

**Saguache Mule Deer Herd  
Data Analysis Unit D-26  
Game Management Units 68, 681 and 682  
March 2008**

Colorado Division of Wildlife  
0722 S Co Rd 1 E  
Monte Vista, CO 81144

Revised by Brad Weinmeister  
Terrestrial Biologist

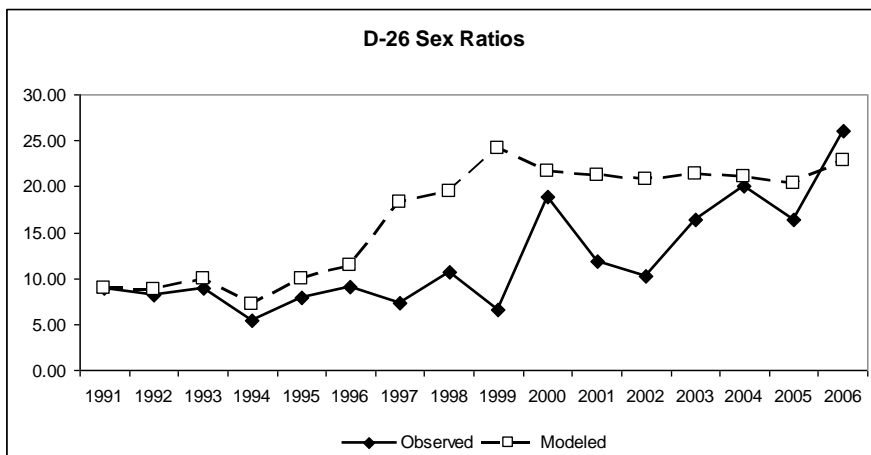
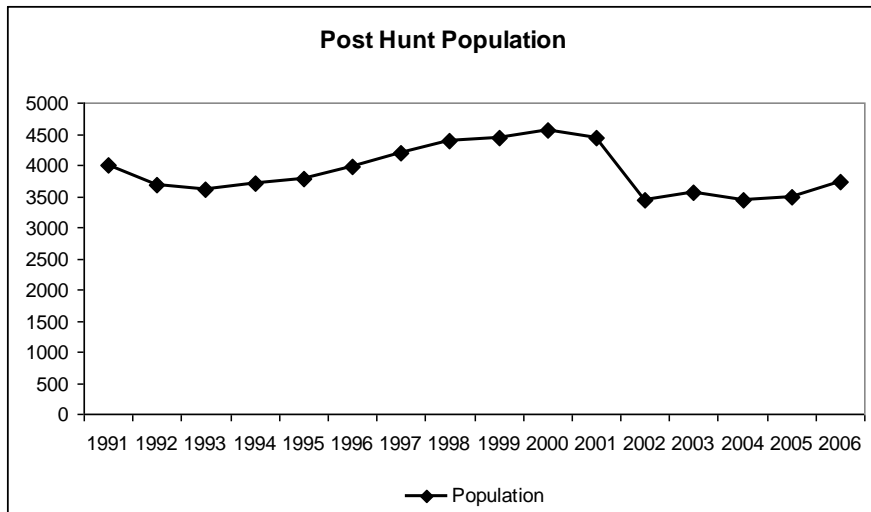
*Approved by the Colorado Wildlife Commission March 2008*

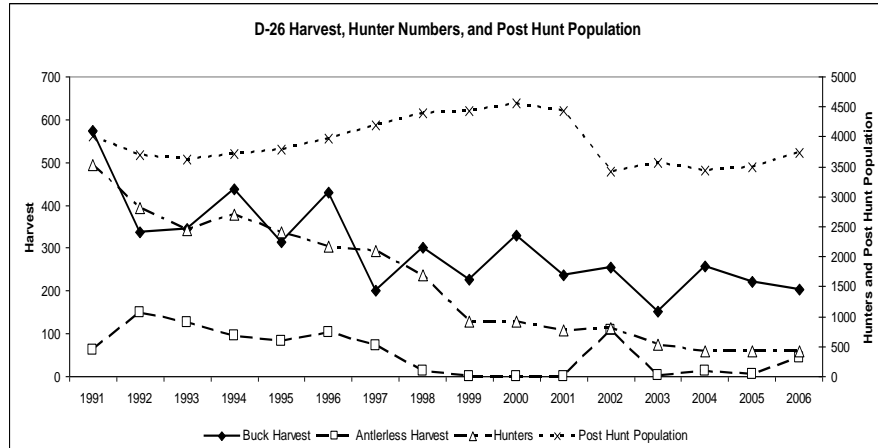
**Data Analysis Unit D-26  
Saguache Deer Herd  
March 2008**

**Executive Summary**

Population	Objective	8500
	2006 Estimate	3500
	<b>Current Objective</b>	<b>4000 to 5000</b>
Sex Ratio	Objective	20:100
	3 year Average	18:100
	2006 observed	26:100
	<b>Current Objective</b>	<b>21 to 24:100</b>

Land Ownership: 28% private, 46% U.S. Forest Service, 22% BLM and 4% other





Data Analysis Unit (DAU) D-26, the Saguache Deer Management Area, consist of Game Management Units (GMUs) 68, 681, and 682. It's located in the northwest portion of the San Luis Valley in Colorado. Both GMUs have been managed with limited antler deer licenses since the statewide mandate in 1999. Limited antlerless deer harvest has occurred sporadically throughout the years. Beginning in 2006 doe licenses were erroneously reintroduced into the GMUs and a minimal number of antlerless animal have been harvested since.

The current model indicates that the 2006 population is about 3700 animals. The model shows that during the past 15 years the population reached a high of 4500 in 2000 and has remained between 3400 and 4500 until reaching its current population. The current population objective of 8500 animals appears unrealistically high for this population due mostly because of habitat constraints.

Sex ratios are at their highest level experienced by this herd due to the limiting of buck licenses in 1999. In 2006 the observed buck to doe ratio was 26 bucks:100 does. The average sex ratio since implementing limited licenses in 1999 has been 19 bucks:100 does. From 1989 to 1999, prior to limited licenses, the average ratio was 7 bucks\100 does.

Harvest since 1999 when buck licenses became limited has ranged from 155 in 2003 to 361 in 2002. On average 257 bucks have been harvested per year since the implementation of limited licenses. Antlerless harvest in 2006 when antlerless were assigned in this DAU was 43 animals.

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 return could lead to game damage issues which the Division of Wildlife could be held responsible for.

**Management Alternatives**

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

Population Objective Alternatives:

- 1) 3000 to 4000 (current population)
- 2) 4000 to 5000 (10% increase in current population)
- 3) 5000 to 6000 (35% increase in current population)

Sex Ratio Objective Alternatives:

- 1) 21 to 24 bucks: 100 does
- 2) 24 to 27 bucks: 100 does
- 3) 27 to 30 bucks: 100 does

## Table of Contents

Executive Summary .....	2
DAU Plans and Wildlife Management by Objectives .....	5
Description of the Data Analysis Unit .....	5
Location .....	6
Deer Range and Movement .....	7
Herd Management History .....	7
Post-hunt Population Size .....	7
Post-hunt herd composition .....	8
Harvest .....	8
Hunting Pressure .....	9
Current Herd Status .....	9
Summary of Current Conditions .....	9
Current Management Issues .....	9
Habitat Resources .....	10
Public Lands .....	11
Private Lands .....	11
Development of Alternatives .....	11
Population Objective .....	12
Herd Composition (Buck:doe ratio) .....	12
Alternative Selection .....	12
Preferred Alternatives .....	12

## 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.

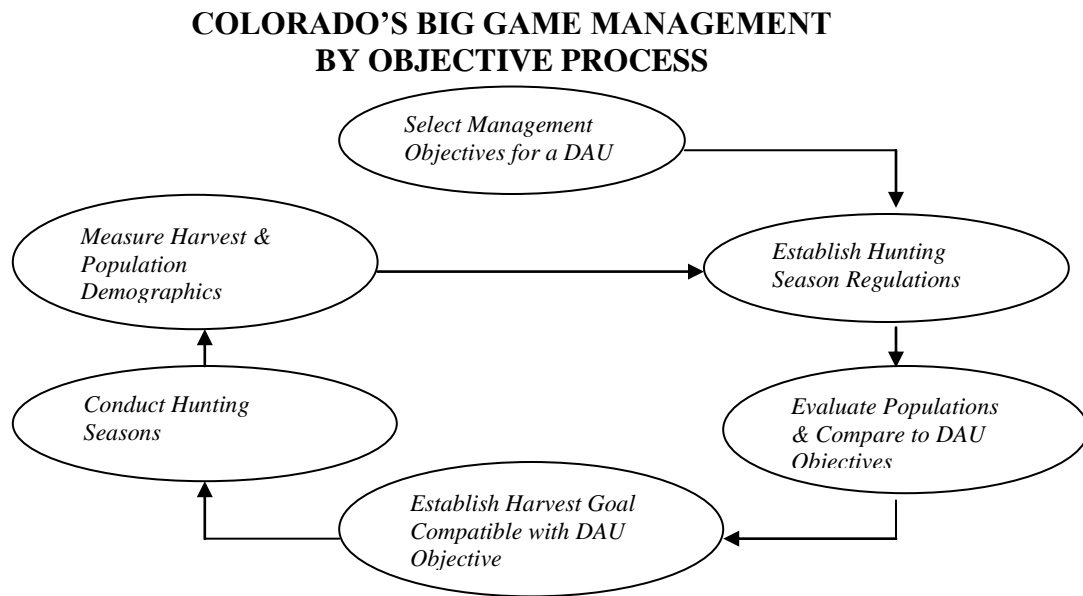


Figure 1. Management by objectives process used by the CDOW to manage big game populations on a DAU basis.

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 deer herd is located in south central Colorado, on the northwest side of the San Luis Valley. It consist of Game Management Units (GMU) 68, 681, and 682. It is 1301 square miles in size and encompasses portions of Saguache County. Its main drainages are Saguache, Carnero and Keber Creeks.

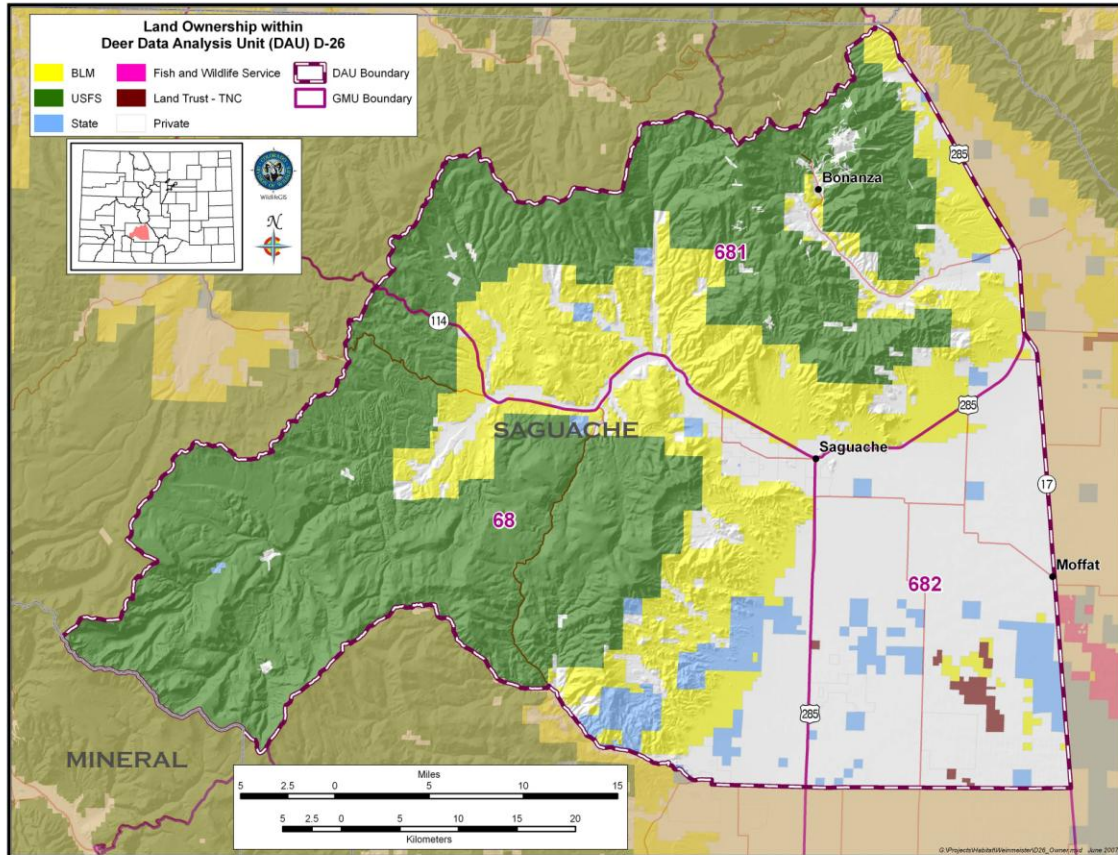


Figure 2. DAU map with landownership

The DAU is bounded on the north and west by the continental divide, on the west and south by Saguache Creek/Rio Grande divide and County Road G, and on the east by Colorado Highway 17 (Figure 2).

Land ownership in the DAU is 27% private, 46% U.S. Forest Service, 22% BLM and 5% other.

The elevation ranges from a low of about 7500 feet north of Alamosa to nearly 14,000 feet in the LaGarita Mountains.

The lower elevations of between 7,500 and 8,200 feet are grassland/shrub and agricultural lands but 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 9500 and 12,500 feet stands of Englemann spruce and subalpine fir are predominant. Extensive areas of alpine tundra occur above 12,000 feet.

The climate is highland or 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 lesser extent frequent afternoon

showers during the summer months. The foothills receive 10 to 12 inches while the valley floor gets only 7 to 8 inches annually and is considered a high desert.

## 2.2 Deer Range and Movement

Deer generally occupy the entire DAU from the grassland/shrub and pinion/juniper areas of the foothills on the winter range through all vegetative zones up to the alpine tundra during the summer and early fall. Some deer are found scattered throughout the agricultural lands of the DAU year round, especially along Saguache Creek. In the last decade it appears that deer numbers are increasing on agricultural lands and are decreasing in what has been considered traditional forest habitats.

Deer Movement to winter range is dictated by weather with snow and limited forage availability driving the deer to winter range. This movement usually occurs during November and continues until January. The migration of deer is usually elevational in most of the DAU. Animals on agricultural lands are more sedentary.

## 3. Herd Management History

The Saguache DAU has never been better than a fair deer unit. A high elevation winter range lacking in abundant browse and difficult winters combined to lower the quality of the DAU for deer. Management of the deer herd in the DAU has been mainly limited to buck only seasons since the 60's with the exception of archery and muzzleloading seasons. A private land only doe deer season for a limited number of does was started in 1992. Field observations indicate that the herd has declined since the early 1980's. Doe licenses were issued in 2006 and 2007 when it was falsely believed the population was over objective. Little in terms of active management has been done to adjust the total herd size. Modifications in statewide season structure, the private land only doe season, the limiting of buck licenses in 1999, and the doe season in '06 and '07 have been the only management changes in this DAU.

### 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 biologist to make management decisions concerning big game herds.

The long term population objective is 8500 animals. The current model indicates that the 2006 population is about 3700 animals. The model shows that during the past 15 years the population reached a high of 4500 in 2000 and has remained between 3400 and 4500 until reaching its current population.

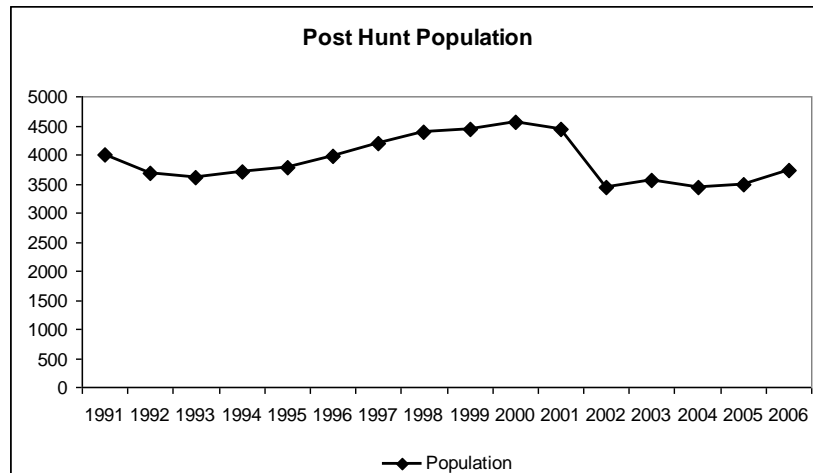


Figure 3. Posthunt population estimate for 1991 to 2006

### 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. These surveys are targeted mainly at elk populations with deer observations of secondary importance. It is generally accepted that buck:doe ratios and fawn:doe values are fairly accurate. Aerial surveys are subject to variability do to weather, snow cover, sample size and observers. The average fawn doe ratio observed from 1991 to 2006 was 47 fawns:100 does, with a low of 21 in 2002 and a high of 58 in 1992 (see Figure 4). Classification flights were not done in 1997, 1998, 2001, 2003, and 2005.

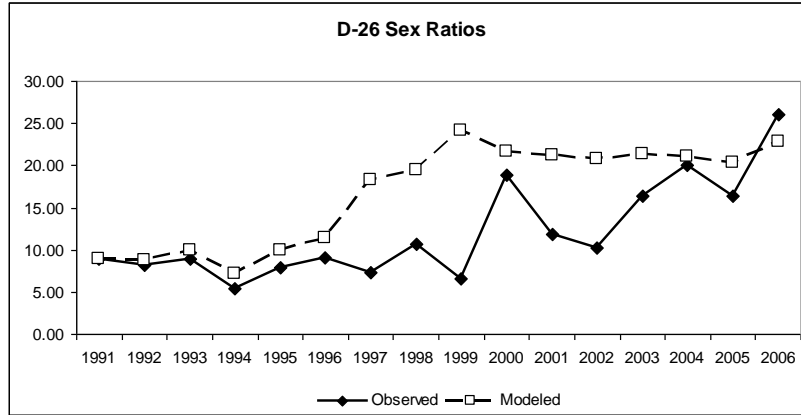


Figure 4. Observed and modeled posthunt sex ratios for 1991 to 2006

Sex ratios are at their highest level experienced by this herd due to the limiting of buck licenses in 1999. In 2006 the observed buck to doe ratio was 26 bucks:100 does. The average sex ratio since implementing limited licenses in 1999 has been 19 bucks\100 does. From 1989 to 1999, prior to limited licenses, the average ratio was 7 bucks\100 does. In 1999 buck licenses were reduced to 1117 licenses, 65% of the unlimited sales in previous years. Since that time they have continued to decrease and a low of 395 licenses was reached in 2006. Current, 2007, license numbers for buck deer are at 470.

### 3.3 Harvest

Harvest is affected by hunting pressure, season structure, weather, and population size. Harvest from 1971 to 1996 ranged from a low of 155 in 2003 to a high of 815 in 1972 and has averaged 260 since 1997. Since 1999 when buck licenses became limited harvest has ranged from 155 in 2003 to 361 in 2002 (Figure 5). On average 257 bucks have been harvested per year since the implementation of limited licenses.

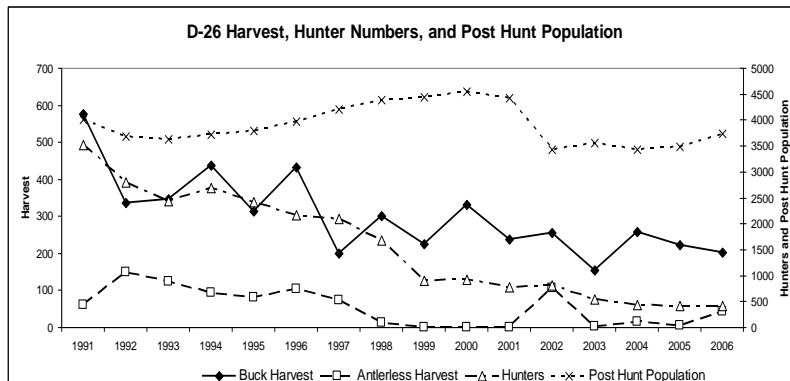


Figure 5. Buck harvest, antlerless harvest, hunter numbers, and post hunt population from 1991 to 2006



Private land only doe hunts during 1991 to 1997 greatly increased the doe harvest during that time period. An average of 94 does were harvested each year in that seven year span. Prior, the average annual doe harvest was 43. From 1999 to 2001 there was no doe harvest. Since then doe harvest has fluctuated with a high of 105 does killed in 2002 to a low of 2 in 2003. In 2006 with the implementation of general season doe license, 43 does were harvested.

### **3.4 Hunting Pressure**

The number of hunters from 1984 to 1998, when buck licenses were unlimited, ranged from a low of 1,687 in 1998 to a high of 3,565 in 1987 averaging about 2600 hunters. During this same time period (1984 to 1998) the yearly success rate for the DAU averaged 19%, with a low of 13% in 1997 to a high of 2% in 1984.

The number of hunters since limiting buck licenses in 1999, when 1117 buck licenses were available, has been gradually decreasing until 2006 when 395 buck licenses were allocated (Figure 5). Since the implementation of limited buck licenses success rates in general have been increasing. The yearly success rate for the DAU has averaged 42% from 1999 to 2006, with a low of 25% in 1999 to a high of 63% in 2004.

## **4. Current Herd Status**

### **4.1 Summary of Current Conditions**

The current population size remains well below (45% below) objective after several years of a steady decline. The sex ratios are at their highest levels since they began to be recorded in 1988. Individuals in the field have commented positively on this and hunters in general are receptive of seeing more mature bucks in the field at the cost of limiting licenses. Although age ratios have been extremely low, it is generally accepted that little can be done to control this through management. Variables such as weather conditions have a higher impact on reproduction than management techniques.

### **4.2 Current Management Issues**

The current population and herd structure objectives were set in 1996. Since that time the population has never met the objective of 8500. Changing from POPII population model to a spreadsheet model since that time might be one factor causing the discrepancy. Attempts to increase the size of this herd will be a continued effort most likely throughout this DAU plan's life. There is no potential of meeting the current population objective within the next ten years under current conditions.

Deer numbers decreased beginning in the early 1990's. The cause of the decline is unknown but could be attributed to one or more of the following: 1) Interspecies competition with an increasing elk herd, 2) forest succession limiting the amount of quality habitat, 3) record drought in 1999 to 2004, or 4) doe harvest that occurred because of old population modeling systems. This population will continue to decrease with current fawn/doe ratios around 30.

The proportion of bucks in this population has historically been under objective. 2004 was the first year that 20 bucks per 100 does, the objective since 1996, were observed during post season classification flights. Credit for achieving this can be given to the limiting of buck licenses in 1999. To maintain this ratio buck license numbers will need to be adjusted as hunter success rates continue to increase and recruitment in the population remains low.

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 wild deer and elk in the San Luis Valley, including D-26, are free of chronic wasting disease. In August 2001 the Anta Grande Elk Farm west of Del Norte on Hwy 160 (DAU D-35), 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 D-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 deer population could be negatively impacted due to disturbance on limited winter range.

## **5. Habitat Resources**

The limiting factor for the deer herd in this DAU is the quality and composition of winter range (Figure 6). Winter range is defined as that part of the overall range where 90% of the deer are located during the average five winters out of ten from the first heavy snowfall to spring green-up. Severe winter range is that part of the overall 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. Winter concentration area is that part of the winter range where deer densities are at least 200% greater than the surrounding winter range density.

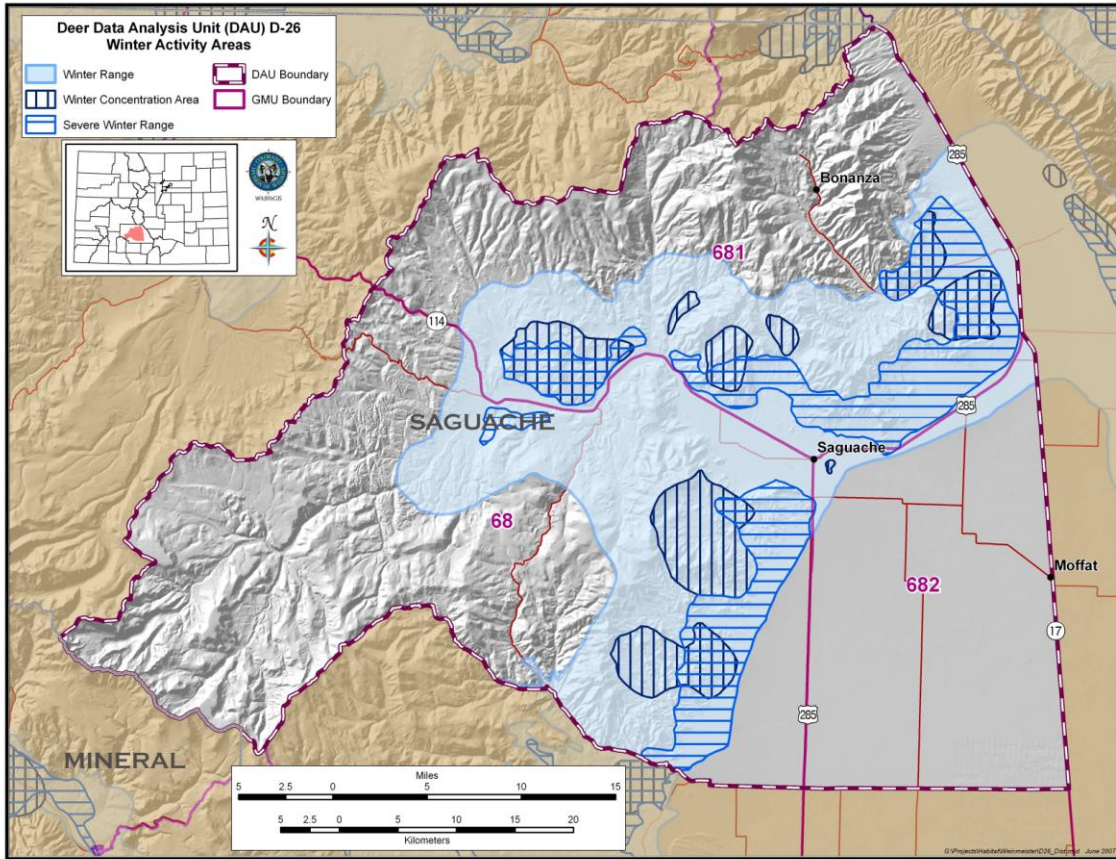


Figure 6. Winter range, severe winter range, and winter concentration areas for D-26

### 5.1 Public Lands

The overall range for deer is the entire DAU of which 73% is public land. Winter range is 37% of the overall range. Eighty-one percent of the winter range is public with 53% BLM, 23% U.S. Forest Service, and 5% Colorado. Severe winter range is only 11% or 142 square miles of the overall range. Eighty-five percent of severe winter range is public with 71% BLM, 4% U.S. Forest Service, and 9% Colorado.

### 5.2 Private Lands

Private lands are 27% of the overall range and comprise 19% of the winter range. Severe winter range consist of 15% private lands.

## 6. Development of Alternatives

The primary purpose of this DAU Plan is to determine the long term post-hunt population objective and herd composition objectives. Sex ratios (buck:doe ratios) are a management option and age ratios (fawn:doe ratios) are a product of environmental factors. The past DAU plan used a set number for each objective. For each alternative proposed for the new plan a number range is given for the objective instead. This is to allow more flexibility in management based on uncontrolled impacts to the population such as extreme weather events and other causes.

Each alternative includes a brief discussion of general results of managing at that 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, costs and life expectancy of the project. Individual practices that could be considered

include prescribed fires, fertilization, seeding, water developments, fencing, timber management, travel management and range management. Game damage problems would probably decrease under the low population alternatives, and would most likely increase as population objective increases. Higher population levels would support a higher harvest by hunters, help satisfy hunter demand and increase the fiscal benefits to state and local economies.

## **6.1 Population Objective**

### **ALTERNATIVE 1            3,000 to 4,000 (current population)**

The current population is at the upper level of this alternative. Doe hunting would be used to maintain the current population size. Game damage caused by deer is currently minimal and would remain that way.

### **ALTERNATIVE 2            4,000 to 5,000 (10% increase in current population)**

This objective allows for a slight increase in the population before the objective would be met. It is a 47% decrease from the current objective. Currently game damage by deer in the DAU has been minimal and this objective would most likely keep problems to a minimum. Doe hunting might become a possibility in the near future with this objective if the population increases just a couple hundred animals.

### **ALTERNATIVE 3            5,000 to 6,000 (35% increase in current population)**

Under this alternative the population would still be allowed to grow during the DAU plan's life although it would be a 32% decrease from the current objective. The proposed objective also has a high probability of being met during the next 10 years. As the population increases so does hunter opportunity and the potential for game damage. Demands on the resources will also increase but will not be at a level that currently could not be met. Habitat manipulation would be encouraged and be beneficial but intense habitat management would not be necessary.

## **6.2 Herd Composition (Buck:doe ratio)**

### **ALTERNATIVE 1            21 to 24 bucks per 100 does**

The three year average ratio is 18 bucks per 100 does with the 2006 observed ratio at 26 bucks per 100 does. Any changes to buck licenses over the next ten years would most likely be minimal to adjust for harvest success and reproduction in the population. This alternative would allow maximum harvest of bucks while maintaining the current ratio.

### **ALTERNATIVE 2            24 to 27 bucks per 100 does**

To reach this ratio, a decrease in buck harvest would most likely have to be implemented and maintained which would decrease hunter opportunity. Buck licenses would have to be reduced by approximately 10% to reach this objective in the next three years. The benefit of this would be more mature bucks in the population.

### **ALTERNATIVE 3            27 to 30 bucks per 100 does**

This alternative would be the most restrictive on buck harvest, limiting hunting opportunity the most. Buck licenses would have to be cut approximately 20% to achieve this objective in the next three years. In return, the greatest number of mature bucks would be managed for. Any higher sex ratio than this would come at great costs to hunters with minimal returns seen.

## **7. Alternative Selection**

### **7.1 Preferred Alternatives**

The preferred alternatives were selected after gathering input from 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.

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 28<sup>th</sup>. The San Luis Valley Habitat Partnership Program Committee supported population objective of 4000 to 5000 (alt. 2) and a sex ratio of 21 to 24 bucks per 100 does (alt. 1). Blanca HPP Committee game damage issues with D26 animals are minimal and they did not provide any verbal or written comments.

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. Everyone who responded, excluding one person, supported population alternative 2 (4000 to 5000). The majority supported sex ratio alternative 2 (24-47) all though hunting frequently was strongly desired which is counterintuitive to higher sex ratios.

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 supported population objective alternative 2 and sex ratio objective alternative 2. There was concern about sex ratio alternative 1 not providing enough bucks in the population to successfully breed does during the first estrous cycle.

AWM Rick Basagoitia met with Saguache County Commissioners. The Commissioners supported increasing the deer herd and maintaining the current sex ratios.

Local DOW Area Wildlife Manager and District Wildlife Managers supported the recommended alternatives (population alternative 2 and sex ratio alternative 1). 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 D26 that the **population objective be 4000 to 5000** (alternative 2) and the **sex ratio objective be 21 to 24 bucks per 100 does** (alternative 1).