WET MOUNTAIN
DEER MANAGEMENT PLAN EXTENSION

DATA ANALYSIS UNIT D-34

GAME MANAGEMENT UNITS
69, 84, 86, 691, 861

NOVEMBER 2020

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Approved November 19, 2020 by the Colorado Parks and Wildlife Commission

EXECUTIVE SUMMARY

Wet Mountain Deer Herd (DAU D-34)   GMUs: 69, 84, 86, 691 & 861

Posthunt Population: Previous Objective: 16,500-17,500 deer; Estimate for 2019: 11,400. **Preferred Alternative: Maintain population objective of 16,500-17,500**

Posthunt Sex Ratio (Bucks:100 Does): Previous Objective: 20-25. Posthunt 2019 observed: 31; modeled: 28. **Preferred Alternative: Status Quo 20-25**
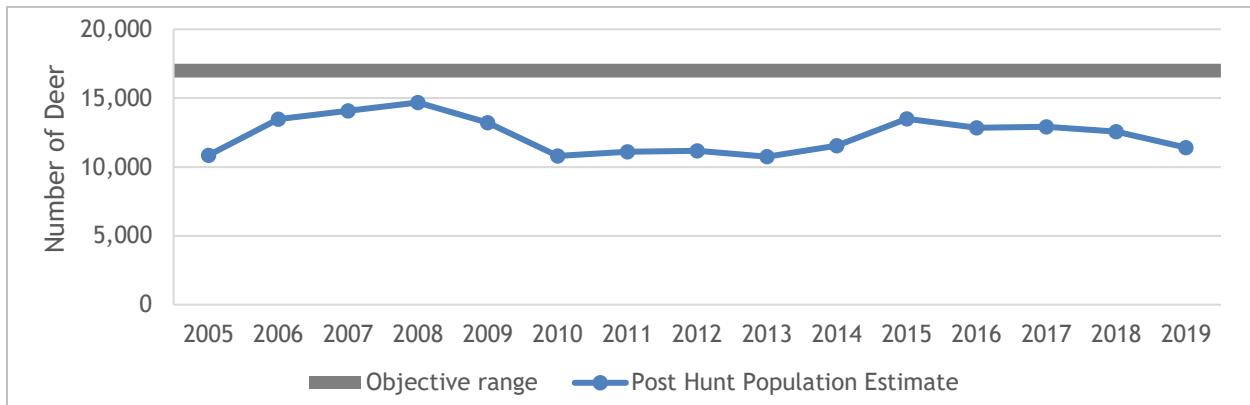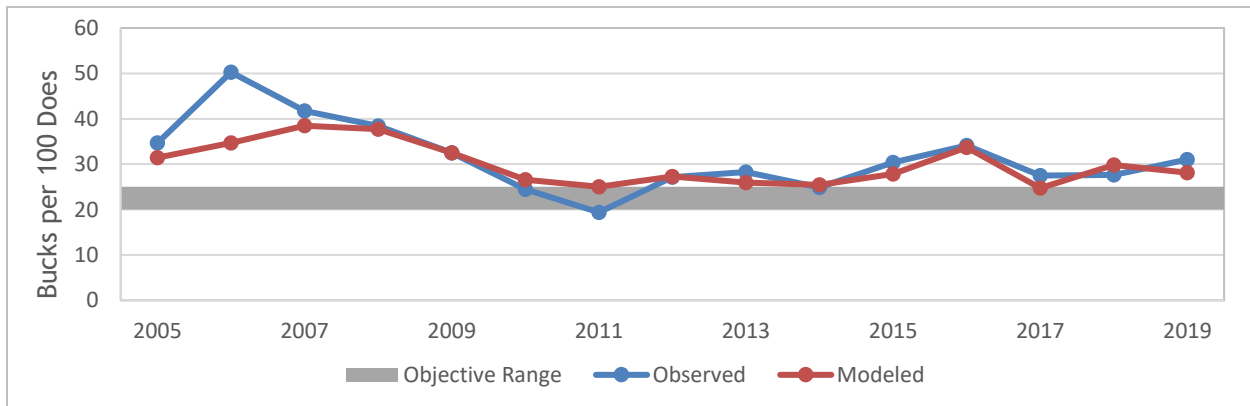

Figure 1. D-34 Post-hunt population estimate since 2005

Figure 2. D-34 observed and modeled post-hunt bucks:100 does since 2005.
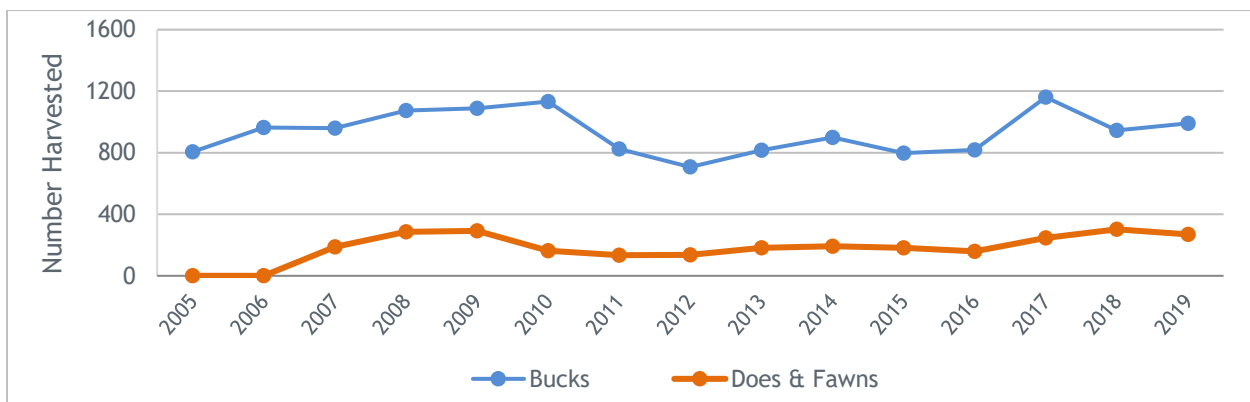

Figure 3. D-34 harvest since 2005.

D-34 Background

The Wet Mountain (D-34) deer herd is an important resource for southeastern Colorado because it offers a significant deer population in close proximity to the towns of Pueblo and Colorado Springs. The management area has significant amounts of public lands to hunt and view deer.

The first population objective, adopted in 1987, for D-34 was 22,000 deer. At that time, the estimated post-season population was close to 15,000 deer. This objective was then revised in 2005 to our current objective of 16,500-17,500 deer with a sex ratio objective of 20-25 bucks per 100 does. Prior to 2005, we had limited funding for inventory flights in D-34, but since then, CPW has made it a priority to consistently collect data in D-34 and we now have a more defensible population model for the management area. The 2019 post season population estimate was 11,400 deer with a modeled estimate of 28 bucks per 100 does.

In the winter of 2016/2017, a nine-year research project was initiated in D-34, and the Cripple Creek (D-16) deer herd to the north, to examine the mule deer population response to changes in cougar density. In 2017, the first sample of cougars, does, and fawns were captured and fitted with GPS radio collars for this study. This project will provide a better understanding of how cougar harvest could be used as a deer management tool. In addition, it will provide valuable information on deer body condition, deer movements and neonate fawn mortality, which can better refine our population model and objectives in the future.

D-34 Significant Issues:

- Ongoing deer/cougar research study
- Housing development and habitat fragmentation
- Conversion of farmland and rangeland to marijuana cultivation
- Urban deer issues

CPW Recommendation to the Wildlife Commission

Population and Sex Ratio Objectives: The CPW recommendation is to extend the current population objective of 16,500-17,500 deer and a sex ratio of 20-25 bucks per 100 does for the life of the plan. This will allow CPW to evaluate the results of the deer/cougar study before suggesting management changes.

Strategies for Addressing Management Issues and Achieving Objectives

CPW has limited ability to affect several of the management issues identified in D-34, including housing development and conversion of farmland and rangeland. However, we will seek opportunities to conserve land through fee title purchase of conservation easements. We will seek opportunities, working with land management agencies and private landowners, to improve habitat. For urban deer issues, local wildlife managers are working with each community to establish methodologies that will attempt to alleviate residential concerns.

Annually, we will evaluate where the D-34 deer herd is relative to the population and sex ratio objectives set forth in this plan. We will set hunting licenses numbers with the goal of moving the population towards the objectives.

Wet Mountain Deer Herd Management Plan

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INTRODUCTION AND PURPOSE

Colorado Parks and Wildlife (CPW) manages big game for the use, benefit, and enjoyment of the people of the state in accordance with the CPW's Strategic Plan (2010-2020). Deer management is also determined by mandates from the Colorado Parks and Wildlife Commission (PWC) and the Colorado Legislature. Colorado's wildlife species require careful and increasingly intensive management to accommodate the many and varied public demands and growing human impacts. The CPW uses a "Management by Objective" approach to manage the state's big game populations (Figure 4).

COLORADO'S BIG GAME MANAGEMENT
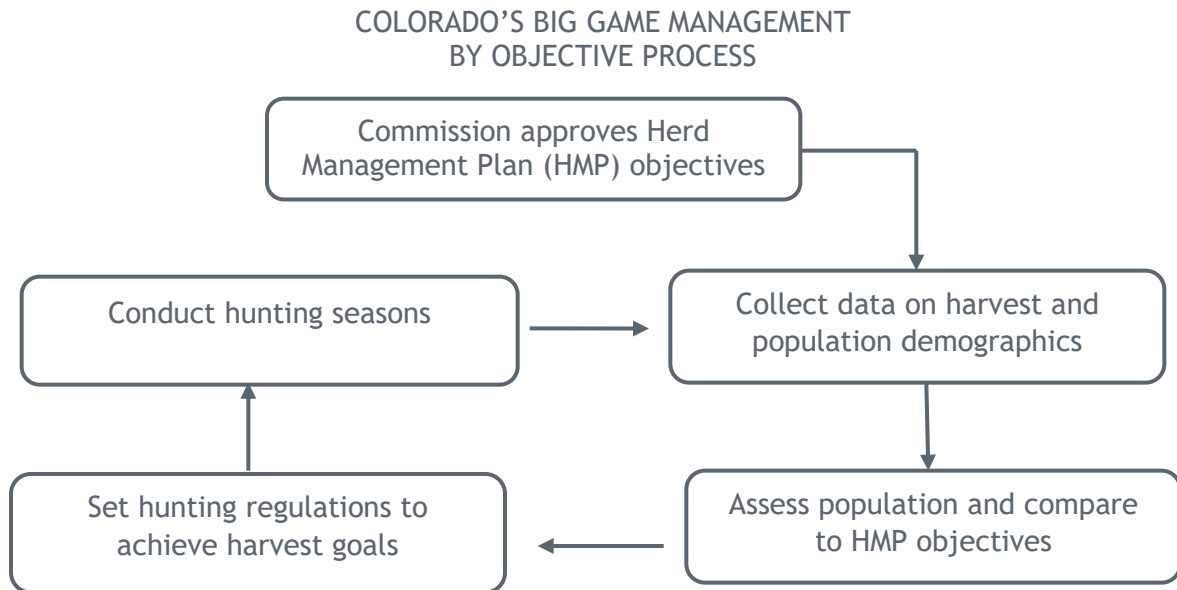BY OBJECTIVE PROCESS

Figure 4. Management by Objective process used by Colorado Parks and Wildlife to manage big game populations by Data Analysis Unit (DAU).

With the Management by Objective approach, big game populations are managed to achieve population objectives established for a Data Analysis Unit (DAU). A DAU is the geographic area that includes the year-round range of a big game herd. A DAU includes the area where most animals in a herd are born, live and die. DAU boundaries are delineated to minimize interchange of animals between adjacent herds. A DAU may be divided into several Game Management Units (GMUs) to distribute hunters and harvest.

Management decisions within a DAU are based on a Herd Management Plan (HMP). The primary purpose of a Herd Management Plan is to establish population and sex ratio (i.e., the number of males per 100 females) objectives for the herd. The HMP also describes the strategies and techniques that will be used to reach these objectives. During the herd management planning process, public input is solicited and collected through questionnaires, public meetings, and comments to the CPW staff and the PWC. The intentions of the CPW are integrated with the concerns and ideas of various stakeholders including the State Land Board (SLB), the Bureau of Land Management (BLM), city and county governments, hunters, guides and outfitters, private landowners, local chambers of commerce, and the public. In preparing a HMP, agency personnel attempt to balance the biological capabilities of the herd and its

habitat with the public's demand for wildlife recreational opportunities. Herd Management Plans are approved by the PWC and are reviewed and updated approximately every 10 years.

The HMP serves as the basis for the annual herd management cycle. In this cycle, the size and composition of the herd is assessed and compared to the objectives defined in the HMP and removal goals are set. Based on these goals, specific removal strategies are made for the coming year to either maintain the population or move it towards the established objectives (e.g., license numbers and allocation are set, translocation plans are made). Hunting seasons and/or translocations are then conducted and evaluated. The annual management cycle then begins again (Figure 4).

The purpose of this HMP is to set population and sex ratio objectives for the Wet Mountain deer herd. This HMP will be in place from 2020-2030 with the expectation that it will be reviewed and updated in 2030.

DESCRIPTION OF THE WET MOUNTAIN DEER HERD D-34

Location

The Wet Mountain DAU is located in south central Colorado and lies within portions of Fremont, Custer, Huerfano and Pueblo Counties (Figure 5). It consists of Game Management Units (GMU's) 69, 84, 86, 691 and 861. In 1998, GMU 69 was split down Grape Creek to create GMU 691, which increased the number of GMU's in the DAU while the total area remained the same. The area is bounded on the north by US Highway 50; on the east by Interstate 25; on the south by Colorado 69, Huerfano County Road #555 (Muddy Creek Road and Huerfano County Roads #570 and #572 (Pass Creek Road); and on the west by the Sangre de Cristo Divide.
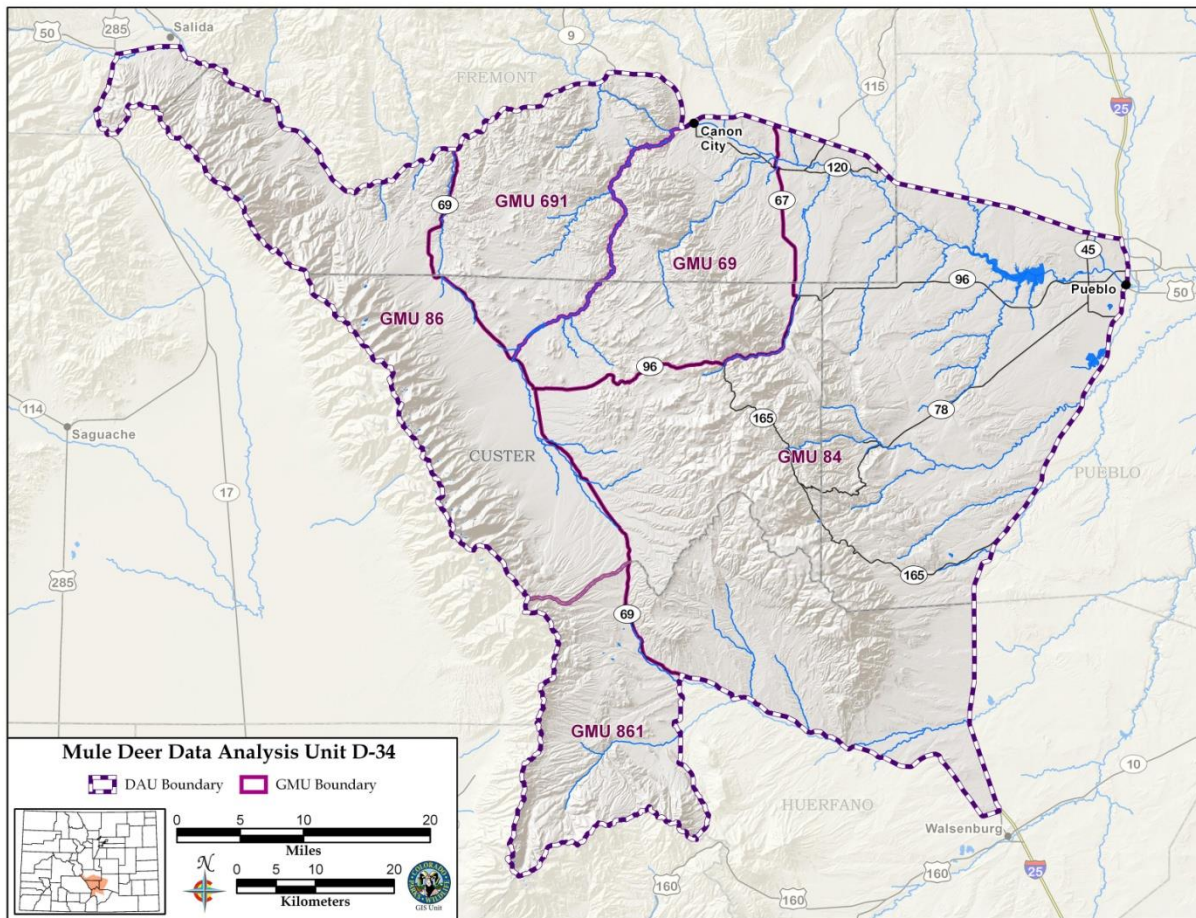
Figure 5. Wet Mountain Mule Deer DAU D-34

Physiography and Vegetation

D-34 covers 2,524 mi^2 ranging in elevation from 14,345 ft at the summit of Mount Blanca to about 4,640 ft where the Arkansas River flows under Interstate 25. Topography ranges from flat short-grass prairie to rolling hills, steep foothills with cliffs, mountain and alpine meadows, and steep ridges. Predominate biotic communities include: alpine tundra, sub-alpine conifer, montane conifer, montane shrub, mountain meadow and plains grassland. Two mountain ranges, the Sangre de Cristo and Wet Mountains, dominate the area. Higher elevations may receive >20 inches of moisture while lower elevations may receive < 6 inches, with precipitation falling mainly as winter snow and spring and summer rains. Major drainages in D-34 include: Arkansas River, Howard Creek, Cherry Creek, Hayden Creek, Lake Creek, Texas Creek, Grape Creek, Hardscrabble Creek, Oak Creek and Newlin Creek in Fremont County; Brush Creek, Taylor Creek, Alvarado Creek, Venable Creek, Horn Creek, Grape Creek, Hardscrabble Creek, Antelope Creek, Froze Creek, St. Charles River, Beaver Creek and Ophir Creek in Custer County; Muddy Creek, Manzanares Creek, May Creek, Williams Creek, Turkey Creek, Apache Creek and the Huerfano River in Huerfano County; and Little Graneros Creek, Greenhorn Creek, Cold Springs Creek, Muddy Creek, St. Charles River and Red Creek in Pueblo County.

Land Status

More than half of the 2,524 mi^2 DAU is in private ownership (62% or 1,576 mi^2). The largest public land managers are the U. S. Forest Service (23% or 586 mi^2) followed by the Bureau of Land Management (10% or 247 mi^2). CPW manages 3% (65 mi^2) of the area including 22 mi^2 of State Trust Lands that are leased for hunting opportunities. CPW also manages Lake Pueblo State Park, Pueblo Reservoir, Middle Taylor Creek, DeWeese Reservoir, Lake Beckwith, and Huerfano State Wildlife Areas. The State Land Board holds an additional 2% (42 mi^2) of the area that is not open to public hunters. Overall, approximately 80% (2,014 mi^2) of the area is deer habitat, of which 900 mi^2 is open for public hunting (Figure 6).
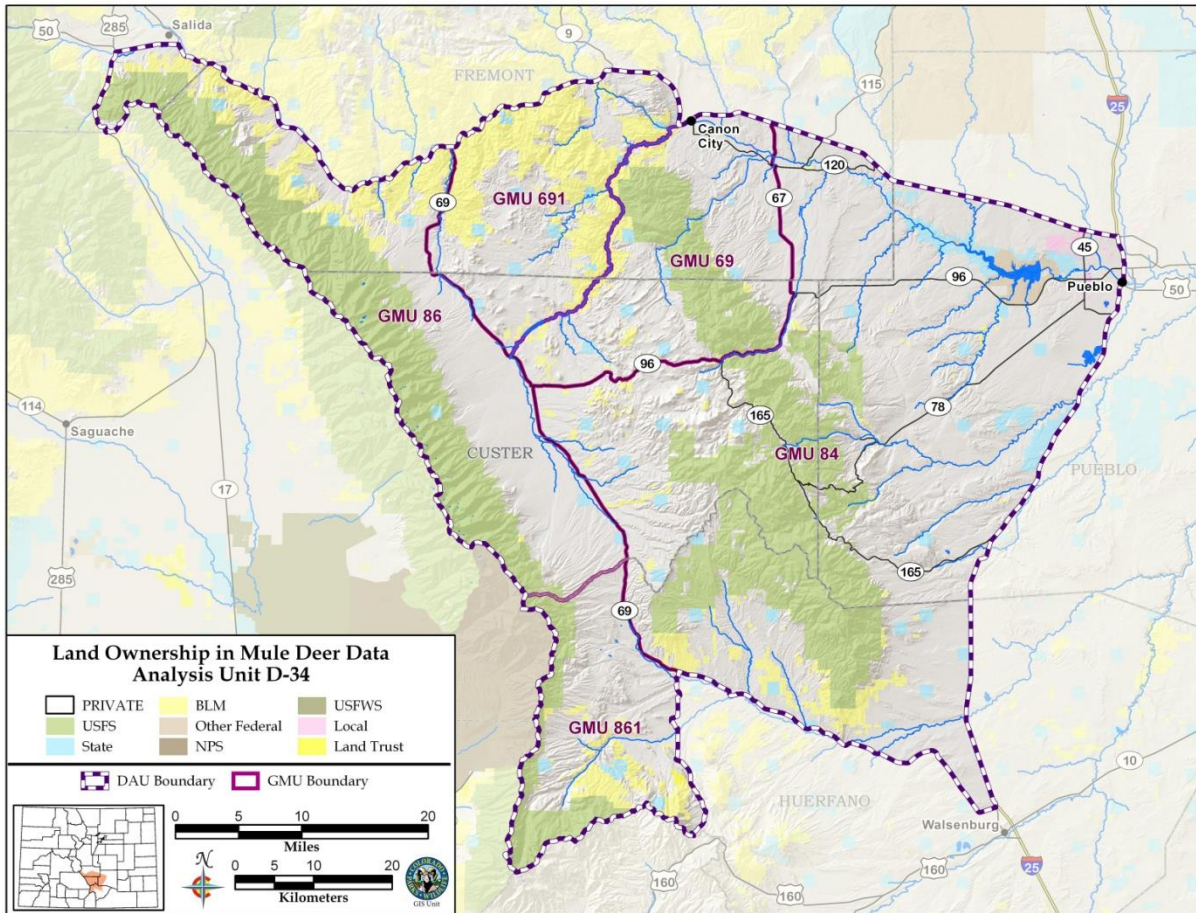

Figure 6. Land Ownership in D-34

Land Use

Agriculture is the dominate land use in D-34 with livestock grazing, primarily cattle and horses, occurring throughout the area on native rangeland. Irrigated hay and alfalfa occurs along many rivers with most row crops confined to small farms. Custer County is in the top ten fastest growing counties in the nation. Pueblo West, Colorado City, Canon City, Beulah, Rye, Wetmore and Florence also continue to expand, and large ranches are being developed into 40 acre or smaller "ranchettes". Habitat loss to development and a decline in habitat quality will be the major concerns for the future of D-34.

Deer Distribution

During the summer and early fall, deer can generally be found in all suitable habitat in the area including the grassland\shrub and pinion\juniper areas of the foothills through all vegetative zones up to the alpine tundra (Figure 7). Another distinct population of deer spends most of the year in the riparian and agricultural areas at lower elevations throughout most of the drainages described above. The areas with the highest deer densities are found in the northwest portions of D-34. Deer movement to winter range is dictated by weather with snow and limited forage availability driving the deer to winter range (Figure 8). For those animals that summer in the mountainous part of D-34, the migration moves east to the lower elevation winter ranges. Many areas in D-34 have little distinction between overall range and winter range, with the deer in the agricultural and riparian areas wintering in the same areas they occupied during the rest of the year. South facing slopes will often be free from accumulated snow, and influence deer movement into many areas that are not necessarily classified as winter range.
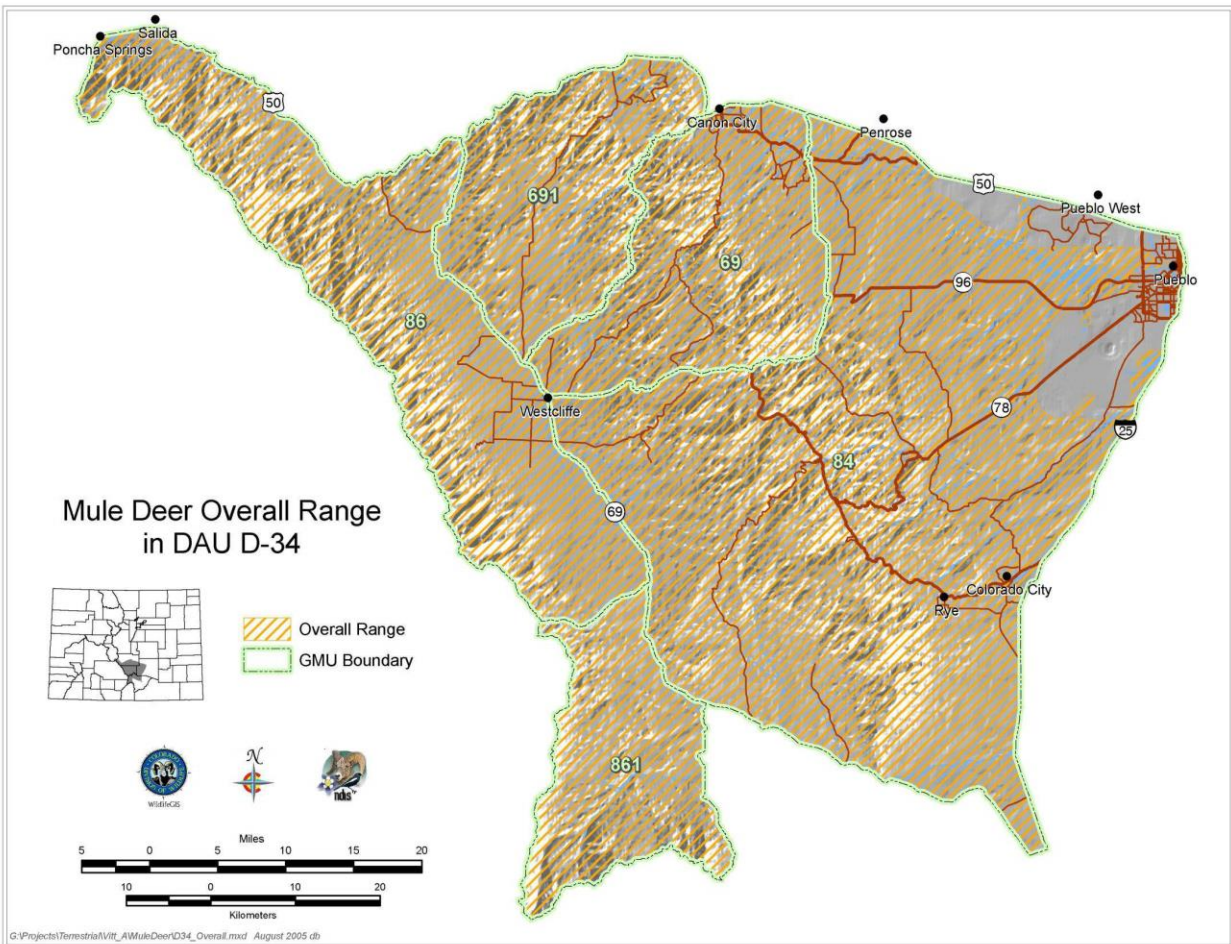

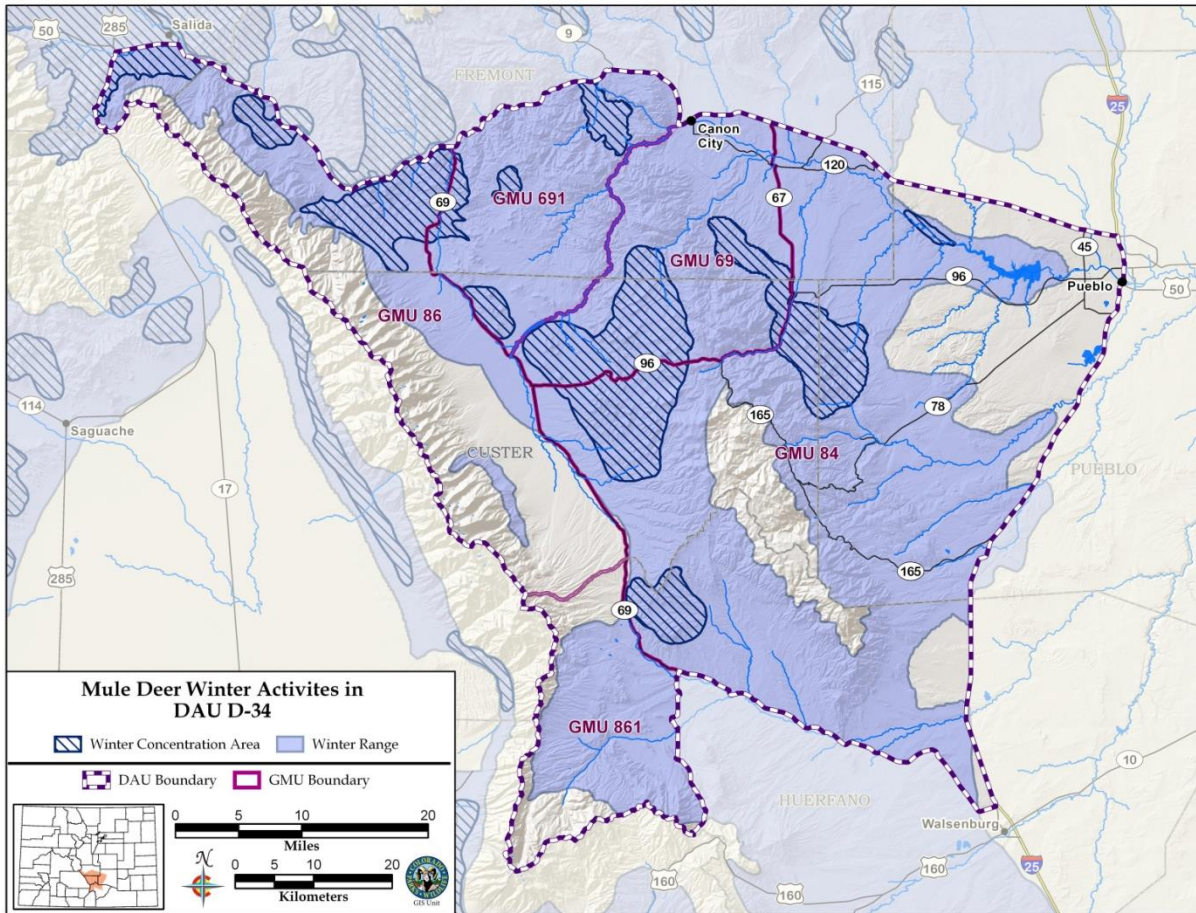Figure 7. Mule Deer Overall Range in D-34

Figure 8. Mule Deer Winter Range in D-34

HERD MANAGEMENT

The Wet Mountain DAU is one of the better deer management areas in the south-central part of the state. Generally mild winters and available year-round food supplies have allowed the deer population to remain in optimum habitat during the winter months. Management of the deer herd has included limited doe licenses with Private Land Only (PLO) doe licenses being used in all GMU's to reduce deer conflicts in the agricultural areas. Modifications in statewide season structure and the limited doe and PLO doe hunts have been the only management changes instituted within D-34 since the last HMP revision.

Post-hunt population size is derived with a spreadsheet population model, which incorporates harvest and age & sex ratio data collected annually from post-hunt aerial surveys for most DAUs in the state (White and Lubow 2002). For mule deer models, we also incorporate doe and fawn survival estimates that come from five Intensive Monitoring Areas. Biologists use the modeled predictions to set harvest goals that are compatible with herd management objectives. These may change as new information becomes available.

From 1988-2004, the population goal was 22,000 deer. In 2005, the population objective was lowered to 16,500-17,500 deer. The population is still below the current objective, with an estimate of approximately 11,400 deer in 2019 (post-hunt). Post-hunt population estimates have been below objective for the past 15 years since the lower objective was approved. Since 2005, the post-hunt population has ranged from a low of about 10,800 deer in 2013 to a high in 2015 of about 13,500 deer.

Post-hunt Herd Composition

We use aerial surveys, conducted in December or January, to collect post-hunt herd composition (sex and age ratio) data. The results of aerial surveys are subject to variability due to weather, snow cover, sample size and observers. Between 1992 and 2001, surveys were conducted in D-34 in alternate years. Starting in 2005, aerial surveys were conducted annually. Buck to doe ratios have ranged from 19 bucks per 100 does in 2011 to a high of 50 bucks per 100 does in 2006 (Figure 9). Since 2005, the fawn to doe ratio has ranged from a low of 38 fawns per 100 does in 2016 to 94 fawns per 100 does in 2005 (Figure 10).
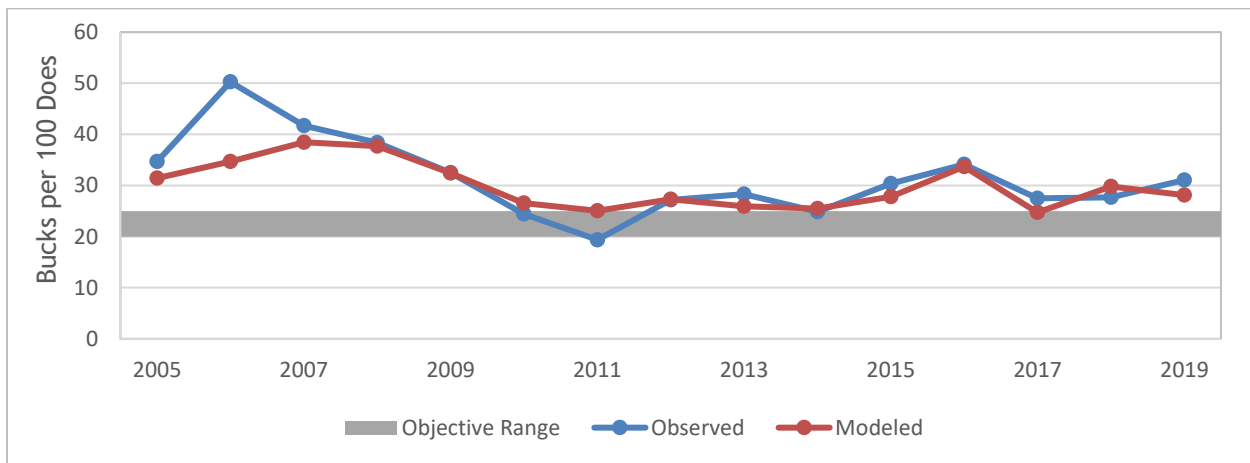

Figure 9. D-34 observed and modeled post-hunt bucks:100 does since 2005.
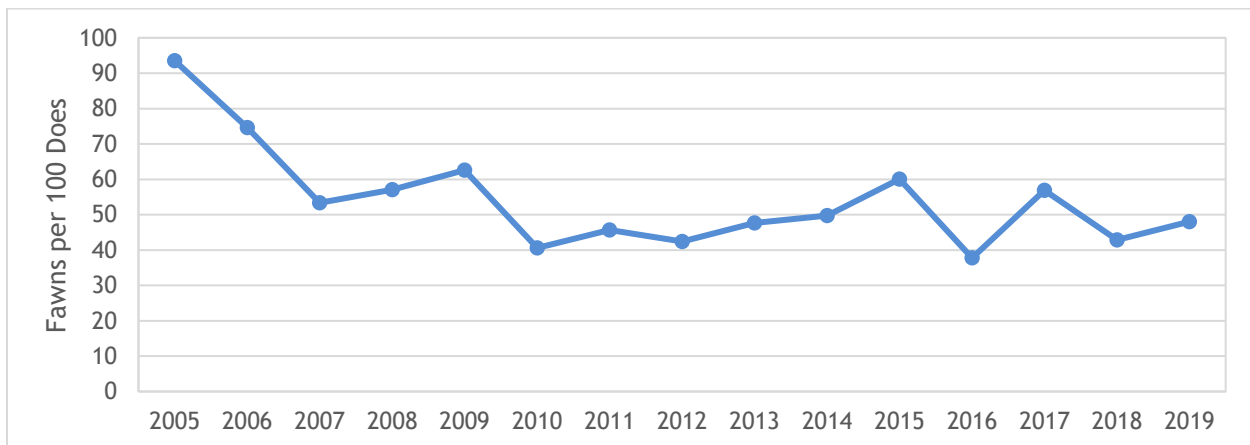

Figure 10. D-34 observed post-hunt fawn:100 does since 2005.

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Hunter harvest can be affected by hunter pressure, the availability of antlerless permits, season structure, weather, hunting access and the deer population size. Harvest from 2005 to 2019 ranged from a low of 806 deer in 2005 to a high of 1408 deer in 2017 and has averaged about 1,114 deer since 2005 (Figure 11). The yearly success rate for all manners of take within D-34 averaged 44% from 2005 to 2019, with a low of 42% success in 2010 and high of 69% success in 2017 (Figure 12). The number of hunters from 2005 to 2019 ranged from a low of 1,920 in 2005 to a high of 3,176 in 2009 with a total average of 2,516 hunters (Figure 13).
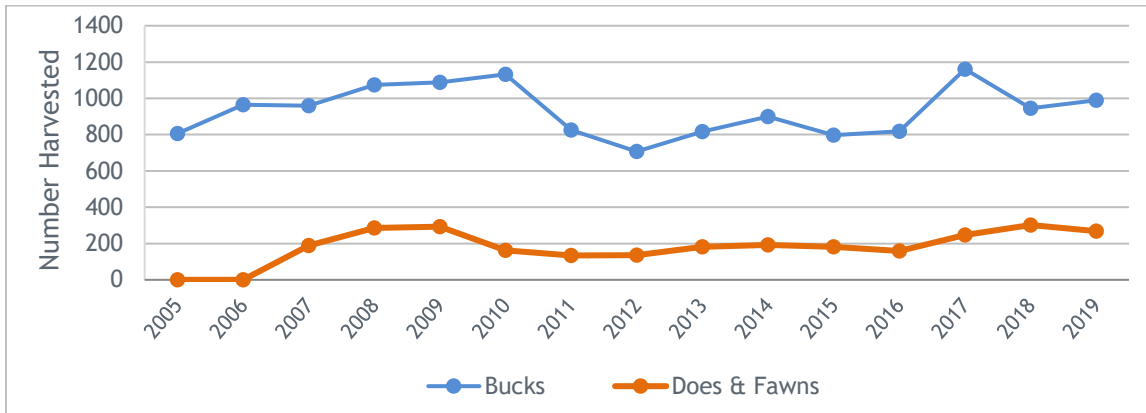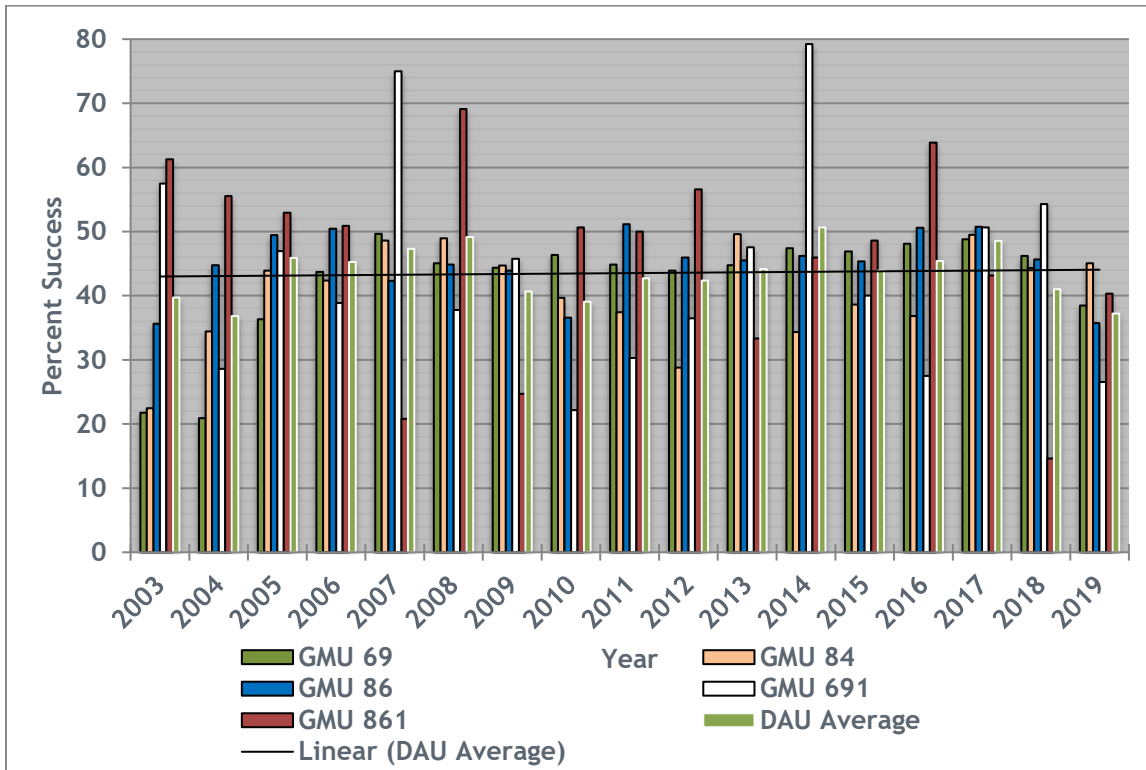

Figure 11. D-34 deer harvest from 2005-2019.

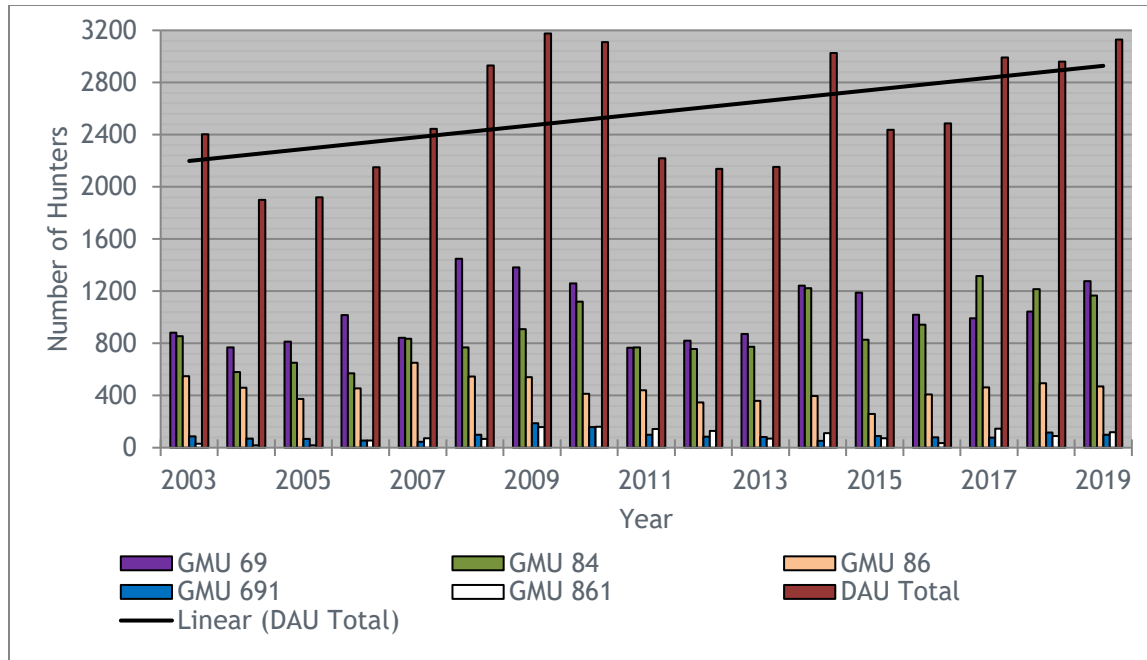Figure 12. Hunter harvest success by GMU from 2003-2019 in D-34.

Figure 13. Number of hunters by GMU from 2003-2019 in D-34.

Current Herd Management Status

The 2019 post-hunt population estimate for D-34 is approximately 11,400 deer, which is below the current objective of 16,500-17,500 deer.

The current sex ratio objective is 20-25 bucks/100 does. Since 2005, the observed number of bucks per 100 does has fluctuated between 19 and 50 bucks/100 does with an average of 32 bucks/100 does. The post-hunt 2019 observed ratio was 31 bucks/100 does. The average modeled buck/doe ratio between 2005 and 2019 was 31 bucks/100 does.

Current Management Problems

Prior to 2005, very little aerial inventory data had been collected for this DAU. However, since we started collecting data annually in 2005, we have continued to refine the population model and estimates for D-34.

Natural mortality can play a large role in the herd size, but there is little information on its influence in D-34. The lack of information on natural mortality in this area has made modeling the population difficult. For modeling purposes fawn survival data from the survival study north of the DAU (D-16) have been used. Habitat conditions and quality are similar between D-16 and D-34 so we expect survival estimates to be similar.

Answers to these questions will be addressed during the cougar study that was initiated during the winter of 2016-2017. This study will examine the relationship of deer survival to cougar population density. By gathering deer survival information, additional data will be added to the population model which should increase the model's precision.

Chronic Wasting Disease

Chronic wasting disease (CWD) was first detected in the Wet Mountain deer herd in 2005 when a road killed buck tested positive for the disease. Only one other animal, a deer from Canon City in 2007, tested positive until mandatory sampling in 2019.

For the 2019 hunting season, all licensed rifle hunters were required to submit their harvested animals for CWD sampling, resulting in the testing of 348 adult bucks. This sampling effort demonstrated that CWD prevalence within the adult male segment of the population is less than 1% (95% Confidence Interval 0%-1%), below the 5% prevalence threshold for compulsory management outlined in the Colorado Chronic Wasting Disease Response Plan (CPW 2018). We do not foresee the need to take management actions to control CWD for the life of this plan. However, CPW will require mandatory CWD sampling again in 4 years to monitor changes in prevalence rates.

ISSUES AND STRATEGIES

In the winter of 2016/2017, a nine-year research project on mule deer and cougar was initiated in D-34 and D-16 to the north (Alldredge et al. 2016). The overall goal of the project is to examine the mule deer population response to changes in cougar density and how cougar populations respond to various harvest levels. This project will improve understanding of how cougar harvest could be used to manage predation on deer herds. In 2017, we initiated the project by radio collaring 60 adult does (30 GPS vs. 30 VHF collars). In the spring of 2017, we captured and equipped 60 newborn fawns with GPS collars. Over the course of the nine-year study, we expect to collect: 1) annual adult doe survival rates, 2) annual fawn survival rates, 3) adult doe and fawn movements, 4) pregnancy rates on adult does, 5) body condition measurements of adult does, and 6) cause specific mortality information on both adult does and fawn. All this information is in addition to the annual winter classification to examine both sex and age ratios in D-34. Therefore, we will collect more information on mule deer in D-34 than we have ever had in the past. Given what we expect to learn and not wanting to drastically change our harvest management during the duration of this study, we are proposing to maintain the existing objectives for the next 10-year period while the research is being conducted.

Identified Issues and Concerns

Housing Development – In the last several decades, this DAU has seen a rapid development of housing in areas that were once part of deer ranges. Deer habitat has been sub-divided into ranchettes and natural habitats have been permanently altered or eliminated. In one study, housing development was found to be negatively correlated with fawn:doe ratios (Johnson et al. 2016, Figure 14). Reduced ratios were attributed to direct loss of habitat and effective loss of habitat due to harassment from people and pets.

Colorado is expected to double its human population by 2050. This trend is expected to be one of the main areas of concern for managers, both with trying to maintain mule deer populations and managing deer populations in an increasingly developed landscape.
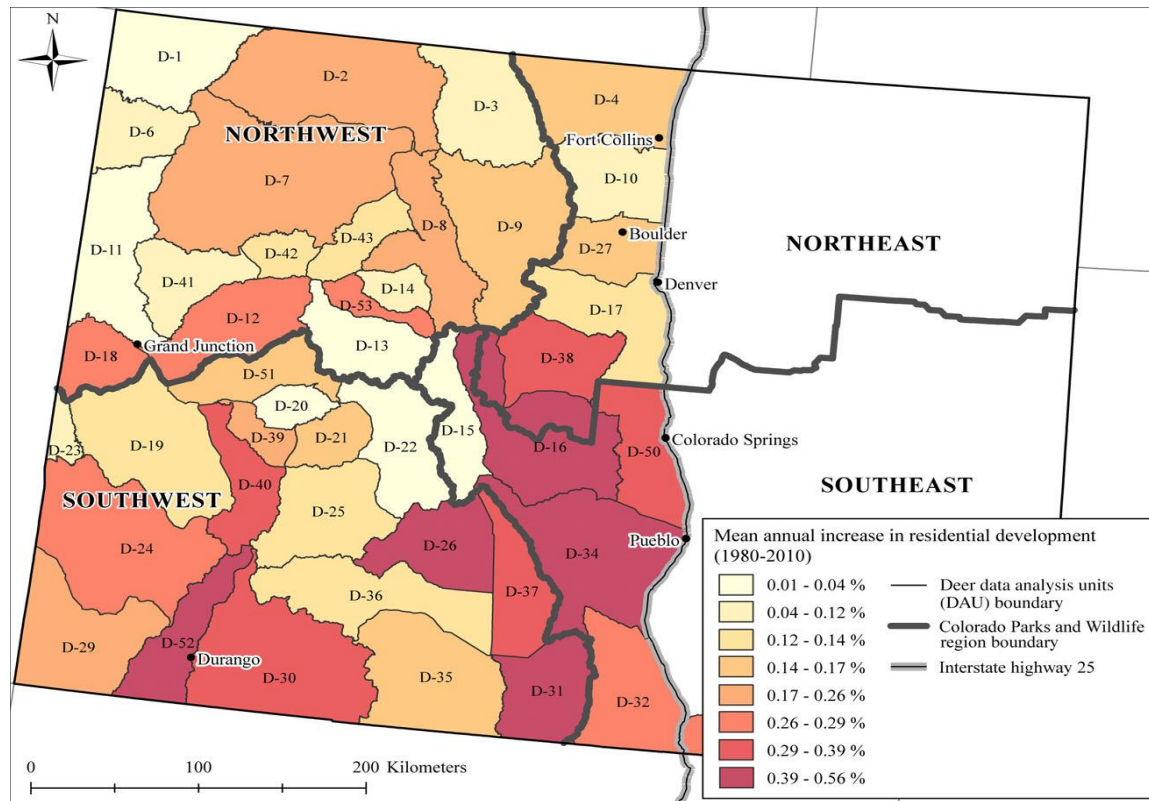
Figure 14. Increase in residential development across deer DAUs in Colorado from 1980-2010 (Johnson et al. 2016).

Conversion of farmland and rangeland to marijuana cultivation - With the legalization of recreational marijuana in Colorado, Pueblo, Huerfano and Custer counties have seen a renewed effort to convert rangeland to marijuana cultivation. Pueblo County, especially along Siloam road, has seen extensive grassland conversion to exclusionary fenced recreational marijuana production and unfenced hemp production.

Additionally, illegal marijuana grows in wilderness settings have increased. In wilderness settings, deer have been poached to feed workers or to reduce deer utilization of the growing crop. Additionally, illegal grows have resulted in water diversion leading to a drying up of water sources prematurely and contamination of the area from utilization of unapproved fertilizers and pesticides.

Urban deer issues – Several communities within D-34 have expressed concern over the increasing population of urban deer. The communities of Rye, Colorado City, Westcliffe, Silvercliffe, Beulah, Canon City and Salida have varying densities of deer within city limits, but have all had multiple complaints. Complaints within each community differ, but include damage to ornamental landscaping, damage to trees and shrubs, loss or damage to family gardens, human/pet safety during the fawning and rut portions of the year, and damage to vehicles from collisions. District Wildlife Managers (DWMs) are working with each community to establish methodologies to help alleviate landowner concerns.

MANGEMENT OBJECTIVES

Historically, we identified a range of alternatives population and sex ratio objectives when updating a HMP. The current herd management plan for D-34 was adopted by the Wildlife Commission in October of 2005 and has exceeded the 10-year planning window that we try to maintain for HMPs. Therefore, this plan is due for an update. However, given the recently initiated cougar/deer research project in D-34, we think it is important to extend the existing objectives for the next 10 years and utilize the wealth of information that we will gain from this project to inform our next HMP revision for D-34.

STRATEGIES FOR ACHIEVING OBJECTIVES

The current deer population size (11,400 deer) is below the current population size objective, while the sex ratio (28 bucks per 100 does) is above the sex ratio objective. We maintain doe harvest in the DAU to manage deer numbers on private lands, which could prevent the population from growing toward objective. However, local managers think doe harvest is necessary to control conflicts. Depending on the results of the deer/cougar research project, we may be able to identify the management actions necessary to move population towards objective. We will evaluate the sex ratio objective annually, and adjust antlered licenses as needed to move the buck/doe ratio toward the objective.

LITERATURE CITED

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Colorado Parks and Wildlife. 2018. Colorado Chronic Wasting Disease Response Plan. Denver, CO. 41 pp.

Johnson, H. E., J. Sushinsky, A. Holland, E. J. Bergman, T. Blazer, J. Garner, and S. E. Reed. 2016. Increases in residential and energy development are associated with reductions in recruitment for a large ungulate. Global Change Biology. 23:578-591.

White. G. C., and B. C. Lubow. 2002 Fitting population models to multiple sources of observed data. Journal of Wildlife Management 66:300-309.

APPENDIX A: SANGRE DE CRISTO HABITAT PARTNERSHIP PROGRAM LETTER OF SUPPORT

October 30, 2017

Allen Vitt
Colorado Parks and Wildlife
600 Reservoir Road
Pueblo, CO 81005

RE: Sangre de Cristo Habitat Partnership Program Comments – DAU D-34

Dear Allen:

One of the initial reasons for creating the Habitat Partnership Program was to provide local landowners and other interests an opportunity to provide input into big game management in their areas. The diverse makeup of local HPP committees (3 livestock growers, Forest Service, BLM, CPW and sportsmen representatives) provide a good cross section of local interests to review DAU proposals and respond accordingly for CPW consideration.

The Sangre de Cristo HPP committee has discussed your presentation and reviewed the draft recommendation for this DAU plan update. The Sangre de Cristo HPP committee offers the following comments for your consideration.
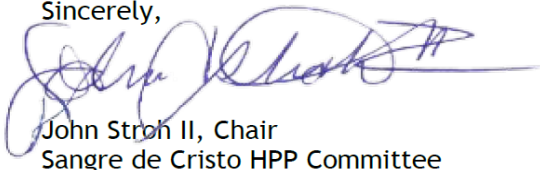
The SDCHPP committee supports the draft alternative to keep the current population objective. We believe this alternative responsibly balances local range and habitat conditions with sportsmen desires and landowner concerns. We have not heard of any concerns about the current population or any desires to increase the local herd size and so we believe the current levels are where they should be. Any issues we have are more likely related to distribution of the herds in the area and not the overall population size.

We have heard your comments that any changes to the current population objectives has the potential to complicate the effects and results of the recently started predator study, which will analyze mule deer population response to predator manipulation. We have taken this into consideration and agree that this is a concern that further solidifies our support of the proposal to keep the current population objective.

The SDCHPP committee also discussed the proposed sex ratio alternative. We believe the current sex ratio is a good balance and provides ample hunting opportunity while also providing for a reasonable number of mature animals for those hunters who want to take a larger buck.

Thank you for the presentation and the opportunity to provide these comments.

Sincerely,

John Stroh II, Chair
Sangre de Cristo HPP Committee