Approved by the Colorado Wildlife Commission September 2008

ELK DATA ANALYSIS UNIT PLAN
DAU E-3, NORTH PARK
GAME MANAGEMENT UNITS
6, 16, 17, 161, 171

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DAU E-3 (North Park)
EXECUTIVE SUMMARY

GMU's: 6, 16, 17, 161, 171
Land Ownership: 35.9% Private, 31.9% USFS, 18.2% BLM, 1.7% ANWR, 12% State
2007 Post hunt estimate 7900-8500
Old Posthunt Population Objective: 4,000-4,500 **New Approved Population Range 4,000 – 4,500**
Old Posthunt Sex Ratio: 20-23 Bulls:100 Cows **New Approved Sex Ratio 20-23 Bulls:100 Cows**

Figure 1. E-3 NORTH PARK ELK POPULATION ESTIMATE

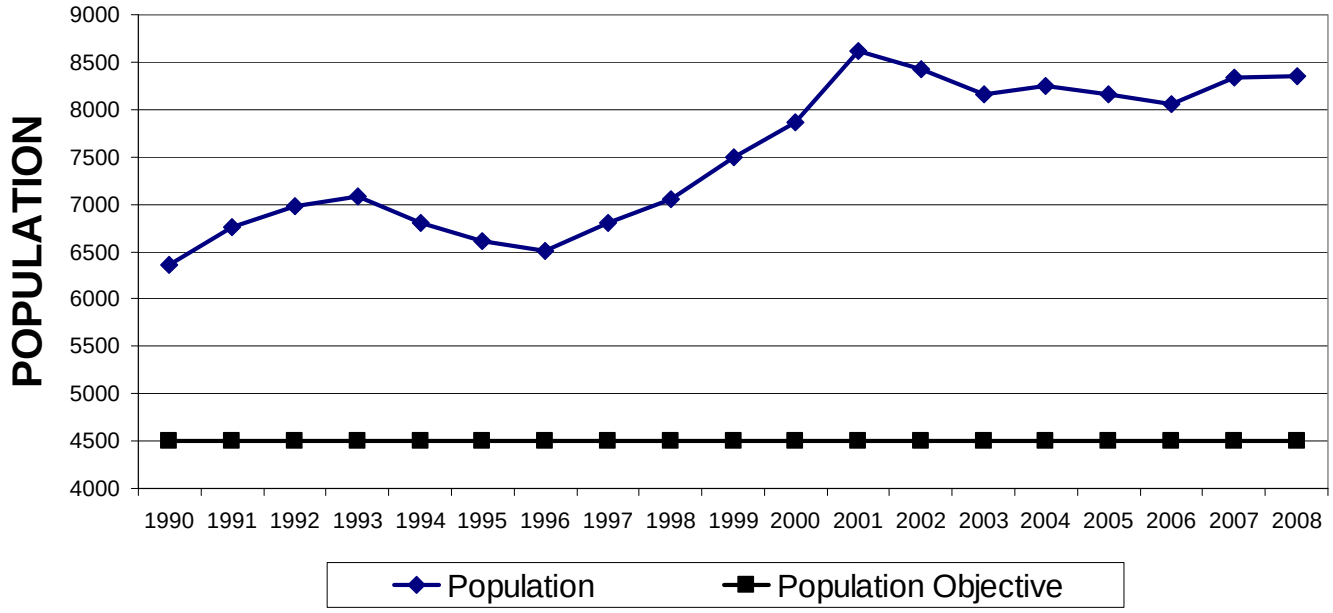


Figure 2. E-3 NORTH PARK ELK HARVEST ESTIMATE

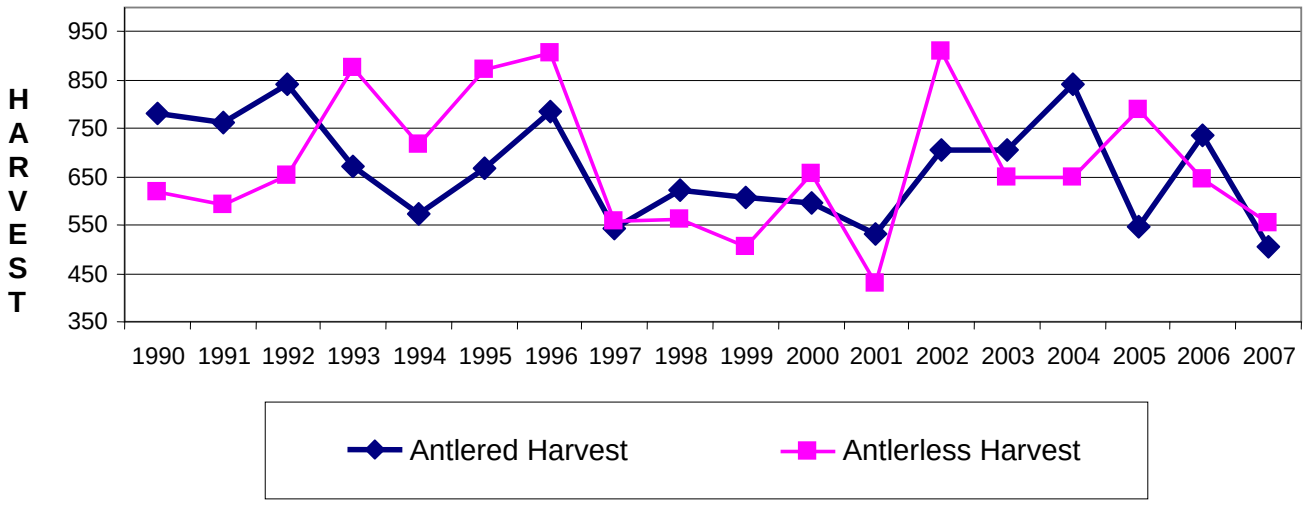


Figure 3. E-3 NORTH PARK ELK SEX RATIOS

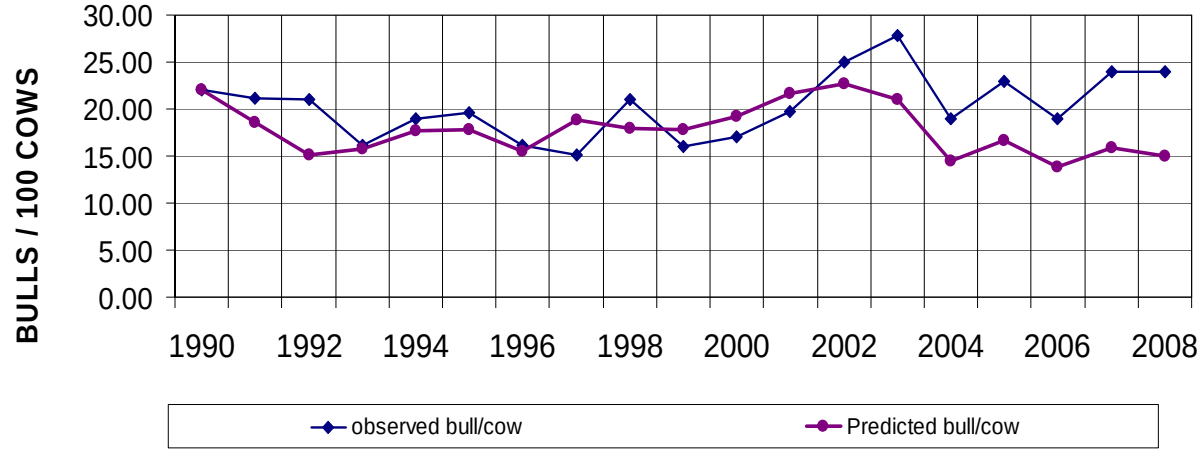
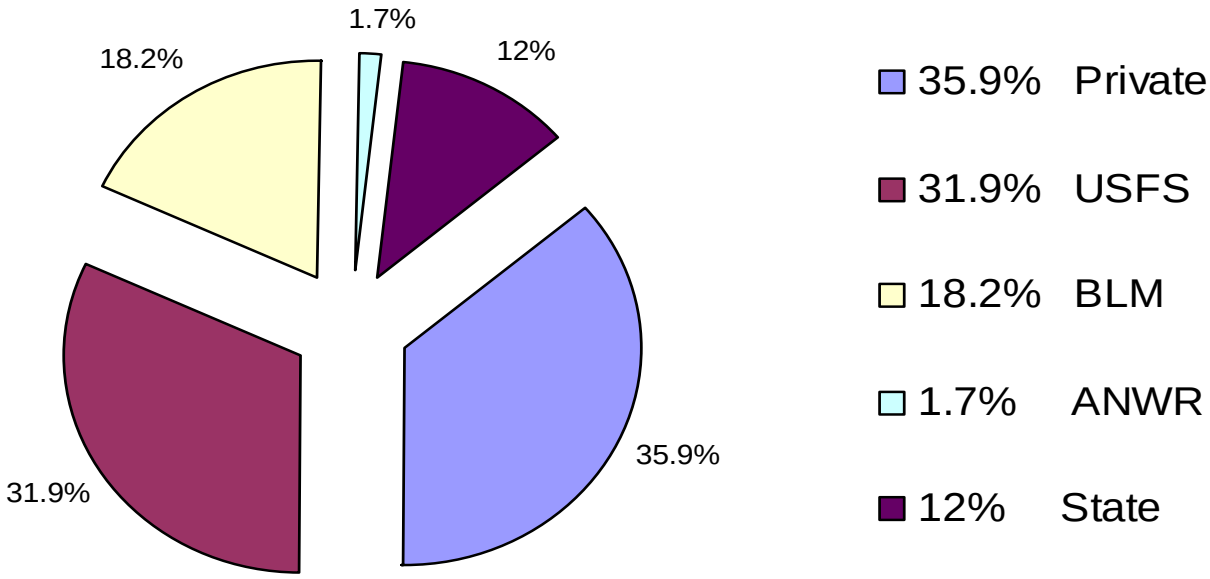
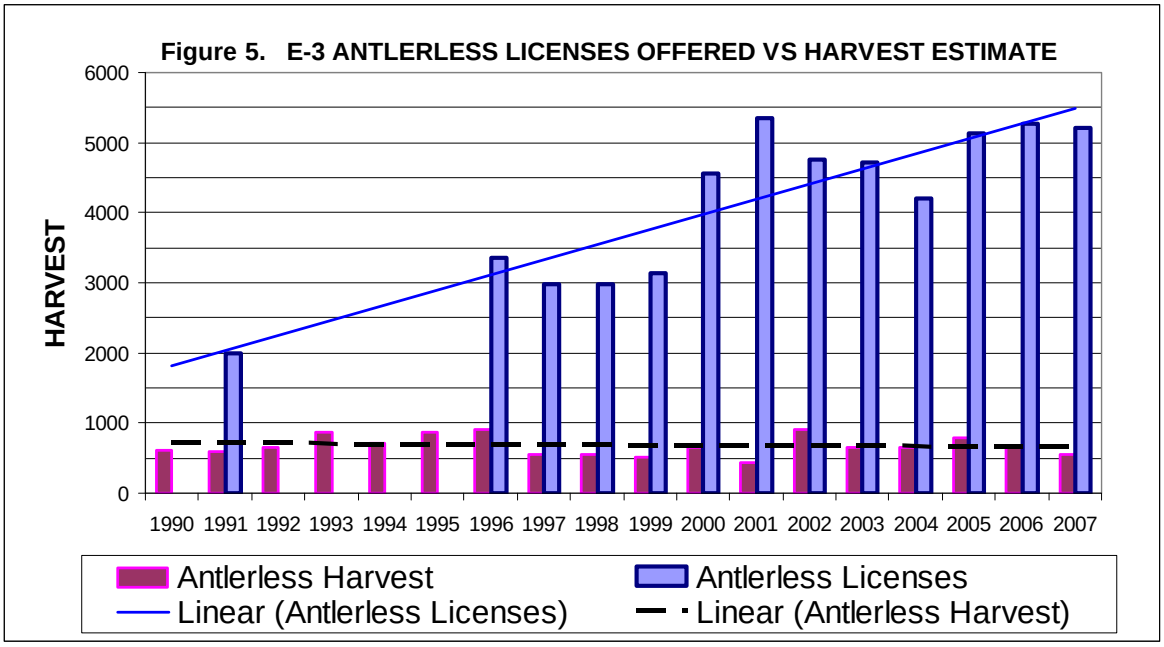


Figure 4. North Park Land Ownership





E-3 Background

Elk DAU E-3 is located in North Central Colorado and comprises all of Jackson County, commonly called North Park. E-3 consists of Game Management Units 6, 16, 161, 17, and 171. North Park is an intermountain park on the east side of the Continental Divide. The North Park watershed begins at the headwaters of the North Platte River. Major tributaries that make-up the North Platte drainage in Colorado are Grizzly Creek, the Illinois River, the Michigan River, the Canadian River, and the North Fork of the North Platte. Popular fishing lakes in the area include Delaney Buttes, Lake John, and Big Creek Lakes among others. The DAU is bounded on the west by the Park Range, on the south by the Rabbit Ears Range, to the east by the Medicine Bow and Never Summer Ranges, and Independence Mountain and the Wyoming border on the north. DAU E-3 encompasses 1.036 million acres or 1,618 square miles and is a mix of public and private land (Figure 4).

Cattle ranching and growing hay for cattle have historically been, and continue to be, the primary land uses in North Park. This high, cold, semi-desert habitat has a strong agricultural base of irrigated hay meadows and cattle grazing. These conditions also produce some of the most productive wildlife habitat in the state. Timber harvest is still an important land use; although the lumber mill in Walden has closed the huge number of beetle killed lodgepole has kindled interest in wood products such as pellets for wood stoves. Hunting and fishing are an important part of the local economy providing 17.3% of the jobs in Jackson County with elk hunting generating $3,750,000 in revenue to the county annually (BBC Research and Consulting 2004).

Elk were plentiful in North Park in the early 1800's, but by the 1880's elk were virtually non-existent in North Park and most of Colorado, primarily due to market and subsistence hunting. The Colorado Game and Fish Commission closed elk hunting from 1903 to 1929 and hired game wardens to enforce the law. The protection of elk and transplanting elk from Yellowstone National Park to other parts of the state resulted in recovery of the elk population to a level with sustainable harvest. By the 1930's elk had returned to North Park and the population increased to approximately 2,000 animals by the late 1950's. By 1988 the post hunt population was estimated at over 6,500 elk and the post hunt 2007 population estimate was approximately 7,900 animals.

E-3 Significant Issues

The historic population model generates a 2008 post-hunt population of approximately 8,348 elk. The North Park elk herd is difficult to model because it is an interstate herd and little is known about elk movement between the two states. Radio collar deer studies show nearly half of North Park deer winter in Wyoming and it may be realistic to believe a significant number of North Park elk do too. Local DOW field personnel believe the true post hunt population to be at or below the historic model estimates and the majority of public comments received indicate current population levels are about right (landowners and hunters are mostly satisfied).

The current post hunt population estimate exceeds the current objective of 4,000 to 4,500 total elk in the post-hunt population, and thus, the total population would require significant reductions to achieve the current objective. Conversely, the population objective could be raised to reflect a more realistic estimate of the current number of elk in North Park.

The current population of elk in North Park may be at "socially" acceptable level, considering game damage complaints are minimal and overall habitat conditions appear acceptable at the current population level. However, the U.S.F.S. states "in some areas, shrub use reaches recurring, unacceptable levels that may threaten the vigor and overall sustainability of some shrub stands (2008)".

While access to good public land elk hunting is available in all units in North Park harvest success rates averaged over the past five seasons have been below statewide averages for all seasons and methods of take E-3. Hunters on private land typically have higher success rates than public land hunters.

Hunter access to private property and areas off limits to hunting along with the timing and intensity of snowfall events are the biggest factors affecting harvest rates for rifle hunters. When deep snow pushes elk down from the high country onto the valley floor during the rifle seasons success rates are much higher than during warm dry seasons. However, too much snow too soon can have a negative affect on harvest by pushing elk down low where hunting pressure forces them to refuge areas that are off limits to hunting. Elk will stay in these areas and will not

be available for harvest through out the remainder of the regular hunting seasons (Figure 2). To address this issue early PLO antlerless season in North Park have been expanded to be valid for the entire DAU, rather than GMU specific, in order to increase harvest opportunity. Additionally, the Arapaho National Wildlife Refuge is working on a hunt plan for elk on the refuge but it will likely be several years before it could be implemented, if it is approved.

Since 1990 there have been three five-year season structures and we are now in the fourth five-year structure. Over this time period there have been multiple adjustments made in elk seasons ranging from separate and combined rifle seasons with deer to no antler point restrictions on bulls to 4 point antler restrictions on bulls in all seasons. The 10-year average sex ratio is 21 bulls per 100 cows (Figure 3).

The total number of hunters for all methods of take in E-3 has fluctuated annually but has remained consistently between 8,000 and 9,000 since 1990. The average number of hunters over this period is 8,672 with the lowest number of hunters in 2001 at 7,130 and the greatest number of hunters in 1996 when 9,592 hunted elk in North Park.

The number of licenses in E-3 has increased from approximately 2,000 antlerless permits in the early 90's to over 5,000 permits since 2005 yet harvest has not responded proportionately. Presently there are 36 antlerless hunt codes that do not sell out every year. Over 20 of these hunts are PLO tags. Despite the increase in license numbers, elk harvest has only mildly increased (Figure 5).

Public and agency comments on management alternatives yielded the following results; 47% of public respondents desire no change in the population objective, 41% want to see an increase and 12% want to see a decrease. For sex ratio objectives 70.5% of public respondent's desire no change and 29.5% want to see a higher sex ratio objective. The State Land Board, BLM, USFS, and Jackson County Commissioners all recommended the population remain at the current objective. The HPP Committee suggested the current population estimate be used as the upper end of the population level. All agency responses indicated the current sex ratio objective is fine.

E-3 Management Alternatives

Three post-hunt population objectives were proposed **(1)** decrease the population to a range of **3,500 – 4,000 elk**, **(2)** remain at the current objective range of **4,000 – 4,500 elk** and **(3)** increase the population range to **6,000 - 6,500 elk.**

Three post-hunt sex ratio objectives were proposed **(1) Sex Ratio, 15 - 20 bulls:100 cows, (2) Sex Ratio, 20 - 23 bulls:100 cows** this is the current sex ratio alternative, **(3) Sex Ratio, 25 - 30 bulls:100 cows.**

Through the DAU planning process and public input the preferred alternative for post-hunt population size and sex ratio objectives for E-3 were selected as a population range of 4,000 – 4,500 elk. This preferred population range represents a 53% reduction from the current population estimate. The recommended sex ratio objective is, 20 - 23 bulls/100 cows.

Conclusion

The preferred post-hunt population objective of 4,000–4,500 elk will be difficult to achieve without a significant increase in antlerless harvest. Several factors make this a difficult task with the major issue being poor public hunter access to elk which have moved off National Forest and BLM or state lands and into areas off limits to hunters. Snow events are needed during the rifle seasons to move elk onto areas with good hunter access but not too much snow too fast or elk move quickly onto winter range inaccessible to hunters. The North Park elk are part of an interstate herd that has exchange with Wyoming elk. It is difficult to determine how many of these animals leave and are not available to Colorado hunters.

The primary issue for elk management in E-3 is lack of hunter access to refuge areas where elk are not hunted, until this situation changes it will be difficult to reduce elk numbers significantly in E-3. Although the preferred alternative may be difficult to achieve, it is important to note that the public is generally satisfied with the current elk population level in North Park. Thus, a continued strategy of reducing the elk herd with liberal cow licenses and expanded PLO opportunity (i.e. gaining more public hunter access to private land), is warranted and recommended with the long term DAU objective of 4,000 to 4,500 elk.

* Please note that the public DAU meetings and requests for agency comments occurred in January of 2008 well before 2007 harvest information and 2008 population modeling data was available.

Final plan approved by the Colorado Wildlife Commission September 2008

ELK DATA ANALYSIS UNIT (DAU) E-3, NORTH PARK
GAME MANAGEMENT UNITS
6, 16, 17, 161, 171

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INTRODUCTION AND PURPOSE

The Division of Wildlife (DOW) is responsible for the maintenance of Colorado's big game herds at population levels that are established through a public review process and approved by the Colorado Wildlife Commission. For planning and management purposes the various big game "herds" throughout the state are divided into Data Analysis Units (DAU's). The DAU Plan is a strategic plan that addresses two primary decisions, the number of animals the DAU should contain and the desired sex ratio. The geographic area of each DAU is drawn to encompass the year-round range of the majority of the animals of that species. A typical DAU encompasses several Game Management Units (GMU's) that divide the DAU into workable sub-units, primarily for harvest management.

The DAU Plan is also a collection of important management data of a particular wildlife population. This document includes alternate strategies, evaluation of those strategies, and a preferred alternative. The DAU Plan process is designed to examine public desires and balance them with biological capabilities. The population objective is established for a ten-year period. The population objective drives the decisions related to annual license numbers that will determine the number of animals that need to be harvested to meet population objectives**.**

In order to achieve the desired level of harvest for males, females, and total post hunt population objectives multiple seasons and methods of take are employed. Season options range from archery and muzzleloading to rifle hunting. Average harvest success rates are used to determine the number of licenses of various types needed to achieve the desired harvest.

Management by objective (Figure 1) is a process based on an annual cycle of information collected from sex and age ratio flights, survival studies, and harvest data. Analysis of the data results in recommendation of harvest objectives to meet the population objectives for that DAU. Harvest objective recommendations culminates each year with the Colorado Wildlife Commission adopting the number of limited hunting permits to issue in order to achieve the current DAU population objective.

Figure 1.

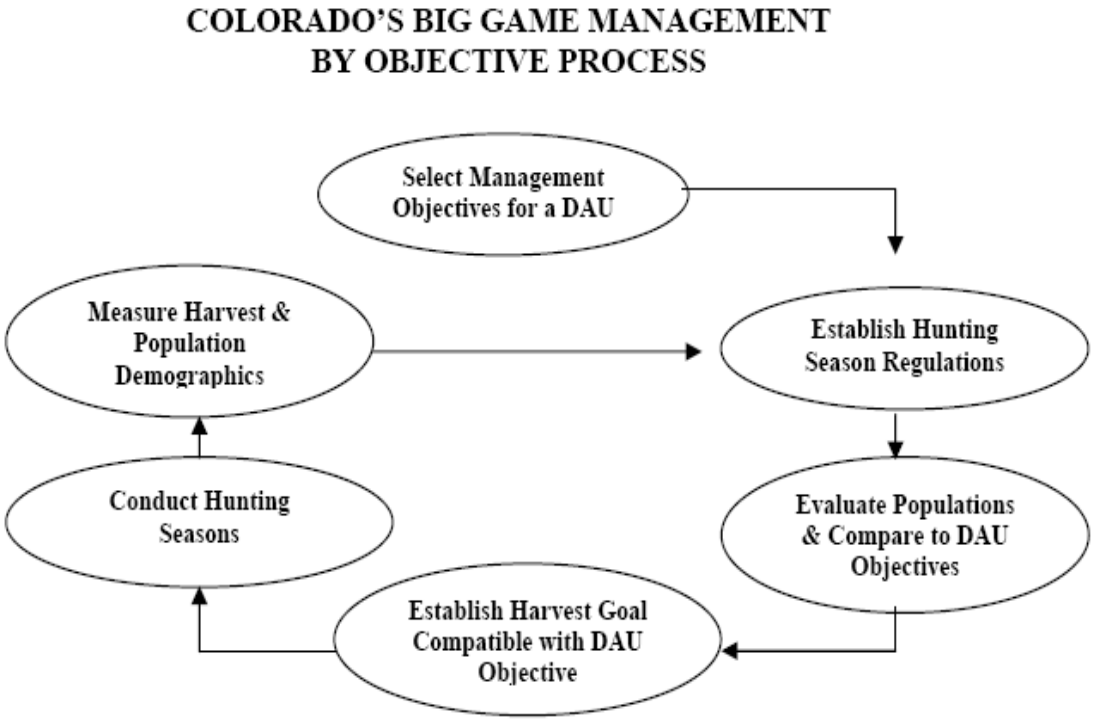


Figure 1. Management by objectives process used by the CDOW to manage big game populations on a DAU basis.

Estimating population size of wild animals over large geographic areas is an extremely difficult and inexact exercise. In several research projects, attempts have been made to accurately count all the known number of animals in large fenced areas. All of these efforts have failed to consistently count all of the animals. In some cases less than 50% of the animals can be observed and counted. High-tech methods using infrared sensing have also met with limited success. The DOW recognizes this is a serious challenge to our management. The DOW attempts to minimize this problem using the latest technology and inventory methodology available. Most population estimates are derived using computer model simulations that involve estimations for mortality rates, hunter harvest, wounding loss and annual production. These simulations are then adjusted to align on measured post-hunting season age and sex ratio classification counts. The DOW recognizes the limitations of the system and strives to do the best job with the resources available. If better information becomes available, such as new estimates of survival rates, wounding loss, sex ratio at birth, density estimates, or new modeling techniques and programs, the DOW will use this new information and the new techniques. This may result in significant changes in the population size estimates and management strategies. It is recommended that the

population estimates presented in this document be used only as an index or as trend data and not as an absolute estimate of the population in the DAU.

The total number of animals in a big game population fluctuates throughout the year. Normally, the population peaks in the spring just after birth of the young. Populations then decline throughout the year as natural mortality and hunting seasons take animals from the population. Traditionally the CDOW uses post-hunt populations (immediately after conclusion of the last hunting season) as a frame of reference when we refer to the size of a population. In this manner we have established a reference point and can eliminate confusion when referring to populations.

Realistically, population objectives are determined by a combination of variables woven tightly together and fashioned to satisfy all the demands to arrive at a final population objective. The major variables include biological data, economic impact, political considerations, recreational activities, livestock concerns, and habitat conditions. Population objectives are often set at a level consistent with herd's maximum sustained yield (MSY). However, it is very difficult to determine the ranges MSY and carrying capacity (see Appendix A for a brief summary of the concept of MSY and carrying capacity).

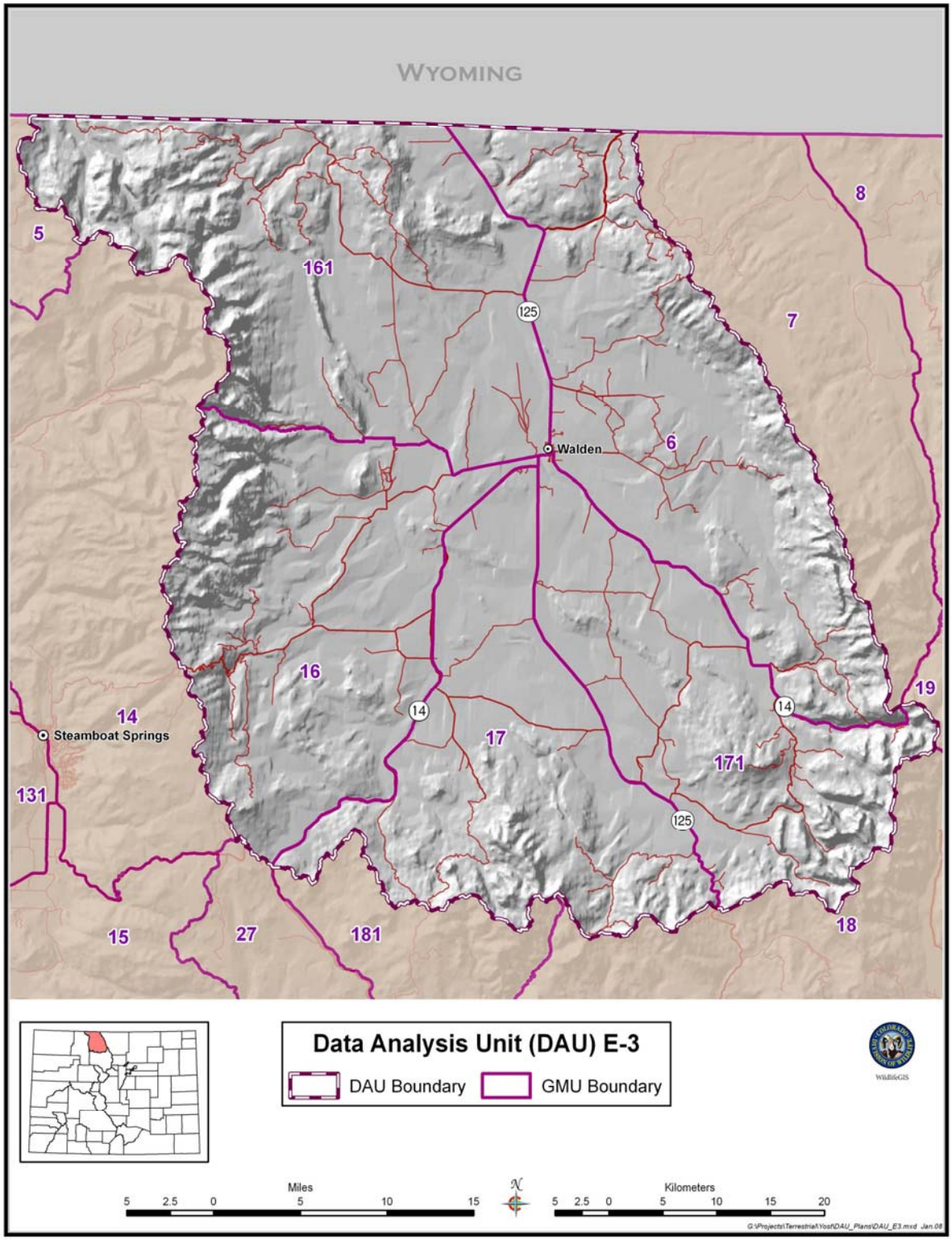
DESCRIPTION OF DAU

Location

Elk DAU E-3 is located in North Central Colorado and comprises all of Jackson County, commonly called North Park. The largest town in North Park and the county seat is Walden (population 734), Cowdrey, Gould, and Rand are much smaller but well known towns. E-3 consists of Game Management Units 6, 16, 161, 17, and 171. North Park is an intermountain park on the east side of the Continental Divide. The North Park watershed begins at the headwaters of the North Platte River. Major tributaries that make-up the North Platte drainage in Colorado are Grizzly Creek, the Illinois River, the Michigan River, the Canadian River, and the North Fork of the North Platte. Popular fishing lakes in the area include Delaney Buttes, Lake John, and Big Creek Lakes among others.

The DAU is bounded on the west by the Park Range, on the south by the Rabbit Ears Range, to the east by the Medicine Bow and Never Summer Ranges, and Independence Mountain and the Wyoming border on the north. DAU E-3 encompasses 1.036 million acres or 1,618 square miles (Figure 2).

Figure 2. E-3 DAU Map



Physiography

Topography

Elevations in North Park range from 7,800 feet at Northgate to 12,951 feet at Clark's Peak. The average elevation of the open, sagebrush-grassland park is 8,000 feet. North Park is a relatively flat, sagebrush grassland with numerous wetlands interspersed with wide, willow dominated drainages. The mountains that surround the park rise rapidly to the alpine zone above timberline. The montane zone is dominated by lodgepole pine stands and to a lesser extent aspen and spruce-fir stands.

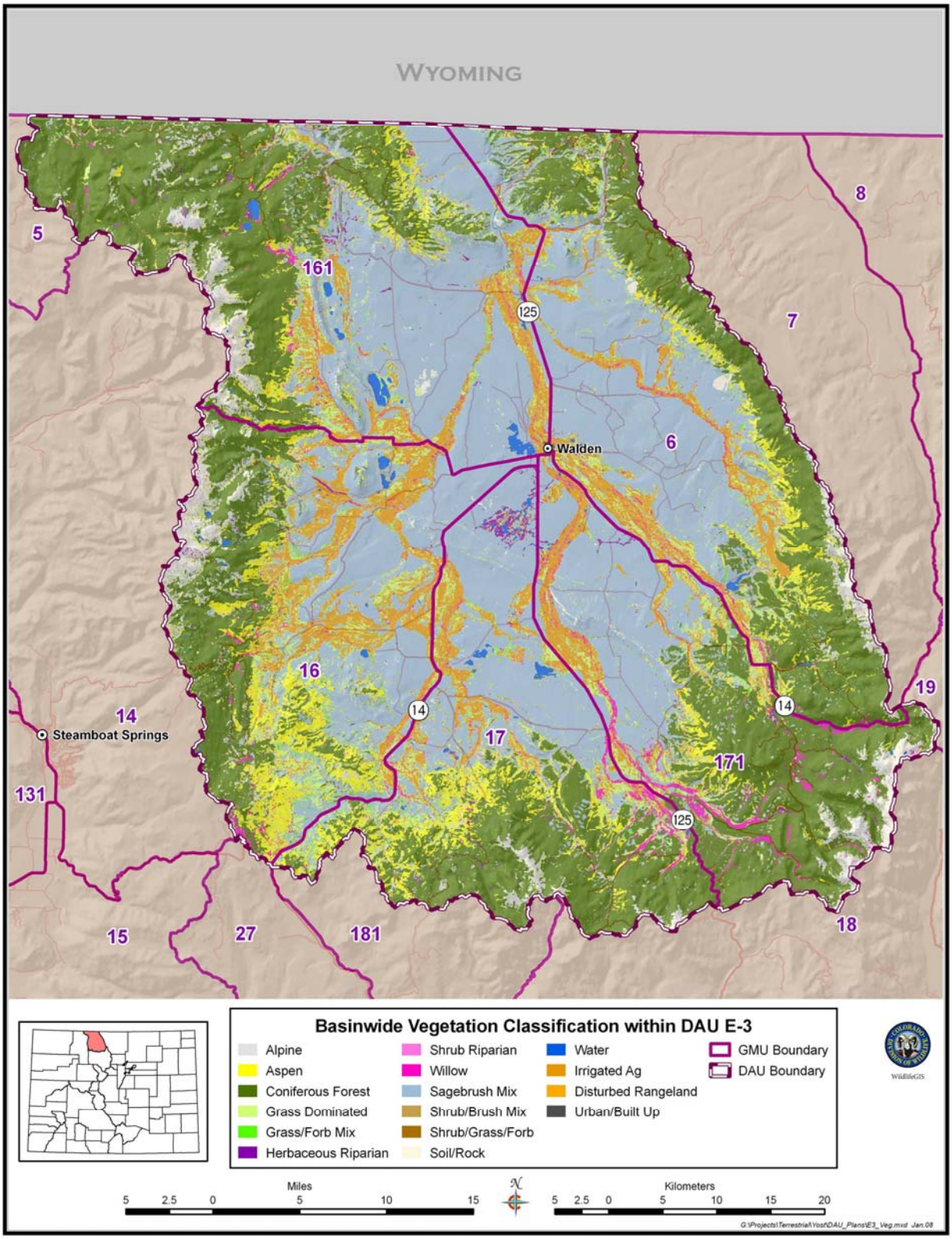
Climate

Winters are windy, cold, and snowy. The summers are short, cool, and dry. The average temperature measured at Walden is 37.8 degrees F, with a temperature range between -50 degrees F and 90 degrees F. The growing season averages 33 days, mostly in the month of July with between 15 and 45 frost free days annually. The average annual precipitation is ten inches, which includes fifty inches of snowfall that comes in a few large snowstorms. Moderate to severe winds are common in North Park prevailing to the northeast.

Vegetation

Vegetation varies throughout the Park with sagebrush lining the valley floor, a variety of willow species along stream courses, and mountain shrub, lodgepole pine, aspen, and spruce-fir at higher elevations. The dominant vegetation types present are coniferous forest, sagebrush mix, and irrigated grass hay fields (Figure 3). See also Appendix B - GIS Vegetation Data.

Figure 3. Basin wide Vegetation Map



Land Use

Historically cattle ranching and growing hay for cattle were, and continue to be, the primary land uses in North Park. This high, cold, semi-desert habitat has a strong agricultural base of irrigated hay meadows and cattle grazing. This habitat also produces some of the most productive wildlife habitat in the state, especially for waterfowl. Timber harvest is still an important land use, although the lumber mill in Walden has closed the huge number of beetle killed lodgepole has kindled interest in wood products such as pellets for wood stoves. Hunting is an important part of the economy, with big game hunting bringing in the largest number of hunters, but small game and waterfowl hunting also has a significant impact locally. Until now land development has not been prevalent in North Park but with land prices skyrocketing in Routt, Grand, and Larimer Counties more people may begin looking at Jackson County for affordable vacation homes and land.

Land Ownership

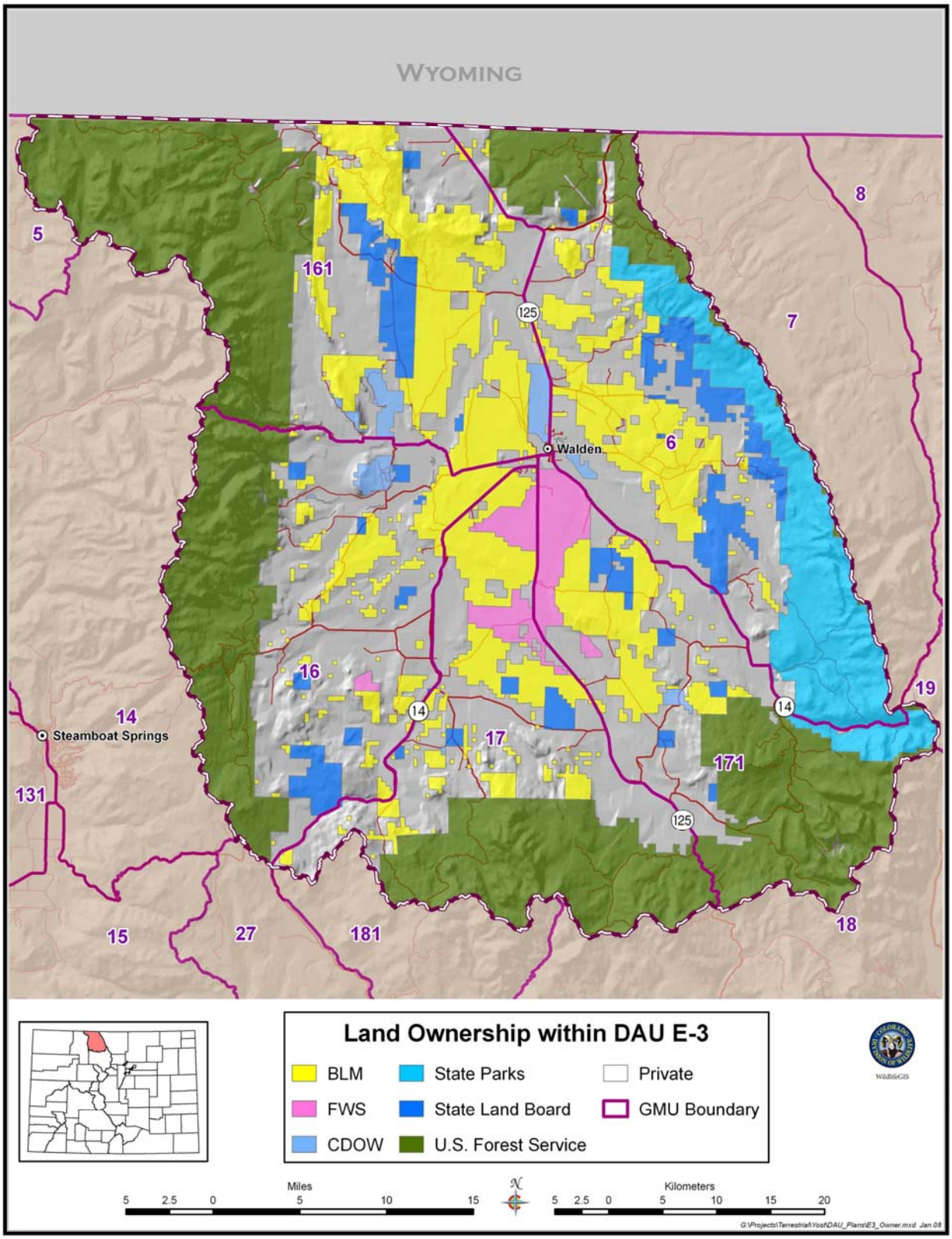
Land ownership (Table 1 and Appendix C) in DAU E-3 is 36% private land, 12% state land and 52% federal land. The Routt National Forest covers 32% of the DAU and most of the mountainous areas that surround the park. The Bureau of Land Management (BLM) property, 18.2%, is primarily sagebrush habitat in the center of the park where a majority of the private land is also located. The Colorado State Forest, 6.8%, is found on the east side of the park. The Arapaho National Wildlife Refuge, 1.7%, manages important elk habitat in the center of the park. State Trust Lands, 4.9%, are primarily in sagebrush habitat (Figure 4).

Table 1. North Park Land Ownership

OWNER	MANAGER	ACRES
BLM	BLM	189,221.66
BLM	*CDOW	11,167.93
FWS	FWS	23,457.71
PRIVATE	PRIVATE	357,294.86
SLB	SLB	52,080.41
SLB	STPARKS	69,760.43
USFS - ARNF	USFS - ARNF	2,112.71
USFS - ROUTT	USFS - ROUTT	330,971.47
	Total	1,036,067.19

* CDOW is listed as manager for some BLM land where stocked waters occur or the CDOW has facilities such as restrooms, parking lots, etc. This does not necessarily mean the CDOW has exclusive management of those acres listed.

Figure 4. Land Ownership Map



HERD MANAGEMENT HISTORY

Elk, once plentiful in North Park in the early 1800's all but disappeared due to market and subsistence hunting. By the 1880's elk were virtually non-existent in North Park and most of Colorado. The Colorado Game and Fish Commission closed elk hunting from 1903 to 1929 and hired game wardens to enforce the law. The protection of elk and transplanting elk from Yellowstone National Park to other parts of the state resulted in recovery of the elk population to a level with sustainable harvest. By the 1930's elk had returned to North Park and by the late1950's the population had increased to approximately 2,000 animals. In 1988 the post hunt population was estimated at over 6,500 elk and the post hunt 2007 population estimate was approximately 7,900 animals.

The current post hunt population estimate of 8,348 far exceeds the current objective of 4,000 to 4,500 total elk in the post-hunt population, and thus, the total population would require significant reductions to achieve the current objective. Conversely, the population objective could be raised to reflect a more realistic estimate of the current number of elk in North Park. The current population of elk in North Park may be at "socially" acceptable level, considering game damage complaints are minimal and overall habitat conditions appear acceptable at the current population level.

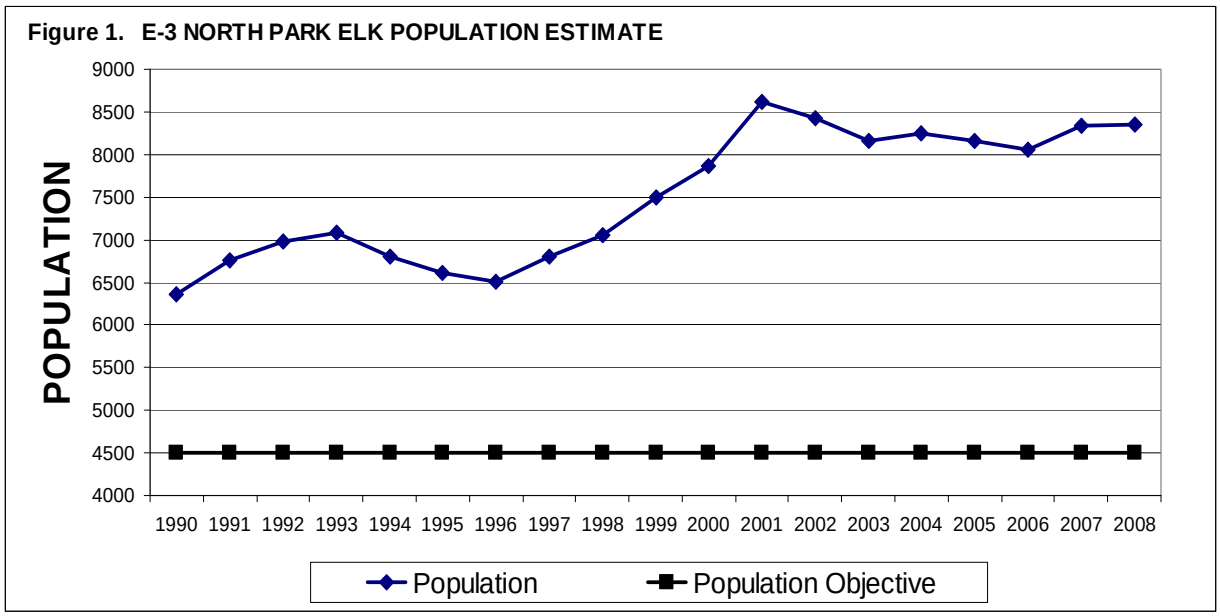
In 1999 (Weisberg) used the SAVANNA ecosystem model to simulate elk population impacts to the ecosystem of North Park at various population levels. Results indicate a population of 4,000 to 5,000 elk will have minimal negative impacts on the system. However, when the elk population reaches a level of 8,000 animals or greater marked deterioration in winter range will occur. Impacts to domestic cattle production would be minimal even at elk population levels of 12,000 animals. For example the SAVANNA model shows when the elk population level is 0 (zero) mean domestic cow weights at the end of September would average 1,052 lbs and when the elk population level is 12,000 animals mean domestic cow weights at the end of September would average 1,039 lbs.. This equates to a reduction in mean September cow weights of 13 lbs. or 0.012 percent.

A habitat assessment model was created for the Habitat Partnership Program (HPP) committee in 2004 (Roath, Hardy, Wockner, Porter, Hobbs, and Freddy) as a tool to aid the committee in determining the wild ungulate population and its relationship to habitat sustainability. Results from this model predicted sustainable elk population numbers of 1,939 animals at the low end, 5,835 at the mid-point, and 9,731 at the high end. Assuming both of the above models are relatively accurate North Park could support between 8,000 and 9,000 elk before serious habitat and corresponding negative impacts to the herd occur. That does not mean we should manage for the maximum elk population merely this is a guideline for sustainable population thresh holds.

Post-hunt population size

The 2008 post-hunt population size estimate taken from computer models is approximately 8,348 elk. The current post season population objective is 4,000-4,500 elk. The five-year modeled post hunt population mean is 8,195 and the ten-year post hunt mean is 8,044 elk (Figure 5).

Figure 5

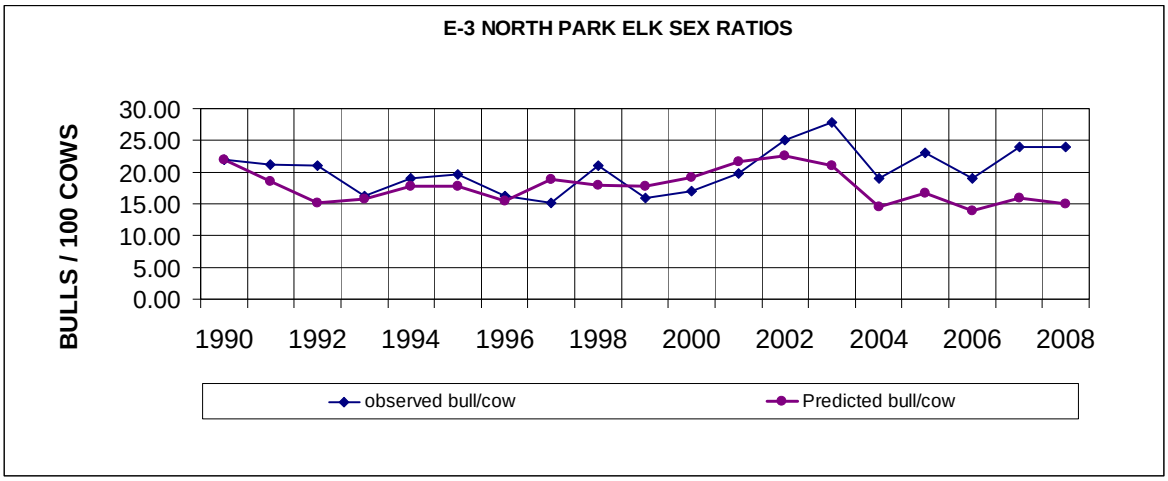


Post-hunt Herd Composition

Sex Ratios

The modeled post-season sex ratio is 15 bulls:100 cows. The current adult sex ratio objective is 20-23 bulls per 100 cows, post-season. The lowest modeled sex ratio estimate occurred in 2006 with 14 males per 100 females and the highest occurred in 2002 with 23 males per 100 females. The long term observed trend has been an increasing sex ratio (Figure 6).

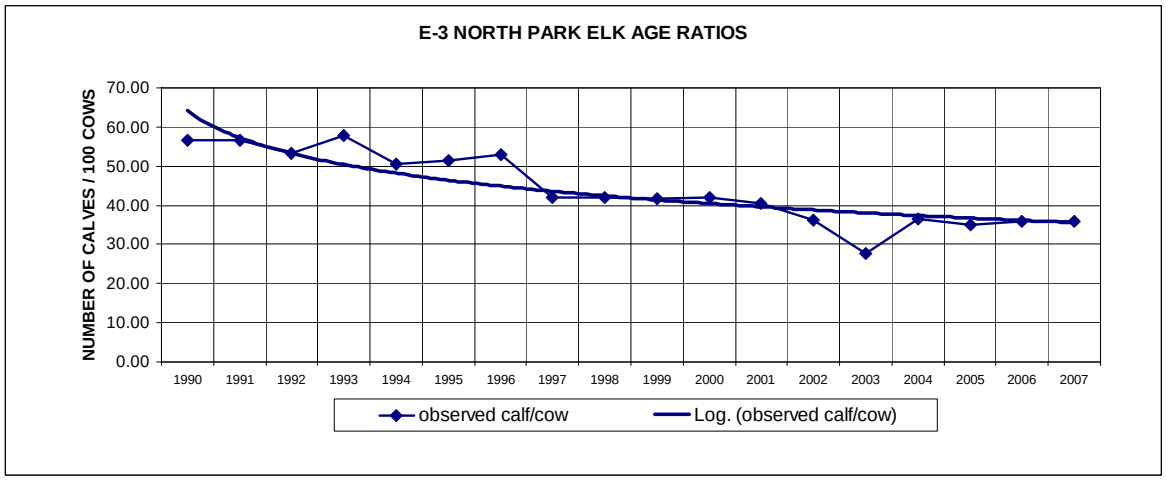
Figure 6.



Age Ratios

The lowest observed post hunt ratio occurred in 2003 with 28 young per 100 females and the highest occurred in 1993 with 59 young per 100 females. The long term trend has been a decreasing age ratio. The 2008 modeled post-season age ratio is 36 calves per 100 cows. The lowest age ratio estimate occurred in 2003 with 27 young per 100 females and the highest occurred in 1993 with 59 young per 100 females (Figure 7).

Figure 7.



HARVEST

While access to good public land elk hunting is available in all units in North Park harvest success rates averaged over the past five seasons have been below statewide averages for all seasons and methods of take E-3 (Table 2). Hunters on private land typically have higher success rates than public land hunters.

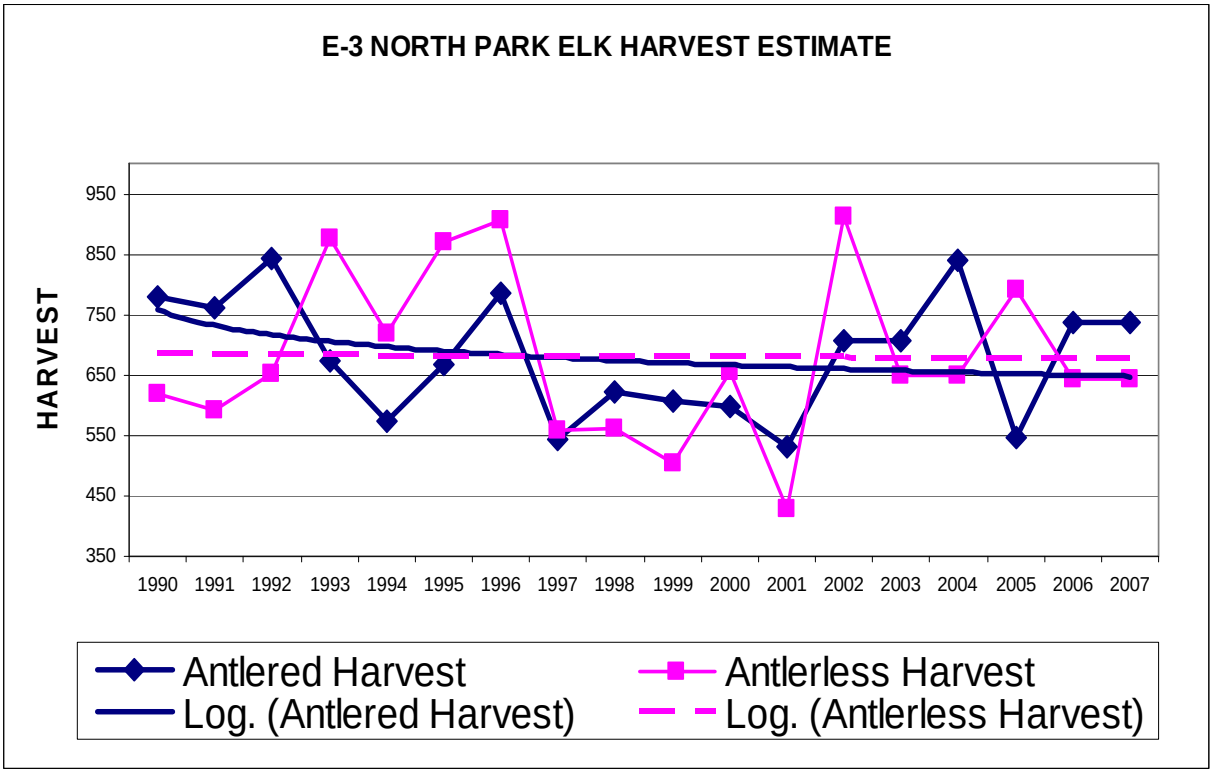
Table 2.

E-3 North Park Five-Year Average Percent Success Rate

Year	All Rifle		Muzzleloading		Archery Combined	
	Antlered	Antlerless	Antlered	Antlerless	Antlered	Antlerless
2002	16	24	16	15	11	
2003	14	15	20	7	14	
2004	19	19	16	9	12	
2005	11	17	19	16	12	
2006	18	15	19	5	8	
Average E-3	**15.6**	**18**	**18**	**10.4**	**11.4**	
Statewide	**21.4**	**30.6**	**22.8**	**15.2**	**14.4**	

Hunter access to private property and areas off limits to hunting along with the timing and intensity of snowfall events are the biggest factors affecting harvest rates for rifle hunters. When deep snow pushes elk down from the high country onto the valley floor during the rifle seasons success rates are much higher than during warm dry seasons. However, too much snow too soon can have a negative effect on harvest by pushing elk down low where hunting pressure forces them to refuge areas that are off limits to hunting. Elk will stay in these areas and will not be available for harvest (Figure 8) through out the remainder of the regular hunting seasons.

Figure 8.



Hunters

Colorado manages big game season structures and dates on a five-year basis meaning that every five years the current system is re-evaluated and adjustments are made to season lengths and dates as is necessary to achieve management objectives and public desire. Since 1990 there have been three five-year season structures and we are now in the fourth five-year structure. Over this time period there have been multiple adjustments made in elk seasons ranging from separate and combined rifle seasons with deer, to no antler point restrictions on bulls, to 4 point antler restrictions on bulls in all seasons. Through all these changes hunters have faithfully returned to hunt E-3.

The total number of hunters for all methods of take in E-3 has fluctuated annually but has remained consistently between 8,000 and 9,000 since 1990. The average number of hunters over this period is 8,672 with the lowest number of hunters in 2001 at 7,130 and the greatest number of hunters in 1996 when 9,592 hunted elk in North Park (Table 3). See Figures 9-11 for graphs of hunters by method.

Table 3.

E-3 North Park Total Number of Hunters by Method 1990-2006

Year	Rifle	Muzzleloading	Archery	All Manners
1990	6216	232	910	7362
1991	6512	283	989	7784
1992	6703	454	993	8148
1993	7040	460	1288	8792
1994	7748	467	1186	9393
1995	7329	494	1144	8977
1996	7637	593	1366	9592
1997	7312	714	1330	9350
1998	6154	715	1150	8021
1999	7142	753	1491	9391
2000	6636	840	1675	9153
2001	5195	773	1210	7130
2002	6924	747	1083	8754
2003	7396	706	1348	9450
2004	6589	708	1446	8743
2005	6540	730	1596	8866
2006	6266	645	1600	8514
Average	6785	607	1283	8672

Figure 9.

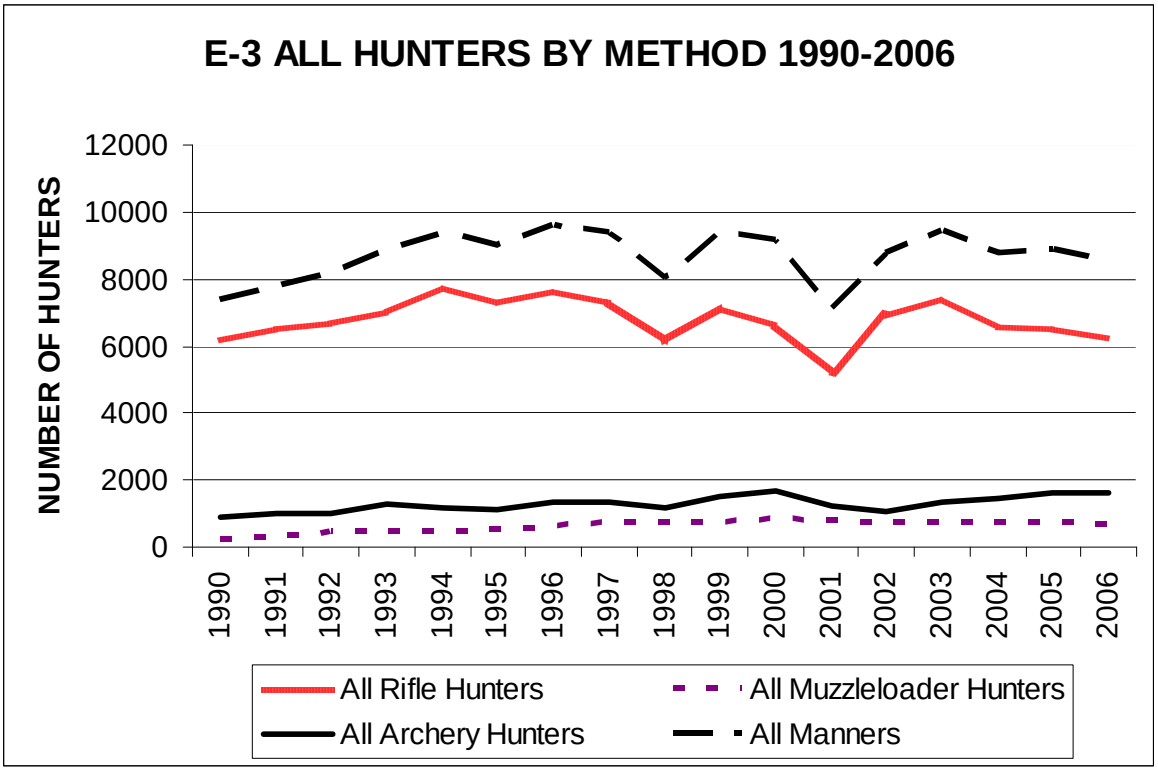


Figure 10.

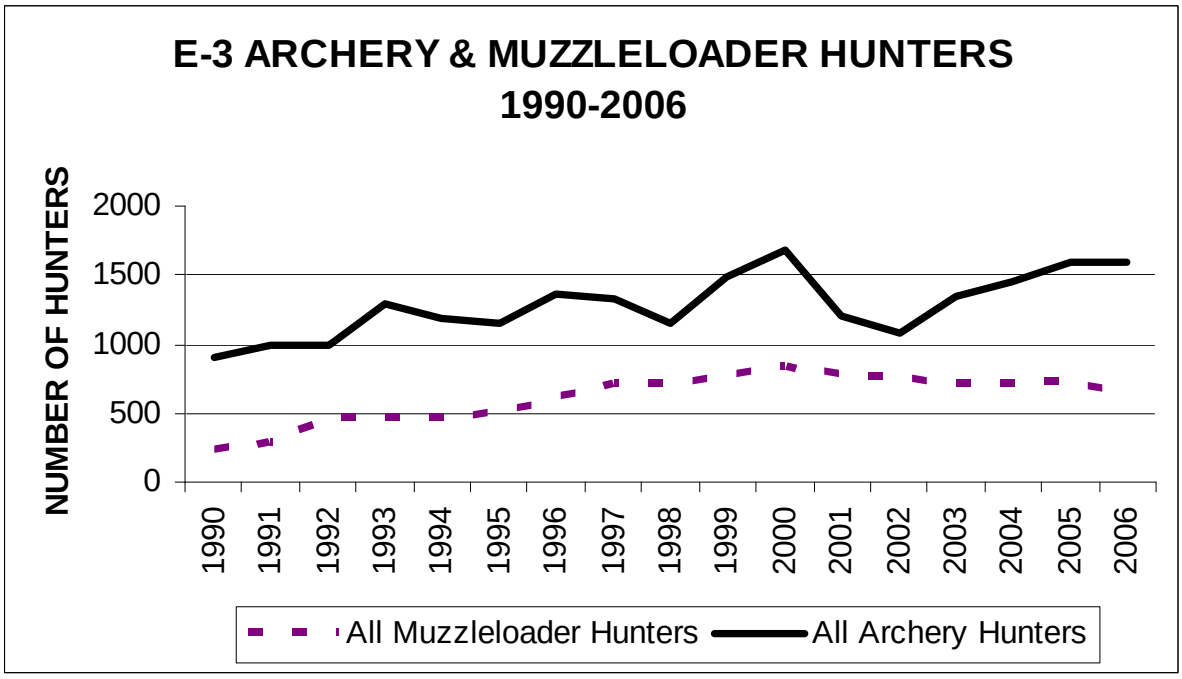
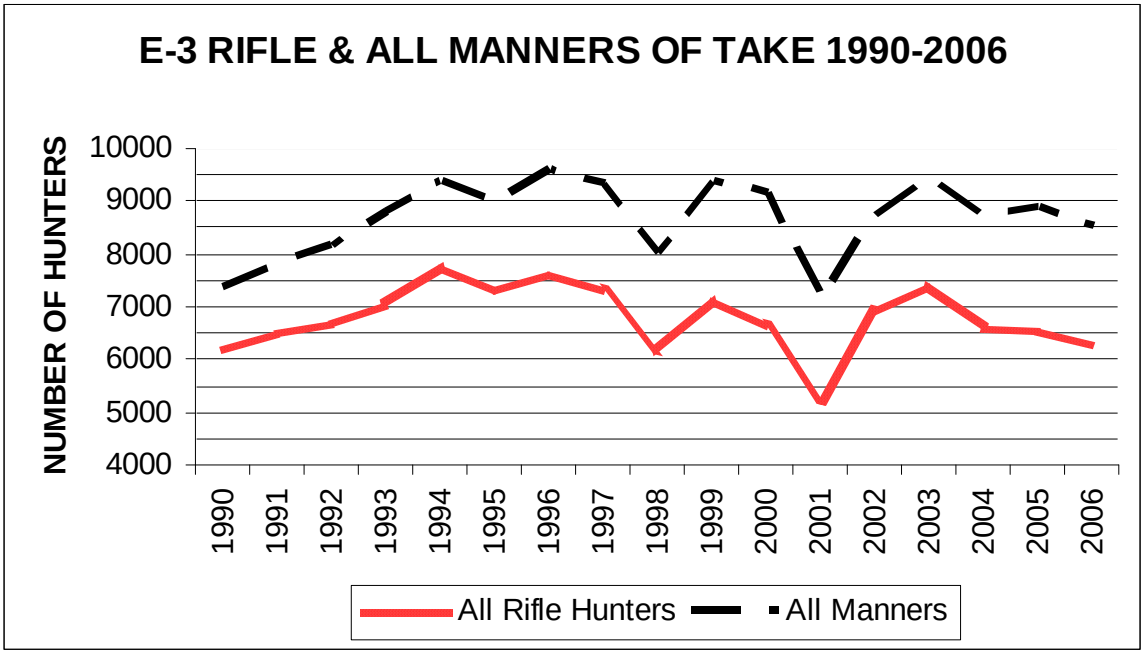


Figure 11.



CURRENT HERD MANAGEMENT

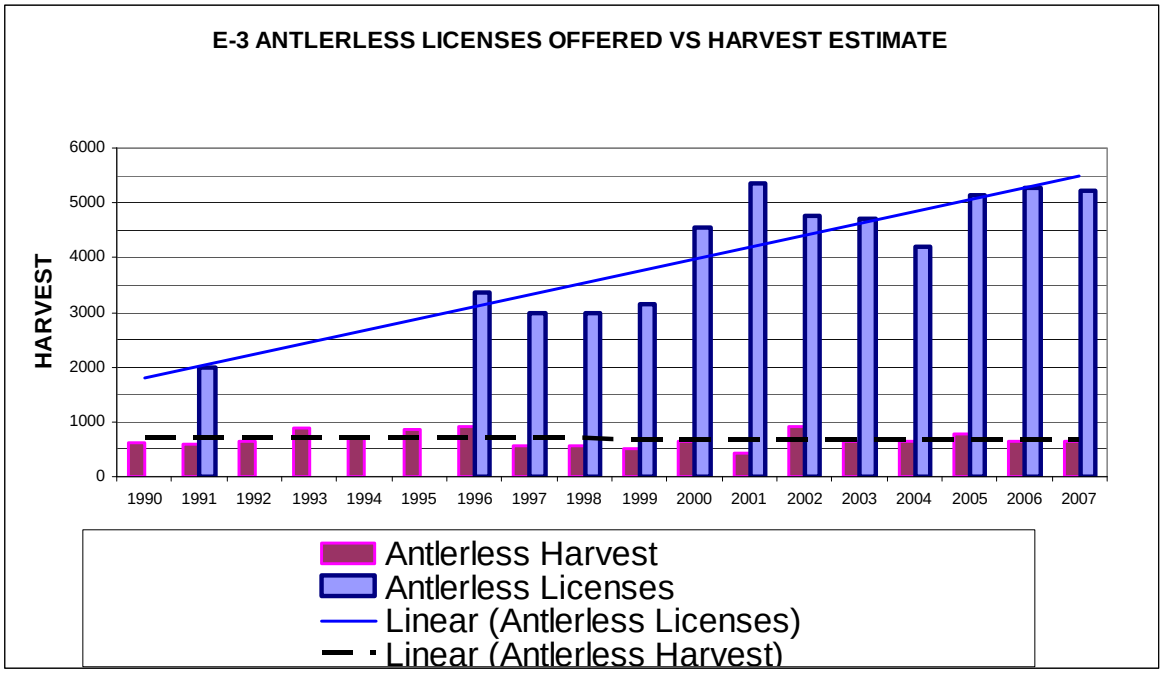
The current post-hunt population objective is 4,000–4,500 animals and the sex ratio objective is 20-23 bulls per 100 cows. Current management strategies seek to provide the maximum harvest of cows to keep the population near the long term post hunt objective while allowing liberal bull hunting opportunities. Bull licenses are limited during first and fourth rifle seasons and are valid for either sex. Bull licenses are available over the counter for second and third rifle seasons. A bull must have four points on one antler or have a brow tine five inches in length or longer to be legal for harvest in all seasons. All GMU's in North Park (6, 16, 17, 161, 171) are open for over the counter either sex archery elk licenses and are open to statewide muzzleloader elk license holders. Muzzleloading elk hunters must choose a license valid for either antlered or antlerless elk.

As the elk population has grown the number of antlerless permits available has increased from 2,000 in the early 1990's to over 5,000 in 2007. However, as Figure 12 shows there has not been a proportionate increase in cow harvest with this increase in license numbers because hunters are not able to access areas where the elk are. Antlerless harvest has remained near the same level regardless of the number of licenses offered since 1990.

Private Land Only (PLO) licenses are available during most rifle seasons and outside of the regular rifle season structure in order to increase harvest and help reduce game damage situations when elk move off of public lands and onto private lands. When game damage to agriculture does occur from elk, game damage licenses may be issued to the land manager for that specific property by

the CDOW Area Wildlife Manager. These licenses are valid for antlerless animals only and are intended to focus on the specific animals causing damage. All GMU's in E-3 are classified as "List B" licenses meaning hunters can purchase up to two elk licenses per calendar year providing at least one of them is a "List B" license (See Colorado Big Game Season Brochure). In no case can a person purchase more than one antlered elk license per year. Elk hunters can purchase two antlerless elk licenses or one antlered and one antlerless license per year under the current season structure regardless of season or method of take (as long as licenses are still available).

Figure 12. (Note data is missing for 1990, and 1992 – 1995)



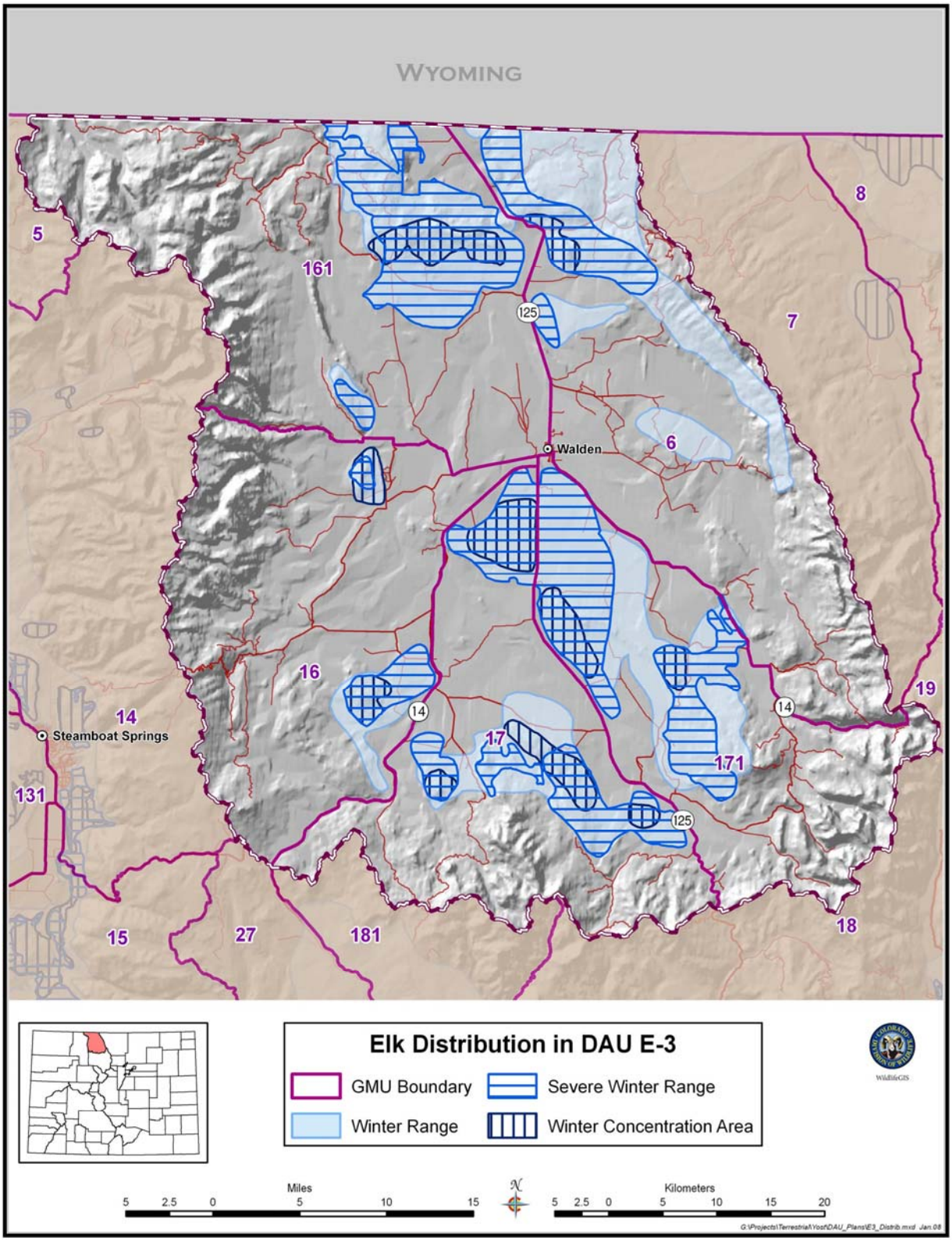
HABITAT RESOURCE

Habitat Conditions and Capability

Land ownership in North park can be generalized as private, BLM, and national wildlife refuge on the valley floor with National Forest occurring on the higher slopes. As such, the majority of elk summer range in North Park is found on public lands at higher elevations of the Arapaho National Forest on the south, the Routt National Forest on the west, and the Colorado State Forest on the east. Small numbers of elk do summer at lower elevations on private land, BLM, and the Arapaho National Wildlife Refuge (ANWR).

Using the Colorado Division of Wildlife's Wildlife Resource Information System (WRIS) severe winter and winter concentration areas for elk in North Park have been identified. Sever winter range and winter concentration areas are the limiting habitat types for elk in North Park with the majority of these critical habitats found on private land, Bureau of Land Management property, or the ANWR (Figure 13).

Figure 13. E-3 Elk Winter Range



The overall range for the North Park elk population is the entire area of North Park, 1,619 square miles (Table 4). Of this only four percent is considered winter concentration areas (See the appendix C for a breakdown of critical habitat ownership). These are areas critical to the survival of the majority of the elk population in five out of ten winters. The habitat condition of these winter concentration areas should be evaluated, maintained and improved.

Table 4.

Elk DAU E-3 Area

GMU	ELKDAU		ACRES	SQ MILES
6	E-3		226,457.80	353.84
16	E-3		204,534.16	319.58
17	E-3		180,180.02	281.53
161	E-3		260,937.19	407.71
171	E-3		163,969.34	256.20
		Total	1,036,078.51	1,618.87

E-3 Elk Activities

Winter Range	253,976.36
Severe Winter Range	154,348.63
Winter Concentration	41,939.81

Forage for livestock, elk, and other wild ungulates is a major concern for both private and public land managers as they seek to find the proper balance of grazers and browsers on the landscape. Currently habitat conditions appear adequate for the present number of elk in North Park. The HPP Committee completed a habitat assessment model in 2004 that indicated “elk population estimates were in line with a midpoint threshold elk population based on habitat at that time”.

The BLM in their Habitat Data Summary for the 1998 North Park HPP Habitat Management Plan allocated forage for 3,500 elk on their ranges. The BLM states in the summary that “elk start leaving the winter ranges for the summer ranges before they utilize forage to the extent that it is damaged”. There is enough time between when the elk leave and cattle come onto BLM allotments for vegetation to grow and produce adequate summer forage for cattle. In the Draft HPP Habitat management Plan for 2008 “the BLM reports that they are unaware of any conflicts caused by elk on any of the property they administer”. In this same Draft plan the United States Forest Service “has some areas of concern where concentrations of elk may have an impact on the vegetation but these would be in relatively small areas”. And the 2008 Draft HPP Habitat management Plan states “some mountain shrub communities are moderately to severely hedged from over use and a significant portion of the sagebrush community receives considerable

use". This may indicate a decrease in habitat conditions between 1998 and 2008 or isolated areas of overuse.

United States Forest Service lands in the Parks Ranger District contain 420,000 total acres in Jackson County. Approximately 54,150 acres of this are suitable for cattle and sheep grazing. The only sheep grazing allotment occurs at high elevations near or above timberline. In this allotment 3,700 acres are suitable for sheep but not cattle. At this time there are no active domestic sheep grazing allotments on USFS lands in Jackson County. Seventeen active cattle grazing allotments occur on National Forest System lands in Jackson County. For around half of these allotments the earliest "on" date is July 1 and the latest "off" date is October 7. For the other half the earliest "on" date is July 15 and the latest "off" date is about September 25.

In most cases all active and inactive allotments exhibit acceptable range plant conditions. When range conditions in an allotment or allotments are not acceptable the grazing system is amended or adjusted until the unit/s once again meet or exceed the rangeland health standards and guidelines. In general, range conditions are in fair or better condition on National Forest land in Jackson County. The U.S. Forest Service in the Habitat Data Summary for the North Park HPP Plan (1998) states "there are no areas identified on National Forest System allotments in Jackson County where big game are affecting availability of forage for livestock". However, in 2008 DAU plan comments the U.S.F.S. states "in some areas, shrub use reaches recurring, unacceptable levels that may threaten the vigor and overall sustainability of some shrub stands".

For the most part National Forest lands occur in summer or transitional range areas for elk. Because summer range is not considered to be a limiting factor for elk in North Park there are only minor conflicts between big game animals and livestock. When cattle are present on an allotment elk and deer generally avoid these areas as long as cattle are present. However there is ample habitat available on areas adjacent to livestock that big game can move to avoid cattle while still finding suitable habitat for feeding, hiding, and rearing young. Allotment records indicate that approximately 50 percent of total available forage remains after grazing by livestock on suitable range, whereas most, if not all, of the forage on steep slopes, high elevations, and other areas inaccessible to cattle are available to elk and other wildlife.

HABITAT PARTNERSHIP PROGRAM

In 1990 the Colorado Division of Wildlife (CDOW) created the Habitat Partnership Program (HPP) to address fence and forage damage conflicts on private and public land caused by big game. The North Park HPP Committee was formed in 1991 and the Wildlife Commission in 1992 approved the Big Game Distribution Management Plan.

HPP is now an integral part of elk management efforts in North Park and one of the most successful HPP Committees in the state. The locally run program is funded by 5% of the big game license revenues generated statewide.

Distribution management hunts (game damage hunts) are conducted on private land using hunters that are designated by the landowner. These hunts are for antlerless elk only, starting August 15, through February 28, each year as needed. This management tool has been effective in moving elk away from damage conflict areas. Habitat modification projects such as fertilizing, placement of salt blocks, and implementation of grazing management systems have been effective in drawing elk away from conflict areas by providing better habitat elsewhere.

Elk proof fencing for haystacks has been the most effective tool in reducing elk damage conflicts. Alternate cattle fence design such as top rails of wood or plastic, lay-down, suspension, high tensile and vinyl covered wires have been successful in reducing damage to livestock fencing. Also, to offset damage costs, the HPP Committee has authorized funds to purchase fencing material to distribute to landowners.

In 1993 the North Park HPP Committee applied for and received a grant from "Seeking Common Ground." The grant funds were used to form the Owl Mountain Partnership (OMP). OMP is an ecosystem management partnership that involves cooperation among private landowners, and all the government agencies. The OMP has accomplished many on-the-ground projects to improve habitat for both wildlife and livestock. The original boundaries of the OMP were the southeast section of North Park, but in 1997 the OMP Steering Committee expanded the program to include all of Jackson County. The partnership can also do work in the Colorado counties of Grand and Larimer, as well as, Albany County and Carbon County in Wyoming.

ISSUES AND STRATEGIES

In order to gather public input on elk management in E-3 several multiple methods were employed ranging from soliciting ideas from individuals to public meetings to comments via the CDOW website.

Public meetings were held in Walden on January 29th 2008 and in Fort Collins on January 30th, 2008 to obtain comments on both moose and elk management in North Park. Local and state agricultural groups, sportsmen, government agencies, and citizens were notified of the meetings and other opportunities to provide input through local media, mailings, the CDOW website, and direct contact by CDOW employees.

Public attendance at the Walden meeting consisted of thirteen individuals representing a mix of sportsmen, business owners, ranchers, county commissioners, USFWS, USFS, loggers, and local media. Public attendance at the Fort Collins meeting consisted of eleven individuals representing a mix of sportsmen, landowners and hunting guides.

Questionnaires (Appendix D) were provided on the internet and to those attending public meetings. From the questionnaires and issues brought up and documented at the public meetings the following were identified as being important to North Park elk management. In addition to the questionnaires turned in at public meetings a total of 19 questionnaires were returned by mail mostly from those who read the plan on the DOW website.

Issue Identification

A) Written comments received on the questionnaire from the public meetings in Walden and Fort Collins included the following ranked in order of number received:

1) Need to find a way to kill more cows

2) Hunters can't access private land

3) Need an elk hunt on the Arapaho National Wildlife Refuge

4) Need to move elk off private land

5) Game damage is occurring early on meadows and growing hay

** See Appendix D for the questionnaire and responses (includes all questionnaire responses received from public meetings and internet).

B) Written comments received from the questionnaire on the DOW website included the following main concerns ranked in approximate order of number received:

1) Need to harvest more cows

2) Hunters cannot gain permission to hunt private land or can't afford fees

3) Need to move elk off "refuge" areas during hunting season

4) Need more antlerless licenses

5) Need more opportunity like longer seasons, early seasons and late (December)

6) Make licenses valid for more than one unit

7) Game damage to pastures, meadows, trees, and growing hay from elk

8) Elk over grazing is blamed on livestock

** See Appendix D for the questionnaire and responses (includes all questionnaire responses received from public meetings and internet).

C) Written comments received from other agencies and interest groups who have reviewed the draft included the following:

** See Appendix E for complete copy of written responses

D) Public and agency comments on management alternatives yielded the following results; 47% of public respondents desire no change in the population objective, 41% want to see an increase and 12% want to see a decrease. For sex ratio objectives 70.5% of public respondent's desire no change and 29.5% want to see a higher sex ratio objective. The State Land Board, BLM, USFS, and Jackson County Commissioners all recommended the population remain at the current objective. The HPP Committee suggested the current population estimate be used as the upper end of the population level. All agency responses indicated the current sex ratio objective is fine.

* Please note that the public DAU meetings and requests for agency comments occurred in January of 2008 well before 2007 harvest information and 2008 population modeling data was available.

MANAGEMENT ALTERNATIVES

Population Objective Alternatives (Post-Season Observed)

1. 3,500 - 4,000 elk – This level would allow more elk for harvest in the short term but would reduce the population below maximum sustained yield reducing hunting and viewing opportunities in the future.

2. 4,000 - 4,500 elk – This alternative is the current population level and the former population objective. This population level would continue to provide moderate to high recreational hunting opportunities for elk and recruitment levels remain high.

3. 6,000 - 6,500 elk – The elk population is doing well at its current level and has been increasing slowly over time despite significant increases in antlerless and PLO licenses. Some population models predict the post-hunt population is already at or above this level currently. A higher population goal will result in increased hunting opportunities. However, sustaining this population level may lead to significant forage issues and game damage on private lands, particularly in refuge situations where minimal or no elk hunting is allowed.

Sex Ratio Objective Alternatives (Post-Season Observed)

1. Sex Ratio, 15 - 20 bulls/100 cows - This is a lower sex ratio than the current alternative. At this level fewer large bulls would be available to harvest. It may be difficult to lower the sex ratio to this level without removing antler point restrictions in at least some of the seasons.

2. Sex Ratio, 20 - 23 bulls/100 cows - This is the current objective and is being maintained at the current harvest rate and season structure.

3. Sex Ratio, 25 - 30 bulls/100 cows - This alternative would likely require a reduction in bull licenses. This level of males in the population would produce larger bulls for hunting but not a great number more than current management.

MANAGEMENT IMPLICATIONS

Under the current post-hunt population objective of 4,000–4,500 elk the necessary harvest level of cows is not being achieved in order to hold the population at this level. Major factors contributing to this under harvest are 1) public hunter access to elk which have moved off National Forest and BLM or state lands and into areas off limits to these hunters and 2) timing of weather which can significantly increase or decrease harvest 3) the North Park elk are part of an interstate herd that has exchange with Wyoming elk. It is difficult to determine how many of these animals leave and are not available to Colorado hunters.

There exist many areas on private land where only small numbers of elk hunters have access or no hunting is allowed. Reasons why access is denied to many hunters on private land range from the property being leased for hunting to small groups, a guided hunting business is using the property for quality hunting not quantity, bull hunters are willing to pay more for a hunt on private land then cow hunters, landowners have had problems with bad hunters in the past, only friends and family of landowners are allowed, hunters are unwilling or afraid to ask permission, or landowners are fundamentally opposed to hunting.

When hunting pressure is light to non existent on larger blocks of land elk find these "refuge" areas where they know they are safe and concentrate there. This leads to increased resource damage and possible disease transmission between animals as large groups of 100 to 500 or more herd up for the winter. The consequences of this are two fold. Besides these animals being unavailable for harvest by hunters the over all herd health may decline due to reduced nutrition and game damage situations increase where elk damage hay stacks. While some people feel they are protecting elk by giving them a safe haven from hunters they actually may be doing harm to the overall herd by reducing the ability to maintain the proper post-hunt population objective and by allowing elk to remain in large groups which fosters disease transmission between animals.

Ideally a balance should occur between landowners, hunters and the CDOW where enough public hunter access occurs in these areas to maintain healthy elk population levels that 1) are acceptable to landowners and land managers 2) are acceptable to public hunters 3) are acceptable to the non hunting public, while at the same time meeting herd management goals.

PREFERRED ALTERNATIVE

Through the DAU planning process and public input the preferred alternative for post-hunt population size and sex ratio objectives for E-3 were selected as a population range of 4,000 – 4,500 elk. This preferred population range represents a 53% reduction from the current population estimate. The recommended sex ratio objective is, 20 - 23 bulls:100 cows.

Conclusion

The primary issue for elk management in E-3 is lack of hunter access to refuge areas where elk are not hunted, until this situation changes it will be difficult to reduce elk numbers significantly in E-3. Although the preferred alternative may be difficult to achieve, it is important to note that the public is generally satisfied with the current elk population level in North Park. Thus, a continued strategy of reducing the elk herd with liberal cow licenses and expanded PLO opportunity (i.e. gaining more public hunter access to private land), is warranted and recommended with the long term DAU objective of 4,000 to 4500 elk.

LITERATURE CITED

1998 North Park HPP Habitat Management Plan

2008 North Park HPP Habitat Management Plan (DRAFT)

Roath, L. R., E. M. Hardy, G. Wockner, S. Porter, N.T. Hobbs, and D. Freddy. 2003. The habitat assessment model: a tool to improve wildlife habitat management.

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Zimmerman, M. L., W. Leininger, and R. C. Kufeld. 2001. A method for monitoring moose habitat in montane willow communities. CDOW Report

BBC Research and Consulting. 2004. The Economic Impacts of Hunting, Fishing and Wildlife Viewing in Colorado. Colorado Division of Wildlife.

APPENDICES

A. Elk Populations Dynamics

B. GIS Vegetative Data

C. Landownership North Park / Critical Elk Habitat

D. Questionnaire

E. Agency and Interest Group Comments

F. Public Meetings Announcement

G. Approval / Signature Page – Insert separate file

APPENDIX A: ELK POPULATION DYNAMICS

Numerous studies of biological populations of such species as bacteria, mice, rabbits, and white-tailed deer have shown that animal populations grow in a mathematical relationship that biologists refer to as a "sigmoid growth curve" or "S" curve (Figure 12). There are three distinct phases to this cycle. The first phase occurs while the population level is still very low and is characterized by a slow growth rate and a high mortality or death rate (see A in Figure 12). This occurs because the populations may have too few animals and the loss of even a few of them to predation or accidents can significantly affect the population. In other words, there appears to be some truth to the old saying "There's strength in numbers".

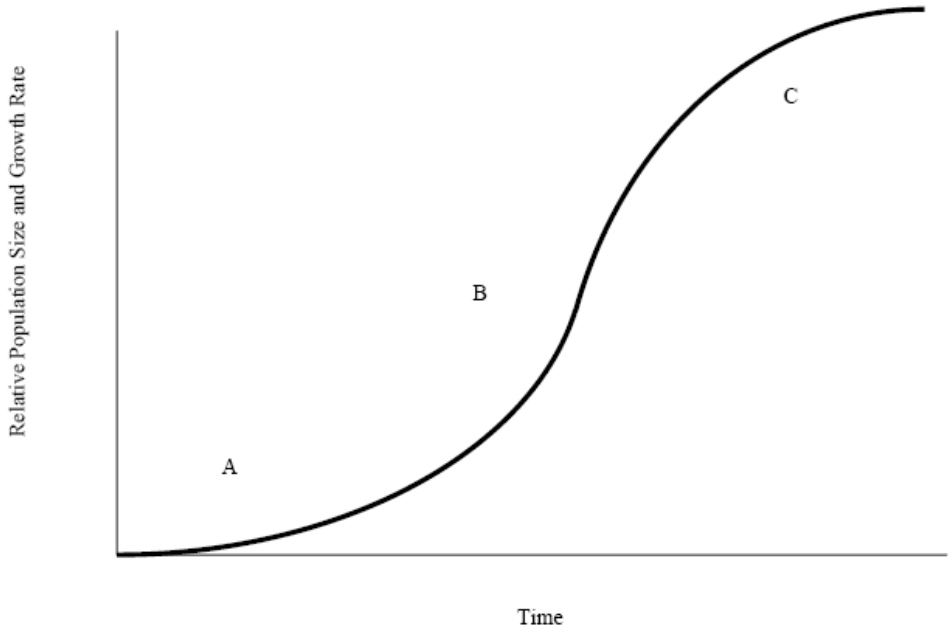

Figure 12. Sigmoid Growth Curve.

The second phase occurs when the population number or density is at a moderate level. This phase is characterized by a very high reproductive and survival rate (see B in Figure 12). During this phase, food, cover, water, and space (habitat) is optimal and abundant. These high reproductive rates during this phase can be seen in white-tail deer, when does may breed successfully at 6 months of age and produce a live fawn on their first birthday. Older does have been known to produce 3-4 fawns that were very robust and healthy. Survival rates of all deer (bucks, does, and fawns) are at maximum rates during this phase.

The third and final phase occurs when the habitat becomes too crowded. The quality and quantity of food, water, cover, and space become scarce and poor due to the competition with other members of the population. This phase is characterized by

decreased reproduction and survival (see C in Figure 12). For example, white-tail deer fawns can no longer find enough food to grow to a critical minimum weight to reproduce; adult does will only produce 1-3 fawns, and survival of all deer (bucks, does, and fawns) decreases. During severe winters, large die-offs can occur due to overcrowding and lack of forage. The first to die in these situations are fawns, followed by bucks, finally followed by adult does. Thus, severe winters affect future buck: doe and fawn: doe ratios by favoring more does in the populations. Additionally, since buck's antlers are dependent upon nutrition, antlers are stunted during this phase.

If the population continues to grow, it will eventually reach the maximum carrying capacity, or "K" (Figure 13). At this point, the population reaches a dynamic equilibrium with the habitat. The number of births each year equals the number of deaths, therefore, maintaining the population at this level would not allow for any "huntable surplus." The animals in the population would be in relatively poor condition and when a severe winter or other catastrophic event occurs, a large die-off is inevitable. Thus, another old expression, "the bigger they are the harder they fall" may be appropriate here. A recent example of such a population die-off occurred in the relatively unhunted Northern Yellowstone elk herd during the severe winter of 1988-89. This winter followed the forest fires of 1988 that raged in the National Park.

What does all this mean to the management of Colorado's big game herds such as deer and elk? It means that if we attempt to manage for healthy big game herds, we should attempt to hold the populations at about the middle of the "sigmoid growth curve." Biologists call this "MSY" or "maximum sustained yield." At this level, which is exactly half the maximum population size or "K", the population will display the maximum production, survival and available surplus animals for hunter harvest (Figure 13). Also, at this level, range condition and trend should be good to excellent and stable, respectively. Game damage problems should not be significant and economic return to the local and state economy should be at the maximum. This population level should produce a "win - win" situation to balance sportsmen and private landowner concerns.

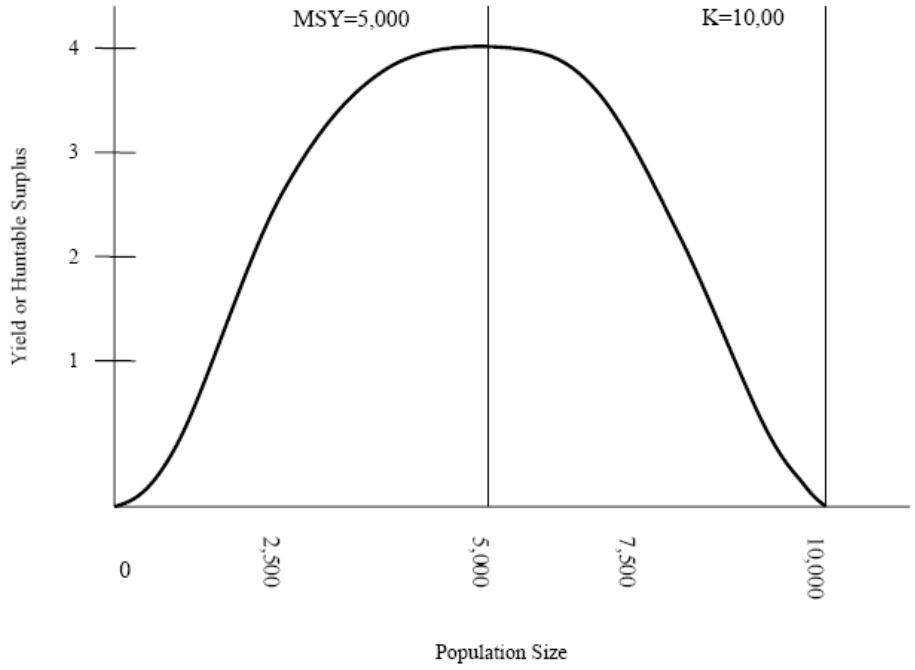

Figure 13. Maximum Sustained Yield and Maximum Carrying Capacity.

A graph of a hypothetical deer population showing sustained yield (harvest) potential vs. population size is shown above. Notice that as the population increases from 0 to 5,000 deer, the harvest also increases. However, when the population reaches 5,000 or "MSY", food, water and cover becomes scarce and the harvest potential decreases. Finally, when the population reaches the maximum carrying capacity or "K" (10,000 deer in this example), the harvest potential will be reduced to zero. Also, notice that it is possible to harvest exactly the same number of deer each year with 3,000 or 7,000 deer. This phenomenon occurs since the population of 3,000 deer has a much higher survival and reproductive rate compared to the population of 7,000 deer.

APPENDIX B – GIS Vegetative Data (1993-1997 "Basin wide" version Land sat imagery)

CLASS_NAME	NPark_Veg	Acres	Sum Acres
Alpine Grass Dominated	Alpine	1,120.92	100,685.92
Alpine Grass/Forb Mix	Alpine	11,142.56	
SubAlpine Shrub Community	Alpine	25.95	
Subalpine Grass/Forb Mix	Alpine	22,660.35	
Aspen	Aspen	65,433.01	
Aspen/Mesic Mountain Shrub Mix	Aspen	303.13	
Douglas Fir	Coniferous Forest	1,851.70	350,218.11
Englemann Spruce/Fir Mix	Coniferous Forest	82,119.19	
Limber Pine	Coniferous Forest	163.94	
Lodgepole Pine	Coniferous Forest	218,945.26	
Lodgepole Pine/Aspen Mix	Coniferous Forest	34,557.11	
Lodgepole/Spruce/Fir Mix	Coniferous Forest	1,466.37	
Mixed Forest Land	Coniferous Forest	1,444.21	
Spruce/Fir Regeneration	Coniferous Forest	9.42	
Spruce/Fir/Aspen Mix	Coniferous Forest	9,618.39	
Spruce/Fir/Lodgepole/Aspen Mix	Coniferous Forest	3.93	
Spruce/Lodgepole Pine Mix	Coniferous Forest	38.59	
Grass Dominated	Grass Dominated	68,502.74	72,676.16
Sparse Grass (Blowouts)	Grass Dominated	4,173.42	
Grass/Forb Mix	Grass/Forb Mix	10,507.76	10,507.76
Shrub/Grass/Forb Mix	Shrub/Grass/Forb	53.03	53.03
Herbaceous Riparian	Herbaceous Riparian	6,971.81	6,971.81
Willow	Willow	21,476.58	21,476.58
Shrub Riparian	Shrub Riparian	1.08	1.08
Sagebrush Community	Sagebrush Mix	289,878.88	357,873.35
Sagebrush/Grass Mix	Sagebrush Mix	67,209.97	
Sagebrush/Mesic Mtn Shrub Mix	Sagebrush Mix	48.97	
Bitterbrush Community	Shrub/Brush Mix	234.56	
Greasewood	Shrub/Brush Mix	486.68	
Upland Willow/Shrub Mix	Shrub/Brush Mix	14.29	
Water	Water	6,277.12	6,277.12
Rock	Soil/Rock	226.37	19,451.94
Snow	Soil/Rock	0.15	
Soil	Soil/Rock	2,992.01	
Talus Slopes & Rock Outcrops	Soil/Rock	16,233.41	
Residential	Urban/Built Up	268.40	268.40
Disturbed Rangeland	Disturbed Rangeland	203.59	203.59
Irrigated Ag	Irrigated Ag	86,355.57	86,355.57
			1,033,020.42

Note – due to the "grid" size of GIS classification units the total acres of vegetation classes is approximately 3,000 acres shy of the total acres represented by the DAU due to overlap of "grids" between DAU boundaries.

APPENDIX C

LANDOWNERSHIP DAU E-3 NORTH PARK

OWNERSHIP	Percent
Private	36.00%
BLM	18.20%
National Forest	32.00%
Colorado State Forest	6.80%
Colorado State Trust	5.00%
Arapaho National wildlife Refuge	1.70%
Colorado Division of Wildlife	0.03%

CRITICAL ELK WINTER HABITAT

	Acres	Percent Overall Range
Winter Concentration Areas	42,244	4.00%
BLM	16,324	38.40%
Private	17,029	40.30%
Colorado	2,567	6.00%
Arapaho Refuge	5,847	13.80%
USFS	477	1.30%

	Acres	Percent Overall Range
Severe Winter Range	159,473	15.40%
BLM	58,539	37.00%
Private	59,594	37.00%
Colorado	12,568	8.00%
Arapaho Refuge	14,433	9.00%
USFS	14,339	9.00%

ELK ACTIVITY AREAS	Acres
Overall Winter Range	1,036,991
Winter Range	244,845
Winter Concentration Areas	42,244
Severe Winter Range	159,523
Production Areas	191,712

APPENDIX D – QUESTIONAIRE

OPPORTUNITY FOR PUBLIC COMMENT ON ELK MANAGEMENT IN NORTH PARK, COLORADO

DATA ANALYSIS UNIT (DAU) E-3
GAME MANAGEMENT UNITS 6, 16, 17, 161, 171
WINTER 2008

For Wildlife-
For People

The Colorado Division of Wildlife is currently updating elk management plans for North Park and is requesting your input. Your opinion can help shape the future of elk management in this area. Please fill out the following questionnaire and mail or return it to:

COLORADO DIVISION OF WILDLIFE
DAU PLAN COMMENTS
925 WEISS DRIVE
STEAMBOAT SPRINGS, COLORADO 80487

COMMENTS MUST BE RECEIVED BY March 14, 2008

ELK DAU PLAN E-3 NORTH PARK QUESTIONAIRE

Please answer the following questions regarding elk management in DAU E-3, North Park Game management Units 6, 16, 17, 161, and 171 by placing an X in the appropriate space next to your chosen answer.

Please mark all that apply.

1) Meeting Attended:

_10__ Internet Only

__4__ Walden – January 29, 2008

__5__ Fort Collins - January 30, 2008

2) Are you?

__5__ LANDOWNER

__1__ LIVESTOCK OPERATOR

__1__ NORTH PARK BUSINESS OWNER

__1__ NORTH PARK GUIDE OUTFITTER

_16__ HUNTER

__4_ VIEWER

3) Have you experienced or have knowledge of any of the following caused by elk in North Park? If so explain.

__5__ HABITAT DAMAGE

1. Primarily summer damage to irrigated pasture and hay meadows.

2. Some logging – clear cutting has changed elk movement.

3. Elk are changing habitats by moving more to the lower country and river bottoms.

4. Haystack damage. Hayfield damage.

5. Elk have debarked several aspen on our property. Only two trees have died but the problem is accelerated by the loss of lodge-pole on the property. Aspens provide all the trees on the property currently. Loss of those aspens to damage from elk would not be acceptable.

6. During winter concentration.

7. Grass and Hay meadows.

__2__ GAME DAMAGE

1. Primarily summer damage to irrigated pasture and hay meadows.

2. The elk are beginning to use the hay meadows as calving grounds and more summer use.

3. Fence damage.

__2__ COMPETITION WITH LIVESTOCK

1. Seems like when the cattle move in the elk move higher, rather than compete for the same areas.

2. Less livestock in park than 10 years ago, also public land managers have limited use for livestock than 10 years ago.

3. On forest permit in the Gould area elk hammer a couple areas and my cows get blamed for over-grazing.

4. Some pasture.

5. Talked with a couple ranchers who say elk graze in the same areas as their cattle

4) PREFERRED ALTERNATIVE

__2__ **3,500 to 4,000** elk – This level would allow more elk for harvest in the short term but would reduce the population below maximum sustained yield reducing hunting and viewing opportunities in the future.

__8__ **4,000 to 4,500 elk** – This alternative is the current population level and the former population objective. This population level would continue to provide moderate to high recreational hunting opportunities for elk and recruitment levels remain high.

__7__ **6,000 to 6,500 elk** – The elk population is doing well at its current level and has been increasing slowly over time despite significant increases in antlerless and PLO licenses. Some population models predict the post-hunt population is already at or above this level currently. A higher population goal will result in increased hunting opportunities. However, sustaining this population level may lead to significant forage issues and game damage on private lands, particularly in refuge situations where minimal or no elk hunting is allowed.

Sex Ratio Objective Alternatives (Post-Season Observed)

_____ **Sex Ratio, 15 to 20 bulls/100 cows** - This is a lower sex ratio than the current alternative. At this level fewer large bulls would be available to harvest. It may be difficult to lower the sex ratio to this level without removing antler point restrictions in at least some of the seasons.

_12__ **Sex Ratio, 20 to 23 bulls/100 cows** - This is the current objective and is being maintained at the current harvest rate and season structure.

__5__ **Sex Ratio, 20 to 25 bulls/100 cows** - This alternative would likely require a reduction in bull licenses. This level of males in the population would produce larger bulls for hunting but not a great number more than current management.

Do you have any suggestions for increasing <u>antlerless</u> elk harvest in North Park and how this might be achieved?

1. Require any hunter who desires to harvest a male elk to harvest and remove a female prior to taking a male elk. That would remove all female elk to hunting camps or locker facilities before the individual hunter could pursue a bull. The tags could be inspected and female kill verified by DOW following the contact with a hunter killing a bull. Current strategies to increase cow harvest are not working. A new approach is required. Try this one to preserve habitat in North Park. I also applaud all efforts to decrease elk "safe" areas on private land and public lands. That includes the Arapaho NWR. DOW might try daily flyovers and posting locations of elk herds within the park during the hunting season or during specially framed cow seasons because of the mobility of elk herds to allow hunters and elk to come together.

2. Possible late season when snow pushes elk to sagebrush public ground.

3. Can you produce a list of landowners that would allow cow hunts, no fee, that we could contact.

4. Move the elk from private land.

5. Over the counter cow tags, draw bulls. Hunting season on refuge. Change hunt areas. The migration of elk have changed over the years. The units should be changed to reflect elk migration and changes also in park. Combine GMU.

6. DOW must find a way to get elk off private property and the refuge. I don't see any way to get hunters onto private property. Refuge management needs to face reality instead of viewing elk population as job insurance. DOW research determined CWD more prevalent in elk bunched together rather than smaller herds. Isn't that a good enough argument for scattering herds off private property?

7. Have hunter kill a cow before they are eligible to harvest a bull.

8. Don't believe 2007 season would be a good year to base kill ratios on because, unless your surveys show different, kill success was not good. Kirk Snyder indicated low success in the last two seasons and people I visited with had poor luck in all seasons.

Please rank the following reasons more elk hunters in North Park do not hunt on private land for <u>antlerless</u> elk (1 – 5 with 1 being the highest reason)

1,2,3,4,4,3,3,1,1,3,4,4,4,4	Hunters don't ask or are afraid to ask permission of landowners to hunt **(RANKED NUMBER FOUR)**
2,1,5,3,5,2,1,1,1,1,1,1,1,3	**Hunters cannot gain permission from landowners for access to private land (RANKED NUMBER ONE)**
3,1,2,3,4,2,1,1,2,2,2,2,4,4	Hunters cannot get access to private land without paying a fee **(RANKED NUMBER TWO)**
4,2,1,2,5,4,2,2,3,3,3,3,3	Hunters are willing but cannot afford to pay access fees for cow elk **(RANKED NUMBER THREE)**
4,1,1,5,5,5	Other – Describe: **(RANKED NUMBER FIVE)**

(Descriptions)
4 – Most private land is leased out to guides
1 – Cost of NR license
1 – My guess is that most people don't know where to start and then don't try. I cannot pay a fee, but would gladly attend a training or sign a waiver required by a landowner. The early PLO season would be great but I don't know where to start.
5 – I don't like to go in cold & ask for permission. Maybe a list of landowners that might allow hunting & what trespass fees would be might be helpful. Part of this is being a non-resident.
5 - Absentee owners
5 - Can't access public land without going through private

ADDITIONAL WRITTEN COMMENTS
In the space provided please write down any addition thoughts, comments, or suggestions pertinent to elk management in North Park. (Use back if necessary)

1. <u>Hunting specifically on State Forest State Park</u>
The cattle should be removed from the State Forest prior to the beginning of archery season and not returned until the next year. It is ridiculous to wait until after July 4 to start grazing season. They should start grazing season much earlier. The hunter's perspective is "the elk are on private property and cows are on public property". Yes, hunters will always believe State Forest State Park is public property.
As soon as measurable snow lands on the ground Colorado State Parks locks the gates barring any mobility except on JCR 41. We are seeing fewer hunters every year.

2. A late season cow hunt on the refuge.

3. Would prefer to see muzzleloading season move consistent to second and third weeks of September. It seems early start dates, especially in lower elevations and warmer years, the elk aren't moving around much.

With point restrictions in place, I would like to (see) scopes allowed on muzzleloaders for anyone over fifty.

4. Opening a Cow-Only Late Season as in NW Colorado would most likely solve the problem of inconsistent weather preventing access of hunters to elk in the wintering range. I have hunted in unit 161 2 seasons and often elk are sighted high in mountains but are inaccessible to hunters. Holding a season in late December and January would allow elk to move down into the valley, settle into their winter habitat and disperse into more accessible areas. In addition, it would allow another period for hunters to bring business into the area.

5. I feel the elk need to be moved off the Arapaho National Wildlife Refuge some. There is a resident herd there and it grows as the hunting seasons go along. Elk knows they are safe in certain areas and they go there. You can only kill elk when they are in areas that allow hunting. So I think either move the elk off refuge or allow limited hunting there.

6. Sell rifle cow tags over the counter.

7. Reduce license fees for non-resident cow tags!

Lengthen the season for cows only hunting, especially for non-residents who have to travel a long distance.

Allow extra tags at reduced cost for additional cows/calves.

8. I have a lot of friends that have cattle ranches in this county and see both sides of this conflict. I think that if you make more extra cow tags available for more seasons, mainly archery and muzzle loading more cows will be harvested.

9. Allow antlerless licenses to be good for more than one season; or issue a license that is good for a longer period of time, similar to some private land only tags.

Issue a license that is good for all of North Park units, similar to the muzzleloading tags for deer in North Park. I really think this would work. I hate being limited to one unit.

I would first like to say thank you for giving the public the opportunity to comment on this issue. My family has 40 acres a few miles south of Rand, so we are very interested in what's going on in the area. It doesn't seem like the elk population is having an adverse effect on the area. Sometimes I think it would be nice to have more elk around, but realize damage could occur at increased levels. Also, we are not around much in the winter and do not see effects of elk during the winter months. I would like to see additional opportunity

to harvest antlerless animals. I mentioned a couple of suggestions and would really like to see opportunity to hunt more than one unit. We generally hunt unit 17, and it's frustrating not to be able to hunt a different area only because it's on the other side of the highway.

Trying to gain permission to hunt private ranches has also proved difficult. Maybe something could be done to disburse large herds once they are held up on these ranches or on the refuge. Keeping them moving would, in my opinion, allow for more opportunity It's frustrating to see hundreds of elk on the wrong side of the fence and not being able to do a thing about it. Have you thought about allowing limited hunting on the refuge? That may also create opportunity for hunters around the refuge , as it would disburse the herd.

I did participate in the ranching for wildlife program on the Silver Spur Ranch in 2006. We saw plenty of elk. The only problem was they were on public ground and we only had tags for the ranch. This last year we hunted where we had seen those elk the previous year, but the weather didn't cooperate.

One final thought; every year I hunt North Park, I end up seeing more moose than I do elk. I never thought that would be the case. I guess the moose realize they don't have much to worry about, and the elk know where to go.

P.S. Why is it that ranches like Buffalo Creek seem to kill 15-20 big bulls every year, and I have yet to have a shooting opportunity at a big bull? I hunt their property line all the time and see so many elk on the wrong side of the fence. It's like they know they are safe.

10. Reduce the cost to NR

11. A cow elk is what I try for in North Park each year.
Some ideas:

- How about an early public land season in September like unit 25 or unit 3?
- Could the DOW find landowners willing to experiment with the private land experimental tags like in SE Colorado or unit 2. (I think)

- How about a late season cow hunt with 50 tags so the pressure is low across the valley. I would apply!

I enjoy North Park Spring, Summer, and Fall. I love elk season in North Park and appreciate all information the DOW staff in Walden provide.

Pressure and weather seem to be the two largest influences on cow harvest. It seems that when archery and ML season pressure starts, the elk begin to head for private land or the refuge. When rifle season pressure starts and the snow hits, they really seem to head down out of the public land in a hurry!

Maybe the DOW could hold some clinics specific to elk behavior in North Park? It seems to be different than other places. Maybe these clinics could help maximize the chances for

people who hunt public land. Just more information and ideas on how to find them on public land would help. Thanks.

12. Since the existing population is not causing habitat damage or the DOW is not having to pay game damage then population is okay at or above its current level.

If game damage becomes a problem have game damage cow elk licenses issued for private land & public for a December hunt.

13. Our group has been hunting the last season for the past few years. May be a little longer season would help. We hunt unit 6, there is a lot of area to cover.

14. Due to conversations with area ranchers and reading the summary provided by the plan draft, I would suggest that more cow tags be made available. I would recommend that the herd size decrease to 5,000-5,500 to still allow high success rates as well as decrease the herd size so the conservation goals are maintained. I would also suggest a late cow season be set up after the regular fourth rifle season to help achieve recommended herd levels. My personal success rate in unit 6 has been very good. However, many hunters are not prepared to hunt the state forest or any of the state trust lands in the area due to physical limitations. Another suggestion might be to have ranchers, who control a third of the land in the area of discussion, open their lands up to public who have acquired an additional “damage tag” and pay a trespass fee to harvest a cow from one of those large ranches. This would be similar to the potato crop damaged tags in the southern part of the state. This tag would not count against the regular quota set by the DOW and allow hunters to assist in the herd management. Are there large ranches in the area that will allow hunters to pay a trespass fee as indicated in question 4?

APPENDIX E – AGENCY AND INTEREST GROUP COMMENTS

North Park Habitat Partnership Program
Colorado Division of Wildlife

Date: June 13, 2008
To: Jeff Yost
From: North Park Habitat Partnership Program Committee
Re: Elk and Moose DAU management Plans

Thank you for the opportunity to comment on the Colorado Division of Wildlife's draft DAU plans for elk and moose for Jackson County. We take great interest in the management of these two species. After review of the plans we make the following comments:

We suggest that current population estimate of elk be used as an upper end of the management goal. Our committee has been very active in helping local landowners build permanent elk stackyards, which has significantly reduced damage issues to stacked hay. However, we have noticed an increase in conflicts with elk using agriculture lands with growing hay during the summer months. Therefore, we ask that adaptable hunting strategies be used to ensure that elk populations do not increase. We encourage the continuation of current four point antler restrictions as it appears to be producing higher numbers of larger bull elk that are attractive to hunters. We continue to have concerns with two issues regarding elk. One is what appears to be a change in elk distribution from public lands to private agricultural fields due to increases in recreational activities by people on the National Forest and on the Colorado State Forest. The second issue is with the concentration of elk in areas of "safe haven" such as private lands and the Arapaho National Refuge during hunting seasons that significantly impact elk harvest. Our committee is open to any suggestions or help in dealing with these issues.

The North Park HPP committee feels the existing number of moose within the DAU is adequate to provide high quality hunting experiences and the adequate non-consumptive watch able wildlife opportunities. We are not aware of significant damage issues with moose. Current Bull Moose licenses seem to be limiting the harvest to the extent that bull moose hunter satisfaction remains high. However, if there is a verifiable reduction in average antler size we suggest issuing fewer licenses to maintain more and therefore larger Bull Moose that would be available to hunters and wildlife viewers.

Sincerely,

Mike Alpe, Chairman
For the NPHPP Committee

100 Main Street ♦PO Box 737 ♦Walden, Colorado 80480-0737
Phone 970-723-0020 ♦ Fax 970-723-0021

BOARD OF COUNTY COMMISSIONERS
MICHAEL A. BLANTON, Chairman
COUNTY OF JACKSON
WALDEN, COLORADO 80480

JOHN C. RICH

P.O. BOX 337

LANNY R. WEDDLE

FAX (970) 723-4706
(970) 723-4660

June 13, 2008

Jeff Yost
Colorado Division of Wildlife
P.O. Box 775777
Steamboat Springs, CO 80477

Re: Elk DAU E-3 (North Park) and Moose DAU M-1 (North Park)

Dear Mr. Yost:

The Board of County Commissioners of Jackson County has reviewed the executive summaries and management alternatives for Elk DAU E-3 and Moose DAU M-1 in North Park. The Board's preferred alternatives for these big game species are as follows:

Elk DAU E-3 (North Park)

Population Objective: Remain at the current objective of a population of 4,000 - 4,500 elk
Sex Ratio Objective: 20 - 23 bulls/100 cow (Current sex ratio objective)

Moose DAU M-1 (North Park)

Population Objective: Hold the population stable at 500- 600 moose
Sex Ratio Objective: greater that 70 bulls/100 cows to produce trophy bulls with an antler spread greater than 40"

If you have any questions regarding this letter, please do not hesitate to contact us.

Board of County Commissioners
Jackson County, Colorado

By: _____
Michael A. Blanton, Chair

STATE OF COLORADO

BOARD OF LAND COMMISSIONERS

1313 Sherman Street, Room 621
Denver, Colorado 80203
Phone: (303) 866-3454
Fax: (303) 866-3152

Department of Natural Resources

Managing
State Trust Lands
Since 1876

May 7, 2008

Jeff Yoast – Terrestrial Biologist
Colorado Division of Wildlife
PO Box 775777
Steamboat Springs, CO 80477

Dear Jeff:

I appreciate the opportunity to comment on the DAU Elk and Moose numbers on the North Park DAU. From my experience, observation and lessee feedback, I would support the Alternative #2 of current population and continuance of maintaining the populations at the current level of 4000 head of elk and 600 head of moose. Maintaining this level is probably even more important for the elk population. Being less familiar with Moose requirements, but based on your discussion on the lower of competition with other wildlife and livestock, this population size may still be best alternative for the time being, because of their expanding population.

Distribution can sometimes be more of an issue than the actual numbers. I have not had much negative feedback on distribution issues. As usual in land management scenarios, allocation of the range vegetation to the various livestock and wildlife types is always an issue, which for the most part remains unanswered. Establishment of a baseline inventory of vegetation would help to resolve some of these issues.

Because the reproduction rate is usually greater than losses by hunting and/or natural causes, it is recognized that it is difficult to stay within target numbers. This would support holding numbers at the lower level.

Again thanks for the opportunity to comment on your DAU objectives.

Sincerely,

Lane Osborn
Northwest District Manager
P.O. Box 1094
Craig, CO 81626
Phone (970) 824-2850
Fax (970) 824-3036

cc: Beverly Rave, Field Operations Section Manager SLB
Peter Torma, Bureau of Land Management, PO Box 68, Kremmling, CO 80459

United States Forest Service - Walden

File Code: 2200-3/2270-1/2610/2620-1
Date: March 12, 2007

Jeff Yost
Terrestrial Biologist
Colorado Division of Wildlife
925 Weiss Dr.,
Steamboat Springs, CO 80477

RE: Scoping comments for Elk-Moose Data Analysis Unit Plans.

Dear Jeff:

After discussions with the Parks District Rangeland Management Specialists and Wildlife Biologist, I would like to offer the following response to the solicitation for comments on the Data Analysis Unit (DAU) Plans for Elk.

Elk

At the bottom of page 3, the draft plan states that "If the population is indeed 7,900 then this level may be acceptable as game damage complaints are minimal and habitat conditions appear acceptable at the current population". The fact that game damage complaints are minimal does not mean that all game damage is recognized and addressed. While habitat conditions may appear acceptable in some areas, we have reason to believe this is not the case in all areas of North Park. In fact, in some areas, shrub use reaches recurring, unacceptable levels that may threaten the vigor and overall sustainability of some shrub stands.

Population estimates show a post-hunt population of approximately 7,900 elk in Jackson County (DAU-3). Page 14 states "However, when the elk population reaches a level of 8,000 animals, or greater, marked deterioration in winter range will occur." This is based on the 1999 Weisberg SAVANNA model. A different model (Roath, Hardy, Wockner, Porter, Hobbs and Freddy, 2003) suggests that North Park could support a sustainable elk population ranging from 1,939 to 9,731 animals. Both models indicate that North Park could possibly support between 8,000 and 9,000 elk before "serious habitat and negative impacts to the herd occur."

Population models provide an effective tool for estimating population goals, however the models are only as good as the information fed into the model. It is usually advisable to rely upon the more conservative estimates derived from population models, especially when using vegetation estimates that are dependent on highly variable climatic conditions.

The fact the North Park Habitat Partnership Program, a CDOW based program that helps mitigate big game damages to livestock producers, continues to provide fencing material and conducts habitat manipulation projects for elk, suggests it would be wise to keep the elk population at current levels.

Based on visual estimates of browse utilization on National Forest System lands and the perception, real or imagined, that the current number of elk causes damage to private property and the ecology of North Park, I feel that the elk population should be maintained at the moderate level of approximately 4,500 animals, as suggested in Alternative 2.

Sincerely,

/s/ Michael A. Wright
MICHAEL A. WRIGHT
District Ranger

cc: Mike J Alpe
Marcia L Pfleiderer
Ann Timberman

ELK DAU PLAN E-3 NORTH PARK QUESTIONAIRE

Please answer the following questions regarding elk management in DAU E-3, North Park Game management Units 6, 16, 17, 161, and 171 by placing an X in the appropriate space next to your chosen answer.

Please mark all that apply.

1) Meeting Attended:

___XX__ Internet Only – Did not attend a public meeting
_____ Walden – January 29, 2008
_____ Fort Collins - January 30, 2008

2) Are you?

_____ LANDOWNER
_____ LIVESTOCK OPERATOR
_____ NORTH PARK BUSINESS OWNER
_____ NORTH PARK GUIDE OUTFITTER
_____ HUNTER
_____ VIEWER
__XX___ AGENCY (BLM)

3) Have you experienced or have knowledge of any of the following caused by elk in North Park? If so explain.

__XX___ HABITAT DAMAGE
Through our land health assessments we have noticed areas in North Park where desirable species (e.g. bitterbrush, serviceberry, and even sagebrush) have been browsed excessively by wild ungulates.

_____ GAME DAMAGE
_____
_____
_____

_____ COMPETITION WITH LIVESTOCK
_____
_____

4) PREFERRED ALTERNATIVE

_____ **3,500 to 4,000** elk – This level would allow more elk for harvest in the short term but would reduce the population below maximum sustained yield reducing hunting and viewing opportunities in the future.

___XX__ **4,000 to 4,500 elk** – This alternative is the current population level and the former population objective. This population level would continue to provide moderate to high recreational hunting opportunities for elk and recruitment levels remain high.

_____ **6,000 to 6,500 elk** – The elk population is doing well at its current level and has been increasing slowly over time despite significant increases in antlerless and PLO licenses. Some population models predict the post-hunt population is already at or above this level currently. A higher population goal will result in increased hunting opportunities. However, sustaining this population level may lead to significant forage issues and game damage on private lands, particularly in refuge situations where minimal or no elk hunting is allowed.

Sex Ratio Objective Alternatives (Post-Season Observed)

_____ **Sex Ratio, 15 to 20 bulls/100 cows** - This is a lower sex ratio than the current alternative. At this level fewer large bulls would be available to harvest. It may be difficult to lower the sex ratio to this level without removing antler point restrictions in at least some of the seasons.

__XX___ **Sex Ratio, 20 to 23 bulls/100 cows** - This is the current objective and is being maintained at the current harvest rate and season structure.

_____ **Sex Ratio, 20 to 25 bulls/100 cows** - This alternative would likely require a reduction in bull licenses. This level of males in the population would produce larger bulls for hunting but not a great number more than current management.

Do you have any suggestions for increasing antlerless elk harvest in North Park and how this might be achieved?

_____
_____
_____
_____
_____

Please rank the following reasons more elk hunters in North Park do not hunt on private land for antlerless elk (1 – 5 with 1 being the highest reason)

_____ Hunters don't ask or are afraid to ask permission of landowners to hunt
_____ Hunters **c**annot gain permission from landowners for access to private land
_____ Hunters cannot get access to private land without paying a fee
_____ Hunters are willing but cannot afford to pay access fees for cow elk
_____ Other – Describe:

ADDITIONAL WRITTEN COMMENTS
In the space provided please write down any addition thoughts, comments, or suggestions pertinent to elk management in North Park. (Use back if necessary)

Clarify statement on p.23. “BLM is unaware of conflicts between availability of forage for livestock and elk on BLM administered lands, however specialists have observed impacts (overuse) to mountain shrub communities caused by wild ungulates.” (see #3 above)

APPENDIX F – PUBLIC MEETING ANNOUNCEMENTS

North Park Elk and Moose Management Meetings Scheduled

The Colorado Division of Wildlife (DOW) is interested in hearing from the public about management of elk and moose herds in North Park. Public input is critical in helping revise management plans, called Data Analysis Unit or DAU plans. DAU plans establish population objectives and set goals for male-female ratios within populations.

Interested members of the public are invited to attend a DAU planning meeting in Walden on Tuesday, Jan. 29 or Ft. Collins on Wednesday, Jan. 30. The Walden meeting will be held at the US Forest Service office at 100 Main Street. The Ft. Collins meeting will be at the Ft. Collins Hilton at 425 West Prospect Road. Both meetings begin at 6:30 p.m.

Elk populations in North Park are guided by the E-3 DAU plan, which includes Game Management Units 6, 16, 17, 161 and 171.

Moose in North Park are managed under the M-1 DAU plan, which includes Game Management Units 6, 16, 17, 161 and 171.

DAU plans are based on wildlife management principles and public input and are revised approximately every 10 years. To aid the public in discussion, several management alternatives will be presented at the public meetings. The alternatives cover increasing or decreasing overall herd size and male-female ratios or leaving the populations and gender ratios at their current levels. The benefits and drawbacks to each alternative will be presented.

"Herd size is a function of biology and habitat, but management of those herd sizes involves understanding public tolerance and desires for species populations," said Jeff Yost, DOW terrestrial biologist for the Steamboat Springs area. "While the DOW is well suited to make biological decisions, we need public input to determine if larger or smaller herds are wanted."

Sportsmen, outfitters, business owners and landowners all have a vested interest in the big game populations in an area. Sportsmen may want larger herds for increased opportunity or male-female ratios that create bigger bucks but less hunting opportunity. Outfitters and hunting-tourism dependent businesses like hotels and restaurants may want increased hunting opportunity that brings hunters to an area. Landowners may want decreased herd sizes to limit damage to haystacks and fences. Large landowners may also want herd gender ratios that promote bigger bulls and result in more desirable private land bull licenses.

The Colorado Division of Wildlife is the state agency responsible for managing wildlife and its habitat, as well as providing wildlife related recreation. The Division is funded through hunting and fishing license fees, federal grants and Colorado Lottery proceeds through Great Outdoors Colorado.

APPENDIX G – APPROVAL/SIGNATURE PAGE

INSERT SEPARATE FILE