# Lower Rio Grande Mule Deer Herd
# Data Analysis Unit D-35
# Game Management Units 80 and 81
# January 2007

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*Approved by the Colorado Wildlife Commission January 2007*

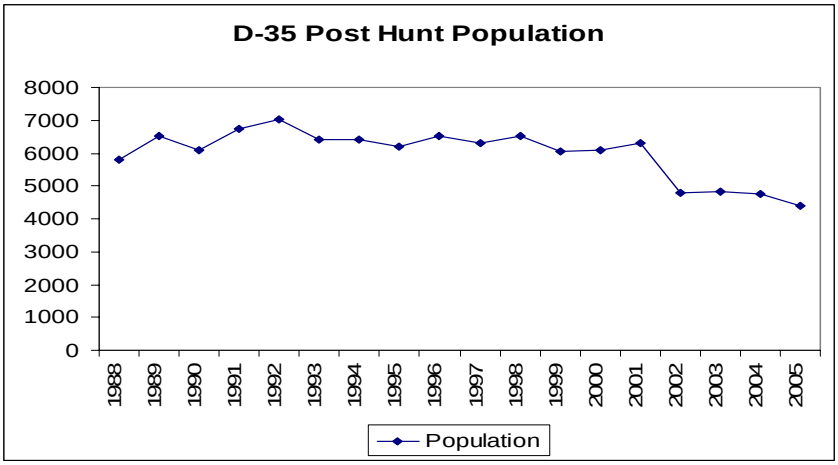
**Data Analysis Unit D-35**
**Lower Rio Grande Deer Herd**
**August 2006**

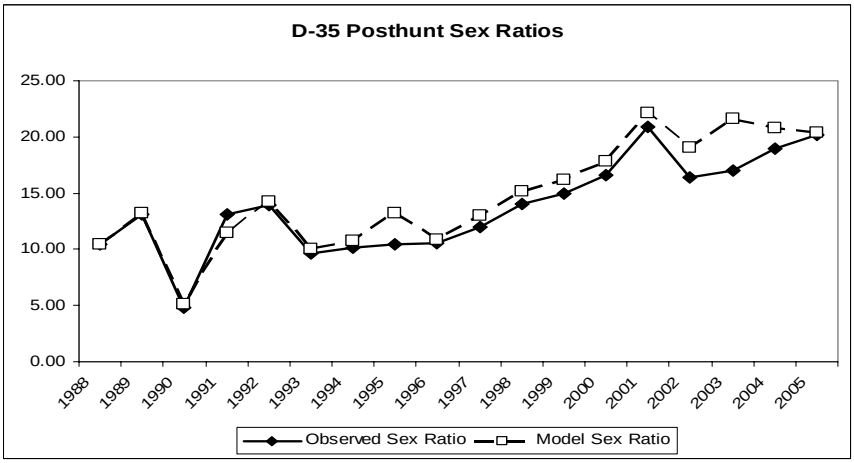
**Executive Summary**
Draft

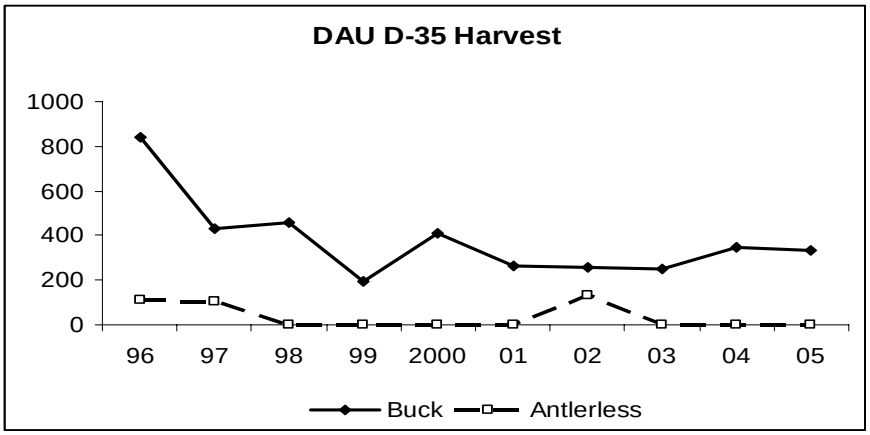
Game Management Units 80 and 81

| | | |
|---|---|---|
| Population | Previous Objective | 8500 |
| | 2005 Estimate | 4400 |
| | **Current Objective** | **6000 to 7000** |
| Sex Ratio | Previous Objective | 20 bucks: 100 does |
| | 2005 observed | 20 |
| | 2005 modeled | 20 |
| | **Current Objective** | **21-24 bucks:100 does** |

Land Ownership: 35% Private, 41% USFS, 18% BLM, 1% NWR, 5% other






Data Analysis Unit (DAU) D-35, the Lower Rio Grande Deer Management Area, consist of Game Management Units (GMUs) 80 and 81. It's located in the southwest portion of the San Luis Valley in Colorado. Both GMUs have been managed with limited antler deer licenses since the statewide mandate in 1999. Antlerless deer harvest has not occurred since 1997 in either unit. The exception to this was in 2002 when 138 antlerless deer were harvested within the DAU in attempts to remove a segment of the older aged, non-productive females in the population. This was hoped to increase reproduction in the herd and had no noticeable affect on the population.

The D-35 population began to decrease steadily in the early 1990s. To address this decrease doe licenses were eliminated and buck licenses which had been unlimited became limited in 1999. The herd reached an estimated low of 4400 animals in 2005, still well below the objective of 8500. The current population objective of 8500 animals appears unrealistically high for this population due mostly because of habitat constraints.

Posthunt sex ratios have shown an increase since limiting antler licenses. In 2005 a high of 20 bucks per 100 does was observed. Since the implementation of limited licenses in 1999 the low of 9 bucks per 100 does occurred in the same year. From 1985 to 1998 the average observed sex ratio was 10 bucks per 100 does. From 1999 to 2005 the average observed sex ratio has been 15.5 bucks per 100 does.

Harvest in this DAU averaged 377 in the last ten years with a low of 193 bucks harvested in 1999 and a high of 839 bucks in 1996. Since limiting buck licenses in 1999 the average harvest has been 293. Antlerless deer have not been harvested in the DAU since 1998 excluding in 2002 when 138 antlerless deer were taken.

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-35 were considered for posthunt population size and sex ratio objectives.

Population Objective Alternatives:

1) 5000 to 6000 (20% increase in current population)
2) 6000 to 7000 (40% increase in current population)
3) 7000 to 8000 (60% 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

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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 DOW takes to meet the legislative and Wildlife Commission mandates.

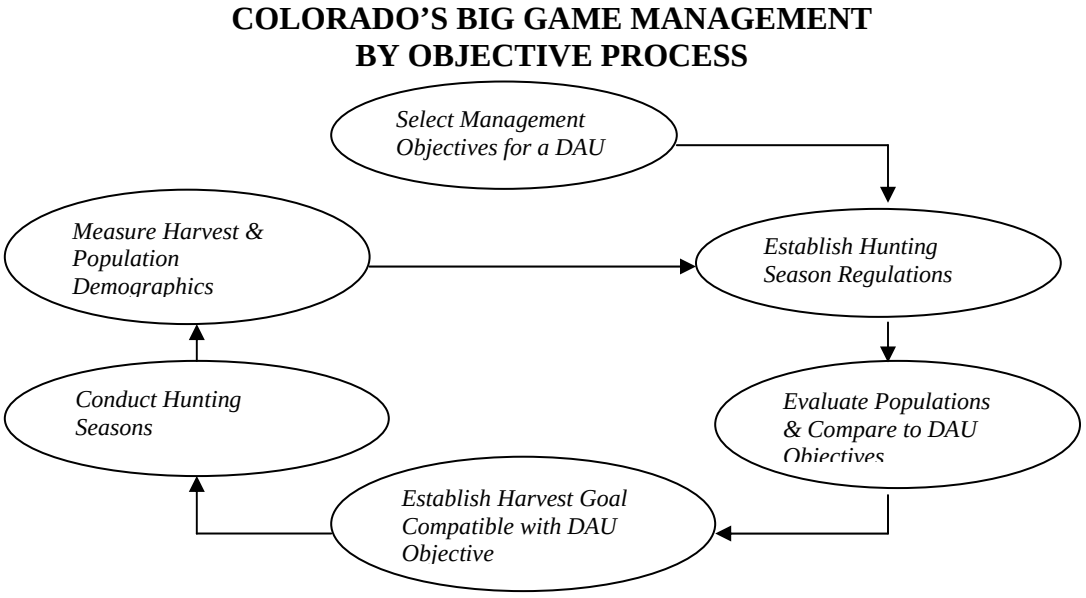


Figure 1. Management by objectives process used by the CDOW to manage big game populations on a DAU basis.

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 (DAU) for the Lower Grande deer herd is located in south central Colorado, on the southwest side of the San Luis Valley. It consists of Game Management Units (GMU) 80 and 81 (Figure 2). The DAU is bounded by U.S. Highway 160 on the north, the continental divide on the west, the New Mexico state line to the south and the Rio Grande to the east. It is 2,100 square miles in size and encompasses portions of Alamosa, Rio Grande, Conejos, Mineral, and Archuleta Counties. Its primary drainages are the Rio Grande, Conejos and Alamosa Rivers.

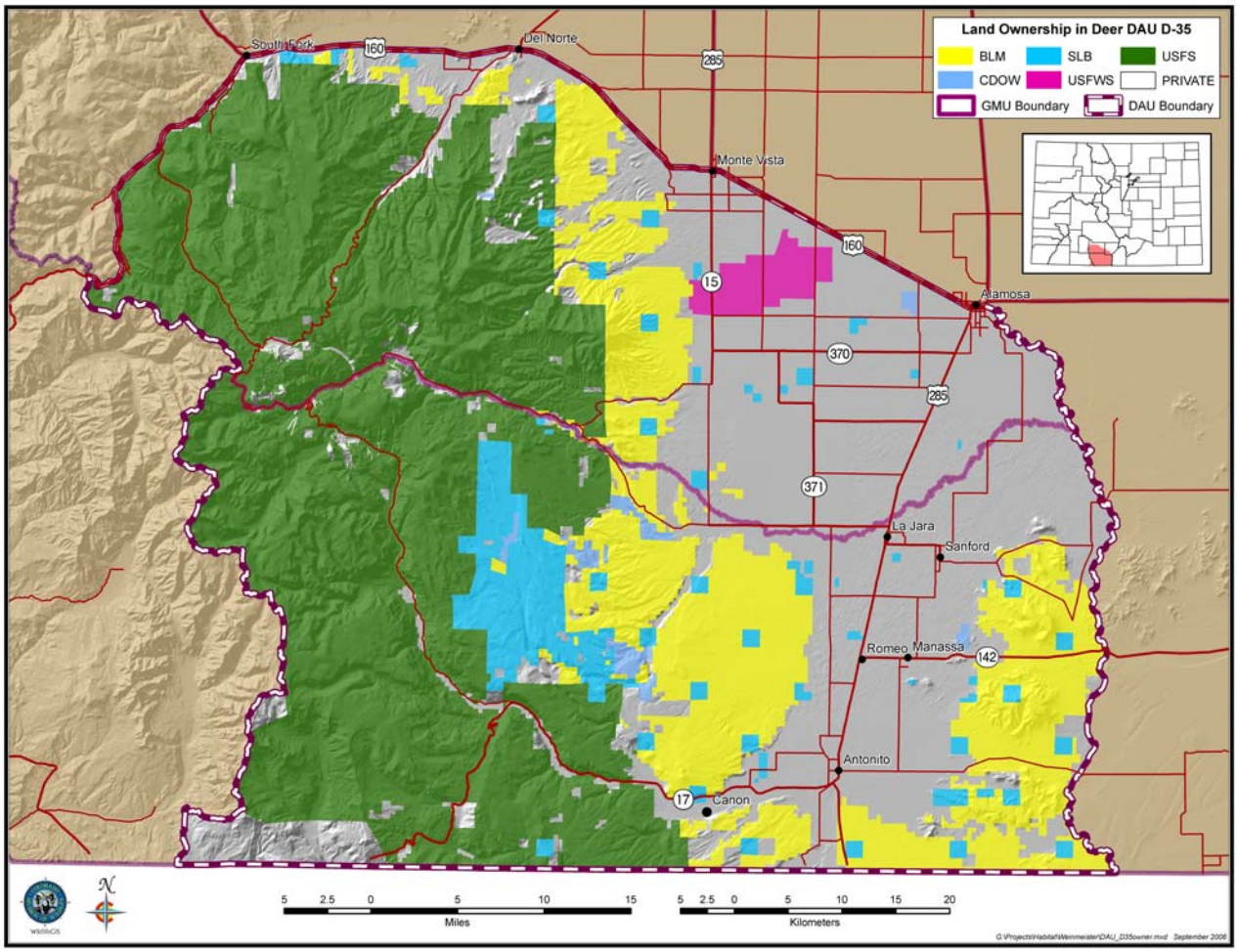


Figure 2. DAU map with landownership

Land ownership composition in the DAU is 35% private, 41% U.S. Forest Service (of which 88,000 acres is within the South San Juan Wilderness Area), 18% Bureau of Land Management, 1% National Wildlife Refuge, and 5% other (Figure 2).

The main geographic features are the San Juan Mountains which rise to over 13,000 feet to the west along the continental divide and the Rio Grande which is less than 7,500 feet elevation at the New Mexico state line.

The climate is highland or mountain climate with cool summers and very cold winters with heavy snows. The higher elevations of the San Juan Mountains receive 50 inches of precipitation yearly, while the foothills get 12 to 16 inches and the valley floor gets only 7 to 8 inches a year and is considered high desert.

The lower elevations 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. Between 9,500 and 12,500 feet stands of Engleman spruce and subalpine fir are predominant. Extensive areas of alpine tundra occur above 12,500 feet.

### 2.2 Deer Range and Movement

Deer generally occupy the 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. Another distinct population of deer spend the majority of the year in the riparian areas of the valley floor especially along the Rio Grande and adjacent agricultural areas. It appears that the valley population of deer is increasing, while those occupying the higher elevations have been decreasing over the last ten years. Reproduction of deer on the valley floor has been greater, often with twins, than in the foothills and mountainous areas.

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. Some deer in the riparian areas west of Monte Vista will move to higher elevations on traditional winter ranges if the snow depth in the river bottoms becomes too great. There is some evidence that some deer that summer on the western side of the DAU may winter west of the Continental Divide or in northern New Mexico.

## 3. Herd Management History

The Lower Rio Grande DAU has never been considered a good deer unit. A high elevation winter range lacking in abundant browse and hard winters lower the quality of the habitat in the DAU for deer. Management of the deer herd in the DAU has been limited to bucks only seasons since the 60's with the exception of archery and muzzleloading seasons. Field observations and modeling efforts indicate that the herd declined from the early 1980's to current. Little in terms of active management has been done to adjust the total herd size. Modifications in statewide season structure, eliminating doe harvest, and limiting buck hunting licenses have been the only management changes instituted in the DAU.

Doe hunting was allowed in the DAU with over-the-counter either sex archery tags and limited statewide muzzleloader doe tags. In 1998 the archery tags went to bucks only and the muzzleloader doe tags were eliminated. In 1999 all buck licenses (archery, muzzleloader, and rifle) went to a limited draw and were only valid for specific GMUs. Buck licenses were valid for both GMU 80 and 81. Currently no doe licenses are available except through dispersal hunt regulations and some other exceptions.

### 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 current long term objective is 8,500 animals (Figure 3). This yields a density of 4.1 deer per square mile which is considered low. The current model predicts a high of almost 7,000 animals during the early 90’s and a low of 4400 animals in 2005. Since 1988 the estimated population has averaged 6000 deer. In the last ten years it has averaged 5500 animals.

The current population and herd structure objectives were set in 1996. Since that time the population has decreased significantly and has never met the objective of 8500. The 2005 post hunt population estimate for the Lower Rio Grande herd was 4400 animals.

### 3.2 Post-hunt herd composition

Post hunt herd composition is determined 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. The surveys are not done to count the total number of animals, but to obtain sex and age ratios. It is generally accepted that observed values for buck:doe ratios are a good representation of the population and that

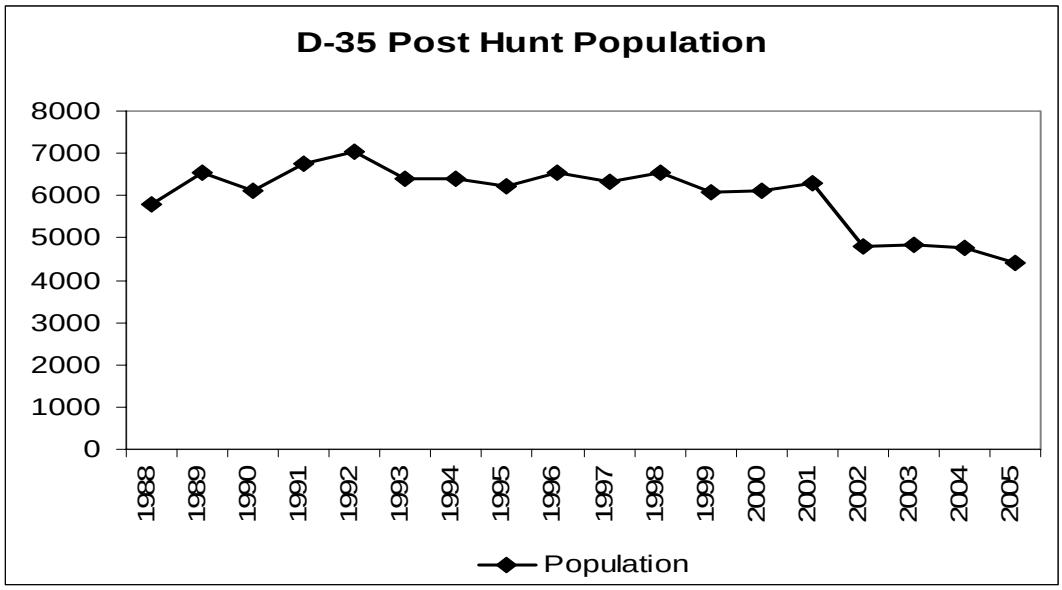


Figure 3. Posthunt population estimate for 1996 to 2005

observed fawn:doe ratios are fairly accurate as well. Aerial surveys are subject to variability due to weather, snow cover, sample size and observers. The average fawn doe ratio observed from 1985 to 2005 was 53 fawns\100 does, with the low of 22 in 2005 and the high of 67 in 1985. The current long range objective is 55 fawns\100 does.

Sex ratios are at their highest level experienced by this herd due to the limiting of buck licenses in 1999 (Figure 4). In 2005 the observed buck to doe ratio reached the objective of 20bucks:100 does. The average sex ratio since implementing limited licenses in 1999 has been 15 bucks\100 does. From 1985 to 1999, prior to limited licenses, the average ratio was 10 bucks\100 does. In 1999 buck licenses were reduced to 1400 licenses, 65% of the unlimited sales in previous years. Since that time they have continued to decrease through 2003 when a low of 610 licenses was reached. Current, 2005, license numbers for buck deer are at 770 (Figure 5).

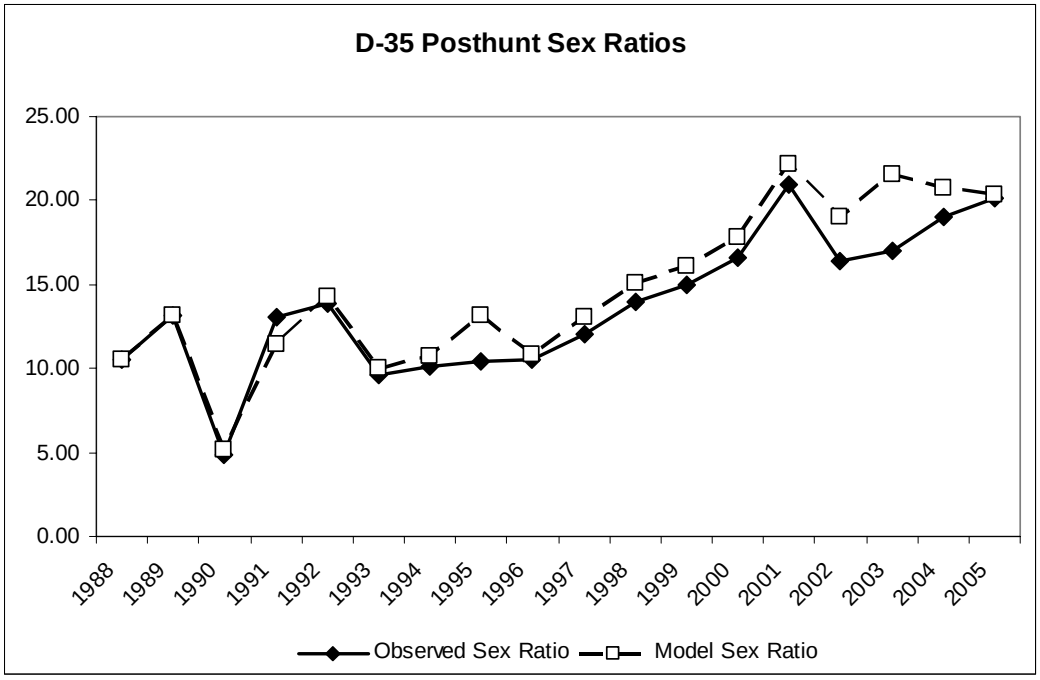


Figure 4. Observed and modeled posthunt sex ratios for 1996 to 2005

### 3.3 Harvest

Harvest is affected by the number of permits issued, season structure, weather, and population size. Harvest from 1971 to 1998 when buck licenses were unlimited ranged from a low of 140 in 1975 to a high of 897 in 1984. Since 1999 when buck licenses became limited harvest has ranged from 190 in 1999 to 408 in 2000 (Figure 5). On average 300 bucks have been harvested per year since the implementation of limited licenses.

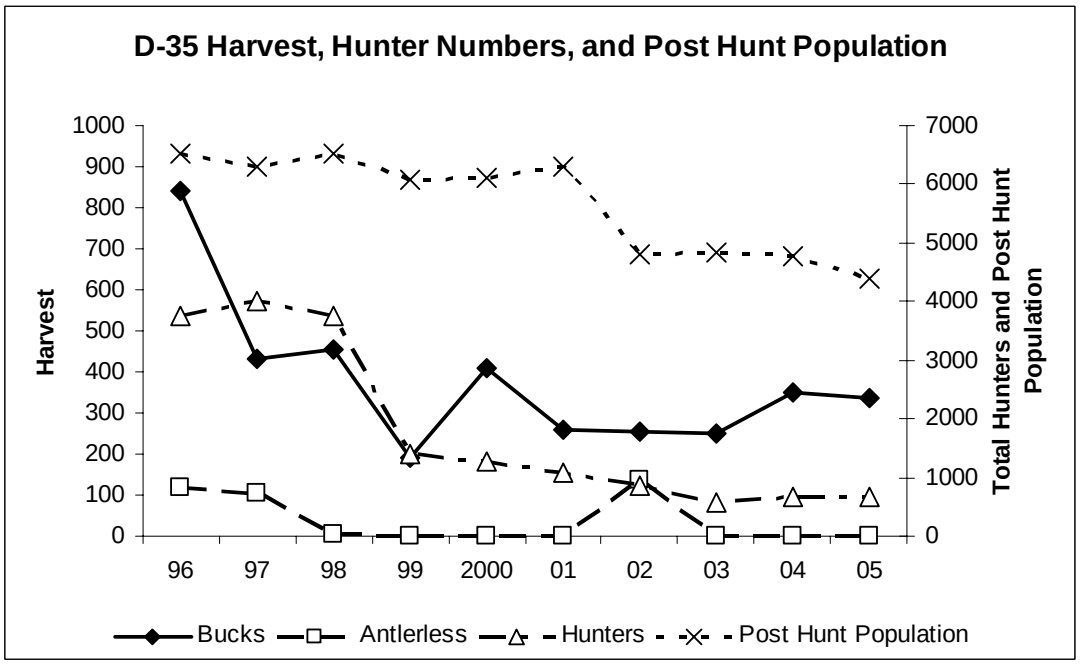


Figure 5. Buck harvest, antlerless harvest and hunter numbers from 1996 to 2005

Harvest of the female component of the herd is usually a management tool used in attempts to decrease the population. Since this herd is under population objective, doe harvest has been implemented on an extremely

limited basis. Doe harvest through archery and muzzleloading seasons was an issue from 1988 to 1997 which accounted for over 15% of the harvest for several years. In 2002, during a record drought year, 132 does and 8 fawns were harvested. This was in an attempt to remove older does from the population in hopes of stimulating recruitment by allowing younger, more productive does to reproduce. There was no monitoring in place to evaluate the effectiveness of this but it is believed to have little or no positive results. Excluding 2002, no does have been harvested in this DAU since 1999.

### 3.4 Hunting Pressure

The number of total hunters from 1984 to 1998 ranged from a low of 2,987 in 1985 to a high of 4,468 in 1991 with an average of about 3,646 hunters. During this same time period (1984 to 1998) the yearly success rate for the DAU averaged 17%, with a low of 12% in 1987 to a high of 25% in 1996.

The number of hunters since limiting buck licenses in 1999, when 1400 buck licenses were available, has been gradually decreasing until 2003 when 610 buck licenses were allocated. In 2005 770 buck licenses were available to hunters. Since the implementation of limited buck licenses success rates in general have been increasing. Success rates during the past six years varied from a low of 13% in 1999 to a high of 53% in 2004, with an average of 38%.

## 4. Current Herd Management 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 1985. 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 to mid 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. 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. 2005 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.

In the winter 2005/06 an effort was made to get a good classification on deer through aerial surveys. At this time age ratios were extremely low, 22 fawns per 100 does. The previous two years data was not collected for this DAU so it is difficult to tell if this is a new trend or perhaps a poor sample of the herd. Continued effort will be needed to determine the possible factors leading to this observed number. A higher number of fawns will be needed before this population can increase.

Game damage is a concern in lower elevations where alfalfa and small grain fields are found. Several small populations of deer can be found scattered throughout the agriculture land in lower elevations. Game damage

complaints have been minimal in past years but can potentially become a problem as the population begins to increase. This situation could be addressed by the addition of Private Land Only licenses. Game damage is confined mostly to deer grazing alfalfa in the spring. It may be difficult to resolve this problem because of the high attractive value of the alfalfa fields during that time of year. Limited access to the effected areas has been a major factor in decreasing problem deer number through hunter harvest. These are localized problem areas and are a function of distribution of deer and do not effect the entire DAU. Addressing these problems individually through various means appear to be acceptable to farmers experiencing game damage and local District Wildlife Managers.

Development of private lands on winter range is a growing problem in the DAU. Impacts to the deer population from development, mostly private homes, include loss of important limited habitat and redistributing animals from historic winter habitat.

Summer recreation continues to increase in this area. People primarily from Texas, New Mexico, and Oklahoma as well as from 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 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 deer to some degree. This could possibly affect distribution of deer and more importantly reproduction in fawning 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 deer herds are not known but it is expected that OHV traffic off roads put undue stress on animals. This is especially important to fawning or lactating does and new born fawns. During the hunting season, illegal OHV use often displaces deer, making them more difficult for hunters to find which in return decreases harvest and hunter satisfaction. Unfortunately only one person using an OHV illegally can have major negative impacts to the resource and others recreationalist's enjoyment.

Disease – Currently all area in the San Luis Valley, including D-35, are free of chronic wasting disease. In August 2001on the Anta Grande Elk Farm west of Del Norte on Hwy 160, within the DAU, 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-35.

**5. Habitat Resources**

The limiting factor for the deer herd in this DAU is 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% grater than the surrounding winter range density.

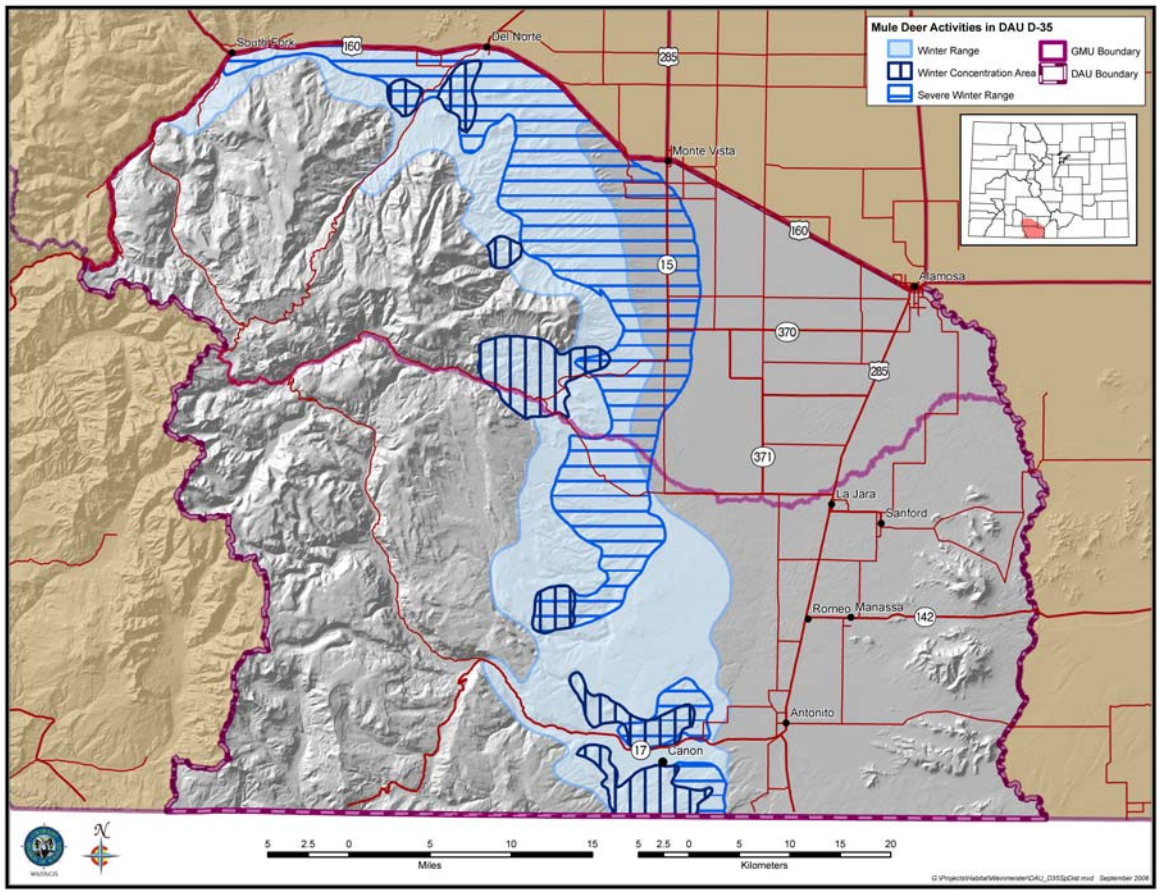


Figure 6. Winter range, severe winter range, and winter concentration areas for D35

### 5.1 Public Lands

The overall range for deer in the entire DAU is 2,100 square miles of which 65.3% is public land. Winter range is 23.5% of the overall range. 76% of the winter range is public with 42.8%BLM, 23.5% USFS and 9.8% Colorado. Severe winter range is only 12.8% or 268 square miles of the overall range. 56.2% of severe winter range is public with 42.1 %BLM, 2.9% USFS, and 8.2% Colorado.

### 5.2 Private Lands

Private lands are 34.6%, 727 square miles, of the overall range and comprise 23.9% of the winter range. Severe winter range consist of 43.8% 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** Current Objective – 8500 Current Population ~ 4400

ALTERNATIVE 1 5000 to 6000 (20% increase in current population)

The current population is estimated to be at 4400 animals. This objective allows for a slight increase in the population before the objective would be met. It is a 30% 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 2 6000 to 7000 (40% 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 12% 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.

ALTERNATIVE 3 7000 to 8000 (60% increase in current population)

This would encompass the current population objective which has not been met with in the past 10 years. The ability of this herd to increase to this size during the next ten years is questionable without intensive habitat improvement. This proposed population would increase buck hunting opportunity and would likely create more game damage conflicts.

**6.2 Herd Composition (Buck:doe ratio)** Current Objective 20 bucks:100 does

ALTERNATIVE 1 21 to 24 bucks per 100 does

2005 observed ratio was 20 bucks per 100 does which is at current objective. 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 have to be implemented and maintained which would decrease hunter opportunity. 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. 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 HPP committee, 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 September 20, 2006 a presentation concerning this plan was given to the San Luis Valley Habitat Partnership Program Committee. The HPP committee gave their support to population alternative 2 (6000-7000) and sex ratio alternative 1 (21-24 bucks:100 does).

A public meeting was held in Alamosa on October 2, 2006 to discus DAU objectives. The overall view from the public was that they were pleased with current deer management. Overall, everyone was supportive of attempting to increase the herd to 6000 to 7000 animals (population objective - alternative 2). There was support shown for increasing the sex ratio to 24 to 27 bucks per 100 does (sex ratio objective - alternative 2) but general attitude from attendants at the meeting indicated that there was not support for restricting hunting opportunity any more than current levels. Because of this it was deduced that alternative 1 of 21 to 24 bucks per 100 does would be most supported.

A meeting with US Forest Service and Bureau of Land Management managers and DOW staff was held on October 16, 2006 to discuss plan revisions. These federal land management agencies supported population objective alternative 2 (6000 – 7000) and sex ration objective alternative 1 (21-24 bucks:100 does).

County Commissioners from Conejos County and Rio Grande County (counties which make up most of the DAU) were contacted by DOW Area Wildlife Manager, Rick Basagoitia, and asked for their comments concerning this plan. Conejos County Commissioners were supportive of population alternative 2 (6000 to 7000), and suggested increasing the sex ratio objective to option 2 (24-27 bucks:100 does)or 3 (27-30 bucks:100does). The reason for a higher sex ratio was to make the area more of a trophy deer area. Commissioner Sandoval was strongly opposed to any more limitation of public hunting opportunity through limited licenses. Rio Grande County Commissioners were supportive of DOW's recommendation.

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.

Currently additional comments from three additional County Commissions (Alamosa, Archuleta, and Mineral), Woolgrower Association, and Cattleman's Association are being sought to be incorporated into this plan.

Through input given through these various means it is recommended for D-35 that the **population objective be 6000 to 7000** (alternative 2) and the **sex ratio objective be 21 to 24 bucks per 100 does** (alternative 1).

The recommended population objective was the most supported objective by all groups who provided comment. It allows growth of the population which is believed to be necessary and remains realistic in what can be accomplished during the DAU plans life.

Support for the recommended sex ratio was given by several groups. Yet there was also strong support shown for alternative 2 and 3 which would increase the sex ratio to a higher level. The decision was made of Alternative 1 (21-24 bucks:100 does) because it would increase the sex ratio from its current level and produce more mature bucks in the population. The upper range of this alternative is a significant increase from the current sex ratio and previous objective. It is believed that this increase will meet the desires of those wanting a higher sex ratio by providing more mature/trophy quality bucks to hunters. It also addresses public concern and Commissioner Sandoval's concern of providing hunting opportunity by maintaining the maximum number of hunting licenses allowed by any of the alternatives. To reach alternative 2 or 3, buck licenses in the DAU would have to be decreased an estimated 25 to 45% over the next three year. This decrease in licenses (hunting opportunity) is not expected to be acceptable to the local hunting publics that were represented at the DAU public meeting.