

RED FEATHER-POUDRE CANYON DEER HERD MANAGEMENT PLAN

DATA ANALYSIS UNIT D-4 Game Management Units 7, 8, 9, 19, 191



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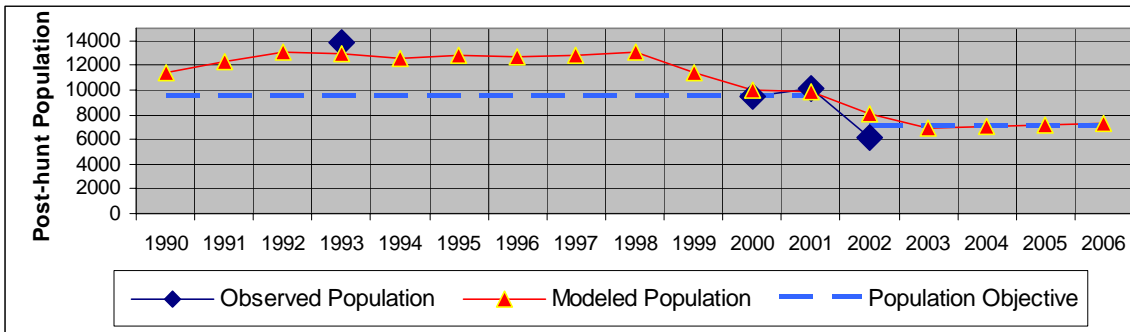


DATA ANALYSIS UNIT PLAN FOR D-4

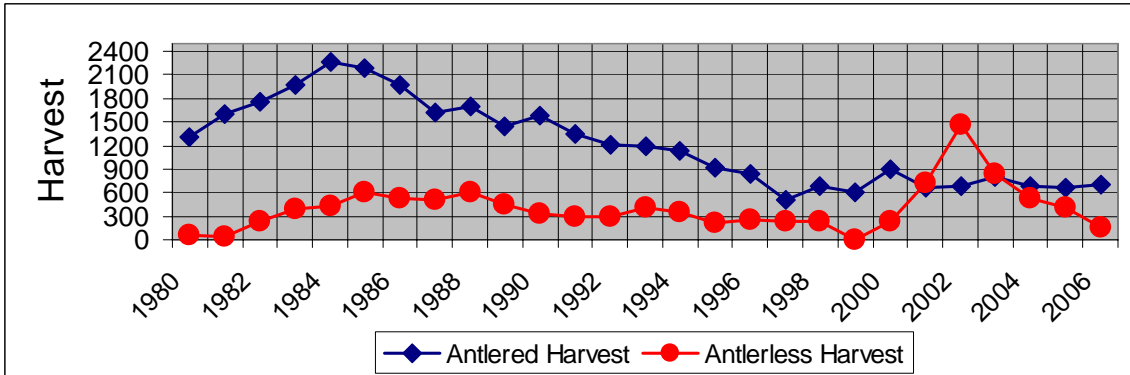
EXECUTIVE SUMMARY

GMUs: 7, 8, 9, 19 and 191 (Northern Larimer County)
Land Ownership: 40% Private, 46% USFS, 6% City/County, 5% State, 2% BLM
Post-hunt Population:
Previous Objective: <7,000 2006 Estimate: 7,300
Current Objective: 10,000-12,000
Post-hunt Sex Ratio (bucks:100 does):
Previous Objective: 10-35 2006 Observed: NA 2006 Modeled: 34
Current Objective: 25-30 bucks:100 does

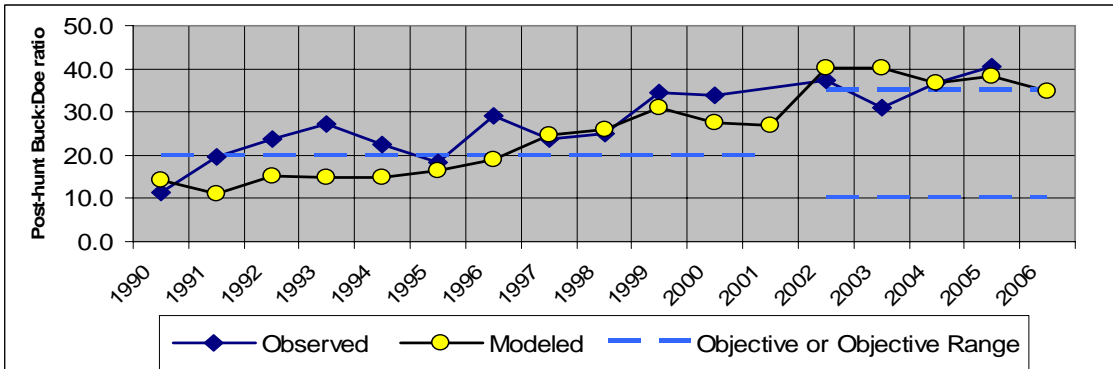
D-4 Post-hunt Population Estimate



D-4 Harvest



D-4 Post-hunt Sex Ratios



Background

The Red Feather-Poudre Canyon deer herd (D-4) consists of Game Management Units (GMUs) 7, 8, 9, 19 and 191. It is located in northern Larimer County in the area north and west of Fort Collins.

Two separate management philosophies and 2 distinct DAU plan objectives have been in place in D-4; one before 2001 and one after 2001. Historically, D-4 has been principally managed with statewide buck licenses and very limited doe hunting. Through the early and mid 1990s, hunting during the first and second rifle seasons was allowed with an unlimited, statewide license, followed by a limited statewide license in the third season. In 1997, all deer licenses in D-4 were limited. From 1997 to 2001, antlered hunting was provided under a limited, but maximum opportunity framework. Buck licenses were available as leftovers, with some going unsold each season. Antlered harvest peaked in 1984 at 2,300 and continued to decline until 1997 when it stabilized at 600 bucks. Harvest has ranged from 600-900 bucks since 1997. Antlerless license levels have been more conservative with approximately 200-600 does harvested each year from 1980-2000. Antlerless harvest peaked in 2002 with nearly 1,500 does taken by hunters, but in the last 2 years female harvest has returned to the low levels of the early 1980s with less than 300 killed each year.

From 1990-2000 the observed buck:doe ratio was consistently above the 20:100 objective, ranging as high as 35 bucks:100 does. During this decade the herd was also projected as being above the long-term population objective of 9,500, with a quadrat-based population estimate of 13,900 in 1993. In 2001, a new DAU plan was written that gave disease management priority over hunting recreation. The new population objective was lowered to < 7,000 deer and the buck:doe ratio covered a range (10-35 bucks:100 does). At the time, little was known about chronic wasting disease (CWD) and the aim of this management strategy was to lower the deer density in D-4 in an attempt to control the prevalence and spread of CWD. It was unclear at what buck:doe ratio CWD might be minimized, so the range ratio was created to allow flexibility in moving the herd towards whichever end might reduce the disease rates.

To reduce the population, hunting regulations were liberalized to include 2 years of 2-for-1 doe carcass tags, doe licenses as List B licenses and large increases in antlerless tag numbers. Liberalized antlerless hunting strategies succeeded in reducing the population down to approximately 7,000, but no evidence of a change in CWD prevalence was observed. Prevalence rates from both small-scale and large-scale density reductions have not decreased over the last 5 years. Both buck license numbers and buck harvest stayed relatively static over the last 5 years, although recent observed and modeled buck:doe ratios are some of the highest in the last 17 years.

Significant Issues

The most significant issue for D-4 seems to be the overwhelming demand from the public for a larger deer herd. The 2001-2006 reduction was effective in removing a large portion of the deer herd from the most heavily hunted areas (state wildlife areas, accessible US Forest Service lands) in the DAU. Landowner damage is non-existent and public input from landowners mirrors the demand from hunters to increase the deer herd.

Chronic wasting disease remains a significant issue as prevalence in the herd has not decreased and none of the management techniques applied to date have been successful at reducing the rate.

Management Alternatives

This DAU plan offers 3 long-term objective alternatives for post-hunt population size and 3 alternatives for the post-hunt buck:doe ratio.

Population Objective Alternatives

The first population objective alternative calls for maintaining the herd at the current 2007 level of 7,000-7,700 deer. This would represent the status quo in terms of deer numbers and would be at a level far lower than the habitat can support or landowners and survey respondents favored. Increasing the herd back to the pre-2001 level of approximately 9,000-10,500 deer is alternative 2. This would require a low level of doe harvest until the herd increased to objective, followed by an increase in hunting opportunity over current levels. The third population alternative would allow the herd to increase to approximately 10,000-12,000 deer. This would require no doe harvest for a number of years until the herd had reached this objective, at which time hunting opportunity would increase substantially as management would focus on stabilization at this new level. This third alternative assumes that there is sufficient habitat available to support this higher deer density.

Herd Composition-Sex Ratio Objective Alternatives

Sex ratio alternatives are provided as ranges and would provide for 3 different levels of buck numbers and maturity (or body size, antler size, etc). Alternative 1 calls for 20-25 bucks:100 does, which would allow for maximum opportunity for buck hunting. However, hunters would see fewer bucks and the average buck would be smaller than under the other alternatives. The second alternative strikes a balance between hunting opportunity, which could be maintained at levels relatively similar to 2007, and buck numbers or body/antler size. The ratio of 25-30 bucks:100 does could be considered as providing an intermediate buck proportion in the population. This alternative should have less older, mature bucks than Alternative 3, and therefore should have fewer bucks testing positive for CWD. The final alternative of 35-40 bucks:100 does would provide the highest number of bucks in the population, as well as the most mature, large antlered bucks. To reach this level, reductions in buck harvest could be expected at some time. However, currently the observed and modeled ratios are already in this range, so under present assumptions antlered harvest could remain unchanged. If a reduction in antlered harvest was needed to sustain this ratio it would impact hunting opportunity. Hunters that did draw however, would experience fewer other hunters and see more mature animals. CWD prevalence in tested bucks could well be highest under this 3rd option.

Preferred Alternatives

The CDOW recommends population objective Alternative # 3, which calls for increasing the herd over 50% to 10,000-12,000 deer. Antlerless hunting will be eliminated or greatly reduced until the herd has reached this new objective. This alternative was overwhelmingly supported during the public input process. The CDOW sex ratio objective recommendation is Alternative #2, 25-30 bucks:100 does. This is within the upper range of the previous 10-35 bucks:100 does objective. This alternative would not require any change to current antlered hunting management.

This plan was approved by the Colorado Wildlife Commission on November 8, 2007.

**RED FEATHER-POUDRE CANYON
DEER MANAGEMENT PLAN
DAU D-4 (GMUs 7, 8, 9, 19 & 191)**

TABLE OF CONTENTS

INTRODUCTION.....	6
DAU PLANS AND WILDLIFE MANAGEMENT BY OBJECTIVES.....	6
DESCRIPTION OF DAU AND HABITAT.....	8
Geography.....	8
Climate.....	9
Deer Species.....	9
Land Ownership and Use.....	10
Vegetation.....	11
HERD MANAGEMENT HISTORY AND BACKGROUND.....	12
Past Management.....	12
<i><u>Population and Sex Ratio</u></i>	13
<i><u>Licenses</u></i>	15
<i><u>Harvest</u></i>	18
<i><u>Success Rates</u></i>	19
<i><u>Disease</u></i>	20
Game Damage.....	21
CURRENT HERD MANAGEMENT.....	21
Current Post-hunt Population.....	21
Current Sex/Age Composition.....	21
Current Management Strategies.....	21
Current Management Problems.....	22
ISSUES AND STRATEGIES.....	22
Issue Solicitation Process.....	22
Issue Identification.....	23
MANAGEMENT ALTERNATIVES DEVELOPMENT.....	23
PREFERRED OBJECTIVE AND ALTERNATIVE.....	25
LITERATURE CITED.....	26
APPENDIX A, D-4 survey.....	27
APPENDIX B, Summary of public survey response.....	31
APPENDIX C, Outside agency and public comments to draft plan.....	32

DATA ANALYSIS UNIT PLAN FOR D-4

INTRODUCTION

The purpose of a Data Analysis Unit (DAU) plan is to give the Colorado Division of Wildlife (CDOW) direction in managing a big game species in a given geographical area. It identifies suitable habitat, gives the herd history and current status, and identifies issues and problems. Key features of a DAU plan are the herd size and herd composition objectives, which are developed after considering input from all interested entities. CDOW intends to update these plans as new information and data become available, at least once every ten years.

DAU PLANS AND WILDLIFE MANAGEMENT BY OBJECTIVES

The Colorado Division of Wildlife manages wildlife for the use, benefit and enjoyment of the people of the state in accordance with the CDOW's Strategic Plan and mandates from the Colorado Wildlife Commission and the Colorado Legislature. Colorado's wildlife resources require careful and increasingly intensive management to accommodate the many and varied public demands and growing impacts from people. To manage the state's big game populations, the CDOW uses a "management by objective" approach (Figure 1). Big game populations are managed to achieve population and sex ratio objectives established for Data Analysis Units.

DAUs provide the framework to manage individual herds of big game animals. DAUs are generally discrete geographically, and attempt to identify an individual big game population. However, individual animal movements may at times straddle or encompass more than one DAU. While DAU boundaries are administrative, they represent the best way to encompass the majority of a herd within a biological area, and allow the most practical application of management tools such as hunting, to reach objectives. DAUs are typically composed of smaller areas designated as game management units (GMUs), which provide a more practical framework where the management goals can be refined and applied on a finer scale, typically through hunting regulations.

The DAU plan process is designed to balance public demands, habitat capabilities and herd capabilities into a management scheme for the individual herd. The public, hunters, federal land use agencies, landowners and agricultural interests are involved in the determination of the plan objectives through input given during public meetings, the opportunity to comment on draft plans and when final review is undertaken by the Colorado Wildlife Commission.

The objectives defined in the plan guide a long term cycle of information collection, information analysis and decision making. The end product of this process is a recommendation for numbers of hunting licenses for the herd (Figure 1). A traditional DAU plan addresses two primary goals: the number of animals the DAU should contain and the sex ratio of those animals expressed as males:100 females. The plan also specifically outlines the management techniques that will be used to reach desired

objectives. The fact that DAU plans are reviewed and revised on a 5-10 year basis provides assurances against the often-dynamic fluctuations experienced by Colorado’s big game herds. Changes in land development, public attitudes, hunter success, hunter access, research results, disease prevalence and game damage may all contribute new information needed when reviewing or revising a DAU plan. The CDOW strives to maintain a tight link between the inclusion of publics in the development of population objectives and the yearly iteration of data collection, analysis and renewed decision-making to reach those objectives.

Individual DAUs are managed with the goal of meeting herd objectives. Herd data, which is typically collected annually, is entered into a computer population model to get a population projection. The parameters that go into the model include harvest data from hunter surveys, sex and age composition of the herd gathered by field surveys, and mortality factors such as wounding loss and winter severity, generally acquired from field observations. The resultant computer population projection is then compared to the herd objective, and a harvest calculated to align the population with the herd objective.

**COLORADO’S BIG GAME MANAGEMENT
BY OBJECTIVE PROCESS**

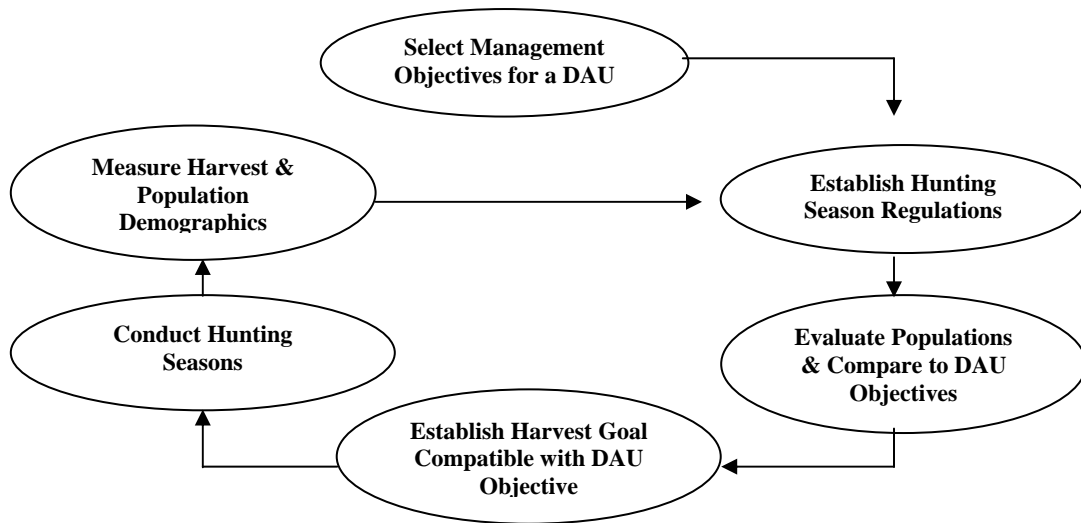


Figure 1. Management by objectives process used by the CDOW to manage big game populations on a DAU basis.

DESCRIPTION OF DAU AND HABITAT

Geography

Data Analysis Unit (DAU) D-4 is located in Larimer County in northcentral Colorado. D-4 is bounded on the north by the Wyoming state line, on the west by Jackson County, and on the east by I-25. The southern boundary is defined by Harmony Road, Larimer County roads 19, 38E, 27 and 44H, the Elk Creek and Pennock Creek divide and Rocky Mountain National Park's northern border. D-4 is drained by the Laramie River, and the north fork and mainstem of the Cache la Poudre River (Figure 2). The DAU is comprised of game management units 7, 8, 9, 19 and 191.

Elevations range from 12,795 feet at the highest point in the southwestern part of the DAU to 4,921 feet along the eastern edge near Fort Collins. The DAU covers much of the northern part of the Arapaho/Roosevelt National Forest.

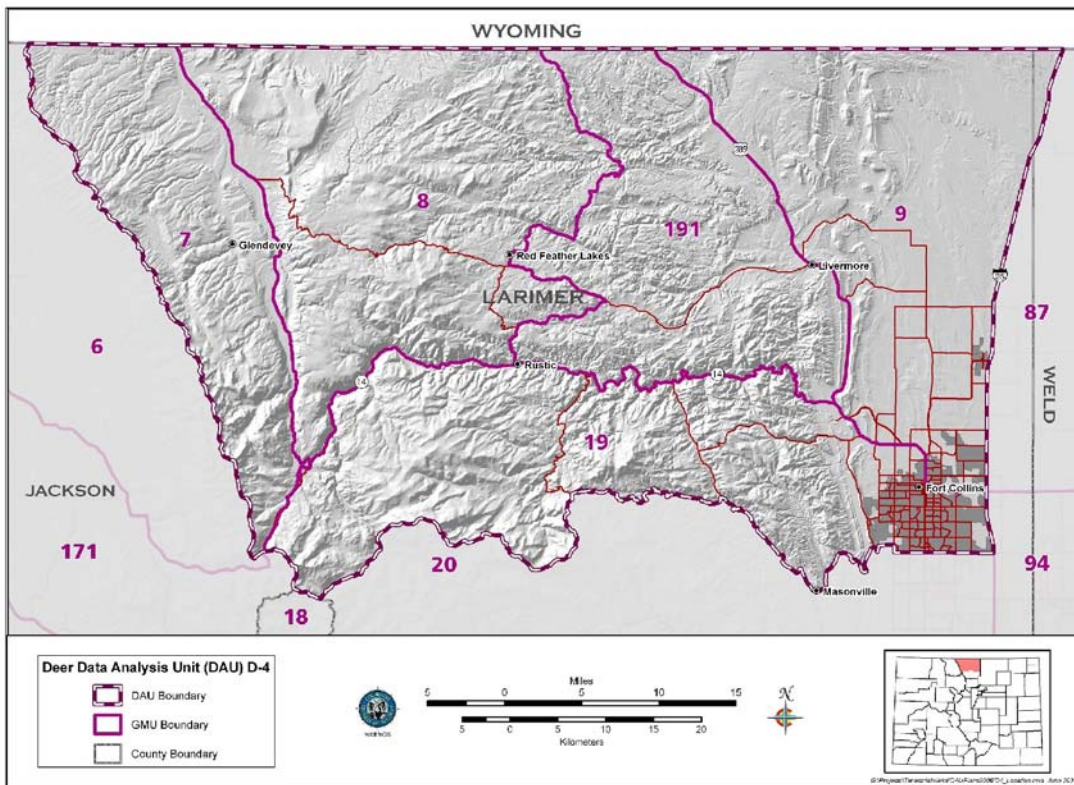


Figure 2. Location of DAU D-4

Climate

The overall climate in D-4 is relatively dry with low humidity. Climate varies across the DAU as a function of elevation. Conditions on the eastern edge are standard for the foothills/short grass prairie interface, with relatively mild winters, smaller snow accumulations and hotter summers. The higher elevation portions in the west experience a harsher climate, with long, cold winters, abundant snowfall, and short, cool summers. Deer summer range generally includes all of D-4, from elevations of 5,000 to 11,500 feet. The higher range usually becomes available to deer as snowlines recede in mid to late May. The majority of deer winter at elevations below 8,000 feet. (Figure 3). Many west and south-facing slopes are typically clear of snow all year, with occasional spring and late winter storms depositing accumulations which quickly melt off. Weather-related winter deer mortality is usually not a factor in D-4.

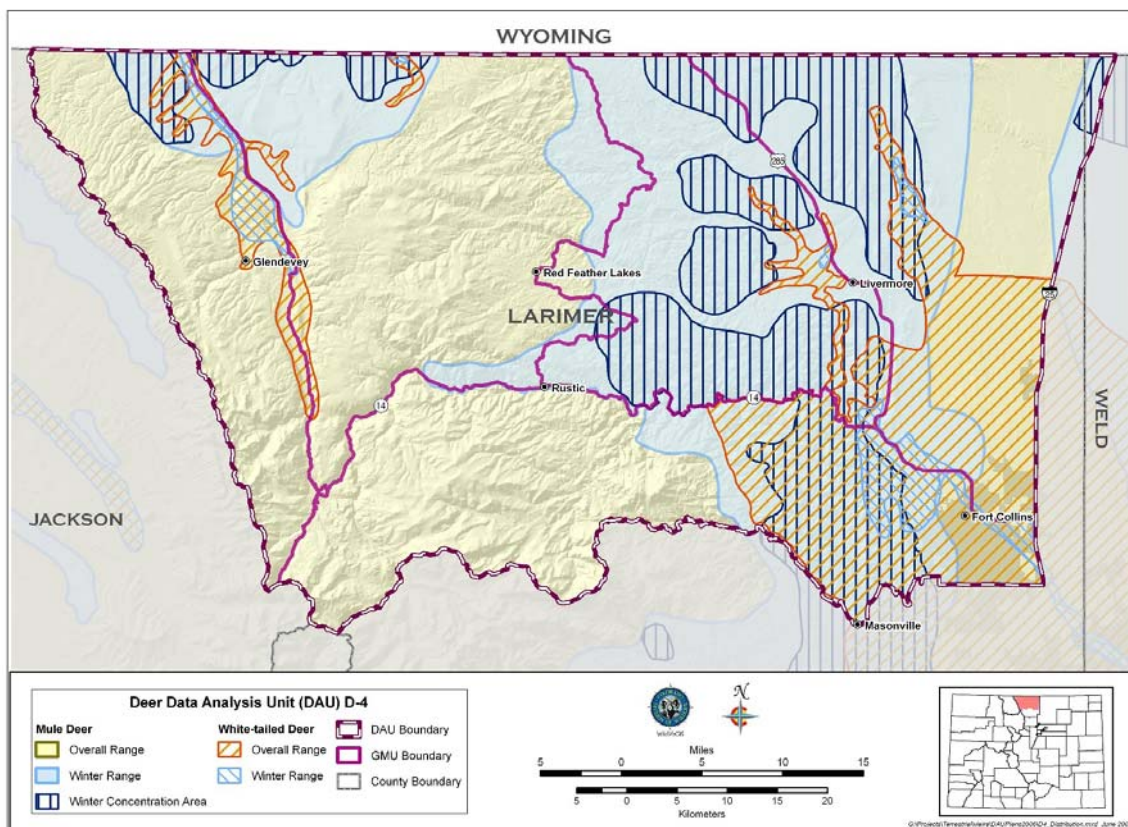


Figure 3. D-4 mule and white-tailed deer distribution

Deer Species

In most DAUs in Colorado, mule deer and white-tailed deer are managed together, with populations estimates, harvest and licensing focusing on the entire deer herd, with no species distinctions. In D-4 mule deer are by far the predominant species, however occasional white-tailed deer have historically been observed in the DAU for at least the last 30-40 years. In recent years however, localized white-tailed deer herds have become established in D-4, most notably in the Laramie River drainage, the area surrounding Fort Collins and in some drainages of the North Fork of the Cache la Poudre

river. These small localized herds are currently not a large concern for hybridization or competition with mule deer, but any expansion will be evaluated. Since white-tailed deer are harvested along with mule deer on general deer licenses, harvest pressure and habitat may act together to limit their range.

Land Ownership and Use

Wildlife habitat in D-4 is spread across a wide range of land ownership categories (Figure 4). One of the two largest land classes in D-4 is private land, which encompasses 716 sq. miles, or 40% of the DAU. The United States Forest Service (USFS) manages an almost equal amount of land in D-4 with stewardship over 829 sq. miles (46% of DAU). The vast majority of USFS land is National Forest or Designated Wilderness. There are 4 USFS wilderness areas in the DAU; Cache La Poudre Wilderness (14 sq. mi.), Comanche Peak Wilderness (96 sq. mi.), Neota Wilderness (15 sq. mi.) and Rawah Wilderness (113 sq. mi.). There are some small areas in D-4 managed by the Bureau of Land Management (BLM)(43 sq. miles or 2% of DAU). Among state lands, those managed as State Wildlife Areas or State Land Board holdings account for almost all of the total area (97 sq. miles). These two state property types provide an abundance of deer hunting opportunity. Outside of private land, USFS, BLM and Division of Wildlife (DOW) lands receive almost all deer hunting pressure.

Both the City of Fort Collins and Larimer County manage sizable parcels of land in D-4, all of which include quality deer habitat. Overall, city and county ownership of land totals 104 sq. miles or 6% of the DAU including Larimer County Open Space's (LCOS) Red Mountain property, Eagle's Nest property and the City of Fort Collins' Soapstone property.

Human occupation is limited, particularly in the western (Laramie River valley) and south-western portions of D-4 (upper Poudre, Joe Wright Creek). To the east, especially in portions of eastern GMU 8 and most of GMU 191, rural developments are more common. Irrigated hay and ranching form the main landscape use in the western part of the DAU, however, increased fragmentation due to home construction, small acreage pasturing and hobby livestock ranching is occurring, particularly on the eastern side. GMU 9 is almost entirely private land; however recent purchases by the City of Fort Collins and Larimer County may allow some public access for hunting in this area.

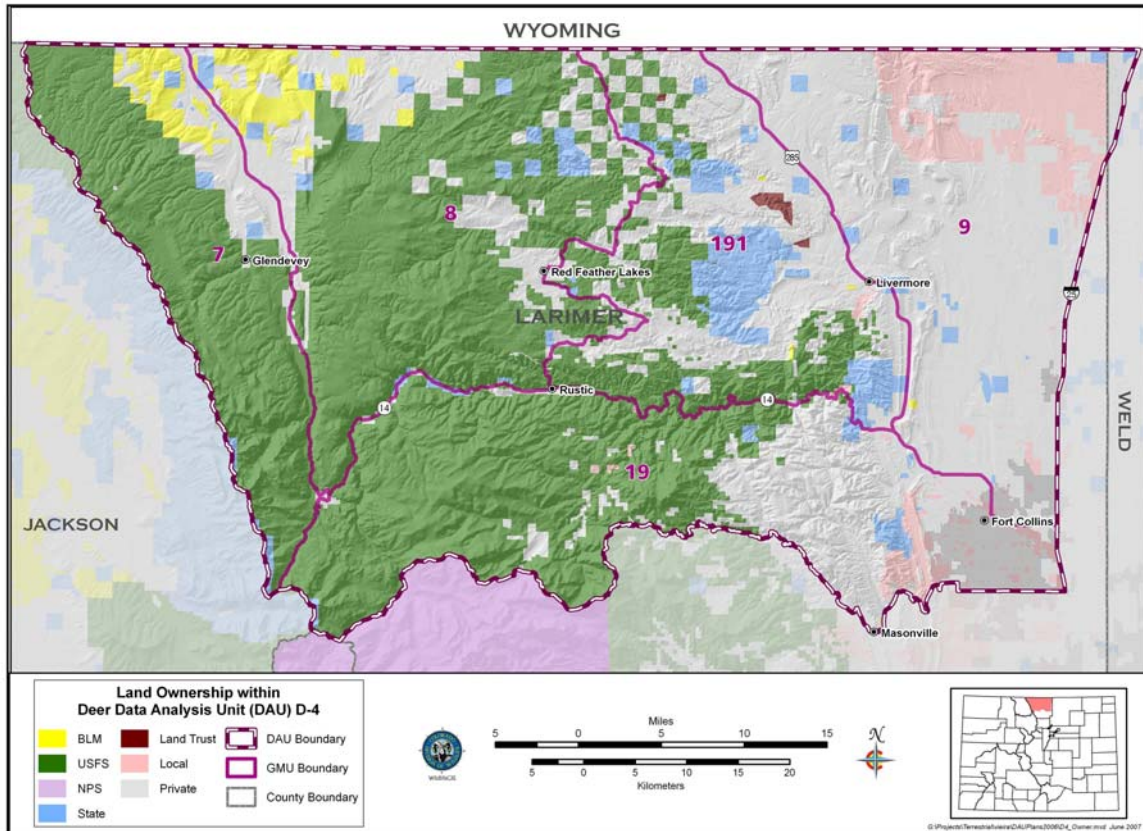


Figure 4. Land ownership in D-4

Vegetation

Vegetation on the eastern side of the DAU bordering I-25 is composed of shortgrass prairie shrubs and plants. Native grasses, non-native grasses and croplands dominate much of the landscape, with areas of sagebrush, rabbitbrush and cacti. Most riparian areas are comprised of cottonwoods, along with alders and willows. Deer densities are relatively high in these open, broken eastern landscapes.

Foothills vegetation from approximately 5,500 to 7,000 feet is characterized by various shrub types and ponderosa pine. Shrubs such as mountain mahogany, bitterbrush, juniper, wild plum, and serviceberry all are present, although the localized diversity varies greatly. This community type may represent some of the highest overall and winter range densities of deer in D-4 (see Figure 3).

Moving higher in elevation from the foothills brings a change in vegetation and a new ecological region, the montane zone. Ponderosa pine forests may continue to elevations above 8,000 feet, but often Douglas-fir stands begin at middle elevations and continue up to 9,000 feet. Both aspen and lodgepole pine appear as early colonizers, inhabiting areas of disturbance.

Areas on the far western and southwestern portion of the DAU represent the subalpine region. Aspen is present at the lower end of the zone, giving way to lodgepole stands as elevation increases. Spruce/fir communities are the standard forest type through the subalpine until 11,500 feet, at which point timberline is reached and tree

growth is nearly impossible given the cold, snow and wind. Above timberline, the landscape is dominated by tundra vegetation such as cushion plants and small groups of krumholtz trees. Summer deer densities tend to be low on the alpine, although size and maturity of bucks at these elevations can sometimes be exceptional.

HERD MANAGEMENT HISTORY AND BACKGROUND

The current DAU plan for D-4 was written in 2001. Management objectives were to decrease the herd to less than 7,000 deer with a buck:doe ratio of between 10-35 bucks:100 does.

Past Management

During the 1990s, D-4 was managed under season structures and licensing philosophies that focused on providing maximum opportunity for antlered hunting with a small amount of antlerless hunting. Before 1997, buck hunting opportunities included both unlimited and limited statewide tags. In 1997, licenses in the DAU became specified and limited, meaning that licenses were only valid in D-4 and they were limited in number. The total number of buck licenses was so high however, that this still provided maximum opportunity. This overabundance of tags was evident in 1999, when D-4 antlered licenses were cut almost 60% (in keeping with the statewide direction of limiting all deer hunting and reducing harvest) and there were still left-over license available.

Beginning in 2001, management emphasis shifted from recreational opportunity to disease management. At the time, chronic wasting disease (CWD) prevalence rates in D-4 were the highest in the state, and based on lack of detection of the disease in other DAUs adjacent to D-4 (primarily to the west and southwest), an attempt was made to control the spread and prevalence of the disease. In 2001, there was no management precedent for CWD and very little was known about transmission, eradication or containment. Based on the Colorado Wildlife Commission (CWC) CWD policy at the time, CDOW attempted to manage D-4 towards a reduced CWD prevalence rate objective, and made changes in population size (and buck:doe ratio) to reach that objective. While CWD prevalence and rate of spread were the management objectives, in keeping with traditional DAU planning format, the D-4 plan was rewritten to implement a population reduction. The specific post-season population objective was “less than 7,000 deer or sufficient to result in a less than 1% prevalence across the DAU”. At the time, sample sizes sufficient to show higher prevalence rates in male deer had not been reached, so no guidance was available on an optimal sex ratio to help reduce disease prevalence. For that reason, the plan was explicit in managing for a “ratio consistent with reducing CWD prevalence to less than 1% across the DAU” and the correspondingly broad sex ratio range of 10-35 bucks:100 does was established.

Imbedded in this new population objective reduction was a smaller, GMU-specific management experiment that was initiated in the fall of 2000 in GMU 9. The objective was to lower the population by half to see what effect this density reduction would have on CWD prevalence in that area. To accomplish this reduction, unlimited licenses were sold to hunters who had acquired private lands access vouchers. In the first year, tags were issued as either-sex licenses and the vast majority of hunters harvested

male deer. Since population reduction was the target, these tags were changed to antlerless licenses to more efficiently accomplish that goal. In the following years late-season and multiple-carcass tag licenses were also made available to assist in that reduction. CDOW culling was employed consistently on one ranch that allowed access. Despite these efforts to reduce the population, this 50% reduction was never achieved in GMU 9 due primarily to inability to access private land. Landowner support for agency culling or intense hunter access for removal was far less than expected. This management experiment was discontinued in 2005.

Population and Sex Ratio

Estimating population numbers of wild animals over large geographic areas is a difficult and approximate science. Numerous attempts have been made to accurately count known numbers of wild animals in large fenced areas. All of these efforts have failed to count 100% of the animals. The CDOW recognizes the difficulties of estimating the size of deer populations as a challenge in managing populations and attempts to maximize the accuracy of these estimates by using the latest technology and inventory methodology available. As better information and techniques become available (e.g., new estimates of survival/mortality, wounding loss, sex ratios, density, or new modeling techniques and software) they are evaluated and used where appropriate. The population estimate presented in this document should, therefore, not be considered a completely accurate enumeration of the animals in the DAU.

Historical populations of deer were much more robust than they are today in northern Larimer County. Observations from residents along Poudre Canyon from the mid 1900s indicate much higher deer densities were commonplace. While population estimates are not available, harvest numbers certainly indicate a much greater abundance in the past. More recently, population levels appear to have peaked in the mid-1980s and have been stable or declining since that time. Through most of the 1990s, modeled population projections were relatively stable, fluctuating around 12,000 deer (Figure 5). From 1998 to 2001, the population is estimated to have declined due to factors outside of hunting pressure, as harvest decreased in those years. With the new DAU plan in place in 2002, the population decline continued, in this case hunting pressure was the main component driving the decrease.

The Poudre-Red Feather deer herd was specifically targeted for a study to gather more precise information on population size and survival beginning in 1997. From 1997 to 2004, D-4 was considered a core mule deer monitoring unit. A quadrat system was set up over the landscape using a random sampling approach to estimate population size. During the 80s and 90s this consisted of aerial sampling a group of approximately 100 quarter-section quadrats each winter and counting the total deer seen per quadrat. Quadrat corners were physically marked with orange signs and the same quadrat was sampled each year. Beginning in 2001, the number of quadrats was increased to approximately 140 and GPS units were used in the helicopter to locate the corners. Sample size was increased in an attempt to more closely track the proposed population reduction in D4.

As part of the core mule deer monitoring protocol a sample of mule deer does and fawns were captured and radiocollared in D-4 each year from 1997-2002. These deer

were monitored aerially on a regular basis and all mortalities were immediately investigated. Annual doe survival and over-winter fawn survival were estimated for each of these years.

During the past 11 years, population flights were conducted in 2000, 2001 and 2002. D-4 population quadrat flights require 3 days of helicopter time, so financial and weather related constraints dictated the years that these were conducted. The 2000 post-hunt population estimate of 9,500 deer was used as the starting point for the DAU-wide reduction outlined in the plan (down to <7,500) as well as for the GMU 9 50% reduction. The estimate increased slightly in 2001 and then dropped dramatically in 2002 to 6,100 (Figure 5). While the 95% confidence intervals on the estimates in all 3 years overlapped each other, the reduction of the deer population between 2001 and 2002 seemed to be accurate as estimated in the population point estimate. Additional confirmation that this population reduction was achieved included the large increase in harvest in those years and field observations from DOW staff. While there haven't been any population flights since 2002 in the DAU, the D-4 model suggests that the population continued to decline and is now reaching a point of inflection where current management has at least stabilized the decline down to the 7,500 deer objective (Figure 5).

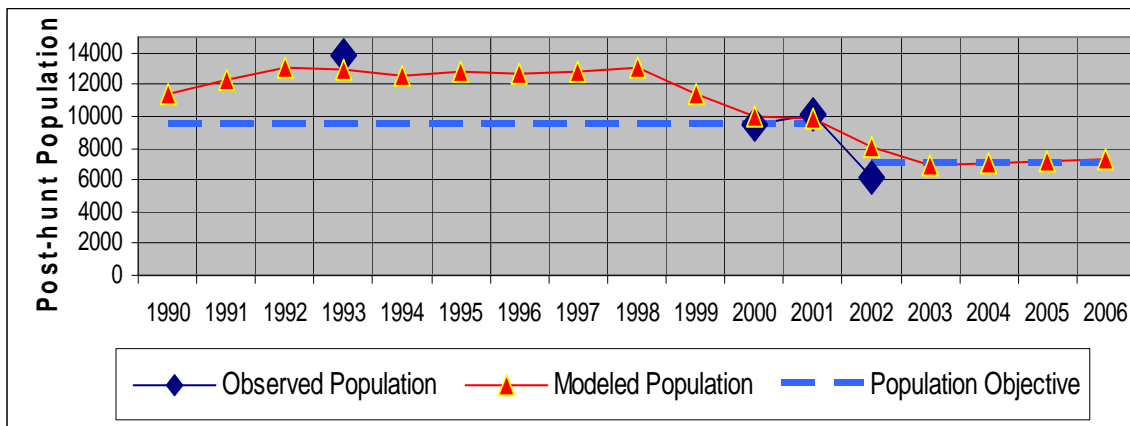


Figure 5. D-4 post-hunt population 1990-2006

The observed buck:doe ratio in D-4 has steadily increased over the last 10 years to reach 40 bucks:100 does in 2005 (Figure 6). It is hard to determine the factors behind this increase; while buck harvest was higher during the late 1990s this would be expected with a larger overall population. Buck harvest since 2000 has been very consistent, yet the buck:doe ratio has remained at a high level. Given that buck licenses are issued liberally to approximate maximum opportunity, the observed buck:doe ratios from 2004 and 2005 (> 35:100) are high. Ratios in units such as the White River and Bear's Ears DAUs with large numbers of left-over buck tags tend to be lower than D-4 (25-30 bucks:100 does). This high ratio can be explained in part by the aerial classification sampling protocol. While deer groups are sampled at random across the landscape, larger groups of deer tend to be found on private, lightly hunted lands or non-hunted refuge properties. Proportionally, deer sampled in D-4 are more likely to come from private land than from public. So, while the overall observed ratio in 2005 was 40 bucks:100

does, it is likely that that is driven by observations on private lands with buck:doe ratios higher than 40. By contrast, buck:doe ratios on SWAs or USFS lands with good hunter access are below the DAU estimate.

As stated earlier, the buck:doe objective in D-4 was changed in 2002 to reflect a goal of reducing the prevalence of CWD. The objective was set at a range of from 10-35 bucks:100 does, as little was known about at which end of the spectrum CWD could most effectively be managed. While there are currently no results from herd-level management experiments implicating reduced buck:doe ratios in lowered overall CWD prevalence rates, a herd with an older buck age structure will probabilistically have a higher rate of CWD (Miller and Conner 2005).

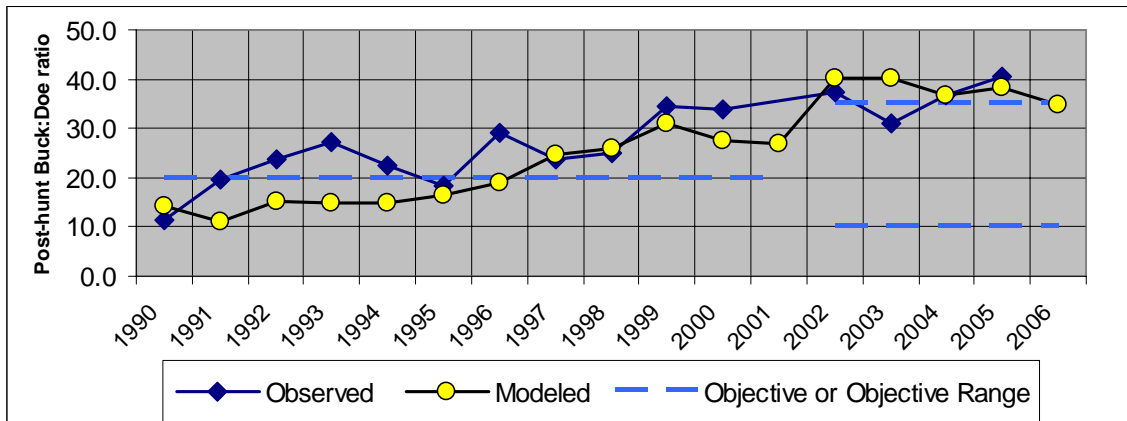


Figure 6. D-4 post-hunt buck:doe ratio 1990-2006

Licenses

Licenses in D-4 have been limited and specified since 1997. Previous to 1997, buck hunting licenses were valid statewide and were over-the-counter in the 1st and 2nd seasons, and limited in the 3rd. Figure 7, showing changes in hunter numbers over the last 16 years, provides the best comparison between limited and unlimited years. Regulations passed in 1997 making D-4 limited and specified were aimed at better identifying and documenting the occurrence of chronic wasting disease (CWD) in the DAU. In 1999, regulations were approved making all deer licenses limited in Colorado. In keeping with the public’s desire to improve both deer numbers and buck:doe ratios by reducing hunting pressure on statewide deer herds, license numbers in D-4 were cut in 1999, over 50% in the case of antlered tags (Figure 8). While this appears to be a dramatic reduction in hunting opportunity, that was not the case, as thousands of licenses under the original levels went unsold each year. The number of bucks harvested in 1999 (607) only decreased slightly relative to previous years or the 5-year average buck harvest (817) (see Figure 9 and Figure 10). While antlered license numbers may have fluctuated over the last 10 years, opportunity has remained nearly unchanged, with licenses available as left-overs. There is no effective cap on the opportunity to purchase a buck license in D-4; the DAU has been managed for maximum antlered opportunity.

From 1995 to 2000, doe licenses were set at relatively conservative levels, especially in 1999 when no antlerless tags were made available. However, beginning in

2001 and continuing through 2002 and 2003, there was an exponential increase in numbers of antlerless licenses issued. In 2001, the only antlerless licenses available in D-4 were in GMU 9, and these were aimed along with the either-sex licenses, at the density reduction experiment. The either-sex tags ultimately contributed minimally to the density reduction because many hunters chose to kill bucks instead of does. In 2002, these GMU 9 specific licenses were converted to antlerless only, although numbers remained unlimited.

To reduce the herd to < 7,000, large license number increases were made by adding antlerless licenses to every regular rifle season in all units, adding private-land only (PLO) doe seasons in GMUs 7 and 8 and adding late seasons in GMUs 19 and 191. Probably the most significant change in licensing was that all antlerless licenses provided 2 carcass tags and were considered additional or ‘list B’ in 2002 and 2003. These changes, with the 2-for-1 doe licenses being the most notable, doubled antlerless harvest in one year from 716 in 2001 to 1461 in 2002 (Figure 9 and Figure 10). Antlerless tags increased from 600 in 2001 to 2925 in 2002 (Figure 8).

Beginning in 2004, as the modeled population neared the < 7,000 objective, incremental reductions were made in antlerless license numbers. The 2-for-1 carcass tag regulation was removed and both regular and late-season antlerless licenses were cut back. The year 2006 was the last year with any late or PLO seasons. During 2006 all doe licenses in D-4 sold in the draw. License numbers were further reduced for the 2007 season.

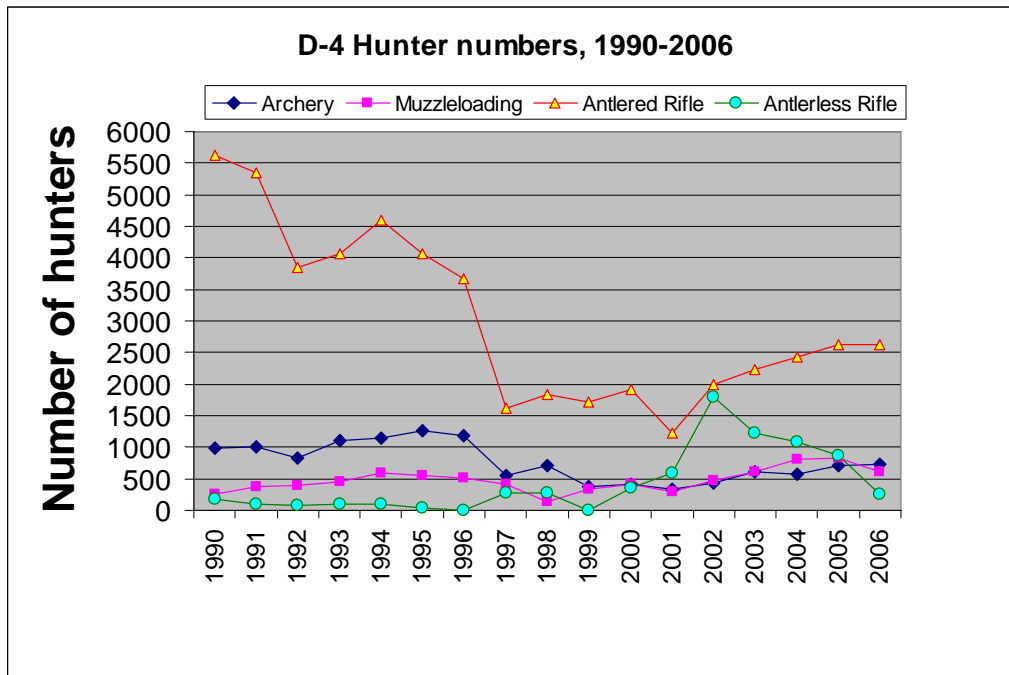


Figure 7. D-4 hunter numbers, by method of take, 1990-2006

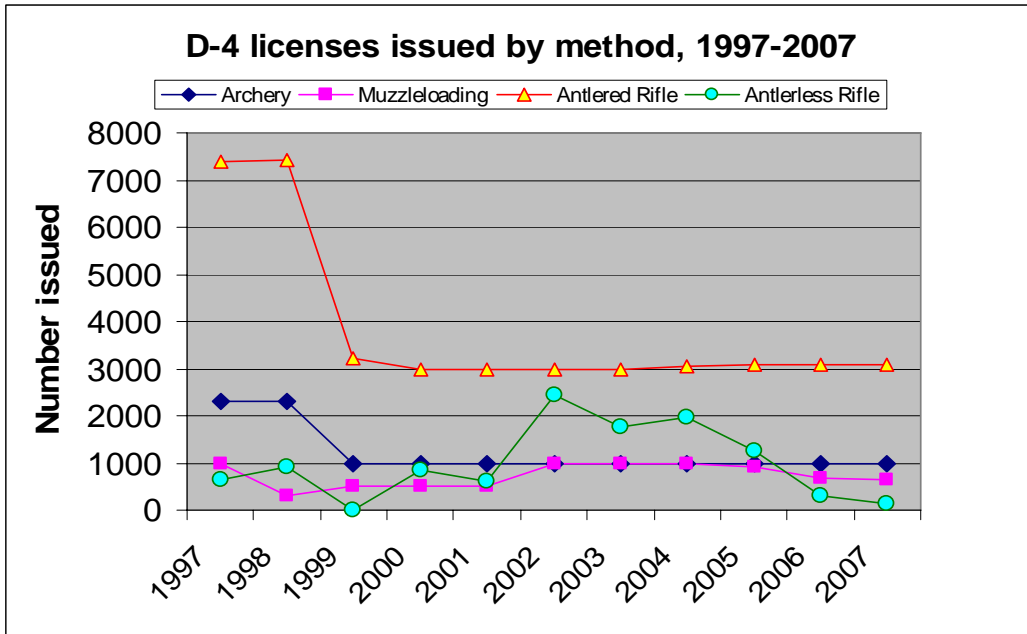


Figure 8. D-4 license numbers by method of take, 1997-2006 (statewide buck licenses previous to 1997)

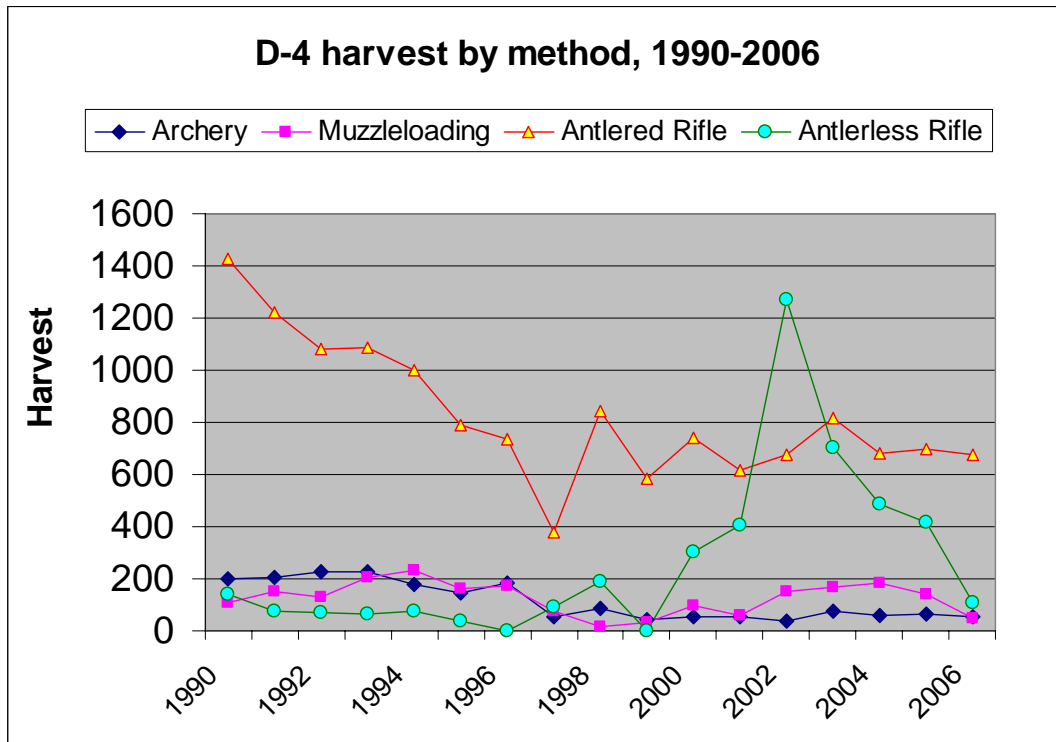


Figure 9. D-4 harvest by method, 1990-2006

Harvest

Buck harvest in D-4 has been relatively consistent over the last 10 years. In the last 5 years (since the large-scale reduction attempt for CWD management) buck harvest has been very consistent (average of 707 harvested, range from 659-799) and similar to the average of the 5 previous years (average of 669 harvested, range from 509-894) (see Figure 8).

Female harvest over the last 10 years in D-4 is driven almost entirely by the management actions begun in 2001 to reduce the density of deer in the DAU. Harvest during the first half of the last 10 years was moderate, with approximately 250 does and fawns harvested each fall during 1995-1998 (Figures 9 & 10), the majority coming from GMUs 19 and 191 during late-seasons. No antlerless rifle licenses were issued in 1996 or 1999, so rifle harvest was zero in both years. In 2000, harvest was again approximately 250 mainly due to the late and GMU 9-specific seasons. From 1995-2001, the only year where antlerless licenses were issued during the regular rifle seasons was 1997. For those 7 years all antlerless harvest was coming outside of the regular rifle seasons. Doe harvest in the regular seasons occurred on a noticeable scale in 2002 (see Figure 9). Well over half of this antlerless harvest continued to occur during the late GMU 19 and 191 seasons. The 2-for-1 carcass tags were still valid during 2003, but overall antlerless licenses were cut almost 30% that year because a record harvest in 2002 accelerated the reduction towards the new population objective. Since 2003 almost all antlerless licenses have been sold during the limited draw, so doe harvest has correlated well with the number of antlerless licenses issued each year. As the population neared the CWD management objective, doe license numbers were reduced and a decrease in harvest followed. Antlerless harvest in 2006 (154 by all methods) was the lowest since 1999, and projected harvest in 2007 (based on average success rates) should be lower, at approximately 55 does.

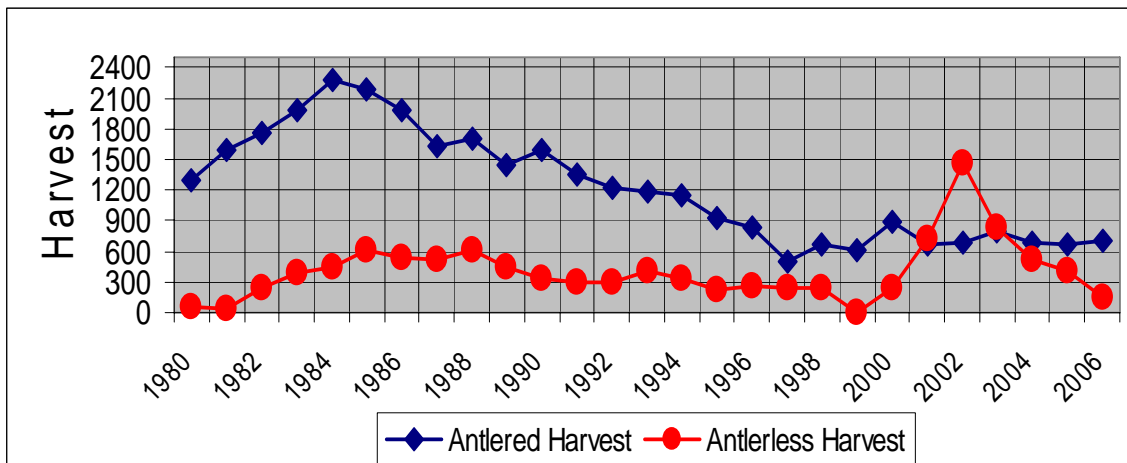


Figure 10. D-4 antlered and antlerless harvest, 1990-2006

Success Rates

Success rates were defined and analyzed in this document as being the number of animals harvested divided by the numbers of hunters afield for that particular method or season. In seasons where all licenses are sold, this creates a similar success rate whether calculated as harvest per hunters afield or harvest per licenses sold. In units where a number of licenses are never sold (D-4 archery for example) using harvest per hunter afield to define success rate is a more meaningful statistic than harvest per license issued. Including unsold licenses will bias success rates low, as they would be included in the calculation although they were never purchased by hunters.

From 1990-1996, both antlered and antlerless rifle success rates were very consistent, with success rates on bucks between 20-30% and success on does between 70-80% (Figure 11). This is a low success rate for rifle buck hunters, in part produced by the large number of antlered licenses available and high hunter numbers. With conservative numbers of antlerless license available from 1990-1996 and a larger deer population than in later years, those hunters who did hunt would have been expected to have high success rates. In 1997 antlerless rifle success dropped to 30%, a one-year anomaly, that can only be explained by the poor doe harvest seen that year. From 1998-2003 rifle buck success increased into the 35-50% range, but has since returned to the 20-30% range as it was in the early 1990s. Antlerless rifle success dropped slightly during the multiple carcass tag years of 2002 and 2003. Given that any antlerless hunter in D-4 could kill 2 does on a single license during those years, it is surprising that success didn't go above 100%. On the harvest survey there was no way to statistically isolate these hunters from those that just harvested one deer on the multiple license, so it may be that most hunters didn't take advantage of the opportunity to harvest a second animal. Since 2003, antlerless rifle success has decreased and now ranges between 45-55%. With a greatly decreased deer herd, particularly on public land, it may be that doe hunters are having difficulty finding deer and are having lower success.

While archers saw a decrease in license numbers in 1999 of over 50%, similar to rifle hunters, success didn't change with that impact due to the undersubscription of licenses. Archery success in D-4 has been consistent over the last 16 years, ranging between 9-21%, but averaging steadily around 14% (Figure 11).

Muzzleloader success has undergone some interesting and unexplained changes. License number changes over the last 16 years have been substantial, but deciphering a pattern proves difficult. Muzzleloader license numbers were actually cut by almost 70% (990 down to 320) from 1997 to 1998. Licenses then increased to 500 in 1999 and stayed at that level until 2002 at which point they increased again to 1000. Success rates were higher (30%-45) during the first half of the 1990s and then decreased during the following 5 years (Figure 11). Both antlered and antlerless rifle success increased during this downturn in muzzleloading success. Since 2002, both rifle and muzzleloading success rates have been decreasing. The peak of the population reduction effort occurred around 2002, so it may be that this lower success across several methods of take is evidence of the lack of deer hunters were encountering.

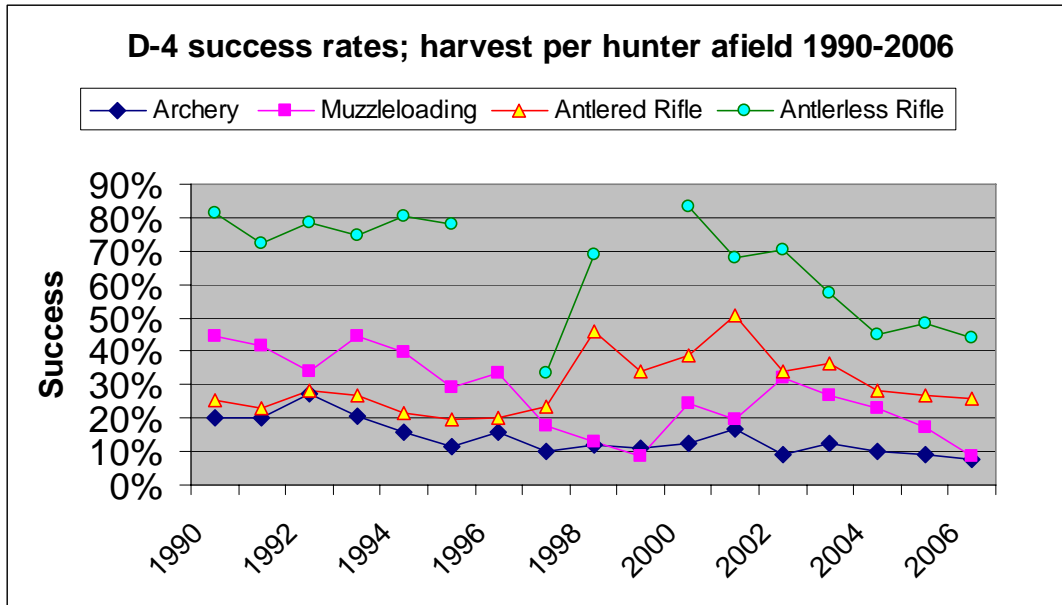


Figure 11. D-4 harvest success rates for archery, muzzleloading and antlered and antlerless rifle 1990-2006 (no antlerless rifle licenses issued in 1996 and 1999)

Disease

Chronic wasting disease, a transmissible spongiform encephalopathy (TSE), is a disease of native deer and elk in D-4 and elsewhere, characterized by behavioral changes and progressive loss of body condition leading to death (Williams and Young 1992). There are no known treatments for CWD in deer, although a tonsillar biopsy live-test has been developed. Three years (2003-2005) of submitted deer heads from harvested animals (n= 1692) produces a DAU-wide CWD prevalence rate of 5.4% (Miller 2006). Hunter concerns over CWD vary, but reductions in hunter participation in D-4 have not been observed. This is consistent with data reported from other CWD-positive states (Miller 2003, Gigliotti 2004, Holsman and Petchenik 2006).

Management attempts were made by the CDOW to reduce the prevalence and spread of this disease in D-4. An analysis of 5 years of data (2000-2005) comparing winter range subherds that had experienced density reductions versus those that hadn't failed to detect any significant change in CWD prevalence rates. The management experiment initiated in GMU 9 aimed at a 50% reduction in overall deer numbers never achieved the target population reduction. Due to an inability to apply the "treatment" across the DAU, this program was applied on a single private ranch with no significant results.

Voluntary and mandatory head testing produced a greater abundance of data to detect differences among CWD positive and CWD not-detected animals. One trend that emerged after a number of years of data collection was a higher prevalence of CWD in mature, male mule deer relative to female or younger male age classes (Miller and Conner 2005). It may be that maintaining an age and sex composition in a herd that

favors younger (and presumably smaller bodied and antlered) males would contribute to a lower operating level of CWD in the population.

Game Damage

Should damage occur, adequate provisions are incorporated into existing game damage laws to effectively deal with claims. For landowners in GMUs 7, 8, 9 and 191, the Northern Larimer County Habitat Partnership Program Committee can also be useful in helping to provide financial compensation for documented losses.

Deer damage in D-4 has been negligible over the last 10 years (Table 1). The ten-year average of annual game damage payments is \$872, and there have not been any claims paid since 2000.

Table 1. D-4 game damage claims 1995-2006

Claim Date	Species	Damage Type	Claim Paid	GMU
02/23/96	MD	Nursery	\$500.00	9
07/01/96	MD	Fence	\$125.00	8
04/09/99	MD	Nursery	\$2,850.00	9
05/05/99	MD	Fence	\$125.00	8
01/30/00	WD	Nursery	\$2,300.00	9
02/06/00	WD	Nursery	\$2,820.00	9

CURRENT HERD MANAGEMENT

Current Post-hunt Population

Based on the D-4 population model, as well as observed data from aerial quadrat flights, the 2006 post-hunt population is estimated at 7,100- 7,600 deer (see Figure 5). Recent license levels have been aimed at lowering the population to the 2001 DAU plan objective of < 7,000 deer.

Current Sex/Age Composition

Annual computer modeling, after incorporating aerial classification flight data projects a 2006 post-hunt sex ratio of 34 bucks:100 does (see Figure 6). This is higher than would typically be expected in a DAU that has significant leftover antlered licenses. However, when aerial observations are further analyzed, trends in sex ratios are apparent between public and private or refuge lands. The sex ratios observed on public lands are much lower than those seen on private, hunted lands or unhunted refuges (including privately-owned and municipality-owned properties). During classification flights the larger samples of deer are often found on these refuge areas; therefore this relatively high buck:doe ratio is derived in greater proportion from these lightly or non-hunted areas.

Current Management Strategies

The current management strategy has focused entirely on CWD prevalence as an objective, with population size and sex ratios as secondary concerns. While the population has been managed towards a reduced level, the rate of CWD among tested deer has not decreased. Based on an analysis of 5 years of data, reducing deer densities

does not seem to be a successful tool in combating the disease. In 2007, preliminary steps were taken in the form of antlerless license reductions in anticipation of stabilizing or increasing the deer herd.

Current Management Problems

There are currently no significant management problems in D-4. However, like much of Colorado, D-4 is experiencing changes in landscape through rural subdivision growth, small acreage development and subsequent loss of deer overall and winter range. Due to the high proportion of public land in D-4, these changes have had limited impact on a DAU/population-scale, however localized issues of habitat loss have occurred and will continue to develop. There are also several water development projects in E-4 are in various stages of planning. If these reservoir projects are completed, the cumulative impacts on deer overall and winter range would be pronounced. As local municipalities (city, county) purchase and manage large working ranches, the continuance of active wildlife management on those parcels is crucial. In most cases, herds can be managed via harvest to keep their size and distribution compatible with habitat on the property and to minimize impacts on surrounding landowners. Recent discussions with municipal land management agencies seem positive with respect to future opportunities for limited hunter access on their properties.

Hunters seem willing and interested to hunt in D-4 despite the presence of CWD. It may be that the most significant problem in D-4 is social in nature; overcoming the negative feelings from both landowners and hunters regarding CWD deer management has been challenging.

ISSUES AND STRATEGIES

Issue Solicitation Process

A letter inviting sportsman to attend the DAU planning meetings and/or requesting written input in the form of a 4-page questionnaire on management was sent to all 2005 D-4 or E-4 license holders (+8,000).

Additional input on the D-4 plan was obtained by advertising in local newspapers, the CDOW web page, and issuing press releases about both the DAU plan meetings and the ways to assess the survey for written comments. Two public meeting were held to gather public input on management in D-4. DAU meetings occurred on February 6, 2007 in Greeley and February 15, 2007 in Fort Collins. Approximately 10 members of the public attended in Greeley and 55 attended in Fort Collins.

Attendees filled out a questionnaire highlighting what they felt the major management issues were, as well as providing general comments on population management, buck:doe ratios, maturity of bucks in the herd versus hunting opportunity, etc.

The D-4 questionnaire that was available on-line as well as at the DAU meetings is attached as Appendix A.

A summary of results (raw numbers for each response as well as percentages) from the survey that were received during the entire initial comment period are attached as Appendix B.

During July 2007 the draft D-4 plan was posted on the CDOW web page to allow additional public comments. Draft copies were sent to Larimer County Commissioners,

USFS Canyon Lakes Ranger District and the Northern Larimer County Habitat Partnership Program committee. Comments received on the draft plan from this second public outreach effort are included as Appendix C.

Issue Identification

Surveys were returned by 435 individuals. Essentially everyone responding (96%) had hunted for either deer, elk or both in the DAU sometime in the last 5 years. Thirty one percent of the responses were from the immediate Fort Collins area and 29% live outside the DAU. Residents of Colorado represented 82% of the returns, with 18% of respondents living outside the state.

When asked what they would like to see in terms of the population size of deer in D-4, the majority (69%) wanted to see an increase in the number of deer. Eighteen percent were comfortable with the status quo, with only 3% of respondents wanting to see less deer in the DAU. Based on the write-in comment section, the desire to see the herd built back after the CWD-driven reduction is strong. Survey respondents were evenly split on the issue of buck:doe ratios. Forty percent favored the status quo of maximum buck hunting opportunity and the subsequent lower buck:doe ratios. Forty three percent wanted an increased quality of hunting opportunity, meaning a willingness to hunt less often if it meant a higher buck:doe ratio and chances to harvest larger deer. The remaining 17% wanted strictly maximum opportunity with opportunity to hunt being the driving factor in management (even though this would mean lower sex ratios).

Based on reading through the additional comments obtained as part of the survey outreach, the lack of deer in D-4 seems to be the most prominent issue. Respondents felt that the deer herd has decreased drastically and they would like to see a return to higher deer numbers.

MANAGEMENT ALTERNATIVES DEVELOPMENT

Post-hunt Population Level

Population Alternative #1

Maintain the herd at approximately 7,000-7,700 deer.

This option would represent a population level similar to what exists currently (post-hunt 2006). Antlerless licenses would need to be increased to keep the population from growing. This would offer a short-term increase in opportunity, but long-term buck license numbers would probably be reduced as the surplus growth from this lower population level would be smaller than any of the other options. Given past deer numbers and habitat condition, a herd of this size could be expected to have no significant game damage or habitat impacts on any large scale.

Population Alternative #2

Increase herd to its pre-2001 level of approximately 9,000-10,500 deer.

Antlerless harvest would be reduced or nearly eliminated to build population levels upward during the following 3-5 years. Once this new objective had been reached harvest intensity would vary annually in response to how the population performed relative to the objective. Antlerless harvest could presumably increase to a stabilizing

level that would help maintain the population at this new level. There would be an initial reduction in overall hunting opportunity followed by an increased level to maintain the objective. Hunters and wildlife viewers could expect to see more deer than they do now, similar to what was experienced in the late 1990s.

Population Alternative #3

Increase the herd to approximately 10,000-12,000 deer.

This alternative would require the largest and most long-term reduction in antlerless hunting opportunity. Doe hunting would be effectively eliminated for a number of years (depending on weather and other habitat conditions). Once the herd reaches the new population objective, hunting opportunity would be at its maximum level, as the number of antlerless licenses needed to stabilize the population would be the greatest among the 3 alternatives. Changes in habitat from fire, grazing and other sources could contribute to the ability of available habitat to sustain this number of deer. It has been 10 years since the population has been projected to be at this elevated level. Deer numbers, habitat impacts, game damage and deer/vehicle collisions would be at their highest level under this alternative compared to the other two.

Herd Composition- Sex ratios

Composition Alternative #1

20-25 bucks:100 does

This alternative represents the lowest number of bucks in the population with presumably more younger, smaller antlered bucks than the other 2 options. This ratio would allow for the most opportunity for antlered hunting, as license numbers would not need to be decreased at all from current levels. Hunters would experience more people afield and probably see a smaller number of bucks compared to alternatives 2 and 3. Based on current data, a smaller proportion of bucks harvested would be expected to test positive for CWD, as the male age structure in the herd would be younger.

Composition Alternative #2

25-30 bucks:100 does

Given that under current antlered license numbers both the modeled and observed data in D-4 indicate that the current sex ratio is above this objective, it could be assumed that buck hunting opportunities wouldn't change dramatically from the status quo. This alternative would provide an intermediate level of buck numbers in the field, with a moderate number of older, large-antlered animals. Hunter numbers would be similar to current levels.

Composition Alternative #3

35-40 bucks:100 does

This alternative represents the highest buck:doe ratio of the three alternatives, with more older, large-antlered bucks than either of the other 2 options. While post-hunt 2006 modeled and previously observed ratios indicate the DAU sex ratio is near the lower end of this objective, it is probable that antlered license numbers would need to be reduced to maintain this proportion of bucks in the population. This alternative represents the option that would provide the largest-antlered, most mature bucks. Based

on current knowledge, this alternative could result in a higher proportion of bucks testing positive for CWD. With reductions in buck licenses, hunters could expect to see more bucks and fewer hunters while afield.

PREFERRED ALTERNATIVE

Population Objective

The CDOW recommended population objective alternative is Alternative # 3 which calls for increasing the herd to 10,000-12,000 deer. This represents approximately a 55% increase over the current herd size and previous objective. This recommendation is supported by the large majority of public comments as well as staff input.

This herd was purposefully decreased from 2001-2005 in an attempt to manage CWD. Since density-reduction management efforts have not been successful at impacting prevalence, public sentiment is strong that the herd should be allowed to increase. This increase will largely be accomplished by elimination/reduction of antlerless hunting. Most existing doe seasons will be removed, leaving hunting opportunities in D-4 essentially only for antlered deer until the population has neared the new objective. There may be some increase in agricultural damage under this new objective, although similar high deer densities in the 1990s didn't account for many damage claims. A 55% increase in deer numbers may contribute to more deer/vehicle collisions and non-agricultural forage conflicts.

Composition Objective

The CDOW recommended herd composition sex ratio is Alternative #2; 25-30 bucks:100 does. The previous objective in D-4 was 10-35 so this new objective falls within its upper range, but further refines the direction of management. This ratio will provide a level of hunting opportunity and buck maturity similar to current levels. Antlered hunting will continue to provide high levels of opportunity where preference points will not be needed to draw a buck license. This ratio should provide a balance between desires expressed by hunters to see mature bucks, but still hunt annually, while also stabilizing the proportion of older age-class males in the population. Based on information about CWD prevalence rates in mature male deer, this intermediate ratio of 25-30 bucks:100 does is in keeping with disease management goals.

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APPENDIX A

Public questionnaire used jointly for E-4 and D-4 DAU process



OPPORTUNITY FOR PUBLIC COMMENT

ON DEER and ELK MANAGEMENT

In Data Analysis Units E-4 and D-4

(Deer and Elk Game Management Units 7, 8, 9, 19 and 191- **Red Feather/Poudre Canyon**)

Dear Interested Citizen:

Deer and elk herds in Colorado are managed at the Data Analysis Unit (DAU) level. The management of each herd is guided by a herd specific management plan called a DAU plan. DAU plans describe herd population and management histories, population objectives and management strategies for a 10 year period. The DAU planning process is the (CDOW) method for incorporating the concerns and desires of the public with the biological capabilities of a specific elk herd. Public input is, therefore, a very important part of the DAU planning process.

Wildlife managers have begun the process of updating both the deer and elk management plans for the Red Feather/ Poudre Canyon area (GMUs 7, 8, 9, 19 and 191). The CDOW is seeking your input on the future management of this herd. The information you provide will help the CDOW develop objectives and management strategies both species of big game in northern Larimer County.

Please complete the following survey and return it to:

COLORADO DIVISION OF WILDLIFE

Attn: Mark Vieira

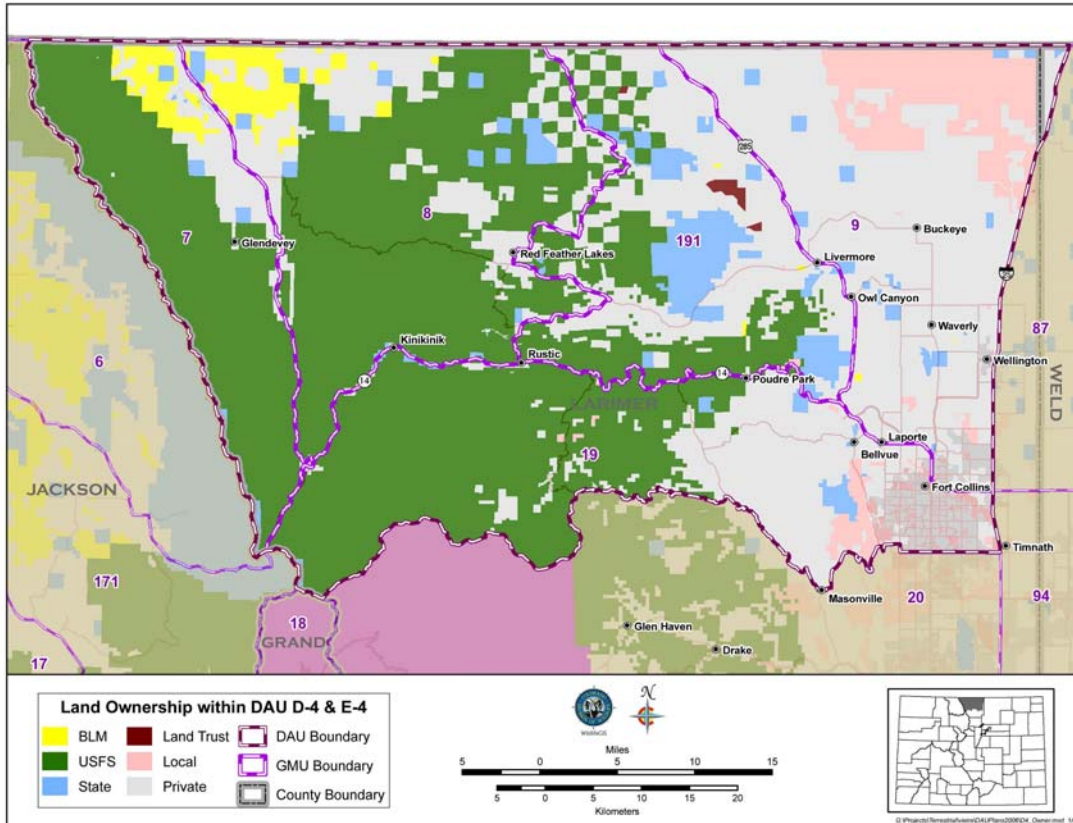
317 W. Prospect

Fort Collins, CO 80526

**Surveys must be received by the
CDOW by March 1, 2007**

Both the Red Feather/ Poudre Canyon Elk and Deer Data Analysis Units (DAU E-4 for elk and DAU D-4 for deer) consists of Game Management Units (GMUs) 7, 8, 9, 19 and 191. This area is bounded by the Larimer County/Jackson County line on the west, Interstate 25 on the east, and Wyoming to the north. This area includes the northern portion of Larimer County, with Rocky Mountain National Park as the southern boundary (Figure 1).

Figure 1: Deer DAU D-4 and Elk DAU E-4.



The Colorado Division of Wildlife manages these deer and elk herds to provide the public with hunting and viewing opportunities while minimizing conflicts and habitat damage. Often in order to do this, a balance is needed in both the total number of animals and the proportion of males (bulls and bucks) in the herd. Both management plans (DAU plans) will therefore, define 1) a population objective and 2) a male to female ratio objective (bull:cow and buck:doe-- see below).

Population Objectives: The Division strives to manage big game populations within both the biological and social carrying capacity of the herd. The biological carrying capacity is the number of animals that can be supported by the available habitat. The social carrying capacity is the number that will be tolerated by the people who are impacted by the herd. The E-4 elk herd is currently right at the previous long-term objective. When elk populations are controlled at levels below both the biological and social carrying capacity, people enjoy viewing, photographing and hunting elk while elk/human conflicts are minimized. As the number of elk in an area increases, conflicts between elk and people arise due to, auto/animal collisions, impacts to gardens or yards, damage to agriculture, etc. Many of these issues are similar with deer as well. From 2000-2005

D-4 deer numbers were managed towards a reduced objective as a chronic wasting disease (CWD) management tactic. That population reduction didn't have the desired effect of reducing prevalence and therefore a new population objective is needed.

Question 1:

Would you like the number of **elk** in GMUs 7, 8, 9, 19 and 191 to:

_____ **Increase**

_____ **Stay the same**

_____ **Decrease**

_____ **Don't Know**

Why?

Would you like the number of **deer** in GMUs 7, 8, 9, 19 and 191 to:

_____ **Increase**

_____ **Stay the same**

_____ **Decrease**

_____ **Don't Know**

Why?

Male:Female Ratio Objective: Elk herds can be managed to maximize the bull hunting opportunity (which creates higher hunter numbers) or to maximize the maturity of bulls available for hunting (typically less hunters afield), or some compromise between the two. If the herd is managed to maximize the quantity of hunting opportunity, more bull hunting licenses are made available and bull hunters will be able to hunt more frequently and probably every year. However, this results in fewer total bulls in the herd (lower bull:cow ratio) as well as fewer large/mature bulls. If a herd is managed to maximize the mature, larger-antlered bulls, fewer bull licenses are issued in order to increase the number of bulls in the population (higher bull:cow ratio). As a result, the size of bulls harvested will be larger, but the frequency that hunters are able to hunt bulls decreases. Therefore a trade-off exists between the number of licenses (amount of opportunity) and the size and maturity of bulls available for hunters. Currently, E-4 is a limited license unit (with significant left-over licenses) and is managed for a lower bull:cow ratio and maximum bull hunter opportunity.

Question 2:

For the purposes of elk hunting, should GMUs 7, 8, 9, 19 and 191 be managed for:

- _____ Increased **quality** of hunting opportunity (higher bull to cow ratio, fewer hunters in the field, but more difficult to draw a bull license)
- _____ Maximum **quantity** of hunting opportunity (lower bull to cow ratio, more hunters in the field, and easy to draw bull licenses)
- _____ Status Quo (current management which focuses on maximum opportunity)

Similar trade-offs between hunter opportunity and numbers of mature bucks exist in D-4. The additional component that should be considered in deer, however, is the fact that older, mature male deer have been found to have a significantly higher prevalence of chronic wasting disease (CWD- a fatal neurological disease) than younger bucks or females. Lower buck:doe ratios (or less mature bucks) could reduce CWD prevalence.

For the purposes of deer hunting, should GMUs 7, 8, 9, 19 and 191 be managed for:

- _____ Increased **quality** of hunting opportunity (higher buck:doe ratios,)
- _____ Maximum **quantity** of hunting opportunity (lower buck:doe ratios)
- _____ Status Quo (current level which focuses on maximum opportunity and lower buck:doe ratios for disease control)

Question 3:

Do you hunt deer in D-4?	Yes	No
Do you hunt elk in E-4?	Yes	No
Do you hunt both deer & elk in E-4/D-4?	Yes	No
Have you hunted elk and/or deer in the last 5 years?	Yes	No

Question 4:

Where do you live (circle one from the seven options below)?

Fort Collins area	Greeley/Windsor area	Livermore	Laporte/Bellvue
Other location in GMUs 7, 8, 9, 19 or 191		Outside GMUs 7, 8, 9, 19 or 191	
Outside Colorado			

Please provide additional comments on the future management of DAUs E4 and/or D4 below.

APPENDIX B- Summary of public responses to survey

DEER POPN
 Would you like the number of **deer** in GMUs 7, 8, 9, 19 and 191 to:
 Decrease n=13 (3%)
 Don't know n=43 (10%)
 Increase n=292 (69%)
 Stay the same n=77 (18%)

DEER RATIO
 For the purposes of **deer** hunting, should GMUs 7, 8, 9, 19 and 191 be managed for:

 Increased **quality** of hunting opportunity (higher buck:doe ratios,) n=176 (43%)
 Maximum **quantity** of hunting opportunity (lower buck:doe ratios) n=68 (17%)
 Status Quo (current level which focuses on maximum opportunity and lower buck:doe ratios for disease control) n=161 (40%)

Do you hunt in:	Where do you live?	
251 out of 435 hunt D4	n=137 Fort Collins area	31%
348 out of 435 hunt E4	n= 46 Greeley/Windsor	11%
237 out of 435 hunt both for deer and elk	n=17 Laporte/Bellvue	4%
	n=21 Livermore	5%
417 out of 435 hunted in the last 5 years	n=128 other location outside DAU	29%
	n=78 outside Colorado	18%

APPENDIX C- Outside agency and public comments to draft D-4 DAU plan

Public comments-

I vote for option 3 for herd objective (largest populations), and don't have much preference on sex ratios.