

**Saguache Elk Herd
Data Analysis Unit E-26
Game Management Units 68 and 681
March 2008**

Colorado Division of Wildlife
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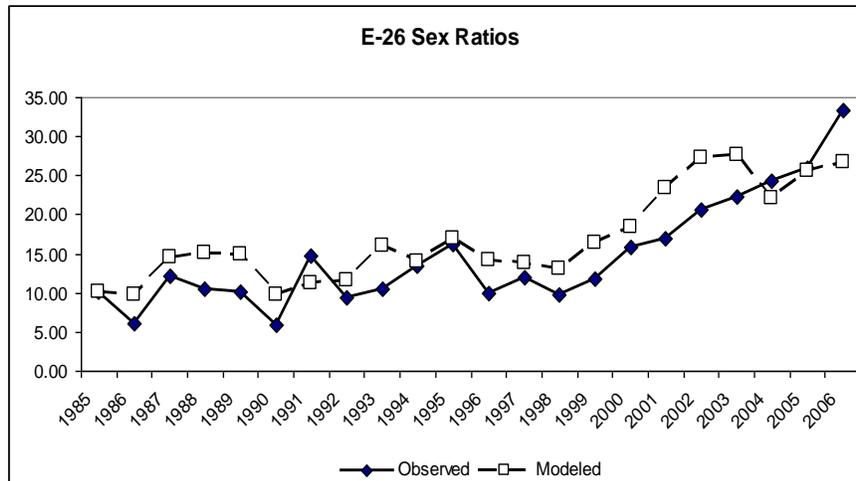
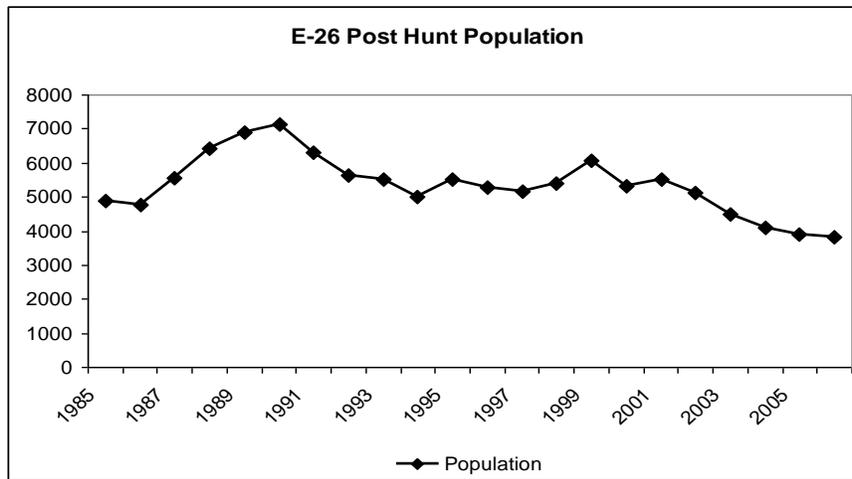
Approved by the Colorado Wildlife Commission March 2008

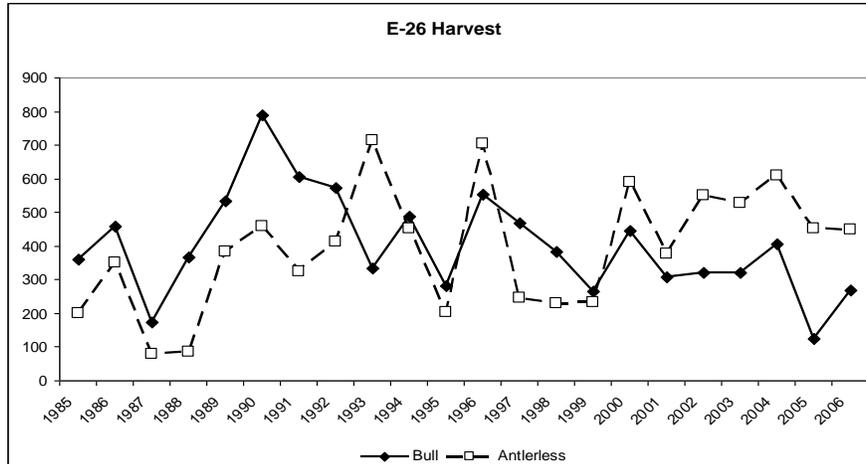
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Executive Summary

Population:	Objective	3750
	2006 Estimate	3800
	Current Objective	3500 to 4500
Sex Ratio	Objective	20 bulls:100 cows
	3 year average	26 bulls:100 cows
	2006 observed	33 bulls:100 cows
	Current Objective	18 to 22 bulls: 100 cows

Landownership: 13% Private, 58% USFS, 26%BLM, 3% other





Data Analysis Unit (DAU) E-26, the Saguache Elk Management Area, consist of Game Management Units (GMUs) 68 and 681. It is located in the northwest portion of the San Luis Valley in Colorado. Both GMUs have been managed similarly as over-the-counter (OTC) bull hunting units. In addition all nits have had high numbers of antlerless licenses since the early 1990's and private land only (PLO) seasons. Either sex tags have been employed in the first rifle season since 2003.

The E-26 population started increasing during the early 1980s and reached its peak population of 7100 in 1990. In 1991 wildlife managers began efforts to control the growth by increasing the number of antlerless elk licenses. This decreased the population and from 1994 to 2001 the population remained stable around 5500. Again antlerless elk licenses were increased and the population decreased to its current level of 3800 animals. The current DAU plan for E-26 was adopted in 1996 based on early population models that underestimated the population. Because of this the population objective of 3750 may be below what the public and managers may desire.

Observed post hunt sex ratios have been steadily increasing from 10 bulls per 100 cows to 33 bulls per hundred cows in 2006. One possible cause of this is from the DAU sitting adjacent to several limited bull license units and bulls emigrating from the higher bull ratios in those units. The current sex ratio objective is 20 bulls per 100 cows.

Harvest in the DAU is most influenced by weather and in the case of cows, the number of limited licenses available. Bull harvest for the past 10 years has averaged 330 with a high of 468 in 1997 and a low of 123 in 2005. Antlerless harvest has ranged from 229 in 1998 to 610 in 2004 with a ten year average of 426.

The main limiting factor on 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 into lower elevations where agricultural fields are located. This in turn could lead to game damage issues which the Division of Wildlife could be held responsible for.

Management Alternatives

Three alternatives for E-26 are being considered for posthunt population size and sex ratio objectives.

Population Objective Alternatives:

- 1) 2500 to 3500 (15% decrease in current population)
- 2) 3500 to 4500 (current population size)
- 3) 4500 to 5500 (20% increase in current population)

Sex Ratio Alternatives:

- 1) 18 to 22 bulls: 100 cows
- 2) 25 to 30 bulls: 100 cows (require public nomination to become limited bull units)
- 3) 32 to 38 bulls: 100 cows (require public nomination to become limited bull units)

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1. DAU Plans and Wildlife Management by Objectives

The growing human demand for a finite wildlife resource dictates wise management of Colorado's resources. 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.

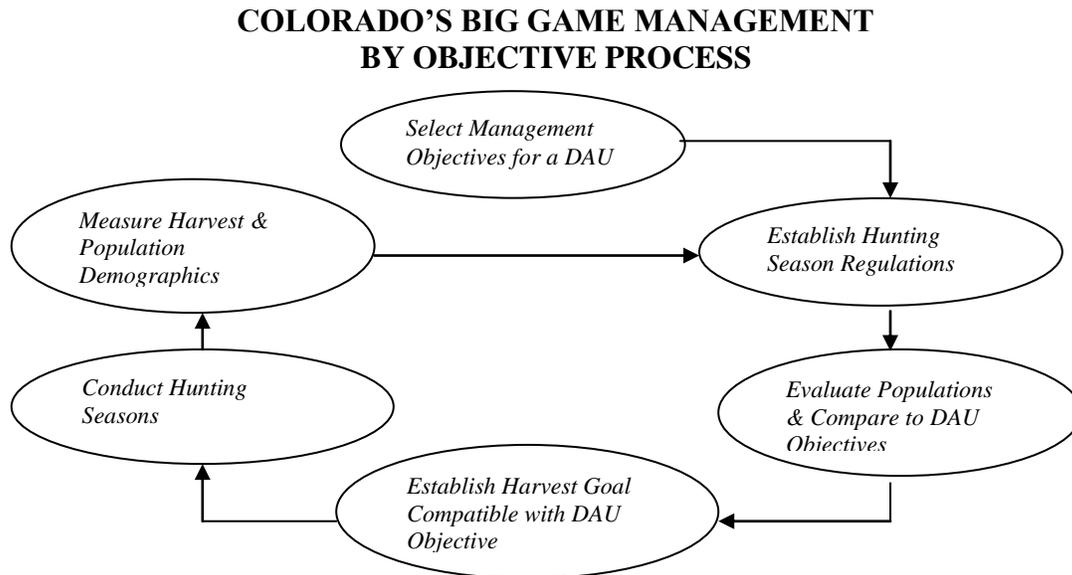


Figure 1. Management by objectives process used by the CDOW to manage big game populations on a DAU basis.

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 objective of the Long Range Plan and meet the public's objectives 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. One of the products of this process is hunting seasons for big game.

The DAU Plan 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, and agricultural interests 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 for the Saguache elk herd is located in south central Colorado, on the northwest side of the San Luis Valley. It consists of Game Management Units (GMU) 68 and 681 (Figure 2). It has an area of 1047

square miles and encompasses portions of Saguache County. Its main drainages are Saguache, Carnero, and Kerber Creeks.

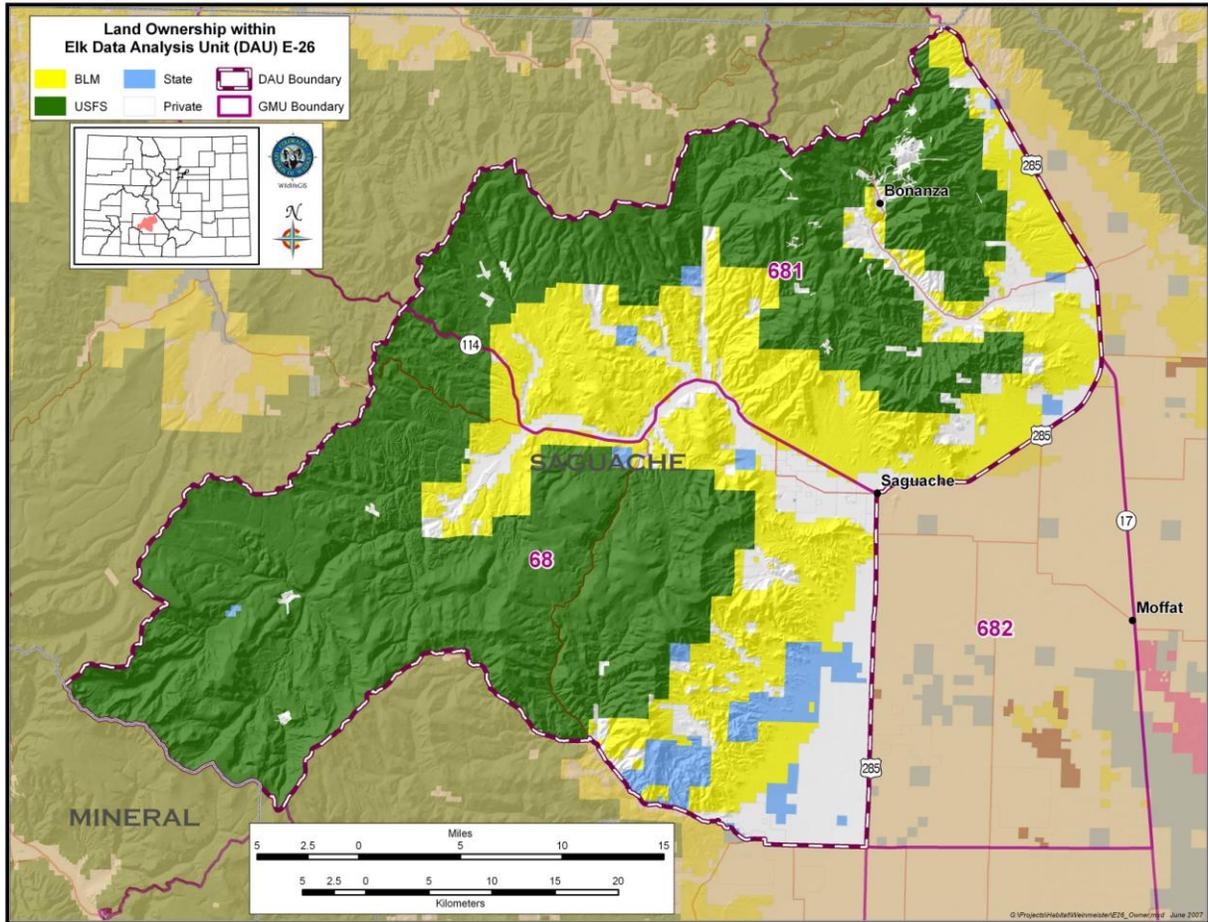


Figure 2. DAU boundary map with landownership

The DAU is bounded on the north and west by the continental divide, on the south by Saguache Creek\Rio Grande divide and County Road G, and on the east by Colorado Highway 285. Landownership in the DAU is 13% private, 58% U.S. Forest Service, 26% BLM, and 3% State.

The elevation ranges from a low of about 7,500 feet north of Monte Vista to nearly 14,000 feet in the LaGarita Mountains.

The lower elevations between 7,500 and 8,200 feet are grassland\shrub and agricultural lands. As elevation and precipitation increase the vegetation changes to pinion-juniper, ponderosa pine, then Douglas fir and white fir combined with extensive stands of aspen. Lodgepole pine is found in the northern part of the DAU. Between 9,500 and 12,500 feet stands of Engleman spruce and subalpine fir predominate. Large areas of alpine occur above 12,500 feet.

The climate is termed highland mountain climate with cool summers and very cold winters with heavy snow. The DAU is in the rain shadow of the San Juan Mountains and is somewhat drier than the western and southern portions of the San Luis Valley. The higher elevations of the LaGarita Mountains receive 30 inches of precipitation per year mostly in the form of winter snows and to a lesser extent frequent afternoon rain showers during the summer months. The foothills receive 10 to 12 inches and the valley floor gets only 7 to 8 inches annually and is considered a high desert.

2.2 Elk Range and Movement

Elk generally occupy the DAU from the grassland/shrub winter range adjacent to the foothills to above timberline on the alpine in the summer.

Elk movement to the winter range is usually initiated by increasing snow cover and decreasing forage availability, along with hunting pressure. This movement generally begins in November and continues until January. The movement is elevational and in an easterly direction. Wintering concentrations of elk are usually found in the foothills between Carnero and Saguache Creeks. Saguache Park can be an important wintering area, but its use is entirely dependant on snow cover with increased snow there is decreased use. In GMU 681 the elk tend to be more scattered over the winter range.

Hunting pressure will move elk from the DAU West into the Gunnison Basin where elk hunting is controlled by limited licenses. Once the main rifle seasons conclude, elk will move back into the DAU.

Elk movement back to summer range usually follows the snowline and in summer and fall the elk have dispersed throughout the DAU.

3. Herd Management History

3.1 Post-Hunt Population Size

Post-hunt population size is determined through the use of 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 biologist to make management decisions concerning big game herds.

Elk numbers in the Saguache DAU have been fairly consistent from 5000 to 6000 since 1987 to 2002 (Figure 3). Since 2002, with aggressive cow harvest the population has decreased to 3800.

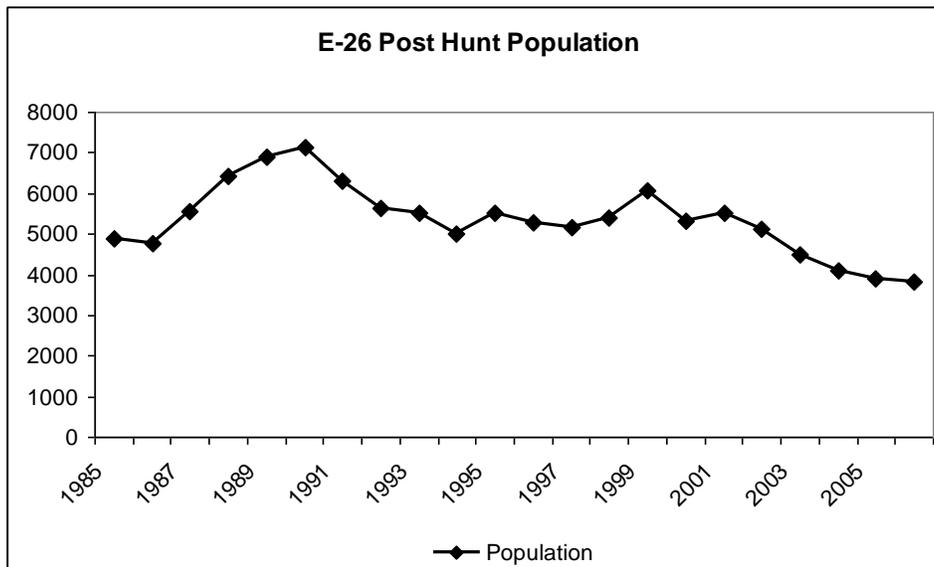


Figure 3. Posthunt population estimate for 1985 to 2006

The current population objective was last set in 1996 when POPII modeling was in use. POPII models underestimated elk populations across the state including this DAU. The objective of 3750 elk might be lower than initially intended because of this.

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 cow:calf ratio from 1997 to 2006 was 33 calves:100 cows, with a high of 45 in 2006 and a low of 17 in 2003 (Figure 4). The average bull:cow ratio for the past 10 years was 20 bulls:100 cows. The current long term objective is 20 bulls:100 cows. Usually in an unlimited bull unit the sex ratio rarely reaches 20. Because of nearby limited units which elk move between, E26 has been able to maintain a higher sex ratio.

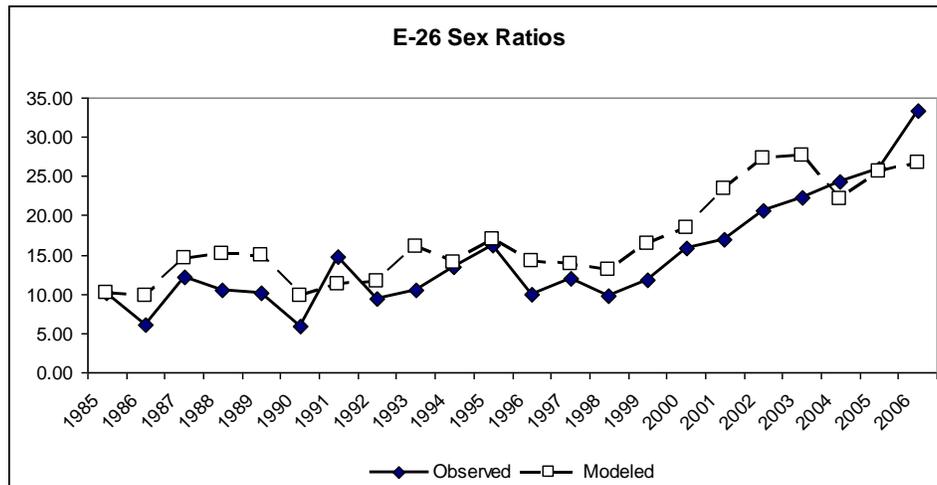


Figure 4. Estimated and observed posthunt sex ratios for 1985 to 2006

3.3 Harvest

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

Harvest from 1969 to 2006 ranged from a low of 165 elk in 1971 to a high of 1258 elk in 1996. Trends in harvest are similar to trends in population numbers (Figure 5).

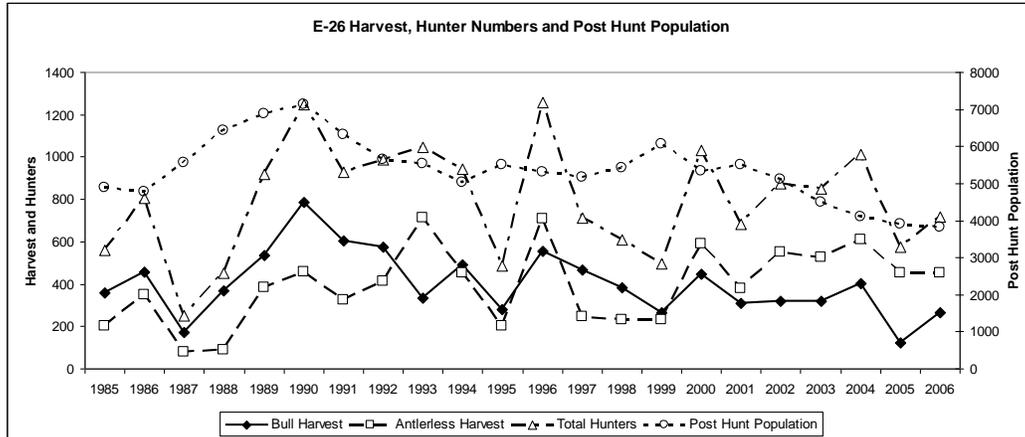


Figure 5. Bull harvest, antlerless harvest, hunter numbers and post hunt population 1985 to 2006

The bull harvest with no antler restrictions from 1974 to 1985 varied between a low of 238 in 1977 to a high of 590 in 1984. After limited antlered restrictions in 1986 the bull harvest varied from a low of 123 in 2005 to an all time high of 788 in 1990.

The yearly success rate from 1969 to 2006 averaged 16% with a low of 6% in 1987 to a high of 37% in 1969 .

3.4 Hunting Pressure

The number of hunters per year for all seasons fluctuated from 1974 to 1995 from a low of 2715 in 1977 to a high of 5348 in 1994. The last two hunting seasons of 1994 and 1995 has seen hunting pressure increase to over 5,300 hunters following a general increase since 1985. This is probably due to the fact that this DAU allows for the harvest of spike bulls during the third rifle season, plus archery and muzzleloading seasons (see Figure 5).

4. Current Herd Status

4.1 Summary of Current Conditions

The 2006 post hunt population for the Saguache DAU is estimated to be about 3800. This is at the current long range objective of 3750. The model shows that since 2001 with an estimated 5500 elk, the population has decreased to the current size primarily from increased hunting efforts.

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 rapidly. From 1990 to 1994 the annual harvest rates increased which decreased the population by about 30%. From 1994 to 1999 population remained relatively stable between 5000 and 6000. Then in 2000 harvest rates increased and the population has since decreased by 36% to the current level.

The long term Post-hunt sex ration objective is 20 bulls per 100 cows. The observed bull:cow ratios have been somewhat higher than objective most likely from bulls from other units that migrate to winter in this DAU.

4.2. Current Management Issues

Summer recreation continues to increase in this area. People 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 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.

Off highway vehicles continue to be a growing concern in the summer and during hunting seasons. Although designed to travel in all but the most rugged terrain, Forest Service laws prohibit the use of OHVs off maintained roads and marked trails. Unfortunately these laws are often ignored and users go where they please, often damaging the resource and creating new roads. Impacts on the elk herds during the summer are not known but it is expected that OHV traffic off roads put undue stress on animals. This is especially important to calving or lactating cows and new born calves. During the hunting season, illegal OHV use often displaces elk, making them more difficult for hunters to find which in return decreases harvest and hunter satisfaction. Unfortunately only one person using an OHV illegal can have major negative impacts to the resource and others recreationalist's enjoyment.

Disease – Currently all area in the San Luis Valley, including E-26, are free of chronic wasting disease. In August 2001 the Anta Grande Elk Farm west of Del Norte on Hwy 160 (DAU E-32), 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-26.

Although oil and gas exploration and development has become an issue with wildlife throughout Colorado, this DAU has had minimal impacts caused by it. Currently there is a small degree of exploration that is taking place and no development. If natural energy is located in the DAU and it can be extracted to produce economic benefit than the elk population could be negatively impacted due to the disturbance on limited winter range.

5. Habitat Resources

Winter range, particularly severe winter range, is the limiting factor to elk populations in this DAU (Figure 6). Winter range is defined as that part of the overall range where 90% of the elk use is located during a mild winter. Winter concentration ranges are those areas the elk would use during a winter with above average snowfall. Severe winter range would be that used by elk during the worst winter's 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.

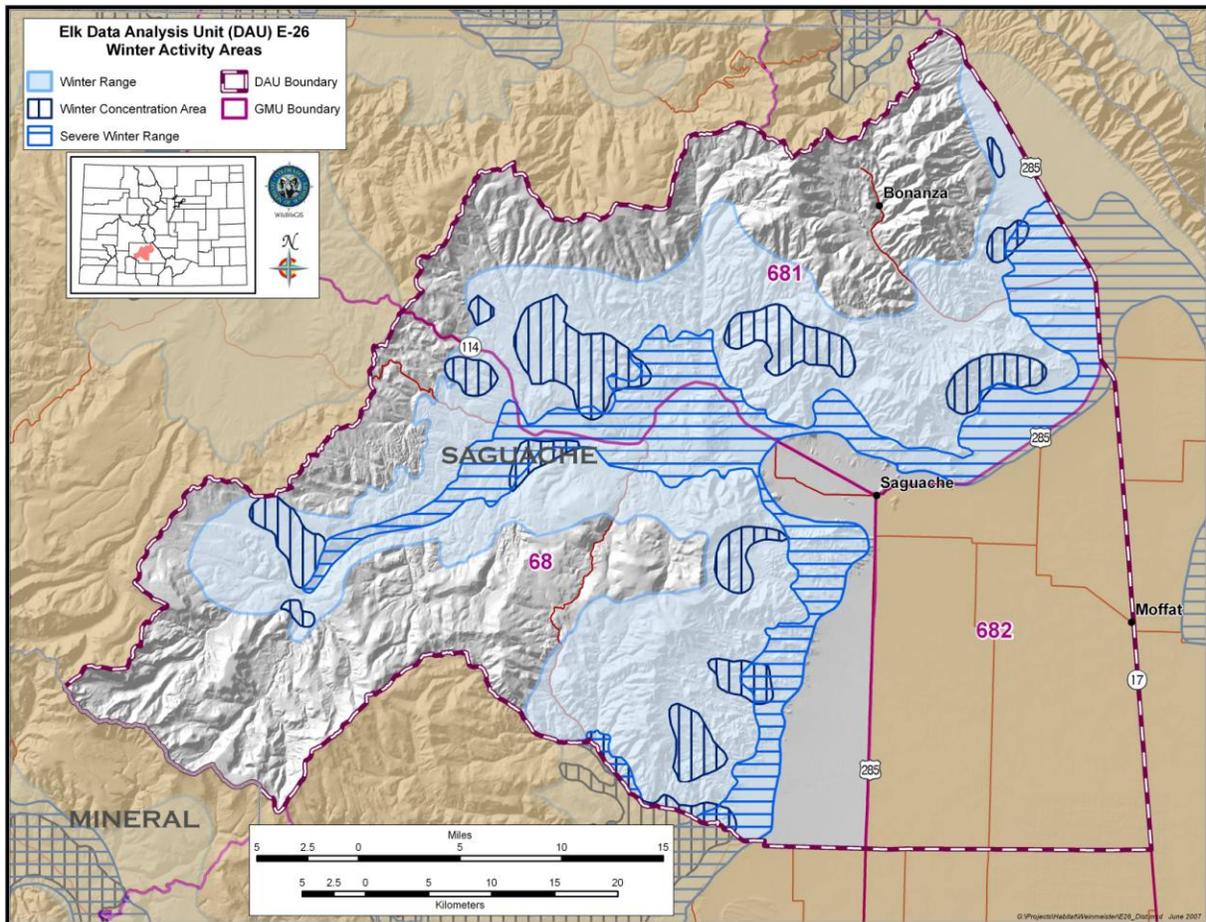


Figure 6. Winter range, severe winter range, and winter concentration areas for E-26

5.1 Public Lands

There is a total of 576 square miles of winter range in the DAU of which 87% or 501 square miles are publicly administered. Severe winter range has a total of 162 square miles of which 76% is public land.

5.2 Private Lands

Thirteen percent or 75 square miles of winter range is private land. Severe winter range consists of 23 square miles of private land or about 14% of the total severe winter range. There have been minimal forage conflicts and these have been mainly distributional problems.

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

ALTERNATIVE 1 2500 to 3500 (15% decrease in current population)

This alternative suggests managing for the lowest population and is still above the current objective. This objective would demand aggressive cow harvest for the next several (approximately 3 years). Long term benefits reaching this objective would include minimal game damage to agricultural fields and minimum impact to the habitat. However, it would also offer the least amount of hunting recreation with reduced number of elk, including bulls.

ALTERNATIVE 2 3500 to 4500 (current population)

Adopting this objective would placemanage the herd at its current level estimated herd at objective. This would decrease antlerless licenses to a level that would allow harvest to equal recruitment rates. Little change of impacts to habitat, agriculture and hunting (excluding the decreased availability of cow tags) would be seen.

ALTERNATIVE 3 4500 to 5500 (20% increase in current population)

This alternative would allow for a slight increase in the population which would equal numbers experienced just a few years prior. Management at this level may have more impact to agricultural interests and to the habitat. It would optimize hunting opportunity for bulls. All antlerless hunting would be reduced until the population increased to objective.

6.2 Herd Composition (Bull:cow ratio)

ALTERNATIVE 1 18 to 22 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 the ability to manage GMU with unlimited bull hunting as currently managed. To increase the sex ratio any higher would require additional harvest restrictions which most likely be seen in the form of limited bull licenses.

ALTERNATIVE 2 25 to 30 bulls per 100 cows

This sex ratio would require limiting bull licenses, which would be a public nomination process. Opportunities to hunt bulls would most likely be given every 1 to 3 years. The benefit of this would be fewer hunters in the field and more mature bulls.

ALTERNATIVE 3 32 to 38 bulls per 100 cows

This sex ratio would require limiting bull licenses, which would be a public nomination process. Bull licenses would need to be severely limited to reach this objective. Most likely, hunters would only be able to obtain a bull license every 6 to 8 years. Benefits of fewer hunters and more mature bulls as seen in alternative 2 would increase more. Limiting licenses beyond this point to increase sex ratios would require greater restrictions with less benefit gained

7. Alternative Selection

7.1 Preferred Alternatives

The preferred alternatives were selected after gathering input from three public meetings, the Blanca and SLV HPP committees, local federal land use agencies, local County Commissioners, written comments, and Division of Wildlife personnel. Also herd capabilities and other factors mentioned previously were considered. Blanca HPP Committee game damage issues with E26 animals are minimal and they did not provide any verbal or written comments.

On November 14, 2007 a presentation concerning this plan was given to the Blanca Habitat Partnership Program Committee. The San Luis Valley HPP Committee received the presentation on November 28th. The SLV HPP committee liked the current population which was alternative 2 and agreed to alternative 1 in regards to sex ratios.

A public meeting was held in Center, CO on November 19, 2007 to discuss the DAU plan. 15 individuals participated as landowners and/or hunters. The majority of those present supported population alternative 2 which was to keep the current population. 2 people suggested increasing the population and 1 person supported decreasing it. People present supported alternative 1(18-22) for the sex ratio.

A meeting with US Forest Service and Bureau of Land Management biologists and DOW staff was held on November 29, 2007 to discuss plan revisions. These federal land management agencies being happy with current elk numbers and range condition supported population objective alternative 2. They also recommended sex ratio objective alternative 1.

AWM Rick Basagoitia met with Saguache County Commissioners. The Commissioners supported current elk numbers and sex ratios (alternatives 2 and 1).

Local DOW Area Wildlife Manager and District Wildlife Managers supported the recommended alternatives. This was after discussion about biological, recreational, social, and political impacts of the proposed objectives.

Through input given through these various means it is recommended for E26 that the **population objective be 3500 to 4500** (alternative 2) and the **sex ratio objective be 18 to 22 bulls per 100 cows** (alternative 1).