2011 - JCR Evaluation Form

SPECIES: White tailed Deer | PERIOD: 6/1/2011 - 5/31/2012

HERD: WD303 - POWDER RIVER

HUNT AREAS: 17-20, 23-33, 163, 169 | PREPARED BY: TIM THOMAS

	2006 - 2010 Average	2011	2012 Proposed
Population:	15,754	16,610	12,722
Harvest:	5,053	5,684	6,000
Hunters:	7,003	6,571	6,800
Hunter Success:	72%	87%	88%
Active Licenses:	7,999	8,773	9,000
Active License Percent:	63%	65%	67%
Recreation Days:	34,221	35,968	38,500
Days Per Animal:	6.8	6.3	6.4
Males per 100 Females	34	33	
Juveniles per 100 Females	68	65	

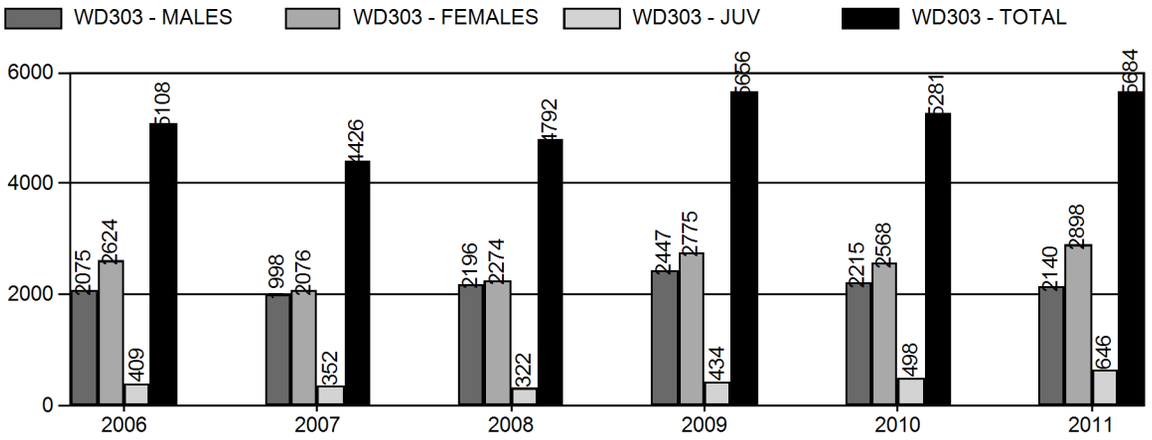
Population Objective:	8,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	108%
Number of years population has been + or - objective in recent trend:	10
Model Date:	04/6/2012

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

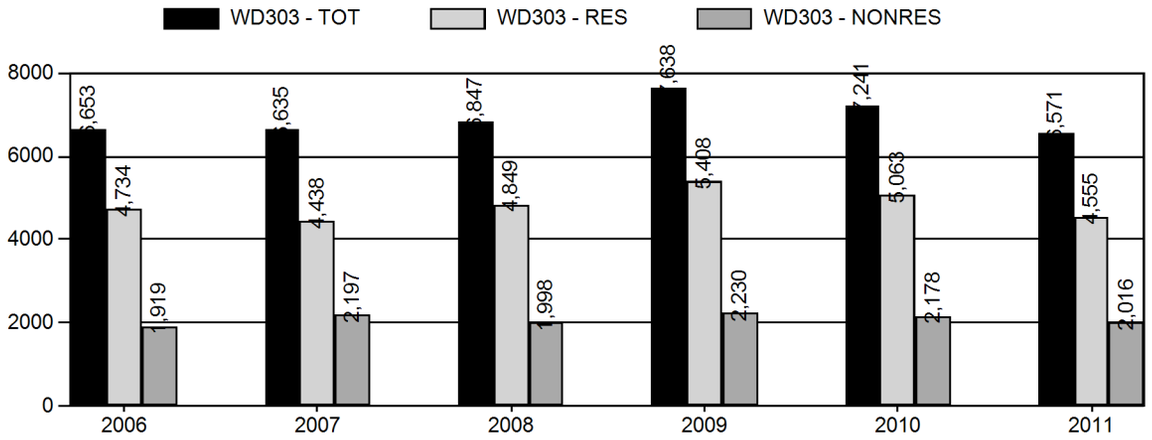
	JCR Year	Proposed
Females ≥ 1 year old:	26%	33%
Males ≥ 1 year old:	37%	48%
Juveniles (< 1 year old):	11%	11%
Total:	25%	31%
Proposed change in post-season population:	-19%	-26%

Population Size - Postseason

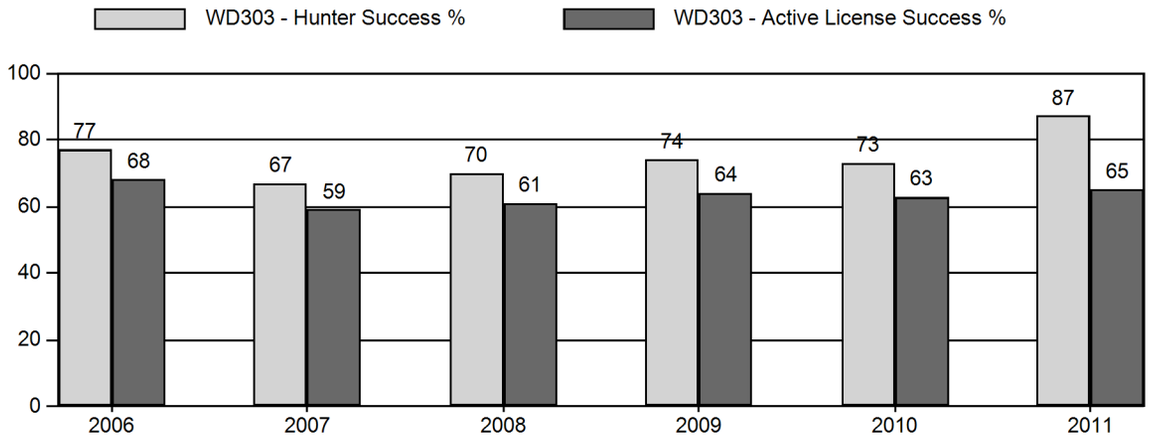
Harvest



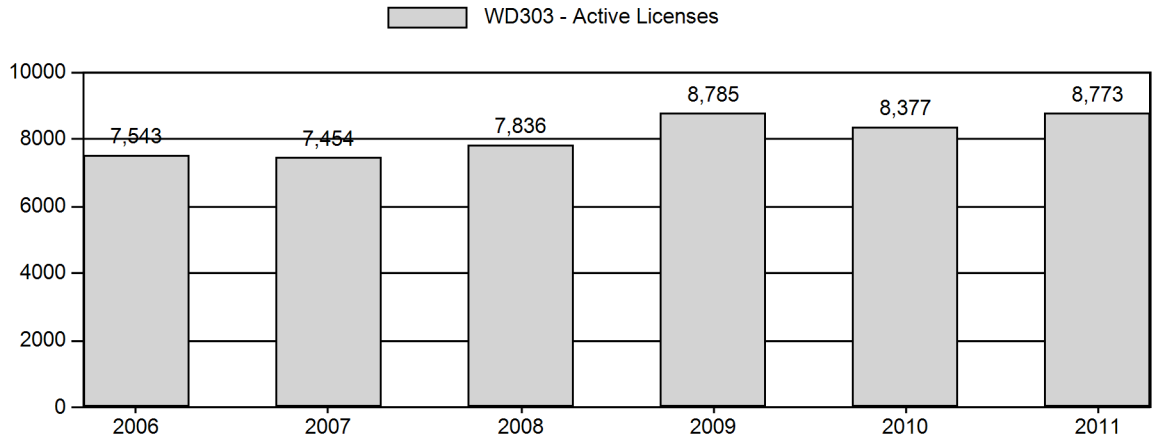
Number of Hunters



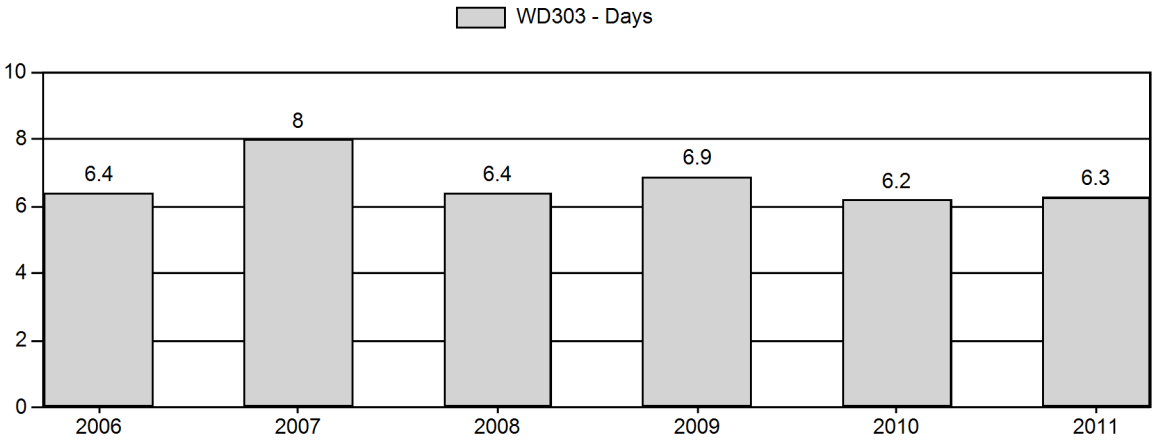
Harvest Success



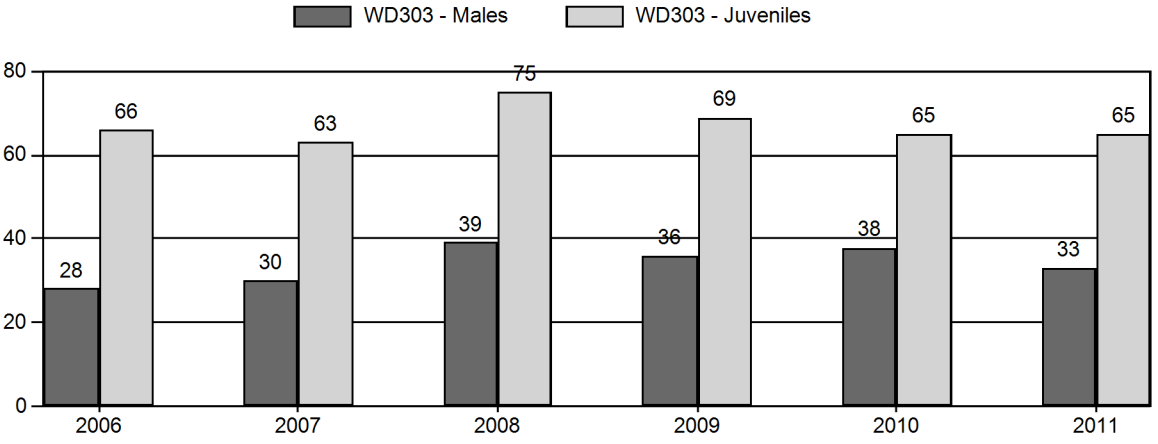
Active Licenses



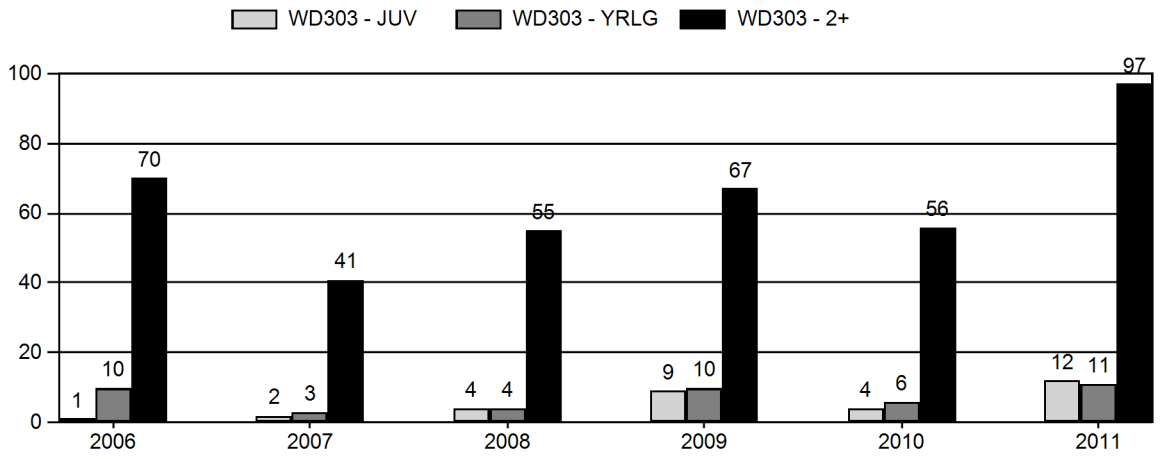
Days per Animal Harvested



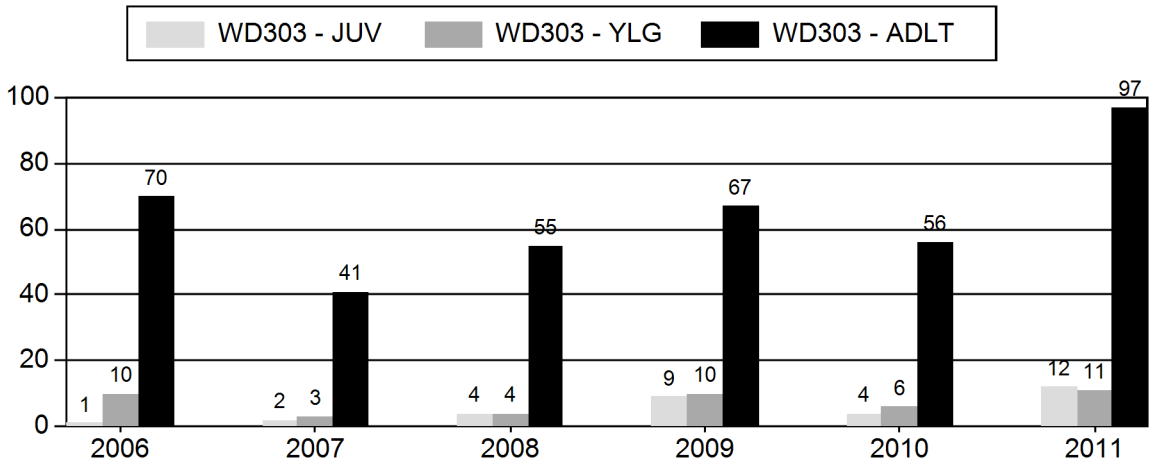
Postseason Animals per 100 Females



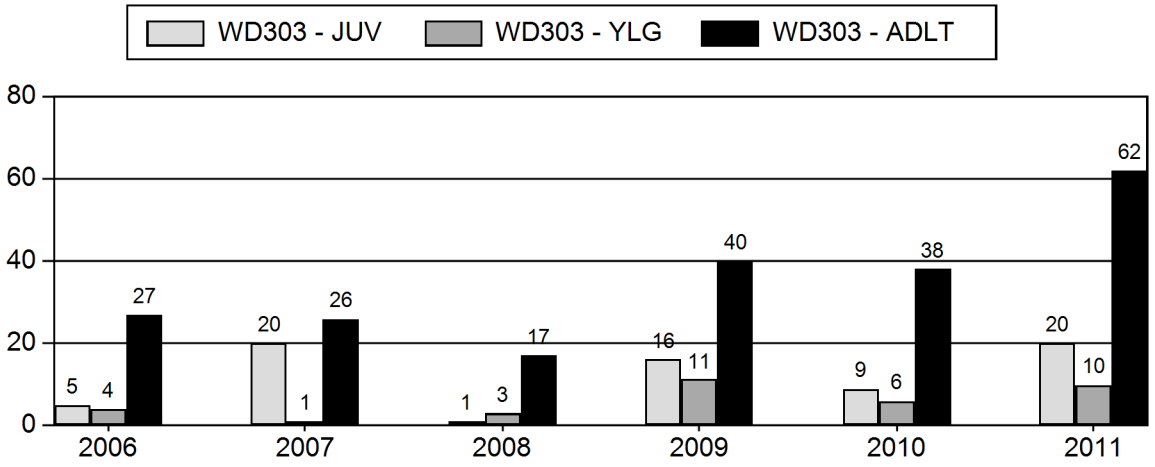
Age Structure of Field Checked Males



Age Structure Data (Field and Laboratory) - Male



Age Structure Data (Field and Laboratory) - Female



INTRODUCTION

The Powder River White-tailed Deer herd unit encompasses a large portion of north-central Wyoming. The Data Analysis Unit (DAU) contains deer Hunt Areas 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 163 and 169, corresponding to the Sheridan Wildlife Region. The DAU contains 8,610 sq. mi. total area, but only about 10% (880 sq. mi.) is currently delineated as occupied habitat. The occupied area and seasonal range maps for this herd unit are outdated and need revision, however other higher priority projects have precluded review and revision of seasonal ranges for this herd unit. The postseason population management objective is 8,000 white-tailed deer.

Habitats found in the DAU include alpine, mixed coniferous forest, mixed deciduous forest, riparian, mixed mountain shrub and woody draw communities, sagebrush-grasslands, grasslands, reclaimed mined lands, and agricultural lands. White-tailed deer are found mostly along riparian areas, agricultural crop and grass lands, and mountain shrub/woody draw communities. The majority of these habitat communities are located on private lands or isolated public lands. Very few white-tailed deer are found in the montane habitats of the Big Horn Mountains. Private land comprises about 88% of the currently delineated occupied habitat. The herd unit contains the Amsden Creek, Bud Love, Kerns and Ed O. Taylor Wildlife Habitat Management Units (WHMA). These WHMAs are managed primarily for elk winter range, but they do provide some habitats and hunting opportunity for white-tailed deer.

White-tailed deer are native to Wyoming and were present in the Sheridan area pre-settlement. There is archeological evidence of white-tailed deer from around 1420-1500 at what is thought to be a Crow Indian hunting camp along Big Goose Creek (Pauley and Lindzey 1983). Whitetail populations declined significantly post-settlement, and deer were relocated from the Black Hills into this herd unit in the late 1940s and early 1950s. In 1949, 19 white-tailed deer captured near Sand Creek in Crook County were released near Story and 45 deer were released southeast of Kaycee. In 1950, another relocation took place near Kaycee, but the exact number of deer released is unknown. These relocated deer, along with deer from scatter remnant populations, appear to have quickly expanded and re-populated this herd unit.

The current management strategy for white-tailed deer is to provide recreational hunting opportunity and to manage numbers based on landowner tolerance by providing liberal season structures. Hunting buck whitetails has become popular and access to private land is generally limited for antlered harvest. Several landowners charge a trespass fee or have leased their property to outfitters for buck white-tailed deer hunting. Landowners have been reasonable about allowing access for antlerless harvest, especially for local hunters. Hunting season strategies have been very liberal in recent years, with up to 47 day any white-tailed deer seasons and extended doe/fawn seasons (up to 112 days of hunting opportunity including archery season and extended doe/fawn seasons).

Urban development is a major problem concerning white-tailed deer management in Sheridan and Johnson counties. Subdivisions near Sheridan, Bighorn and Buffalo are generally in areas currently inhabited by white-tailed deer. Urban development often makes it unsafe to hunt deer with firearms, increase damage problems to ornamental vegetation, and reduce quality of habitats due to over-utilization. Vehicle-deer collisions result in damage to vehicles, dead or injured deer, human safety concerns and increased management costs for the WGFD. The 2012 legislature passed legislation allowing the Wyoming Game and Fish Commission to regulate the baiting of big game animals. The Department will draft regulations to implement this statute mostly like for the 2013 hunting seasons. This will allow the Department to authorize baiting big game animals in developed rural areas, such as white-tailed deer, into areas where they can be safely harvested, providing managers another option to control deer numbers.

Coal-bed Methane / Natural Gas (CBM or CMNG) development is occurring across a large portion of this herd unit. Impacts due to CBM development are unknown at this time. Increased roads, water storage and discharge, habitat degradation, vegetation disturbance and affects from an increased human presence (e.g., increased housing development, increased recreational demand, and increased traffic) will likely have some adverse impacts to this population.

WEATHER

For a detailed analysis of the 2009-10 weather conditions, refer to Appendix A of the 2009 Annual Big Game Herd Unit Reports for the Sheridan Region. Generally, the summer of 2009 saw normal to above normal precipitation with slightly below normal temperatures. This resulted in some increased forage production, but a lot of cool season grasses were stunted due to an extremely dry May. Precipitation was below average for all the fall and winter months, except for October, which saw above normal precipitation. Temperatures were near or above normal, except for October and December, which saw below normal cold temperatures. This resulted in an open dry winter for the most part. April saw near normal temperatures and precipitation, while May saw double the normal precipitation, resulting in a good start for forage production for the 2010 summer. As of May 29, 2010, the Palmer Drought Severity Index indicated that this area was under average conditions.

For a detailed analysis of the 2010-2011 weather conditions, refer to Appendix A of the 2010 Annual Big Game Herd Unit Reports for the Sheridan Region. Generally, the summer of 2010 saw normal (June) to below normal precipitation (July-August) with near normal temperatures. This resulted in some increased forage production early in the summer. Precipitation was below average for September and October, resulting in a very open, mild fall for hunting. November through March saw normal to slightly below normal precipitation. Temperatures were near normal for most months, except for October (above normal) and February (below normal). Starting in the middle of November, winter conditions were more normal as compared to recent years, which had been fairly mild and open. April and May saw near normal temperatures and above normal precipitations, resulting on a good start for forage production for the 2011 summer. As of May 28, 2011, the Palmer Drought Severity Index indicated that this area was under average conditions.

Generally, the summer of 2011 saw very high precipitation early (May), with normal to below normal precipitation the rest of the summer, resulting in a good forage production year. Temperatures were about average through the summer. The fall start warm and dry, with very little precipitation in September. This was more than made up for in October, with twice the average precipitation, most right around the opening of deer and elk season on the Bighorns. November also saw increased precipitation with below average temperatures. The winter moderated, with below average precipitation in January, and warmer than average temperatures in January and February. Spring has been dry, with below average precipitations and normal to above normal temperatures. As of May, 2012, the Palmer Drought Severity Index indicated that this area was under moderate drought conditions.

The Palmer Drought Severity Index attempts to measure the duration and intensity of the long-term drought-inducing circulation patterns. Long-term drought is cumulative, so the intensity of drought during the current month is dependent on the current weather patterns plus the cumulative patterns of previous months.

HABITAT CONDITIONS/ASSESSMENT

Habitats in this herd-unit are diverse, and include: cottonwood/willow, wooded draw, mixed grass prairie, agricultural cropland and montane forest communities. Some herd-unit habitats are bisected by rural developments and other human activities.

Within this herd-unit, white-tailed deer utilize riparian and riparian-like deciduous forests that are typically adjacent to irrigated croplands. There are indications that white-tailed deer are having a profound impact on these forests by high-lining mature woody plants and surprising the re-establishment of palatable species (e.g. serviceberry and native plum). More durable shrubs like chokecherry, silver buffaloberry and hawthorn persist but overall shrub diversity has declined.

White-tailed deer populations maintain a high nutritional plane by foraging on croplands during the summer and fall seasons. Once croplands (e.g. alfalfa and small grains) are harvested or senesce, high-density white-tailed deer populations revert to these native woodlands, which constitute only about 1-3 percent of

the landscape. Live twigs that are within their reach can often approach 100 percent utilization. Sprouts and seedlings are usually surpressed or eliminated by deer. The same issue involves herbaceous vegetation, where more palatable forb species are lacking within high-density white-tailed deer habitats.

Wooded draws represent a unique vegetative community and because of their limited extent over broad areas of mixed-grass prairie, they offer diverse breeding areas for a large array of birds and mammals. Most of these shrubs/trees are fire dependent and are resprouters. With few fires occurring, many patches are becoming over-mature and decadent. This reduces the palatability of browse and fewer berries are produced. The WGFD and conservation partners have provided grant dollars to fund prescribe burning of these communities, but there's considerable consternation about the potential failure of these restoration efforts due to excessive white-tailed deer browsing. This presents a challenge for managers. Most white-tailed deer occur on private lands. To be successful, we'll need to educate landowners about this threat and enlist their assistance in managing deer population to allow wooded draw restoration.

Other than the condition of wooded draws, habitat conditions for white-tailed deer have been favorable due to above-average spring precipitation since 2007. Despite the rainfall, we still saw an epidemic of grasshoppers in 2009. This resulted in decreased forage availability as swarms of grasshoppers competed for the most nutritious forbs. In anticipation of another grasshopper epidemic in 2010, County Weed and Pest Districts and cooperating landowners sprayed extensive areas to control them. This prevented another large-scale outbreak. Some localized areas still experiences large numbers of grasshoppers.

POPULATION

The Powder River White-tailed Deer Herd Unit is a distinct white-tailed deer population generally separated from other white-tailed deer populations by natural or man-made barriers. Some interchange does occur with the State of Montana to the north, but these movements are thought to be well below the 10% threshold for herd unit designation. This herd is composed of scattered populations separated by poor quality habitats.

The postseason population management objective for this herd unit was set at 8,000 white-tailed deer in 1980. The actual population has likely exceeded the management objective most of the past 15+ years.

CLASSIFICATION DATA – POSTSEASON

During November and December of each year, local wildlife biologists and game wardens conduct post-season classifications surveys. Surveys are usually conducted from mid-November through December 15, prior to antler drop by male deer. Classification surveys are conducted using ground and aerial survey methods. Ground surveys are conducted along roads where deer are observed using binoculars or spotting scopes. Aerial surveys are conducted from helicopters, incidental to mule deer surveys, flying habitats known to contain deer. If possible, aerial surveys are conducted when there is snow cover to provide contrast and increase the likelihood of detection of deer. Surveys, especially ground surveys, are generally conducted during early morning or early evening hours when white-tailed deer activity increases the probability of detection. All deer observed are assigned to age and sex classes, specifically juvenile, yearling male, adult male (≥2 years old) and adult female (≥ 1 year old). UTM locations are recorded for each observation using GPS units. Surveys are designed to collect classification data at the 80% confidence level. Protocol calls for sampling to occur across the occupied habitats of the herd unit without repetition to get representative data, which can result in sampling more than the number required for statistical confidence.

During this reporting period (2009-2011), we observed an average of 66 fawns:100 does, well below the long-term average (n = 30 years) of 77 fawns:100 does. The range of the past three years was 65 to 69 fawns:100 does, well within the range of variability over the past 30 years (range = 63-94). This level of production is generally considered adequate to maintain or grow white-tailed deer populations. Fawn production has decreased during the past 10 years (2002-2011), averaging 72 fawns:100 does, compared

to 79 fawns:100 does the previous 10 years (1991-2001). This could a function of density dependent factors as well as reduced quality habitat due to drought conditions during most of the past 10 years. The decline in fawn production observed in 2009 (69 fawns:100 does compared to 75 fawns:100 does in 2008) could be a function of severe winter weather conditions in February and March of that year, including three major snow storms in as many weeks.

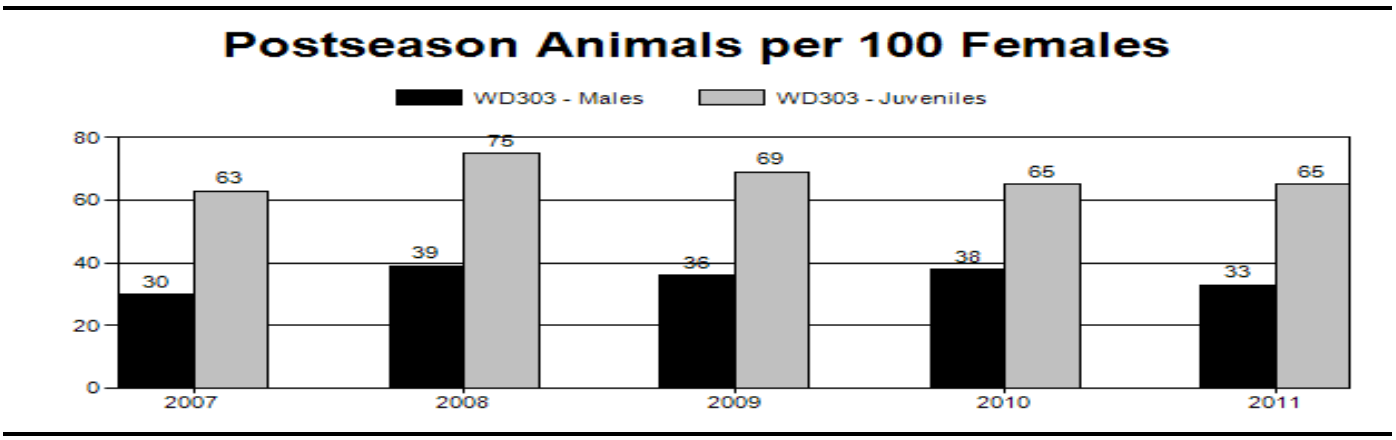


Figure 1. Classification ratios of males and juveniles per 100 adult females observed in the Powder River White-tailed Deer Herd Unit during post-season classifications surveys from 2007-2011.

Observed bucks per 100 does varied from 30:100 to 39:100 (average=35 bucks:100 does) during this reporting period. We have observed an average of 31 bucks:100 does over the long-tern (n = 30 years). This is more than a sufficient number of males required to assure adequate breeding of receptive females as well as to provide abundant recreational hunting opportunities.

Recruitment of deer into the adult population, as measured by yearling bucks:100 does, has averaged 13 yearling bucks:100 does during the reporting period, which is about average over the long-term. During classification surveys, male deer ≥ 1 year old were assigned to yearling or adult cohorts. Placement of a buck into a yearling versus an adult cohort is subjective and influenced by several factors, including: light conditions, survey technique (i.e., ground vs. aerial survey), training and experience of observer(s), and annual antler development which is influenced by annual nutritional quality and quantity. The 2010 and 2011 winters were fairly mild and open, with only short periods of severely cold temperatures and little to no prolonged snow cover. Snow seldom stayed for more than a week or two at lower elevations. This likely resulted in below average over-winter mortality of fawns and average to above average recruitment of individuals into the adult population.

We have established two general management categories for big game species in Wyoming – recreational management and special management. Recreational management is generally intended to provide maximum recreational hunting opportunities with less consideration for quality of animals. Special management is generally intended to provide less recreational opportunity while emphasizing animal quality. Management of white-tailed deer in this herd unit is considered recreational management. As such, we try to manage for a postseason ratio of 20-29 bucks:100 does, which will assure sufficient males to breed available females. Hunter opportunity is a function of license allocation, animal distribution and access, among other factors. In this herd unit, we allocate sufficient licenses to provide abundant recreational opportunity, but access and white-tailed deer distribution can make it difficult to harvest deer, especially buck white-tailed deer. As such, we usually exceed the recreational management guidelines. With the general desire to reduce this population, we will maintain a recreation management status for this herd unit.

Table 1. Summary of post-season classification surveys during 2002-2011.

2002 - 2011 Postseason Classification Summary

for White-tailed Deer Herd WD303 – POWDER RIVER

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Ad	Tot	%	Total	%	Total	%	Tot Cls	Cls Obj	Ylng	Ad	Tot	Conf Int	100 Fem	Conf Int	100 Adult
2002	12,643	108	108	216	14%	722	48%	558	37%	1,496	1,626	15	15	30	± 2	77	± 5	59
2003	13,970	135	196	331	13%	1,174	45%	1,103	42%	2,608	2,142	11	17	28	± 2	94	± 4	73
2004	16,264	83	128	211	13%	832	52%	553	35%	1,596	1,285	10	15	25	± 2	66	± 4	53
2005	14,881	107	160	267	15%	820	47%	660	38%	1,747	1,790	13	20	33	± 3	80	± 5	61
2006	11,643	143	217	360	14%	1,286	52%	847	34%	2,493	1,244	11	17	28	± 2	66	± 3	51
2007	13,575	139	257	396	16%	1,319	52%	836	33%	2,551	1,200	11	19	30	± 2	63	± 3	49
2008	13,983	173	312	485	18%	1,251	47%	936	35%	2,672	1,631	14	25	39	± 2	75	± 4	54
2009	18,312	180	328	508	18%	1,393	49%	9634	34%	2,865	1,435	13	24	36	± 3	69	± 4	51
2010	21,258	134	230	364	19%	946	49%	619	32%	1,929	1,349	14	24	38	± 3	65	± 4	47
2011	16,610	162	267	429	17%	1,302	50%	851	33%	2,582	1,286	12	21	33	± 2	65	± 3	49

TREND COUNTS

Trend counts are not conducted in this herd unit.

POPULATION MODELING

Computer based population simulation models are one tool used to analyze and estimate the population dynamics of big game herds. We have constructed a population simulation model for this herd unit using POP-II for Windows (ver. 1.2.5) to estimate a postseason population. Several assumptions go into the construction of these models and there may be bias errors associated with entered data. Inconsistent data, unknown population dynamics (i.e., predation, disease), and annual variations in production and survival rates all make population simulation difficult at best. This is the last year the POP-II simulation model will be used. We are switching to a spreadsheet based model developed initially by Dr. Gary White, Colorado State University, for the Colorado Division of Wildlife.

The current simulation model was reconstructed and updated in 2003 to incorporate newly adopted statewide standardized modeling parameters. The current model is constructed with 15 age cohorts (0-14 years old). Fecundity rates are standardized at 180 fawns born per 100 females > 1 year old. Pre and post-season mortality severity index (MSI) multipliers are standardized by sex and age cohort. The model is aligned with observed annual postseason fawn to doe ratio by adjusting preseason MSI values. The model tracks observed annual postseason buck to doe ratio by adjusting postseason MSI values. We have generally collected adequate classification sample sizes at or near the 80% confidence level. Estimated harvest data are provided by an independent survey company based on a stratified statistical survey of hunters.

The current model appears to reasonably simulate the population dynamics of this herd. The model is aligned with observed doe:fawn ratios, and reasonably tracks observed buck:doe ratios. Observed and perceived population dynamics seem to correlate with the model predictions. The model has not been adjusted for disease outbreaks or other mortality factors such as vehicle collisions. EHD, blue tongue and adenovirus, all hemorrhagic viral diseases, have been documented within this or adjoining herd units.

These diseases are not considered a significant mortality factor for white-tailed deer during most years and are likely accounted for in the standardized postseason mortality rates established in the model. They can be significant mortality factors in certain years, such as 2008. Numerous deer are killed in deer-vehicle collisions throughout the herd unit annually. This mortality can be substantial in some areas.

While the current model appears to simulate the perceived population dynamics of this herd, it has not been validated with an independent population estimate and is considered moderately reliable. Observed and perceived population dynamics seem to correlate with the model predictions. The simulation model predicts a 2011 post-season population of 12,722 white-tailed deer, well above the management objective of 8,000 deer. This population likely peaked in recent years in 2008 and has decreased since that time, due to increased harvest, reduced production and recruitment, and hemorrhagic disease outbreak in 2008. We project that this population will continue to decrease over the next several years under current harvest strategies.

HUNTING SEASON

2011 HUNTING SEASONS

WD303 - POWDER RIVER

Hunt Area	Add'l Hunt Areas	Type	Quota	Season Dates	Limitations
17		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
17		GEN		10/01 - 10/20	Any white-tailed deer
17		GEN		11/01 - 11/30	Any white-tailed deer
17	18	Type 6	50	10/01 - 10/31	Reduced Price doe/fawn
18		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
18		GEN		10/01 - 10/20	Any white-tailed deer
18		Type 3	25	10/01 - 10/31	Any White-Tailed Deer
18		Type 8	25	10/01 - 10/31	Reduced Price doe/fawn white-tailed Deer
19		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
19		GEN		10/01 - 10/20	Any white-tailed deer
19		GEN		11/01 - 11/15	Any white-tailed deer
19	20	Type 6	50	10/01 - 10/31	Reduced Price doe/fawn
20		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
20		GEN		10/01 - 10/20	Any white-tailed deer
20		GEN		11/01 - 11/15	Any white-tailed deer
23		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
23		GEN		10/01 - 10/14	Antlered deer off private land, any deer on private land

Hunt Area	Add'l Hunt Areas	Type	Quota	Season Dates	Limitations
23		GEN		11/01 - 11/30	Any white-tailed deer
23	26	Type 3	100	11/01 - 11/30	Any White-Tailed Deer
23	26	Type 6	1000	10/01 - 12/18	Reduced Price doe/fawn
24		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
24		GEN		10/15 - 10/31	Antlered deer off private land, any deer on private land
24		GEN		11/01 - 11/30	Any white-tailed deer
24		GEN		12/01 - 12/18	Antlerless white-tailed deer
24		Type 3	200	11/01 - 11/30	Any White-Tailed Deer
24		Type 6	1500	09/01 - 12/18	Reduced Price doe/fawn
24		Type 8	1500	09/01 - 12/18	Reduced Price doe/fawn white-tailed Deer
25		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
25		GEN		10/15 - 10/31	Any white-tailed deer
25		Type 6	50	10/15 - 10/31	Reduced Price doe/fawn
26		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
26		GEN		10/01 - 10/14	Antlered deer off private land, any deer on private land
26		GEN		11/01 - 11/30	Any white-tailed deer
27		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
27		GEN		10/15 - 10/31	Any deer
27		GEN		11/01 - 11/30	Any white-tailed deer
27		GEN		12/01 - 12/18	Antlerless white-tailed deer
27		Type 6	50	10/15 - 12/18	Reduced Price doe/fawn
27		Type 8	1000	09/01 - 09/30	Reduced Price doe/fawn white-tailed Deer
27		Type 8	0	10/15 - 12/18	Reduced Price doe/fawn white-tailed Deer
28		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
28		GEN		10/15 - 10/31	Any white-tailed deer
29		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
29		GEN		10/01 - 10/14	Antlered deer off private land, any deer on private land

Hunt Area	Add'l Hunt Areas	Type	Quota	Season Dates	Limitations
29		GEN		11/01 - 11/15	Any white-tailed deer
29		GEN		11/16 - 12/18	Antlerless white-tailed deer
29		Type 6	100	10/01 - 11/30	Reduced Price doe/fawn
29		Type 8	500	09/01 - 12/18	Reduced Price doe/fawn white-tailed Deer
30		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
30		GEN		10/15 - 10/31	Any deer
30		GEN		11/01 - 11/30	Any white-tailed deer
30		GEN		12/01 - 12/18	Antlerless white-tailed deer
30		Type 6	100	10/15 - 11/30	Reduced Price doe/fawn
30		Type 8	500	10/15 - 12/18	Reduced Price doe/fawn white-tailed Deer
31		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
31		GEN		10/01 - 10/10	Antlered deer
32		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
32		GEN		10/15 - 10/31	Any deer
32		GEN		11/01 - 11/15	Any white-tailed deer
33		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
33		GEN		10/15 - 10/31	Any deer
33		GEN		11/01 - 11/15	Any white-tailed deer
33		GEN		11/16 - 12/18	Antlerless white-tailed deer
33		Type 6	100	10/15 - 11/15	Reduced Price doe/fawn
33		Type 8	500	09/01 - 12/18	Reduced Price doe/fawn white-tailed Deer
163		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
163		GEN		10/15 - 10/21	Any white-tailed deer
163		GEN		11/01 - 11/15	Any white-tailed deer
169		ARCH		09/01 - 09/30	Refer to Section 3 of this Chapter
169		GEN		10/15 - 10/21	Any white-tailed deer
169		GEN		11/01 - 11/15	Any white-tailed deer

HARVEST

White-tailed deer harvest in this herd unit is by general license in all hunt areas, limited quota any white-tailed deer licenses (Type 3) in select hunt areas, and limited quota doe/fawn license in most hunt areas. Resident hunters can hunt in any open hunt area with a general license. Non-resident hunters are restricted by limited quota non-resident regional licenses. This herd unit is split between non-resident deer Region C (Hunt Areas 17, 18, 19, 20, 23, 26, 29, 31) and non-resident deer Region Y (Hunt Areas 24, 25, 27, 28, 30, 32, 33, 163, 169). Non-residents can hunt in any open hunt area within the region for which they are licensed with a general license.

Hunter can also hunt any white-tailed deer on Type 3 limited quota licenses in Hunt Areas 18, 23, 24, and 26. This is often considered an "additional" license as a hunter can possess both a general license and a Type 3 licenses. These licenses are often used by outfitted hunters during November as most white-tailed deer are found on private lands within this herd unit.

Hunters can also harvest antlerless deer in all hunt areas on a general license (any deer season), or on Type 6 or 8 (reduced priced doe/fawn) licenses in select hunt areas. Type 6 or 8 licenses are issued to provide recreational hunting opportunity, meet population management objectives, and to address damage/landowner tolerance issues. Prior to the 2011 season, hunters could purchase up to 4 reduced priced doe/fawn licenses in this herd unit. Starting in 2011, these license types were unlimited after the initial draw process in Hunt Areas 24, 27, 29, 30, and 33. Only a few hunters took advantage of this opportunity to purchase more than 4 doe/fawn licenses.

Harvest during this reporting period averaged 5,540 white-tailed deer per year (range = 5,281 – 5,684). This is the highest 3 years of harvest ever recorded in this herd unit and an increase of 60% compared to the previous 10 years (1999 – 2008). Harvest has increased in relation to an increase in license allocation, a decrease in landowner tolerance for white-tailed deer, and liberal season strategies. Hunters can harvest white-tailed from September 1 to late December in some portions of this herd unit.

Table 2. Estimated 2011 white-tailed deer harvest by license type per hunt area.

Area	Type	Active Licenses	Hntrs	Buck	Doe	Fawn	Total	Success		Days/ Harvest	Days	Licenses Sold
17 NORTHWEST GILLETTE												
	General	240		71	8	8	87	36.20%		6.3	544	
	Type 6	4		0	0	0	0	0%		0	6	50
Pooled Total		241	(244)*	71	8	8	87	36.10%	(35.7%)*	6.3	550	
Pooled Resident		131		47	4	8	59	45.00%		4.8	281	
Pooled Nonresident		110		24	4	0	28	25.50%		9.6	269	
18 CAMPBELL												
	General	255		41	0	0	41	16.10%		16.3	667	
	Type 3	13		0	0	0	0	0%		0	43	27
	Type 6	7		0	4	0	4	57.10%		3.8	15	50
	Type 8	14		0	6	0	6	42.90%		7.8	47	25
Pooled Total		281	(289)*	41	10	0	51	18.10%	(17.6%)*	15.1	772	
Pooled Resident		144		21	8	0	29	20.10%		14.3	415	
Pooled Nonresident		137		20	2	0	22	16.10%		16.2	357	

Area	Type	Active Licenses	Hntrs	Buck	Doe	Fawn	Total	Success		Days/ Harvest	Days	Licenses Sold
19 PUMPKIN BUTTES												
	General	55		4	4	0	8	14.50%		23.1	185	
	Type 6	5		0	0	0	0	0%		0	16	50
Pooled Total		60	(60)*	4	4	0	8	13.30%	(13.3%)*	25.1	201	
Pooled Resident		44		4	4	0	8	18.20%		19.4	155	
Pooled Nonresident		16		0	0	0	0	0%		0	46	
20 CLARKELEN												
	General	20		0	0	0	0	0%		0	42	
	Type 6	2		0	0	0	0	0%		0	3	50
Pooled Total		22	(22)*	0	0	0	0	0%	(0%)*	0	45	
Pooled Resident		8		0	0	0	0	0%		0	18	
Pooled Nonresident		14		0	0	0	0	0%		0	27	
23 CLEARMONT												
	General	567		205	47	16	268	47.30%		6.6	1769	
	Type 3	77		51	5	0	56	72.70%		12.4	693	100
	Type 6	351		0	192	22	214	61.00%		3.3	699	1001
Pooled Total		796	(995)*	256	244	38	538	67.60%	(54.1%)*	5.9	3161	
Pooled Resident		607		220	214	38	472	77.80%		6	2823	
Pooled Nonresident		189		36	30	0	66	34.90%		5.1	338	
24 SHERIDAN												
	General	1578		813	193	43	1049	66.50%		8.1	8536	
	Type 3	183		129	15	0	144	78.70%		8.6	1244	200
	Type 6	872		0	559	95	654	75%		6	3942	1218
	Type 8	831		0	574	136	710	85.40%		6	4244	973
Pooled Total		2334	(3464)*	942	1341	274	2557	109.60%	(73.8%)*	7	17966	
Pooled Resident		1772		736	1015	203	1954	110.30%		8	15553	
Pooled Nonresident		562		206	326	71	603	107.30%		4	2413	
25 TONGUE-GOOSE												
	General	157		44	0	4	48	30.60%		9.4	452	
Pooled Total		157	(157)*	44	0	4	48	30.60%	(30.6%)*	9.4	452	
Pooled Resident		91		15	0	4	19	20.90%		13.4	254	
Pooled Nonresident		66		29	0	0	29	43.90%		6.8	198	
26 UCROSS												
	General	446		203	44	28	275	61.70%		4.4	1222	
	Type 3	9		7	0	0	7	77.80%		3.6	25	100
	Type 6	163		0	84	39	123	75.50%		5.1	630	1001
Pooled Total		554	(618)*	210	128	67	405	73.10%	(65.5%)*	4.6	1877	
Pooled Resident		435		174	106	50	330	75.90%		4.6	1517	
Pooled Nonresident		119		36	22	17	75	63.00%		4.8	360	

Area	Type	Active Licenses	Hntrs	Buck	Doe	Fawn	Total	Success		Days/ Harvest	Days	Licenses Sold
27 BUFFALO												
	General	649		246	69	12	327	50.40%		8.6	2813	
	Type 6	28		0	11	3	14	50%		13.2	185	51
	Type 8	641		0	411	53	464	72.40%		6.4	2973	789
Pooled Total		947	(1318)*	246	491	68	805	85.00%	(61.1%)*	7.4	5971	
Pooled Resident		739		184	323	49	556	75.20%		8.4	4651	
Pooled Nonresident		208		62	168	19	249	119.70%		5.3	1320	
28 HUNTER MESA												
	General	191		44	8	4	56	29.30%		8	446	
Pooled Total		191	(191)*	44	8	4	56	29.30%	(29.3%)*	8	446	
Pooled Resident		141		27	4	4	35	24.80%		10.3	360	
Pooled Nonresident		50		17	4	0	21	42%		4.1	86	
29 JOHNSON												
	General	285		107	54	16	177	62.10%		4.8	858	
	Type 6	19		0	10	6	16	84.20%		1.6	26	99
	Type 8	327		0	249	41	290	88.70%		3.2	937	337
Pooled Total		473	(631)*	107	313	63	483	102.10%	(76.5%)*	3.8	1821	
Pooled Resident		250		63	164	36	263	105.20%		4.1	1076	
Pooled Nonresident		223		44	149	27	220	98.70%		3.4	745	
30 UPPER POWDER RIVER												
	General	197		84	4	0	88	44.70%		5.5	487	
	Type 6	60		0	26	26	52	86.70%		4.8	251	100
	Type 8	183		0	135	24	159	86.90%		1.8	287	247
Pooled Total		369	(440)*	84	165	50	299	81.00%	(68.0%)*	3.4	1025	
Pooled Resident		210		67	87	8	162	77.10%		3.2	518	
Pooled Nonresident		159		17	78	42	137	86.20%		3.7	507	
31 SALT CREEK												
Pooled Total		0	(0)*	0	0	0	0	0%	(0%)*	0	0	
Pooled Resident		0		0	0	0	0	0		0	0	
Pooled Nonresident		0		0	0	0	0	0		0	0	
32 BEARTRAP CREEK												
	General	16		4	0	8	12	75%		3.6	43	
	Type 8	6		0	0	0	0	0%		0	12	22
Pooled Total		22	(22)*	4	0	8	12	54.50%	(54.5%)*	4.6	55	
Pooled Resident		18		0	0	8	8	44.40%		5.4	43	
Pooled Nonresident		4		4	0	0	4	100%		3	12	

Area	Type	Active Licenses	Hntrs	Buck	Doe	Fawn	Total	Success		Days/ Harvest	Days	Licenses Sold
33 RED FORK												
	General	315		83	34	16	133	42.20%		6.5	862	
	Type 6	23		0	6	3	9	39.10%		5.9	53	100
	Type 8	248		0	142	39	181	73.00%		3.4	615	265
Pooled Total		490	(586)*	83	182	58	323	65.90%	(55.1%)*	4.7	1530	
Pooled Resident		283		54	117	25	196	69.30%		4.9	967	
Pooled Nonresident		207		29	65	33	127	61.40%		4.4	563	
163 MIDDLE FORK												
	General	30		4	0	0	4	13.30%		18	72	
	Type 8	8		0	4	4	8	100%		2.5	20	22
Pooled Total		38	(38)*	4	4	4	12	31.60%	(31.6%)*	7.7	92	
Pooled Resident		18		4	0	0	4	22.20%		14.8	59	
Pooled Nonresident		20		0	4	4	8	40%		4.1	33	
169 TISDALE MOUNTAIN												
	General	4		0	0	0	0	0%		0	4	
Pooled Total		4	(4)*	0	0	0	0	0%	(0%)*	0	4	
Pooled Resident		4		0	0	0	0	0%		0	4	
Pooled Nonresident		0		0	0	0	0	0		0	0	
2011 Hunt Area Total		6979	(9079)*	2140	2898	646	5684	81.40%	(62.6%)*	6.3	35968	5704
2011 Herd Total		6571	(8773)*	2140	2898	646	5684	86.50%	(64.8%)*	6.3	35968	2985

*Active Licenses

Hunters harvested an average of 2,267 males (range = 2,140-2,447), 2,747 females (range = 2,568-2,898), and 526 juveniles (range = 434-646) during 2009 – 2011. Buck harvest increased 33%, doe harvest increased 87%, and juvenile harvest increased 81% during the past 3 years compared to the previous 10 years (1999 – 2008).

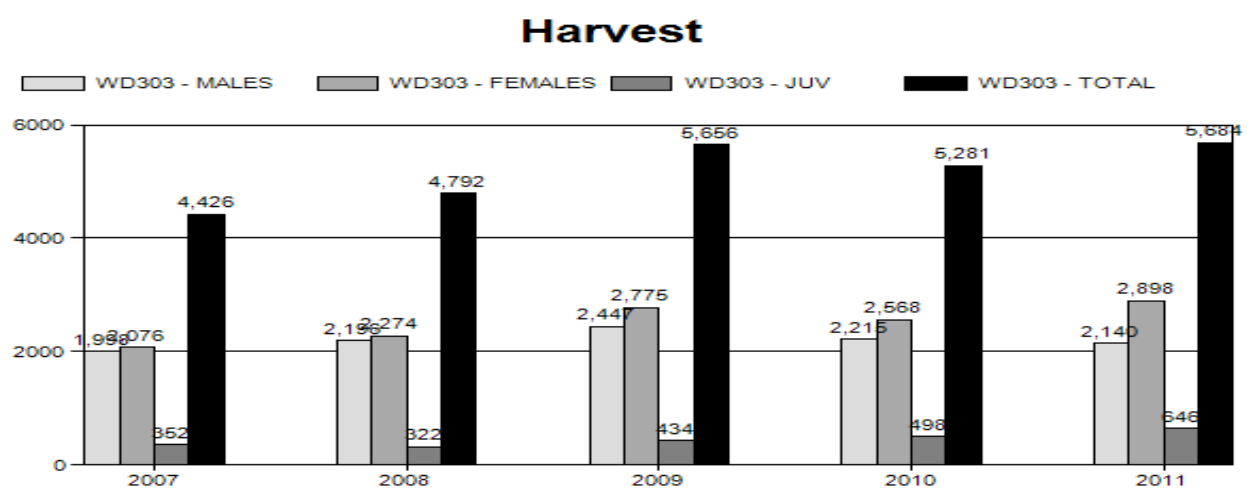


Figure 2. Estimated white-tailed deer harvest from 2007-2011.

HUNTER STATISTICS

An average of 5,009 residents (70%) and 2,141 non-residents (30%) hunted in this herd unit during the past 3-years. Non-resident general license hunters are limited by regional quotas. Non-residents are limited to 20% of available limited quota licenses during the draw process. After the draw process, any remaining limited quota licenses are allocated on first-come, first-served basis. Generally, all Type 3 (any white-tailed deer) licenses are allocated during the draw process. Reduced price doe/fawn licenses are generally available after the draw process for purchase on a "first come – first served" basis, regardless of residency.

Hunter success has varied over the past 3 years, averaging 78% (range = 73-87%), above the 10 year mean of 72% and well above the statewide average success rate of 61% in 2011. We saw the highest success per hunter ever recorded in this herd unit in 2011 (87%). This consistently high success rate suggests deer are still relatively available for harvest.

Hunter effort, as measured by the number of days hunted per white-tailed deer harvested, averaged 6.5 over the past 3-years (range = 62–6.9 days/harvest), the same as the 10-year mean and well below the statewide average of 8.1 days/harvest in 2011. Effort has remained fairly consistence in recent years, suggesting white-tailed deer are still readily available for harvest.

Resident hunters were substantially more successful (90%) on average compared to non-resident hunters (79%), but spent considerably more time hunting per animal harvested (7.0 days/animal) compared to non-resident hunters (4.6 days/animals). A resident hunter is more likely to hold multiple licenses and has over 100 days of hunting opportunity while a non-resident hunter usually has only about a week of hunting opportunity. Non-resident hunters made up about 30% of the hunters and harvested about 28% of the white-tailed deer in this herd unit (24% of bucks; 29% of does; and 33% of fawns).

In 2011, hunters were asked specifically what type of weapon was used to harvest white-tailed deer. In this herd unit, 88% of the white-tailed deer were harvest with firearms, 11% with archery equipment, including crossbows, and 0.5% with muzzleloaders. This was relatively consistent across age and sex of the deer, and between resident and non-residents hunters. Hunters in this herd unit selected archery equipment slightly more than the statewide average of 8%.

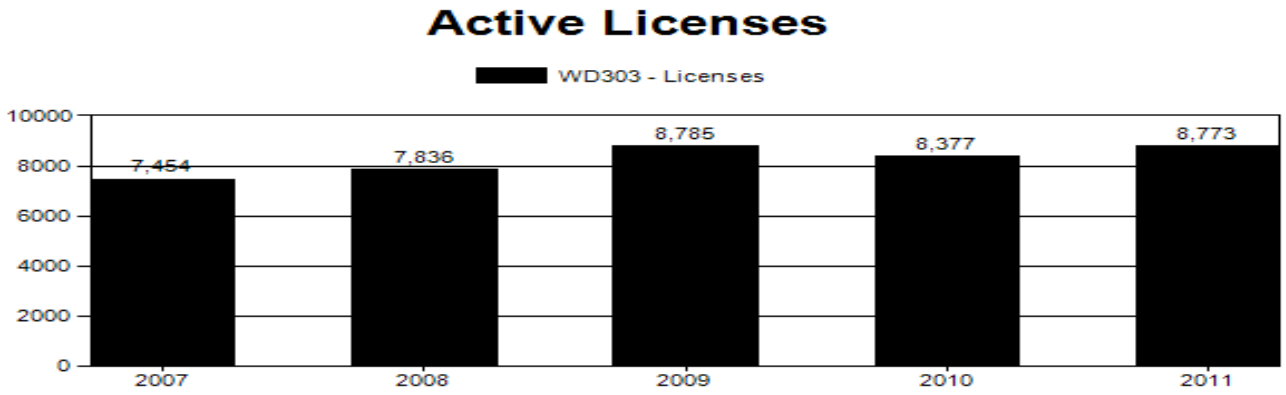


Figure 3. Annual number of active licenses (license used for at least 1 day of hunting) from 2007-2011.

Also in 2011, hunters were queried about their level of satisfaction with the overall quality of their hunt. This is very subjective and is influenced by an individual's values, beliefs and success. In this herd unit, 76% of hunters were satisfied or very satisfied, compared to only 12% that were dissatisfied or very dissatisfied. Non-resident hunters expressed a greatly level of satisfaction (80%) compared to resident hunters (74%), while both expressed the same level of dissatisfaction (11%). The remaining hunters were neutral in the opinion of their hunting experience. The difference between satisfaction levels for residents and non-residents could be a function of access to private lands. Non-residents are usually more likely to gain

access to private lands, where the majority of whitetails are located, by paying a trespass fee or hiring an outfitter.

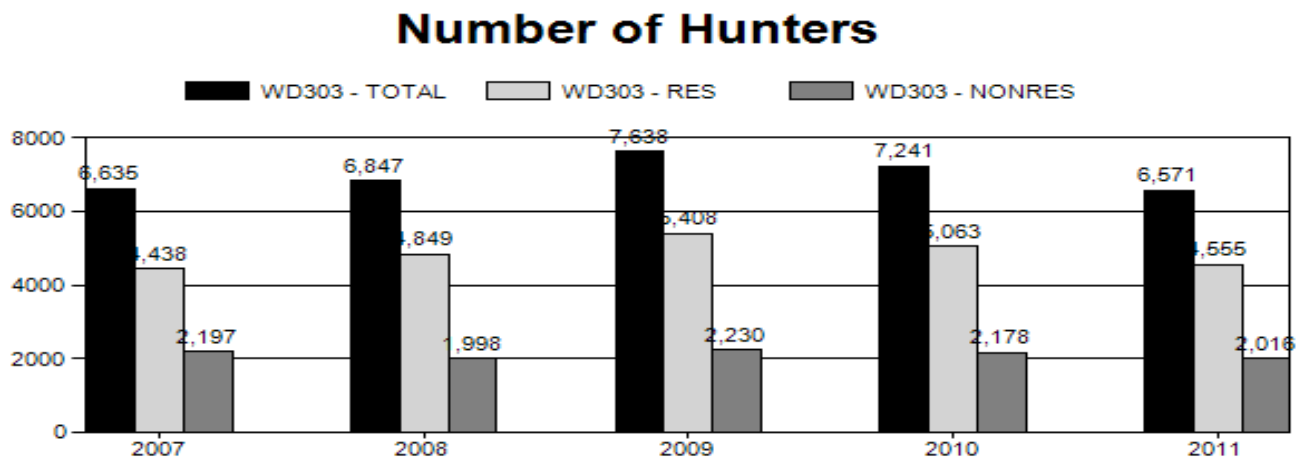


Figure 4. Annual number of white-tailed deer hunters from 2007-2011.

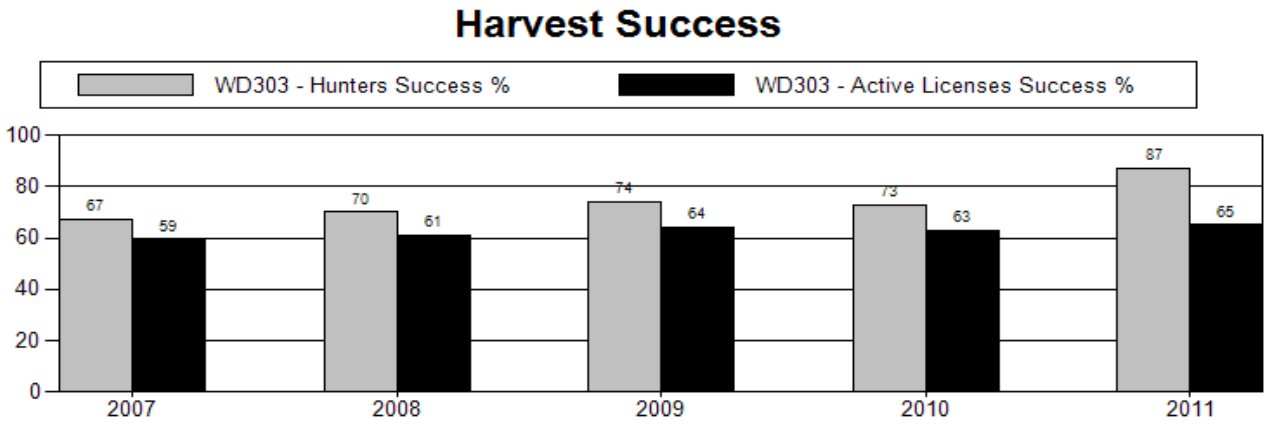


Figure 5. Success by hunter and active license from 2007-2011. Since white-tailed deer hunters can hold more than one license per year, success by hunter and success by license are not necessarily the same.

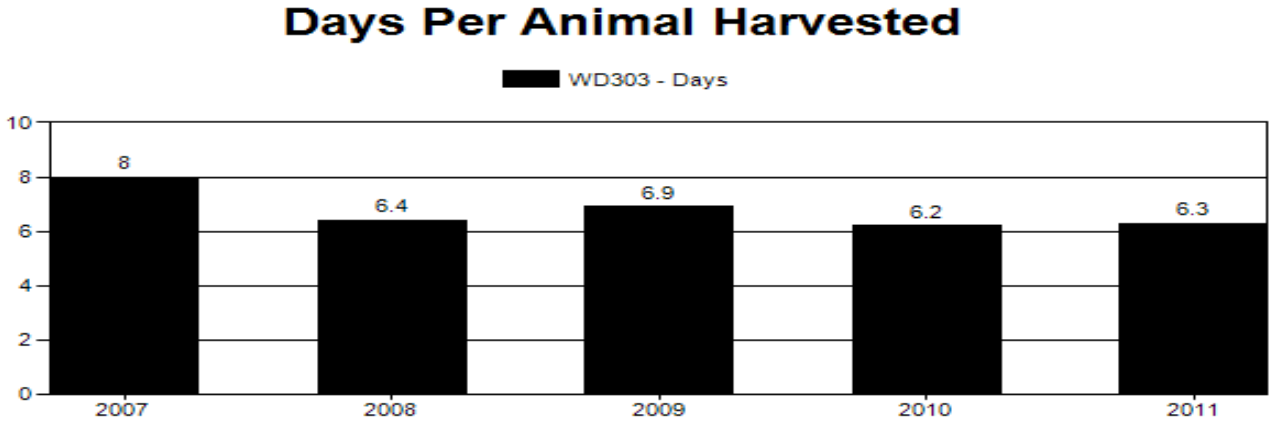


Figure 6. Hunter effort required to harvest a white-tailed deer, as measured by annual number of days hunted per animal harvested, from 2007-2011. Hunting any part of a day counts as a day hunted.

HUNTER FIELD CHECKS

Hunter field checks are generally conducted at hunter camps, checks stations, meat locker facilities, during hunter contacts in the field, and at regional offices. During field checks, various harvest information is collected including sex and age of the harvested white-tailed deer deer, general location of harvest, and compliance with hunting regulations. This also provides an opportunity to collect biological samples for disease and parasite monitoring if desired.

During field checks, animals were assigned to age categories based on body size, antler development and tooth replacement. No teeth were submitted for cementum age analysis. During this reporting period, field personnel checked an average of 161 of 5,540 harvested mule deer (3%). Field personal checked, on average, 51% males, 35% females and 14% fawns, compared to 41% males, 50% females and 9% fawns of average reported harvest the past three years. We likely checked more males then reported in the harvest because buck hunters were likely encounters more on weekends when there was a greater presence of Department personnel afield compared to the long season available for antlerless harvest.

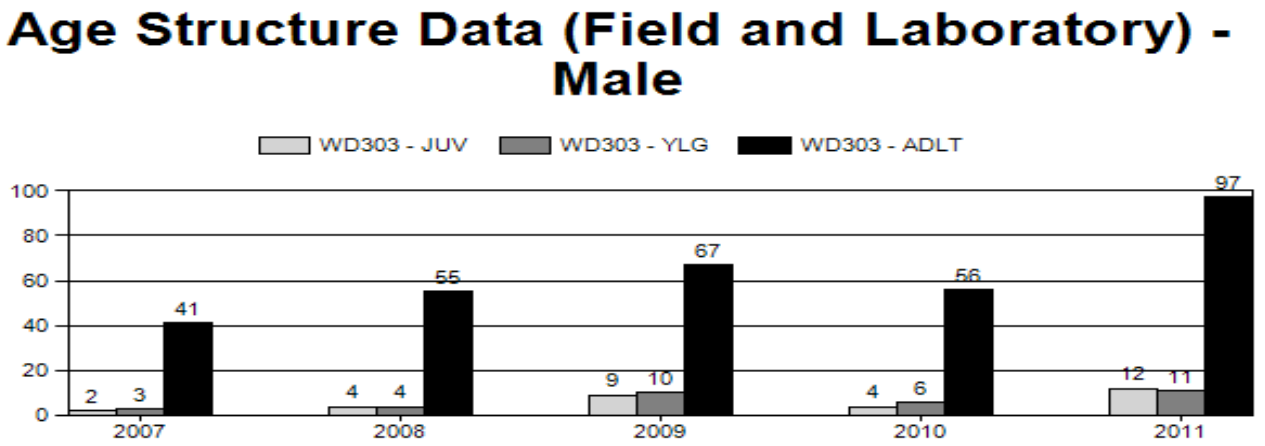


Figure 7. Annual age structure of harvested male white-tailed deer checked in the field by WGFD personnel from 2007-2011.

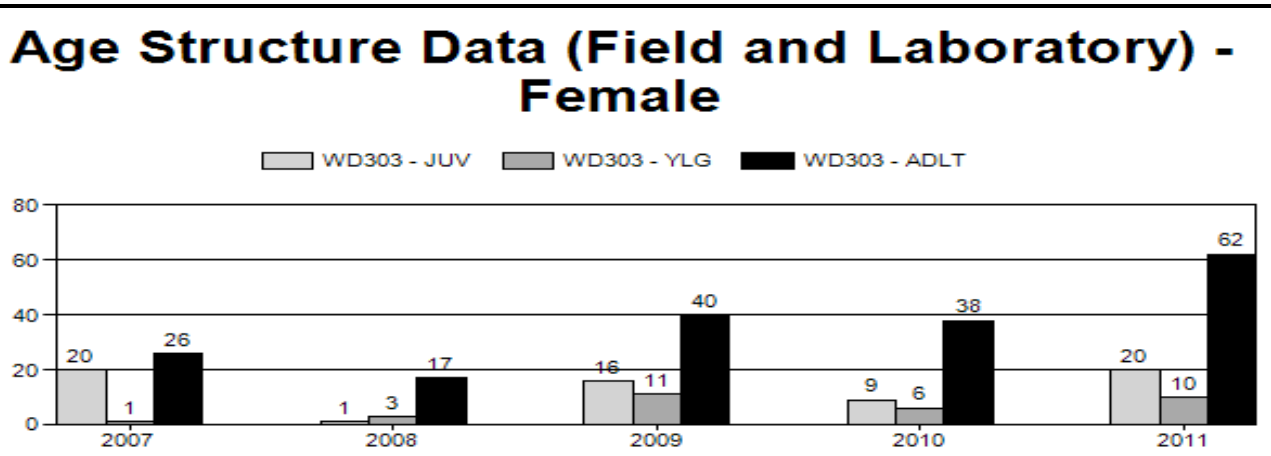


Figure 8. Annual age structure of harvested female white-tailed deer checked in the field by WGFD personnel from 2007-2011.

OTHER MANAGEMENT ISSUES

We addressed all four of the management recommendations listed in the 2008 Annual Big Game Herd Unit Reports for this herd unit, specifically:

1. Continue to monitor and document disease occurrences within the herd unit, including but not limited to EHD, AHD, blue tongue virus and CWD.

   During the past 3 years, we continued to collect samples at check stations, locker plants, and during field checks, as well from targeted individual deer that showed signs of illness. There was limited EHD/BTV detected in the fall of 2011 within this herd unit in pronghorn and mule deer.

2. Continue to evaluate and improve the Pop-II population simulation model. Research alternative population estimation techniques for white-tailed deer.

   While this model was updated with harvest and classification data each of the past three years, a thorough evaluation of the model was not conducted. The model appears to reasonably simulate the population dynamics of this herd unit although there is no independent population estimate to anchor the model. Starting in 2012, we are switching to a new modeling system based on a spreadsheet model developed by Dr. Gary White, Colorado State University, for Colorado Division of Wildlife.

3. Work with Terrestrial Habitat Biologist to finalize habitat suitability index model to prioritize white-tailed deer habitats in the Sheridan Region. Continue to document white-tailed deer seasonal distribution using GPS technology in preparation of updating and revising distribution and seasonal range maps.

   A habitat suitability model for white-tailed deer has been constructed and needs some minor modifications to finalize. This model, along with observation data, will be used to update the herd unit distribution map. We will also attempt to develop a population estimate based on habitat quality and deer densities.

4. Continue to work with private landowners to gain access for the hunting of white-tailed deer. Pursue PLPW Walk-In and Hunter Management access for white-tailed deer hunting when possible.

   We have continued to work with landowners on harvest strategies to address white-tailed deer numbers.

HABITAT

ON-GOING/COMPLETED PROJECTS

South Tonge River Watershed Habitat Analysis

In 2011, the Bighorn National Forest initiated a habitat assessment of riparian habitats in the South Tongue Watershed. An interdisciplinary team completed the assessment using the Proper Functioning Condition methodology. The intent was to identify conditions of stream and riparian habitats, potential sources of watershed instability, potential opportunities for rehabilitation actions and establish a baseline future monitoring. Of particular concern was the loss of tall willow species. Improvement of riparian habitats in this area will benefit elk, moose, and mule deer summer range habitats.

East Slope Big Horn Mountain Conservatin Easement

Within the WGFD Sheridan Region, The Nature Conservancy (TNC) is the leader in long-term conservation of wildlife habitats. Because they are a valued partner, the terrestrial habitat biologist participates on TNC's Northeast Wyoming Advisory Board and assists their program director with planning and project

implementation. Several conservation easements are being planned by TNC and the Rocky Mountain Elk Foundation (RMEF). The most current one is the HF Bar Ranch, located fifteen miles northwest of Buffalo, Wyoming. The 2,300 acre proposed conservation easement will be held by TNC and will restrict future subdivision, while allowing agricultural and guest ranch activities to continue. It will protect both crucial elk and mule deer winter ranges.

Partners and programs that helped TNC with this important accomplishment include the Rocky Mountain Elk Foundation, Natural Resources Conservation Service through the Farm and Ranch Lands Protection Program, Wyoming Wildlife and Natural Resource Trust, Wyoming Governor's Big Game License Coalition, Pheasants Forever, Mule Deer Foundation, WGFD and private philanthropists.

The conservation easement also protects five miles of important stream fisheries and associated riparian zones that benefit white-tailed deer, songbirds, raptors and game birds. It will safeguard open space between the Bighorn National Forest, Wyoming State Trust Lands and the WGFD Bud Love Wildlife Habitat Management Area.

East Slope Big Horn Mountain Aspen/Willow Recovery

In 2010, willow, aspen and adjacent herbaceous vegetation were analyzed to diagnose nutrient deficiencies in plants that occur along the east slope of the Bighorn National Forest. We need to know what minerals are lacking in the environment but accumulated in willow and aspen browse that would drive livestock and big game to over utilize these resources. Samples were taken where heavy browsing is documented and analyzed at Colorado State University's Soil, Water and Plant Testing Laboratory.

Results were compared to the nutritional requirements of wild and domestic ungulates. A second group of samples were sent for analysis in 2011. We wanted to know where these nutrients accumulated in aspen and willow. Were they in the leaves or the woody material?

Table 2. Forage analysis results relative to the needs of a nursing cow (provided by Dr. Blain Horn, UW Cooperative Extension Service).

Year	Plant Type	%CP	%TDN	NEm	P	K	Ca	Mg	Fe	Mn	Zn	Cu	Mo
2010	Riparian Forb	14.0	54	0.50	0.31	1.04	0.78	0.45	449	112	41	6.9	1.05
2010	Upland Forb	12.1	58	0.55	0.30	1.08	0.96	0.33	168	65	28	4.7	0.27
2010	Sedge	11.4	63	0.64	0.19	0.88	0.29	0.16	274	376	26	2.4	1.23
2010	Riparian Grass	8.6	54	0.50	0.16	0.60	0.20	0.11	158	102	17	3.1	1.00
2010	Upland Grass	8.7	59	0.58	0.16	0.72	0.24	0.10	105	86	18	3.0	0.70
2010	Aspen	12.7	67	0.70	0.26	0.63	0.59	0.20	102	45	80	5.5	0.00
2010	Willow	13.1	66	0.67	0.27	0.45	0.39	0.20	114	298	102	4.3	0.35
2011	Aspen leaf	13.2	78	0.85	0.29	0.55	1.01	0.26	75	63	91	5.8	0.78
2011	Aspen twig	5.5	52	0.46	0.17	0.41	0.51	0.12	45	32	78	6.9	0.20
2011	Willow leaf	16.0	76	0.82	0.34	0.53	0.61	0.28	87	219	92	4.1	0.71
2011	Willow twig	8.7	51	0.45	0.17	0.27	0.40	0.13	42	127	151	6.5	0.26

Green values meeting her needs

Red values not meeting her needs

Yellow values borderline

White values within green box may be why animals seek aspen and willows as grasses are low

As shown in Table 2, we determined that it's possible that cattle and wildlife are seeking aspen and willow browse for their crude protein (%CP), energy, phosphorus (P), magnesium (Mg), and zinc (Zn) content. Leaf material was much higher in all nutrients, compared to the woody material of the twig. These nutrients

are lacking in adjacent grass species. Although forbs are more nutritional, they are generally in short supply during the late summer to early fall period, when both cattle and big game seem to prefer the browse.

A report will be produced by the University of Wyoming Cooperative Extension Service to guide livestock producers in the selection of supplements that fulfill nutritional gaps that may be encouraging the selection of aspen and willow (to satisfy this demand). We would like to test this management tool for wildlife, to see if aspen and willow resources can be protected by providing an alternative source of minerals.

Willow and Aspen Retention on the Bighorn National Forest Using Transplanted Beaver

The WGFD has conducted eight beaver cache surveys on the Bighorn National Forest (BNF) since 1986, with the most recent one in 2010. These data indicate that beaver populations on the Bighorn Forest are declining. Drainages that contain beaver generally have lower populations today, while many previously occupied habitats are no longer populated. The most recent survey failed to detect evidence of beaver activity in 14 sixth-order watersheds, which were historically occupied. In response to declining populations and the absence of this keystone species in some drainages, the WGFD and Bighorn Forest have collaborated with the Rocky Mountain Elk Foundation, Wyoming Governor's Big Game License Coalition and Bow Hunters of Wyoming to provide a multi-year funding to transplant beaver to previously occupied habitats. Habitats have been prioritized based on patch size and connectivity of willow and aspen resources, as well as historic activity, hydrology and suitable habitat conditions. Based on our analysis, we recommended that beaver be transplanted to at least fourteen sites. Since the year 2000, 204 beaver have been transplanted onto the Bighorn National Forest.

USFS Bighorn National Forest Mule Deer and Elk Transition Habitat Enhancement Projects

The Bighorn National Forest continues to support the WGFD's objective of enhancing transition range habitats for mule deer and elk along the east slope of the Big Horn Mountains. The Forest has conducted several prescribed burns of grass, mountain shrub and ponderosa pine communities to invigorate forage for big game. Fire causes plants to green-up earlier during a time period when animals are trying to regain their winter weight loss. This weight gain boosts milk production for offspring, thus resulting in heavier and healthier fawns and calves. When big game return to these transition habitats during the late-fall months, improved conditions allow the males to recover from the rut and females to recuperate after weaning their young.

Wooded Draw Restoration in Sheridan County

Wooded draws provide key habitat for nearly all wildlife species living in the Northern Great Plains. For white-tailed and mule deer, these draws provide fawning habitat, escape cover and browse. Studies indicate that deer spend over half their time in this habitat type. Wooded draws are also important to wild turkey, sharp-tailed grouse, pheasants and numerous other birds and mammals.

A collaborative effort with The Nature Conservation, with funding from the Wyoming Governor's Big Game License Coalition, WGFD trust fund and Rocky Mountain Elk Foundation has been initiated to help ranchers restore their wooded draw habitats. These communities, consisting of native plum, chokecherry, serviceberry, aspen, hawthorn, Woods' rose and others, appear to be nearing the end of their life span and need fire to rejuvenate the community. For qualifying ranches, the WGFD, RMEF and WGBGLC will fund 100% of the burning costs. In return, the rancher must defer grazing and control weeds and help manage white-tailed deer populations. We ultimately hope to set back succession on approximately 2,000 acres of wooded draws and associated uplands.

USFS Bighorn National Forest Allotment Management Analyses

The Bighorn National Forest completed an analysis of the Tongue River drainage livestock grazing allotments and has recommended a decrease in allocated animal unit months (AUM) for several allotments. This recommendation was appealed to the Forest Supervisor who upheld the recommendation. A reduction

of grazing by domestic livestock could benefit wildlife by reducing competition and utilization of browse species. Additional allotments are currently being reviewed under the Tongue River decision.

The Forest Service is also completing the “Big 6” livestock grazing analysis that include grazing allotments in portion of this herd unit.

MANAGEMENT RECOMMENDATIONS

1. Continue to monitor and document disease occurrences within the herd unit, including but not limited to EHD, AHD, blue tongue and CWD.

2. Develop a new spreadsheet population simulation model for this herd unit.

3. Continue to work with private landowners to provide opportunities to manage this herd towards desires levels.

4. Work with the Terrestrial Habitat Biologist to finalize the habitat suitability model. Use model, along with observation data, to update herd unit seasonal range map. Also explore the possibility of using the model to estimate a herd unit population based on habitat quality and annual density observations.

SPECIAL STUDIES

ON-GOING PROJECTS

Chronic Wasting Disease Monitoring

Intensive statewide efforts began in 2003 to determine the distribution and prevalence of CWD in cervid species. Department personnel were stationed at meat processing facilities and check stations during the first several days and selected weekends of the general (i.e. rifle) hunting season, as well as collecting samples during field checks. Department personnel from all divisions assisted in this project in addition to temporary employees hired specifically for CWD collection, and volunteers.

Standard protocol is that both retropharyngeal lymph nodes are collected when possible, along with hunter and harvest information, from hunter killed mule deer. In some cases, only one lymph node is available for collection or the mandibular lymph nodes white-tailed deer collected when the retropharyngeal lymph nodes are not available. Participation in this disease surveillance is strictly voluntary on the part of the hunter. Lymph nodes were also collected from road killed deer and any deer that showed symptoms of an illness.

Since 2003, we have collected and tested 879 samples from white-tailed deer within this herd unit. To date, we have had 15 positive samples (5 positives in Hunt Area 27; 1 positive in Hunt Area 29; 6 positives in Hunt Area 30; and 3 positives in Hunt Area 33), for a 1.7% prevalence rate. There have also been 16 positive mule deer from within hunt areas overlapping this herd unit. Complete results are available from Hank Edwards, Wildlife Disease Biologist, at the WGFD Wildlife Disease Laboratory located at the Wyoming State Veterinary Laboratory, Laramie.

At a 1.7% prevalence rate, CWD is not a significant mortality factor and is not having any appreciable population level impact. While there is currently no evidence that CWD can infect humans, hunters are advised not to eat meat from a known CWD infected animal.

Deer Control within Cities of Buffalo and Sheridan

High deer numbers within and adjacent to the Cities of Buffalo and Sheridan have resulted in numerous conflicts, including damage to landscaping, deer-vehicle collisions, and deer-dog interactions. As a result of increased deer numbers in recent years, both cities looked at options for controlling deer numbers.

Buffalo passed an ordinance in 2002 prohibiting the feeding of big game to minimize attractants for deer. In 2008, Buffalo adopted a Deer Management Policy. The goals of the Deer Management Policy are to: 1) Eliminate individual deer that threaten human safety; and 2) Reduce damage to property by lowering deer numbers in the city. One step to reduce deer numbers was to pass Ordinance 1307 allowing archery hunting with the city limits in 2008. Areas greater than 20 acres and designated within hunting zones are open to archery hunting for deer, antelope, and turkeys. Also, the Veterans Home of Wyoming property was enrolled in a Walk-In Area in 2008. To date, archery harvest has been considered minimal.

In 2009, 2010, and 2011, the City of Buffalo was issued a Department Chapter 56 (Regulation Governing Lethal Taking of Wildlife) permit to take deer within the city limits. The Buffalo Police Department removed a total of 186 deer (67 mule deer; 119 white-tailed deer) during this 3-year period. Deer were sampled for CWD. Three deer tested positive for CWD in 2010 and were disposed of in the city landfill in compliance with Department regulations. The remaining deer were processed and distributed for public consumption.

In 2007, the City of Sheridan passed Ordinance #2027 modifying Sheridan Municipal Code Chapter 19, Section 45, allowing the use of archery equipment within the city limits for deer and antelope. The first archery season was allowed in 2008. The City designated 20 hunting zones within city limits. Hunters have taken some deer through this program although it is not considered significant. This program is popular with some archery hunters and the landowners participating in the program and will likely continue in the foreseeable future.

In December 2010, the Sheridan City Council passed Ordinance #2098, creating Sheridan Municipal Code Chapter 6, Section 40, prohibiting the intentional feeding of various wildlife species, including deer, within city limits. Shortly thereafter, the City of Sheridan applied for and received a Department Chapter 56 (Regulation Governing Lethal Taking of Wildlife) permit to take up to 100 deer within the city limits during 2011. They were also issued a permit for 2012 for 100 deer. Deer were taken by Sheridan Police Officers. All deer were sampled for CWD and all deer tested negative. Deer were either processed and donated to a charitable food bank or donated whole to individuals. In 2011, 100 deer were taken, including 51 mule deer and 49 white-tailed deer. There were 27 adult does and 22 fawn whitetails taken. This program seems to be reducing deer in select areas of the city. Any calls of nuisance deer are referred to the Police Department to specifically target problem deer.

Detailed reports of each deer reduction program are attached to the North Bighorn Mule Deer report.

COMPLETED STUDIES AND PROJECTS LIST

There have been no studies specific to white-tailed deer conducted in this herd unit.

POWDER RIVER WHITE-TAILED DEER (WD 303)
Hunt Areas 17 - 20, 23 - 33, 163, 169
2012 Hunting Seasons

HUNT AREA	TYPE	SEASON DATES OPENS	CLOSES	LIMITATIONS
17		Oct. 1	Oct. 20	General license; antlered mule deer or any white-tailed deer
		Nov. 1	Nov. 30	General license; any white-tailed deer
	8	Oct. 1	Nov. 30	Limited quota; 75 licenses doe or fawn white-tailed deer
18		Oct. 1	Oct. 20	General license; antlered mule deer or any white-tailed deer
19		Oct. 1	Oct. 20	General license; antlered mule deer or any white-tailed deer
		Nov. 1	Nov. 15	General license; any white-tailed deer
19,20	6	Oct. 1	Oct. 31	Limited quota; 50 licenses doe or fawn valid on private land
20		Oct. 1	Oct. 20	General license; antlered mule deer or any white-tailed deer
		Nov. 1	Nov. 15	General license; any white-tailed deer
23		Oct. 1	Oct. 14	General license; antlered deer off private land, any deer on private land
		Nov. 1	Nov. 30	General license; any white-tailed deer
23,26	3	Nov. 1	Nov. 30	Limited quota; 100 licenses any white-tailed deer
	6	Oct. 1	Dec. 16	Limited quota; 1,200 licenses doe or fawn valid on private land
24		Oct. 15	Oct. 31	General license; antlered deer off private land, any deer on private land
		Nov. 1	Nov. 30	General license; any white-tailed deer
		Dec. 1	Dec. 16	General license; antlerless white-tailed deer
	3	Nov. 1	Nov. 30	Limited quota: 300 licenses any white-tailed deer
	6	Sept. 1	Dec. 16	Limited quota; 1,200 licenses doe or fawn valid on private land
	8	Sept. 1	Dec. 16	Limited quota; 1,500 licenses doe or fawn white-tailed deer
25		Oct. 15	Oct. 31	General license; antlered mule deer or any white-tailed deer
	6	Oct. 15	Oct. 31	Limited quota; 50 licenses doe or fawn
26		Oct. 1	Oct. 14	General license; antlered deer off private land, any deer on private land
		Nov. 1	Nov. 30	General license; any white-tailed deer

HUNT AREA	TYPE	SEASON DATES OPENS	CLOSES	LIMITATIONS
27		Oct. 15	Oct. 31	General license; any deer
		Nov. 1	Nov. 30	General license; any white-tailed deer
		Dec. 1	Dec. 31	General license; antlerless white-tailed deer
	8	Sept. 1	Sept. 30	Limited quota; 1,000 licenses doe or fawn white-tailed deer valid on private land
		Oct. 15	Dec. 31	Unused Area 27 Type 8 licenses valid in the entire area
28		Oct. 15	Oct. 31	General license; antlered mule deer or any white-tailed deer
29		Oct. 1	Oct. 14	General license; antlered deer off private land, any deer on private land
		Nov. 1	Nov. 15	General license; any white-tailed deer
		Nov. 16	Dec. 31	General license; antlerless white-tailed deer
	6	Oct. 1	Nov. 30	Limited quota; 50 licenses doe or fawn valid on private land
	8	Sept. 1	Sept. 30	Limited quota; 500 licenses doe or fawn white-tailed deer valid on private land in that portion of Area 29 north of Crazy Woman Creek
		Oct. 1	Dec. 31	Unused Area 29 Type 8 licenses valid in the entire area
30		Oct. 15	Oct. 31	General license; any deer
		Nov. 1	Nov. 30	General license; any white-tailed deer
		Dec. 1	Dec. 31	General license; antlerless white-tailed deer
	8	Sept. 1	Sept. 30	Limited quota; 500 licenses doe or fawn white-tailed deer valid on private land
		Oct. 15	Dec. 31	Unused Area 30 Type 8 licenses valid in the entire area
31		Oct. 1	Oct. 10	General license; antlered deer
32		Oct. 15	Oct. 31	General license; any deer
		Nov. 1	Nov. 15	General license; any white-tailed deer
32,163	8	Oct. 15	Nov. 15	Limited quota; 50 licenses doe or fawn white-tailed deer

HUNT AREA	TYPE	SEASON DATES OPENS	CLOSES	LIMITATIONS
33		Oct. 15	Oct. 31	General license; any deer
		Nov. 1	Nov. 15	General license; any white-tailed deer
		Nov. 16	Dec. 31	General license; antlerless white-tailed deer
	8	Sept. 1	Sept. 30	Limited quota; 500 licenses doe or fawn white-tailed deer valid on private land
		Oct. 15	Dec. 31	Unused Area 33 Type 8 licenses valid in entire area
163		Oct. 15	Oct. 21	General license; antlered mule deer or any white-tailed deer
		Nov. 1	Nov. 15	General license; any white-tailed deer
169		Oct. 15	Oct. 21	General license; antlered mule deer or any white-tailed deer
		Nov. 1	Nov. 15	General license; any white-tailed deer
ARCHERY				
All Areas		Sept. 1	Sept. 30	General license; any white-tailed deer Limited quota; refer to Section 4 of this Chapter.

Summary of Proposed Changes

Area	Type	Proposed Change
Areas 17, 18	Type 6	Eliminate this license type **(-50)**
Area 17	Type 8	Add this license type **(+75)**
Area 18	Type 3	Eliminate this license type **(-25)**
Area 18	Type 8	Eliminate this license type **(-25)**
Areas 23/26, 24		Close extended antlerless seasons on December 16 (-2 day)
Area 23/26	Type 6	Increase licenses from 1,000 to 1,200 **(+200)**
Area 24	Type 3	Increase licenses from 200 to 300 **(+100)**
Area 24	Type 6	Decrease licenses from 1,500 to 1,200 **(-300)**
Area 25	Type 6	Make license valid in entire hunt area
Areas 27,29,30,33		Close extended antlerless seasons on December 31 (+13 days)
Area 27	Type 6	Eliminate this license type **(-50)**
Area 29	Type 6	Reduce from 100 to 50 **(-50)**
Area 30	Type 6	Eliminate this license type **(-100)**
Area 30	Type 8	Add September season valid on private land
Area 33	Type 6	Eliminate this license type **(-100)**
Area 33	Type 8	Add September season
License Reductions	Type 3	- 25 license
	Type 6	- 500 license
	Type 8	- 25 license
License Additions	Type 3	+100 licenses
	Type 6	+200 licenses
	Type 8	+75 licenses
Net License Change		-175 licenses (+75 full price, -250 reduced price)

MANAGEMENT EVALUATION

Current Post-season Objective: 8,000

2011 Post-season Population Estimate: ~ 16,600 (+100 % over objective)

2012 Post-season Population Estimate: ~ 12,720

Current Population Trend: Due to favorable environmental conditions and relatively low harvest, this population of white-tailed deer experienced explosive growth during the 1990s and 2000s despite significant localized mortalities due to occasional outbreaks of epizootic hemorrhagic disease (EHD). Besides a significant increase in the population, white-tailed deer moved into areas that had not contained significant numbers of deer in recent memory. Due to increased harvest starting 2004 and reduced recruitment, this population has decreased but remains significantly above the post-season population management objective of 8,000 deer.

We have constructed a POP-II (ver. 1.2.5) population simulation model using standardized model parameters adopted in 2003. We consider the current model as low quality because we do not have an independent population estimate and classification data is often collect secondarily to mule deer classifications and may not be representative of the true population. Under the proposed season strategy, which includes general any white-tailed deer, 300 any white-tailed deer (Type 3), and 6,675 doe/fawn licenses (2,550 Type 6 licenses valid for either mule or white-tailed deer doe/fawn; and 4,125 Type 8 licenses restricted to white-tailed deer doe/fawn), this population should continue to decrease.

Proposed 2012 Harvest: The projected harvest for 2012 includes 2,400 bucks, 3,000 does, and 600 fawns for a total estimated harvest of 6,000 white-tailed deer, an increase over the 2011 harvest. The majority of white-tailed deer hunting occurs on private lands, and hunting access, and thus harvest, is currently controlled primarily by landowners. Current and proposed harvest strategies are designed to encourage increased antlerless harvest. Hunters can purchase unlimited doe or fawn licenses as well as an additional any white-tailed deer license in certain areas. Antlerless seasons run up to 122 days in some hunt areas.

Harvest increased 9% in 2011 to its highest level ever in this herd unit. Increased harvest was most prominent in Hunt Areas 24, 29, 30 and 33. Harvest continued to decline in Hunt Areas 17, 18, 20 and, surprisingly, 27. Some declines were in response to decreased license numbers and/or season length.

For 2012, we propose the following changes: Open the general license white-tailed deer season on October 21 in Area 17 to increase hunter opportunity; add a Area 17 – Type 8 license to address the desire of some landowners to continue to harvest antlerless whitetails; eliminate the Area 17, 18 – Type 6 license to reduce harvest of antlerless mule deer; eliminate Area 18 – Type 3 and Type 8 licenses in response to a decrease in numbers; add 200 Area 23/26 – Type 6 licenses to address landowner's desire to harvest more antlerless whitetails; decrease Area 24 – Type 6 license to reduce antlerless mule deer harvest; expand the Area 25 – Type 6 license unit wide; eliminate Area 27, 30, and 33 – Type 6 license to reduce antlerless mule deer harvest; open Area 30 and Area 33 – Type 8 license September 1 to increase opportunities for antlerless white-tailed deer harvest; and adjust various closing dates to meet local objectives.

Management Challenges: Problems associated with the management of this herd include: hunter access, urban development (which limits safe firearm hunting opportunities), artificial feeding of deer, and significant refuge for deer that act as a source to replenish areas where harvest occurs. Access for antlerless harvest is reasonable and generally available for hunters willing to ask permission. Access for antlerless harvest seems to be restricted by safe hunting opportunity, rural subdivision restrictions, or landowners who desire to protect white-tailed deer.

There are high white-tailed deer densities in and around rural subdivisions. This is creating problems with dogs chasing deer, deer caught in fences, increased deer - vehicle collisions, and damage to ornamental shrubs and gardens. Harvest options in these areas are limited due to safety concerns, restriction on firearm discharge/hunting, and/or public desire to protect the deer.

The Buffalo and Sheridan city councils have both passed ordinances banning the feeding of certain wildlife, including big game animals, within city limits. Both municipalities have been issued a Chapter 56 Permit authorizing them to take deer within the city limits.

Current survey methods and protocol result in inconsistent data and the population objective is unrealistically low for the size of this herd unit. Management is currently based primarily on landowner tolerance for white-tailed deer. All landowners who returned a survey (Hunt Areas 23, 24, and 26; n=28) felt they were at or above desired number of white-tailed deer and all suggested similar or more liberal harvest strategies for the 2012 season.

In 2011, we removed the limit on reduced price doe/fawn licenses (Type 6, 7, or 8) that an individual could purchase in certain hunt areas, specifically Areas 24, 27, 29, 30 and 33 of this herd unit. This change was in response to the request of a few individuals and landowners. While we do not think we will likely see a significant increase in harvest, it may allow landowners to address specific problems using selected hunters.

Region C was split into two nonresident deer regions (new Region C and Region Y) starting with the 2008 season to address hunter distribution and access to public versus private land. The new Region C is made up of Hunt Areas 17, 18, 19, 20, 23, 26, 29 and 31, which are predominately private lands or inaccessible public lands. The majority of white-tailed deer hunting in these hunt areas occur on private lands. Region Y contains Hunt Areas 24, 25, 27, 28, 30, 32, 33, 163 and 169. These hunt areas vary from predominately private lands (areas 24, 27) to mixed public / private lands (30, 32, 33, 163, and 169) to predominately public lands (areas 25, 28).

Data Set: Powder River WTD 2005 - 2012.GN1
04/26/2012 02:33 pm Page 1

Powder River White-tailed Deer Herd Unit 2005 - 2012
Data from 2005 to 2012 Simulation from 2005 to 2012

Age Class	Init Pop. Male	Prop. Female	Presn Male	Mort% Female	Postsn Mort% Male	Female	Effort Set 1 Male	Female	Effort Set 2 Male	Female
0	850.0	850.0	50.0	50.0	30.0	25.0	0.80	0.80	1.00	1.00
1	265.0	275.0	2.0	2.0	4.0	4.0	1.00	1.00	1.00	1.00
2	120.0	250.0	2.0	2.0	4.0	4.0	1.00	1.00	1.00	1.00
3	60.0	150.0	2.0	2.0	4.0	4.0	1.00	1.00	1.00	1.00
4	40.0	130.0	2.0	2.0	4.0	4.0	1.00	1.00	1.00	1.00
5	25.0	100.0	2.0	2.0	15.0	4.0	1.00	1.00	1.00	1.00
6	15.0	80.0	2.0	2.0	25.0	8.0	1.00	1.00	1.00	1.00
7	7.0	75.0	2.0	2.0	35.0	10.0	1.00	1.00	1.00	1.00
8	4.0	65.0	2.0	2.0	50.0	15.0	1.00	1.00	1.00	1.00
9	2.0	55.0	2.0	2.0	60.0	20.0	1.00	1.00	1.00	1.00
10	1.0	45.0	2.0	2.0	70.0	30.0	1.00	1.00	1.00	1.00
11	1.0	35.0	2.0	2.0	80.0	40.0	1.00	1.00	1.00	1.00
12	0.0	25.0	2.0	2.0	90.0	50.0	1.00	1.00	1.00	1.00
13	0.0	15.0	2.0	2.0	95.0	75.0	1.00	1.00	1.00	1.00
14	0.0	5.0	2.0	2.0	100.0	100.0	1.00	1.00	1.00	1.00

Sum = 3545.0 Estimated Sum = 57000 Subadults: Ages 0 to 0

Data Set: Powder River WTD 2005 - 2012.GN1
04/26/2012 02:33 pm Page 2

MSI Function is Linear

Bio-Year	Preseason MSI	Harvest // Des. Pop Size in NA Subadults#	Males#	Females#	Postseason MSI	Effort & Wound Set Used
2005	0.81	495	1947	1916	2.10	1
2006	1.21	409	2075	2624	1.75	1
2007	1.26	352	1998	2076	0.95	1
2008	1.11	322	2196	2274	1.50	1
2009	1.21	434	2447	2775	1.20	1
2010	1.25	498	2215	2568	1.35	1
2011	1.29	646	2140	2898	1.00	1
2012	1.20	600	2400	3000	1.00	1
Set 1 Wounding Loss		10.%	10.%	10.%	Yearling Male 10.%	
Set 1 Wounding Loss		10.%	10.%	10.%	Yearling Male 10.%	

Data Set: Powder River WTD 2005 - 2012.GN1
04/26/2012 02:33 pm Page 3

Bio-Year	Young/100 Fems Age 1 - 1	Young/100 Fems Age 2 - 14	Young/100 Fems Disabled	Sex Ratio: 50 : 50
2006	0.0	180.0	0.0	
2007	0.0	180.0	0.0	
2008	0.0	180.0	0.0	
2009	0.0	180.0	0.0	
2010	0.0	180.0	0.0	
2011	0.0	180.0	0.0	
2012	0.0	180.0	0.0	
2013	0.0	180.0	0.0	

POP-II (V1.2.5) Simulation Output Tables for Powder River WTD 2005 - 2012.GN1, 04/26/2012 02:33 pm

Table 1. Population Size During Bio-Year for Powder River WTD 2005 - 2012.GN1 04/26/2012 02:33 pm

Bio-Year	Start	Pre-Season	Post Season	End	%Growth
2005	57000	45449	40655	27179	-5.1
2006	54112	37160	31541	24207	-10.3
2007	48513	32591	27722	24309	-2.4
2008	47352	34024	28752	22766	-6.9
2009	44077	30633	24411	20444	-10.5
2010	39468	27067	21258	17421	-13.8
2011	34014	22862	16610	14375	-18.8
2012	27604	19322	12722	10856	-25.8

Table 3. Harvest Mortality for Powder River WTD 2005 - 2012.GN1 04/26/2012 02:33 pm

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	% of Pop
2005	495	1947	1916	4358	9.6
2006	409	2075	2624	5108	13.7
2007	352	1998	2076	4426	13.6
2008	322	2196	2274	4792	14.1
2009	434	2447	2775	5656	18.5
2010	498	2215	2568	5281	19.5
2011	646	2140	2898	5684	24.9
2012	600	2400	3000	6000	31.1

Table 4. Harvest Percentages for Powder River WTD 2005 - 2012.GN1 04/26/2012 02:33 pm

Bio-Year	Sub-Adults	Adult Males	Adult Females	Total	Yearling Males
2005	3.0	22.8	9.3	9.59	49.1
2006	3.8	25.1	14.4	13.75	34.3
2007	3.9	26.1	13.0	13.58	30.9
2008	3.1	27.3	14.5	14.08	37.4
2009	5.2	32.0	19.0	18.46	34.8
2010	7.0	32.0	19.7	19.51	35.8
2011	11.0	36.5	26.1	24.86	32.5
2012	11.3	48.4	33.1	31.05	35.7

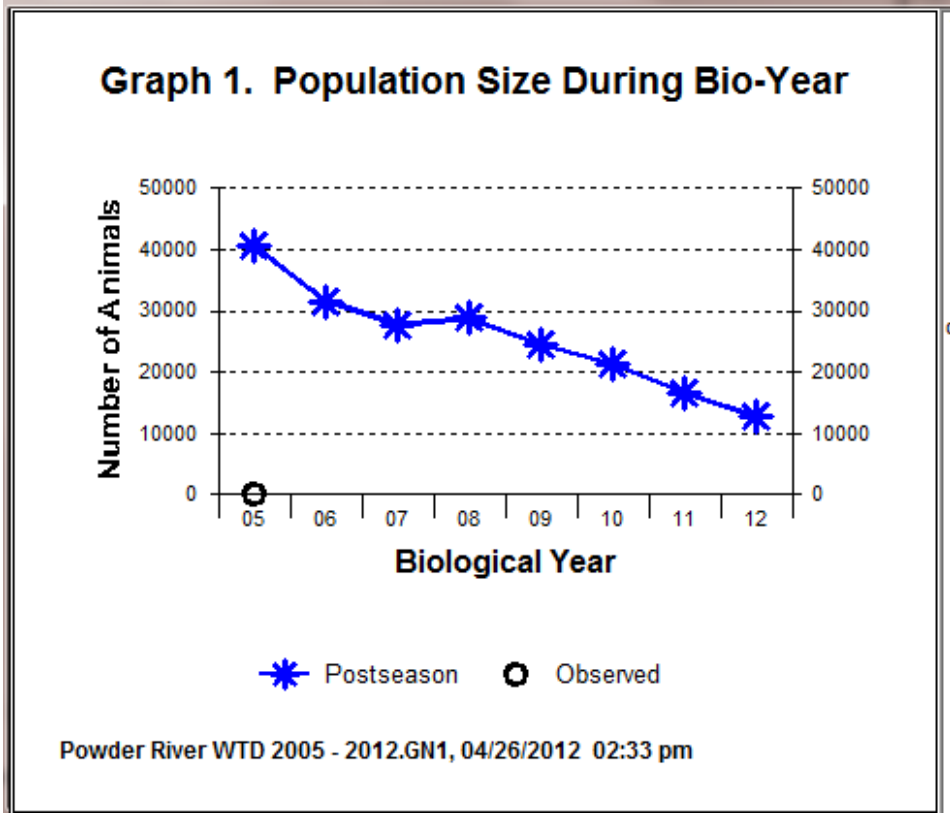
Table 6. Preseason Ratios for Powder River WTD 2005 - 2012.GN1 04/26/2012 02:33 pm

Bio-Year	Subadults /100 1+F	2+ Males /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2005	78.8	21.1	20.3	41.4
2006	58.3	29.8	15.6	45.4
2007	56.4	33.1	14.8	47.9
2008	65.2	32.0	19.1	51.2
2009	57.8	34.2	18.2	52.4
2010	54.8	34.1	19.0	53.2
2011	53.0	35.6	17.2	52.8
2012	58.3	35.2	19.5	54.7

Table 7. Postseason Ratios for Powder River WTD 2005 - 2012.GN1 04/26/2012 02:33 pm

Bio-Year	Subadults /100 1+F	2+ Males /100 1+F	Yr. Males /100 1+F	Ad Males /100 1+F
2005	84.8	17.6	16.9	34.5
2006	66.3	25.7	13.4	39.0
2007	62.9	27.5	12.3	39.8
2008	74.9	26.6	15.9	42.6
2009	68.9	28.0	14.9	43.0
2010	64.6	28.2	15.8	44.0
2011	65.4	29.9	14.4	44.4
2012	80.3	25.9	14.3	40.2

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

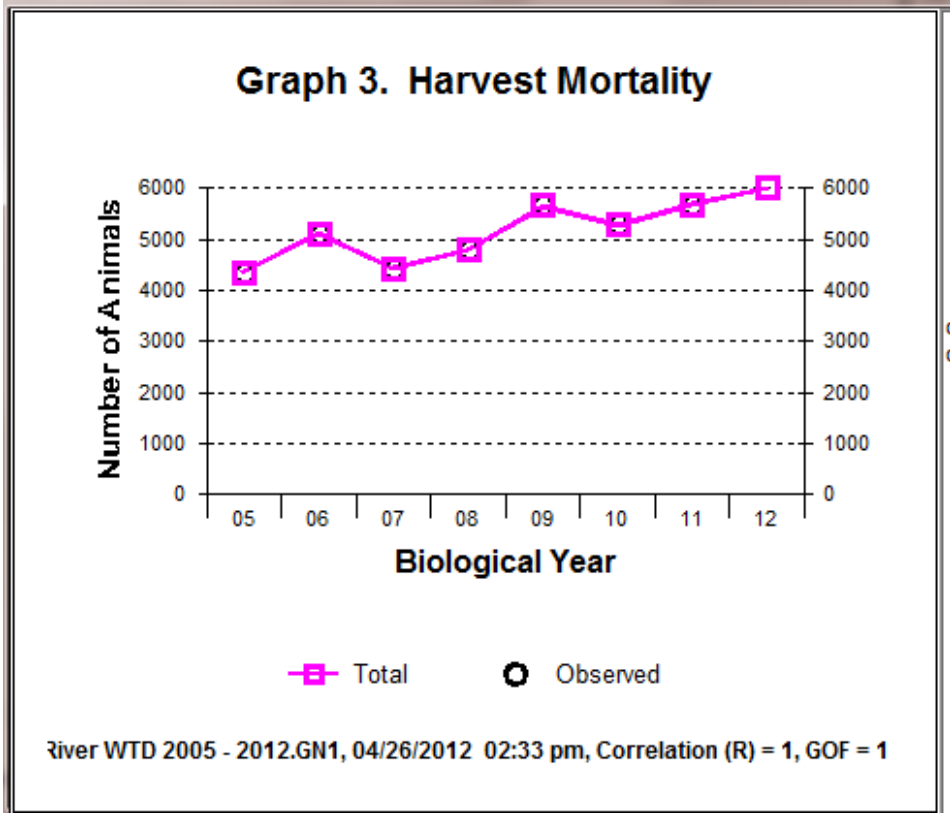


YR	SIM	OBS
05	40655	0
06	31541	-----
07	27722	-----
08	28752	-----
09	24411	-----
10	21258	-----
11	16610	-----
12	12722	-----

AVERAGES

of Col.	25459	

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

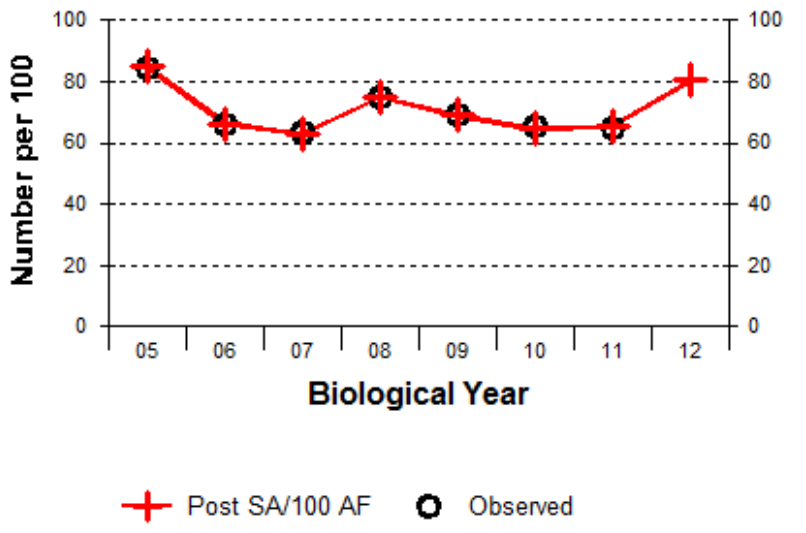


YR	SIM	OBS
05	4358	4358
06	5108	5108
07	4426	4426
08	4792	4792
09	5656	5656
10	5281	5281
11	5684	5684
12	6000	-----

AVERAGES

of Col.	5163	
of Pair	5044	5044

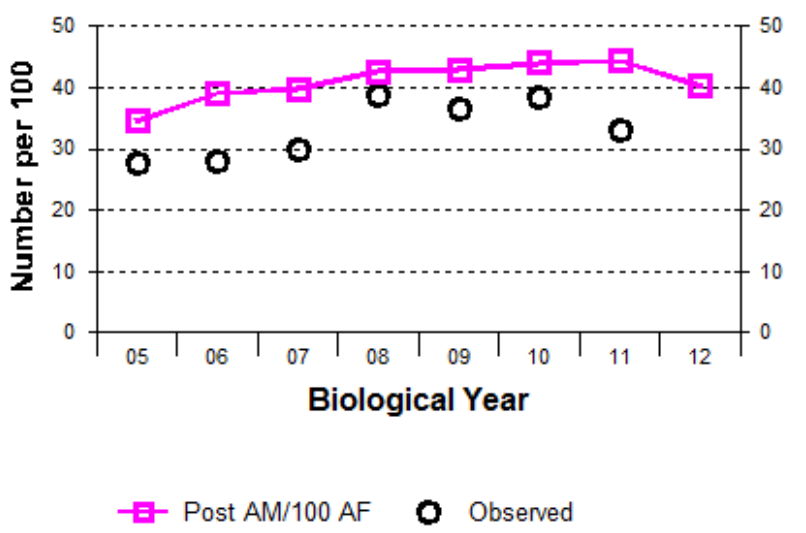
POP-II (V1.2.5) Graph 7. Postseason Ratios



D 2005 - 2012.GN1, 04/26/2012 02:33 pm, Correlation (R) = 0.998, GOF = 0.994

YR	SIM	OBS
05	85	85
06	66	66
07	63	63
08	75	75
09	69	69
10	65	65
11	65	65
12	80	-----
	AVERAGES	
of Col.	71	
of Pair	70	70

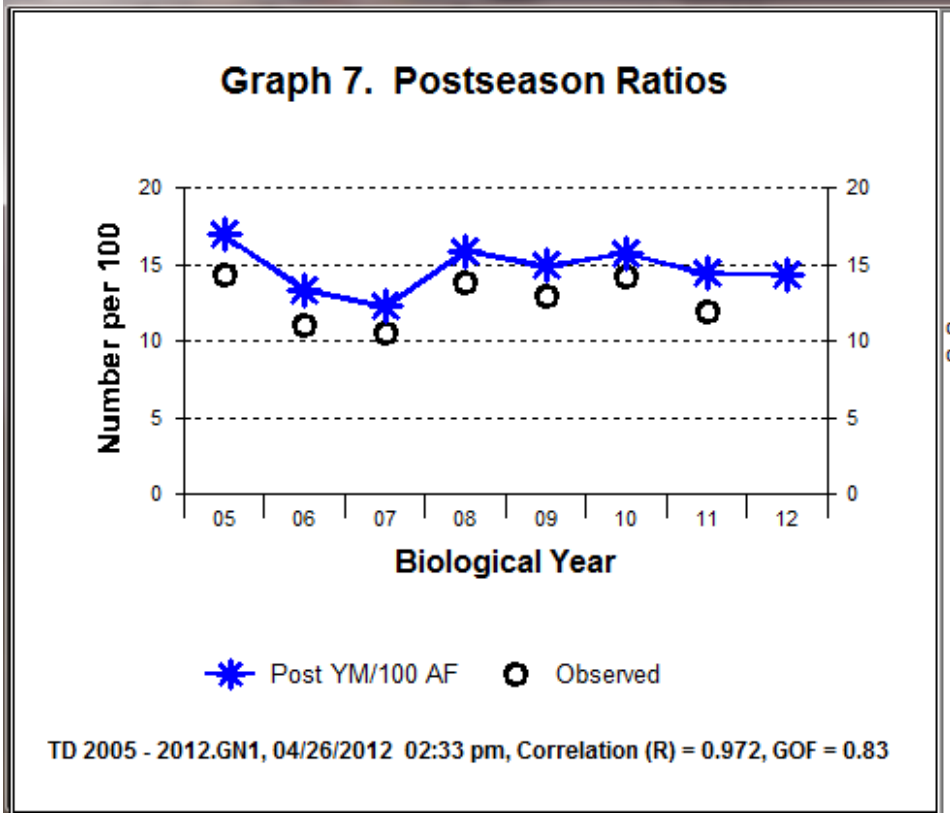
POP-II (V1.2.5) Graph 7. Postseason Ratios



D 2005 - 2012.GN1, 04/26/2012 02:33 pm, Correlation (R) = 0.794, GOF = 0.751

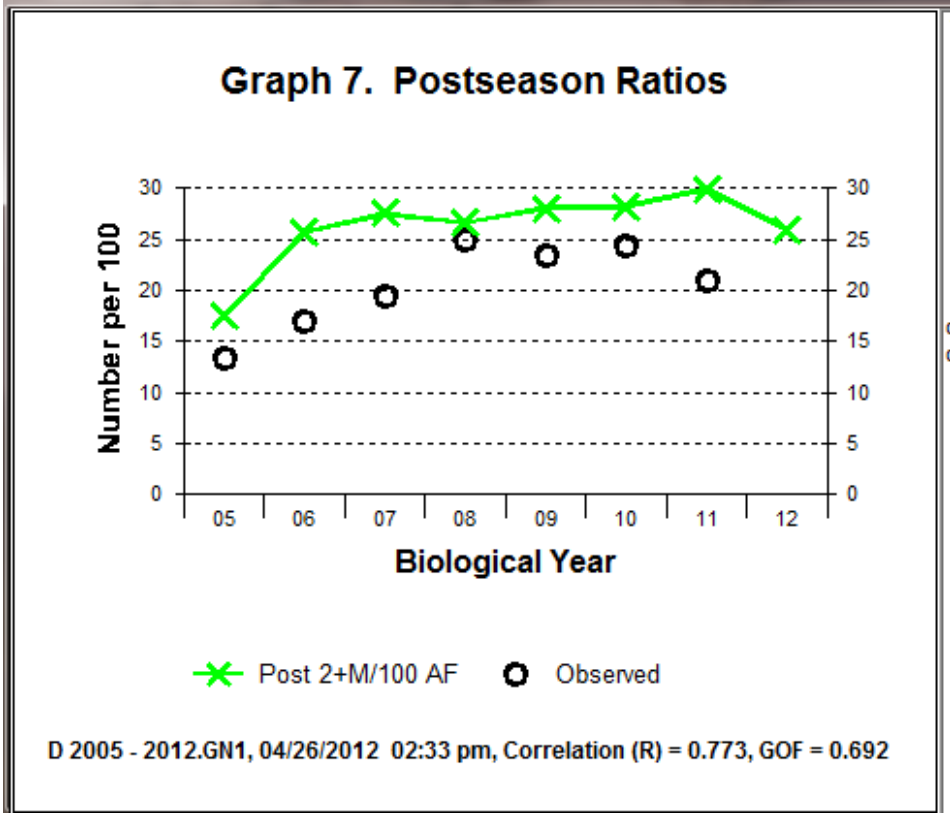
YR	SIM	OBS
05	35	28
06	39	28
07	40	30
08	43	39
09	43	37
10	44	39
11	44	33
12	40	-----
	AVERAGES	
of Col.	41	
of Pair	41	33

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

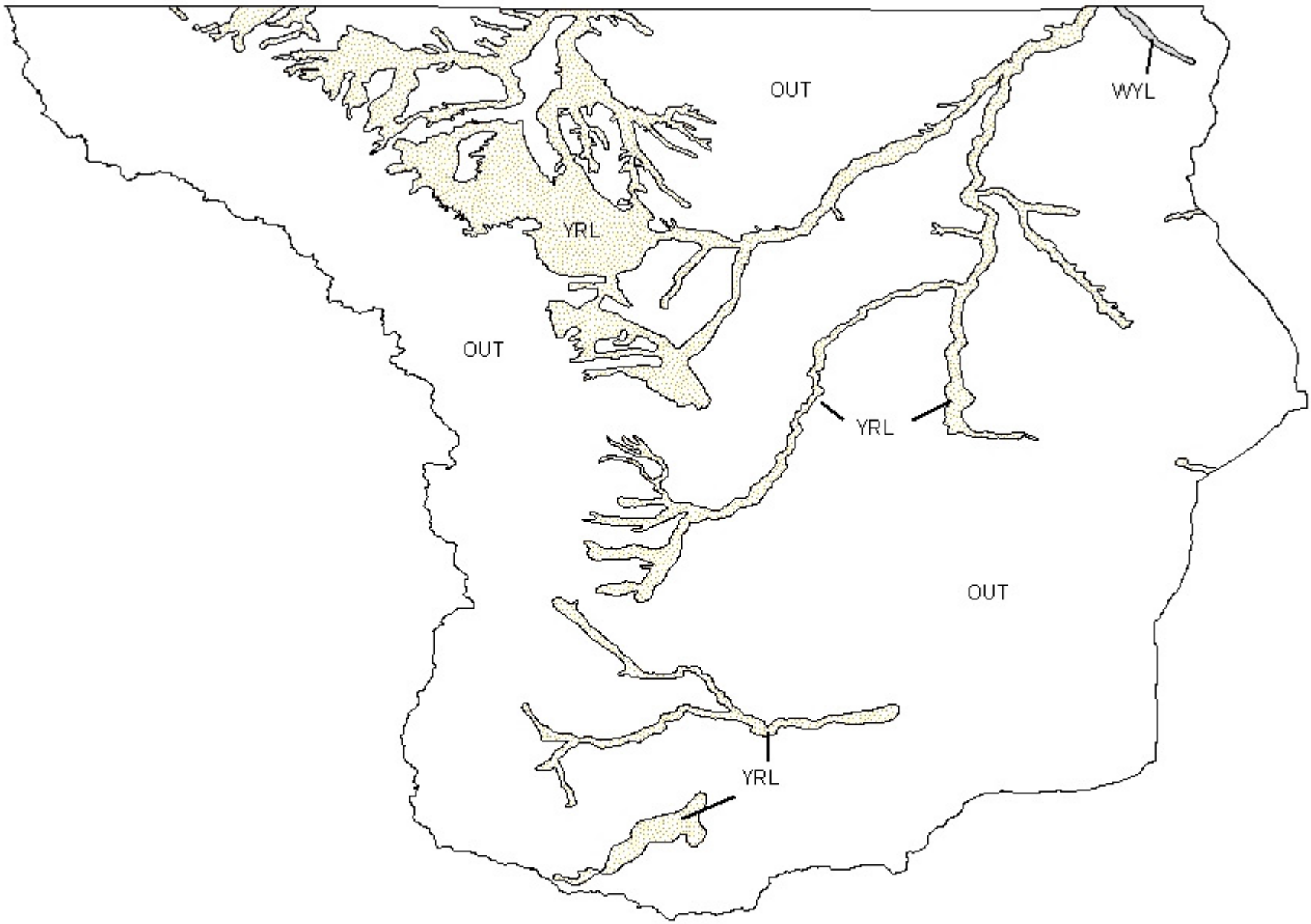


YR	SIM	OBS
05	17	14
06	13	11
07	12	11
08	16	14
09	15	13
10	16	14
11	14	12
12	14	-----
	AVERAGES	
of Col.	15	
of Pair	15	13

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



YR	SIM	OBS
05	18	13
06	26	17
07	28	20
08	27	25
09	28	24
10	28	24
11	30	21
12	26	-----
	AVERAGES	
of Col.	26	
of Pair	26	20



White-tailed Deer (WT303) - Powder River
HA 17, 19, 23-33, 163, 169
Revised 4/87