Mule Deer Herd is located in south central Wyoming and consists of Hunt Areas 78, 79, 80, 81, 83, and 161. These hunt areas are located on the west slope of the Snowy Range and the east slope of the Sierra Madre Range, including the North Platte River valley. Areas 83 and 161, located north of the other hunt areas, contain drier and less productive habitats. These two hunt areas are part of this herd unit because many deer that summer in high elevation mountain habitat in the other hunt areas migrate to winter ranges in these areas during more severe winters (Ward et al. 1976). Summer and fall densities of deer in Areas 83 and 161 are comparatively lower than in the southern hunt areas.

Elevation ranges from about 6,400 feet along the North Platte River to just over 12,000 feet at Medicine Bow Peak. Habitats include alpine meadows, subalpine and montane forests, mountain shrub, sagebrush-grasslands, grasslands, cottonwood riparian, and agricultural croplands. The forests are a mix of subalpine fir, Engelmann spruce, Douglas-fir, lodgepole pine, aspen, and a few ponderosa pines, with associated grass/forb/shrub understory vegetation. The herd unit contains 2,720 square miles of occupied habitat. Land ownership consists of 41% private, 28% Forest Service, 25% Bureau of Land Management, 5% State of Wyoming, and 1% WGFD. Newman (1968), Strickland (1975) and Ward et al. (1976) provide historical information on seasonal movements, distributions and aspects of habitat ecology for this herd. There appears

to be significant seasonal interchange of mule deer between Colorado and Wyoming. Segments of this deer herd summer in the North Park area of Colorado and move to winter ranges in Wyoming such as Baggot Rocks (Newman 1968). Because of the high number of deer observed in the 1960 - 1970's, which was well above the current objective of 20,000 mule deer, there is concern by some stakeholders that the current number of deer is far too low. However, poor range conditions, specifically in the crucial winter yearlong range, concerns managers about the long term sustainability of these habitats to support more deer than currently present. These conflicting management directions significantly complicate our ability to manage mule deer numbers at both a level desired by stakeholders and within the sustainability of the habitat.

The Platte Valley Mule Deer Herd Unit is located in south central Wyoming and is an extremely important resource to residents and visitors. The herd unit occupies one of the larger blocks of accessible public lands near major population centers in Wyoming and Colorado. In addition to providing access to high densities of hunters, this herd unit provides a substantial amount of non-consumptive recreation related to viewing mule deer and other wildlife. While some public lands in the area receive excessive use from humans, access to private lands is highly restricted which complicates distributing hunters and harvest pressure. Competition for habitat resources from other ungulates, transportation, subdivisions, recreation, energy development, and other land uses compose the majority of impacts on this herd unit's mule deer habitat.

WEATHER

Weather data for Upper Platte Climatic Division 10 which is normally appended to the annual job completion reports was unavailable this year. Generally, precipitation increased during this period, primarily during winter and spring. The average high temperatures also increased. Severe, prolonged winter conditions were experienced in this herd unit during the winter of 2010-2011, and may have negatively influenced over-winter survival for mule deer and fawn production in 2011.

HABITAT CONDITIONS/ASSESSMENT

Production/utilization transects data for this herd unit which is normally appended to the job completion reports was unavailable this year. The Habitat Branch has established 7 production/utilization transects to represent 2,720 square miles of occupied mule deer habitat in this herd unit. The limited production/utilization data available for this herd unit limits any inferences regarding the condition status of the Platte Valley Herd Unit habitat. Generally, production improved slightly during this period due to an increase in precipitation. Utilization of browse appeared excessive due high densities of mule deer and other ungulates in the vicinity of transects.

POPULATION

CLASSIFICATION DATA

Postseason classifications were conducted from a helicopter in December for the period from 2009 through 2011. Fawn ratios were 67, 55 and 50 per 100 does in 2009, 2010 and 2011 respectively (Figure 1). Fawn ratios decreased through this period while buck ratios were stable at 26 bucks per 100 does. Observed buck ratios were maintained below the Wyoming Game and Fish Department's (WGFD) 29 bucks/100 doe maximum for the "recreational" management strategy under which this herd unit was managed. Fawn and yearling buck ratios appeared to be impacted by the winter of 2010-2011; however adult buck ratios did not indicate a great reduction in over winter survival. It was assumed buck ratios have been maintained annually

during this reporting period due to a decline in the number of hunters choosing to hunt in this herd unit and fall weather conditions which have not been conducive to harvest success.

Sample sizes for the classification surveys have been excellent in this herd unit (Table 1). Survey sample sizes have been at least 100% in excess of what was assumed to be needed for an adequate sample with an 80% confidence interval. Classification surveys were conducted in conjunction with the Snowy Range Elk Herd classifications, and because a greater amount of time is spent covering the herd unit to sample elk, as well as deer, the sample size is typically larger than necessary for an adequate sample.

Surveys are conducted in early winter and many of the mule deer classified in the southern portion of the herd unit include mule deer which annually migrate north from the North Park, Colorado area to winter in the Platte Valley Herd Unit (Newman 1968, Strickland 1975 and Yost 2009). The extent to which this annual migration influences the ratios observed in this herd unit is unknown. This has been problematic for managers because Wyoming's mule deer management strategies are based solely on male/female ratios. Colorado's trophy management strategy for the North Park area emphasizes higher buck ratios. The migration artificially inflates the Platte Valley Herd Unit's classification ratios beyond what our traditional harvest strategy assumes to be available for Wyoming hunters. Much of discontent from hunters about the quality of the hunt rests in this management issue.

Fawn ratios have been in a long term decline for this herd unit. Fawn survival in this herd unit continued to be poor during this period, with the exception of 2009. An investigation into the cause for the fawn low survival rate is warranted. The perception of the public is that predation is the primary cause for low fawn survival rates. However, the impacts from poor quality habitat such as lower birth rates and reduced birth weights have not been investigated in this herd unit.

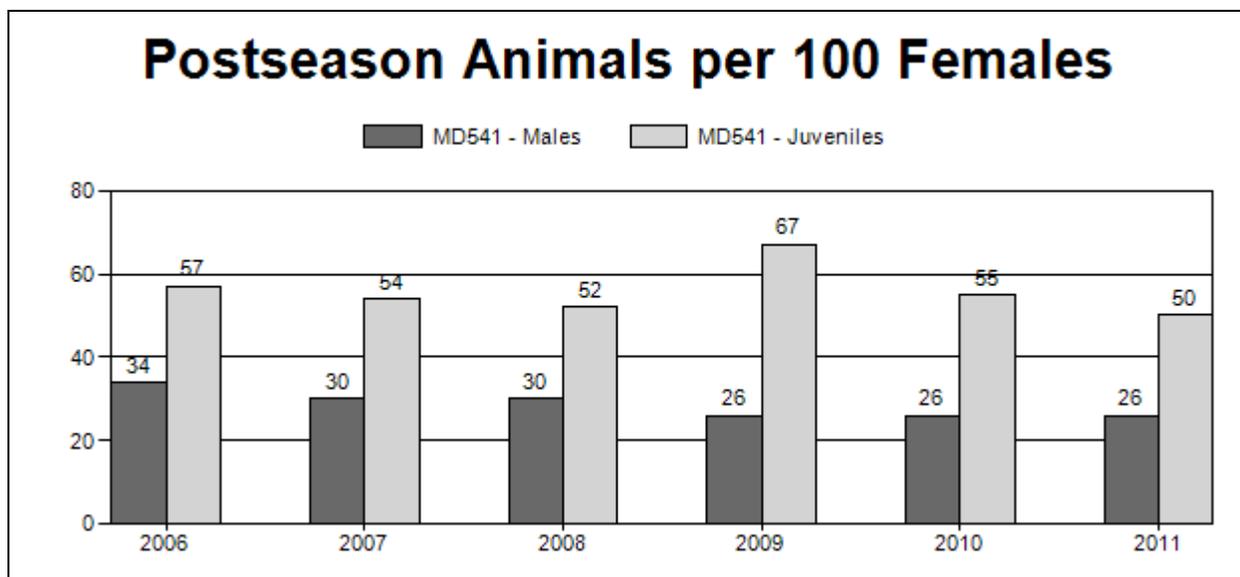


Figure 1. Platte Valley Herd Unit Postseason Animals per 100 Females, Wyoming 2006-2011.

2006 - 2011 Postseason Classification Summary for Mule Deer Herd MD541 - PLATTE VALLEY																		
Year	Post Pop	MALES				FEMALES		JUVENILES		Tot CIs	Cls Obj	Males to 100 Females			Young to			
		Ylg	Adult	Total	%	Total	%	Total	%			YIng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2006	32,500	165	271	436	18%	1,272	52%	729	30%	2,437	1,094	13	21	34	± 2	57	± 3	43
2007	28,000	262	534	796	16%	2,673	54%	1,451	29%	4,920	978	10	20	30	± 1	54	± 2	42
2008	25,060	199	386	585	17%	1,928	55%	1,003	29%	3,516	1,020	10	20	30	± 2	52	± 2	40
2009	24,221	65	207	272	13%	1,047	52%	700	35%	2,019	1,053	6	20	26	± 2	67	± 4	53
2010	21,627	111	222	333	14%	1,265	55%	701	30%	2,299	1,094	9	18	26	± 2	55	± 3	44
2011	11,120	114	340	454	15%	1,738	57%	865	28%	3,057	0	7	20	26	± 2	50	± 2	39

Table 1. Platte Valley Herd Unit Deer Postseason Classification Summary, Wyoming 2006-2011.

POPULATION MODELING

Wyoming Game and Fish Department (WGFD) used the POP-II computer program to model herd population dynamics for mule deer for over 2 decades. This program simulated the changes in the sex and age structure of the entire population based on input of observed in annual sex and age ratios for the population collected during postseason classification surveys, and the harvest.

The Platte Valley Herd Unit population estimate has been above the management objective of 20,000 mule deer since the early nineties. In 2004, WGFD instituted the use of standardized model parameters for the POP-II program for each big game species. In most cases, the use of these parameters resulted in model revisions with higher population estimates for many of Wyoming's big game herds. During the period of 2009-2011 the population estimate has decreased from 24,000 to 19,000 mule deer (Figure 2). Whether these estimates have been significantly influenced by the use of the standardized parameters was not investigated.

Population estimates for the Platte Valley Herd Unit have been a contentious issue, both externally and internally, for several decades. Most stakeholders believed POP-II over estimated the number of deer present in this herd unit. This perception has limited WGFD's ability to effectively institute population control measures such as increased antlerless harvest due to a lack of confidence in the estimates. Poor buck harvest success in recent years combined with the public's recollection of great numbers of deer in the past only exacerbated the situation. Despite the debate about the accuracy of population estimates for this herd, most stakeholders recognize a decline in the number of deer for this herd unit has occurred. This trend also correlates well with the decline in buck harvest success rates and postseason fawn ratios.

In biological years 2008, 2010, and 2011, WGFD in conjunction with the Wyoming Cooperative Fish and Wildlife Research Unit conducted sightability surveys to estimate mule deer abundance in the Platte Valley Herd Unit. Results were abundance estimates of 12,955 (±267), 16,892 (±1,548), and 11,120 (±1,774) at a 90% confidence interval for biological years 2008, 2010, and 2011 respectively. Mark/re-sight estimates, derived in 2010 and 2011 from radio-collar marked mule deer observed/missed during the sightability surveys, were comparable to the respective abundance estimates. Results of these surveys indicated POP-II models over estimated mule deer numbers by an average of 38%. Due to results such as these and other concerns with POP-II models, WGFD will discontinue using the POP-II model for estimating big game population size in 2011. The 2012 hunting season proposal (included in this report) included a POP-II model simulation, for posterity. The 2011 postseason abundance or "population" estimate reported for the Platte Valley Herd Unit was based on the results of the sightability survey. The 2012 hunting season proposal also

included an Aerial Survey program (Unsworth et. al., 1999) report for the 2011 sightability survey abundance estimate. Future abundance estimates for this herd unit will be derived from spreadsheet models developed by Wyoming Cooperative Fish and Wildlife Research Unit, anchored to sightability survey estimates.

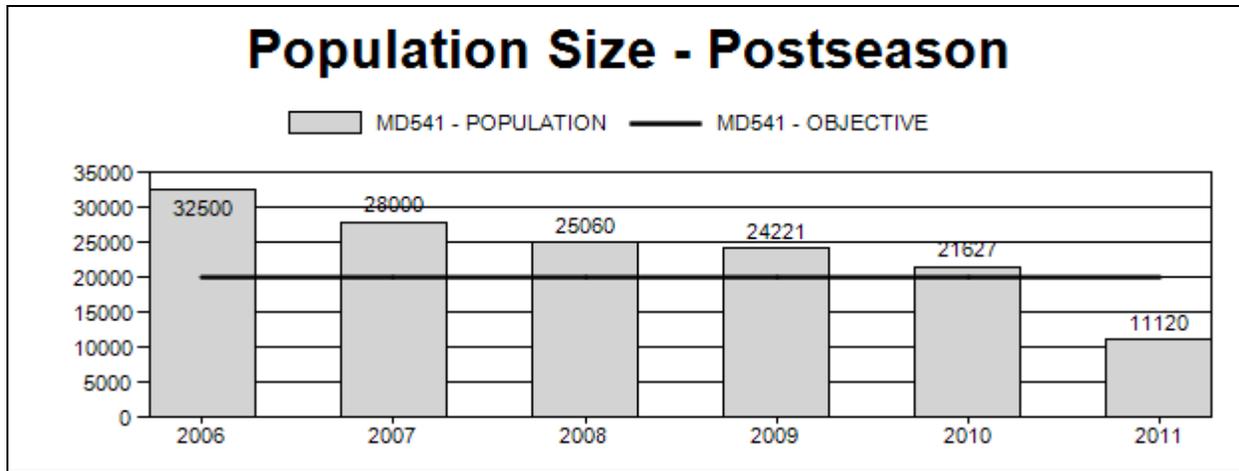


Figure 2. Platte Valley Herd Unit Population Size - Postseason, Wyoming 2006-2011.

HUNTING SEASON

The 2011 Platte Valley Mule Deer Herd Unit hunting season structure is described in figure 3.

<u>Hunt Area</u>	<u>Add'l Hunt Areas</u>	<u>Type</u>	<u>Quota</u>	<u>Season Dates</u>	<u>Limitations</u>
78		GEN		10/01 - 10/14	antlered mule deer or any white-tailed deer
78		Type 1	25	10/01 - 10/31	Any
78		Type 6	10	10/01 - 10/14	Reduced Price doe/fawn
79		GEN		10/01 - 10/14	antlered mule deer or any white-tailed deer
79		Type 6	10	10/01 - 10/14	Reduced Price doe/fawn
80		GEN		10/01 - 10/14	antlered mule deer or any white-tailed deer
80		Type 6	10	10/01 - 10/14	Reduced Price doe/fawn
81		GEN		10/01 - 10/14	antlered mule deer or any white-tailed deer
81		Type 6	10	10/01 - 10/14	Reduced Price doe/fawn
83		GEN		10/01 - 10/14	antlered mule deer or any white-tailed deer
161		GEN		10/15 - 10/25	antlered mule deer or any white-tailed deer

Figure 3. Platte Valley Mule Deer Herd Unit 2011 hunting season, Wyoming.

HARVEST

The Platte Valley Herd Unit was still very popular with General licensed mule deer hunters although hunter numbers declined during this period. This decline was due to implementation of more conservative antlered only hunting seasons and overall lower deer densities. Limited doe and fawn harvest continued during this period with area specific, reduced priced licenses being allocated. The majority of the overall harvest in this herd unit was attributed to the harvest of bucks in all years during this period. Over 25% of the buck harvest occurred in Hunt Area 78 (Figure 2). Hunt Area 78 was hunted by over 39% of all hunters who hunted the Platte Valley Herd Unit in 2011.

Weather conditions in this herd unit were favorable for successful deer hunting in 2009 with snowfall occurring at the higher elevations and cooler temperatures throughout the season. The weather conditions in 2010 and 2011 were very mild and dry, with temperatures barely dropping below freezing only in the higher elevations at night. Mild weather conditions are typically not conducive to deer harvest and contributed to the declining harvests of 2010 and 2011.

HUNTER STATISTICS

A decrease in active license numbers in 2009 was attributed in part to the decrease in the Region D nonresident license quota from 2,500 in 2008 to 2,200 licenses in 2009 (Figure 4 and Figure 5). The Region D nonresident license quota was lowered again in 2010 to 2,100. In 2010 nonresident numbers increased slightly and then declined again in 2011. Resident hunter numbers decreased incrementally during this time period (Figure 5).

During the 2009-2011 period, overall active license harvest success decreased while days per animal harvested increased (Figure 6 and Figure 7). This inverse correlation between harvest success and days per animal harvested tracked well with the decrease in the population estimate during this period. Active license harvest success decreased from 37% in 2009 to 20% in 2011. The days per animal harvested increased from 15 days in 2009 to 27 days in 2011. In a general hunting season herd unit these statistics are often indicators for the “quality of the hunt.” The 2011 harvest survey respondents indicated only 45% were satisfied, or very satisfied, with their hunting experience in the Platte Valley herd unit. Platte Valley Herd Unit hunter satisfaction ranked 36th out of 38 herd units statewide.

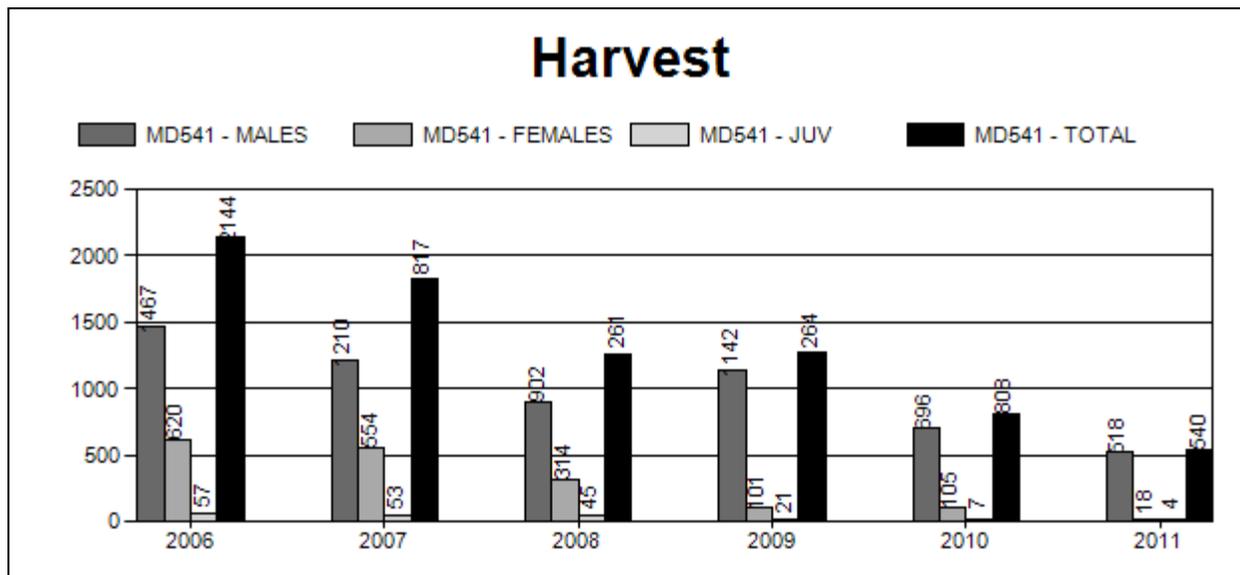


Figure 4. Platte Valley Herd Unit Harvest, Wyoming 2006-2011.

2011												
Area	Type	Active Lic/Htrs	Buck	Doe	Fawn	Total	Success		Days/ Harvest	Days	Licenses Sold	
78 FRENCH CREEK												
	General	1014	126	0	0	126	12.4%		41.5	5228		
	Type 1	22	10	0	0	10	45.5%		12.4	124	26	
	Type 6	9	0	3	0	3	33.3%		13	39	13	
	Pooled Total	1040	(1045)*	136	3	0	139	13.4%	(13.3%)*	38.8	5391	
	Pooled Resident	866		102	2	0	104	12.0%		43.1	4482	
	Pooled Nonresident	174		34	1	0	35	20.1%		26	909	
79 KENNADAY PEAK												
	General	659	152	0	0	152	23.1%		20.5	3113		
	Type 1	3	0	0	0	0	0.0%		0	7	0	
	Type 6	6	0	2	0	2	33.3%		12	24	11	
	Pooled Total	668	(668)*	152	2	0	154	23.1%	(23.1%)*	20.4	3144	
	Pooled Resident	391		65	2	0	67	17.1%		26.9	1801	
	Pooled Nonresident	277		87	0	0	87	31.4%		15.4	1343	
80 SPRING CREEK												
	General	458	76	0	0	76	16.6%		33.6	2553		
	Type 6	6	0	6	0	6	100.0%		3.7	22	11	
	Pooled Total	459	(464)*	76	6	0	82	17.9%	(17.7%)*	31.4	2575	
	Pooled Resident	298		29	6	0	35	11.7%		49.5	1734	
	Pooled Nonresident	161		47	0	0	47	29.2%		17.9	841	
81 BLACKHALL												
	General	538	86	0	0	86	16.0%		30.3	2609		
	Type 6	15	0	7	4	11	73.3%		6.5	71	16	
	Pooled Total	542	(553)*	86	7	4	97	17.9%	(17.5%)*	27.6	2680	
	Pooled Resident	389		59	3	1	63	16.2%		28.3	1784	
	Pooled Nonresident	153		27	4	3	34	22.2%		26.4	896	
83 BOLTEN RIM												
	General	90	15	0	0	15	16.7%		26.6	399		
	Pooled Total	90	(90)*	15	0	0	15	16.7%	(16.7%)*	26.6	399	
	Pooled Resident	50		8	0	0	8	16.0%		27.5	220	
	Pooled Nonresident	40		7	0	0	7	17.5%		25.6	179	
161 ST MARYS CREEK												
	General	93	53	0	0	53	57.0%		3.9	208		
	Pooled Total	93	(93)*	53	0	0	53	57.0%	(57.0%)*	3.9	208	
	Pooled Resident	56		40	0	0	40	71.4%		3.1	124	
	Pooled Nonresident	37		13	0	0	13	35.1%		6.5	84	
2011 Hunt Area Total		2892	(2913)*	518	18	4	540	18.7%	(18.5%)*	26.7	14397	77
2011 Herd Total		2654	(2674)*	518	18	4	540	20.3%	(20.2%)*	26.7	14397	77
*Active Licenses												

Table 2. Platte Valley Herd Unit Deer Harvest by Hunt Area, Wyoming 2011.

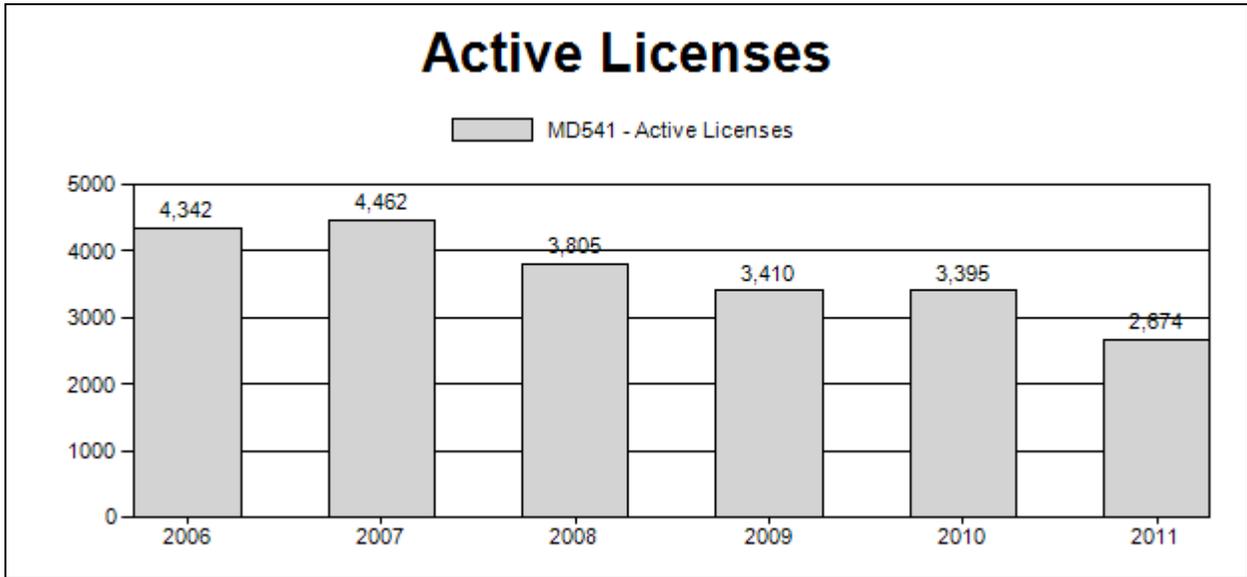


Figure 5. Platte Valley Herd Unit Population Size, Wyoming 2006-2011.

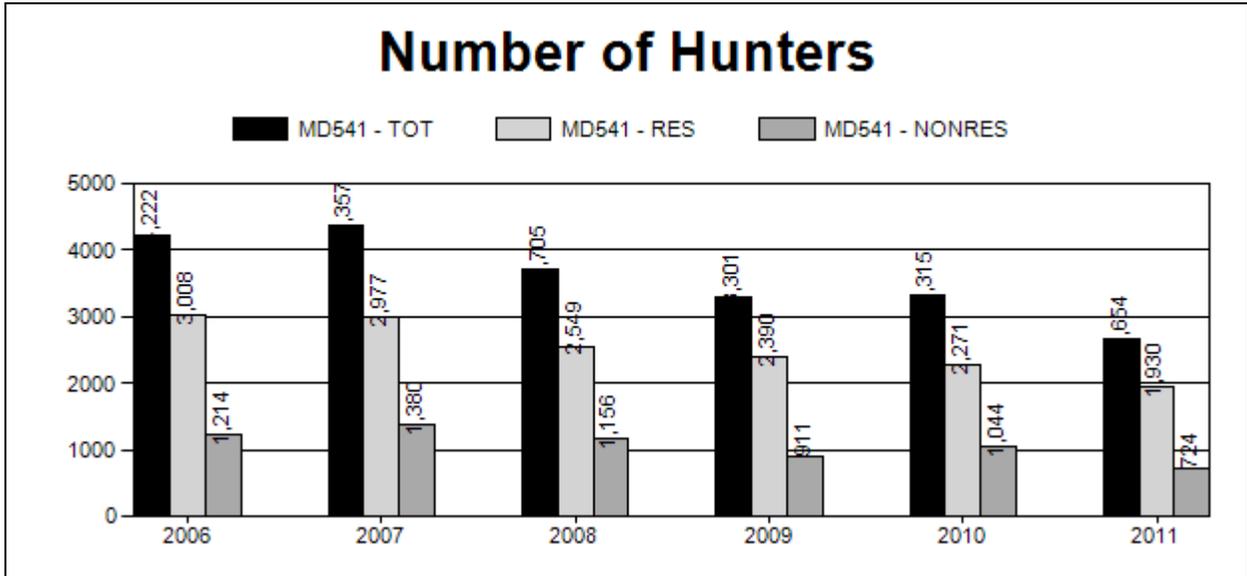


Figure 6. Platte Valley Herd Unit Number of Hunters, Wyoming 2006-2011.

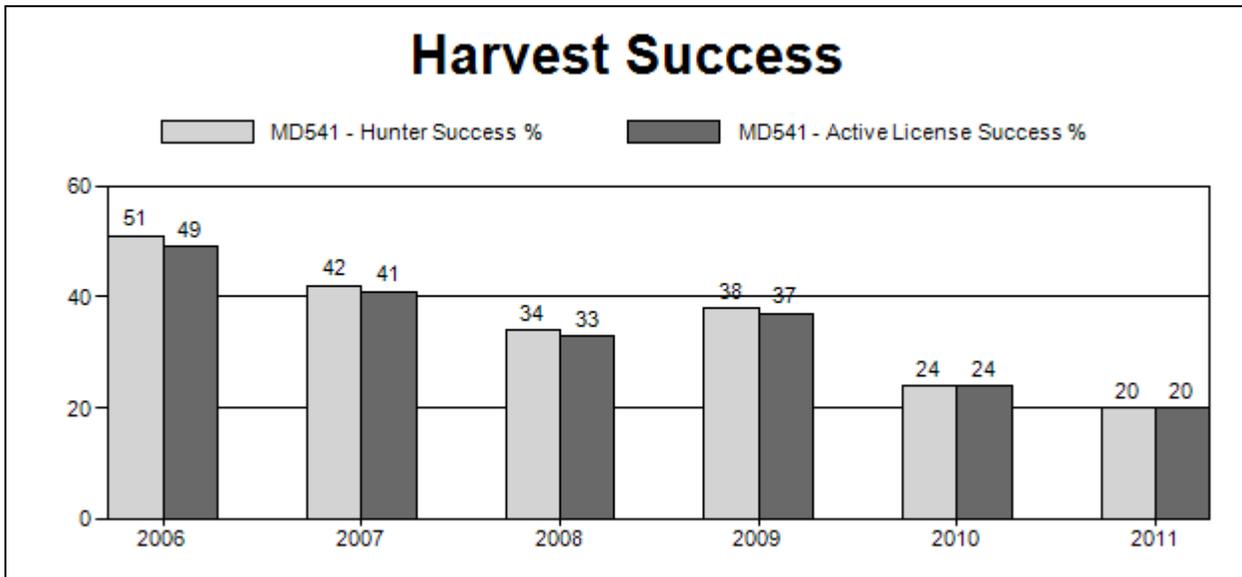


Figure 7. Platte Valley Herd Unit Harvest Success, Wyoming 2006-2011.

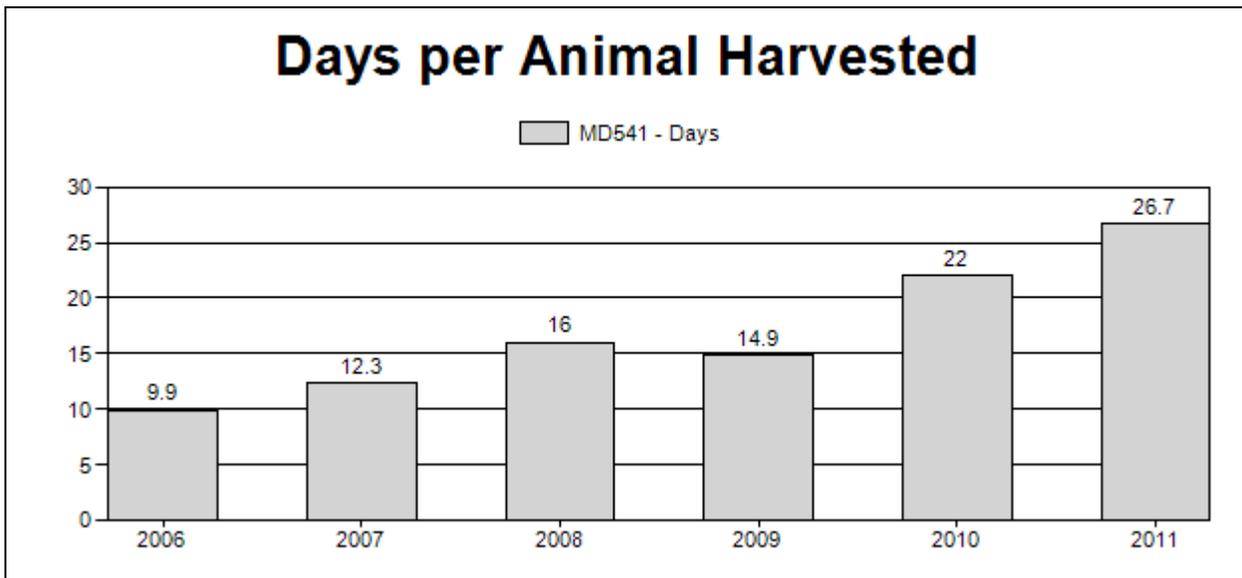


Figure 8. Platte Valley Herd Unit Days Per Animal Harvested, Wyoming 2006-2011.

HUNTER FIELD CHECKS

The age structure data for harvested mule deer was reported to 3 age classes: juvenile, yearling, and adult (Figures 8, 9, and 10). As demonstrated in the graphs, all data was based on field checked deer only. No mule deer teeth from this herd unit were submitted to the tooth aging laboratory for further analysis.

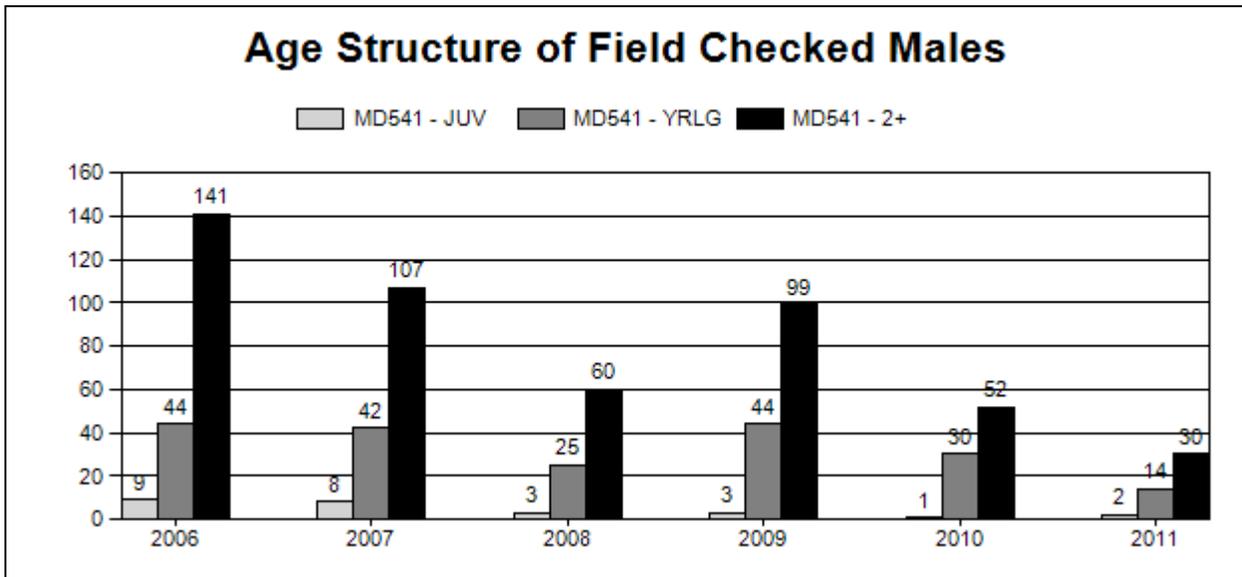


Figure 9. Platte Valley Herd Unit Age Structure of Field Checked Males, Wyoming 2006-2011.

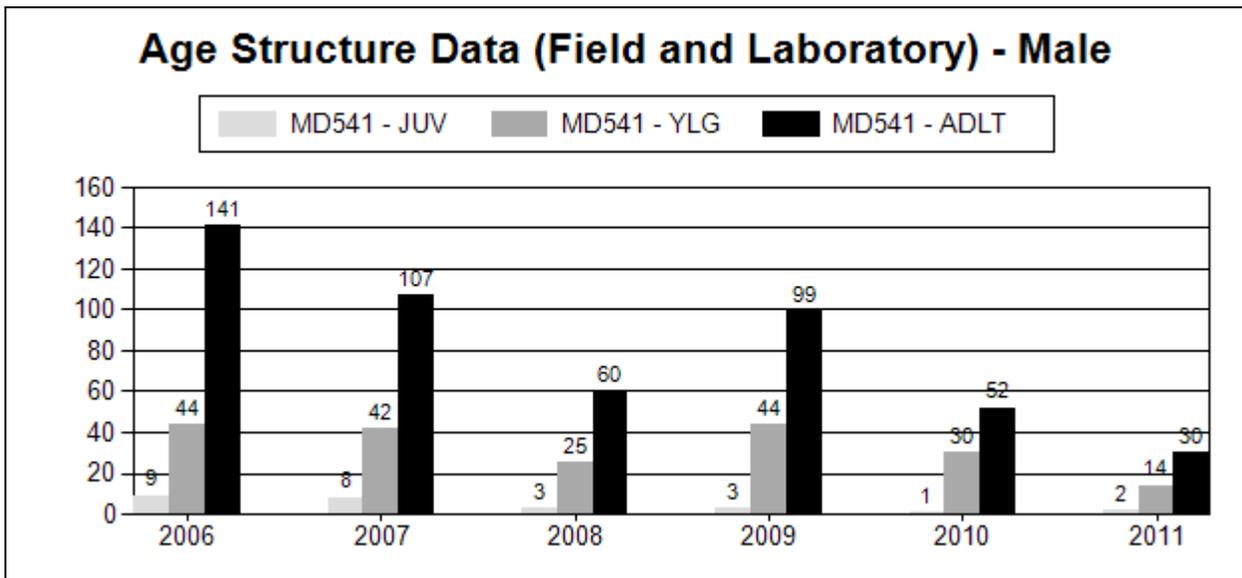


Figure 10. Platte Valley Herd Unit Age Structure Data (Field and Laboratory) - Male, Wyoming 2006-2011.

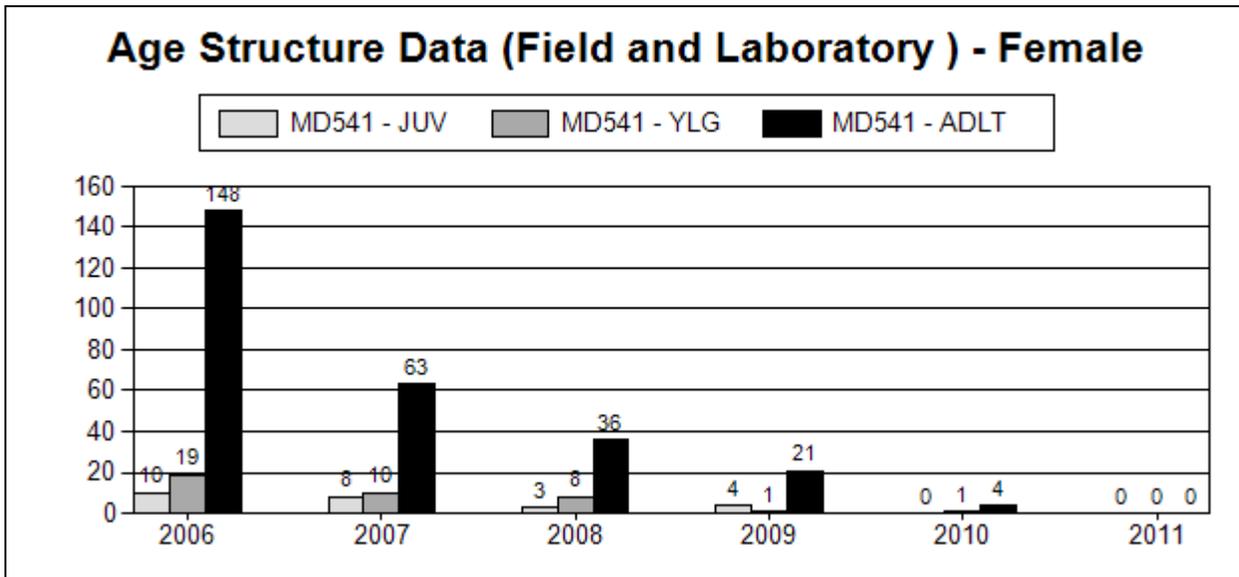


Figure 11. Platte Valley Herd Unit Age Structure Data (Field and Laboratory) - Female, Wyoming 2006-2011.

OTHER MANAGEMENT ISSUES

DISEASE

CWD has been documented in Hunt Areas 78-81 in the Platte Valley Herd Unit (Table 3). CWD Surveillance of hunter-harvested deer was intensified in the early years of this past decade as part of a statewide surveillance effort. In recent years surveillance efforts in hunt areas where CWD was endemic was decreased due to budget constraints. Surveillance in Hunt Areas 83 and 161 has been poor due to the low number of hunters in these hunt areas. Mule deer observed exhibiting clinical signs of CWD have been collected opportunistically in this herd unit and are reported as “Targeted” in the table below. Overall, the Platte Valley Herd Unit has a low prevalence rate of 1.3% for all mule deer tested. CWD has been documented in elk and white-tailed deer from this area but it has not been detected in moose from this area.

Hunt Area	Harvest Surveillance	Harvest Surveillance Positive	Targeted	Targeted Positive
78	871	11	4	1
79	316	5	4	0
80	252	0	4	1
81	341	5	2	0
83	10	0	0	0
161	30	0	0	0
Herd Unit Totals	1,820	21	14	2

Table 3. Platte Valley Herd Unit CWD Surveillance, Wyoming 1999-2011.

PARASITES

In April of 2009, an adult mule deer buck collected in Hunt Area 80 was found to have a heavy infestation of the exotic louse *Bovicola tibialis*. This was the first documented observation of this exotic parasite in Wyoming. *Bovicola tibialis* has been linked to localized mule deer declines in several western states. Since

2009, this exotic louse has been documented in 7 counties throughout Wyoming and on at least 2 more mule deer in the Platte Valley Herd Unit.

HABITAT

ON-GOING/COMPLETED PROJECTS

The Conservation Research Center for Teton Science Schools, Jackson, was contracted to complete an assessment of the mule deer habitat in the Platte Valley Mule Deer Herd Unit in 2008. Fieldwork for the southern section was completed in 2008, and the northern section was completed in 2009. The assessment report was not well received by landowners in the Platte Valley Herd Unit. Most concerns were focused on the broad assessments applied to private lands, identifying them as managed poorly with respect to livestock grazing, or, in need of noxious weed control. WGFD personnel spent a considerable amount of time during this period addressing these concerns, and ultimately removed the report from the WGFD website. WGFD personnel provided apologies to the Saratoga, Encampment, Rawlins Conservation District, and to landowners who participated in the assessment and felt their property was misrepresented in the assessment report.

In May of 2012, WGFD initiated the Platte Valley Habitat Partnership (PVHP). This is a collaborative approach to address mule deer habitat issues in the Platte Valley Herd Unit. The PVHP is comprised of landowners, sportspersons, federal land management agencies, WGFD, Saratoga, Encampment, Rawlins Conservation District, and several non-governmental organizations. Wyoming Game and Fish Commission allocated \$500,000 to the PVHP to be granted towards habitat projects in the herd unit. The goal for the first year of the PVHP is to develop a Platte Valley mule deer habitat management plan and to identify specific areas to implement habitat improvements.

ISSUES DISCUSSION

Mule deer habitat quality has been exacerbated by continued drought conditions sustained during this past decade. Elk and other ungulates are assumed to compete with mule deer on much of their overlapping ranges. Efforts have continued to reduce the Snowy Range and Sierra Madre Elk Herds towards their management objectives but progress in accomplishing this task has been slow.

WYOMING MULE DEER INITIATIVE

In July of 2007 the Wyoming Game and Fish Commission adopted the *Wyoming Mule Deer Initiative* (WGFD, 2007). The *Wyoming Mule Deer Initiative* “outlines the issues affecting deer management now and in the future, identifies the appropriate goals and objectives to address mule deer management issues, and recommends strategies to improve mule deer management in Wyoming.” The Department selected the Platte Valley Mule Deer Herd Unit as one of the first areas in which to implement the concepts outlined in the *Wyoming Mule Deer Initiative*.

In 2008, WGFD personnel associated with the Platte Valley Herd Unit began meeting for the purpose of developing a document that would identify and provide guidance with regard to mule deer issues for this herd unit. WGFD personnel formulated problem statements under the categorical headings of Habitat Management, Population Management, and Public involvement and Outreach to capture the issues identified for this herd unit. Although these discussions never produced a final document, it provided a beginning for what became known as the Platte Valley Mule Deer Initiative (PVMDI).

The PVMDI began to take form in the spring of 2011, following several informal meetings with local sportspersons and landowners who were concerned about the status of mule deer in the Platte Valley Herd Unit. WGFD contracted a facilitator and began a series of public meetings to collaboratively develop the Platte Valley Mule Deer Plan - DRAFT (WGFD 2012). Copies of the plan are available through WGFD offices and electronically at the link listed below.

http://wgfd.wyo.gov/web2011/Departments/Wildlife/pdfs/PVMD_MGMTPLAN_DRAFT0001661.pdf

Efforts to continue engaging the public collaboratively in the management of mule deer for this herd unit will be accomplished through annual public meetings. Continued mule deer research in this herd unit and the formation of the PVHP are also considered to be components of the PVMDI effort. Many of the management recommendations listed below were derived directly from the Draft Platte Valley Mule Deer Plan - DRAFT.

MANAGEMENT RECOMMENDATIONS

1. Continue implementing components of the *Wyoming Mule Deer Initiative*, through the PVMDI, such as mule deer research, collaborative management, and habitat improvement under the PVHP.
2. Begin using spreadsheet models developed by Wyoming Cooperative Fish and Wildlife Research Unit to simulate population dynamics and produce annual abundance estimates anchored to sightability survey estimates.
3. Improve fawn survival by reducing predator and trophy game population numbers in the Platte Valley Herd Unit.
4. Implement limited quota hunting seasons to improve the quality of the hunt and to align hunter numbers with the mule deer resource. Evaluate this hunting season strategy in 2016.
5. Continue to monitor browse production and utilization, as well as overall range health in the Platte Valley Herd Unit.
6. Continue to work with land management agencies to mitigate the impacts of energy development in the Platte Valley Herd Unit.

SPECIAL STUDIES

FINAL REPORTS/ON-GOING PROJECTS

In February of 2009, the Department conducted a mule deer sightability survey in the Platte Valley Herd Unit following a technique developed in Idaho (Unsworth et. al., 1999). The intent of this survey was to develop an abundance estimate for comparison with the population estimate generated from the POP-II program. The results of this survey were appended to the 2008 Job Completion Report (WGFD 2010).

In 2010, WGFD in conjunction with the Wyoming Cooperative Fish and Wildlife Research Unit began a multifaceted research project which involved radio-collaring 70 mule deer. The project's objectives were to better delineate mule deer habitat use patterns, estimate survival, and evaluate the use of sightability surveys to produce abundance estimates for mule deer. Preliminary results from the sightability surveys were

discussed previously in this report under the Population Modeling section. A final report for this research project should be completed in 2014.

COMPLETED STUDIES AND PROJECTS LIST

Newman, J. 1968. Deer Distribution and Movement Studies. Final Report. Wyoming Game and Fish Department, Cheyenne.

Strickland, M. D. 1975. An investigation of the factors affecting the management of a migratory mule deer herd in southeastern Wyoming – the Snowy Range. Ph.D. Dissertation, University of Wyoming, Laramie. 171 pp.

Yost, J. 2009. North Park Deer Movement and Distribution Study Update - March, 2009. Colorado Division of Wildlife, Steamboat Springs. 4 pp.

Wyoming Game and Fish Dept. 2012. Platte Valley Mule Deer Plan – DRAFT. Wyoming Game and Fish Department, Cheyenne. 90 pp.

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Mule Deer Working Group. 2007. The Wyoming Mule Deer Initiative, Wyoming Game and Fish Department, Cheyenne. 53 pp.

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Strickland, M. D. 1975. An investigation of the factors affecting the management of a migratory mule deer herd in southeastern Wyoming – the Snowy Range. Ph.D. Dissertation, University of Wyoming, Laramie. 171 pp.

Unsworth, J. W., F. A. Leban, E. O. Garton, D. J. Leptich, and P. Zager. 1999. Aerial Survey: User's Manual. Electronic Edition. Idaho Department of Fish & Game, Boise.

Ward, A. L., J. J. Cupal, G. A. Goodwin and H. D. Morris. 1976. Effects of highway construction and use on big game populations. Rept. No. FHWA-RD-76-174, Federal Highway Administration, Washington, D.C. 92 pp.

Wyoming Game and Fish Dept. 2007. Big Game Management Parameter Update – ‘Recreational’ vs. ‘Special’ Management. Memorandum. Wyoming Game and Fish Department, Cheyenne. 3 pp.

_____. 2010. Platte Valley Mule Deer Herd Unit 2008 Job Completion Report Wyoming Game and Fish Department, Laramie. 44 pp.

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Yost, J. 2009. North Park Deer Movement and Distribution Study Update - March, 2009. Colorado Division of Wildlife, Steamboat Springs. 4 pp.

**Platte Valley Mule Deer (MD541)
Hunt Areas 78-81, 83 & 161
2012 Season Recommendations**

Hunt Area	Type	Date of Seasons		Limitations
		Opens	Closes	
*78, *79, *80, *81, <u>83</u>		Oct. 1	Oct. 14 <u>7</u>	General license; antlered mule deer <u>3 points or more on either antler</u> or any white-tailed deer
	1	Oct. 1	Oct. 31	Limited quota; 25 <u>10</u> licenses antlered deer
78, *79, *80,*81, 161	3	Nov. <u>Oct. 1</u>	Nov. 30	Limited quota; 25 licenses any white-tail deer
*78	6	Oct. 1	Oct. 14	Limited quota; 10 licenses doe or fawn
*79	6	Oct. 1	Oct. 14	Limited quota; 10 licenses doe or fawn
*80	6	Oct. 1	Oct. 14	Limited quota; 10 licenses doe or fawn
*81	6	Oct. 1	Oct. 14	Limited quota; 10 licenses doe or fawn
*78, *79, *80, *81, 161	8	Sept. 1	Dec. 15	Limited quota; 25 licenses doe or fawn white-tailed deer
161		Oct. 15	Oct. 25	General license; antlered mule deer <u>3 points or more on either antler</u> or any white-tailed deer
Archery				Refer to Section 4 of this Chapter

Summary of Proposed Changes in License Numbers

Hunt Area	Type	Change From 2011
78	1	-15
78	6	-10
79	6	-10
80	6	-10
81	6	-10
Totals	1	-15
	6	-40

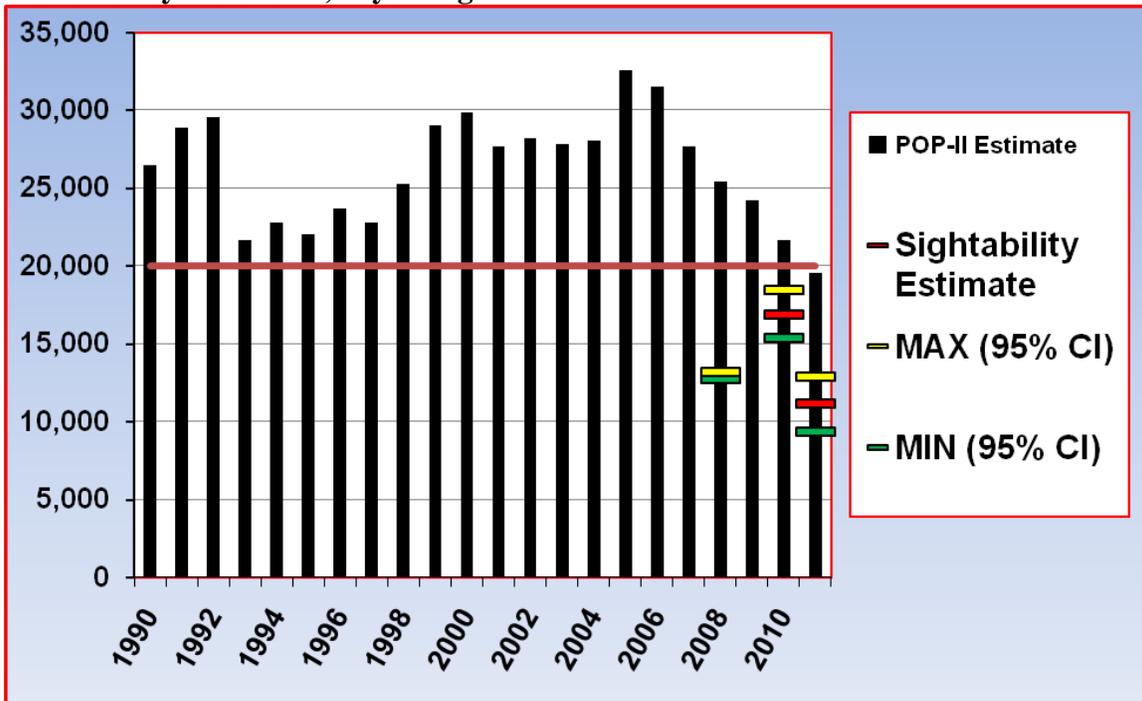
Management Evaluation

The 2011 Platte Valley Herd Unit postseason classification ratios were 26 bucks and 50 fawns/100 does, based on an adequate sample of 3,057 mule deer. The total buck ratio remained the same as in 2010. However, the observed fawn ratio was 10% lower than the previous year. Harvest data from hunter checks indicated the proportion of yearling bucks harvested during 2011 was 31% (n=11), which decreased from the 37% (n=30) observed during the 2010 season.

In 2009, the Department's first mule deer abundance sightability survey was completed in this herd unit. Results from this survey indicated a postseason population 48% lower than an estimate reported from the 2008 POP-II model estimate. In July of 2010, the Department initiated a mule deer research project, through the UW Wyoming Fish and Wildlife Cooperative Research Unit, to investigate the application of sightability surveys

for monitoring mule deer abundance. Sightability surveys were conducted in February of 2011 and 2012 for the Platte Valley herd unit. Results from all sightability surveys were lower than the corresponding annual POP-II model estimates (Figure 1). Recently, a decision was made to adopt a spreadsheet modeling program to replace the POP-II modeling program. This program will be used to monitor population dynamics and produce the annual postseason population estimates for big game herd in Wyoming. Future population estimates for this herd unit will be derived from a spreadsheet model, anchored to sightability abundance estimates.

Figure 1. A comparison of 1990-2011 mule deer postseason population estimates, Platte Valley Herd Unit, Wyoming.



The mid-winter abundance estimates from the 2010 and 2011 sightability surveys were 16,892 and 11,120, respectively. These estimates indicated a decline of 34% occurred for the number of mule deer wintering in the Platte Valley herd unit. For comparison, 27% (n=19) of the radio-collared adult mule deer in this herd unit died due to various causes during this period. It was assumed late winter fawn mortalities increased in 2011 due to the severity of the prolonged winter. Cumulatively, this information indicated mule deer numbers were well below the postseason management objective and had declined in recent trend.

Harvest

Total harvest in the Platte Valley herd unit decreased 37% in 2011 to 516 mule deer. Hunter numbers decreased 20% (n=2,645) in 2011. Buck harvest success decreased 2% to 20% in 2011. Field-checked yearling buck harvest percentage decreased from 37% in 2010 to 31% (n=11) in 2011. The decrease in the total buck harvest success was attributed to poor hunting conditions caused by warm, dry weather which occurred during the General hunting season, and less deer. However, the poor hunting conditions also attributed to maintaining a postseason buck ratio of 26 bucks/100 does in this herd unit. Had hunting conditions been better, this postseason ratio would not have been maintained. A telemetry flight conducted 2 days prior to the hunting season indicated a large proportion of the radio-collared deer from the southern portion of the herd unit were still on their summer range in Colorado.

2012 Season Proposal

The 2012 General season length is proposed to be reduced 50% to 7 days in length. The Type 1 numbers will be reduced to 10 licenses. Type 6 licenses will not be issued in 2012. General and Type 1 licenses will be limited to the harvest of antlered mule deer 3 points or more on either antler, or any white-tailed deer. This conservative season proposal will allow recreational hunting opportunities to continue for General licensed mule deer hunters in 2012, while promoting optimal recruitment of yearling bucks into future adult age classes.

A decision to propose a reduced season length, in conjunction with an antler point restriction, is supported by the following points relative to the current status of the Platte Valley herd unit:

- a.) The winter abundance estimate (11,120) for this herd unit was well below the management objective (20,000).
- b.) The 2011 fawn ratio (50/100 does) was the lowest observed since 1993 (44/100 does).
- c.) Although the 2011 buck ratio (26/100 does) was within the parameters for the recreational management strategy, data from radio-collared mule deer suggested the total number of bucks which are conceivably available to Wyoming hunters during the early October hunting season, particularly in the southern portion of this herd unit, may not be accurately represented in the observed postseason buck ratio.

MD541_2012_SEASON

Data from 1987 to 2012

Simulation from 2001 to 2012

Age Class	Init Pop. Prop.		Presn Mort%		Postsn Mort%		Effort Set 1		Effort Set 2	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	10489.0	10489.0	50.0	50.0	50.0	45.0	1.00	1.00	1.00	1.00
1	2234.0	2508.0	2.0	2.0	10.0	5.0	1.40	1.00	0.50	1.00
2	1951.0	2681.0	2.0	2.0	10.0	5.0	1.00	1.00	1.00	1.00
3	1119.0	2203.0	2.0	2.0	10.0	5.0	1.00	1.00	1.00	1.00
4	649.0	1802.0	2.0	2.0	10.0	5.0	1.00	1.00	1.00	1.00
5	432.0	1461.0	2.0	2.0	10.0	5.0	1.00	1.00	1.00	1.00
6	348.0	1481.0	2.0	2.0	15.0	10.0	1.00	1.00	1.00	1.00
7	169.0	955.0	2.0	2.0	20.0	20.0	1.00	1.00	1.00	1.00
8	84.0	598.0	2.0	2.0	40.0	30.0	1.00	1.00	1.00	1.00
9	30.0	351.0	2.0	2.0	60.0	40.0	1.00	1.00	1.00	1.00
10	24.0	419.0	2.0	2.0	80.0	50.0	1.00	1.00	1.00	1.00
11	3.0	239.0	2.0	2.0	100.0	60.0	1.00	1.00	1.00	1.00
12	0.0	115.0	2.0	2.0	100.0	75.0	1.00	1.00	1.00	1.00
13	0.0	32.0	2.0	2.0	100.0	85.0	1.00	1.00	1.00	1.00
14	0.0	3.0	2.0	2.0	100.0	95.0	1.00	1.00	1.00	1.00
15	0.0	0.0	2.0	2.0	100.0	100.0	1.00	1.00	1.00	1.00

Sum = 42869.0 Estimated Sum = 42869 Subadults: Ages 0 to 0

Bio-Year	MSI Function is Linear					Postseason MSI	Effort & Wound Set Used
	Preseason MSI	Harvest Subadults#	Des. Pop Males#	Size in NA Females#	Des. Pop Females#		
1987	1.00	14	1596	64		1.00	1
1988	0.74	57	1736	643		1.00	1
1989	0.86	37	1168	651		1.00	1
1990	0.95	40	1497	486		0.70	1
1991	1.17	69	1526	532		1.00	1
1992	1.14	33	1513	819		1.70	2
1993	1.48	25	1036	654		1.20	2
1994	1.22	0	818	0		1.30	1
1995	1.21	0	575	0		0.90	1
1996	1.15	0	799	0		1.10	1
1997	1.27	0	508	0		0.70	1
1998	1.19	0	700	0		0.70	1
1999	0.99	0	1180	0		0.90	2
2000	1.01	0	1866	0		1.10	2
2001	1.22	0	1564	0		1.00	1
2002	1.13	35	1756	378		1.10	2
2003	1.13	62	1384	395		0.90	2
2004	1.19	17	1767	420		0.50	2
2005	1.13	23	1595	277		1.00	2
2006	1.24	57	1467	620		1.30	2
2007	1.32	53	1210	554		1.25	2
2008	1.33	41	901	306		1.41	2
2009	1.15	21	1142	101		1.34	1
2010	1.28	7	696	105		1.40	1
2011	1.36	4	516	18		1.20	1
2012	1.23	0	350	0		1.20	1

Set 1 Wounding Loss 10.0% 10.0% 10.0% Yearling Male 10.0%
 Set 2 Wounding Loss 10.0% 10.0% 10.0% Yearling Male 10.0%

Bio- Year	Young/100 Fems Age 1 - 1	Young/100 Fems Age 2 - 15	Young/100 Fems Disabled	Sex Ratio: 50 : 50
1988	0.0	170.0	0.0	
1989	0.0	170.0	0.0	
1990	0.0	170.0	0.0	
1991	0.0	170.0	0.0	
1992	0.0	170.0	0.0	
1993	0.0	170.0	0.0	
1994	0.0	170.0	0.0	
1995	0.0	170.0	0.0	
1996	0.0	170.0	0.0	
1997	0.0	170.0	0.0	
1998	0.0	170.0	0.0	
1999	0.0	170.0	0.0	
2000	0.0	170.0	0.0	
2001	0.0	170.0	0.0	
2002	0.0	170.0	0.0	
2003	0.0	170.0	0.0	
2004	0.0	170.0	0.0	
2005	0.0	170.0	0.0	
2006	0.0	170.0	0.0	
2007	0.0	170.0	0.0	
2008	0.0	170.0	0.0	
2009	0.0	170.0	0.0	
2010	0.0	170.0	0.0	
2011	0.0	170.0	0.0	
2012	0.0	170.0	0.0	
2013	0.0	170.0	0.0	

POP-II (V1.2.9) Simulation Output Tables for MD541_2012_SEASON_.GN1, 03/05/2012 07:17 am

Table 1. Population Size During Bio-Year for MD541_2012_SEASON_.GN1 03/05/2012 07:17 am

Bio- Year	Start	Pre- Season	Post Season	End	%Growth
2001	42869	29538	27818	21725	1.7
2002	43596	30748	28362	21128	-2.3
2003	42615	29997	27972	22178	3.4
2004	44078	30520	28096	24915	10.4
2005	48678	34689	32605	25036	2.6
2006	49957	33885	31527	22309	-8.4
2007	45744	29688	27689	20179	-9.1
2008	41580	26812	25439	17755	-10.6
2009	37162	25595	24204	16563	-7.6
2010	34346	22541	21652	14902	-8.3
2011	31495	19807	19215	14092	-6.6
2012	29425	19649	19264	13706	-5.3

Table 2. Preseason Natural Mortality for MD541_2012_SEASON_.GN1 03/05/2012 07:17 am

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2001	12797	172	362	13331	31.1
2002	12357	149	342	12848	29.5
2003	12140	138	340	12618	29.6
2004	13030	156	372	13558	30.8
2005	13426	170	393	13989	28.7
2006	15451	187	434	16072	32.2
2007	15467	174	415	16056	35.1
2008	14231	156	381	14768	35.5
2009	11159	116	293	11568	31.1
2010	11381	114	310	11805	34.4
2011	11284	108	298	11689	37.1
2012	9430	95	252	9777	33.2

Table 3. Harvest Mortality for MD541_2012_SEASON_.GN1 03/05/2012 07:17 am

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2001	0	1564	0	1564	5.3
2002	35	1756	378	2169	7.1
2003	62	1384	395	1841	6.1
2004	17	1767	420	2204	7.2
2005	23	1595	277	1895	5.5
2006	57	1467	620	2144	6.3
2007	53	1210	554	1817	6.1
2008	41	901	306	1248	4.7
2009	21	1142	101	1264	4.9
2010	7	696	105	808	3.6
2011	4	516	18	538	2.7
2012	0	350	0	350	1.8

Table 4. Harvest Percentages for MD541_2012_SEASON_.GN1 03/05/2012 07:17 am

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	Yearling Males
2001	0.0	22.8	0.0	5.29	39.4
2002	0.4	27.2	2.6	7.05	18.3
2003	0.7	23.2	2.7	6.14	21.2
2004	0.2	27.7	2.8	7.22	24.3
2005	0.2	21.7	1.6	5.46	28.4
2006	0.6	19.9	3.6	6.33	20.6
2007	0.7	18.9	3.6	6.12	14.3
2008	0.6	15.8	2.2	4.65	14.5
2009	0.3	23.2	0.8	4.94	27.0
2010	0.1	16.0	0.9	3.58	37.9
2011	0.1	13.4	0.2	2.72	30.9
2012	0.0	9.3	0.0	1.78	34.7

Table 5. Postseason Natural Mortality for MD541_2012_SEASON_.GN1 03/05/2012 07:17 am

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2001	3886	586	1620	6093	21.9
2002	4951	565	1718	7234	25.5
2003	3967	451	1376	5793	20.7
2004	2102	248	830	3180	11.3
2005	4898	620	2050	7568	23.2
2006	5809	814	2594	9218	29.2
2007	4696	690	2124	7510	27.1
2008	4771	728	2185	7684	30.2
2009	5235	552	1854	7641	31.6
2010	4252	591	1907	6750	31.2
2011	3024	492	1607	5123	26.7
2012	3365	536	1657	5557	28.8

Table 6. Preseason Ratios for MD541_2012_SEASON_.GN1 03/05/2012 07:17 am

Bio-Year	Subadults /100 1+F	2+ Males /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2001	56.5	32.4	15.0	47.4
2002	64.4	30.2	13.5	43.7
2003	63.6	26.4	14.2	40.6
2004	58.1	25.5	16.3	41.8
2005	60.8	24.1	19.1	43.1
2006	55.5	28.4	14.7	43.1
2007	52.0	31.3	10.5	41.8
2008	51.4	30.6	10.4	40.9
2009	66.4	31.3	8.3	39.6
2010	54.3	25.7	11.2	37.0
2011	49.9	27.4	8.8	36.2
2012	59.1	27.3	10.4	37.6

Table 7. Postseason Ratios for MD541_2012_SEASON_.GN1 03/05/2012 07:17 am

Bio-Year	Subadults /100 1+F	2+ Males /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2001	56.5	25.2	10.4	35.6
2002	66.0	20.1	11.5	31.5
2003	65.1	18.8	12.4	31.1
2004	59.8	16.3	13.6	30.0
2005	61.7	17.0	16.4	33.4
2006	57.4	21.7	13.3	35.0
2007	53.8	24.8	9.6	34.4
2008	52.4	25.1	9.6	34.7
2009	66.8	24.2	5.6	29.8
2010	54.8	21.9	8.8	30.8
2011	49.9	23.8	7.1	30.9
2012	59.1	24.7	9.0	33.8

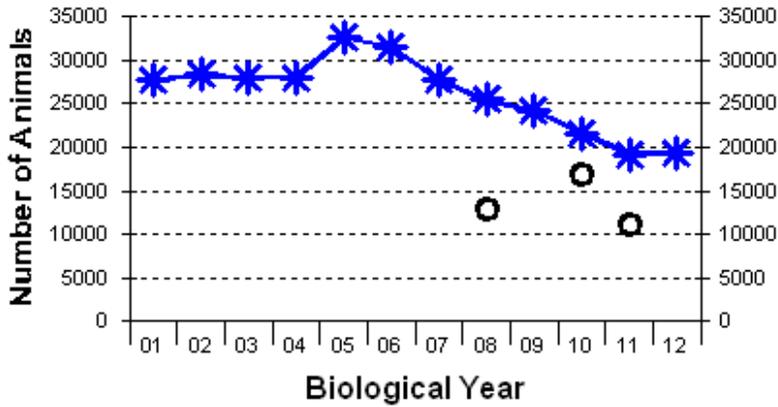
Table 8. End of Year Ratios for MD541_2012_SEASON_.GN1 03/05/2012 07:17 am

Bio-Year	Subadults /100 Adlts	Subadults /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2001	24.6	33.4	10.5	35.5
2002	27.3	35.8	11.6	31.4
2003	31.5	41.2	12.4	30.9
2004	37.1	48.3	13.7	30.0
2005	27.6	36.9	16.9	33.9
2006	19.2	26.1	13.8	35.7
2007	18.9	25.5	9.8	34.8
2008	15.3	20.6	9.8	34.9
2009	22.0	28.6	5.7	29.8
2010	16.8	21.9	9.1	30.7
2011	19.3	25.3	7.4	30.9
2012	22.7	30.5	9.5	34.1

Table 9. Reproduction at Start of Bio-Year for MD541_2012_SEASON_.GN1 03/05/2012 07:17 am

Bio-Year	Young / 100 AF 1 +	Sub-Ad. / 100 AF 1 +	Total Young	Total Sub-Adult	Total Females 1 +
2001	141	141	20978	20978	14848
2002	145	145	21871	21871	15115
2003	143	143	21487	21487	15032
2004	140	140	21900	21900	15643
2005	137	137	23763	23763	17408
2006	142	142	24921	24921	17495
2007	149	149	23434	23434	15737
2008	149	149	21400	21400	14319
2009	153	153	19407	19407	12718
2010	147	147	17783	17783	12093
2011	152	152	16594	16594	10944
2012	150	150	15333	15333	10240

Graph 1. Population Size During Bio-Year

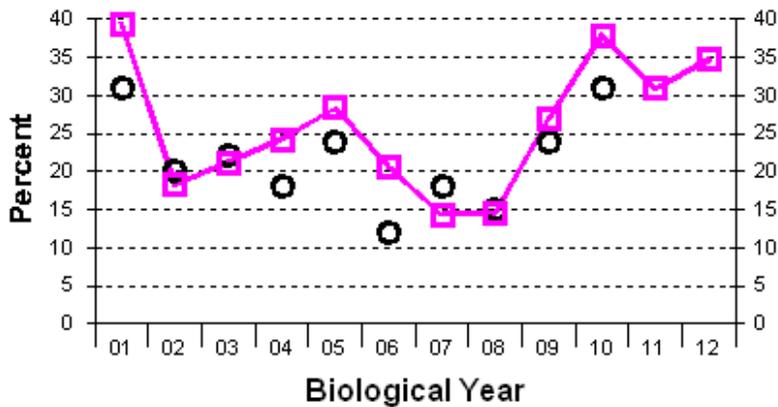


YR	SIM	OBS
01	27818	----
02	28362	----
03	27972	----
04	28096	----
05	32605	----
06	31527	----
07	27689	----
08	25439	12955
09	24204	----
10	21652	16892
11	19215	11120
12	19264	----

AVERAGES		
of Col.	26154	
of Pair	22102	13656

012_SEASON_GN1, 03/05/2012 07:17 am, Correlation (R) = 0.191, GOF = 0.34

Graph 4. Harvest Percentages

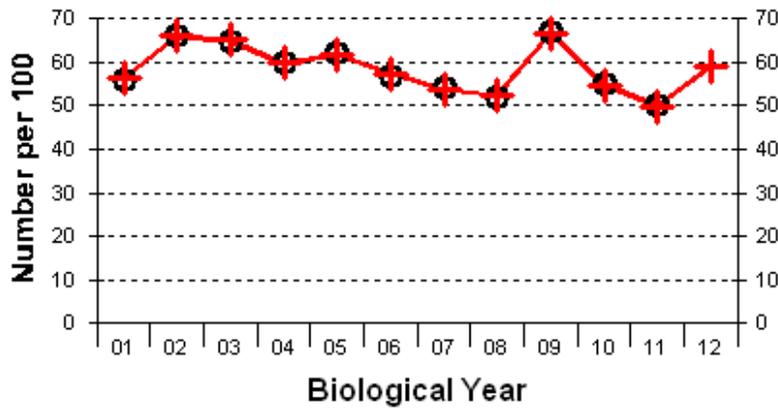


YR	SIM	OBS
01	39	31
02	18	20
03	21	22
04	24	18
05	28	24
06	21	12
07	14	18
08	14	15
09	27	24
10	38	31
11	31	----
12	35	----

AVERAGES		
of Col.	26	
of Pair	25	22

12_SEASON_GN1, 03/05/2012 07:17 am, Correlation (R) = 0.873, GOF = 0.755

Graph 7. Postseason Ratios



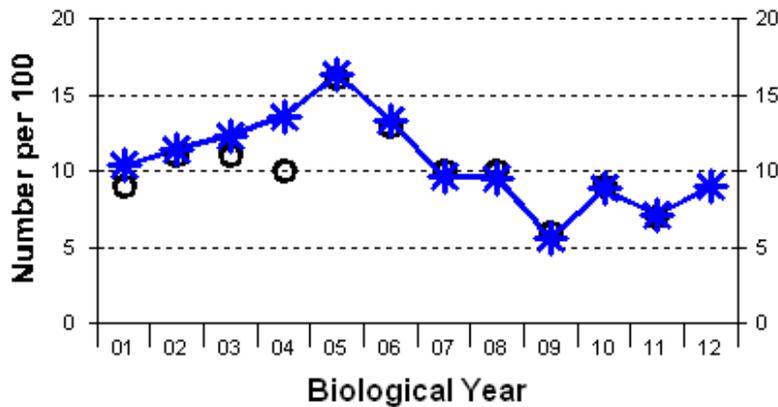
YR	SIM	OBS
01	56	56
02	66	66
03	65	65
04	60	60
05	62	62
06	57	57
07	54	54
08	52	52
09	67	67
10	55	55
11	50	50
12	59	---

AVERAGES		
of Col.	59	
of Pair	59	59

+ Post SA/100 AF
 ○ Observed

12_SEASON_GN1, 03/05/2012 07:17 am, Correlation (R) = 0.998, GOF = 0.995

Graph 7. Postseason Ratios



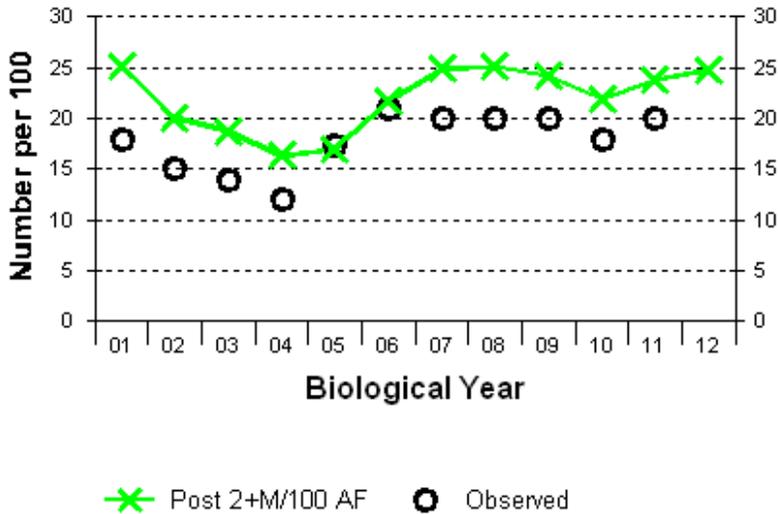
YR	SIM	OBS
01	10	9
02	11	11
03	12	11
04	14	10
05	16	16
06	13	13
07	10	10
08	10	10
09	6	6
10	9	9
11	7	7
12	9	---

AVERAGES		
of Col.	11	
of Pair	11	10

* Post YM/100 AF
 ○ Observed

12_SEASON_GN1, 03/05/2012 07:17 am, Correlation (R) = 0.923, GOF = 0.875

Graph 7. Postseason Ratios

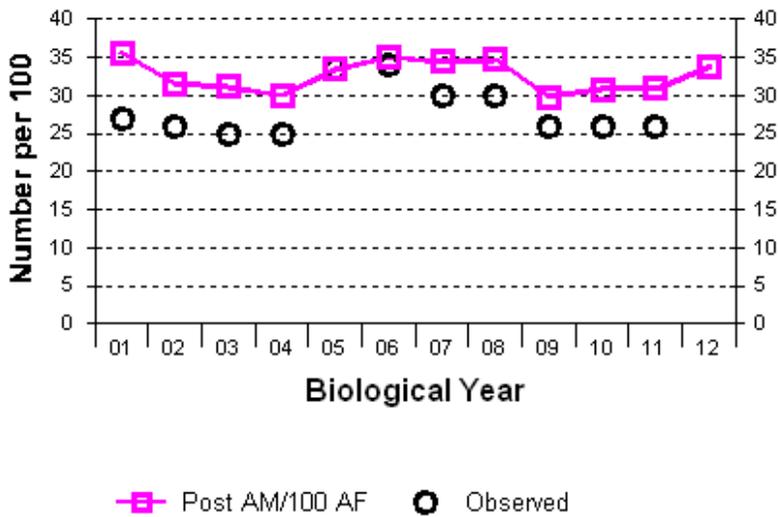


YR	SIM	OBS
01	25	18
02	20	15
03	19	14
04	16	12
05	17	17
06	22	21
07	25	20
08	25	20
09	24	20
10	22	18
11	24	20
12	25	---

AVERAGES		
of Col.	22	
of Pair	22	18

012_SEASON_GN1, 03/05/2012 07:17 am, Correlation (R) = 0.779, GOF = 0.75

Graph 7. Postseason Ratios



YR	SIM	OBS
01	36	27
02	32	26
03	31	25
04	30	25
05	33	33
06	35	34
07	34	30
08	35	30
09	30	26
10	31	26
11	31	26
12	34	---

AVERAGES		
of Col.	33	
of Pair	32	28

12_SEASON_GN1, 03/05/2012 07:17 am, Correlation (R) = 0.715, GOF = 0.824

Aerial Survey for Windows, Version 1.00 Beta 6.1.1 (17-Sep-1999)

Monday, February 27, 2012 06:09 PM

Model: Mule Deer, Hiller 12-E, Idaho (Spring)

[Files]

Title = C:\Program Files\IDFG\Aerial Survey\2012_MD541_EST1.ttl

Summary = C:\Program Files\IDFG\Aerial Survey\2012_MD541_EST1.sum

.....
2012_MD541_EST1

Section 1: Summary of Raw Counts

Stratum	Units Sampled	Total
1	4	40
2	6	252
3	18	3569
4	12	4293
Total	40	8154

=====

Section 2: Summary of Raw Counts for Perfect Visibility Model

This table projects the number of animals that would have been counted if every unit had been flown and visibility had been perfect (no animals obscured by vegetation, etc.)

Strat	No of Units		Total
	Popn	Sample	
1	27	4	270
2	25	6	1050
3	23	18	4560
4	12	12	4293
Total	87	40	10173

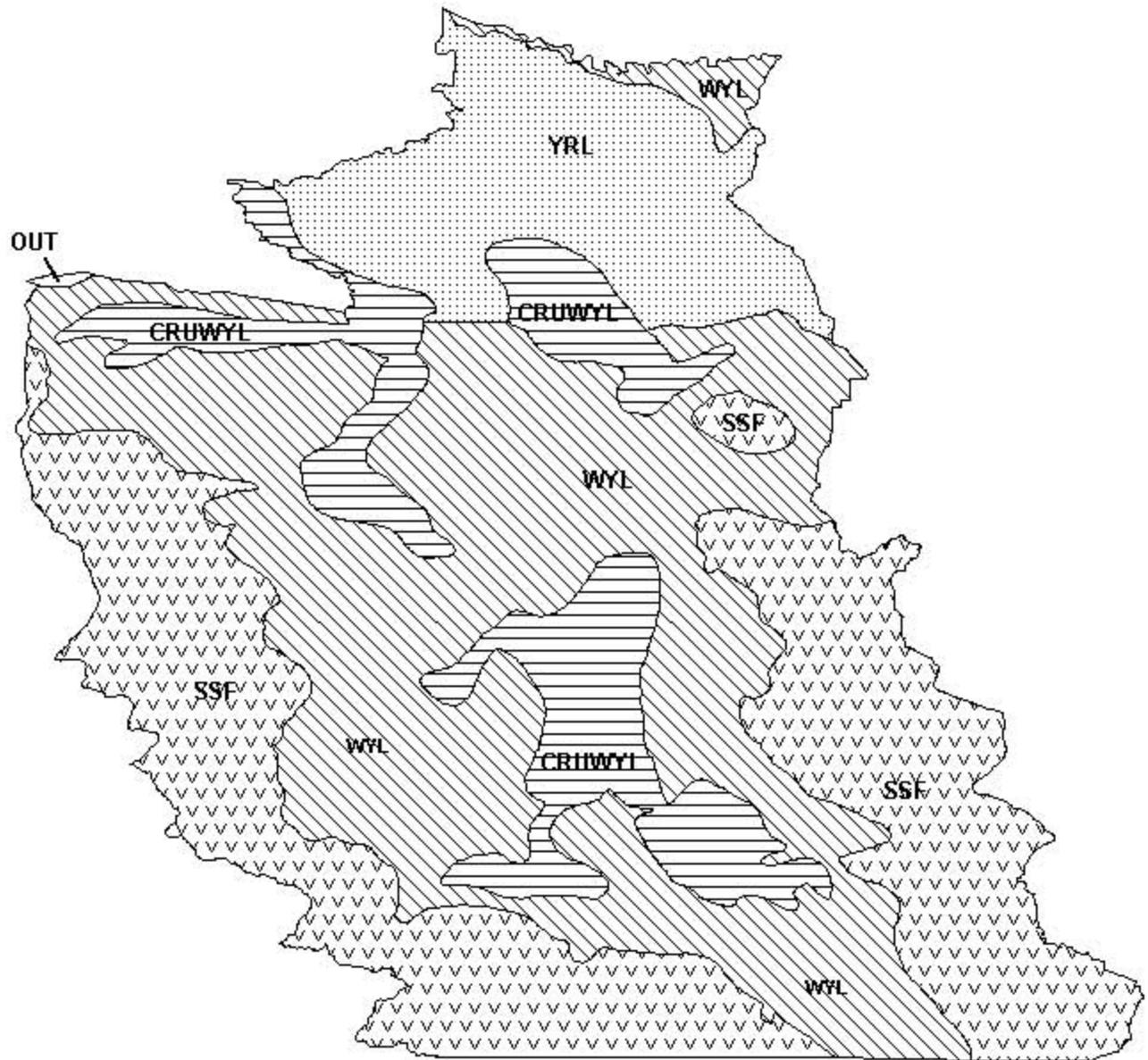
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Section 3: Estimates for Total Number

Total

Stratum	Number of Units		Estimate	Variance		Bound	
	Popn.	Sample		Sampling	Sightability	95%	
				Model			
1	27	4	338	36766	1035	52	381
2	25	6	1138	488935	1657	55	1373
3	23	18	5010	276832	8366	570	1048
4	12	12	4634	0	4815	200	139
Total	87	40	11120	802533	15873	877	1774

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Mule Deer (MD541) - Platte Valley
 HA 78-81, 83, 161
 Revised - 12/87

