Sand Dunes Elk Herd
Data Analysis Unit E-11
Game Management Unit 82
July 2010

Colorado Division of Wildlife
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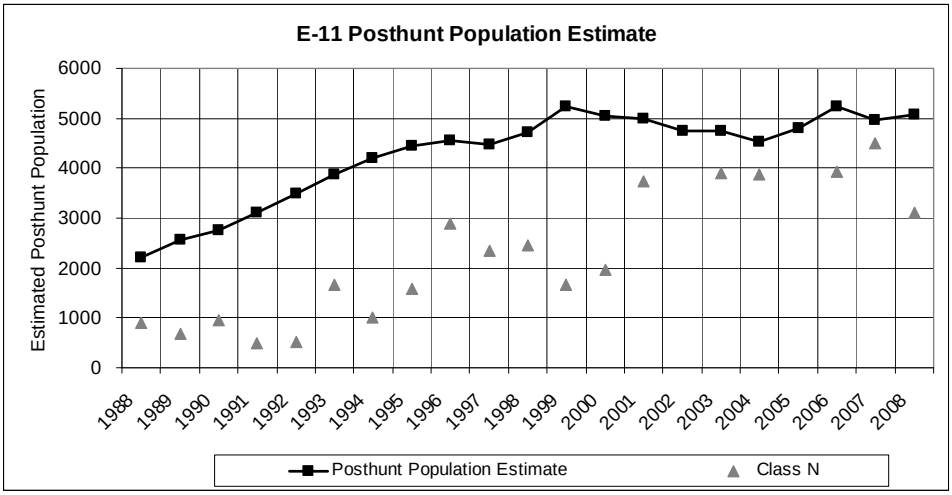
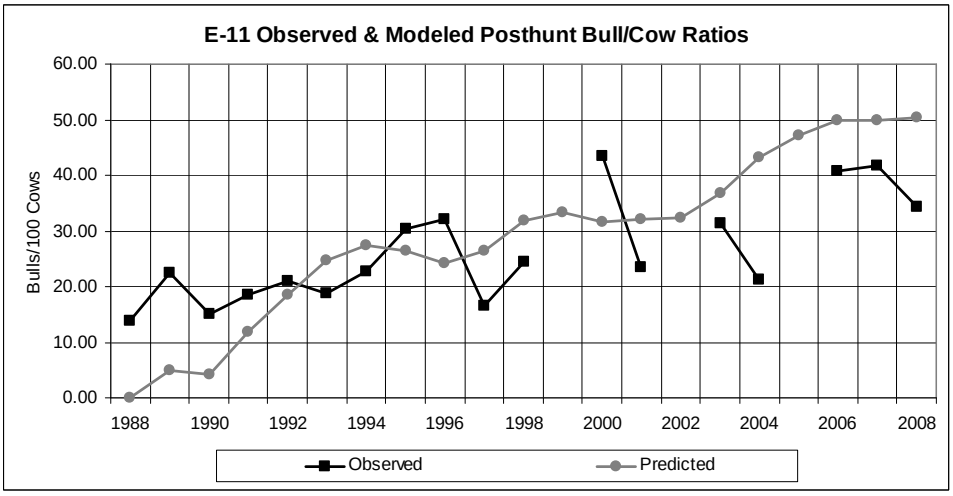
Sand Dunes Elk Herd
Data Analysis Unit E-11
Game Management Unit 82

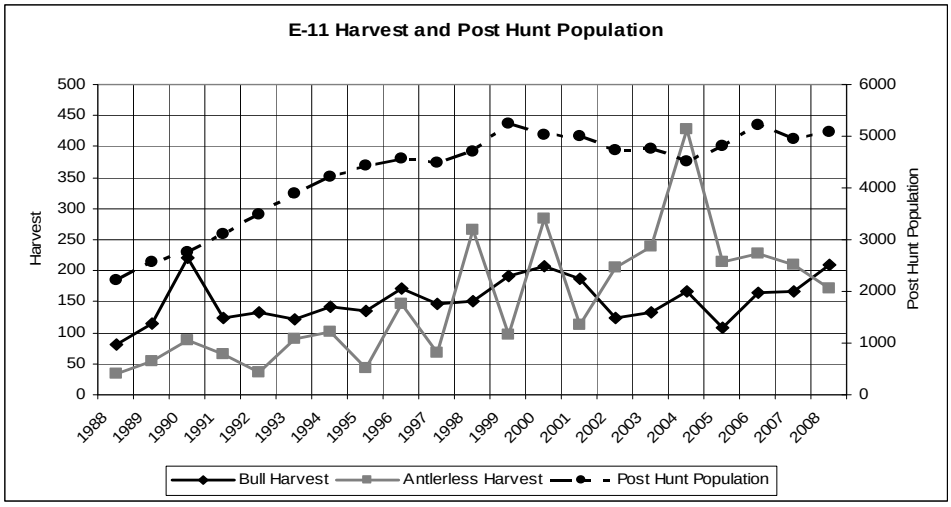
Executive Summary
June 2010

Population:	2008 Estimate	5000
	2010 Objective	**3,000 to 4,000**
Sex Ratio:	2008 Observed	34 bulls:100 cows
	2010 Objective	**17 to 23 bulls per 100 cows**

Land Ownership: 42% private, 17% USFS, 16% NPS, 10% BLM, 8% US Fish & Wildlife Service, and 6% State







Data Analysis Unit (DAU) E-11, the Sand Dunes Elk Management Area, consist of Game Management Unit (GMU) 82. It is located in south central Colorado, on the northeast side of the San Luis Valley. The GMU has been managed as an over-the-counter (OTC) bull hunting unit. In addition there has been generous numbers of antlerless licenses and private land only (PLO) seasons since the early 2000's. Either sex tags have been employed in the first rifle season since 2003 and in fourth season since 2004.

The E-11 population increased from the late 1980s to 2000. Since then the population as modeled has remained around 5,000 elk. The previous DAU plan for E-11 was adopted in 1996 based on a early population model that underestimated the population. Because of this the 1996 population objective of 1500 is most likely below what the public and wildlife managers had desired.

Observed post hunt sex ratios are high for this unit with a 20 year average of 26 bulls per 100 cows. This has increased even more with the last three years average of 39 bulls per 100 cows. This high sex ratio is a result of refuges created by private lands, US Fish and Wildlife Service lands, and National Park Service property that are used by bull elk, as well as cows, to escape hunting pressure in the unit.

Harvest is most influenced by weather, the number of limited licenses available and the accessibility of elk on public and private lands. Bull harvest for the past 20 years has averaged 152 animals per year. The high bull harvest was 221 in 1990 and the low was 80 in 1988. Antlerless harvest during the same time period has ranged from a 34 in 1988 to 429 in 2004, averaging 151.

The main limiting factor for this herd is the amount of winter range available. Overpopulation of deer and/or elk on the winter range can damage the habitat and can also force animals onto agricultural fields. This in turn could lead to game damage issues. Housing development on private lands continues to decrease winter range availability, restricting this population further.

Management Alternatives
Three alternatives for E-34 were considered for posthunt population size and sex ratio objectives.

Population Objective Alternatives:

1) 2000 to 3000 (decrease in current population)
2) 3000 to 4000 (decrease in current population)
3) 4000 to 5000 (current population)

Sex Ratio Objective Alternatives:

1) 17 to 23 bulls per 100 cows
2) 25 to 30 bulls per 100 cows
3) 30 to 35 bulls per 100 cows

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1. DAU Plans and Wildlife Management by Objectives

The growing human demand for a finite resource dictates wise management of Colorado's wildlife. The Colorado Division of Wildlife (DOW) employs a management by objectives approach to big game populations (Figure 1). The DOW's Long Range Plan provides direction and broad objectives for the DOW to meet a system of policies, objectives and management plans such as the Data Analysis Unit Plan. It also directs the actions the Division takes to meet the legislative and Wildlife Commission mandates.

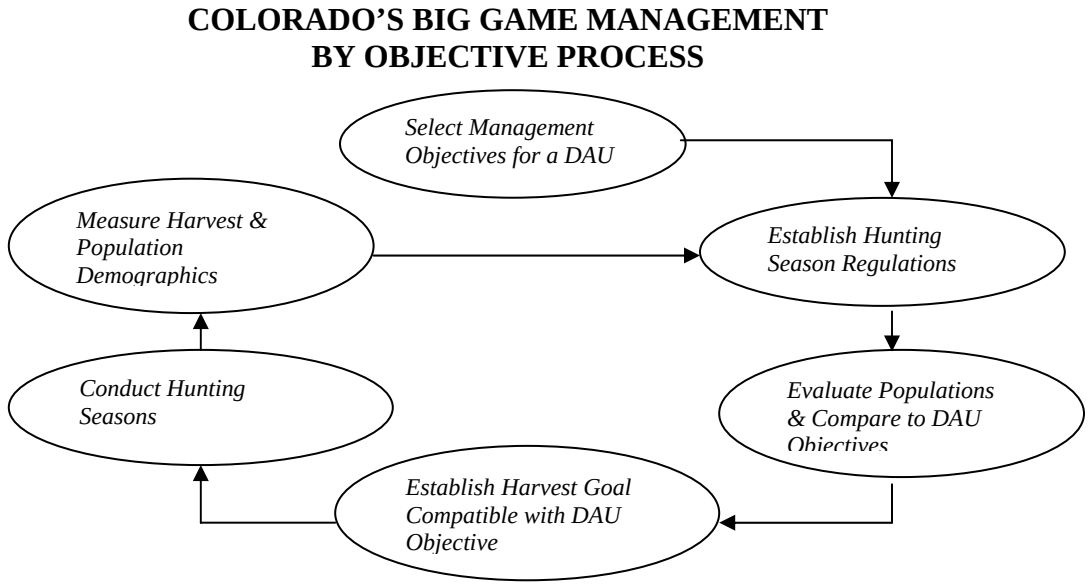

Figure 1. Management by objectives process used by the CDOW to manage big game populations on a DAU basis.

Data analysis units (DAUs) are used to manage herds of big game animals. The DAUs are generally geographically discrete big game populations. The Data Analysis Unit Plans are designed to support and accomplish the objectives of the Long Range Plan and meet the public's desires for big game. The DAU Plan establishes the short and long term herd objectives. The objective approach is the guiding direction to a long term cycle of information collection, information analysis, and decision making.

The DAU planning process is designed to incorporate public demands, habitat capabilities, and herd capabilities into a management scheme for the big game herds. The public, sportsmen, federal land management agencies, landowners, agricultural interests and others are involved in the determination of the plan objectives through goals, public meetings, comments on draft plans, and the Colorado Wildlife Commission.

Individual DAUs are managed with the goal of meeting the herd objectives. This is done by gathering data and then inputting it into population models to get a population estimate. The parameters used in the model include harvest data which is tabulated from hunter surveys, sex and age composition of the herd which is acquired by aerial inventories, and mortality factors such as wounding loss and winter severity which are generally acquired from field observations. Once these variables are entered into the population models a population estimate is obtained. The resultant computer population projection is compared to the herd objective, and a harvest calculated to align the population with the herd objective.

2 . Description of the Data Analysis Unit

2.1 Location

The Data Analysis Unit (DAU) for the Sand Dunes elk herd is located in south central Colorado, on the northeast side of the San Luis Valley. It consists of Game Management unit (GMU) 82. It has an area of 1, 088 square miles and encompasses portions of Saguache and Alamosa Counties (Figure 2).

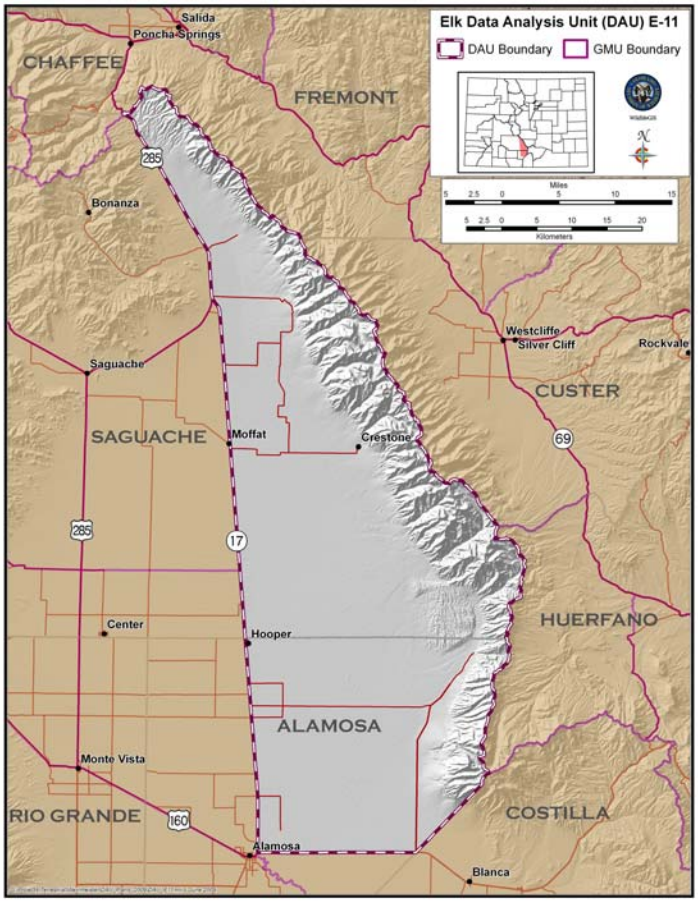

Figure 2. DAU E-11 boundary

The DAU is bordered by the crest of the Sangre de Cristo Mountains to the east, the Costilla County line and U.S. Highway 160 to the south, Colorado Highway 17 and U.S. Highway 285 to the west and the divide between the Arkansas drainage and the San Luis Valley to the north.

Land ownership in the DAU is 42% private, 17% US Forest Service, 10% Bureau of Land Management, 16% National Park Service, 8% US Fish and Wildlife Service, and 6% State, which includes CDOW State Wildlife Areas, State Trust Land, and State Parks (Figure 3). Land is currently being exchanged with BLM, State, and private lands transferring to the National Park Service. Because of this dynamic situation the landownership makeup within the DAU will be outdated by the time this plan is approved by the Colorado Wildlife Commission or shortly thereafter.

The crest of the Sangre de Cristo Mountains rise to over 14,000 feet and the valley floor is 7,500 feet elevation.

The vegetation varies from grassland/shrub and agriculture at lower elevations up through oak brush, pinion-juniper, ponderosa pine, Douglas fir/aspen, spruce/fir and an extensive alpine zone above 12,000 feet.

The climate is a highland or mountain climate with cool dry summers and very cold winters with heavy snow. The Sangre de Cristo mountain range is in the rain shadow of the San Juan Mountains and therefore somewhat drier. The higher elevation o f the Sangre de Cristos receive 30 o 40 inches of precipitation per year mostly in the form of winter snow and to a lesser extent frequent afternoon showers in the summer. The precipitation in the foothills is about 12 inches while the valley floor gets only 7 inches per year and is consider a high desert.

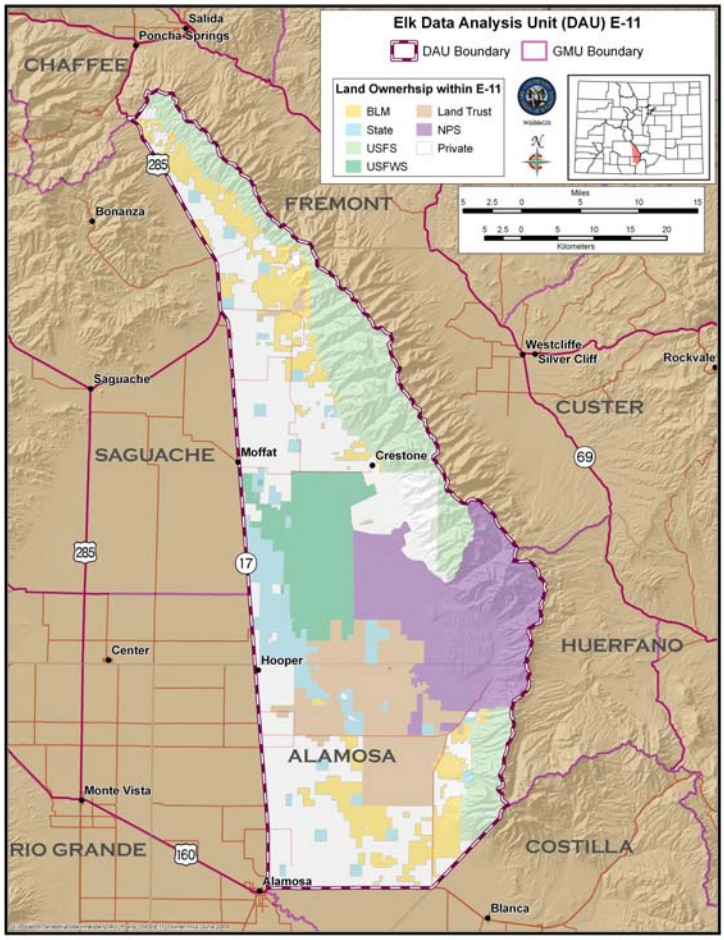

Figure 3. Landownership within DAU E-11

2.2 Elk Range and Movement

Elk occupy most of the DAU at some portion of the year. Elk movement to the winter range is usually initiated by hunting pressure and to some degree snow cover. This movement generally begins in September and continues until December. The movement is elevational as well as a movement out of the northern part of the DAU to the south and from west of the DAU southeasterly. Elk will winter on the south facing slopes in the lower portions of most of the drainages along the Sangre de Cristos. There are also some animals that will winter in or near agricultural fields north of County Road T. The majority of the population winters south of County Road T between Deadman Creek and Sand Creek.

Migration back to the summer range usually follows the melting snow prior to calving. The elk disperse throughout the DAU in summer and fall from the flats at low elevation to above timberline, along

the Sangre de Cristo range to the north, and to the northwest out of the DAU. There are also a portion of animals that stay in the wintering area.

Cow elk were caught in E-11 and radio collars placed on them beginning January 2005 in a combined effort involving Division of Wildlife, United State Geological Survey, and National Park Service. From 2005 to 2007 around 45 active collars were maintained on elk and movements monitored on a biweekly basis. This data provided insight into how these animals used the geographic area. Cows that were captured in the areas of Deadman Creek and Sand Creek, where the highest density of elk occur, had four main summer movement patterns. These included elk that summered in the alpine areas in the Deadman Basin, elk that moved north along the foothills of the Sangre de Cristos, elk that remained in the same area throughout the year, and elk that moved northwest across Highway 17 and summered in the area between Highway 17 and Highway 285 which is within DAU E-55. The significance of these animals using E-55 is explained in a following paragraph on game damage. The elk that were collared at the northern portion of the GMU tended to have north/south movement, spending summer months in the north and winter in the south. There was also movement at the same time to higher elevations during the summer. These animals remained in the northern half of the DAU. Cow elk captured south of the sand dunes remained south of that point throughout the year. Their seasonal movements were again north and south but they summered south on or near the Medano Ranch and wintered north around the Great Sand Dunes National Park headquarters.

3. Herd History and Management

The DAU is managed with unlimited bull licenses in the rifle seasons and unlimited either sex licenses during the archery season. A four point antler restriction has been in effect since 1986. Antlerless licenses are available during the rifle seasons.

Prior to the late 1990's elk were unheard of in the southern ¾ of the DAU. Only in the early 1990's did people begin to see elk around Sand Creek. These initial elk most likely came from GMU 83 which is adjacent and south of GMU 82. Currently the greatest concentrations of elk within the DAU are found where before there were few, if any, elk.

3.1 Post-hunt Population Size

Post-hunt population size is determined using the best information available at the time in conjunction with a spreadsheet model as described in section one of this plan. Changes are made as new and better information becomes available. Computer modeling is not an exact science and may not produce a final number that is exactly correct. Population models do represent trends well and these trends are a tool used by biologists to make management decisions concerning big game herds.

In 2008 the projected population was 5000 which is about 300% over the population objective of 1,500 (Figure 4). The population has possibly been over objective since prior to 1988. Most likely the population is higher than what is being produced by the model. This is because of a low percentage of bulls being harvested compared to the number of bulls present in the population. Harvest is a driving component of the model.

For the past eight years around 4,000 elk have been classified each year. In 2007 4,507 elk were classified. The same year the population was estimated at 5,000. This would make sight ability 90% which is extremely high.

As part of the radio collaring endeavor mentioned previously, the USGS also looked at population sampling and population size in E-11. Two independent observers from a helicopter recorded number of elk groups they detected and the number of elk in each group. At the same time another person in a fixed-wing aircraft located radio collared elk and associated groups using radio telemetry. The data from all of these observations were then compared. A preliminary estimate of 3,955 elk was given in the 2005 progress report (Shoenecker et al). A final population estimate has not been made available at this time.

The revision of this DAU plan was delayed in anticipation of being able to incorporate this estimate in the plan and decision making process.

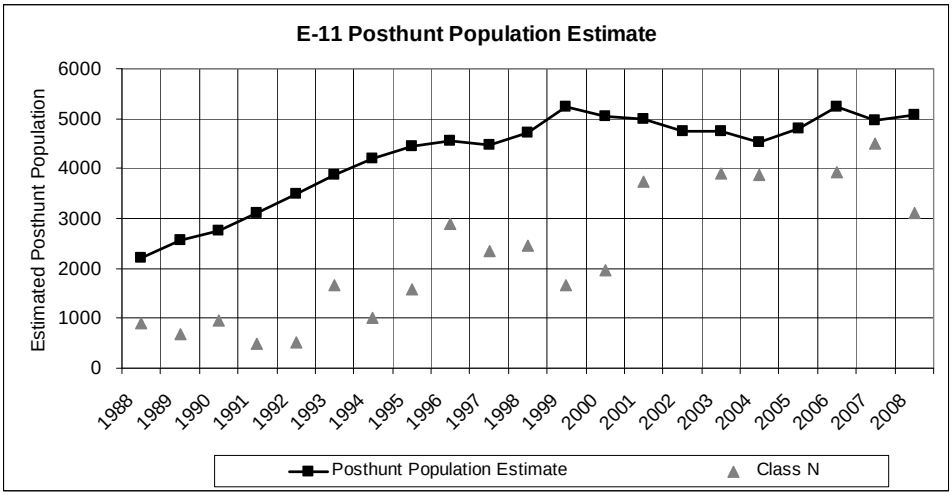

Figure 4. E-11posthunt population estimate for 1988 to 2008

3.2 Post-hunt herd composition

Post-hunt herd composition is acquired by aerial surveys usually done in December or January following the big game hunting seasons. The surveys are not done to count the total number of animals, but to obtain sex and age ratios. It is generally accepted that bull:cow ratios are higher than the observed values and that observed calf:cow ratios are fairly accurate. Aerial surveys are subject to variability due to weather, snow cover, sample size and observers.

The average calf/cow ratio observed from 1988 to 2008 was 35 calves/100 cows. The high was 49/100 in 1990 and a low of 21/100 in 2008 (Figure 5).

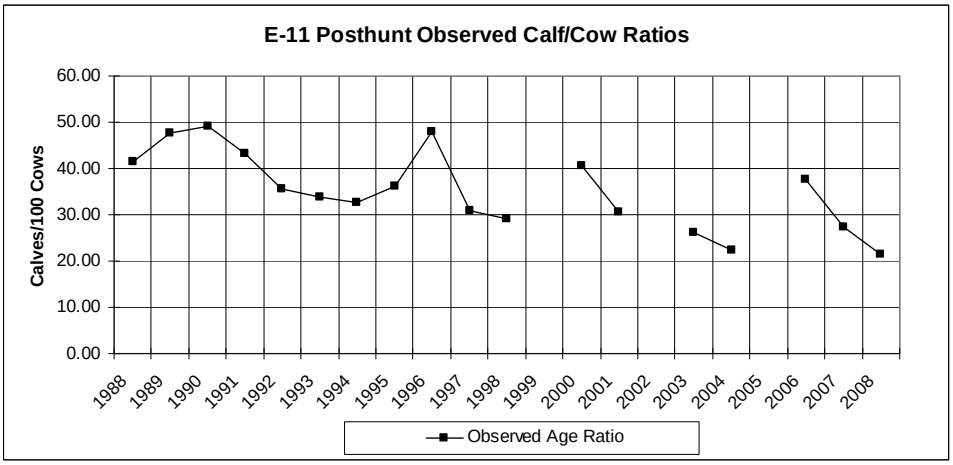

Figure 5. E-11observed posthunt age ratios from 1988 to 2008

The bull/cow ratio for E-11 has averaged 26 bulls per 100 cows from the years 1988 to 2008 (Figure 6). The high during this time was 43 bulls:100 cows in 2000 and the low was 14 bulls:100 cows in 1988. Overall this ratio has been increasing due to a high percent of elk being on lands where hunting is prohibited.

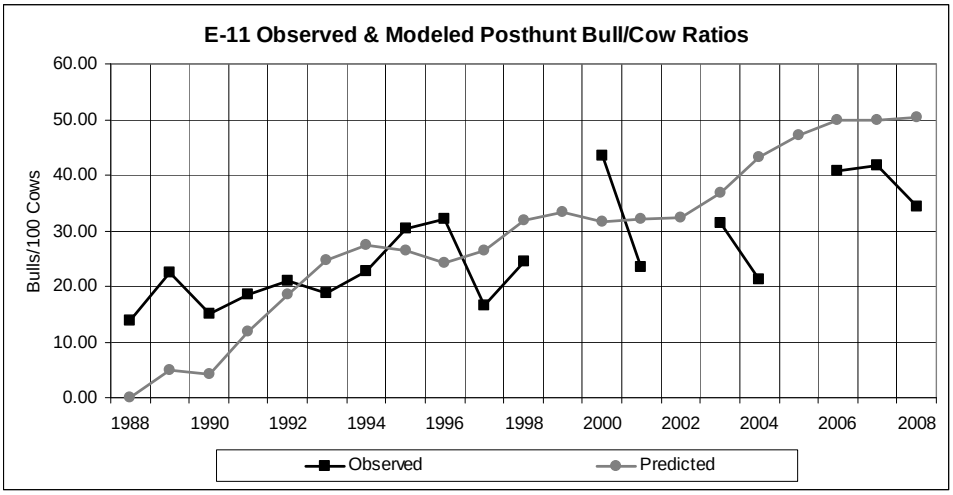

Figure 6. E-11estimated and observed posthunt sex ratios from 1988 to 2008

3.3 Harvest

Harvest is effected by the number of permits issued, season structure, weather and population size. When a population is over objective surplus animals plus recruitment must be taken to decrease the population. Therefore an increased number of antlerless licenses are available, which in return increases harvest. When the herd objective is reached only annual recruitment can be taken.

Since 1988 harvest has ranged from a low of 114 elk in 1988 to a high of 596 in 2004. The average has been 304. Bull harvest for the same time period has averaged 152 with a low of 80 in 1988 and a high of 221in 1990 (Figure 7). Cow harvest has averaged 151 with a low of 34 in 1988 and a high of 429 in 2004.

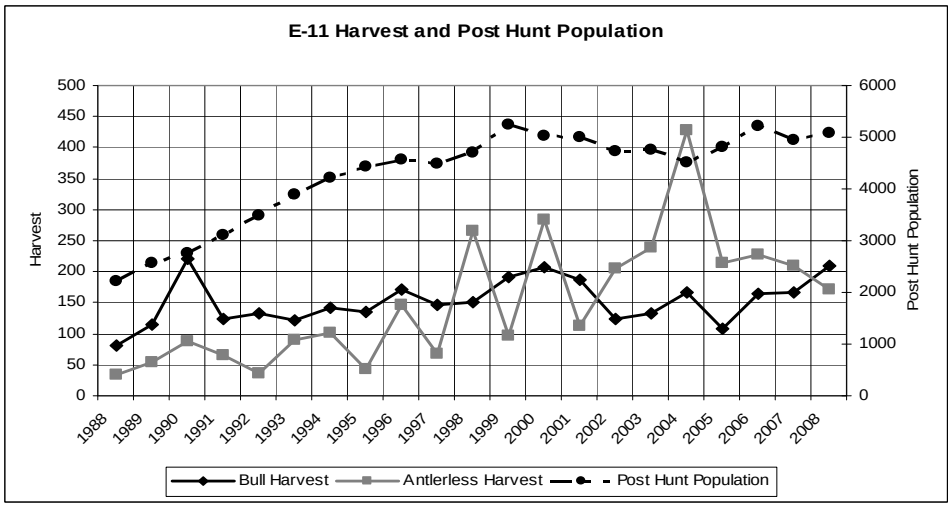

Figure 7. E-11 Bull harvest, antlerless harvest and post hunt population estimate from 1988 to 2008

Hunter success from 1988 has averaged 21% with 13% as a low in 1995 and a high of 35% in 1990. For the past five years success rates have averaged 24%.

3.4 Hunting Pressure

The number of hunters per year for all seasons between 1988 and 2008 has ranged from a low of 668 in 1989 to a high of 2448 in 1998 (Figure 8). The average for these years is 1450. For the past five years hunter numbers have remained stable and have averaged 1617.

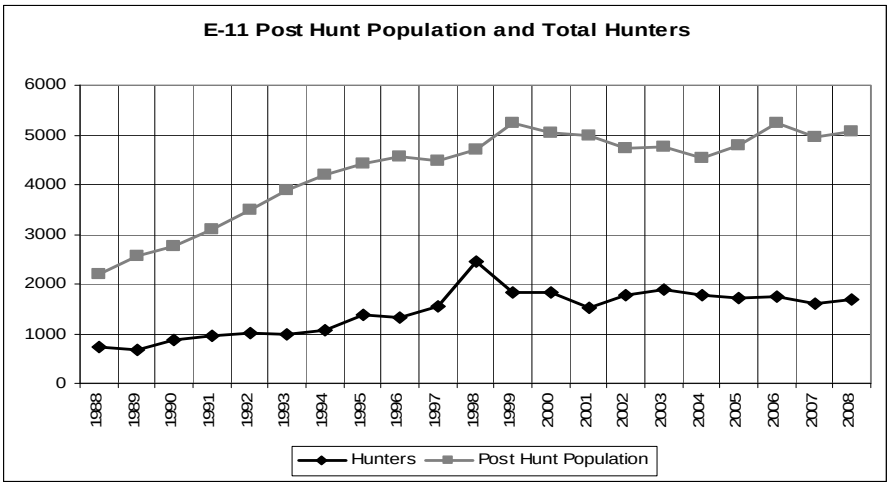

Figure 8. E-11 post hunt population and total hunters from 1988 to 2008

4. Current Herd Management Status

4.1 Summary of Current Conditions

The 2008 post hunt population estimate for the Sand Dunes elk herd was approximately 5,000 elk. This is above the long term objective of 1500 elk. The current herd model indicates that this population is stable to increasing with the current harvest. Elk inventory and modeling procedures have become more refined in recent years, and the current models probably do a better job of reflecting actual herd status than the older versions. It must be remembered that herd modeling is an ever evolving science and with new information can change significantly.

The long term post hunt sex ratio objective is 20 bulls per 100 cows. The observed bull/cow ratios have been above objective since 1994 although this is an unlimited bull unit. The cause of this is elk using areas during the hunting seasons that are inaccessible to hunters.

4.2 Current Management Issues

This elk herd has grown to significant numbers. Controlling the population through harvest has been near impossible because of areas of private and federal land where hunting is not allowed or is on a limited basis. There is concern from the Division of Wildlife and US Forest Service managers about the impact of this elk herd on the vegetation and on other ungulate populations including deer and bighorn sheep. The DOW is currently trying to maximize the elk harvest in this and adjacent DAUs through license/hunter distribution. The DOW is also working with the US Fish and Wildlife Service, National Park Service, and the Nature Conservancy to allow harvest and disturbance to make the elk more available to hunters in attempts to decrease the elk population.

Game damage issues are minimal in the DAU even though elk are found on agricultural fields. Concerns by landowners are handled on an individual basis. More significantly is the game damage potential in the adjacent DAU E-55 caused by elk from E-11. Elk cross these DAU boundaries on a yearly cycle moving into E-55 in May and to E-11 in September. E-55 has a high proportion of agricultural fields irrigated by center pivot sprinklers. Crops commercially grown include alfalfa which attracts elk as forage, spinach, lettuce, potatoes, and small grains. The biggest concern is the potential of elk spreading crop disease into a seed potato field. This could be done as easily as a single animal carrying a disease walking through a field. This damage claim could cost the DOW in excess of $250,000.

Summer recreation continues to increase in this area. People from surrounding states, the Front Range of Colorado and, the communities within the San Luis Valley make their way to higher elevations within this DAU to escape the summer heat and enjoy the mountain environment. Activities include camping, hiking, horseback riding, mountain biking, fishing, and use of off highway vehicles (OHVs). US Forest Service and BLM lands receive the majority of the use from these recreationalists. These same lands are also where most of the summer range within the DAU is located. The impacts by these various forms of recreation are unknown but are believed to disturb elk to some degree. This could possibly affect distribution of elk and more importantly reproduction in calving areas.

A significant management issue that could impact this population is the development of oil and gas. Currently there are not any large scale oil and gas exploration in the area. However, the possibility is real in the imminent future. Lexam Explorations, Inc. is attempting to drill two exploratory wells on the Baca National Wildlife Refuge where the company owns mineral rights. If these wells show a promising production, then it can be expected to see increased oil and gas development interest on surrounding land. Oil and gas leases and development could have significant negative impacts through loss of habitat, fragmentation of habitat, disturbance to elk, especially on winter range, and illegal harvest due to the increased number of roads and easier access to wintering herd.

Similar to oil to gas development are solar farms. The San Luis Valley has been identified as an area having a high potential to harvest solar power. Solar farm companies are exploring these possibilities on private and public land. The area of focus on public land includes several parcels of BLM property in Conejos, Saguache, and Alamosa Counties. Most all of these areas provide winter range for big game. There are several major impacts on wildlife, similar to those seen with oil and gas development, which includes loss of habitat, habitat fragmentation, and disturbance, especially on winter range.

Spruce pine beetle is becoming a forest management issue. Several high elevation spruce stands are currently infected by the beetle of which the larva occupies mature trees. The infection can become great enough to kill the tree. Currently the US Forest Service has limited means to manage this. As a result the landscape at higher elevations is at the beginning stages of changing from the current dominate conifer habitat. The impacts on the elk herd as a result of this change are unknown.

Disease – Currently all areas in the San Luis Valley, including E-11, are free of chronic wasting disease. In August 2001 at the Anta Grande Elk Farm west of Del Norte on Hwy 160, a domestic cow elk was found dead and later determined to be carrying CWD. After testing the remaining animals in the herd (approximately 200 elk) one other elk tested positive for CWD. Eventually the entire domestic elk population on the farm was depopulated. The fall of 2001 after CWD was detected, the DOW built a second ten foot high fence around the perimeter of the elk holding pens to create a barrier between the domestic herd and wild animals. Efforts to monitor the chance of spread of CWD into wild populations were made through culling and extensive testing of deer and elk in the immediate and adjacent areas. To date, CWD has not been found in wild populations in E-11 or adjacent DAUs.

5. Habitat Resources

Winter range, particularly severe winter range, is the limiting factor to elk numbers in this DAU (Figure 9). Winter range is defined as that part of the overall range where 90% of the elk are located during the average first heavy snowfall to spring green-up. Winter concentration areas are that part of the winter range where densities are at least 200% greater than the surrounding winter range density in the average five winters out of ten. Severe winter range would be that part of the range where 90% of the individuals are located when the annual snow pack is at its maximum and/or temperatures are at a minimum in the two worst winters out of ten.

5.1 Public Lands

There are a total of 511 square miles of winter range in the DAU of which 56% or 288 square miles are publicly administered. Severe winter range totals 338 square miles of which 53% is on public lands. Of this 19% is on U.S. Fish and Wildlife Refuge and 20% is on National Park.

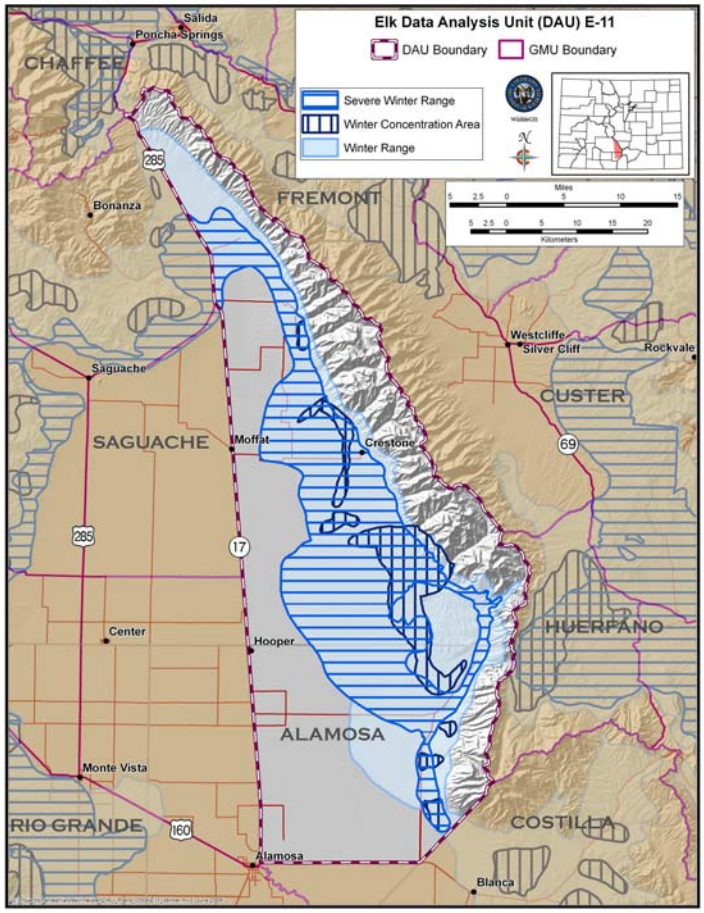

Figure 9. E-11 winter range, severe winter range, and winter concentration areas

5.2 Private Lands

223 square miles, or 44%, of winter range, is private. Severe winter range consists of 159 square miles of private land or about 47% of the total severe winter range. A portion of private lands used by elk is the Baca sub-division.

6. Development of Alternatives

The primary purpose of this DAU Plan is to determine long term post-hunt population and herd composition objectives. Herd composition is determined by calve/cow and bull/cow ratios. Calf/cow ratios are determined by environmental factors, most of which wildlife managers have no control. On the other hand bull/cow ratios can be directly controlled by management actions.

Each alternative also includes a brief discussion of management variables that would probably occur for that population level. Generally, the lower the population objective the lower the investment needs to be in habitat improvements. As the objective population increases, the larger the investment needs to be. Habitat management practices vary in labor intensity, cost, and life expectancy of the project. Individual practices that should be considered include prescribed fires, fertilization, seeding, water developments, fencing, timber management, travel management, range management, salting and others.

Game damage problems, although closely tied to the severity of the winter, would probably decrease under the lower population alternatives and would increase with increasing population levels.

Higher population levels, on the other hand, will also support a higher harvest by hunters, increase hunter opportunity, and increase the fiscal benefits to the economy. A population objective that involves reducing the number of hunting licenses by 10% will also reduce the economic benefits to the state and local counties involved by approximately 10%.

6.1 Population Objective 1996 Objective – 1500

ALTERNATIVE 1: 2,000 to 3,000 (decrease in current population)
This alternative suggests managing for the lowest population since 1988 and is still above the 1996 objective. This objective would demand aggressive cow harvest throughout the life of the DAU plan and may not be a reality. Long term benefits reaching this objective would include minimal game damage to agricultural fields and minimum impact to the habitat. However, once achieved it would also offer the least amount of hunting and viewing recreation for elk. There would need to be aggressive hunting or disturbance to elk on areas of concentration which currently closed to such activities such as the Baca NWR and the Great Sand Dunes NP.

ALTERNATIVE 2: 3,000 to 4,000 (decrease in current population)
This alternative decreases the population but still maintains it above the 1996 objective. This objective would demand aggressive cow harvest. Long term benefits reaching this objective would include decreased game damage to agricultural fields and reduce the impact to the habitat. Hunting and viewing recreation opportunity would be balanced with game damage. There would need to be hunting or disturbance to elk on areas of concentration which currently closed to such activities.

ALTERNATIVE 3: 4,000 to 5,000 (current population)
Adopting this objective would manage the herd at its current level. Antlerless licenses would remain similar to the current levels. Little change of impacts to habitat, agriculture and hunting (excluding the decreased availability of cow tags) would be seen.

6.2 Herd Composition (bull:cow ratio) 1996 Objective – 20 bulls:100 cows

ALTERNATIVE 1: 17 to 23 bulls per 100 cows
This alternative offers the lowest sex ratio, therefore the lowest number of mature bulls in the population. The benefit of maintaining a low sex ratio is increased hunting opportunity with unlimited licenses. Under the current distribution of elk on areas inaccessible to hunters, this objective is not attainable. Aggressive hunting and disturbance would need to be implemented on the Baca NWR and the Great Sand Dunes NP.

ALTERNATIVE 2: 25 to 30 bulls per 100 cows
This objective could be reached under current management of unlimited licenses and some degree of disturbance and/or hunting on areas used by elk as refuges. This is lower than the current observed sex ration of 34 bulls:100 cows, but remains high for a DAU managed through unlimited bull licenses.

ALTERNATIVE 3: 30 to 35 bulls per 100 cows
Limiting bull licenses would have to be considered to manage for this alternative. To do this the unit would have to be nominated by the public and ultimately approved by the Colorado Wildlife Commission. This alternative would provide the highest number of mature bulls in the population but at the cost of fewer licenses, therefore decreased hunting opportunity.

7. Alternative Selection

The preferred alternatives were selected after gathering input from public meetings, the Blanca HPP committee, land management agencies, written comments and Division of Wildlife personnel. Also herd capabilities and other factors mentioned previously were considered.

A public meeting was held at the Inn of the Rio Grande in Alamosa on October 7, 2009. There were 13 individuals in attendance. . Most of those in attendance were concerned about other wildlife issues than this DAU plan. The comments that were received supported alternative 2 for the population objective and were equally spit on the sex ratio alternative alternatives.

On December 8, 2009 Terrestrial Biologist Weinmeister met with the Mount Blanca HPP Committee and asked for their comments on the plan. They supported alternative one for both the population objective and the sex ratio objective. The committee had strong concerns with the current high population of elk in this and area and the associated game damage issues.

Comments were also received via e-mail from Ron Garcia of the National Fish and Wildlife Service. The Fish and Wildlife Service would like to see this population reduced to its minimal level, population alternative 1, because of damage to the natural resources caused by elk on the Baca National Wildlife Refuge.

Three landowners wrote letters addressing there concerns about the current number of elk in GMU 82 and related game damage issues. All three landowners stated that a reduction of the elk population was needed.

AWM Rick Basagoitia contacted Saguache County Commissioners concerning the E11 plan. There weren't any issues in their view and they felt a middle of the road approach in the DAU would be prudent. Alamosa County Commissioners were asked for comments by letter without any reply from them.

Comments, which include the following, were received from the San Luis Valley Public Lands Center (SLV PLC) representing the Rio Grande National Forest and the Bureau of Land Management in the San Luis Valley. Based on existing habitat limitations on public land, the SLV PLC recommend that Alternative 1 (a 50% decrease in the population) be implemented as the population objective for DAU E-11. The SLV PLC suspect that this objective will be difficult to achieve, and are hopeful that improved public access to areas such as our new Baca Mountain Tract will assist the Division in these efforts. The SLV PLC encourages the Division to consider extending the hunting season in GMU 82 in an attempt to increase harvest rates of either sex elk. Because of the high numbers of elk in this area, non-traditional hunt seasons may be needed to try to increase the harvest rate as elk move from summer range on National Forest Systems land down to the Valley floor. There was also concern about the destructive impact that the current population of elk was having on the alpine area, specifically in Deadman Creek, and also the possible consequence on the S-9 sheep population.

Comments were solicited from the Great Sand Dunes National Park Supervisor, and The Nature Conservancy. No comments were received from either of these entities.

A copy of the draft DAU plan was posted on the Colorado Division of Wildlife website from October 29, 2009 to December 7, 2009 soliciting comments from the public. No responses were received from this effort.

7.1 Preferred Alternatives

Based on the preceding information about the DAU and comments received from the variety of individuals and entities, the Colorado Division of Wildlife staff recommendation for herd objectives are:

Population: 3,000 to 4,000 – There was overwhelming support from external interests and by DOW staff to decrease this population due to agricultural conflicts and impact to the habitat caused by the current number of elk which is greater than 5,000. If this was the only factor involved than a recommendation of decreasing the herd to 3,000 or less would have been adopted. However, due to the

inability to effectively manage this population through hunter harvest because of the refuges within in the DAU, this option is not a reality. Therefore a more realistic population objective was recommended with the goal of decreasing the population with the current and possible future options. To reach this objective, cooperation to hunt or disperse elk on the Baca National Wildlife Refuge and the Great Sand Dunes National Park is paramount. Care needs to be given when attempting to achieve this objective that elk in the northern part of the DAU are not over harvested and the harvest is received by the core group of the population located in and around the Deadman Creek and Sand Creek areas.

Sex Ratio: 17 to 23 bulls per 100 cows – This sex ratio objective is below the current observed sex ratio. It was suggested for adoption because the DAU is managed as an over-the-counter bull unit and it was not intended to be managed as a "trophy" quality unit which the other objectives imply.

Literature Cited

Shoenecker, Kate, B. Lubow, L. Zeigenfuss, and J. Mao. 2006. 2005 Annual Progress Report: Elk and Bison Grazing Ecology in the Great Sand Dunes Complex of Lands. Open-File Report 2006-1267. US Dept of the Interior, US Geological Survey.

Appendix A: Public Questionnaire

DAU E-11 Plan – Public Survey
GMU 82 - Elk

1) What are your interests in deer and elk management in this area? Check all that apply

____ agricultural

____ hunting

____ commercial (guide/outfitter)

____ viewing opportunities/non-consumptive

___ other (specify)_____

2) **Agriculture Producers** – Have you had problems with elk in the past five years?

Describe problem_____

What species were involved _____

Number of animals _____

Was DOW contacted? Yes / No

Actions taken by DOW_____

Is this a continued or growing problem? No Yes

3) **Non-consumptive Users/ watchable wildlife** – In what ways do you enjoy elk?

_____

_____

What is the general quality of your experiences? Poor Good Excellent

Please explain your rating:_____

4) **Hunters**

What is your satisfaction with **elk** hunting in GMU 82? Poor Good Excellent

What is most important to you? Mark your **top two** choices.

____ hunting every year

____ hunting quality with fewer hunters

____ high harvest success rates

____ potential to harvest mature animals

____ seeing more animals

____ other _____

5) **ALL** (refer to presentation)

Elk Management Alternatives **E11 (GMU 82)**

Population

50% decrease

25% decrease

Current population

Sex Ratio

17 to 23

25 to 30

30 to 35

Additional Comments:_____

_____

_____

_____

Return to:

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