2010 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2010 - 5/31/2011

HERD: EL320 - FORTIFICATION

HUNT AREAS: 2

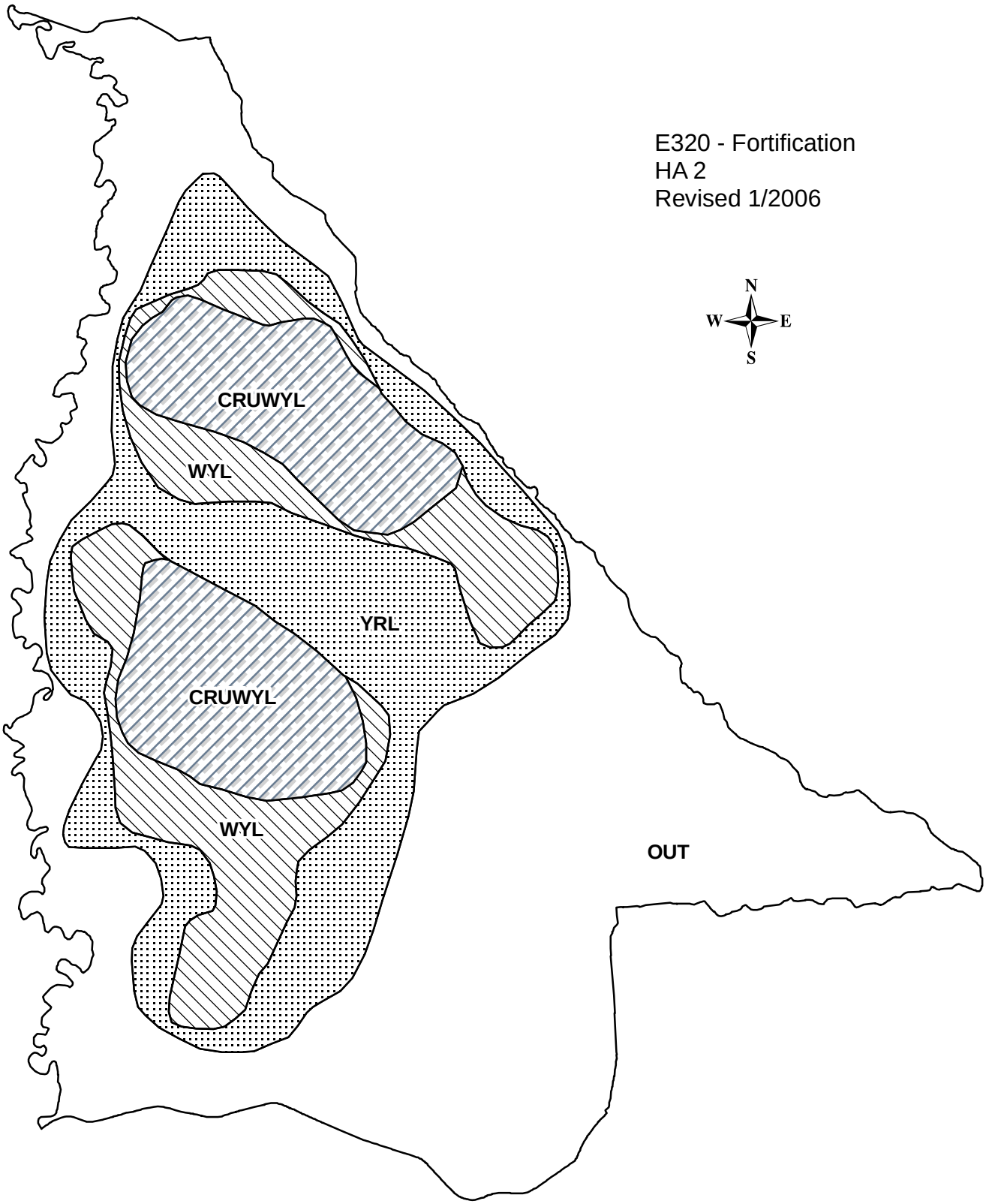
PREPARED BY: HEATHER O'BRIEN

	2005 - 2009 Average	2010	2011 Proposed
Population:	240	228	210
Harvest:	45	50	62
Hunters:	75	76	90
Hunter Success:	60%	66%	69%
Active Licenses:	75	76	90
Active License Percent:	60%	66%	69%
Recreation Days:	272	270	350
Days Per Animal:	6.0	5.4	5.6
Males per 100 Females	44	52	
Juveniles per 100 Females	51	43	

Population Objective:	150
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	52%
Number of years population has been + or - objective in recent trend:	10
Model Date:	02/18/2011

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

	JCR Year	Proposed
Females •1 year old:	14.2%	15.1%
Males •1 year old:	32.4%	47.2%
Juveniles (< 1 year old):	6.8%	8.6%
Total:	17.67%	22.27%
Proposed change in post-season population:	-.6%	-37.5%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2010 - JCR Evaluation Form

SPECIES: Elk | PERIOD: 6/1/2010 - 5/31/2011

HERD: EL321 - NORTH BIGHORN

HUNT AREAS: 35-40 | PREPARED BY: TIM THOMAS

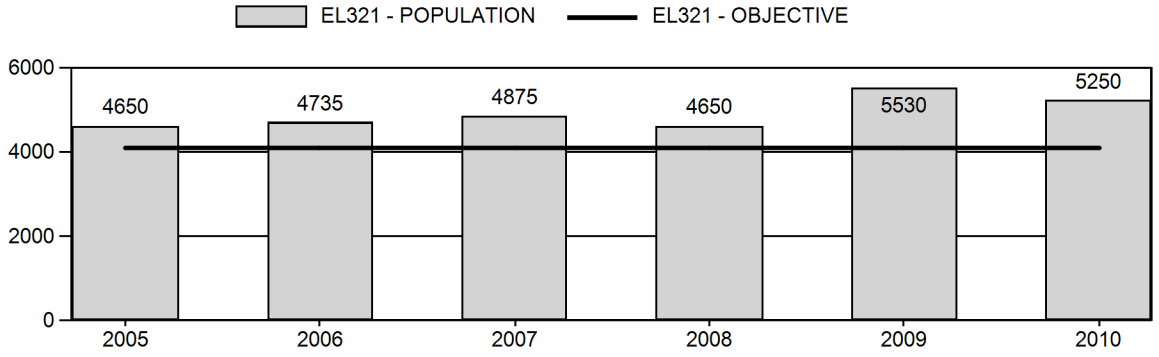
	2005 - 2009 Average	2010	2011 Proposed
Population:	4,888	5,250	5,300
Harvest:	1,019	1,203	1,200
Hunters:	3,956	3,981	4,000
Hunter Success:	26%	30%	30%
Active Licenses:	4,020	4,063	4,100
Active License Percent:	25%	30%	29%
Recreation Days:	28,447	29,950	30,000
Days Per Animal:	27.9	24.9	25
Males per 100 Females	20	23	
Juveniles per 100 Females	45	58	

Population Objective:	4,100
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	28%
Number of years population has been + or - objective in recent trend:	10
Model Date:	None

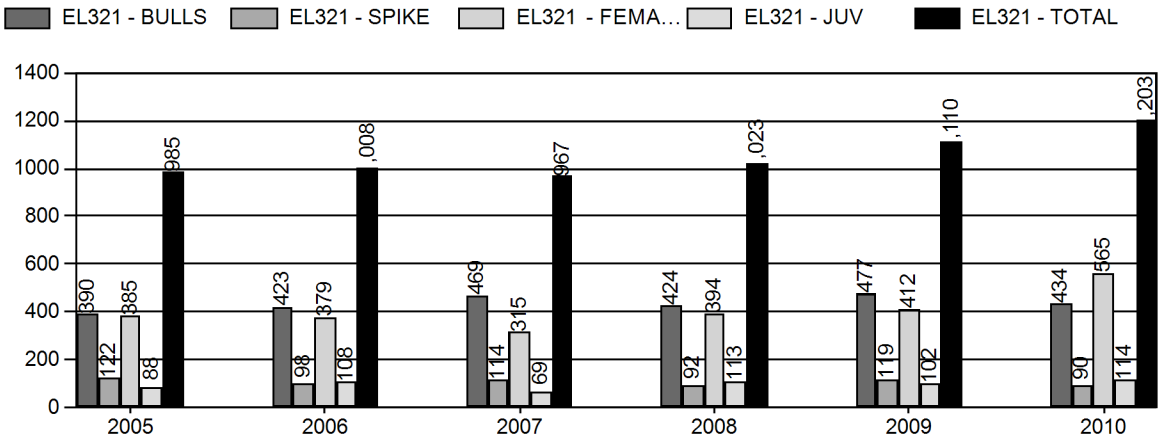
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

	JCR Year	Proposed
Females ≥ 1 year old:	13%	18%
Males ≥ 1 year old:	38%	38%
Juveniles (< 1 year old):	7%	5%
Total:	16%	17%
Proposed change in post-season population:	4%	3%

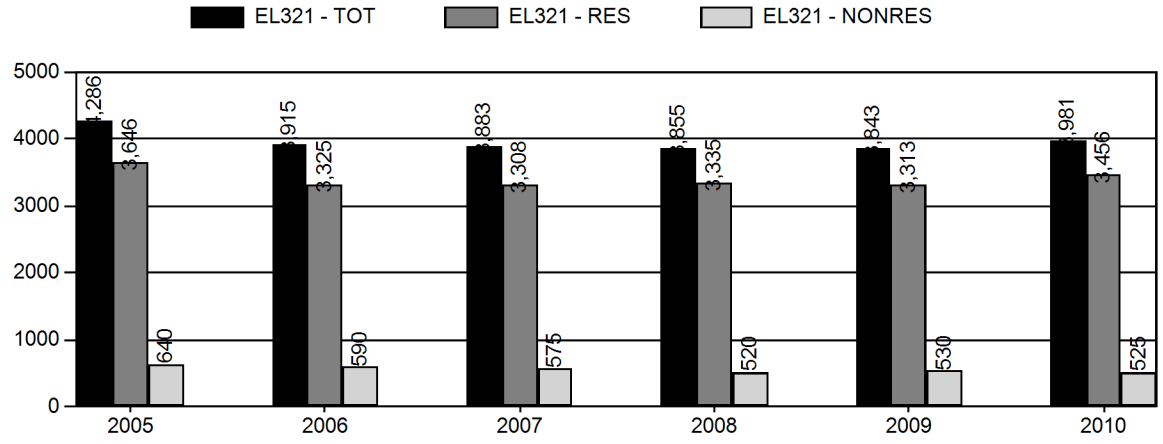
Population Size - Postseason



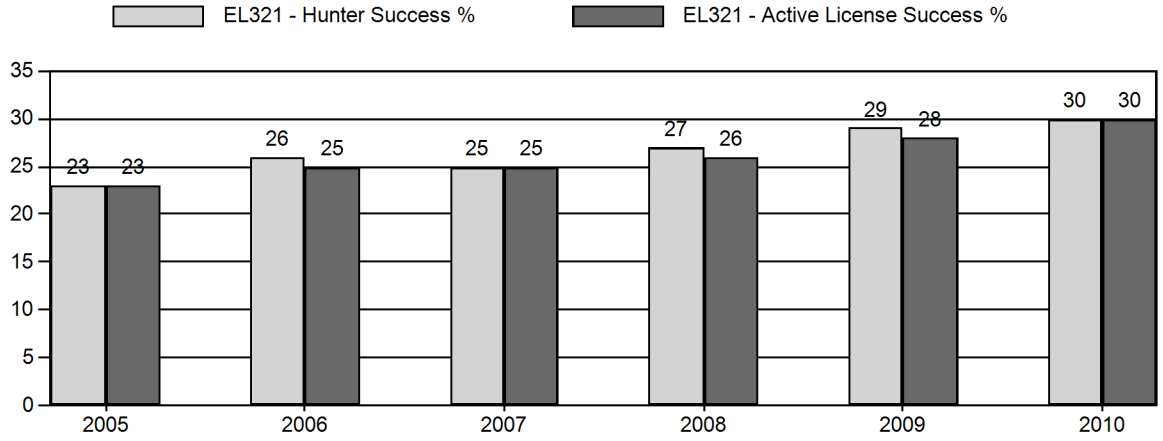
Harvest



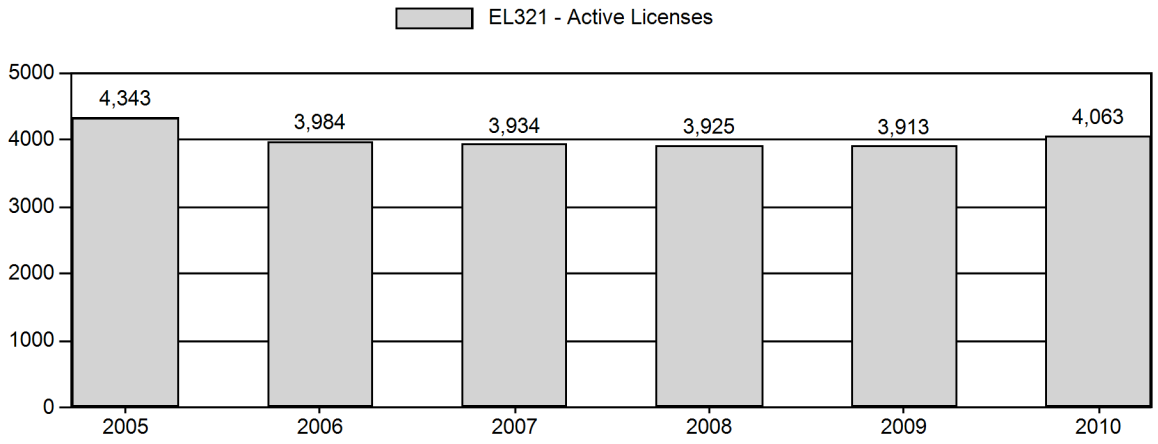
Number of Hunters



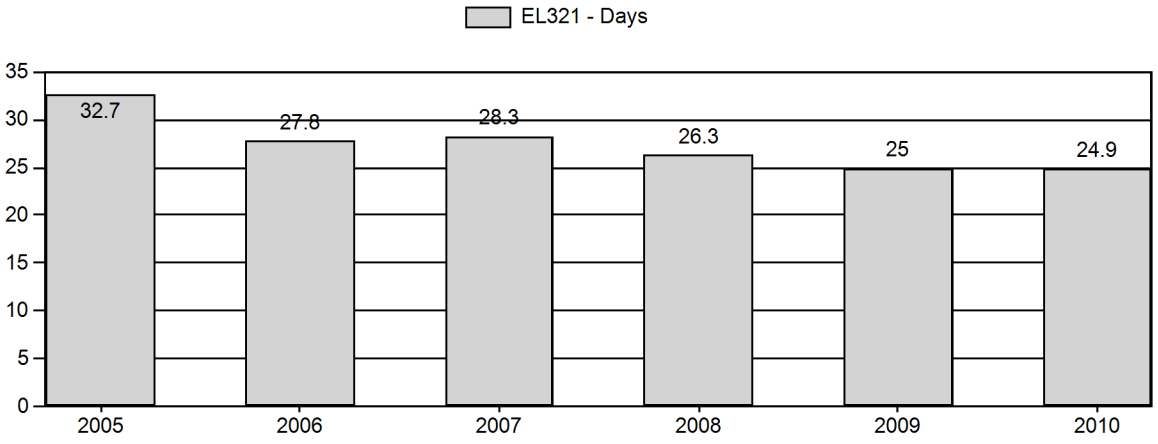
Harvest Success



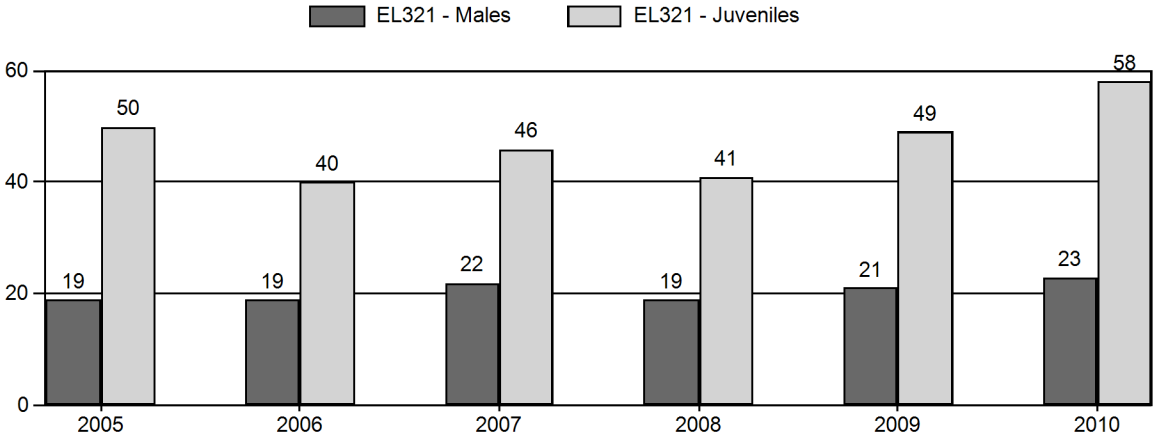
Active Licenses



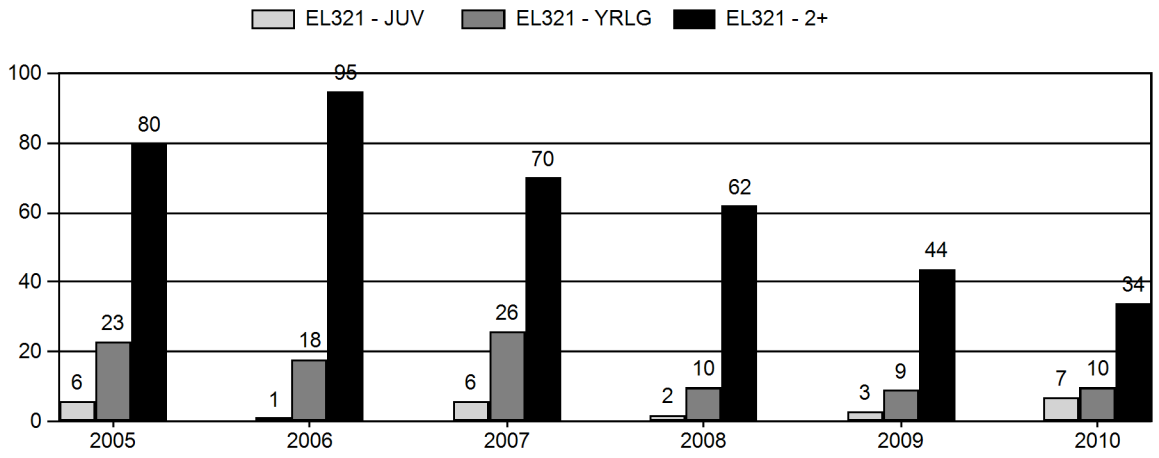
Days per Animal Harvested



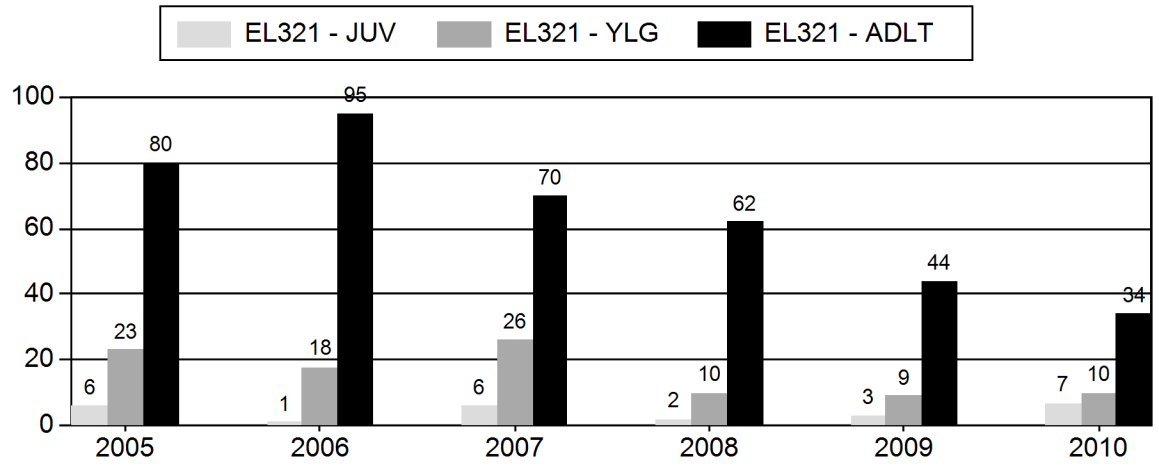
Postseason Animals per 100 Females



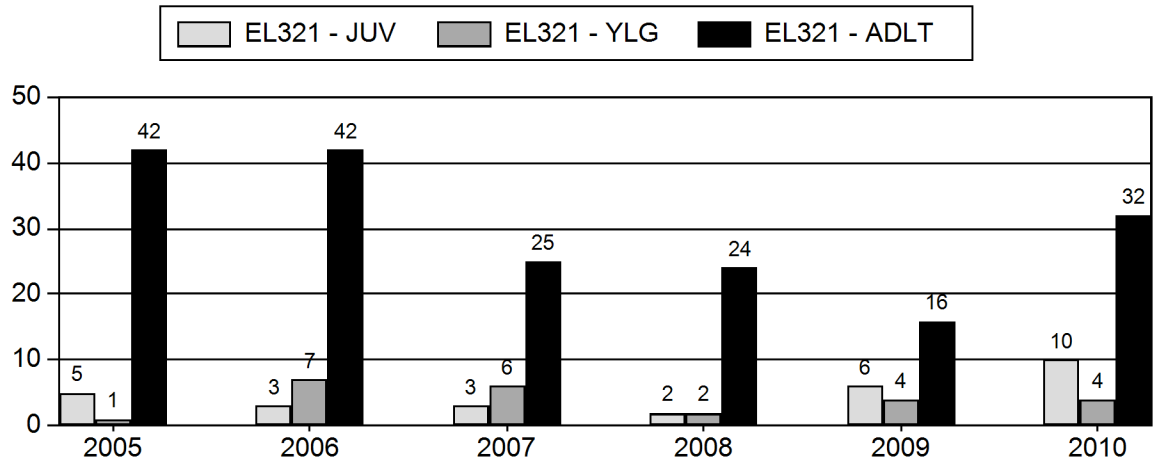
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



2005 - 2010 Postseason Classification Summary

IR(ONLG 257%)251

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to			
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult	
																“			“
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2010 HUNTING SEASONS

EL321 - NORTH BIGHORN

Hunt Area	Add'l Hunt Areas	Type	Quota	Season Dates	Limitations
35		ARCH		09/15 - 09/30	Refer to Section 3 of this Chapter
35		Type 1	150	10/15 - 11/05	Antlered
35		Type 4	75	10/15 - 11/30	Full Priced Antlerless
35		Type 6	50	10/15 - 11/30	Reduced Price cow/calf
35		Type 9	50	09/01 - 09/30	Archery Only
36		ARCH		09/15 - 09/30	Refer to Section 3 of this Chapter
36		GEN		10/15 - 11/05	Antlered
36		Type 4	200	10/15 - 11/30	Full Priced Antlerless
36		Type 9	50	09/01 - 09/30	Archery Only
37		ARCH		09/15 - 09/30	Refer to Section 3 of this Chapter
37		GEN		10/15 - 11/05	Any
37		Type 6	400	09/01 - 09/14	Reduced Price cow/calf
37		Type 6	0	10/01 - 12/19	Reduced Price cow/calf
37		Type 9	100	09/01 - 09/30	Archery Only
38		Type 1	400	10/15 - 11/05	Any
38		Type 1	0	11/06 - 11/15	Antlerless
38		Type 4	500	10/15 - 11/15	Full Priced Antlerless
38		Type 9	250	09/01 - 09/30	Archery Only
39		Type 1	90	10/15 - 11/04	Any
39		Type 1	0	11/05 - 11/15	Antlerless
39		Type 2	75	10/15 - 11/04	Antlered
39		Type 4	50	10/15 - 11/15	Full Priced Antlerless
39		Type 9	70	09/01 - 09/30	Archery Only
40		Type 1	175	10/15 - 11/04	Any
40		Type 4	250	10/15 - 11/30	Full Priced Antlerless
40		Type 6	150	09/01 - 10/14	Reduced Price cow/calf
40		Type 6	0	10/15 - 11/30	Reduced Price cow/calf
40		Type 9	50	09/01 - 09/30	Archery Only

2010 EL 321 Harvest by Hunt Area

Area	Type	Active Licenses	Hntrs	Bull	Spike	Cow	Calf	Total	Success		Days/ Harvest	Days	Licenses Sold
35 HUNTER MESA													
	Type 1	138		47	9	0	0	56	40.6%		21.7	1214	151
	Type 4	75		0	0	20	9	29	38.7%		21.1	611	75
	Type 6	43		0	0	29	2	31	72.1%		3.6	112	51
	Type 9	55		5	3	0	0	8	14.5%		72.4	579	58
Pooled Total		304	(311)*	52	12	49	11	124	40.8%	(39.9%)*	20.3	2516	
Pooled Resident		252		43	12	43	11	109	43.3%		18.9	2062	
Pooled Nonresident		52		9	0	6	0	15	28.8%		30.3	454	
36 ROCK CREEK													
	General	536		49	4	0	0	53	9.9%		59.4	3149	
	Type 4	116		0	0	40	4	44	37.9%		14.5	637	138
	Type 9	46		0	0	2	0	2	4.3%		193	386	54
Pooled Total		698	(698)*	49	4	42	4	99	14.2%	(14.2%)*	42.1	4172	
Pooled Resident		608		42	4	39	4	89	14.6%		40.4	3600	
Pooled Nonresident		90		7	0	3	0	10	11.1%		57.2	572	
37 GOOSE													
	General	806		91	23	28	12	154	19.1%		32.8	5044	
	Type 6	311		0	0	121	32	153	49.2%		15	2288	399
	Type 9	101		12	0	0	3	15	14.9%		79.5	1193	106
Pooled Total		1187	(1218)*	103	23	149	47	322	27.1%	(26.4%)*	26.5	8525	
Pooled Resident		1028		92	19	134	32	277	26.9%		26.7	7392	
Pooled Nonresident		159		11	4	15	15	45	28.3%		25.2	1133	
38 TONGUE													
	Type 1	362		65	4	52	0	121	33.4%		25.5	3084	400
	Type 4	420		0	0	101	0	101	24.0%		30.6	3087	465
	Type 9	236		57	6	0	6	69	29.2%		35.7	2465	251
Pooled Total		1018	(1018)*	122	10	153	6	291	28.6%	(28.6%)*	29.7	8636	
Pooled Resident		885		83	6	129	6	224	25.3%		33.9	7583	
Pooled Nonresident		133		39	4	24	0	67	50.4%		15.7	1053	
39 DEER CREEK													
	Type 1	91		23	12	15	6	56	61.5%		9.1	508	93
	Type 2	76		21	14	0	0	35	46.1%		12.9	451	76
	Type 4	47		0	0	20	14	34	72.3%		6.2	212	49
	Type 9	70		10	0	2	0	12	17.1%		61.6	739	72
Pooled Total		284	(284)*	54	26	37	20	137	48.2%	(48.2%)*	13.9	1910	
Pooled Resident		240		35	22	33	20	110	45.8%		14.4	1584	
Pooled Nonresident		44		19	4	4	0	27	61.4%		12.1	326	
40 HORSE CREEK													
	Type 1	167		47	15	11	0	73	43.7%		14.5	1055	175
	Type 4	243		0	0	98	11	109	44.9%		15.3	1668	249
	Type 6	133		0	0	26	15	41	30.8%		21.3	873	149
	Type 9	53		7	0	0	0	7	13.2%		85	595	53
Pooled Total		570	(596)*	54	15	135	26	230	40.4%	(38.6%)*	18.2	4191	
Pooled Resident		498		45	8	122	24	199	40.0%		18.6	3708	
Pooled Nonresident		72		9	7	13	2	31	43.1%		15.6	483	
2010 Hunt Area Total		4061	(4125)*	434	90	565	114	1203	29.6%	(29.2%)*	24.9	29950	3064
2010 Herd Total		3981	(4063)*	434	90	565	114	1203	30.2%	(29.6%)*	24.9	29950	3064

*Active Licenses

2005 - 2010 Harvest Age Structure

[illegible]

	Males									Females									Herd
Year	Juv	1	% *	2 ^	% **	Tot Aged ++	Not Aged +++	Unk	Tot Chkd	Juv	1	% *	2 ^	% **	Tot Aged ++	Not Aged +++	Unk	Tot Chkd	Tot
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2005 - 2010 Trend Count Summary

NH (125-25)

Year	Count Dates	Flight Time Hours	Flight Time Minutes	Number Counted
	[illegible]			
	[illegible]			
	[illegible]			
	[illegible]			
	[illegible]			
	[illegible]			

NORTH BIGHORN ELK (EL 321)
Hunt Areas 35, 36, 37, 38, 39, 40
2011 Hunting Seasons

HUNT AREA	TYPE	SEASON DATES OPENS	CLOSES	LIMITATIONS
35	1	Oct. 15	Nov. 5	Limited quota; 150 licenses antlered elk
	4	Oct. 15	Nov. 30	Limited quota; 75 licenses antlerless elk
	6	Oct. 15	Nov. 30	Limited quota; 50 licenses cow or calf elk valid in that portion of Area 35 off national forest
	9	Sept. 1	Sept. 30	Limited quota; 50 licenses any elk, archery only
36		Oct. 15	Nov. 5	General license; antlered elk
	4	Oct. 15	Nov. 30	Limited quota; 200 licenses antlerless elk
	9	Sept. 1	Sept. 30	Limited quota; 50 licenses any elk, archery only
37		Oct. 15	Nov. 5	General license; any elk
	6	Sept. 1	Sept. 14	Limited quota; 400 licenses cow or calf valid in that portion of Area 37 north of Wolf Creek Trail (USFS Trail 001) on national forest
		Oct. 1	Nov. 30	Unused Area 37 Type 6 licenses valid in the entire area
		Dec. 1	Dec. 18	Unused Area 37 Type 6 licenses valid in that portion of Area 37 south or east of Little Goose Creek
	9	Sept. 1	Sept. 30	Limited quota; 100 licenses any elk valid in that portion of Area 37 south of Wolf Creek Trail (USFS Trail 001) or off national forest, archery only
38	1	Oct. 15	Nov. 5	Limited quota; 400 licenses any elk
		Nov. 6	Nov. 15	Unused Area 38 Type 1 licenses valid for antlerless elk
	4	Oct. 10	Nov. 15	Limited quota; 500 licenses antlerless elk valid in that portion of Area 38 north of Columbus Creek, the Fools Creek Road (USFS Road 168), the Burgess Road (USFS Road 15) to Burgess Junction, and U.S. Highway 14A
	9	Sept. 1	Sept. 30	Limited quota; 250 licenses any elk, archery only
39	1	Oct. 15	Nov. 4	Limited quota; 90 licenses any elk
		Nov. 5	Nov. 15	Unused Area 39 Type 1 licenses valid for antlerless elk
	2	Oct. 15	Nov. 4	Limited quota; 75 licenses antlered elk
	4	Oct. 15	Nov. 15	Limited quota; 50 licenses antlerless elk
	9	Sept. 1	Sept. 30	Limited quota; 70 licenses any elk, archery only

HUNT AREA	TYPE	SEASON DATES OPENS	CLOSES	LIMITATIONS
40	1	Oct. 15	Nov. 4	Limited quota; 175 licenses any elk
	4	Oct. 15	Nov. 30	Limited quota; 300 licenses antlerless elk
	6	Sept. 1	Oct 14	Limited quota; 150 licenses cow or calf valid in that portion of Area 40 off national forest and south of Bear Creek
		Oct. 15	Dec.11	Unused Area 40 Type 6 licenses valid in the entire area
	9	Sept. 1	Sept. 30	Limited quota; 50 licenses any elk, archery only
ARCHERY				
35,36,37		Sept. 15	Sept. 30	Refer to Section 3 of this Chapter

SUMMARY OF CHANGES

Area	Type	Change
Area 37	Type 6	Close extended season on Dec 18 (-1 day)
Area 40	Type 4	Increase from 250 to 300 **(+50)**
	Type 6	Close season on Dec 11 (+11 days)
License Additions	Type 4	+50
Net License Change		+50 full price licenses

MANAGEMENT EVALUATION

Current Population Objective: 4,100

2010 Post-season Population Estimate: ~5,250 (+28% over objective)

2011 Post-season Population Estimate: ~5,300

Current Population Trend: The population appears to stable to increasing slowly at this time. We do not currently have a POP-II population simulation model constructed for this herd. Due to interstate movement of elk we cannot meet numerous assumptions of simulation modeling. Post-season population estimates are based on annual winter range counts. Most segments of this herd have well defined winter ranges which result in a high level of confidence in the annual winter counts.

Harvest strategies are designed to reduce elk populations in some hunt areas and to maintain populations in other hunt areas. Relatively high harvest will have to be obtained in some hunt areas for several years to reduce this population to objective, which may prove to be difficult if not impossible due to private land constraints. For example, over 600 elk move onto one ranch in Area 37, where extremely limited harvest occurs (<12 elk/annually). While we have been successful harvesting elk in Area 37, it is not from this segment of the population. We have successfully reduced the middle segment of this population while the southern segment has remained relatively stable and the northern segment has continued to grow.

Up to 25% of the elk that reside in this herd unit during spring through fall months move into Garvin Basin, Montana, on the Crow Indian Reservation during winter months. Harvest in this area by members of the Crow Nation is relatively unregulated and unmonitored.

Trend Count Data: Trend and classification surveys were conducted in January - February, 2011 for portions of this herd. Winter trend / classification counts by hunt area were:

- 1,388 elk in Area 35 and 36 (no count in 2009/10; 1,200 desired winter population)
- 1,127 elk in Area 37 (1,078 in 2009/10; 650 desired winter population)
- 1,013 elk in Area 38 (842 in 2009/10; 1,000 desired winter population)
  - Amsden Creek WHMA = 363 (350 desired); Kerns WHMA = 650 (650 desired)
- 324 elk in Area 39 (337 in 2009/10; 350 desired – classification survey, not a trend count)
- 861 elk in Area 40 (1,245 in 2009/10; 650 desired – classification survey, not a trend count)

Classification survey data suggests about average cow:calf ratios and sufficient bull numbers to maintain recent and recommended harvest trends.

Post-season population estimates are based on winter counts. In January and February, 2011, wildlife biologists and wardens conducted winter range surveys via either trend or classification surveys. Elk winter in a limited number of areas in most of these hunt areas. Survey conditions were generally good to excellent, likely resulting in a high observability of elk. Areas where elk are known to occur in more open years were also surveyed and no tracks or evidence of elk were observed during 2011 surveys.

Proposed 2011 Harvest: The projected harvest for 2011 includes 500 bulls, 600 cows and 100 calves for a total estimated harvest of 1,200 elk, similar to the 2010 harvest. The continued liberal harvest strategies in some hunt areas are designed to stop the growth of this herd and eventually reduce this herd to objective. It will take several years of sustained harvest to reduce this population to objective, although there will still likely be isolated areas with more elk than desired.

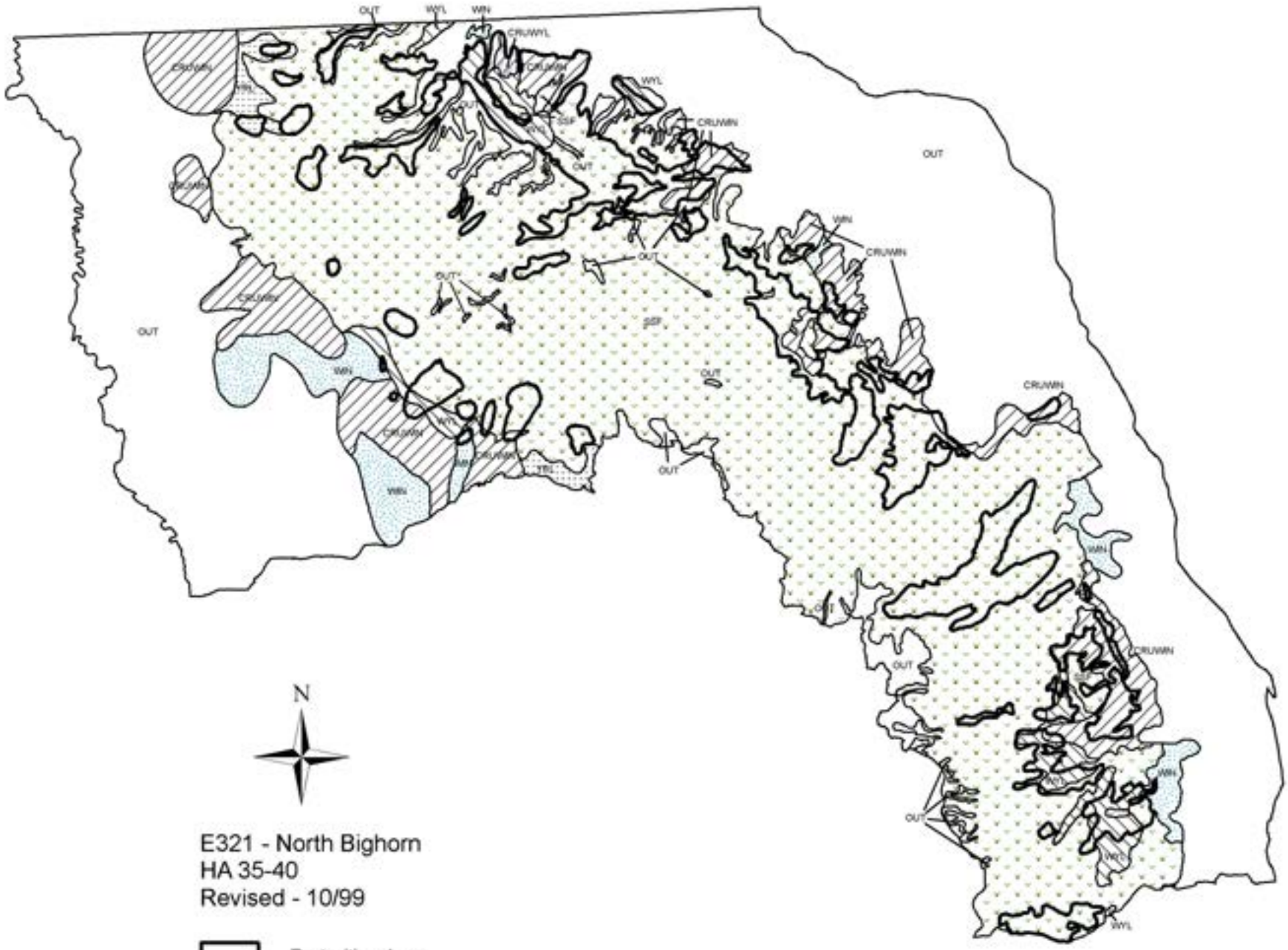
A problem with harvest in some hunt areas is targeting the segments of elk that need additional harvest without overharvesting other segments. For example, we have been successful in harvesting elk from the central part of Area 37, reducing this segment below desired levels. In 2009, we implemented an experimental season strategy to focus harvest on the northern portion of Area 37. We will evaluate the effectiveness of this season strategy after the 2011 season (third year).

Management Challenges: Problems associated with the management of this herd include: migration of 1,000± elk across state lines; relatively unregulated and unmonitored harvest on the Crow Indian Reservation, Montana; the inability to effectively direct antlerless harvest to specific segments of this herd; movement of elk off accessible public lands onto private land refuges; and limited access to private lands for adequate antlerless harvest.

Season strategies are designed to promote harvest on private lands within Areas 35, 37, and 40. Previous liberal harvest strategies have reduced herd segments occupying public lands during the hunting season, reducing hunter opportunity.

Elk numbers have continued to remain above desired levels in Area 37 but access to private lands in the northern and southern areas of the hunt area limit harvest strategy options. Elk numbers continue to increase in the northern portion of the hunt area due to a ranch that provides a refuge for elk. We have been successful reducing elk numbers in other portions of the hunt area, primarily on public lands in the central portion. Hunting pressure for elk on public land has been reduced through more restrictive hunting season strategies. We recommend an early cow/calf season in the northern portion of Area 37 to increase harvest on this segment of the herd.

Elk numbers in Areas 35, 36 and 38 have stabilized and we will have the same season structure for 2011. Elk have appeared to redistribute themselves in Areas 39 and 40 in recent years. Winter elk numbers have increased in recent years in Hunt Areas 39 and 40. License numbers and season length have been liberalized to address this increase in numbers in these hunt areas.



E321 - North Bighorn
HA 35-40
Revised - 10/99

Parturition Area

2010 - JCR Evaluation Form

SPECIES: Elk | PERIOD: 6/1/2010 - 5/31/2011

HERD: EL322 - SOUTH BIGHORN

HUNT AREAS: 33-34, 47-49, 120 | PREPARED BY: DAN THIELE

	2005 - 2009 Average	2010	2011 Proposed
Population:	8,231	7,209	6,607
Harvest:	1,255	1,529	1,525
Hunters:	2,710	2,812	3,200
Hunter Success:	46%	54%	48%
Active Licenses:	2,800	2,951	3,400
Active License Percent:	45%	52%	45%
Recreation Days:	17,588	19,468	21,400
Days Per Animal:	14.0	12.7	14.0
Males per 100 Females	28	29	
Juveniles per 100 Females	35	34	

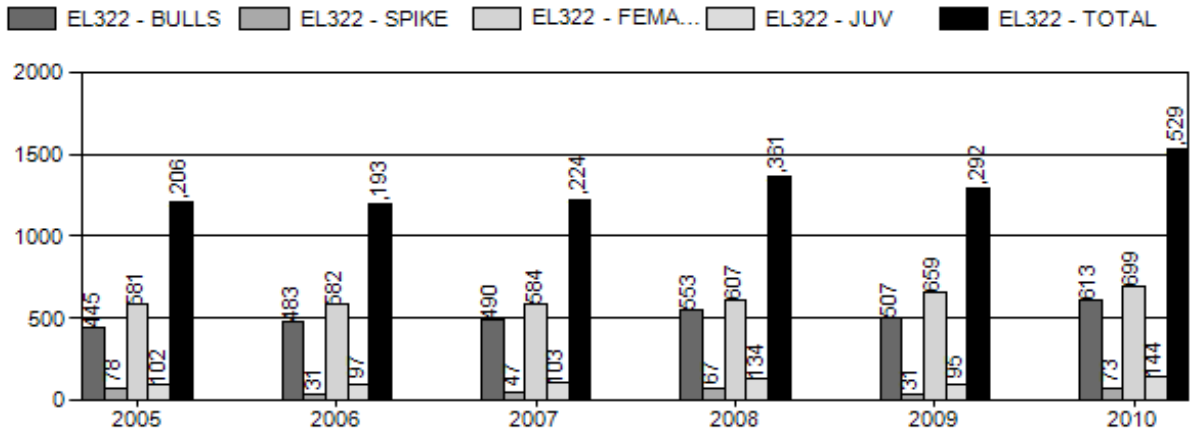
Population Objective:	2,900
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	149%
Number of years population has been + or - objective in recent trend:	10
Model Date:	4/8/2011

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

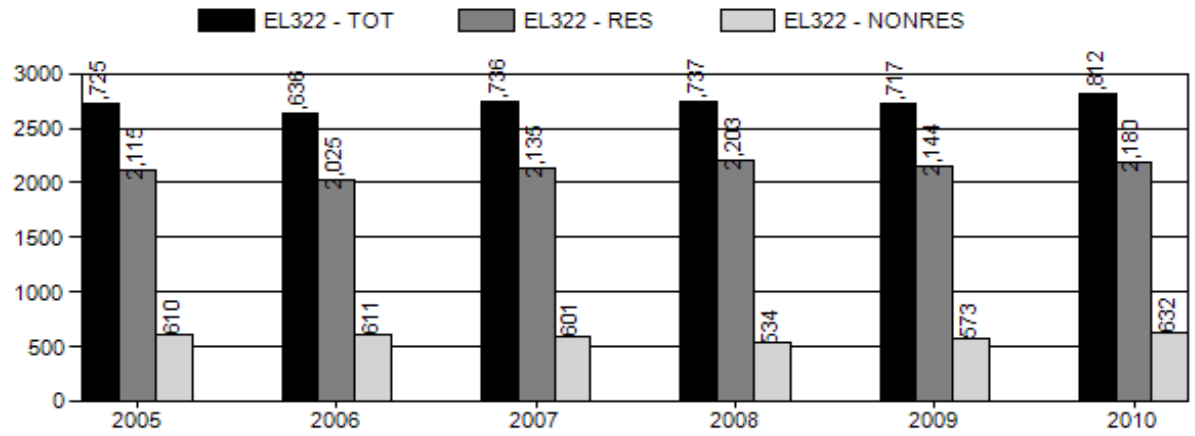
	JCR Year	Proposed
Females •1 year old:	14%	17%
Males • 1 year old:	28%	29%
Juveniles (< 1 year old):	9%	8%
Total:	17%	18%
Proposed change in post-season population:	-8%	-8%

Population Size - Postseason

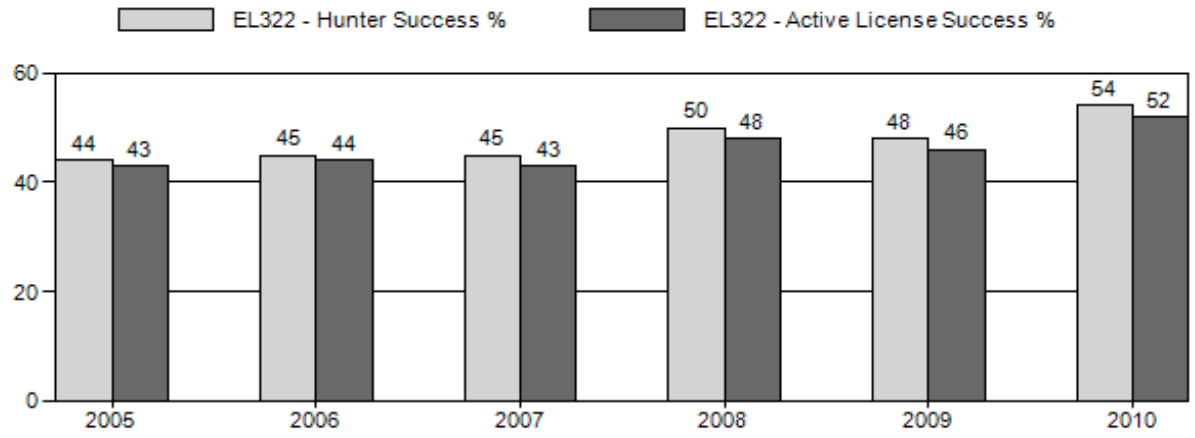
Harvest



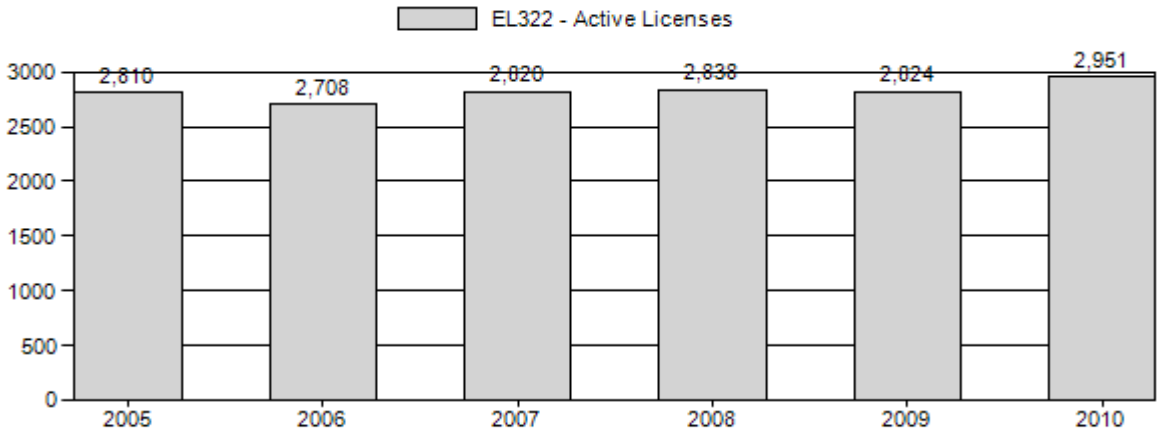
Number of Hunters



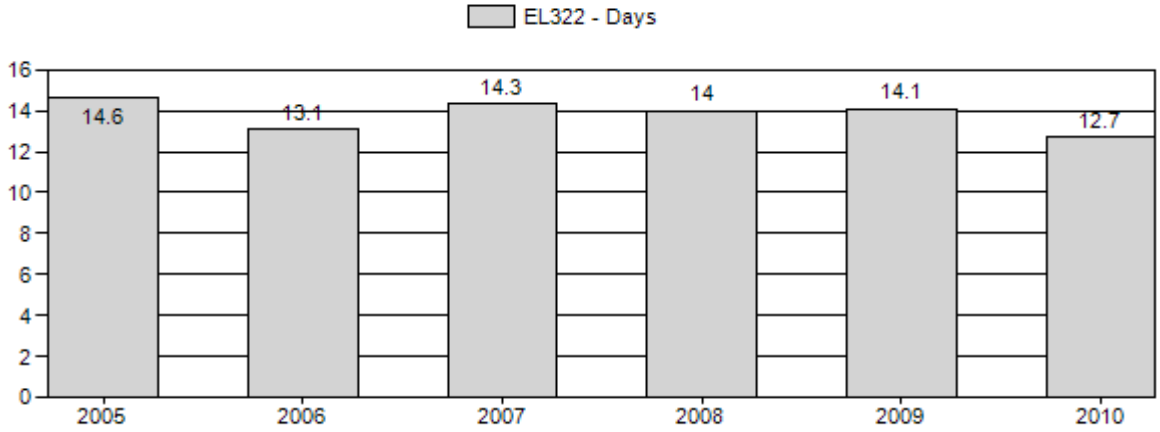
Harvest Success



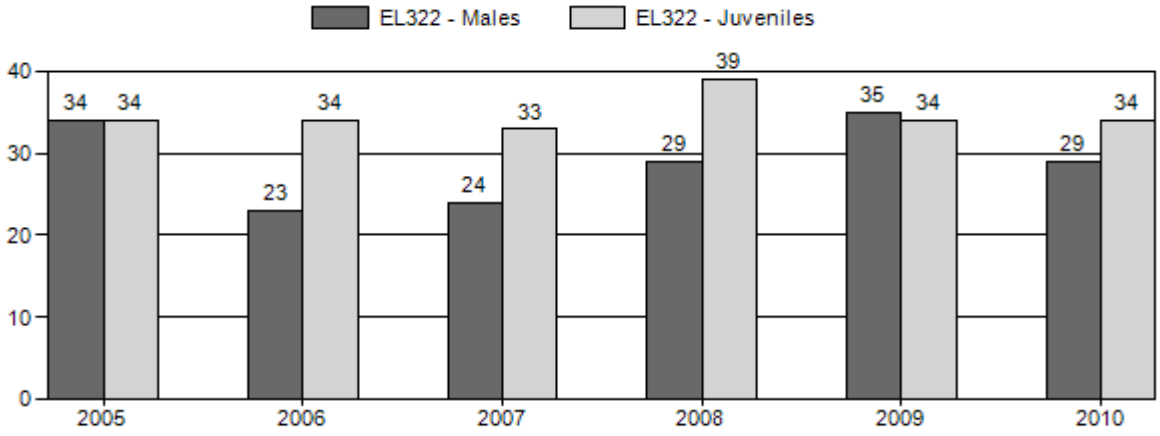
Active Licenses



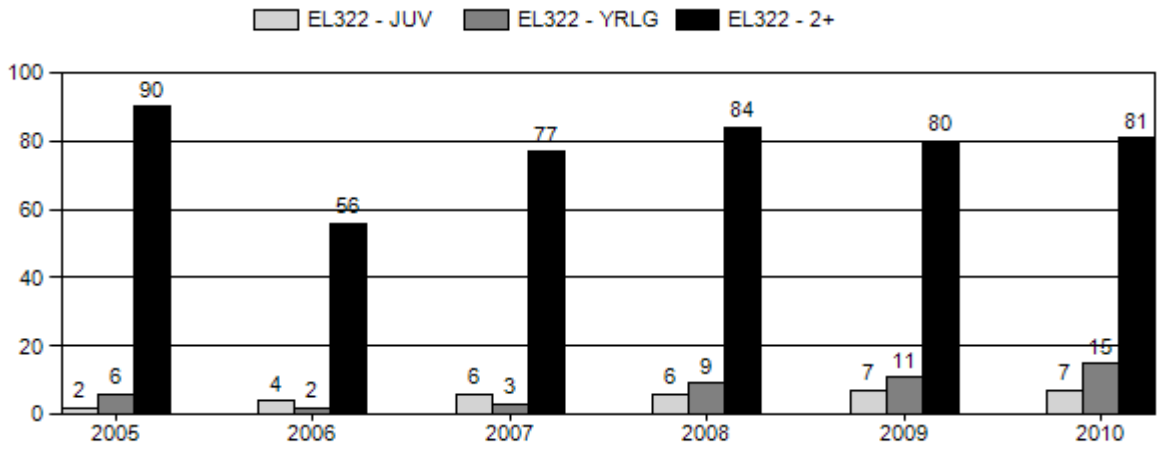
Days per Animal Harvested



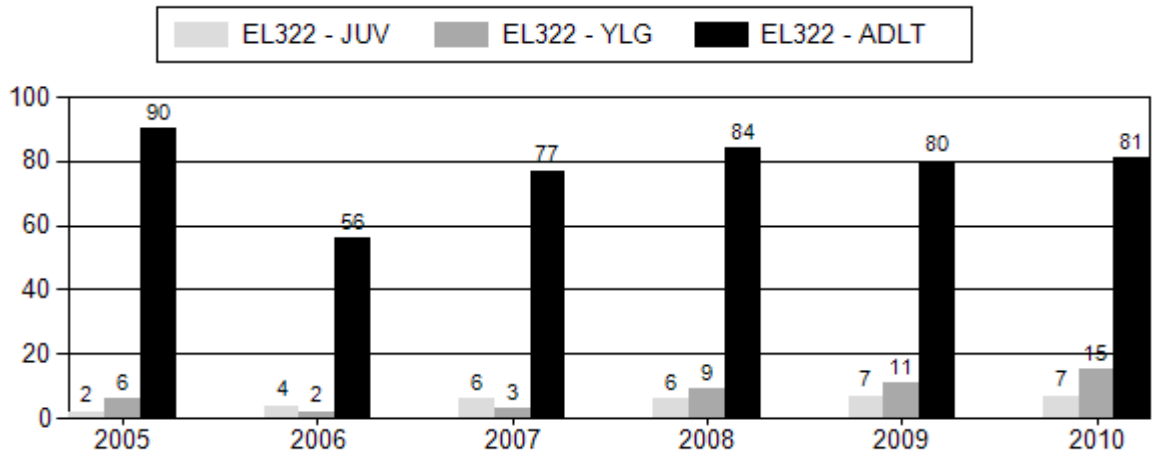
Postseason Animals per 100 Females



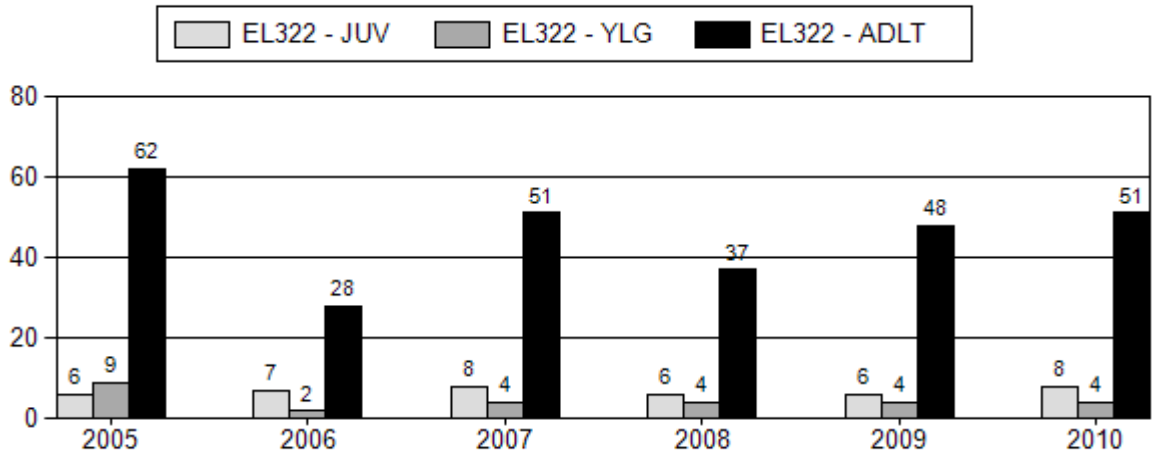
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



2005 - 2010 Postseason Classification Summary

IR(ONH68%)251

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to			
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult	
															“				“
															“				“
															“				“
															“				“
															“				“
															“				“

2010 HUNTING SEASONS

Hunt Area	Type	Quota	Season Dates	Limitations
[illegible]			[illegible]	
	[illegible]	[illegible]		
			[illegible]	
				[illegible]
	[illegible]	[illegible]		
	[illegible]	[illegible]		
			[illegible]	
				[illegible]
	[illegible]	[illegible]		
				[illegible]
	[illegible]	[illegible]		
	[illegible]	[illegible]		
				[illegible]
	[illegible]	[illegible]		
	[illegible]	[illegible]		
				[illegible]
	[illegible]	[illegible]		
	[illegible]	[illegible]		
			[illegible]	
				[illegible]
	[illegible]	[illegible]		
				[illegible]
	[illegible]	[illegible]	

2010 EL322 HARVEST BY HUNT AREA SUMMARY

Area	Type	Licenses	Bull	Spike	Cow	Calf	Total	Success	Days/ Harvest	Days	Sold
33 MIDDLE FORK											
	Type 1	133	53	2	10	0	65	48.9%	13.9	905	157
	Type 4	114	0	0	27	16	43	37.7%	17.2	739	130
Pooled Total		247 (247)*	53	2	37	16	108	43.7% (43.7%)*	15.2	1,644	
Pooled Resident		194	40	0	33	16	89	45.9%	13.6	1,214	
Pooled Nonresident		53	13	2	4	0	19	35.8%	22.6	430	
34 UPPER POWDER RIVER											
	Type 1	722	205	18	130	0	353	48.9%	17.4	6,140	799
	Type 6	250	0	0	54	21	75	30.0%	22.3	1,676	330
Pooled Total		960 (972)*	205	18	184	21	428	44.6% (44.0%)*	18.3	7,816	
Pooled Resident		748	141	18	149	17	325	43.4%	20.6	6,696	
Pooled Nonresident		212	64	0	35	4	103	48.6%	10.9	1,120	
47 COOPER MOUNTAIN											
	Type 1	137	51	9	22	6	88	64.2%	10	883	152
	Type 2	24	10	1	8	0	19	79.2%	4.4	83	25
	Type 6	112	0	0	48	11	59	52.7%	10.8	636	135
Pooled Total		233 (273)*	61	10	78	17	166	71.2% (60.8%)*	9.7	1,602	
Pooled Resident		192	45	9	63	15	132	68.8%	9.8	1,292	
Pooled Nonresident		41	16	1	15	2	34	82.9%	9.1	310	
48 UPPER NOWOOD											
	Type 1	340	160	20	27	13	220	64.7%	9.6	2,115	360
	Type 4	21	0	0	1	0	1	4.8%	129	129	27
	Type 6	291	0	0	146	31	177	60.8%	7.4	1,310	329
Pooled Total		599 (652)*	160	20	174	44	398	66.4% (61.0%)*	8.9	3,554	
Pooled Resident		448	94	20	124	39	277	61.8%	10.5	2,915	
Pooled Nonresident		151	66	0	50	5	121	80.1%	5.3	639	
49 OTTER CREEK											
	Type 1	247	75	15	34	0	124	50.2%	13.6	1,691	276
	Type 4	38	0	0	6	0	6	15.8%	42.7	256	50
	Type 6	279	0	0	121	24	145	52.0%	11.9	1,724	324
Pooled Total		527 (564)*	75	15	161	24	275	52.2% (48.8%)*	13.3	3,671	
Pooled Resident		388	69	9	114	24	216	55.7%	12.4	2,689	
Pooled Nonresident		139	6	6	47	0	59	42.4%	16.6	982	
120 BUFFALO CREEK											
	Type 1	104	59	8	5	0	72	69.2%	7.9	566	104
	Type 4	97	0	0	46	14	60	61.9%	7.2	433	99
	Type 5	42	0	0	14	8	22	52.4%	8.3	182	50
Pooled Total		243 (243)*	59	8	65	22	154	63.4% (63.4%)*	7.7	1,181	
Pooled Resident		207	45	8	56	22	131	63.3%	7.6	995	
Pooled Nonresident		36	14	0	9	0	23	63.9%	8.1	186	
2010 Hunt Area Total		2,809 (2951)*	613	73	699	144	1529	54.4% (51.8%)*	12.7	19,468	3,347
2010 Herd Total		2,812 (2951)*	613	73	699	144	1529	54.4% (51.8%)*	12.7	19,468	3,347

*Active Licenses

2005 - 2010 Harvest Age Structure

[redacted]51

	Males									Females									Herd
Year	Juv	1	% *	2 ^	% **	Tot Aged ++	Not Aged +++	Unk	Tot Chkd	Juv	1	% *	2 ^	% **	Tot Aged ++	Not Aged +++	Unk	Tot Chkd	Tot
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

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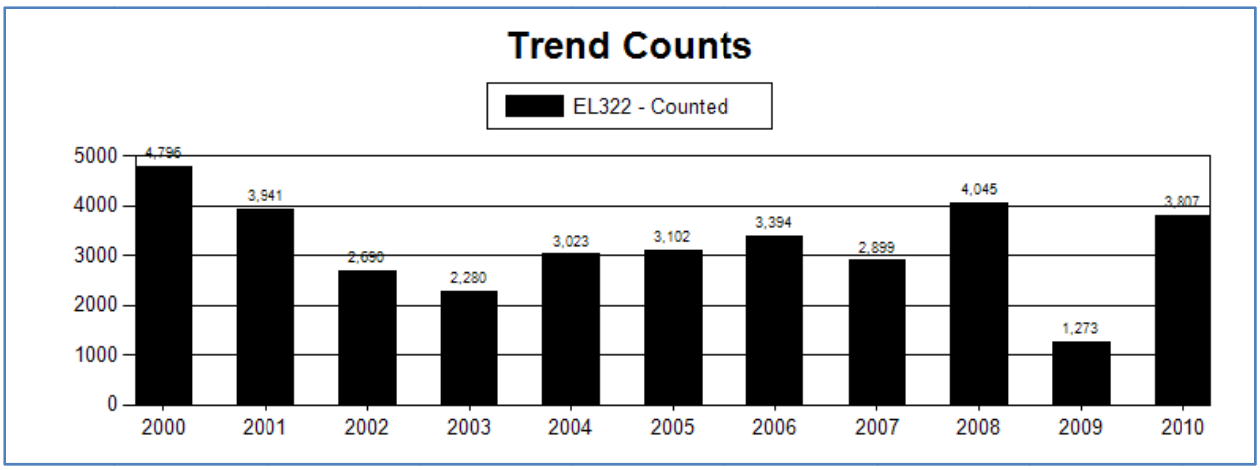


2010 Trend Count by Hunt Area Summary

R(NHG 628 7,985 1

Year	Hunt Area	Count Block	Flight Time Hours	Flight Time Minutes	Comments	Number Counted
	Area Totals:		0	0		869
	Area Totals:		0	0		1,001
	Area Totals:		0	0		443
	Area Totals:		0	0		365
	Area Totals:		0	0		676
	Area Totals:		0	0		453
	Year Totals:		0	0		3,807

2011 HUNTING SEASONS

SOUTH BIGHORN ELK (EL 322)

HUNT AREA	TYPE	DATE OF SEASONS OPENS	CLOSES	LIMITATIONS
33	1	Oct. 9	Oct. 31	Limited Quota, 150 licenses any elk
		Nov. 1	Nov. 30	Unused Area 33 Type 1 licenses valid for antlerless elk
	4	Oct. 9	Nov. 30	Limited Quota, 150 licenses antlerless elk
34	1	Oct. 15	Nov. 15	Limited Quota, 800 licenses any elk
		Nov. 16	Nov. 30	Unused Area 34 Type 1 licenses valid for antlerless elk
	6	Oct. 15	Nov. 30	Limited Quota, 600 licenses cow or calf valid in that portion of Area 34 off National Forest
47	1	Oct. 9	Oct. 31	Limited Quota, 150 licenses any elk
	2	Oct. 9	Oct. 31	Limited Quota, 25 licenses any elk valid in that portion of Area 47 in Fremont County
		Nov. 1	Nov. 15	Unused Area 47 Type 1 and Type 2 licenses valid for antlerless elk
	6	Oct. 9	Nov 15	Limited Quota, 250 licenses cow or calf
48	1	Oct. 9	Oct. 31	Limited Quota, 350 licenses any elk
	4	Oct. 9	Oct. 31	Limited Quota, 50 licenses antlerless elk
	6	Oct. 9	Oct. 31	Limited Quota, 500 licenses cow or calf
		Nov. 5	Nov. 30	Unused Area 48 Type 1, Type 4 and Type 6 licenses valid for antlerless elk
49	1	Oct. 9	Oct. 31	Limited Quota, 300 licenses any elk
		Nov. 1	Dec. 20	Unused Area 49 Type 1 licenses valid for antlerlerless elk
	4	Oct. 9	Dec. 20	Limited Quota, 50 licenses antlerless elk
	6	Sept. 1	Dec. 20	Limited Quota, 350 licenses cow or calf
120	1	Oct. 9	Oct. 31	Limited Quota, 100 licenses any elk
		Nov. 1	Nov. 30	Unused Area 120 Type 1 licenses valid for antlerless elk
	4	Oct. 9	Nov. 30	Limited Quota, 100 licenses antlerless elk
	5	Nov. 1	Nov. 30	Limited Quota, 50 licenses antlerless elk
Archery Season				
33,34,47,48,49,120		Sept. 1	Sept. 30	Limitations by hunt area and license type

Summary of changes

Area	Type	Change from 2010
33	1	no change
	4	no change
34	1	no change
	6	no change
47	1	no change
	2	no change
	6	no change
48	1	no change
	4	no change
	6	no change
49	1	+25
	4	no change
	6	+25
120	1	no change
	4	no change
	6	no change
Total	**1 & 2**	**+25**
	4	**no change**
	6	**+25**

The Area 48 November season opening date is changed to maintain a Saturday opener. In Area 49 the Type 1 and Type 6 quotas increased 25 licenses each and antlerless and cow/calf seasons are extended 20 days to a December 20th closing date.

MANAGEMENT EVALUATION

Current Objective: 2,900

2010 Postseason Population Estimate (% above or below obj.): 7,209 (148% above)

2011 Proposed Postseason Population Estimate: 6,607

Current Population Trend: This population is estimated to be well above objective with several segments of this herd above desired levels. Management objectives call for 2000 elk in Areas 33 and 34 and 900 elk in areas 47, 48, 49 and 120. Since 1997, hunting seasons have been liberalized with increased any elk and antlerless elk license quotas, the addition of cow/calf licenses, and extended hunting seasons. Harvest has increased significantly, although at less than desired levels because of the inability to sell antlerless and cow/calf licenses in some hunt areas. Lack of access in some areas, particularly Areas 34, 47 and 48, has hampered efforts to achieve harvest objectives.

The current population estimate is based on a 2010 revised POP-II model aligned to harvest, classifications and trend counts. The initial population was increased to moderate the decreasing population trend and produce more reasonable harvest percentages. The model aligns very well to calf:cow ratios and yearling bull ratios. Alignment to total bull ratios and percentage of yearling bulls in the male harvest is reasonable. The observed yearling bull ratios are believed to be more representative herd data than total bull ratios since yearling bulls tend to winter with cow/calf herds. The herd is modeled at a considerably higher population than the previous model to dampen the effects of harvest and maintain a more stable population as suggested by trend counts and anecdotal observations. Trend counts now account for about 40-50% of the estimated post-season population. In recent years, trend count

conditions have been less than ideal over the entire herd unit. In 2009-10, Areas 33 and 34 were not flown due to poor survey conditions. Furthermore, limited flight time on the western slope of the Southern Bighorns limits the effectiveness of trend counts. The 2010-11 trend count totaled 3,807 elk, 6% below the 2008 count. In 2008, 4,045 elk were counted, up 40% from the 2,899 elk counted in 2007, but below the 4,800 elk counted in 2000. Continued model review and adjustment is recommended. Classifications in some years are of questionable quality due to partial herd counts and adult bulls are likely under-represented in some samples. This leads to accuracy questions concerning the population model which is considered a medium quality model. The population trend is declining, suggesting that harvest is influencing this herd.

Total harvest increased 20% in 2010 to the highest level in the history of this herd unit. Total bull harvest increased 31% in 2010 and was 15% above the six year high of 620 bulls in 2008. Antlerless harvest increased 12% in 2010, the highest harvest to date. Total harvest was 22% above the five year average and showed a noticeable increase over the rather stable harvest of the past 10 years. Harvest objectives were still not achieved as 600 antlerless and cow/calf licenses went unsold. This accounts for 30% of the antlerless and cow/calf licenses. Areas 33, 34, 47 and 48 had licenses remaining after the season primarily due to access restrictions to private land. The increase in harvest is attributed to increased hunter success as active license success reached a six year high of 53%, an increase of 7% from 2009 and 8% above the five year average. A mild fall season may have helped with access to late season elk hunting, however, some Type 4 and Type 6 license types had low hunter success. The number of active licenses was up slightly with about a 5% increase. It is interesting that the increase of 225 antlerless and cow/calf licenses in 2010 had no effect on increasing harvest as the number of unsold licenses for those license types increased by 245 licenses. Hunter success has trended up since 2002 while hunter effort has trended down.

This herd is managed for recreational opportunity. Representative total bull ratios are difficult to determine because adult bulls are segregated from wintering cow calf herds. Therefore, yearling bull ratios are used to align the model. Total bull ratios have fluctuated over the last five years with the 2010 ratio at 29:100. The yearling bull ratio equaled the five year average of 15:100.

This population is over objective and seasons are designed to continue maintaining hunting pressure on the female segment of the herd. Total harvest could potentially increase in 2011 if available licenses sell. License increases are minimal this year with an increase of 25 Type 1 licenses and 25 Type 6 licenses. A longer season in Area 49 is expected to provide for an increase in harvest in that area. Overall, a significant increase in antlerless elk harvest is not expected given the history of hunter access in a majority of the hunt areas. It appears a saturation point may have been reached with hunters unwilling to purchase licenses without a place to hunt. In 2010, 20 Area 33 Type 4 licenses, 270 Area 34 Type 6 licenses, 115 Area 47 Type 6 licenses and 171 Type 6 and 23 Type 4 Area 48 licenses did not sell. A 2011 postseason population of 6,607 elk is projected.

The Area 33 season proposal is unchanged from 2010 when an increase in the Type 4 quota was made. Type 1 hunters averaged 54% success while Type 4 hunters averaged 39% success. Thirteen percent of the Type 4 licenses did not sell. Public access to significant amounts of public and private land was lost beginning in 2007 when a ranch restricted access across private lands which previously had been open to public hunting. This significantly impacted hunter opportunity. Commitment by the TTT Ranch to increase antlerless harvest of the Tisdale herd should provide additional hunting opportunity in this area.

No changes are proposed for Area 34. Winter counts indicate this population segment remains above desired levels, particularly in the northern part of the hunt area. This is due in part because of the inability to sell cow/calf licenses (45% unsold) and low hunter success (30%). The Type 6 licenses are valid off national forest which makes obtaining access to private and landlocked public lands necessary. This restriction is included to direct harvest to the large elk herds on private land. Type 1 hunters experienced 53% hunter success which is unusually high for this hunt area.

No changes are proposed in Area 47 after license quotas were increased in 2010. The Type 6 license quota was increased by 150 licenses to 250 licenses, however, 115 licenses did not sell. Landowner

concerns about increasing elk numbers prompted several landowners in the Copper Mountain area to sign up for the hunter management program which will improve hunter access and hopefully improve harvest. In 2010, hunter success averaged 67%.

In Area 48, no changes are proposed. Elk numbers appear stable based on field observations, harvest statistics and annual classification/trend counts. For 2010, 46% of Type 4 and 36% of Type 6 licenses did not sell. The PLPW program has been successful in signing access agreements which has helped to address the hunter access issue. Hunters averaged 65% success in 2010.

The Area 49 Type 1 and Type 6 quotas will be increased 25 licenses each and the season will be extended for antlerless hunting though December 20th. The increase in quotas addresses a hunt area boundary change that incorporated the portion of Area 46 south of the Bighorn National Forest into Area 49. All license types sold out in 2010 with hunters averaging 52% success. Elk numbers appear stable based on field observations, harvest statistics and annual classification/trend counts.

In Area 120, no changes are proposed. Elk numbers remain above objective and continued liberal antlerless seasons will remain in place. Hunters experienced excellent hunting success in 2010 averaging 63% success. Type 1 hunter success was 69% with 93% of the harvest comprised of bull elk, 88% of which were adult bulls.

For the herd unit, recommendations include an increase of 25 any elk licenses and 25 antlerless and cow/calf licenses. The proposed season is expected to continue decreasing this population.

Proposed 2011 Harvest: The projected harvest for 2011 is 650 bulls, 750 cows and 125 calves for a total estimated harvest of 1,525 elk. These projections are optimistic considering available licenses will likely be undersubscribed and hunter success will decrease to a more typical level.

Management Challenges: Continued refinement of the POP-II model is needed. It is also likely the population objective is too low given the estimated number of elk in the herd unit and the lack of landowner complaints and hunter access. However, until a new objective is in place, management will continue to focus on improved access and increased antlerless harvest to manage this population toward a lower level. Proposed seasons provide for adequate opportunity to obtain the harvest needed to decrease this population, however, achieving the desired harvest is dependent on getting hunters onto private land in most areas.

2011 SOUTH BIGHORNS ELK MODEL
Data from 2004 to 2011 Simulation from 2004 to 2011

Age Class	Init Pop. Male	Prop. Female	Presn Male	Mort% Female	Postsn Male	Mort% Female	Effort Set 1 Male	Effort Set 1 Female	Effort Set 2 Male	Effort Set 2 Female
0	715.0	715.0	40.0	40.0	10.0	10.0	1.00	1.00	1.00	1.00
1	300.0	300.0	1.0	1.0	3.0	3.0	0.30	1.00	1.00	1.00
2	250.0	316.0	1.0	1.0	3.0	3.0	1.00	1.00	1.00	1.00
3	175.0	292.0	1.0	1.0	3.0	3.0	1.00	1.00	1.00	1.00
4	90.0	264.0	1.0	1.0	3.0	3.0	1.00	1.00	1.00	1.00
5	30.0	236.0	1.0	1.0	3.0	3.0	1.00	1.00	1.00	1.00
6	10.0	204.0	1.0	1.0	10.0	3.0	1.00	1.00	1.00	1.00
7	5.0	168.0	1.0	1.0	25.0	3.0	1.00	1.00	1.00	1.00
8	2.0	128.0	1.0	1.0	50.0	3.0	1.00	1.00	1.00	1.00
9	0.0	80.0	1.0	1.0	75.0	3.0	1.00	1.00	1.00	1.00
10	0.0	32.0	1.0	1.0	100.0	3.0	1.00	1.00	1.00	1.00
11	0.0	12.0	1.0	1.0	100.0	3.0	1.00	1.00	1.00	1.00
12	0.0	4.0	1.0	1.0	100.0	3.0	1.00	1.00	1.00	1.00
13	0.0	2.0	1.0	1.0	100.0	3.0	1.00	1.00	1.00	1.00
14	0.0	2.0	1.0	1.0	100.0	10.0	1.00	1.00	1.00	1.00
15	0.0	1.0	1.0	1.0	100.0	20.0	1.00	1.00	1.00	1.00
16	0.0	0.0	1.0	1.0	100.0	35.0	1.00	1.00	1.00	1.00
17	0.0	0.0	1.0	1.0	100.0	50.0	1.00	1.00	1.00	1.00
18	0.0	0.0	1.0	1.0	100.0	75.0	1.00	1.00	1.00	1.00
19	0.0	0.0	1.0	1.0	100.0	100.0	1.00	1.00	1.00	1.00

Sum = 4333.0 Estimated Sum = 11750 Subadults: Ages 0 to 0

MSI Function is Linear

Bio-Year	Preseason MSI	Harvest // Des. Pop Size in NA Subadults#	Males#	Females#	Postseason MSI	Effort & Wound Set Used
2004	1.12	125	637	495	1.00	1
2005	1.35	102	523	581	1.00	1
2006	1.38	97	514	582	1.00	1
2007	1.42	103	537	584	1.00	1
2008	1.23	134	620	607	1.00	1
2009	1.39	95	538	659	1.00	1
2010	1.37	144	686	699	1.00	1
2011	1.30	125	650	750	1.00	1
Set 1 Wounding Loss		10.%	10.%	10.%	Yearling Male 10.%	
Set 1 Wounding Loss		10.%	10.%	10.%	Yearling Male 10.%	

Bio-Year	Young/100 Fems Age 1 - 1	Young/100 Fems Age 2 - 2	Young/100 Fems Age 3 - 19	Sex Ratio: 50 : 50
2005	0.0	30.0	90.0	
2006	0.0	30.0	90.0	
2007	0.0	30.0	90.0	
2008	0.0	30.0	90.0	
2009	0.0	30.0	90.0	
2010	0.0	30.0	90.0	
2011	0.0	30.0	90.0	
2012	0.0	30.0	90.0	

POP-II (V1.2.5) Simulation Output Tables for E322-10.GN1, 04/08/2011 01:11 pm

Table 1. Population Size During Bio-Year for E322-10.GN1 04/08/2011 01:11 pm

Bio-Year	Start	Pre-Season	Post Season	End	%Growth
2004	11750	9925	8542	8140	2.3
2005	12020	9815	8489	8108	-0.3
2006	11983	9732	8420	8039	-0.8
2007	11889	9588	8241	7860	-2.4
2008	11604	9665	8168	7764	-2.0
2009	11368	9256	7835	7445	-4.4
2010	10870	8891	7209	6833	-7.6
2011	10041	8284	6607	6238	-9.3

Table 3. Harvest Mortality for E322-10.GN1 04/08/2011 01:11 pm

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2004	125	637	495	1257	12.7
2005	102	523	581	1206	12.3
2006	97	514	582	1193	12.3
2007	103	537	584	1224	12.8
2008	134	620	607	1361	14.1
2009	95	538	659	1292	14.0
2010	144	686	699	1529	17.2
2011	125	650	750	1525	18.4

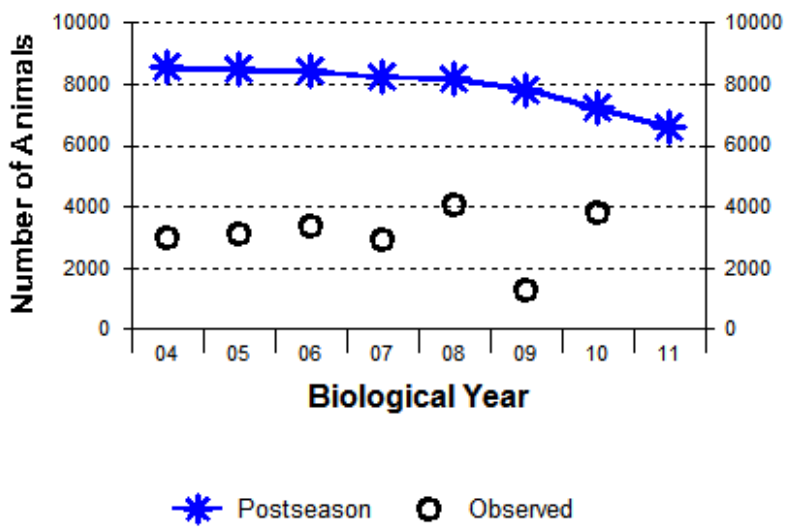
Table 4. Harvest Percentages for E322-10.GN1 04/08/2011 01:11 pm

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	Yearling Males
2004	5.8	27.6	9.0	12.67	13.8
2005	5.7	21.6	10.4	12.29	14.8
2006	5.6	20.5	10.6	12.26	11.2
2007	6.2	20.9	10.9	12.77	10.5
2008	7.0	24.2	11.7	14.08	9.9
2009	5.9	21.1	12.9	13.96	11.7
2010	9.3	27.5	14.4	17.20	9.8
2011	8.1	28.9	16.7	18.41	10.2

Table 7. Postseason Ratios for E322-10.GN1 04/08/2011 01:11 pm

Bio-Year	Subadults /100 1+F	2+ Males /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2004	40.6	18.3	14.4	32.7
2005	33.7	21.1	16.2	37.3
2006	33.6	26.0	14.0	40.0
2007	32.9	27.9	14.0	41.9
2008	38.7	27.7	13.7	41.4
2009	34.1	28.4	16.2	44.6
2010	34.1	28.3	14.5	42.8
2011	38.2	27.0	14.8	41.9

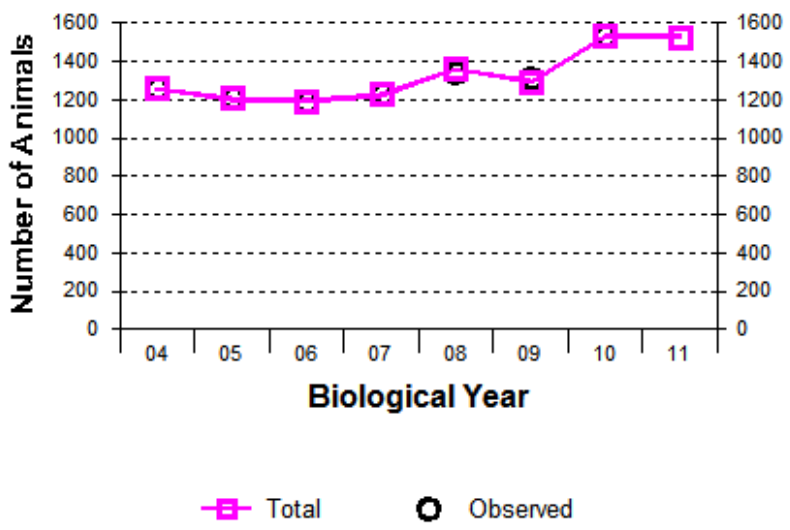
POP-II (V1.2.5) Graph 1. Population Size During Bio-Year



E322-10.GN1, 04/08/2011 01:11 pm, Correlation (R) = -0.017, GOF = -0.67

YR	SIM	OBS
04	8542	3023
05	8489	3102
06	8420	3394
07	8241	2899
08	8168	4045
09	7835	1273
10	7209	3807
11	6607	-----
	AVERAGES	
of Col.	7939	
of Pair	8129	3078

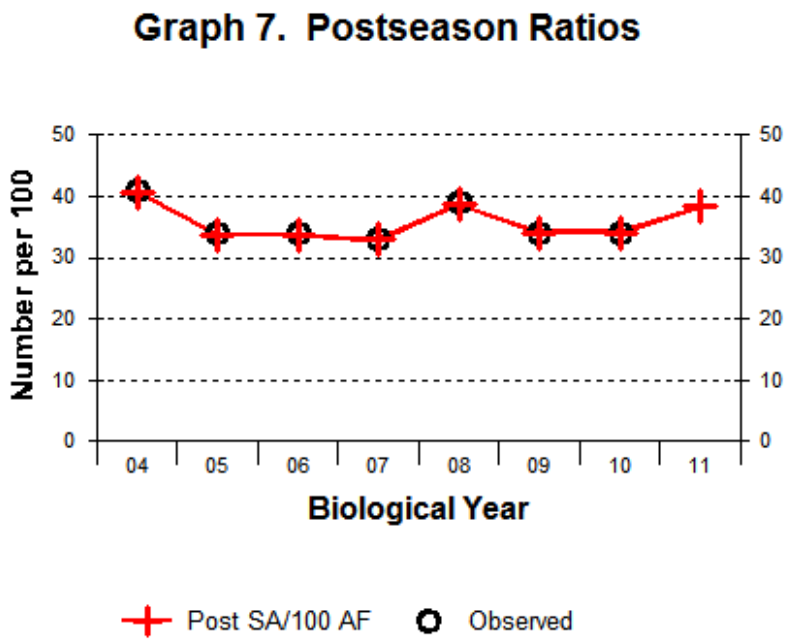
POP-II (V1.2.5) Graph 3. Harvest Mortality



E322-10.GN1, 04/08/2011 01:11 pm, Correlation (R) = 0.997, GOF = 0.993

YR	SIM	OBS
04	1257	1257
05	1206	1206
06	1193	1193
07	1224	1231
08	1361	1344
09	1292	1306
10	1529	1529
11	1525	-----
	AVERAGES	
of Col.	1323	
of Pair	1295	1295

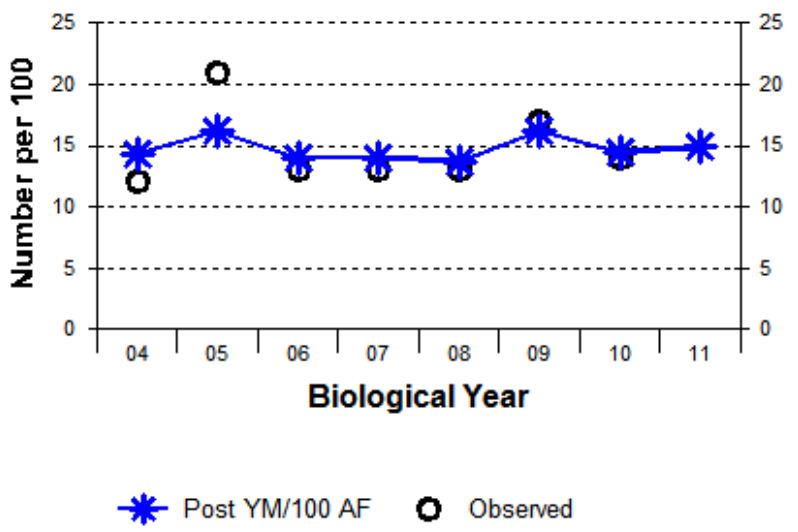
POP-II (V1.2.5) Graph 7. Postseason Ratios



E322-10.GN1, 04/08/2011 01:11 pm, Correlation (R) = 0.998, GOF = 0.992

YR	SIM	OBS
04	41	41
05	34	34
06	34	34
07	33	33
08	39	39
09	34	34
10	34	34
11	38	-----
	AVERAGES	
of Col.	36	
of Pair	35	36

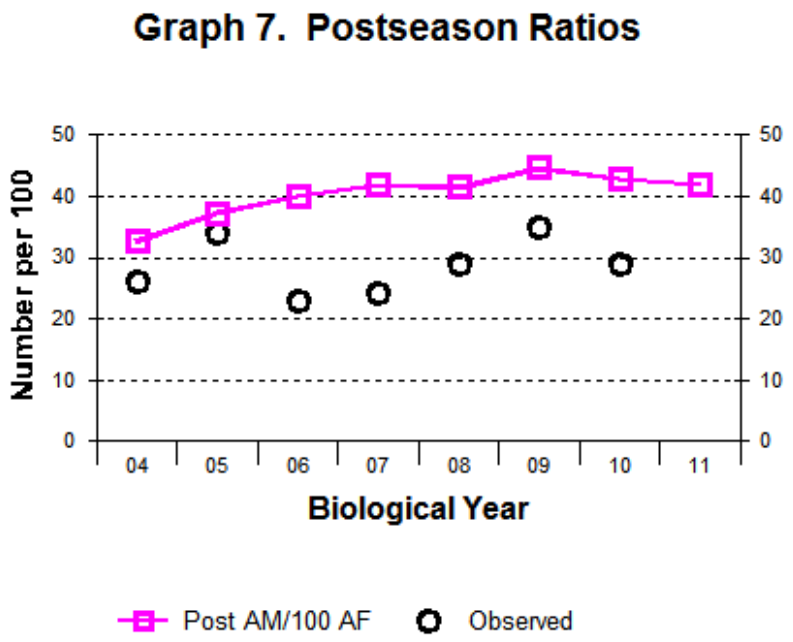
POP-II (V1.2.5) Graph 7. Postseason Ratios



E322-10.GN1, 04/08/2011 01:11 pm, Correlation (R) = 0.895, GOF = 0.855

YR	SIM	OBS
04	14	12
05	16	21
06	14	13
07	14	13
08	14	13
09	16	17
10	14	14
11	15	-----
	AVERAGES	
of Col.	15	
of Pair	15	15

POP-II (V1.2.5) Graph 7. Postseason Ratios

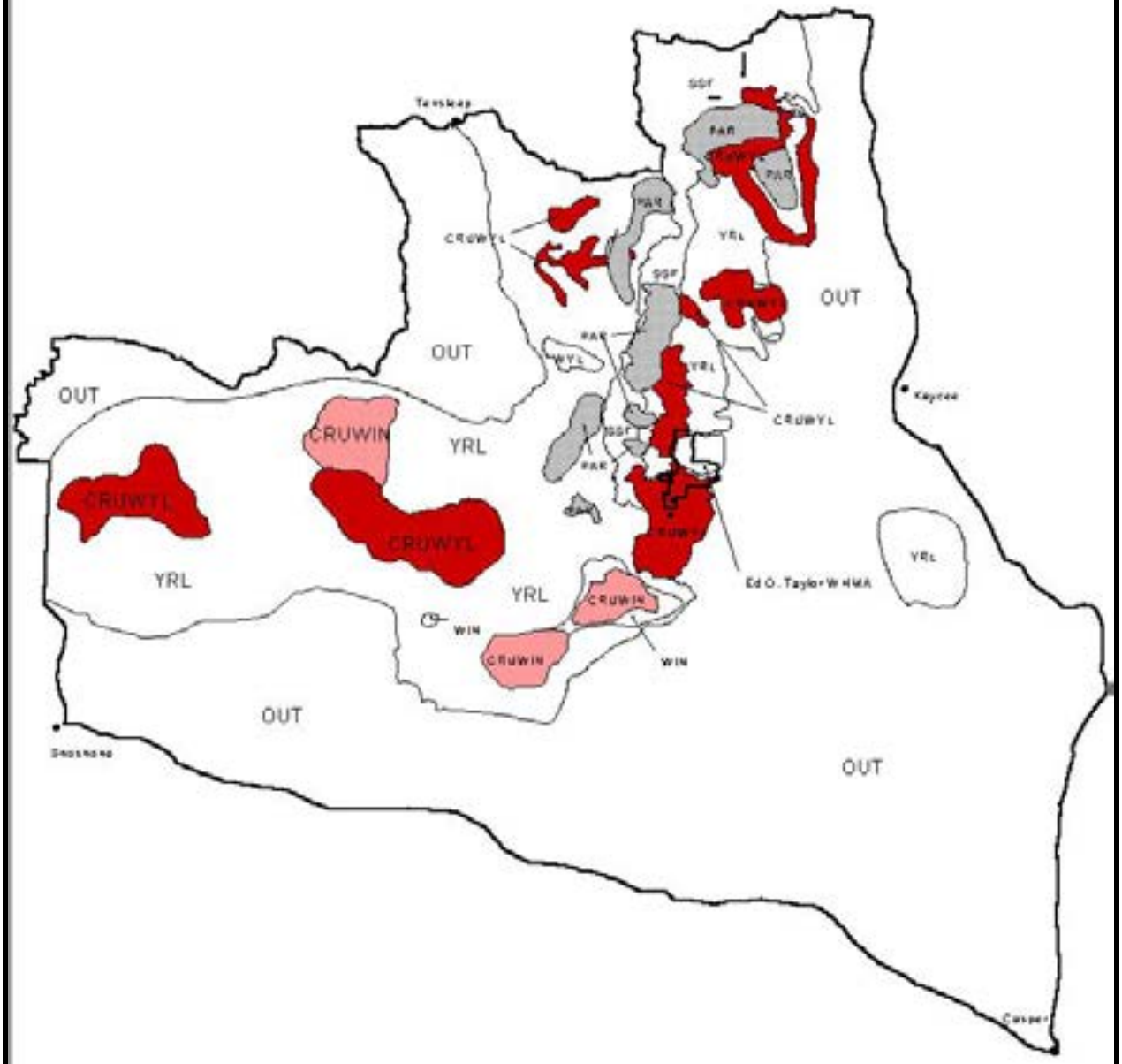


E322-10.GN1, 04/08/2011 01:11 pm, Correlation (R) = 0.239, GOF = 0.561

YR	SIM	OBS
04	33	26
05	37	34
06	40	23
07	42	24
08	41	29
09	45	35
10	43	29
11	42	-----

	AVERAGES	
of Col.	40	
of Pair	40	29

Elk - South Bighorn (E322)
Areas 33, 34, 47, 48, 49, 120
Region 3
Revised - 2001



2010 - JCR Evaluation Form

SPECIES: Elk

PERIOD: 6/1/2010 - 5/31/2011

HERD: EL344 - ROCHELLE HILLS

HUNT AREAS: 113, 123

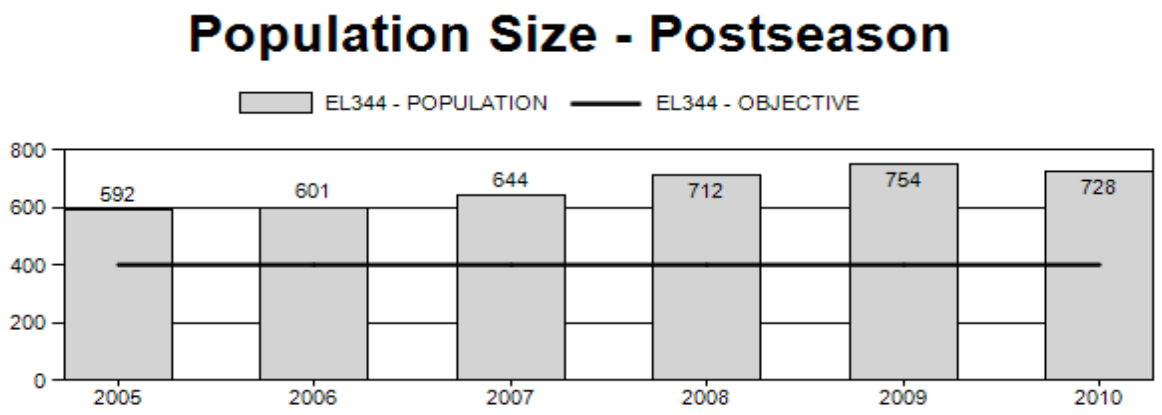
PREPARED BY: HEATHER O'BRIEN

	2005 - 2009 Average	2010	2011 Proposed
Population:	661	728	728
Harvest:	143	81	115
Hunters:	205	116	200
Hunter Success:	70%	70%	58%
Active Licenses:	207	116	200
Active License Percent:	69%	70%	58%
Recreation Days:	762	548	750
Days Per Animal:	5.3	6.8	6.5
Males per 100 Females	55	40	
Juveniles per 100 Females	49	34	

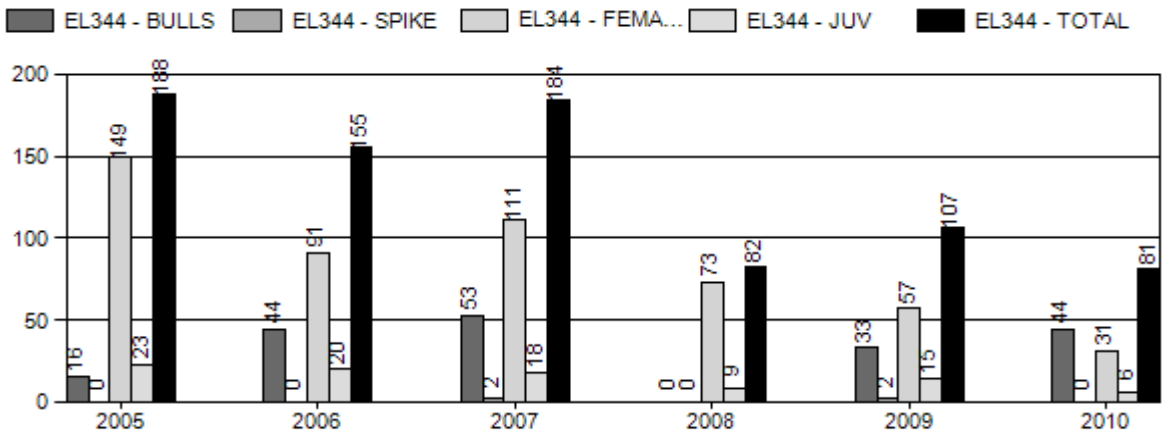
Population Objective:	400
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	82%
Number of years population has been + or - objective in recent trend:	12
Model Date:	4/5/2011

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

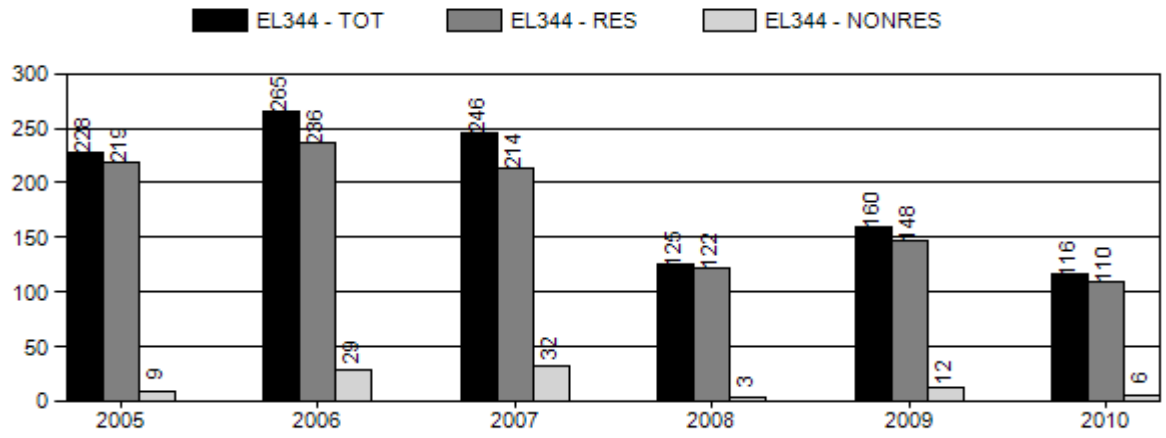
	JCR Year	Proposed
Females •1 year old:	7.8%	15.0%
Males •1 year old:	14.2%	13.0%
Juveniles (< 1 year old):	4.6%	10.1%
Total:	9.69%	13.46%
Proposed change in post-season population:	2.0%	-5.1%



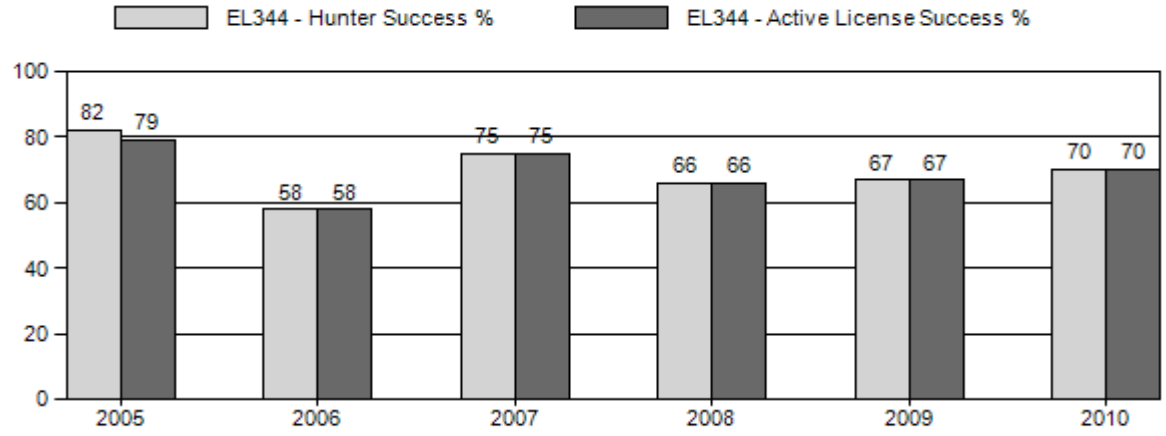
Harvest



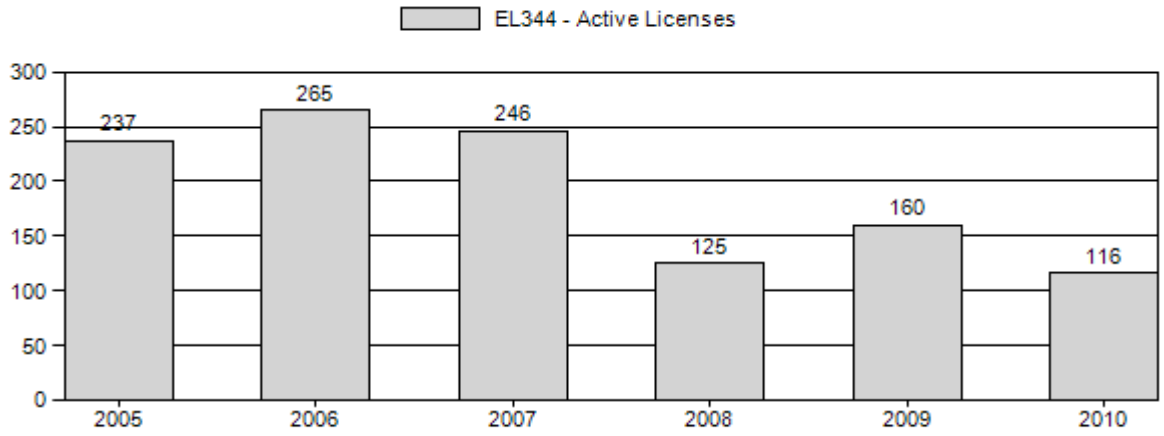
Number of Hunters



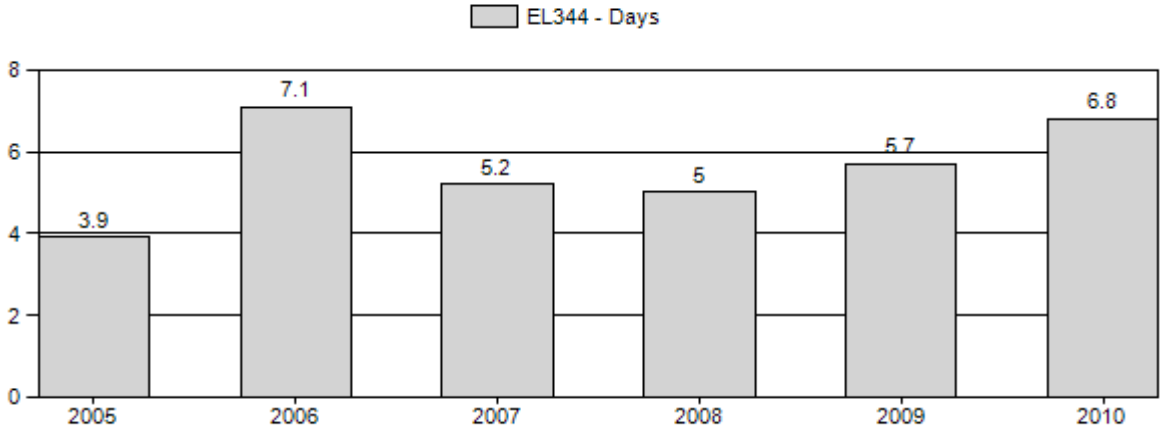
Harvest Success



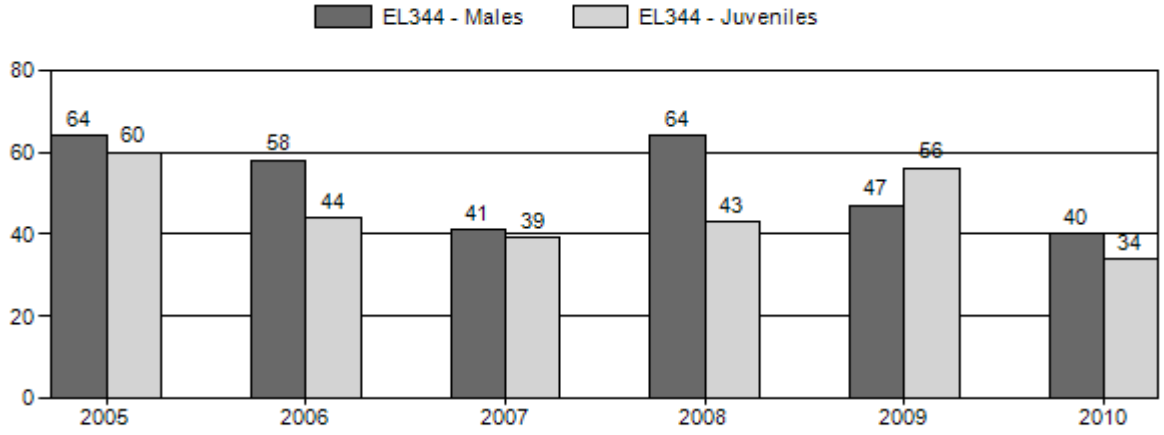
Active Licenses



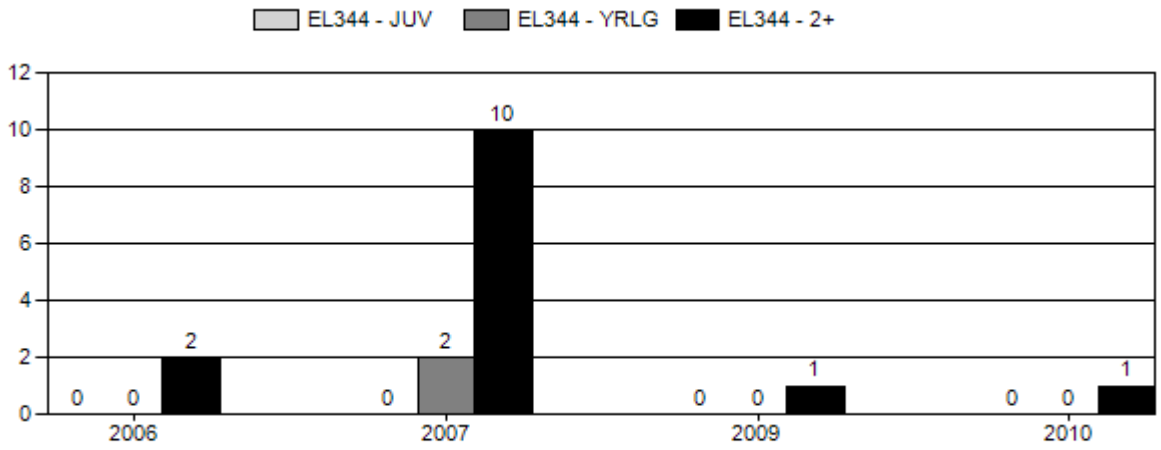
Days per Animal Harvested



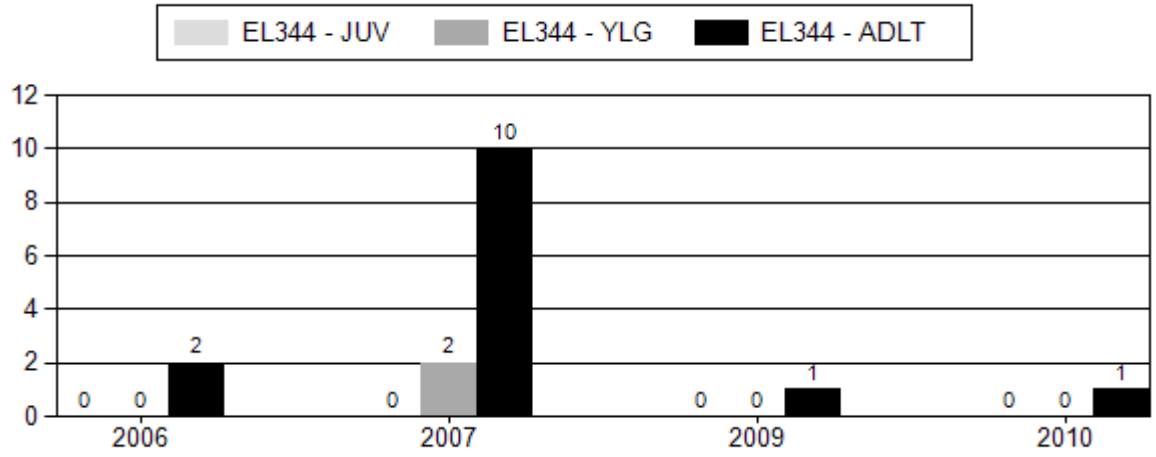
Postseason Animals per 100 Females



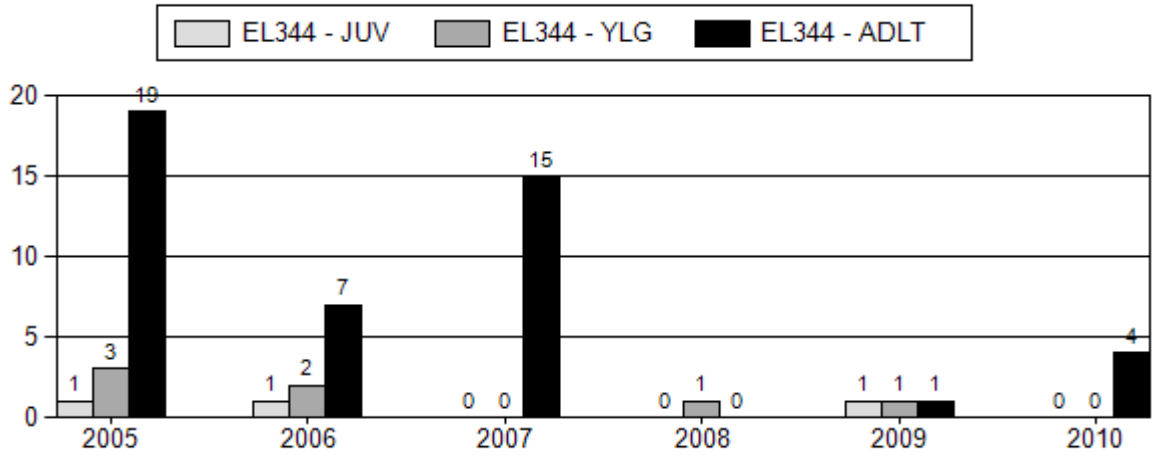
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



2005 - 2010 Postseason Classification Summary

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
															“	“		
															“	“		
															“	“		
															“	“		
															“	“		
															“	“		

2010 HUNTING SEASONS

Hunt Area	Add'l Hunt Areas	Type	Quota	Season Dates	Limitations
		5H	5Q\		
		5H	)OOULFGQWHUOHV		
		5H	)OOULFGQWHUOHV		

2010 EL344 Harvest by Hunt Area Summary

Area	Type	Active Lic/Htrs	Bull	Spike	Cow	Calf	Total	Success		Days/Harvest	Days	Licenses Sold
113 SOUTH ROCHELLE												
	Type 1	50	44	0	1	0	45	90%		6.6	297	51
	Type 4	22	0	0	15	6	21	95.50%		2.8	58	25
Pooled Total		72 (72)*	44	0	16	6	66	91.70%	(91.7%)*	5.4	355	
Pooled Resident		66	39	0	16	6	61	92.40%		5.2	315	
Pooled Nonresident		6	5	0	0	0	5	83.30%		8	40	
123 NORTH ROCHELLE												
	Type 4	44	0	0	15	0	15	34.10%		12.9	193	53
Pooled Total		44 (44)*	0	0	15	0	15	34.10%	(34.1%)*	12.9	193	
Pooled Resident		44	0	0	15	0	15	34.10%		12.9	193	
Pooled Nonresident		0	0	0	0	0	0		0	0		
2010 Hunt Area Total		116 (116)*	44	0	31	6	81	69.80%	(69.8%)*	6.8	548	129
2010 Herd Total		116 (116)*	44	0	31	6	81	69.80%	(69.8%)*	6.8	548	129

*Active Licenses

2005 - 2010 Harvest Age Structure

[illegible]

	Males									Females									Herd
Year	Juv	1	% *	2 ^	% **	Tot Aged ++	Not Aged +++	Unk	Tot Chkd	Juv	1	% *	2 ^	% **	Tot Aged ++	Not Aged +++	Unk	Tot Chkd	Tot
[illegible]																			
[illegible]																			
[illegible]																			
[illegible]																			
[illegible]																			
[illegible]																			

[illegible]

A [illegible]

2005 - 2010 Trend Count Summary

Year	Count Dates	Flight Time		
		Hours	Minutes	Number Counted
	[illegible]<			
	-$[illegible]<			
	-$[illegible]<			

2011 SEASON RECOMMENDATIONS
ROCHELLE HILLS ELK (EL 344)

HUNT AREA	TYPE	DATE OF SEASONS OPENS	CLOSES	LIMITATIONS
	4	Nov 5	Nov 30	Limited quota; 75 licenses antlerless elk
123	1	Sept 10	Sept 30	Limited quota; 50 licenses any elk
123	4	Oct 21	Oct 31	Limited quota; 75 licenses antlerless elk

SUMMARY OF CHANGES IN LICENSE NUMBER

Area	Type	Change from 2010
113	1	-50
	4	+50
123	1	+50
	4	+25
EL344 Total	**1**	**No change**
	4	**+75**

ARCHERY

113	Sept 1	Sept 30	See Section 4 of regulations
123	Sept 1	Sept 9	See Section 4 of regulations

MANAGEMENT EVALUATION

Current Post-season Objective: 400

2010 Post-season Population Estimate: 747 (+87%)

2011 Post-season Population Estimate: 728 (+82%)

Current Population Trend: Historically, this herd has been hunted conservatively, with Hunt Areas 113 and 123 being closed for two years at a time to allow for trophy bull growth. While this regimen of hunting seasons had the potential to produce high quality bulls, it also resulted in very high bull to cow ratios. This hunting regime has been adjusted the past two years to include a bull hunt every other year for each hunt area, along with a consistent low level of cow harvest. This change should help control the potential for climbing bull ratios, while still accounting for annual production and providing some improved bull quality.

Currently the Pop-II population model seems to reasonably simulate herd numbers, but does not accurately predict adult bull ratios when compared to observed trends. This may in part be due to immigration and emigration of individuals from the herd unit, which the model does not account for. Calf ratios appear to track fairly well with observed ratios, but sample sizes are not consistently met for classification surveys from year to year. For these reasons, the current model should be considered "low" quality and an estimation of population size at best. Different options are being explored to better align the model with overall observed data. In the mean time, field observations and aerial surveys show that higher levels of harvest in recent years have slowed herd growth but have not reduced the population size towards objective. Personnel are considering an upward adjustment in population objective for this herd, as the habitat seems to be supporting a higher number of elk. Support from private landowners and other interested parties will need to be achieved to justify an increase in the population objective.

Proposed 2011 Harvest: The projected harvest for 2011 includes 60 cows, and 15 calves and 40 bulls, for a total estimated harvest of 115 elk, which reflects a higher harvest than last year. The projected harvest assumes that all licenses are sold with similar participation compared to 2010. In recent years, poor range conditions in the southern portion of the Area 123 had forced elk to shift onto ungrazed private lands in the northeastern portions of the area. Over the past year, personnel and landowners have begun to notice that these elk are beginning to disperse again to the southern parts of the hunt area, as forage conditions have begun to improve. Additionally, landowners in the southern portions of Hunt Area 113 have expressed that they would like to continue harvest on cows in order to curb population growth. These landowners are also participating in riparian and sage grouse habitat improvement projects and do not desire high numbers of elk that may counteract their efforts to increase grass and forb cover in these areas.

Management Challenges: There is a concern that more frequent seasons for this herd could result in fewer licenses per season, such that most would be distributed to landowner applicants. Since there is significant public land, particularly in Hunt Area 113 (Thunder Basin National Grasslands), residents would find this unacceptable. The presence of outfitting and private access fees is another management challenge for this herd (specifically in Hunt Area 123), as it may cause a larger percentage of hunters to focus their efforts on a small area of public land, rather than distributing their hunting efforts more evenly across the entire herd. Accessing this portion of the herd to control growth is dependent upon cooperation with landowners. Shifts in wintering elk appear to have more to do with forage availability than other factors in both hunt areas. Finally, it is argued that the habitat may be able to support a herd that is larger than the current objective. While landowner opinions shift from year to year in Area 123 depending on hunter tolerance and competition of elk with livestock, landowners in Area 113 are beginning to more consistently request a reduction in elk numbers. Historically the reasoning has been that elk are competing with and consuming forage that landowners would prefer be used by their livestock. More recently however, landowners have begun to participate in federally-funded projects to improve riparian areas and increase nesting and brood-rearing habitat for sage grouse. With these projects underway, landowners are now concerned not only with livestock competition but also with habitat damage on these project areas. Unless moisture and range conditions improve over the next several seasons within the herd unit, it may be difficult to convince some landowners that an increase in the herd objective is justified.

Rochelle Hills Elk, Hunt Area 113 and 123. POP-II ver. 11.2.
Data from 1995 to 2011 Simulation from 2007 to 2011

Age Class	Init Pop. Male	Prop. Female	Presn Male	Mort% Female	Postsn Male	Mort% Female	Effort Set 1 Male	Effort Set 1 Female	Effort Set 2 Male	Effort Set 2 Female
0	40.0	40.0	45.0	45.0	20.0	20.0	1.00	1.00	1.00	1.00
1	37.0	37.0	1.0	1.0	5.0	5.0	0.40	1.00	0.70	1.00
2	15.0	20.0	1.0	1.0	2.0	2.0	1.00	1.00	1.00	1.00
3	8.0	14.0	1.0	1.0	2.0	2.0	1.00	1.00	1.00	1.00
4	5.0	10.0	1.0	1.0	2.0	2.0	1.00	1.00	1.00	1.00
5	3.0	8.0	1.0	1.0	2.0	2.0	1.00	1.00	1.00	1.00
6	2.0	6.0	1.0	1.0	2.0	2.0	1.00	1.00	1.00	1.00
7	1.0	5.0	1.0	1.0	2.0	2.0	1.00	1.00	1.00	1.00
8	1.0	4.0	1.0	1.0	5.0	2.0	1.00	1.00	1.00	1.00
9	1.0	4.0	1.0	1.0	10.0	2.0	1.00	1.00	1.00	1.00
10	1.0	3.0	1.0	1.0	40.0	5.0	1.00	1.00	1.00	1.00
11	1.0	3.0	1.0	1.0	60.0	10.0	1.00	1.00	1.00	1.00
12	0.0	2.0	1.0	1.0	80.0	20.0	1.00	1.00	1.00	1.00
13	0.0	2.0	1.0	1.0	100.0	30.0	1.00	1.00	1.00	1.00
14	0.0	2.0	1.0	1.0	100.0	50.0	1.00	1.00	1.00	1.00
15	0.0	1.0	1.0	1.0	100.0	80.0	1.00	1.00	1.00	1.00
16	0.0	1.0	1.0	1.0	100.0	100.0	1.00	1.00	1.00	1.00
17	0.0	1.0	0.0	0.0	0.0	0.0	1.00	1.00	1.00	1.00
18	0.0	1.0	0.0	0.0	0.0	0.0	1.00	1.00	1.00	1.00
19	0.0	1.0	0.0	0.0	0.0	0.0	1.00	1.00	1.00	1.00
20	0.0	1.0	0.0	0.0	100.0	100.0	1.00	1.00	1.00	1.00

Sum = 281.0 Estimated Sum = 950 Subadults: Ages 0 to 0

MSI Function is Linear

Bio-Year	Preseason MSI	Harvest // Des. Pop Size in NA Subadults#	Males#	Females#	Postseason MSI	Effort & Wound Set Used
1995	1.03	1	10	7	1.00	1
1996	0.13	0	29	3	1.70	1
1997	1.01	0	4	0	0.50	1
1998	1.13	0	15	15	0.25	1
1999	0.47	1	40	15	0.75	1
2000	0.75	0	5	9	0.70	1
2001	0.75	4	25	26	1.00	1
2002	0.75	0	13	9	0.20	1
2003	0.33	7	49	54	0.10	1
2004	0.70	3	37	130	0.20	1
2005	1.45	23	16	149	0.20	1
2006	1.38	20	43	91	0.20	1
2007	1.69	18	52	11	0.10	1
2008	0.91	9	0	73	0.60	1
2009	0.62	15	35	57	0.60	1
2010	1.07	6	44	31	0.60	1
2011	1.00	15	40	60	1.00	1
Set 1 Wounding Loss		10.%	10.%	10.%	Yearling Male 10.%	
Set 1 Wounding Loss		10.%	10.%	10.%	Yearling Male 10.%	

Bio-Year	Young/100 Fems Age 1 - 1	Young/100 Fems Age 2 - 2	Young/100 Fems Age 3 - 20	Sex Ratio: 50 : 50
1996	0.0	30.0	90.0	
1997	0.0	30.0	90.0	
1998	0.0	30.0	90.0	
1999	0.0	30.0	90.0	
2000	0.0	30.0	90.0	
2001	0.0	30.0	90.0	
2002	0.0	30.0	90.0	
2003	0.0	30.0	90.0	
2004	0.0	30.0	90.0	
2005	0.0	30.0	90.0	
2006	0.0	30.0	90.0	
2007	0.0	30.0	90.0	
2008	0.0	30.0	90.0	
2009	0.0	30.0	90.0	
2010	0.0	30.0	90.0	
2011	0.0	30.0	90.0	
2012	0.0	30.0	90.0	

POP-II (V1.2.5) Simulation Output Tables for E344 2010.gn1, 04/04/2011 11:15 am

Table 1. Population Size During Bio-Year for E344 2010.gn1 04/04/2011 11:15 am

Bio-Year	Start	Pre-Season	Post Season	End	%Growth
2007	950	733	644	636	-2.5
2008	926	802	712	673	3.1
2009	955	872	754	713	1.0
2010	964	836	747	713	2.0
2011	983	855	728	675	-5.1

Table 3. Harvest Mortality for E344 2010.gn1 04/04/2011 11:15 am

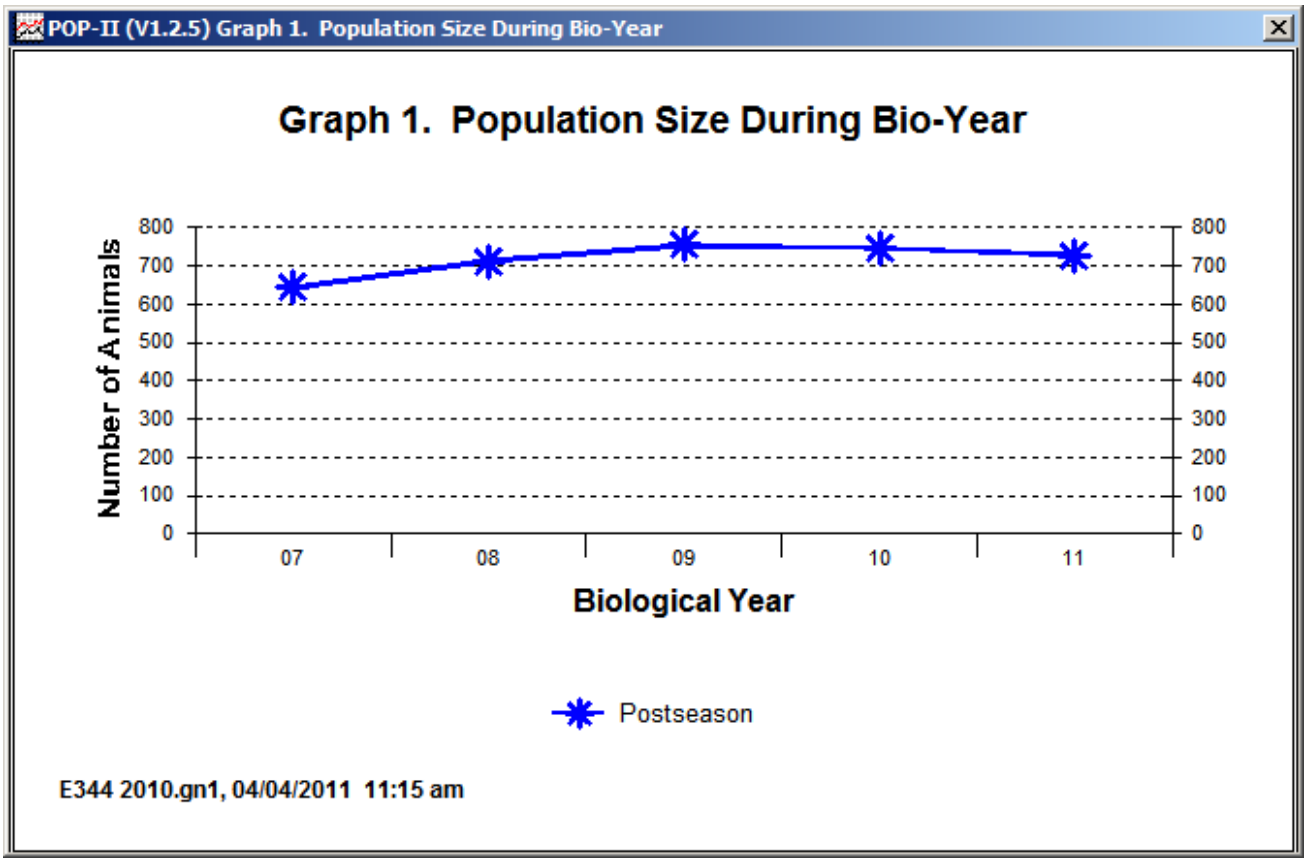
Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2007	18	52	11	81	11.0
2008	9	0	73	82	10.2
2009	15	35	57	107	12.3
2010	6	44	31	81	9.7
2011	15	40	60	115	13.5

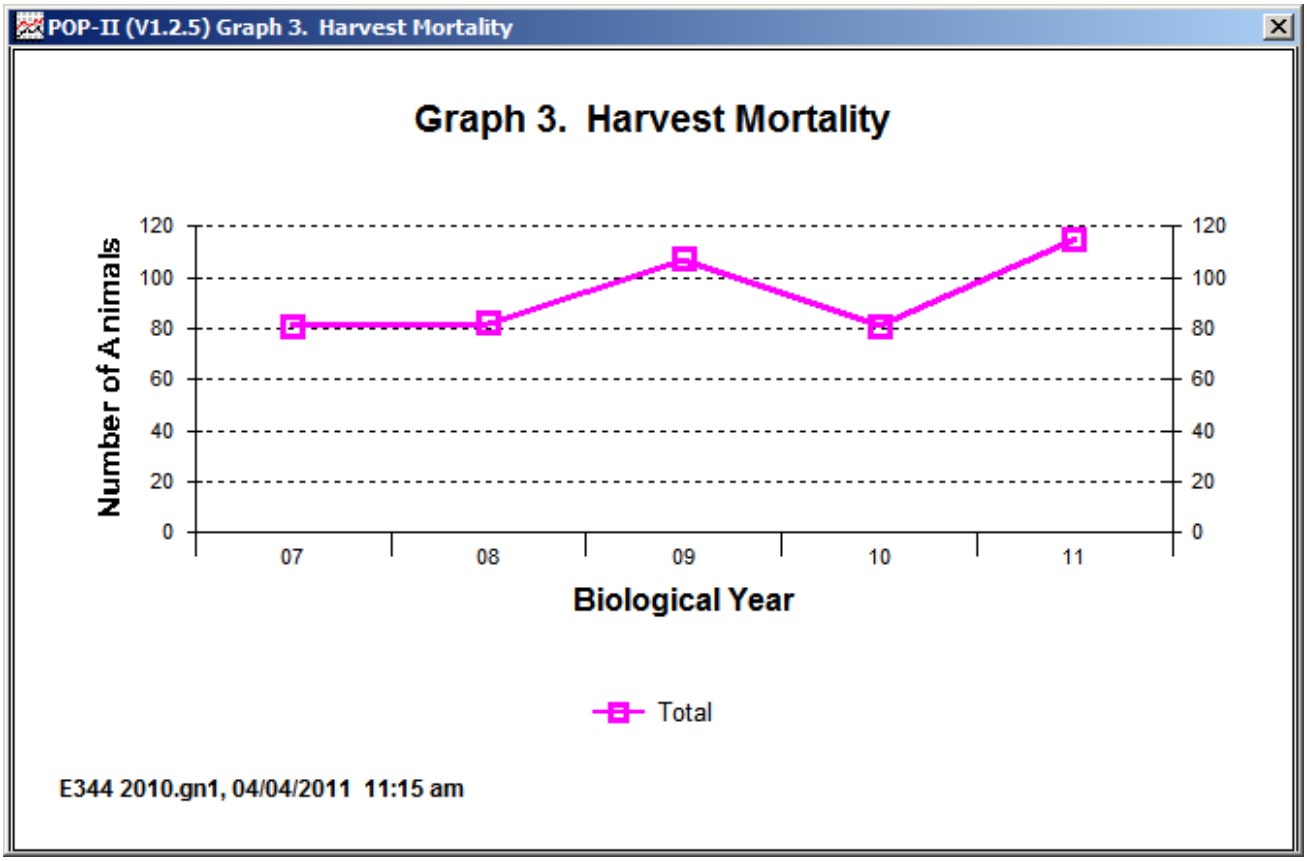
Table 4. Harvest Percentages for E344 2010.gn1 04/04/2011 11:15 am

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	Yearling Males
2007	27.8	20.9	2.6	11.05	28.0
2008	5.3	0.0	17.4	10.23	0.0
2009	7.4	12.7	14.5	12.27	12.1
2010	4.6	14.2	7.8	9.69	12.5
2011	10.1	13.1	15.0	13.46	7.9

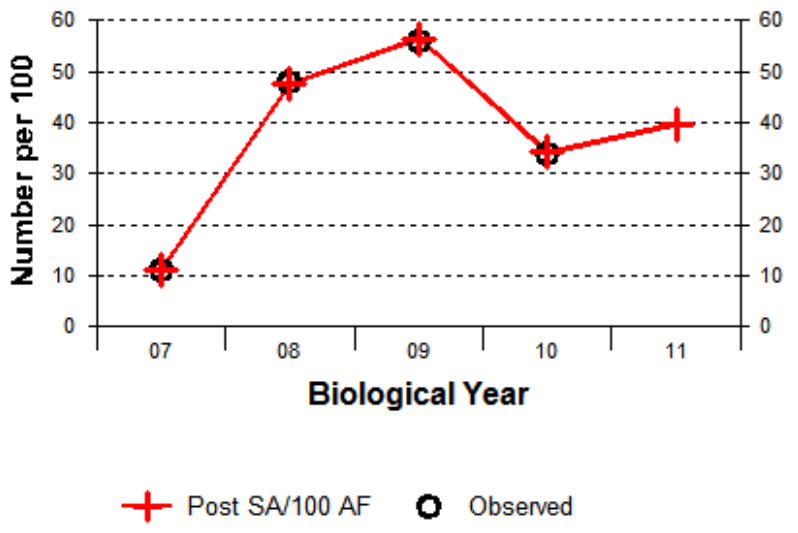
Table 7. Postseason Ratios for E344 2010.gn1 04/04/2011 11:15 am

Bio-Year	Subadults /100 1+F	2+ Males /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2007	11.1	20.9	26.3	47.2
2008	47.5	55.8	6.4	62.3
2009	56.5	51.6	19.9	71.6
2010	34.2	51.3	20.8	72.2
2011	39.7	63.5	15.1	78.7


POP-II (V1.2.5) Graph 1. Population Size During Bio-Year
Graph 1. Population Size During Bio-Year
Number of Animals
800
700
600
500
400
300
200
100
0
07
08
09
10
11
Biological Year
Postseason
E344 2010.gn1, 04/04/2011 11:15 am


POP-II (V1.2.5) Graph 3. Harvest Mortality
Graph 3. Harvest Mortality
Number of Animals
120
100
80
60
40
20
0
07
08
09
10
11
Biological Year
Total
E344 2010.gn1, 04/04/2011 11:15 am

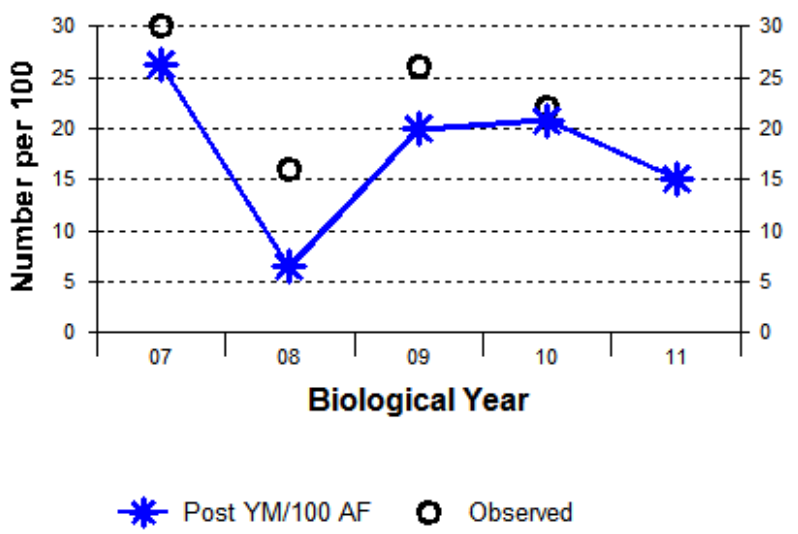
POP-II (V1.2.5) Graph 7. Postseason Ratios



E344 2010.gn1, 04/04/2011 11:15 am, Correlation (R) = 1, GOF = 0.99

YR	SIM	OBS
07	11	11
08	48	48
09	57	56
10	34	34
11	40	-----
	AVERAGES	
of Col.	38	
of Pair	37	37

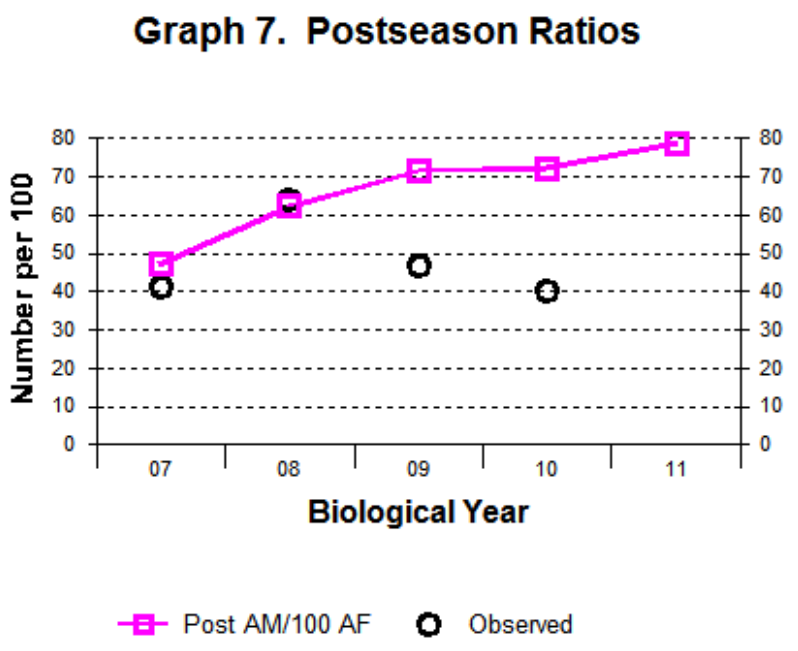
POP-II (V1.2.5) Graph 7. Postseason Ratios



E344 2010.gn1, 04/04/2011 11:15 am, Correlation (R) = 0.934, GOF = 0.745

YR	SIM	OBS
07	26	30
08	6	16
09	20	26
10	21	22
11	15	-----
	AVERAGES	
of Col.	18	
of Pair	18	24

POP-II (V1.2.5) Graph 7. Postseason Ratios

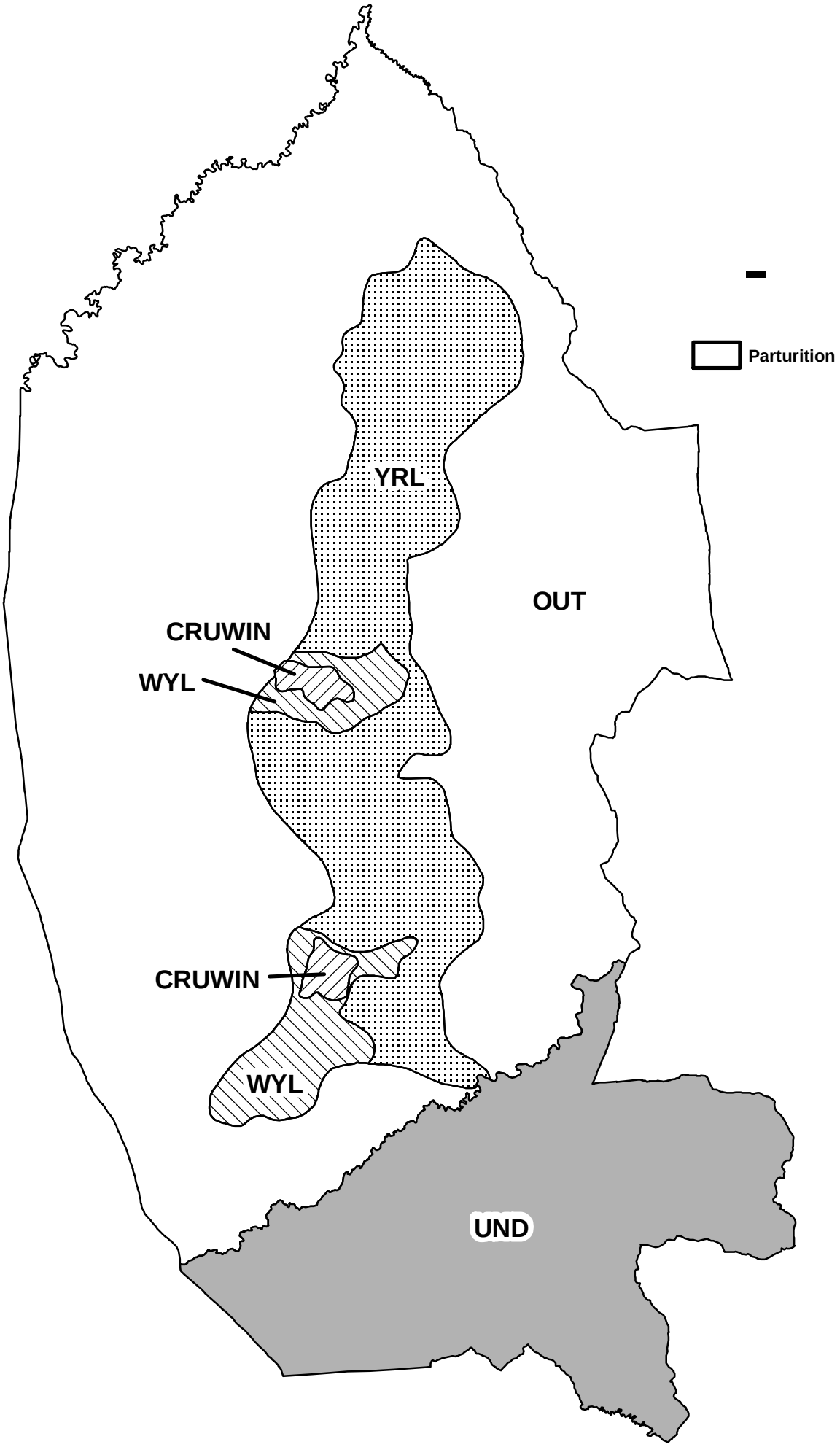


E344 2010.gn1, 04/04/2011 11:15 am, Correlation (R) = 0.044, GOF = 0.573

YR	SIM	OBS
07	47	41
08	62	64
09	72	47
10	72	40
11	79	-----

AVERAGES

of Col.	66	
of Pair	63	48


Parturition
YRL
OUT
CRUWIN
WYL
CRUWIN
WYL
UND