

**Sand Dunes Deer Herd
Data Analysis Unit D-37
Game Management Unit 82
July 2010**

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 July 8, 2010

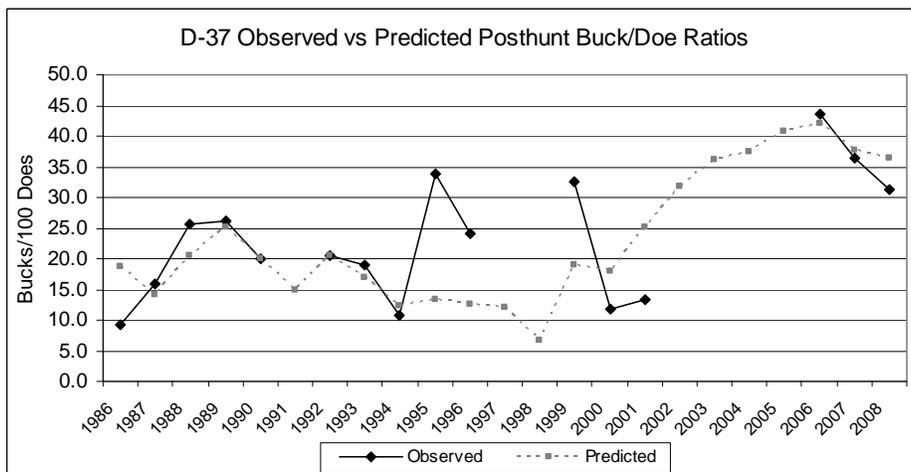
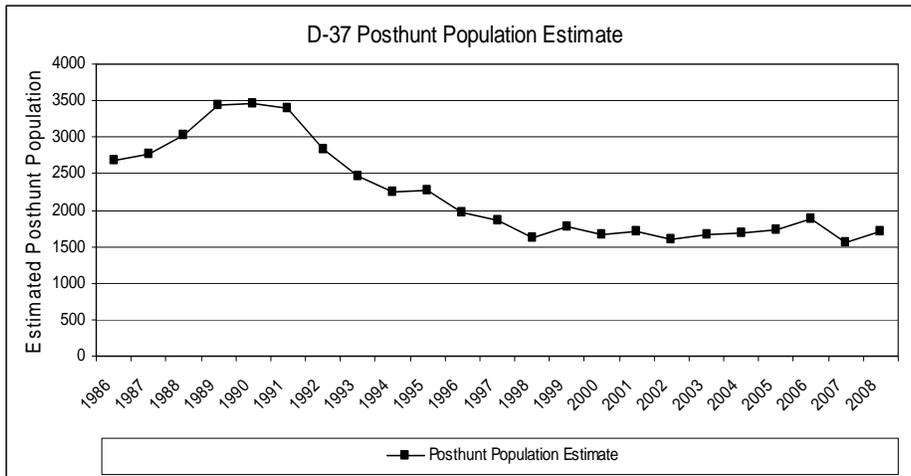
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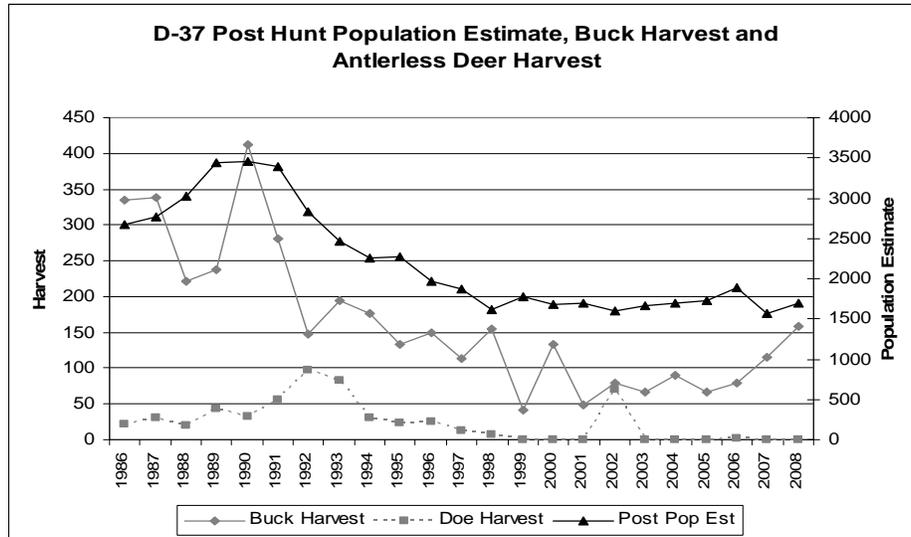
Executive Summary
June 2010

Population: 2008 Estimate 1,700
 2010 Objective **1,500 to 2,000**

Sex Ratio: 2008 Observed 31 bucks:100 does
 2010 Objective **20 to 25 bucks:100 does**

Land Ownership: 42% private, 17% US Forest Service, 16% National Park Service, 10% BLM, 8% US Fish and Wildlife Service, and 6% State





The Data Analysis Unit (DAU) D-37, the Sand Dunes deer herd, is located in southcentral Colorado, on the northeast side of the San Luis Valley and consists of Game Management Unit (GMU) 82. The DAU has been managed with limited antlered deer licenses since the statewide mandate in 1999.

The current model indicates that the 2008 population is about 1,700 animals. The model predicts that the population reached a high of 3,500 in 1990 and has slowly decreased to its current size where it has been since 1998. The 1996 population objective of 4,500 appears unrealistically high for this population due mostly to habitat conditions and poor recruitment.

Sex ratios are high due to the limiting of buck licenses in 1999. In 2008 the observed post season buck to doe ratio was 31 bucks:100 does. The average sex ratio since implementing limited licenses in 1999 has been 28 bucks:100 does. From 1988 to 1999, prior to limiting buck licenses, the average ratio was 21 bucks:100 does.

Since 1999 when buck licenses became limited the average harvest has been 87 bucks and has ranged from 43 (2001) to 158 (2008). Beginning in 2007 buck licenses were increased to decrease the sex ratio which was above the objective. There has basically been no doe harvest in the DAU for the past 10 years excluding 2002 when 70 antlerless deer were harvested.

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, further restricting this population.

Management Alternatives

Two alternatives for D-37 were considered for posthunt population size and three alternatives for sex ratio objectives.

Population Objective Alternatives:

- 1) 1,500 to 2,000 (current population)
- 2) 2,000 to 2,500 (increase in current population)

Sex Ratio Objective Alternatives:

- 1) 20 to 25 bucks per 100 does
- 2) 25 to 30 bucks per 100 does
- 3) 30 to 35 bucks per 100 does

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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.

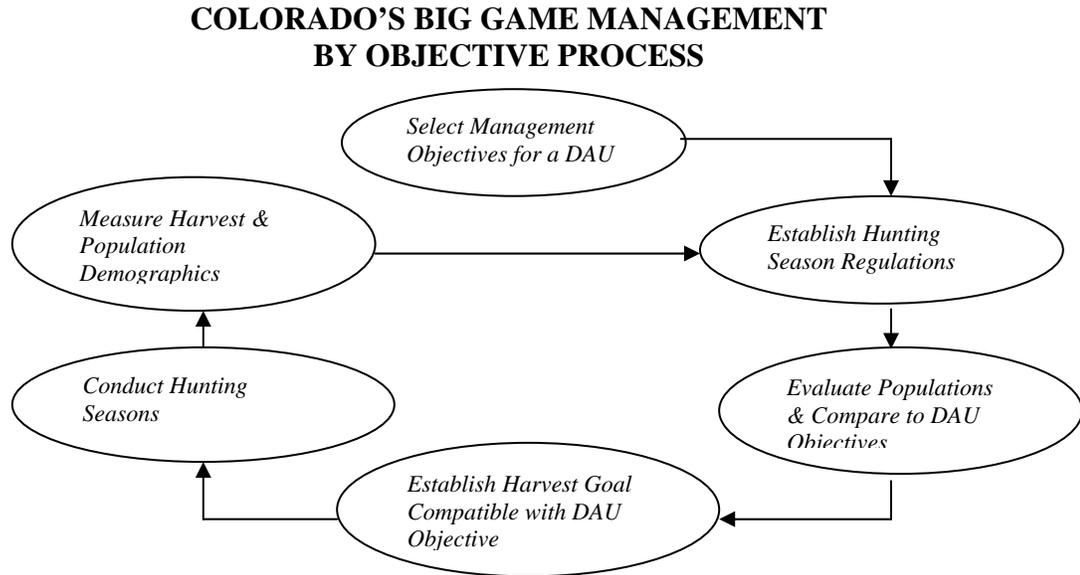


Figure 1. Management by objectives process used by the CDOW to manage big game populations on a DAU basis.

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 deer herd is located in southcentral Colorado, on the northeast side of the San Luis Valley (Figure 2). It consists of Game Management Unit (GMU) 82. It is 1,088 square miles in size and encompasses portions of Saguache and Alamosa counties.

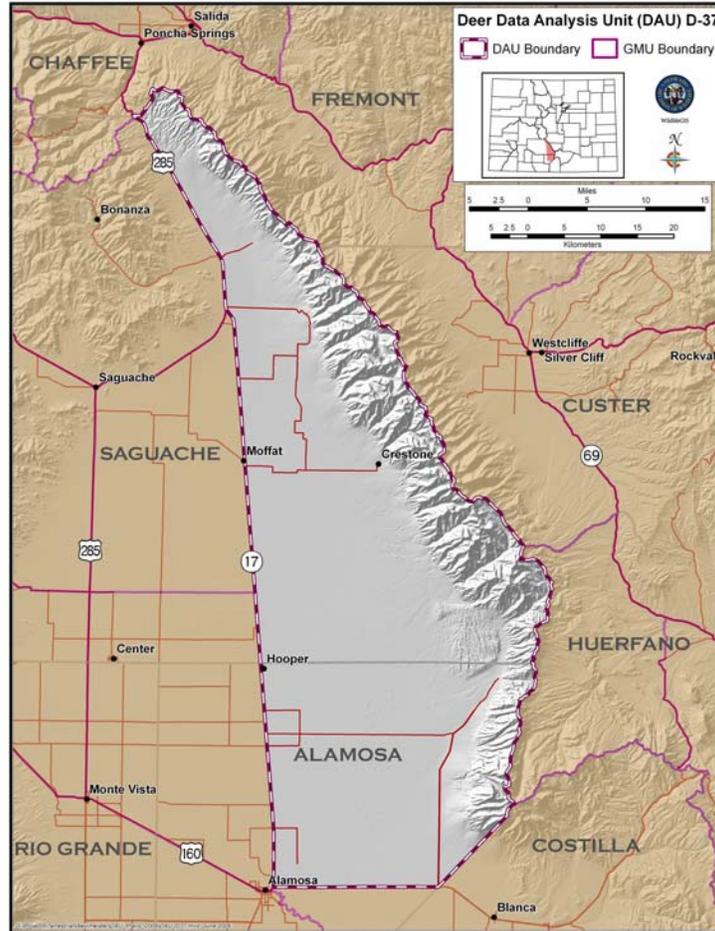


Figure 2. DAU D-37 boundary map

The DAU is bordered by the crest of the Sangre de Cristo Mountains to the east, the Alamosa/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, 16% National Park Service, 10% BLM, 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 rises to over 14,000 feet and the lowest portion of the DAU is the valley floor is at 7,500 feet elevation.

The vegetation varies from grassland/shrub and agriculture at lower elevations up through oakbrush, piñon-juniper, ponderosa pine, Douglas fir/aspens, spruce/fir and an extensive alpine tundra zone above 12,000 feet.

The climate is 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 elevations of the Sangre de Cristos receive 30 to 40 inches of precipitation a year, mostly in the form of winter snow, and to a lesser extent frequent afternoon showers in the summer. The foothills receive about 12 inches of precipitation while the valley floor gets only 7 inches a year and is considered a high desert.

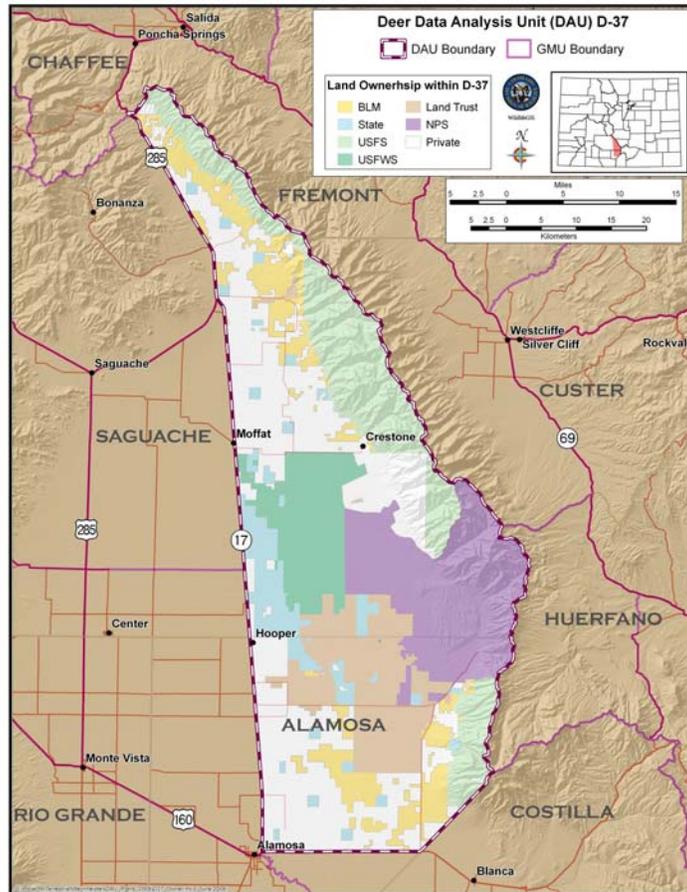


Figure 3. D-37 landownership

2.2 Deer Range and Movement

Deer generally occupy the DAU from the grassland/shrub and piñon-juniper communities in the winter through all vegetation zones including the alpine tundra in the summer and early fall.

Deer movement to winter range is dictated by weather with snow and limited forage availability driving the deer to the winter range. This movement usually begins in November and continues until January. The migration of deer is usually elevation in most of the DAU. Some deer in the agricultural areas are more sedentary.

3. Herd Management History

The Sand Dunes DAU is considered to be one of the better deer DAU's in the San Luis Valley. Generally lower snow depth and productive winter range has sustained a good population of deer. Management of the deer herd in the DAU has included limited doe licenses from 1990 through 1993. Field observations indicate that the herd has declined since the early 1980's. Modification in statewide season structure, the limited doe hunts, and implementing limited buck licenses have been the only management changes instituted in the DAU. Large tracts of private lands, public lands with limited access and difficult terrain have limited hunter access in the DAU. There is an early, high altitude, rifle season with licenses valid in GMUs 82, 86, and 861.

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.

The long term population objective in the 1996 plan is 4,500 animals. The current model indicates that the 2008 population is about 1,700 animals (Figure 4). The model predicts that the population reached a high of 3,500 in 1990 and has slowly decreased to its current size where it has been since 1998.

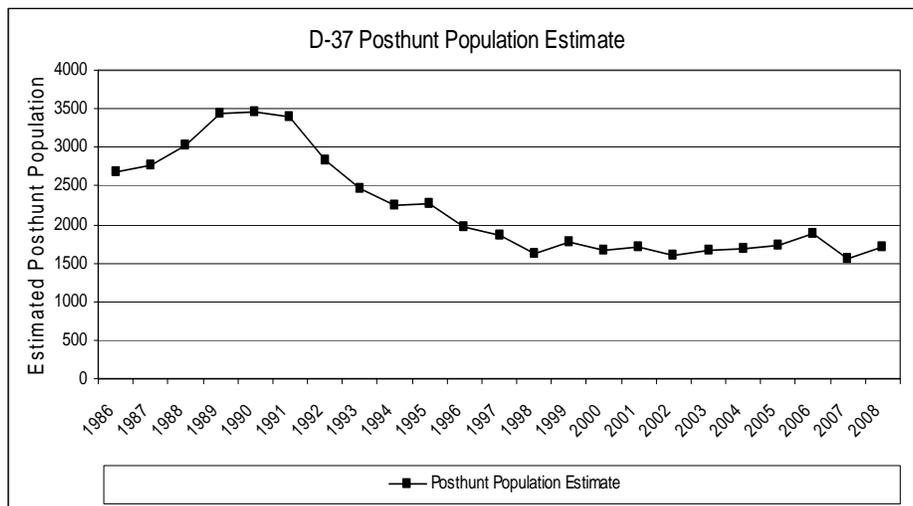


Figure 4. D-37 posthunt population estimate from 1986 to 2008

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. 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 due to weather, snow cover, sample size and observers. Classification flights were not done in 1997, 1998, 2002, 2003, 2004, and 2005.

The average fawn:doe ratio observed from 1986 to 2008 was 55 fawns per 100 does with a low of 30 in 2007 and a high of 75 in 1991 (Figure 5).

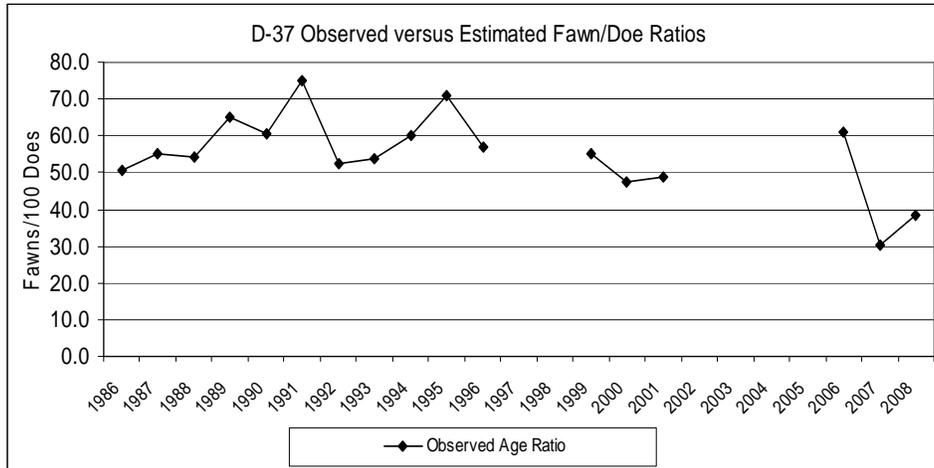


Figure 5. D-37 observed posthunt age ratios from 1986 to 2008

Sex ratios are at their highest level experienced by this herd due to the limiting of buck licenses in 1999. In 2008 the observed buck to doe ratio was 31 bucks per 100 does (Figure 6). From 1986 to 1998, prior to limited buck licenses, the average ratio was 21 bucks per 100 does. The average sex ratio since limiting buck licenses was 28 with a high of 43 reached in 2006. In 2007 buck licenses were increased and the sex ratio has been slowly decreasing since.

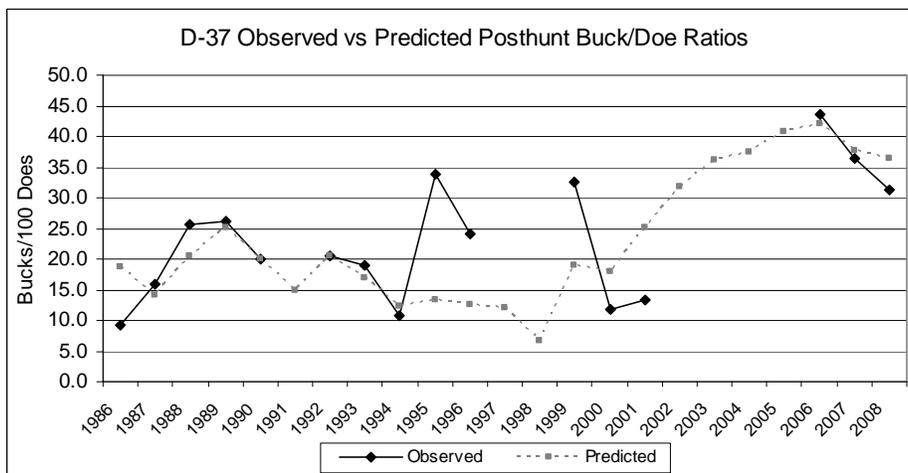


Figure 6. D-37 observed and modeled posthunt sex ratios from 1986 to 2008

3.3 Harvest

Harvest is affected by hunting pressure, season structure, weather, and population size among other variables. From 1986 to 2008 buck harvest has averaged 164 bucks per year (Figure 7). The highest harvest during the same time period was 412 in 1990 and the lowest was 43 in 1999 and 2001. Since 1999 when buck licenses became limited the average harvest has been 87 bucks. Beginning in 2007 buck licenses were increased to decrease the sex ratio which was above the objective.

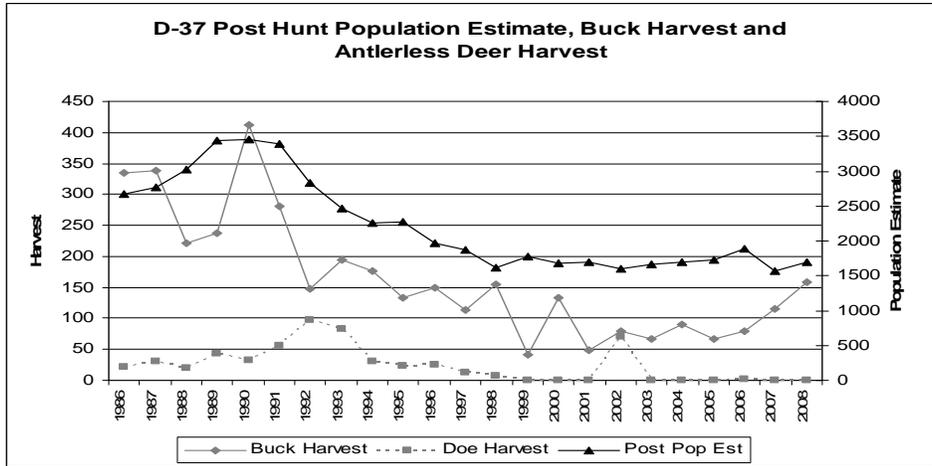


Figure 7. D-37 buck harvest, antlerless harvest and posthunt population from 1986 to 2008

3.4 Hunting Pressure

The number of hunters from 1986 to 1998, when buck licenses were unlimited, ranged from a low of 127 in 1997 to a high of 444 in 1990 averaging 260 hunters (Figure 8). During this same time period (1986 to 1998) the yearly success rate for the DAU averaged 25%, with a low of 15% in 1997 and 1998 to a high of 35% in 1990.

The number of hunters since limiting buck licenses in 1999 has varied from 125 (2006) to 368 in 2000. Since the implementation of limited buck licenses success rates in general have increased. The yearly success rate for the DAU has averaged 48% from 1999 to 2008, with a low of 14% in 1999 to a high of 89% in 2002.

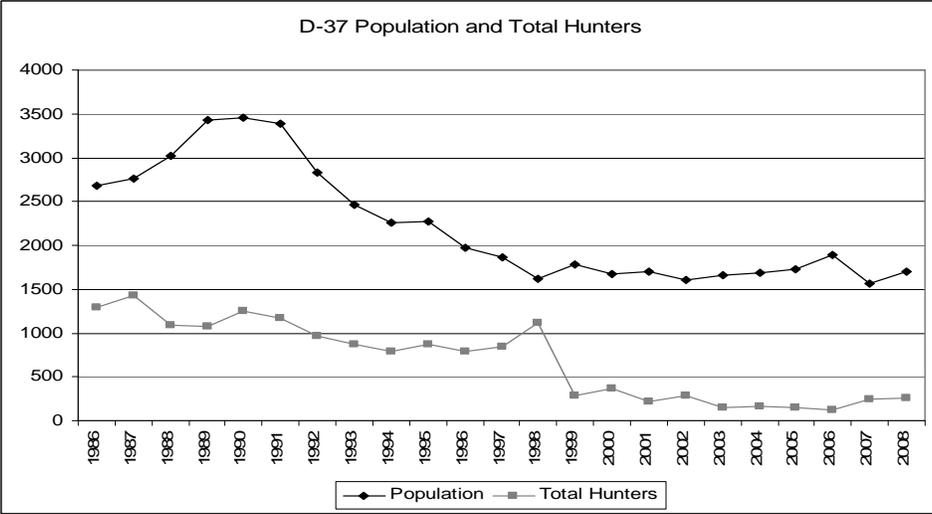


Figure 8. D-37 total hunters and population from 1996 to 2008

4. Current Herd Status

4.1 Summary of Current Conditions

The modeled population is currently at 1,700 and under the 1996 objective of 4,500. It is unrealistic that the 1996 objective could be achieved in the next 10 years with the current habitat conditions and recruitment rates.

Sex ratios are at the highest level in the past two decades and are well above the 1996 objective. 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 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 elk herd in this DAU 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 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 concerning deer are minimal in the DAU even though deer are found on agricultural fields. Concerns by landowners are handled on an individual basis.

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 deer to some degree. This could possibly affect distribution of deer and more importantly reproduction in fawning areas.

Disease – Currently all areas in the San Luis Valley, including D37, are free of chronic wasting disease. In August 2001 at the Anta Grande Elk Farm west of Del Norte on Hwy, 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 D37 or adjacent DAUs.

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 its beginning stages of changing from the current dominate conifer habitat. The impacts on the deer herd as a result of this change are unknown.

5. Habitat Resources

The limiting factor for the deer herd in this DAU is the quality and composition of winter range (Figure 9). 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.

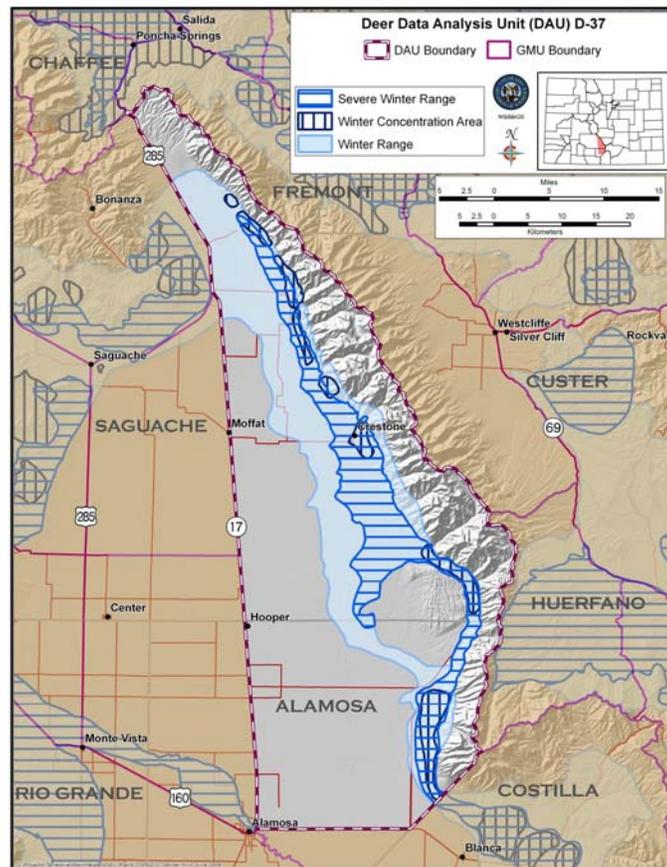


Figure 9. Winter range, severe winter range, and winter concentration area for D-37

5.1 Public Lands

The overall range for deer is the entire 1,088 square miles of the DAU of which 58% is public. Winter range comprises about 33% of the DAU or 355 square miles (Figure 8). About 61% of the winter range is public land with 27% US Forest Service, 27% National Park Service, 16% State, 15% BLM, and 14% US Fish and Wildlife Service.

Severe winter range is only 4% of the overall range or 39 square miles. Almost 63% of the severe winter range is public with the National Park Service having 52%, the BLM 32%, US Forest Service 8%, and US Fish and Wildlife Service and State each having 4%.

5.2 Private Lands

Forty-two percent of the overall range is private. Winter range is 39% private (Figure 8) of which 53,000 acres or 20% is in land trusts. Severe winter range is 37% private lands with 12% or 4,100 acres enrolled in land trusts. The importance of private lands to the deer in this DAU can be seen through the high percentage of the limited winter range and severe winter range found on private land.

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 in the new plan a number range is given for the objective. 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 1,500 to 2,000 (current population)

The current population, 1,700, falls within this alternative. The possibility of including doe hunting could be examined. Game damage caused by deer is presently minimal and would remain that way.

ALTERNATIVE 2 2,000 to 2,500 (increase in current population)

This objective allows for an increase in the population. Currently game damage by deer in the DAU has been minimal. There is a potential for increase game damage with this alternative. Game damage issues would be addressed through PLO licenses and/or dispersal hunts. The current practice of having no doe licenses would continue while the population is under objective. This objective may not be realistic due to the poor recruitment rates. To increase the population, age ratios would have to increase and habitat improvement projects would need to be done on winter range.

6.2 Herd Composition (buck:doe ratio)

ALTERNATIVE 1 20 to 25 bucks per 100 does

The three year average ratio is 37 bucks per 100 does with the 2008 observed ratio at 31 bucks per 100 does. Buck licenses are currently set to reach this objective. Once the objective is reached buck licenses would decrease by around 10% to hold the sex ratio within the objective range. There were 300 licenses issued in 2009. This alternative would allow maximum harvest of bucks.

ALTERNATIVE 2 25 to 30 bucks per 100 does

The sex ratio is expected to be within this range after the 2009 season. If this alternative is adopted than buck licenses would be decreased approximately 30% (200 licenses issued) of current levels. The benefit of this would be more mature bucks in the population.

ALTERNATIVE 3 30 to 35 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 40% to achieve and maintain this objective. In return it would allow the greatest number of mature bucks. Any higher sex ratio than this would come at great costs to hunters with minimal returns.

7. Alternative Selection

The preferred alternatives were selected after gathering input from public meetings, the Blanca HPP committee, local federal land management agencies, local County Commissioners, 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 maintaining the current population (2 out of 3 people) and having the sex ratio of 20-25 bucks:100 does, alternative 1 (2 out of 3 people). There was a minority interest to attempt to increase the population and to have a sex ratio of 25-30 bucks:100 does, alternative 2.

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 two (attempt to increase the population) for the population objective and alternative 1 (20-25 bucks:100 does) for the sex ratio objective. Game damage issues caused by this deer population are currently minimal.

AWM Rick Basagoitia contacted Saguache County Commissioners concerning the D37 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 (current population) be implemented as the population objective for DAU D-37. The SLV PLC believed it could assist in supporting these numbers through habitat maintenance activities and that MIS objectives for the Rio Grande National Forest could be met. The SLV PLC also recommend that limited entry continue, as this helps to control and better manage potential resource damage from recreational hunter numbers that utilize public lands. We recommend that Alternative 2 (25 to 30 bucks per 100 does) be pursued as a sex ratio objective to provide a higher quality recreational experience to the public.

Comments were solicited from the Great Sand Dunes National Park Supervisor, and The Nature Conservancy. No comments were received 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: 1,500 to 2,000 – This population alternative was supported and is perhaps the most realistic to achieve of the alternatives presented.

Sex Ratio: 20 to 25 bucks per 100 does – This sex ratio offers the greatest hunter opportunity and was supported based on comments that were received on the DAU plan.

Appendix A: Public Questionnaire

**DAU D-37 Plan – Public Survey
GMU 82 - Deer**

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 deer 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 deer?

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

Please explain your rating: _____

4) **Hunters**

What is your satisfaction with **deer** 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)

Deer Management Alternatives

D37 (GMU 82)

Population

Current population

25% increase

Sex Ratio

20 to 25

25 to 30

30 to 35

Additional Comments: _____

Return to:

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