2013 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2013 - 5/31/2014

HERD: MD104 - SUBLETTE

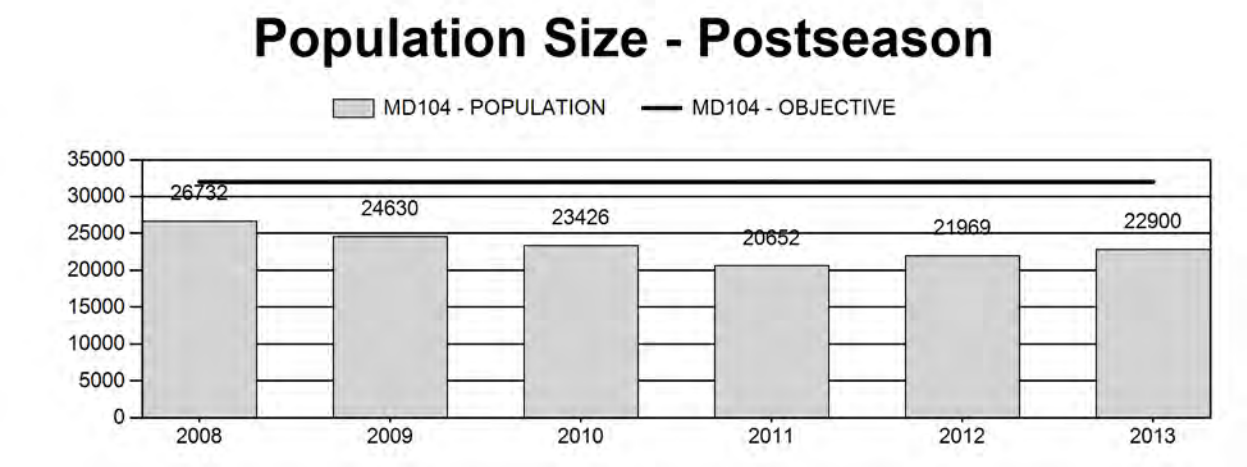
HUNT AREAS: 130, 138-142, 146, 150-156, 162
PREPARED BY: DEAN CLAUSE

	2008 - 2012 Average	2013	2014 Proposed
Population:	23,482	22,900	23,080
Harvest:	1,655	1,576	1,500
Hunters:	4,496	4,130	4,100
Hunter Success:	37%	38%	37 %
Active Licenses:	4,501	4,143	4,100
Active License Percent:	37%	38%	37 %
Recreation Days:	26,500	23,341	23,300
Days Per Animal:	16.0	14.8	15.5
Males per 100 Females	37	36	
Juveniles per 100 Females	66	68	

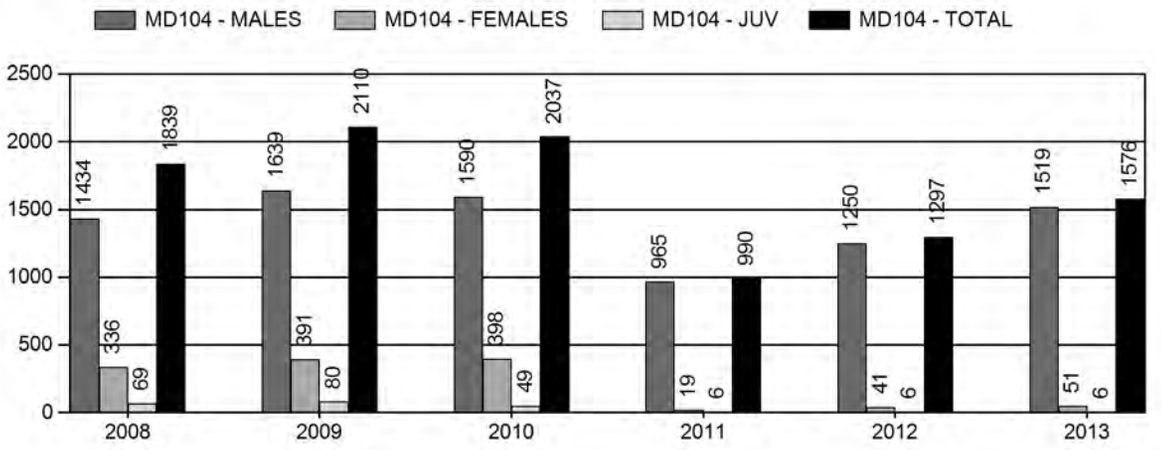
Population Objective:	32,000
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-28.4%
Number of years population has been + or - objective in recent trend:	5
Model Date:	2/20/2014

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

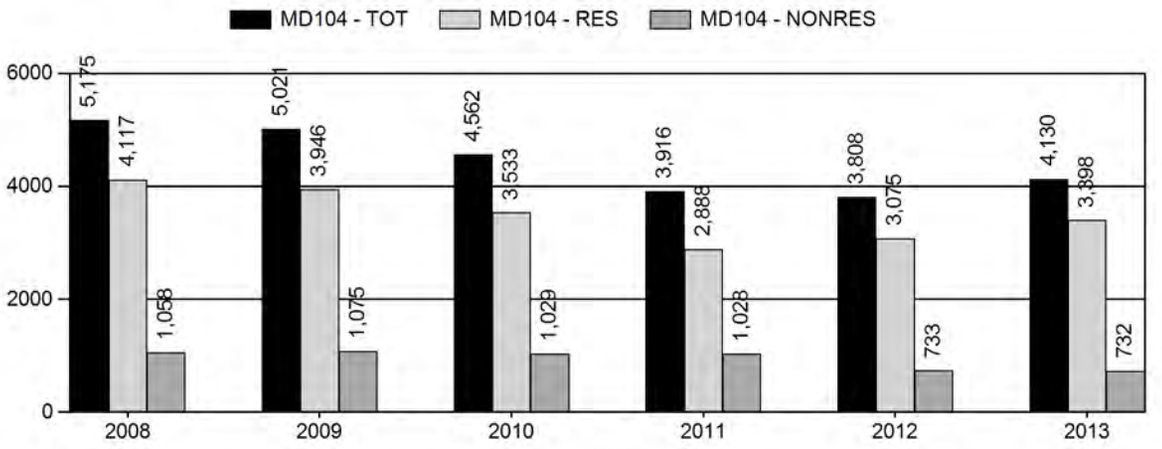
	JCR Year	Proposed
Females ≥ 1 year old:	0.5%	0.5%
Males ≥ 1 year old:	29%	29%
Juveniles (< 1 year old):	<1%	<1%
Total:	6.4%	6.0%
Proposed change in post-season population:	3%	1%



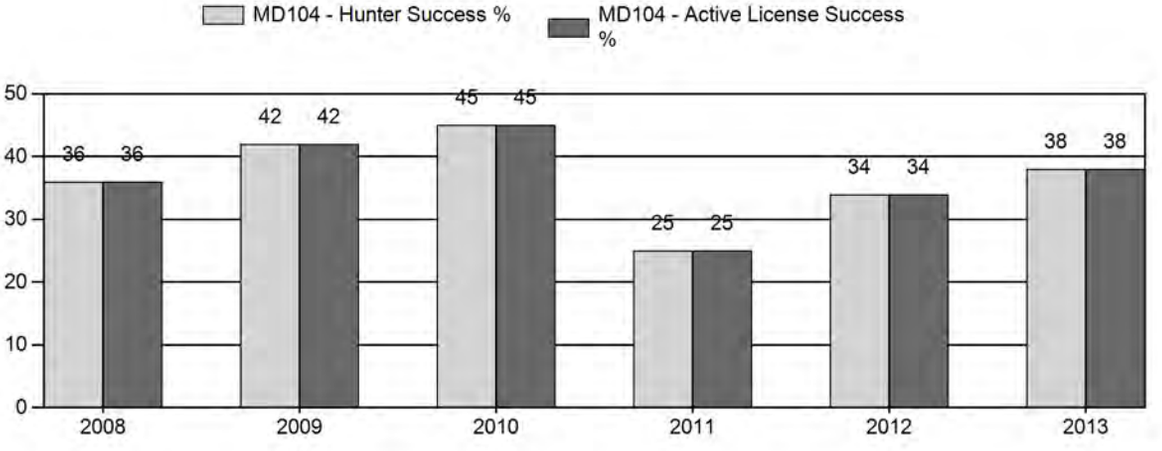
Harvest



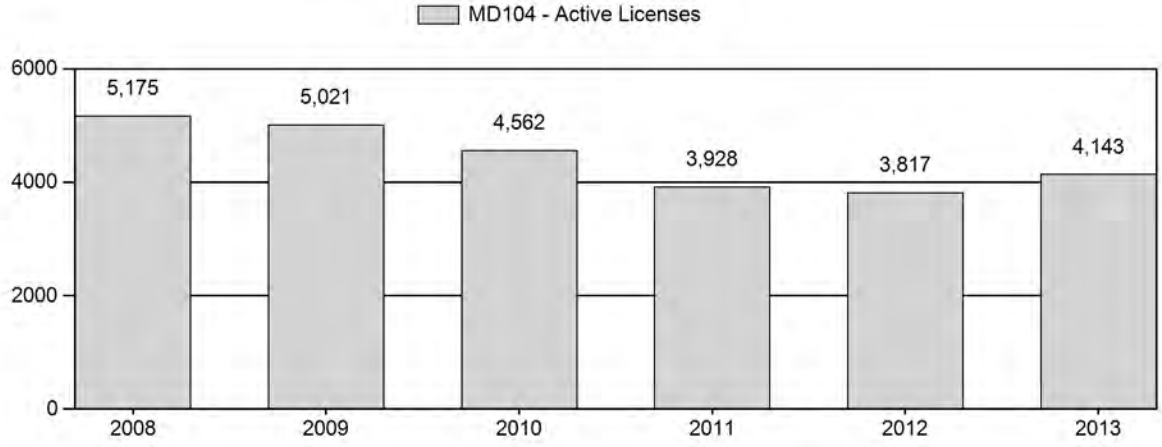
Number of Hunters



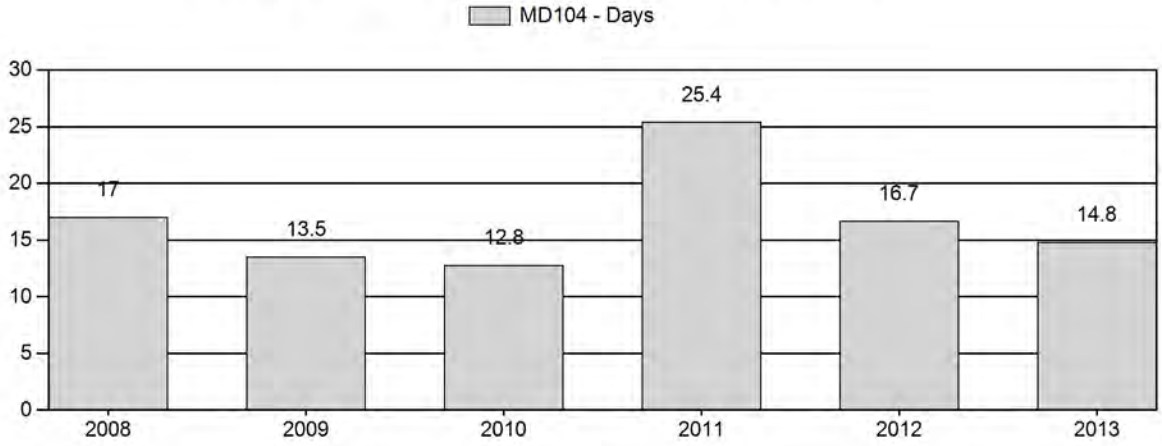
Harvest Success



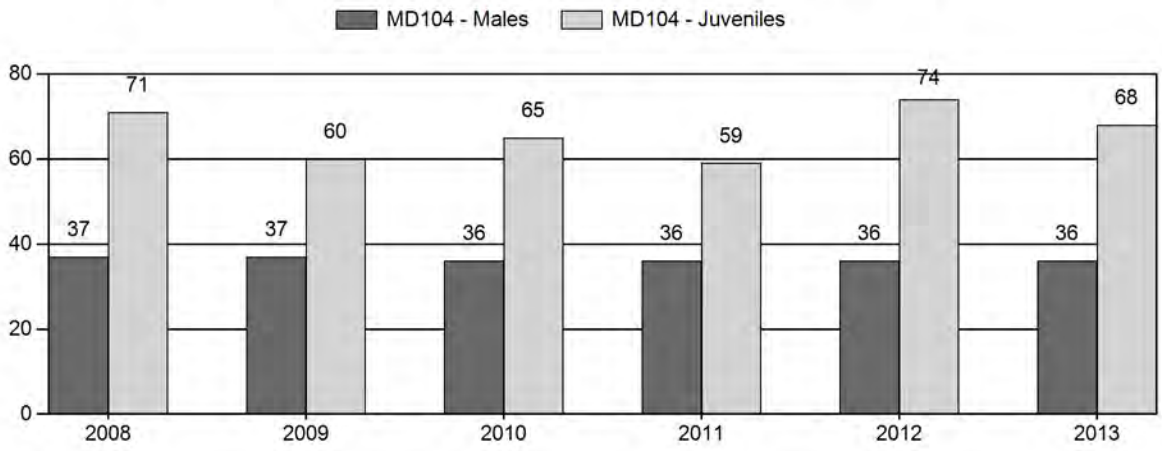
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2008 - 2013 Postseason Classification Summary

for Mule Deer Herd MD104 - SUBLETTE

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2008	26,732	621	945	1,566	18%	4,205	48%	2,967	34%	8,738	1,570	15	22	37	± 1	71	± 2	51
2009	24,630	576	1,143	1,719	19%	4,596	51%	2,758	30%	9,073	1,186	13	25	37	± 1	60	± 1	44
2010	23,426	549	1,156	1,705	18%	4,677	50%	3,043	32%	9,425	1,345	12	25	36	± 1	65	± 2	48
2011	20,652	173	894	1,067	18%	2,985	51%	1,747	30%	5,799	1,141	6	30	36	± 1	59	± 2	43
2012	21,969	357	890	1,247	17%	3,498	48%	2,598	35%	7,343	1,626	10	25	36	± 1	74	± 2	55
2013	22,900	575	895	1,470	18%	4,044	49%	2,745	33%	8,259	1,436	14	22	36	± 1	68	± 2	50

2014 Seasons - Sublette Mule Deer (MD104)

Hunt Area	Type	Opens	Closes	Quota	License	Limitations
130		Oct. 1	Oct. 7		General	Antlered deer
	1	Oct. 15	Oct. 31	25	Limited quota	Antlered deer or any white-tailed deer
	6	Oct. 15	Dec. 31	75	Limited quota	Doe or fawn valid on private lands within Sweetwater County
138, 139, 140, 142	3	Oct. 1	Nov. 30	50	Limited quota	Any white-tailed deer
141, 162	1	Oct. 1 Oct. 22	Oct. 21 Oct. 31	100	Limited quota	Antlered deer Unused Areas 141, 162 Type 1 licenses valid for antlered deer on national forest
138, 139, 140, 142, 146, 151, 152, 153, 154, 155, 156		Sept. 15	Oct. 7		General	Antlered mule deer or any white-tailed deer
150		Sept. 15	Oct. 7		General	Antlered mule deer or any white-tailed deer valid west of Wyoming Highway 390
		Oct. 1	Oct. 7		General	Antlered mule deer or any white-tailed deer valid east of Wyoming Highway 390, archery only
Archery Seasons						
130, 141, 162		Sept. 1	Sept. 30			Refer to Section 3
138-140, 142, 153, 154, 146, 150-156		Sept. 1	Sept. 14			Refer to Section 3

REGION H NON-RESIDENT QUOTA - 800 LICENSES

Summary of Changes in License Numbers

Hunt Area	License Type	Quota Changes from 2013
MD104 Totals		No Changes

Management Evaluation
Current Postseason Population Management Objective: 32,000
Management Strategy: Special
2013 Postseason Population Estimate: ~23,000
2014 Proposed Postseason Population Estimate: ~23,000

The Sublette Mule Deer Herd Unit contains 2,682 square miles of habitat throughout Teton, Sublette, Lincoln and Sweetwater Counties. This deer herd contains 15 hunt areas (130, 138-142, 146, 150-156, 162) and is managed under special status which mandates postseason buck:100 doe ratios range between 30 to 45:100. The postseason population objective is 32,000 deer, adopted in 1991.

Herd Unit Issues

Winter survival, habitat condition and quality on winter ranges, and habitat loss (direct and indirect) from gas and residential development are the primary issues the influencing population dynamics in this herd unit. During the past 10 years, this deer herd experienced two winters that resulted in above normal fawn mortality (> 50% loss). Most recently, the 2010-11 winter fawn mortality estimates exceed 70%. Winter fawn mortality averages around 30% on most years when winter severity is moderate to average. Current annual growth on key winter browse species has been poor in recent years. Overall habitat conditions remain poor, but conditions have improved on certain years. Gas field development has and will continue to impact deer numbers within this herd unit. The Pinedale Anticline gas field development overlaps with crucial winter range located on the Mesa, where annual population estimates indicate deer numbers have decline by roughly 50% from 2001 – 2012. Studies have demonstrated that deer avoid areas with intensive winter gas development, resulting in less forage available for wintering deer within and adjacent to gas development.

Weather

With the overall large size of this herd unit, weather conditions can be somewhat different by geographic area (i.e. Wyoming Range Mountains vs. Wind River Mountains vs. Gros Ventre Mountains). In general, the overall amount of precipitation was below normal during 2009 and 2010, although spring moisture was good during those years resulting in improved forage production on winter range habitat. In 2011 winter and spring moisture was well above normal resulting in very good forage production. During 2012 and 2013, drought conditions persisted through most of the year resulting in very poor production, as several sagebrush monitoring locations had little to no current annual growth. Of particular importance to this deer herd is shrub production on native winter ranges at lower elevations in the Upper Green River Basin.

Late winter and spring precipitation (April to early June) is essential for good annual shrub production. Snow conditions were below normal this past winter (2013-14) until February when heavy snow accumulations occurred. Deep snow persisted well into late April.

Habitat

The Pinedale Region has several shrub monitoring sites where production and utilization data is collected. Figure 1 shows average shrub production by species by year. The primary shrubs available on winter ranges within this herd unit are mountain and Wyoming sagebrush and bitterbrush. Shrub utilization has varied by year as winter snow conditions (depth and crusting) appear to influence winter shrub use by location. The 2012-13 winter was mild, but resulted in higher than normal utilization attributed to very poor leader production during 2012. The 2013-14 winter started mild with snow loads increasing in February on northern most winter ranges. Production was again poor during 2013 having the potential to reduce survival this winter.

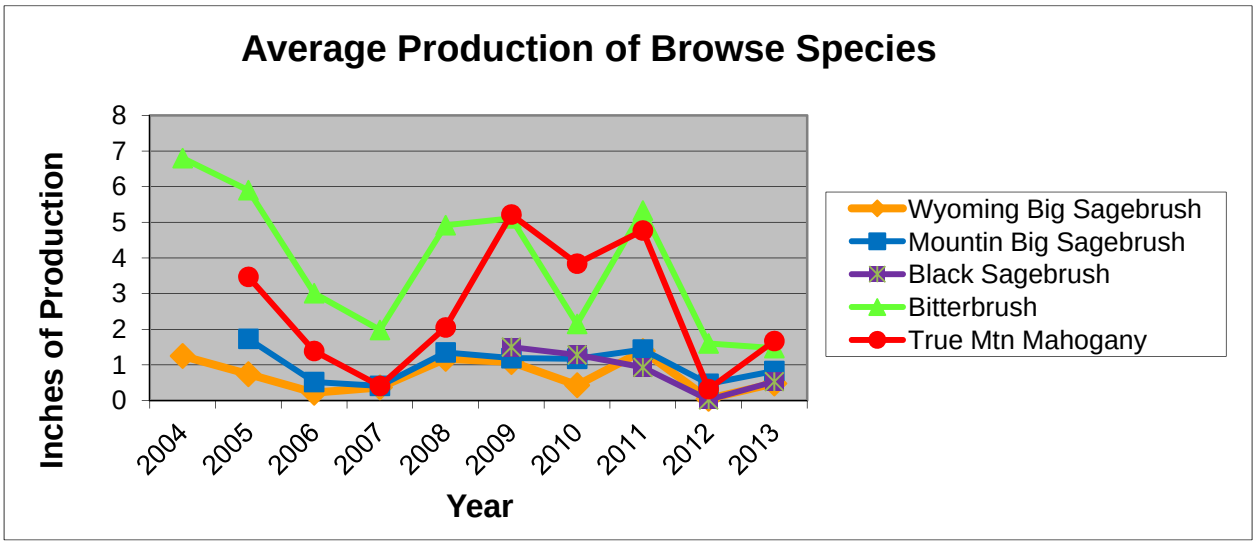


Figure 1. Shrub Production in the Upper Green River Basin, 2004-2013.

Please see the 2013 Annual Report Strategic Habitat Plan Accomplishments, Jackson and Pinedale Region sections located at either the Jackson or Pinedale Game & Fish Regional Office for detailed summaries of habitat work within the Sublette Herd Unit. This Report also summarizes current research efforts to document deer body condition upon arrival and departure to and from winter habitats.

Field Data

Postseason herd composition (classification) counts in early December 2013 totaled 8,259 deer, incrementally increasing compared to the previous two years counts of 7,343 in 2012 and 5,799 in 2011. Some snow cover existed throughout all areas surveyed during the 2013, which led to normal deer distribution on crucial winter habitats. Survey effort to conduct herd composition counts has remained similar during all years, with the exceptions of a four hour reduction in flight time in 2008.

The postseason 2013 total buck:100 doe ratio of 36:100 has changed very little since 2007 and is meeting management goals for this herd unit. Yearling buck:100 doe ratios in 2013 improved to 14:100 indicating better fawn survival the previous year. A low yearling buck ratio of 6:100 in 2011 is attributed to fawn loss (estimated around 70%) during the winter of 2010-11. Adult buck ratios vary annually based on yearling buck recruitment and buck harvest levels. The 2013 adult buck: 100 doe ratio was 22, a slight drop compared that observed in 2012.

The 2013 fawn: 100 doe ratio of 68:100 dropped from that observed in 2012, but is slightly higher than the past 5-year average of 66:100. Good fawn production is important for population growth and sustainability, although winter fawn survival, which has been sporadic in this herd, appears to influence population trend the most.

Post winter change-in-ratio surveys were conducted in April of 2014 as deer began to leave winter range complexes. A total of 3,667 deer were classified during this spring survey, resulting in an 18% decline in the number of fawns/ 100 adults compared to the ratio observed during postseason classification counts in December 2013. Although this assessment of fawn mortality is an absolute minimum, the results indicate overall fawn survival was good during the 2013-14 winter. In addition, few dead deer have been documented on winter ranges this past winter and spring, providing further support that deer in this herd experienced good winter survival.

Harvest Data

The 2013 harvest was approximately 1,550 total deer (1,500 bucks and 50 does/fawns), an increase from the 2012 harvest of 1,300 deer. The 2011 harvest represents the lowest reported harvest in the past 15+ years at approximately 1,000 deer. The hunting seasons in 2011-2013 were more conservative compared to previous years, as all doe/fawn harvest opportunities were eliminated (except for youth), season lengths were slightly shortened, and limited quota licenses (including non-resident quotas) were reduced. Harvest and hunter effort trends correlate well with estimated population trends. When this deer population declines, as in 2011, harvest trends decrease and hunter effort increases while the opposite trends (increase harvest and reduced hunter effort) are apparent with a population increase. Harvest rates vary among hunt areas, as hunting pressure and harvest is typically highest in Hunt Areas 142, 152, and 154, partially attributed to higher deer densities and little to no wilderness area limitations.

Population

The WGFD changed modeling techniques for all of our big game herd units, effective July 2012. The new spreadsheet model designed by the Colorado Division of Wildlife uses harvest sex/age ratios, and survival data. The Time-Specific Juvenile and Constant Adult Survival (TSJ,CA) Model showed the best overall fit compared to the other models (Fit = 77 and Relative AICc = 169) resulting in a 2013 postseason population estimate of approximately 23,000 deer . The TSJ,CA model appears to have a reasonable population estimate, in addition observed male:female ratios track very well. This 2013 population estimate is 28% below the desired objective of 32,000 for this herd unit.

Management Summary

The combination of fluctuating reproductive rates, fawn survival, natural gas development impacts on the Mesa winter complex, and habitat conditions are the primary factors regulating population trends in the Sublette herd unit. The winter/spring losses (fawns and adults) during 2010-11 reduced this population to one of lowest levels ever documented. In addition to years with large winter die-off, other population setbacks have been common in this herd and are primarily attributed to poor fawn survival and poor forage conditions on winter ranges. Overall habitat conditions remain poor, but conditions have improved in certain years. Although the current management direction is for maximum population growth (no female harvest), female harvest will be necessary at some point in the future to offset further degradation of crucial winter habitats and poor survival rates. Population estimates indicate the population is 28% below the objective of 32,000 and without multiple years of good forage production and over-winter fawn survival, this herd will most likely not gain any significant growth. Buck ratios are meeting herd goals (special status; 30-45 bucks:100 does), suggesting this herd should be able sustain current buck harvest levels.

A general license deer season for most hunt areas (except Areas 141/162) will open on September 15, antlered only, and close October 7. Doe/fawn harvest opportunities will be the same as in 2012 and 2013, as only youth hunters will be allowed to harvest doe/fawn deer. There will be the same white-tailed deer season of 50 limited quota (Type 3) licenses valid for any white-tailed deer, October 1 – November 30 in Areas 138-140, 142, and 143. Limited quota (Type 1) licenses in hunt areas 141 and 162 will remain the same at 100 licenses. Limited quota (Type 1) licenses in hunt area 130 will remain the same at 25 licenses with an October 15 to October 31 season. A total of 75 limited quota doe/fawn licenses (Type 6) in Area 130 are available to address damage concerns on private lands near Farson. The nonresident Region H quota remains the same at 800 licenses. The 2014 season is projected to harvest approximately 1,550 deer (1500 bucks, 50 doe/fawns) while allowing for population growth in this herd unit.

INPUT	
Species:	Deer
Biologist:	Dean Clause
Herd Unit & No.:	Sublette (MD104)
Model date:	2/20/2014 (Model#3)

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	426	435	☐ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	237	253	☐ SCJ,SCA Mod	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	77	169	☑ TSJ,CA Model	

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population				Predicted Posthunt Population				Objective
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	
1993			6294	5227	4516	11042	20785	5178	3303	10348	18829	
1994			8699	7122	4951	10542	22616	7122	3491	10542	21155	
1995			8080	6696	5473	11068	23237	6696	4058	11068	21822	
1996			6507	7844	5229	10792	23865	7844	3630	10792	22266	
1997			7338	9166	5234	10918	25317	9166	4091	10899	24155	
1998			9309	8354	6440	11843	26637	8354	4403	11843	24600	
1999			8593	10452	7253	13158	30862	10441	4527	13132	28100	
2000			8742	12208	8291	15120	35619	12183	5001	14871	32056	
2001			11227	11171	8337	16169	35677	11101	5271	15760	32132	
2002			8399	9701	7513	15837	33051	9623	4518	14943	29083	
2003			10070	11300	6472	14745	32517	11261	4298	14410	29969	
2004			8699	8682	4933	12957	26572	8640	3075	12625	24340	
2005			8832	8333	5278	12856	26467	8277	3521	12667	24465	
2006			9132	9361	5239	12497	27097	9325	3538	12109	24972	
2007			10918	9850	6586	13387	29822	9822	4534	13033	27389	
2008			8738	9192	6545	13289	29026	9116	4967	12920	27003	
2009			9073	7624	6677	12988	27288	7536	4874	12557	24967	
2010			9425	7724	6129	12226	26078	7670	4380	11788	23838	
2011			5799	6310	4911	10791	22012	6303	3850	10770	20923	
2012			7343	7880	5154	10646	23680	7873	3779	10601	22253	
2013			8259	7590	5815	11229	24634	7584	4144	11172	22900	
2014			8400	7712	5754	11331	24796	7701	4104	11276	23080	
2015			8400	7794	5759	11451	25004	7783	4109	11396	23288	
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Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.90			0.79		
1994	0.76			0.79		
1995	0.60			0.79		
1996	0.60			0.79		
1997	0.70			0.79		
1998	0.90			0.79	0.84	0.05
1999	0.90			0.79	0.80	0.05
2000	0.72			0.79	0.83	0.06
2001	0.60			0.79	0.79	0.04
2002	0.60			0.79	0.79	0.04
2003	0.27			0.79	0.81	0.06
2004	0.66			0.79	0.91	0.04
2005	0.59			0.79	0.71	0.07
2006	0.81			0.79	0.79	0.07
2007	0.60			0.79	0.78	0.07
2008	0.60			0.79	0.88	0.05
2009	0.60			0.79	0.83	0.05
2010	0.37			0.79		
2011	0.67			0.79		
2012	0.72			0.79		
2013	0.65			0.79		
2014	0.65			0.79		
2015	0.65			0.79		
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Parameters:	Optim cells
Adult Survival =	0.794
Initial Total Male Pop/10,000 =	0.330
Initial Female Pop/10,000 =	1.035

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

Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio			Harvest				Harvest: Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		50.04	1.47	31.92	31.71	1.10	44	1103	631	1778	26.9	6.3
1994		67.56	1.62	33.11	33.29	1.01	0	1328	0	1328	29.5	0.0
1995		60.49	1.55	36.66	38.77	1.15	0	1286	0	1286	25.8	0.0
1996		72.68	2.00	33.63	35.01	1.23	0	1454	0	1454	30.6	0.0
1997		84.10	2.15	37.53	34.04	1.16	0	1039	17	1056	21.8	0.2
1998		70.54	1.62	37.18	33.07	0.98	0	1852	0	1852	31.6	0.0
1999		79.50	1.90	34.47	38.21	1.16	10	2478	23	2511	37.6	0.2
2000		81.93	1.92	33.63	35.10	1.09	22	2991	226	3239	39.7	1.6
2001		70.43	1.48	33.44	35.23	0.93	64	2787	372	3223	36.8	2.5
2002		64.40	1.56	30.23	28.91	0.93	71	2723	813	3607	39.9	5.6
2003		78.15	1.69	29.83	29.61	0.89	35	1976	305	2316	33.6	2.3
2004		68.44	1.60	24.36	24.36	0.82	38	1689	302	2029	37.7	2.6
2005		65.34	1.54	27.80	27.79	0.88	51	1597	172	1820	33.3	1.5
2006		77.01	1.75	29.22	29.22	0.92	33	1546	353	1932	32.5	3.1
2007		75.37	1.61	34.79	37.75	1.01	25	1865	322	2212	31.2	2.6
2008		70.56	1.69	38.45	37.24	1.10	69	1434	336	1839	24.1	2.8
2009		60.01	1.45	38.81	37.40	1.06	80	1639	391	2110	27.0	3.3
2010		65.06	1.52	37.15	36.45	1.03	49	1590	398	2037	28.5	3.6
2011		58.53	1.76	35.75	35.75	1.27	6	965	19	990	21.6	0.2
2012		74.27	1.92	35.65	35.65	1.18	6	1250	41	1297	26.7	0.4
2013		67.88	1.68	37.09	36.35	1.11	6	1519	51	1576	28.7	0.5
2014		68.29	1.67	36.39	36.59	1.10	10	1500	50	1560	28.7	0.5
2015		68.29	1.67	36.06	36.59	1.10	10	1500	50	1560	28.6	0.5
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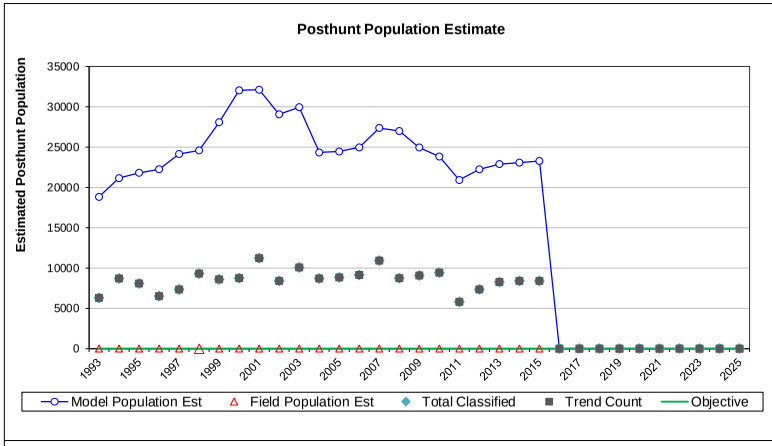
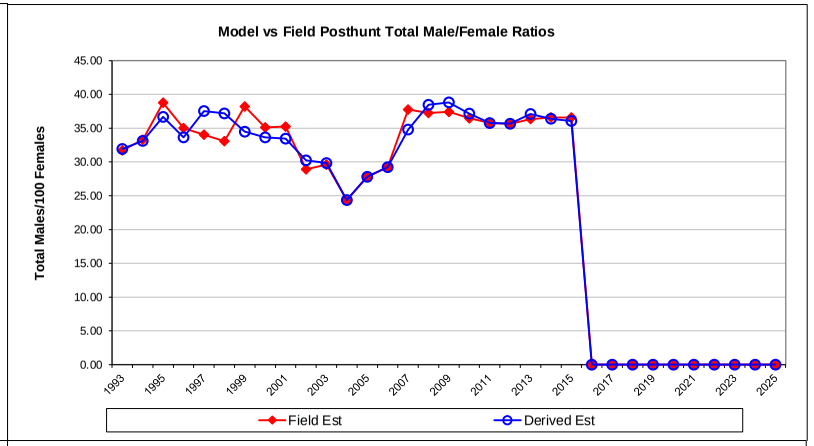
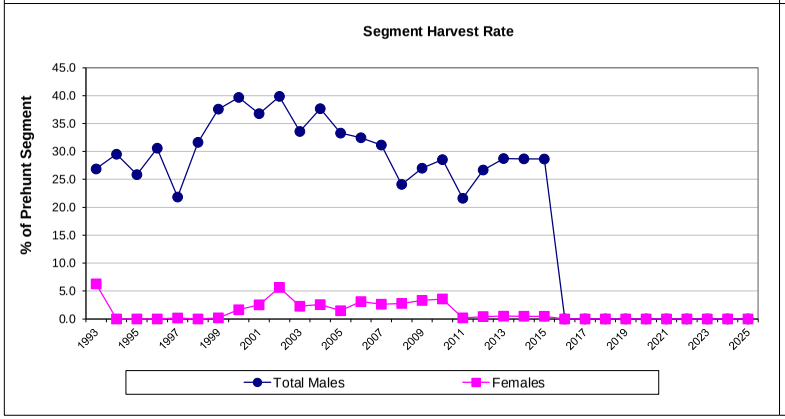
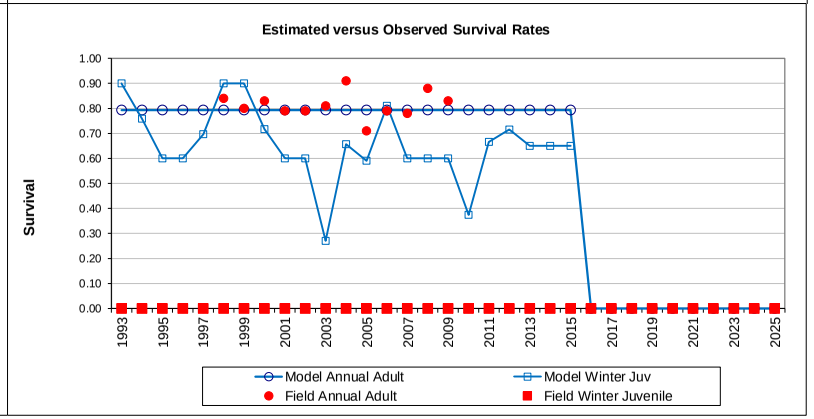
FIGURES



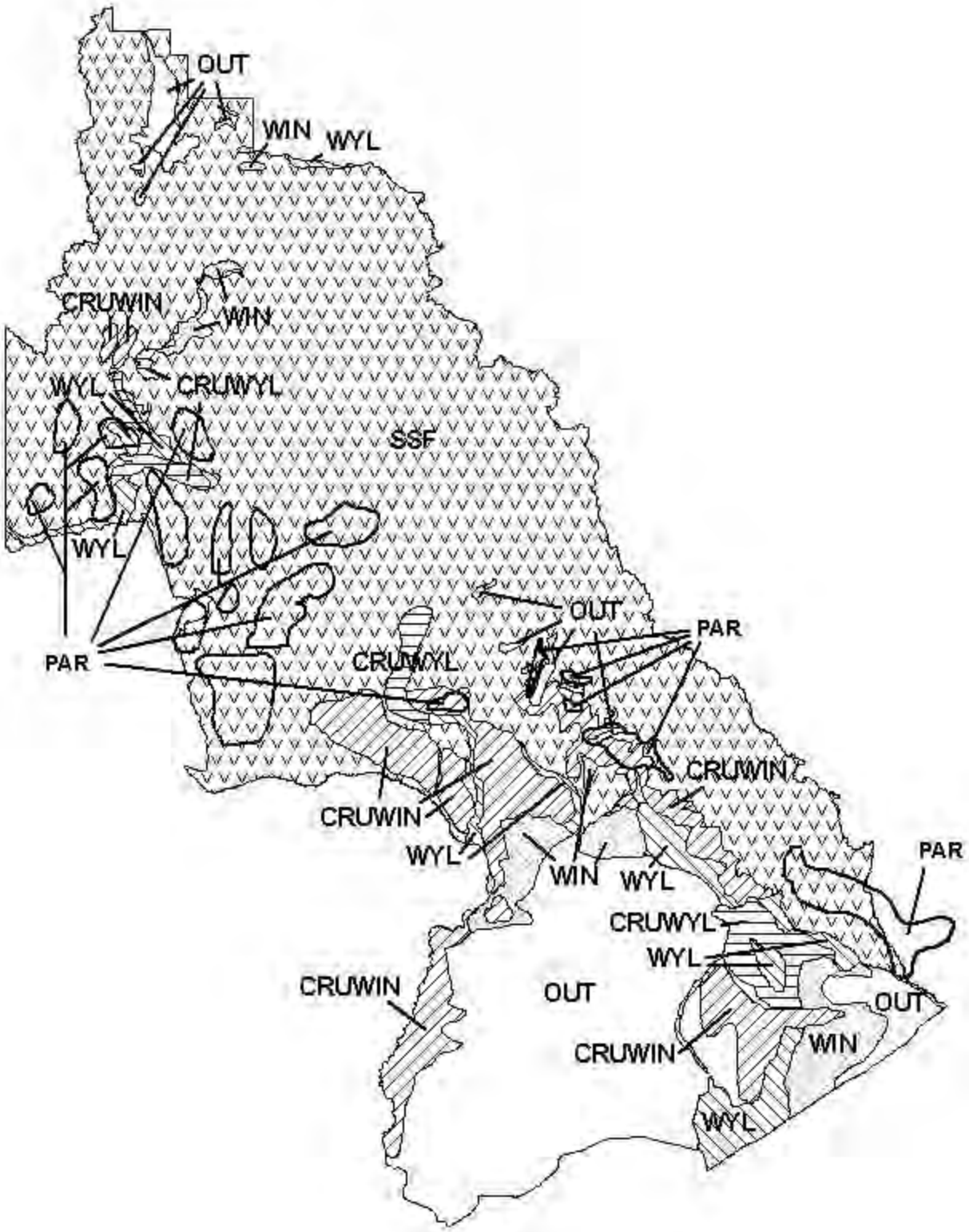






Comments: This modeling exercise assigns the junvenile constraints at 0.6 - 0.9, which tends to optimize down to a 60% fawn surival in the other models.
I believe that on most years a 60% to 90% fawn survival is more representatvie than 40% to 90% in MD104#2Model3-2-12. Fawn Survival constraints were relaxed to 0.2 - 0.9 for those years where documented fawn loss was high.
This TSJ,CA model represents the overall population trends and ratio data very well with the most believable population estimates.
In addition, the other models (CJ,CA and SCJ,SCA) also represent the trend and ratio data pretty well with believable population estimates, which indicates to me that this is the best overall model.

END



Mule Deer (MD104) - Sublette
HA130, 138-142, 146, 150-156, 162
Revised – 3/05