2014 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2014 - 5/31/2015

HERD: MD104 - SUBLETTE

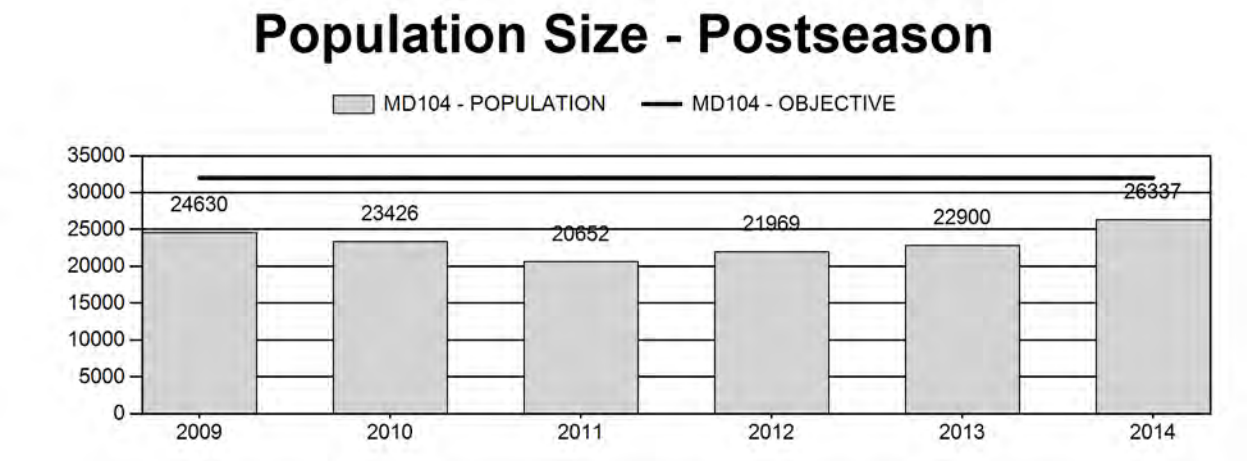
HUNT AREAS: 130-131, 138-142, 146, 150-156, 162
PREPARED BY: DEAN CLAUSE

	2009 - 2013 Average	2014	2015 Proposed
Population:	22,715	26,337	26,752
Harvest:	1,602	1,538	1,720
Hunters:	4,287	4,520	4,600
Hunter Success:	37%	34%	37%
Active Licenses:	4,294	4,567	4,600
Active License Success:	37%	34%	37%
Recreation Days:	24,927	26,715	26,700
Days Per Animal:	15.6	17.4	15.5
Males per 100 Females	36	37	
Juveniles per 100 Females	65	67	

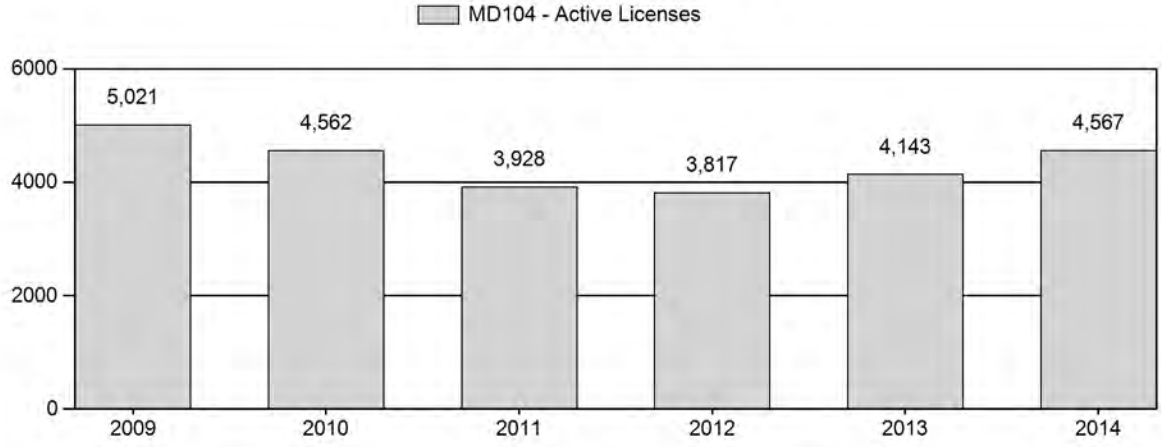
Population Objective (± 20%) :	32000 (25600 - 38400)
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-17.7%
Number of years population has been + or - objective in recent trend:	13
Model Date:	2/21/2015

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

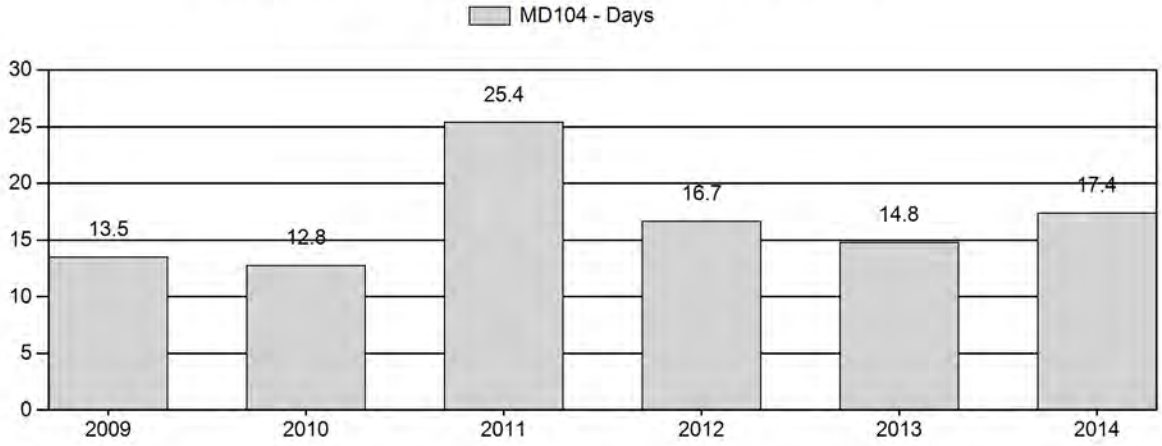
	JCR Year	Proposed
Females ≥ 1 year old:	0.5%	0.8%
Males ≥ 1 year old:	29%	26%
Juveniles (< 1 year old):	<1%	<1%
Total:	6.0%	6.0%
Proposed change in post-season population:	1%	2%



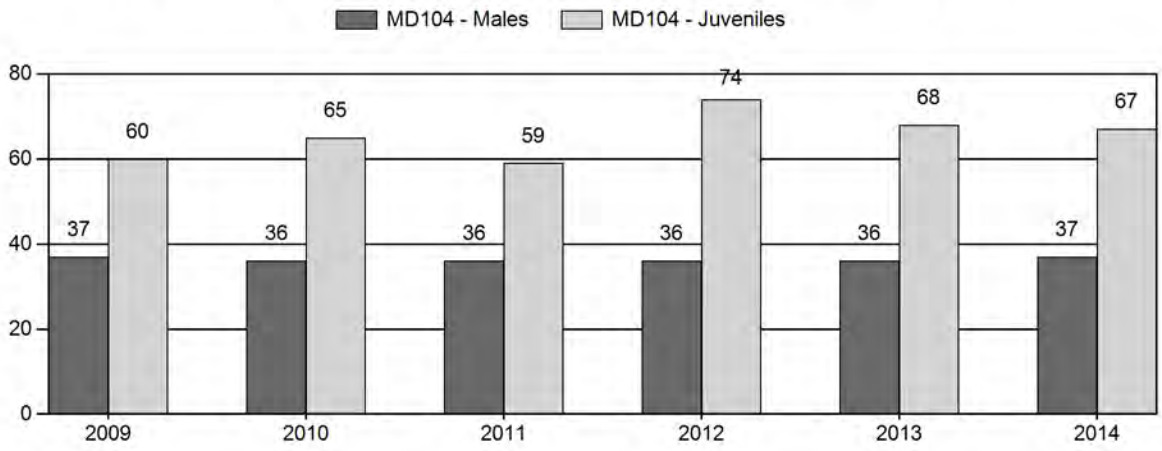
Active Licenses



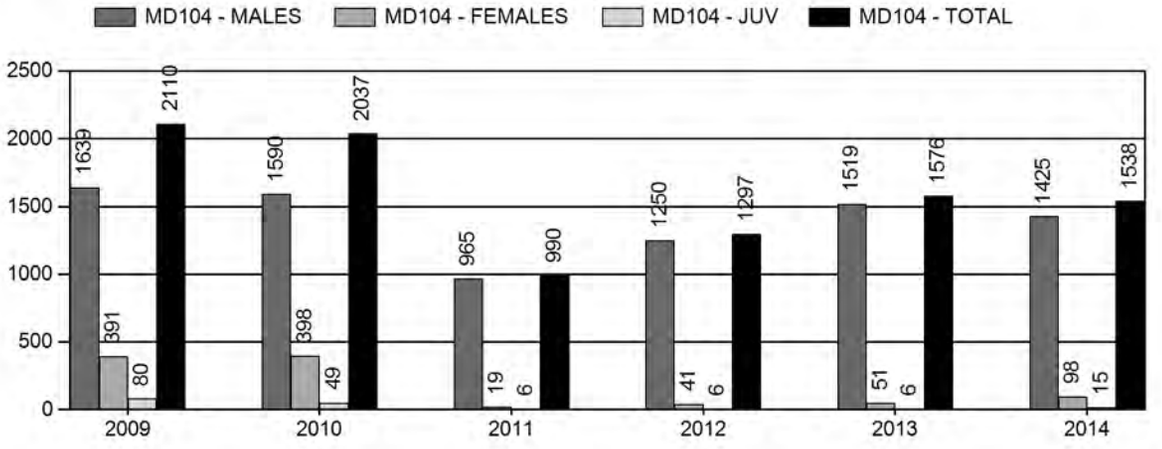
Days per Animal Harvested



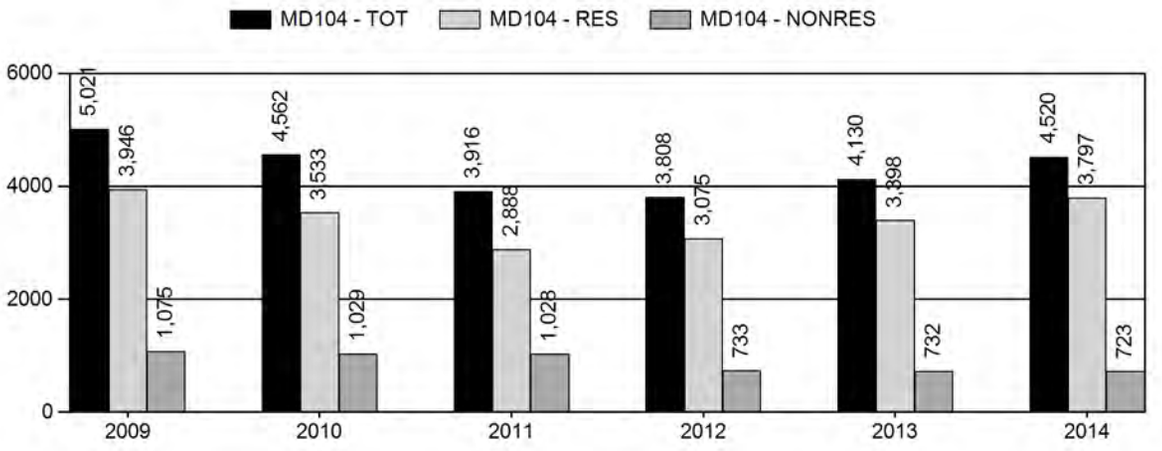
Postseason Animals per 100 Females



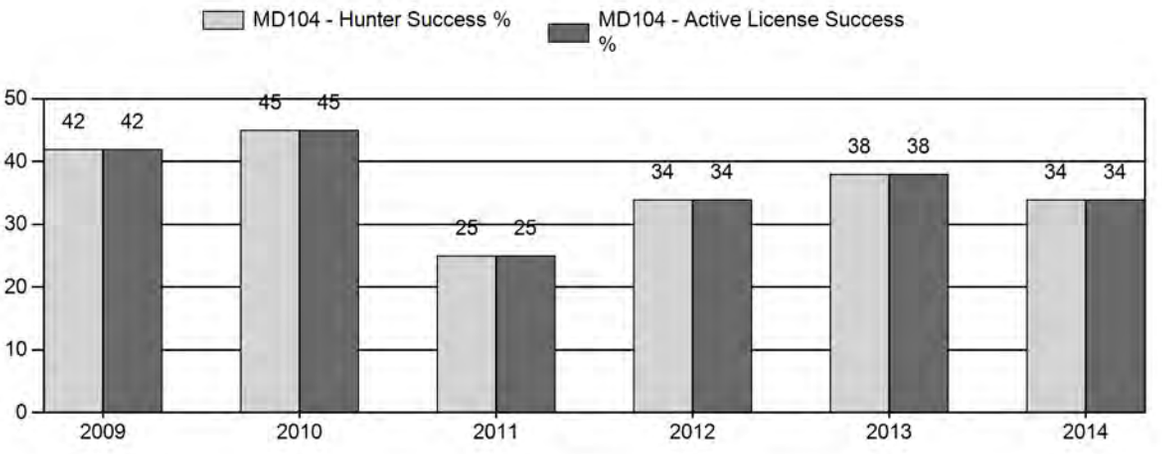
Harvest



Number of Hunters



Harvest Success



2009 - 2014 Postseason Classification Summary

for Mule Deer Herd MD104 - SUBLETTE

		MALES							FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	2+ Cls 1	2+ Cls 2	2+ Cls 3	2+ UnCls	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2009	24,630	576	0	0	0	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	0	0	0	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	0	0	0	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	0	0	0	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	0	0	0	895	1,470	18%	4,044	49%	2,745	33%	8,259	1,436	14	22	36	± 1	68	± 2	50
2014	26,337	620	514	483	144	0	1,761	18%	4,699	49%	3,167	33%	9,627	1,420	13	24	37	± 1	67	± 2	49

2014 Seasons - Sublette Mule Deer (MD104)

Hunt Area	Type	Opens	Closes	Quota	License	Limitations
130		Oct. 1	Oct. 7		General	Antlered deer or any white-tailed deer
	1	Oct. 15	Oct. 31	25	Limited quota	Antlered deer
	6	Oct. 15	Dec. 31	50	Limited quota	Doe or fawn valid on private land within Sweetwater County
131		Oct. 1	Oct. 4		General	Antlered mule deer four (4) points or more on either antler or any white-tailed deer
	7	Oct. 1	Oct. 31	50	Limited quota	Doe or fawn deer valid within the Farson-Eden Irrigation Project
138, 139, 140, 142	3	Oct. 1	Nov. 30	50	Limited quota	Any white-tailed deer
141, 162	1	Oct. 1	Oct. 21	100	Limited quota	Antlered deer
		Oct. 22	Oct. 31			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, 131, 141, 162		Sept. 1	Sept. 30			Refer to Section 3
138-140, 142, 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 2014
130	6	-25
MD104 Totals	**6**	-25

Management Evaluation
Current Postseason Population Management Objective: 32,000
Management Strategy: Special
2013 Postseason Population Estimate: ~23,000
2014 Proposed Postseason Population Estimate: ~26,000 (note added Steamboat herd data – hunt area 131)

The Sublette Mule Deer Herd Unit is very large and contains habitat throughout Teton, Sublette, Lincoln and Sweetwater Counties. This deer herd contains 16 hunt areas (130, 131, 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. With the recent findings of seasonal deer movements outside the Steamboat Herd Unit, managers proposed to consolidate the Sublette and Steamboat herd units into one, referred to as the Sublette Herd Unit (MD104). This recommendation to consolidate herd units (eliminating the Steamboat Herd Unit) was approved by the WYGF Commission in 2014. A population objective of 32,000 deer with a "special" management buck ratio objective of 30 to 45 buck:100 does, same as past objectives identified for the Sublette Herd, was also approved to provide future management direction for the Sublette Herd.

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). 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. In 2014 precipitation levels were above normal resulting in much improved forage production for all plant communities. 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.

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 2013-14 winter started mild with snow loads increasing in February on northern most winter ranges. In addition to good late winter precipitation, above average spring and early summer precipitation in 2014 resulted in improved plant production on most of the winter and transitional ranges.

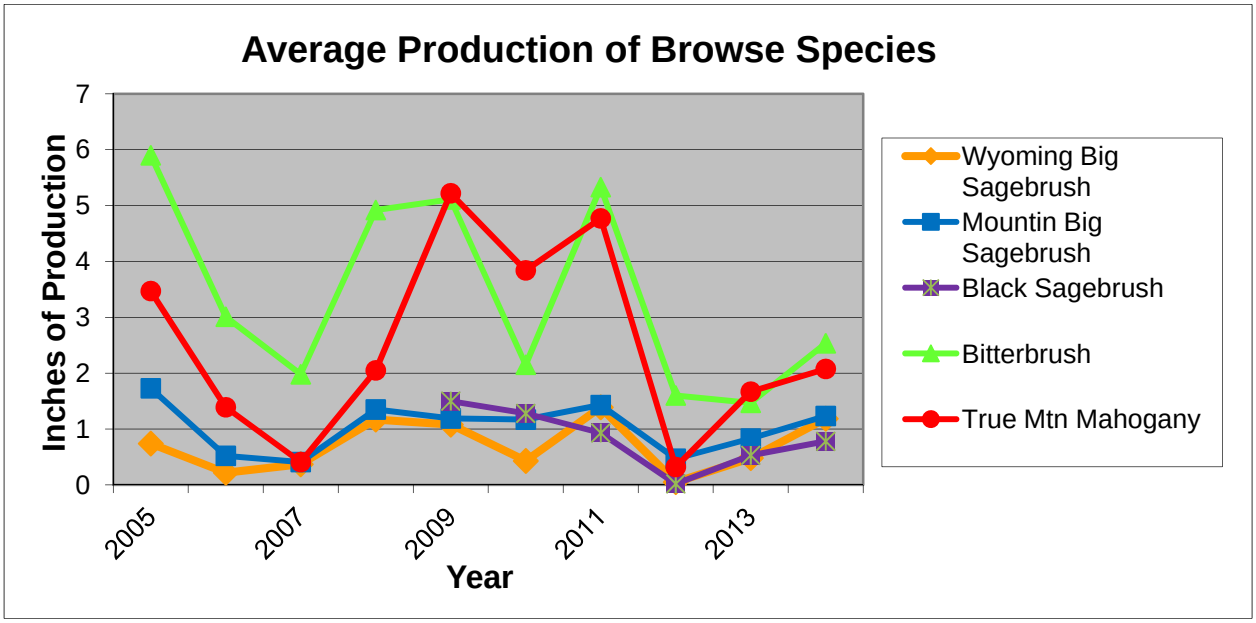


Figure 1. Shrub Production in the Upper Green River Basin, 2005-2014.

Please see the 2014 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 2014 totaled 9,627 deer. The number of deer counted incrementally increased over previous year's count of 8,259 deer in 2013 and 7,343 in 2012 and 5,799 in 2011. Snow cover was spotty throughout all areas surveyed

during 2014, with normal deer distribution occupying traditional 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 2014 total buck:100 doe ratio of 37:100 has changed very little since 2007 and is meeting management goals for this herd unit. Yearling buck:100 doe ratios in 2014 were similar to 2013 at 13:100 indicating good fawn survival during the past two years. 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 2014 adult buck: 100 doe ratio was 24, a slight increase compared that observed in 2012.

The 2014 fawn: 100 doe ratio of 67:100 was also very similar to that observed in 2013, but is slightly higher than the past 5-year average of 65:100. 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.

Harvest Data

The 2014 harvest was approximately 1,538 total deer (1,425 bucks and 113 does/fawns), very similar to the 2013 harvest of 1,500 bucks and 50 does/fawn deer. The 2011 harvest represents the lowest reported harvest in the past 15+ years at approximately 1,000 deer. The hunting seasons in 2011-2014 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 big game herd units in July, 2012. The new spreadsheet model designed by the Colorado Division of Wildlife uses harvest sex/age ratios, and survival data. With the consolidation of data from the Steamboat Herd (Hunt Area 131) with the Sublette Herd Unit data a new model was incorporated, resulting in a slightly higher 2013 postseason population estimate of roughly 1,700 more deer compared to the previous model. The Time-Specific Juvenile and Constant Adult Survival (TSJ,CA) Model showed the best overall fit compared to the other models (Fit = 91 and Relative AICc = 185) resulting in a 2014 postseason population estimate of approximately 26,000 deer . The TSJ,CA model appears to have a reasonable population estimate, in addition observed male:female ratios track very well. This 2014 population estimate is 18% below the desired objective of 32,000 for this herd unit.

Management Summary

The combination of variable reproductive rates, fawn survival, natural gas development 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 dropped 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 roughly 18% 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 2012-2014, 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 and 50 Type 6 licenses in Area 131 are available to address damage concerns on private lands near Farson. The nonresident Region H quota remains the same at 800 licenses. The 2015 season is projected to harvest approximately 1,700 deer (1600 bucks, 100 doe/fawns) while allowing for population growth in this herd unit.

INPUT	
Species:	Deer
Biologist:	Dean Clause
Herd Unit & No.:	New Sublette (MD104) - added Steamboat (MD430)
Model date:	02/21/15

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	416	424	☐ CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	258	274	☐ SCJ,SCA M	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	91	185	☑ 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	5818	4924	12380	23121	5739	3615	11586	20940	32000
1994			8699	8023	5469	11834	25326	8023	3926	11834	23783	
1995			8080	7453	5919	12235	25607	7453	4410	12235	24097	
1996			6507	8936	5757	12005	26699	8932	3995	11986	24912	
1997			7338	10242	5870	12250	28362	10242	4617	12212	27071	
1998			9309	9213	6989	13054	29256	9213	4766	13029	27008	
1999			8593	11552	7951	14550	34054	11538	4898	14503	30938	
2000			8742	13398	9103	16773	39273	13369	5512	16505	35386	
2001			11227	12241	9036	17815	39093	12166	5711	17381	35258	
2002			8399	10553	8210	17529	36292	10473	4865	16617	31955	
2003			10070	12480	7074	16458	36013	12436	4652	16099	33187	
2004			8699	10037	5678	14818	30532	9990	3581	14447	28019	
2005			8832	9903	6151	14828	30882	9847	4004	14629	28480	
2006			9132	11024	6400	14884	32308	10985	4130	14482	29597	
2007			10918	11446	7518	15785	34749	11417	5074	15403	31894	
2008			8738	10534	7476	15725	33735	10454	5534	15188	31176	
2009			9073	8629	7555	15264	31449	8497	5328	14561	28386	
2010			9425	8626	6803	14177	29606	8534	4753	13511	26799	
2011			5799	7387	5559	12552	25498	7355	4308	12486	24149	
2012			7343	8685	5723	12253	26661	8667	4158	12144	24969	
2013			8259	8597	6378	12755	27731	8583	4642	12658	25883	
2014			9627	8636	6496	12897	28029	8619	4929	12789	26337	
2015			9900	8893	6737	13014	28644	8871	4977	12904	26752	
2016			9900	9012	6857	13187	29056	8990	5097	13077	27164	
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Survival and Initial Population Estimates

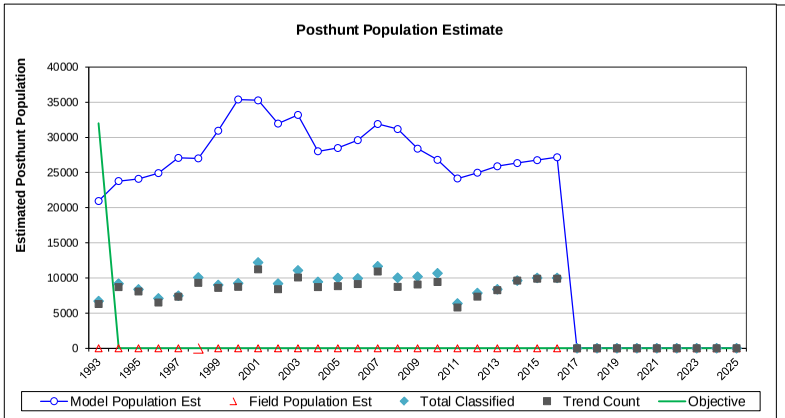
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.90			0.80		
1994	0.69			0.80		
1995	0.60			0.80		
1996	0.60			0.80		
1997	0.64			0.80		
1998	0.90			0.80	0.84	0.05
1999	0.90			0.80	0.80	0.05
2000	0.69			0.80	0.83	0.06
2001	0.60			0.80	0.79	0.04
2002	0.61			0.80	0.79	0.04
2003	0.32			0.80	0.81	0.06
2004	0.66			0.80	0.91	0.04
2005	0.65			0.80	0.71	0.07
2006	0.77			0.80	0.79	0.07
2007	0.60			0.80	0.78	0.07
2008	0.60			0.80	0.88	0.05
2009	0.60			0.80	0.83	0.05
2010	0.41			0.80		
2011	0.62			0.80		
2012	0.71			0.80		
2013	0.65			0.80		
2014	0.65			0.80		
2015	0.65			0.80		
2016	0.65			0.80		
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

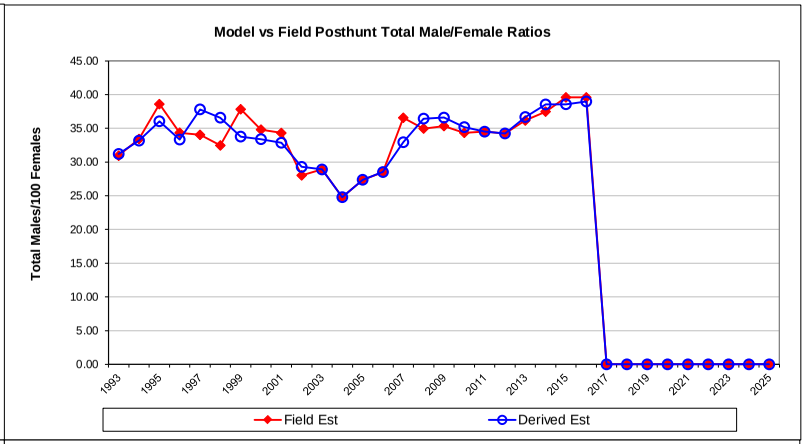
Parameters:	Optim cells
Adult Survival =	0.799
Initial Total Male Pop/10,000 =	0.361
Initial Female Pop/10,000 =	1.159

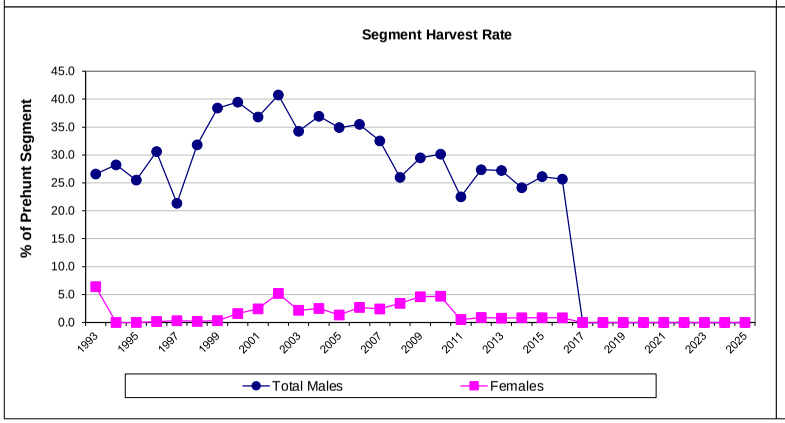
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

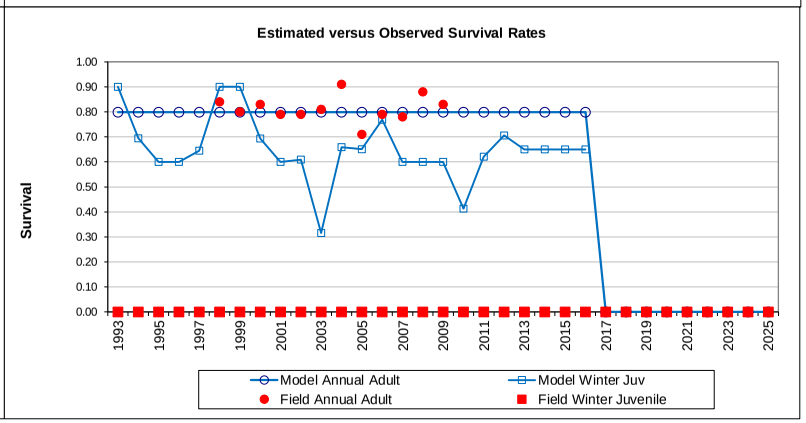
Year	Classification Counts: Juvenile/Female Ratio			Classification Counts: Total Male/Female Ratio			Classification Counts				Harvest: Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		49.53	1.41	31.20	30.94	1.04	72	1190	721	1983	26.6	6.4
1994		67.79	1.58	33.17	33.41	0.99	0	1403	0	1403	28.2	0.0
1995		60.92	1.53	36.05	38.58	1.13	0	1372	0	1372	25.5	0.0
1996		74.52	1.96	33.33	34.34	1.17	4	1602	18	1624	30.6	0.2
1997		83.87	2.12	37.81	34.03	1.15	0	1139	35	1174	21.3	0.3
1998		70.71	1.56	36.58	32.46	0.93	0	2021	22	2043	31.8	0.2
1999		79.56	1.86	33.77	37.82	1.12	13	2776	43	2832	38.4	0.3
2000		81.00	1.85	33.39	34.80	1.05	26	3265	243	3534	39.5	1.6
2001		70.00	1.41	32.86	34.30	0.88	68	3023	395	3486	36.8	2.4
2002		63.02	1.46	29.28	28.02	0.86	73	3041	829	3943	40.7	5.2
2003		77.25	1.60	28.90	28.90	0.83	40	2202	327	2569	34.2	2.2
2004		69.15	1.55	24.79	24.79	0.80	42	1906	337	2285	36.9	2.5
2005		67.31	1.48	27.37	27.37	0.82	51	1952	181	2184	34.9	1.3
2006		75.85	1.66	28.51	28.51	0.87	36	2064	365	2465	35.5	2.7
2007		74.12	1.53	32.94	36.56	0.95	27	2222	347	2596	32.5	2.4
2008		68.83	1.54	36.44	34.97	0.98	72	1766	488	2326	26.0	3.4
2009		58.36	1.33	36.59	35.33	0.95	120	2025	639	2784	29.5	4.6
2010		63.17	1.38	35.18	34.33	0.92	83	1864	605	2552	30.1	4.7
2011		58.91	1.69	34.50	34.51	1.19	29	1137	60	1226	22.5	0.5
2012		71.37	1.79	34.24	34.23	1.10	16	1423	99	1538	27.4	0.9
2013		67.81	1.66	36.67	36.16	1.09	13	1578	89	1680	27.2	0.8
2014		67.40	1.55	38.54	37.48	1.05	15	1425	98	1538	24.1	0.8
2015		68.75	1.55	38.57	39.58	1.07	20	1600	100	1720	26.1	0.8
2016		68.75	1.55	38.98	39.58	1.07	20	1600	100	1720	25.7	0.8
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

FIGURES



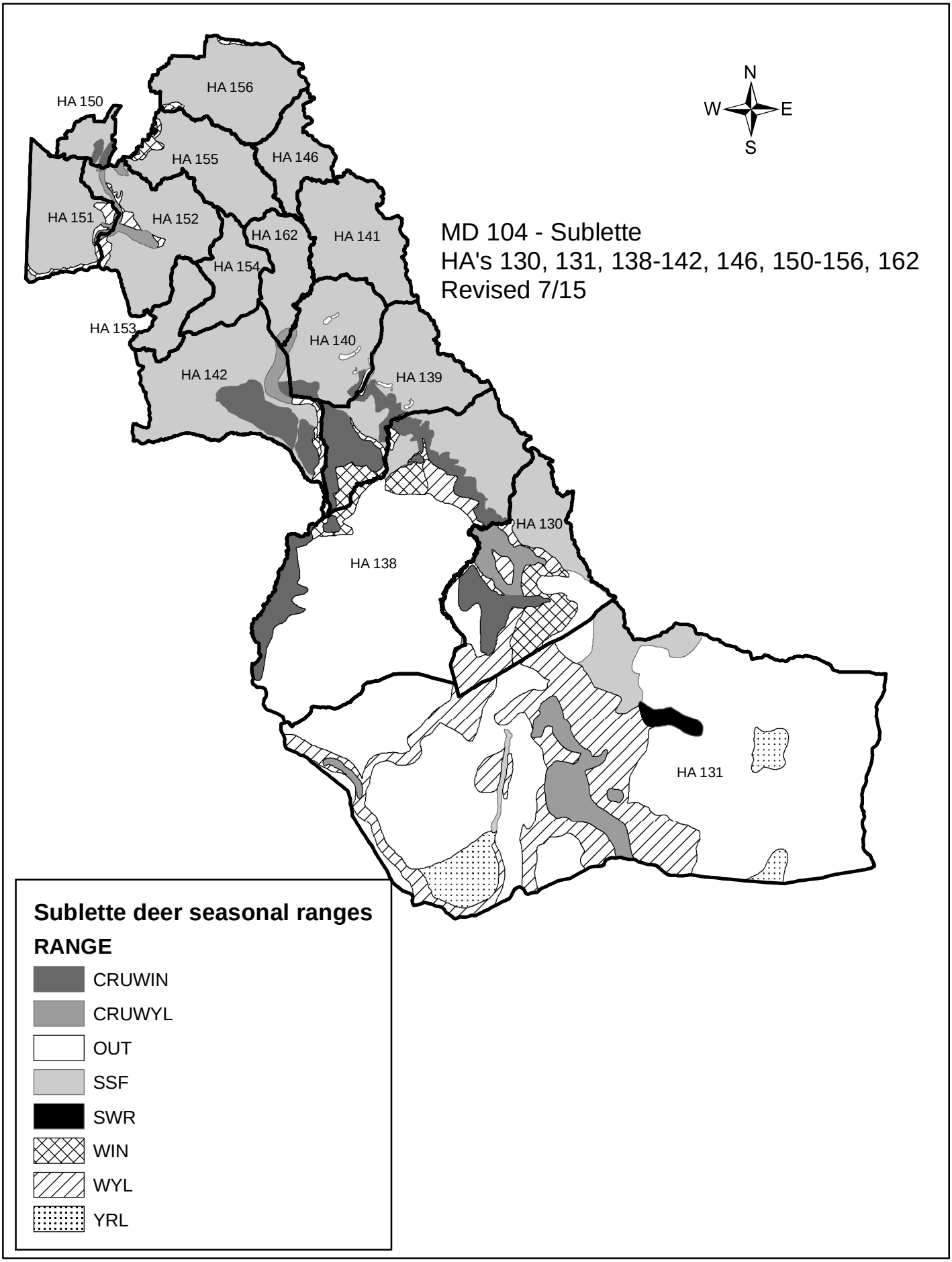






Comments: This modeling exercise assigns the junvenile constraints at 0.6 - 0.9, which tends to optimize down to a 60% fawn surival in the other models.
I believe that on most years a 60% to 90% fawn survival is more representatvie than 40% to 90% in MD104#2Model3-2-12. Fawn Survival constraints were 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.
During the sping of 2014 (after 2013 JCR was written) the Steamboat Deer Herd Unit (MD430) data was added to Sublette Deer Herd Unit data due to the consolidation of these herd units (elimination of Steamboat Deer)

END


HA 150
HA 156
HA 155
HA 146
HA 151
HA 152
HA 162
HA 141
HA 154
HA 153
HA 140
HA 142
HA 139
HA 130
HA 138
HA 131
N
W
E
S
MD 104 - Sublette
HA's 130, 131, 138-142, 146, 150-156, 162
Revised 7/15
Sublette deer seasonal ranges
RANGE
CRUWIN
CRUWYL
OUT
SSF
SWR
WIN
WYL
YRL