Groundhog Mule Deer Herd Management Plan

Data Analysis Unit D-24
Game Management Units 70, 71, and 711

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Approved by the Colorado Parks and Wildlife Commission

Executive Summary
Groundhog Mule Deer Herd Management Plan
DAU D-24
GMUs 70, 71, and 711

2012 posthunt population estimate: 14,500
1998 posthunt population objective: 34,000
Approved posthunt population objective range: **15,000-19,000**

2012 posthunt sex ratio: 23:100
1998 posthunt sex ratio objective: 25:100
Approved posthunt sex ratio objective range: **23-28:100**

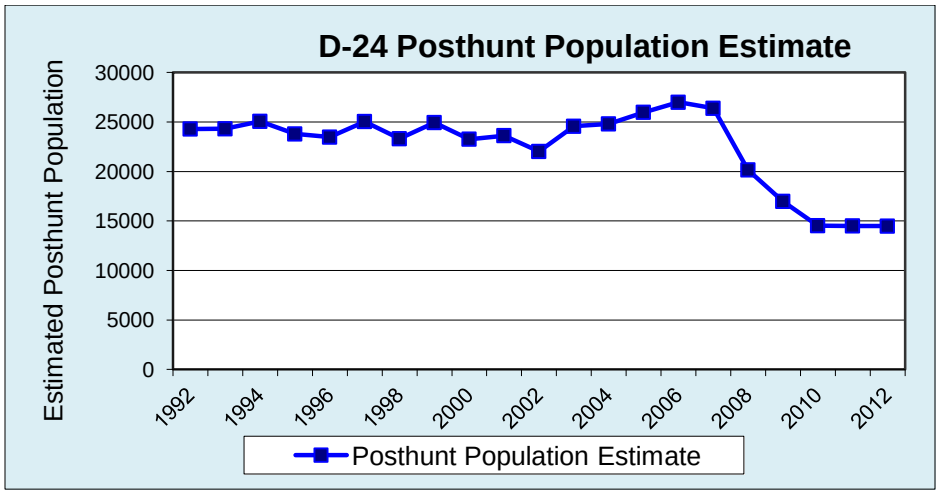

Figure 1: Groundhog Mule Deer Herd posthunt population estimate 1992-2012.

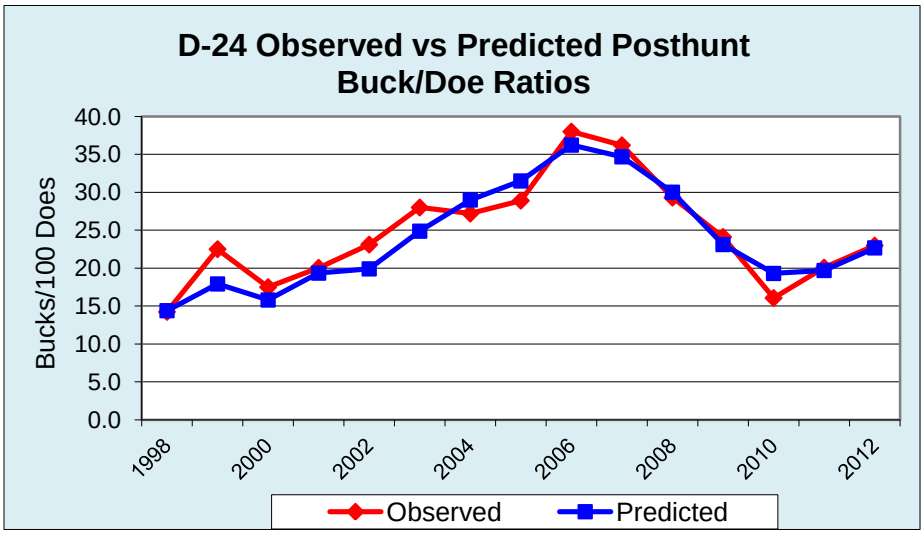

Figure 2: Groundhog Mule Deer Herd observed and modeled sex ratio from 1998-2012.

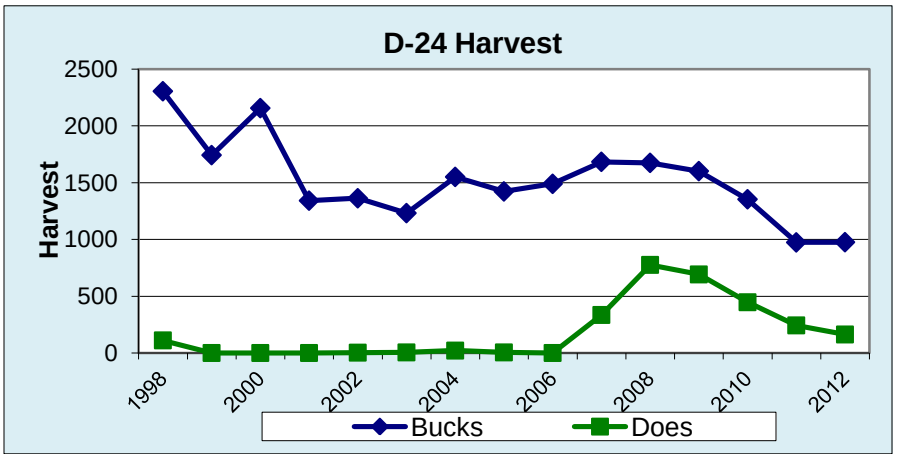

Figure 3: Groundhog Mule Deer Herd buck and antlerless harvest 1998-2012 .

The Groundhog Mule Deer Herd is located in southwest Colorado and includes portions of Dolores, Montezuma, Montrose, and San Miguel Counties. Seventy percent of the 2,852 square miles of the DAU are public lands. It is comprised of Game Management Units 70, 71, and 711.

The herd has been experiencing a decline in the population over the past several decades. In fact the management plan approved in 1998 identified a decreasing population as one of the main issues facing this herd. Only in the past two years has there been indication of the trend leveling.

The most significant issue concerning this herd is the decrease in population. Mule deer populations throughout their range have experienced similar decreases, and the Groundhog herd is no exception with the current estimated population less than half of what was estimated 30 years ago. There hasn't been any factor pinpointed for the decline and it is most likely caused from a combination of reasons related to habitat availability and condition.

The quantity and quality of winter range is restricted and can be considered a limiting factor for population performance. Out of all habitat types required by mule deer in the Groundhog herd winter range is the least protected from development and human use making it the most susceptible to negative impacts and loss. It is also the most impacted by drought.

Management Alternatives:
The following alternatives were explored during the formation of this plan.

Population Objective Alternatives:

1) 9,500-13,500 (decrease in population)
2) 13,500-17,500 (current population size)
3) 17,500-21,500 (increase in population)

Sex ratio Objective Alternatives:

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

Preferred Alternatives

Population

The vast majority of the public who participated in the planning process were concerned about the decrease in the deer population and wanted to see it increase. Letters received from the local HPP committees, Tres Rios BLM office, Dolores Ranger District of the San Juan National Forest, and Southwestern Colorado Livestock Associations preferred to keep the population at its current level or slightly higher. Herd data indicates that the population is at an all time low and may be seeing the start of a recovery with higher recruitment the past two years. Game damage issues from CPW and HPP perspective are low. Based on this information CPW staff recommends a new proposed **population objective of 15,000-19,000** (slight increase in the current population).

Sex Ratio

Based on the public survey and comment letters there was desire to keep the sex ratio at its current level of 25:100 or to increase it. It was decided by CPW staff that the alternatives presented in this plan did not provide the ideal objective to meet expectations. Therefore CPW staff recommends a new proposed **sex ratio of 23-28 bucks per 100 does**.

The proposed population and sex ratio objectives were approved by the Colorado Parks and Wildlife Commission March 2014.

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1. DAU Plans and Wildlife Management by Objectives

The Colorado Parks and Wildlife (CPW) manages wildlife for the use, benefit and enjoyment of the people of the state in accordance with the CPW's Strategic Plan and mandates from the Parks and 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, CPW uses a "management by objectives" approach (Figure 1). Big game populations are managed to achieve population and sex ratio objectives established for Data Analysis Units (DAU's). Each DAU generally represents a geographically discrete big game population. The DAU planning process establishes long term objectives that support and accomplish the broader objectives of the CPW's Strategic Plan.

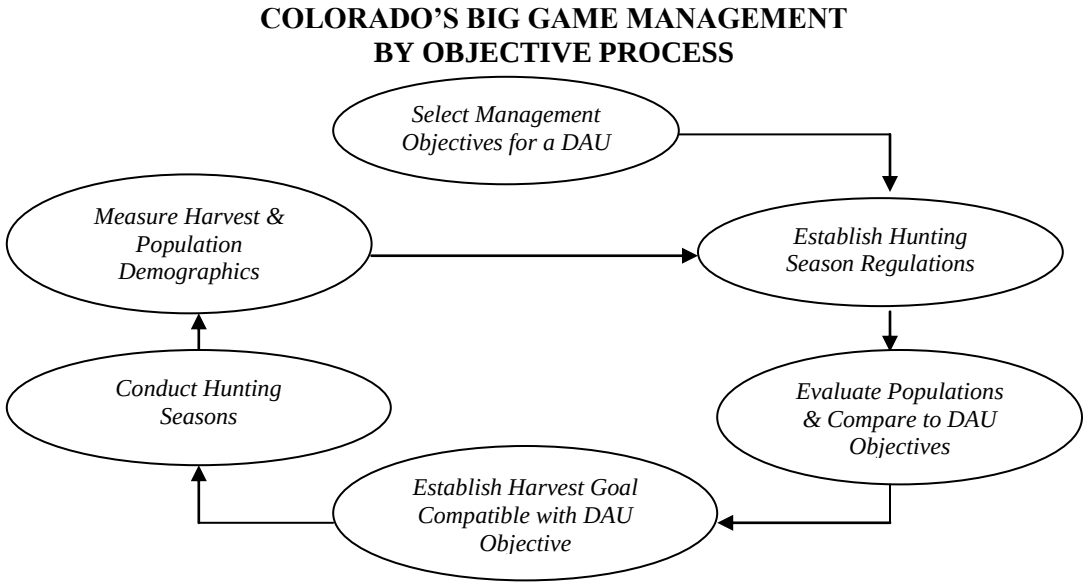

Figure 1. Management by objectives process used by the CPW to manage big game populations on a DAU basis.

The DAU planning process incorporates public input, habitat capabilities, and herd considerations into management objectives for each of Colorado's big game herds. The general public, sportspersons, federal land management agencies, landowners, and agricultural interests are involved in determining DAU plan objectives through questionnaires, public meetings, comments on draft plans, and input to the Colorado Parks and Wildlife Commission. Limited license numbers and season recommendations result from this process.

Each DAU is managed to meet herd objectives that are established through the DAU planning process. The DAU plan establishes post-hunt herd objectives for the size and structure of the population. Once the Commission has approved DAU objectives, they are compared with modeled population estimates. Model inputs include:

- Harvest estimates determined by hunter surveys
- Post-hunt sex and age ratios determined by aerial classifications
- Estimated wounding loss, illegal kill, and survival rates based on field observations and telemetry studies.

A computer model estimates the population's size and structure based on the most accurate information available at the time. The final step in the process is to calculate harvest recommendations that will align population estimates with the herd objectives.
Objectives are set for population size and sex ratio during the DAU planning process. Population objectives influence, and are influenced by: current herd size, carrying capacity, antlerless harvest, reproduction and survival, viewing opportunity and hunter success. Buck:doe ratio objectives influence hunter opportunity, hunter density, buck harvest, trophy potential, and hunter success.

Table 1. A summary of what factors are influenced by the two DAU plan components, population objective and sex ratio.

Population Objective	Male to Female Ratio
Herd size	Hunter opportunity or ability to get a license
Habitat quality and herd capability	Hunter density
Antlerless harvest and antlerless opportunity	Male harvest rate
Reproduction and survival (density-dependence)	Male age structure and trophy potential
Wildlife viewing	Hunter success
Hunter success	Landowner voucher price
Game damage	Hunting lease value

2. Description of the Data Analysis Unit

The Data Analysis Unit for the Groundhog Deer Herd is located in southwest Colorado and includes the Dolores River basin and part of the San Miguel River basin. It consists of Game Management Units 70, 71, and 711. It has an area of 7,388 square kilometers (2,852 square miles) and encompasses portions of Dolores, Montezuma, Montrose, and San Miguel Counties. The DAU is bounded on the north by the Dolores and San Miguel Rivers, State Highways 90 and 62, on the east by the Ouray/San Miguel, San Juan/San Miguel, Dolores/San Juan, Montezuma/La Plata County lines, on the south by Bear Creek, State Highways 145 and 184, and on the west by US Highway 491 and Utah (Figure 2).

The elevation in the DAU goes from a low of 5,300 feet near Paradox to a high of nearly 14,000 feet at several places between Dolores and Telluride.

The lower elevations along the Dolores and San Miguel Rivers are high desert vegetation types and have dominant canyon-mesa geographic features, with some agricultural areas in the river flood-plain areas. As elevations increase, the vegetation changes to grassland/shrub, pinyon-

juniper, and ponderosa pine often with an oak understory, mountain shrub, aspen, and Douglas-fir. At the highest elevations, sub-alpine spruce fir and Engleman spruce lead into alpine areas of willow or grass/sedge/forbs communities above 12,000 feet.

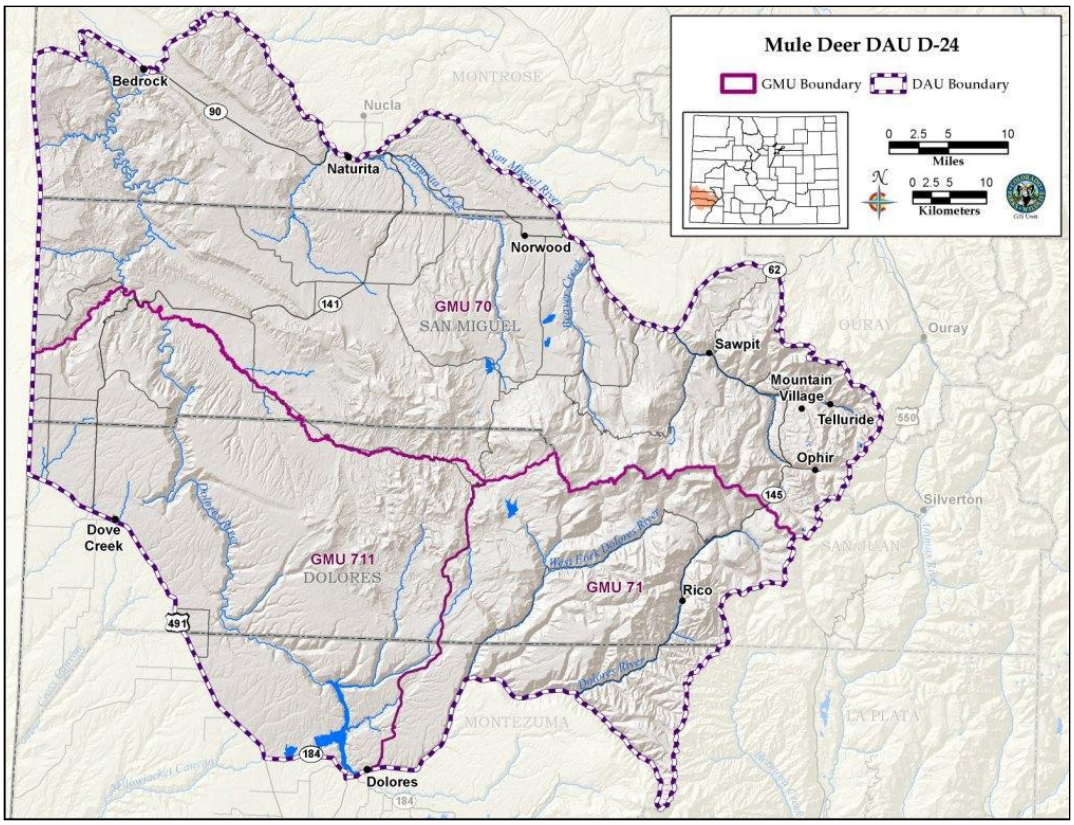

Figure 2: Geographic location of Groundhog Mule Deer Herd which includes Game Management Units 70, 71, and 711.

The climate is termed highland mountain, with cool summers at high elevations but very warm at the lowest, and with cold winters throughout. Snowfall is very heavy throughout the mountainous areas, but is variable at lower elevations. The low elevations receive 8 inches or less of precipitation annually, but some areas in the mountains receive over 30 inches of precipitation.

Deer generally occupy the entire DAU, but occur at highest densities in the central portions comprised of sagebrush, pinyon-juniper, mountain shrub, ponderosa pine, and aspen. A lower density of deer is observed in the low desert and canyon area as well as the higher heavily forested area.

Deer movement to winter range generally begins in late October and continues into December. The movement is elevational and generally east to west. High concentrations of wintering deer are found in Dry Creek Basin, Disappointment Valley, and south of McPhee Reservoir and the

Dolores River. In most winters, deer are fairly concentrated in these relatively large areas.

Deer movement back to summer range usually follows the snowline, and in the summer and fall deer are distributed throughout the DAU.

3. Habitat Resources and Capabilities

The entire 7,388 square kilometers (2,852 square miles) comprising the DAU is considered overall mule deer range.

Land ownership in the DAU is 34% U.S. Forest Service, 32% BLM, 30% private, and 2% CPW and State Land Board each (Figure 3).

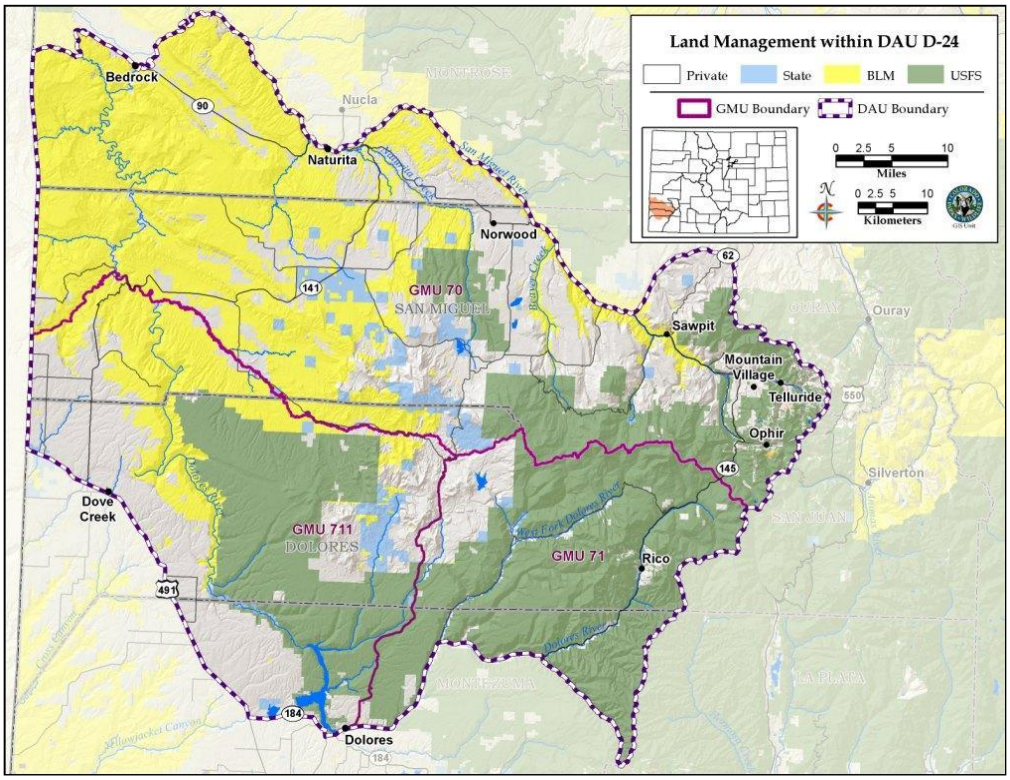

Figure 3: Landownership within the Groundhog Mule Deer Herd.

In general it is recognized that to support a higher population of deer more habitat and/or better quality habitat is necessary (Bergman et al 2007, Bishop et al 2008, and Sawyer et al 2013). This is often in conflict with human activities such as energy development (including the mining of carbon dioxide used in extraction of natural gas), recreation, and overstocking of livestock especially as these relate to winter range. These are all cumulative factors causing a loss of available habitat.

Often the best tool to offset these impacts and promote wildlife is the protection of key habitats such as winter range. This can be as simple as an agreement with a landowner or could be more legally binding such as a conservation easement.

Natural processes can also cause a loss of quality habitat. Over time portions of shrub communities naturally convert to less productive pinyon/juniper forests. Habitat improvement projects can be used to successfully address this in areas that are undeveloped by society. Projects usually involve disturbance to the existing vegetation to set the seral stage to an earlier succession point. In the case of pinyon/juniper encroachment this involves the removal of trees. Large sections of land need to be treated to see a population level response which can be costly, but attainable with the right partnerships in place.

Another habitat consideration is extreme weather. The Groundhog area has experienced years of extreme drought over the past decade. There have been noticeable impacts to forage species on winter range with long lasting effects on individual plants. Extreme drought can have the same negative impact to a deer population as severe winter. Over the past decade there have also been winters with increased snow accumulation on winter range. Forage is less available, deer are restricted in distances they can move, and there is an increase energy demand on animals. The overall effect is a decrease in deer body condition and increased mortality.

Invasive vegetation is also an element that degrades habitat. These plants are introduced, usually unintentionally, and can outcompete native vegetation for nutrients, sunlight, and water. This causes a change to the landscape. A couple of these species that are abundant throughout the lower elevations of the management area are cheatgrass (*Bromus tectorum*) and Russian knapweed (*Acroptilon repens*). These species have little or no value as a food source for deer.

One of the best habitat management tools is to keep big game populations below biological carrying capacity. This often means managing for herd sizes that can be sustained in a severe winter or extended drought. Populations at biological carrying capacity exhibit density dependence in reproduction, recruitment, and survival. Over-stocked ranges also can suffer long-term damage. Deep snow in severe winters has the benefits of protecting some plants from browsing, providing good moisture for spring growth, and adjusting population size to habitat capabilities. Drought impacts may be especially insidious because big game doesn't exhibit overt signs of stress and plant communities can take decades to recover if over-grazed.

Winter Range

Within the DAU 4,056 km^2 (1,566 $miles^2$) or 55% of the DAU is mapped winter range. The actual amount of habitat within this mapped area is even less. Winter range is at the lower elevations within the western portions of the DAU.

Severe winter range, where most of the deer are concentrated in severe winters (including, the winters of 1992-1993, 2007-2008, and 2009-2010) is only 1,748 km^2 (674 mi^2), 24% of the DAU. Winter concentration areas, where deer normally concentrate in a range of winter severities,

make up approximately 1,172 km^2 (452 mi^2), 16% of the DAU (Figure 4). Deer winter concentrations during normal winters are found in Dry Creek Basin and along Disappointment Creek, and north of the Dolores Canyon. Quality sagebrush and mountain shrub winter forage are even more limited than acreage of winter range. The highest protein content and vertical structure created by these shrubs are invaluable when snow is deep.

Winter range is a limited habitat resource and can be considered the limiting factor for the Groundhog Mule Deer Herd. Winter range is also the least protected habitat in the DAU specifically as it is related to human disturbance from rural development and recreation, overgrazing, and drought.

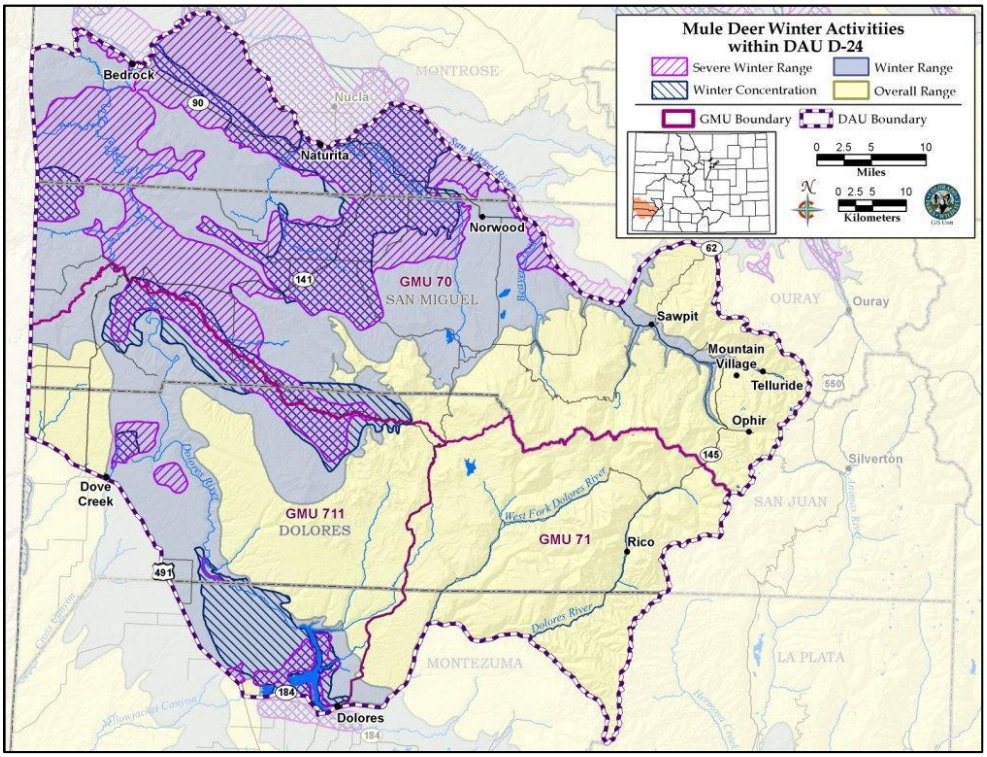

Figure 4: Winter range, severe winter range, and winter concentration areas within the Groundhog Mule Deer Herd.

Agriculture and Deer Conflict

Localized game damage does exist primarily in GMU 711. Most conflicts occur on growing wheat or hay fields and the occasional sunflower crop. Conflicts have decreased with the smaller population size (see Section 4, Post-hunt Population Size). However, some game damage situations would persist even with drastic reductions in deer numbers in the DAU and are best addressed on each property with special seasons, distribution management hunts, and AWM kill permits, rather than on a DAU population scale. CPW has established a private-land-only season in GMU 711 which runs the month of September to address resident deer in the agriculture area and deer game damage.

4. Herd Management History

Unlimited buck licenses were available to hunters prior to 1999. Since that time all buck licenses have become limited. A 3-point buck restriction was in place during the 1990's and later abandoned. Buck licenses are available to hunters in the fourth season on an extremely limited basis. Private land only (PLO) licenses are used to harvest antlerless deer.

Post-hunt Population Size

Post-hunt population size is a product of a computer spreadsheet model using the best information available at the time, but may change as new information becomes available. Primary data used in this model are obtained through aerial herd classification, hunter harvest survey, and survival rates from the adjacent DAU, D-19. The Groundhog Herd also has a population estimate available from quadrats that were surveyed in 1981, 1985, 1988, 1992, and 1995. These quadrat surveys produced a density estimate of deer in various parts of the DAU, and then were extrapolated to estimate the number of deer in the whole DAU. These population estimates were 25,600 (1981), 24,000 (1985), 32,400 (1988), 18,500 (1992), and 20,000 (1995).

Deer numbers in the DAU have been decreasing for the past two decades. During the 1980's the population may have been as high as 35,000. The current estimate is 14,500 (Figure 5). The 1998 long term objective for the population was 34,000 deer. That objective was based on the peak performance of the population. The cause of the long term decline in the population is unknown, but is not unique to this herd. Mule deer populations across southwest Colorado and even throughout much of their range are experiencing the same poor performance.

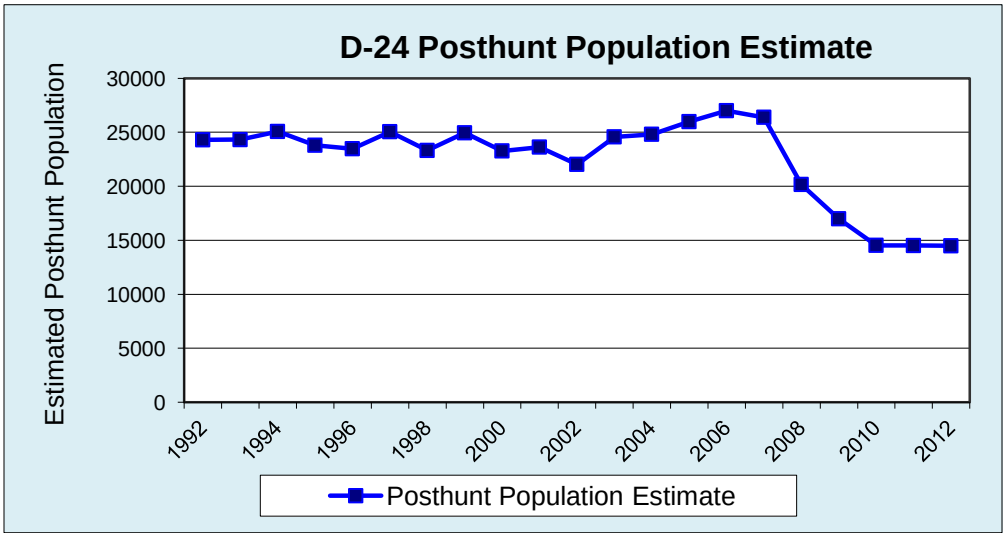

Figure 5. Posthunt population estimate from 1992 to 2012 for the Groundhog Deer Herd.

Post-hunt Herd Composition

Post-hunt herd composition is obtained by aerial surveys usually done in December following the big game hunting seasons. Deer and elk classifications are flown simultaneously. It is generally accepted that observed buck:doe ratios and fawn:doe ratios are fairly accurate. Aerial surveys are subject to variability due to weather, snow cover, sample size, and observers.

The number of fawns per 100 does have averaged 48 for the past 15 years (Figure 6). This average is low for this population and is a factor in the population decrease. During the same time period the high was 58:100 and the low was 38:100, fluctuating annually. Low fawn numbers were seen during winters with heavy snow cover (i.e. 2007 and 2010). An increase in production as measured in fawn to doe ratios needs to occur for the population to increase.

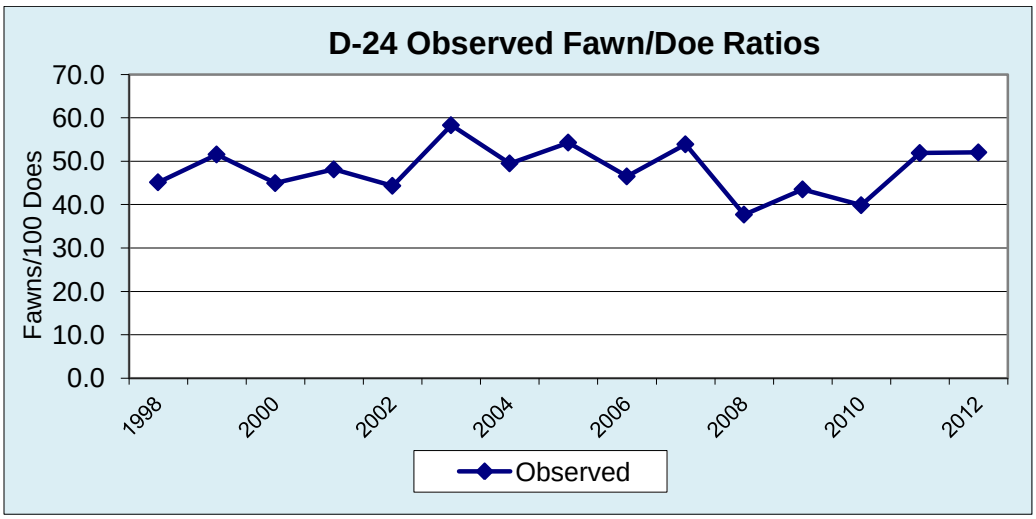

Figure 6. Observed posthunt age ratios from 1998 to 2012 for the Groundhog Deer Herd.

The buck to doe ratio has averaged 25:100 over the last 15 years with a high of 38:100 and a low of 14:100 (Figure 7). The 1998 long term objective was 25 bucks per 100 does. The observed ratio gradually climbed from 1998 to 2006 reaching its peak of 38:100. This was due to the limiting of buck licenses beginning in 1999. Since 2008 the ratio began decreasing and hit its second low of 16:100 in 2010. In 2012 it was at 23:100. The buck to doe ratio is less of an indicator of herd performance or health and is dictated more by hunting license numbers and harvest.

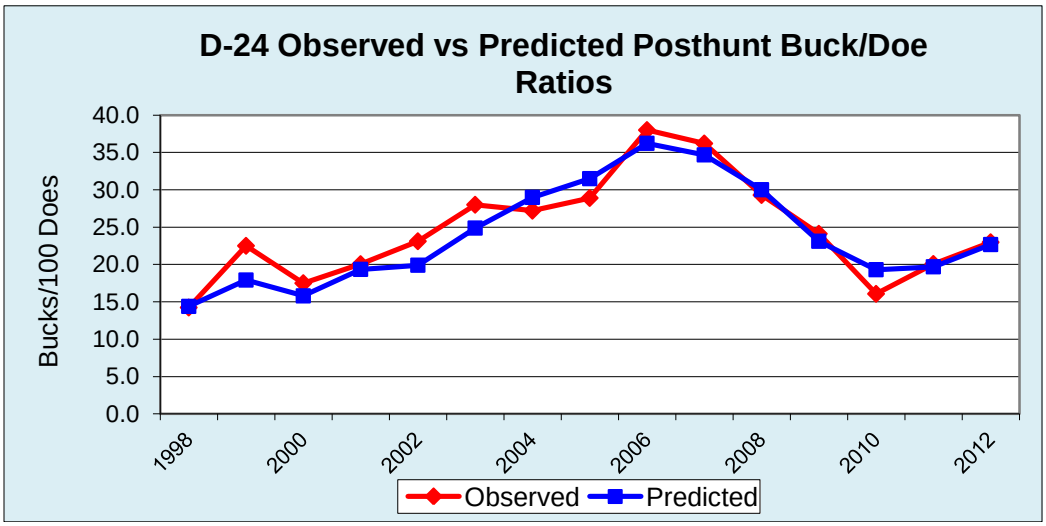

Figure 7. Observed and modeled posthunt sex ratios from 1998 to 2012 for the Groundhog Deer Herd.

Harvest

Harvest is effected by licenses issued, season structure, weather, and population size. All licenses in D-24 are limited and set annually to meet population objectives. From 1998 through 2012, buck harvest has averaged 1524 (Figure 8). Buck harvest mirrors population size and was highest in early years with a peak of 2,306 (1998) and a low of 974 and 976 (2011 and 2012 respectively). Antlerless harvest during the same period has averaged 187 adult does (Figure 8).

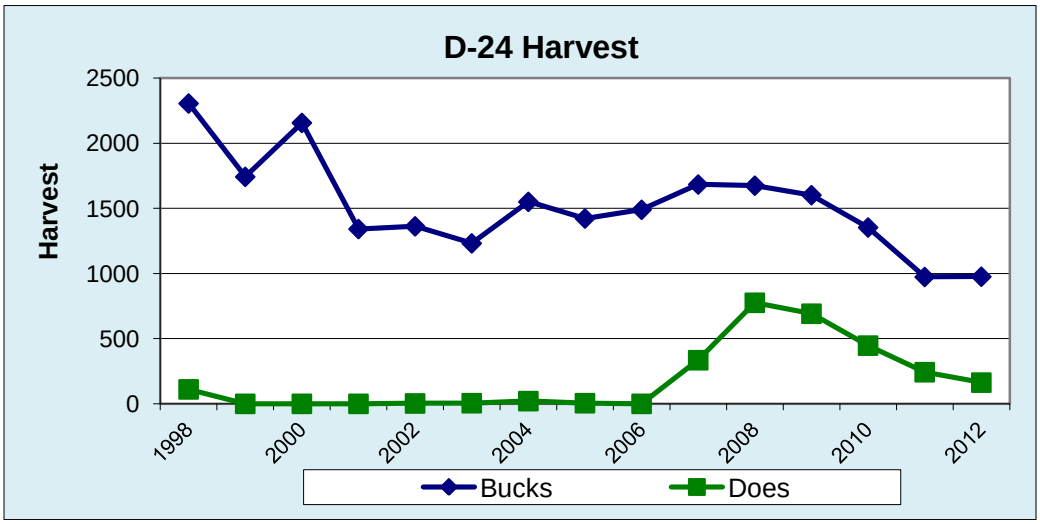

Figure 8. Buck and doe harvest from 1998 to 2012 for the Groundhog Deer Herd.

5. Current Herd Management, Issues, and Strategies

Population Estimation and Population Objective Setting

Previous DAU plan objectives (1998)
Population = 34,000
Sex Ratio = 25 bucks:100 does

Post-season 2012 estimates
Population = 14,500
Sex Ratio = 23 bucks:100 does

The new reality for mule deer management in human impacted landscapes may be fewer deer. The old objective of 34,000 is unattainable with current conditions. Although the public and many biologists would like more mule deer, population objectives need to be realistic. Trying to allow a herd to increase above what it has shown it is capable of given environmental constraints and change is unproductive and ecologically irresponsible.

The old population objective of 34,000 was based on earlier population models and quadrat surveys. The population estimate in 1998 was 26,000 which was consistent with what the current model estimates for the same time period. There has been a drastic decrease in this population. The primary goal of this DAU plan revision is to set the population objective closer to the number of deer that currently exist and we believe the habitat can support.

Data for this herd is unique in that it may show the upper and lower bounds for the population. The 35,000 estimate in the late 1980's might be the potential of this population when all conditions are ideal. Keep in mind this does not take into account loss of habitat due to development or changes in management that has occurred over the past two and half decades which would have a net effect of decreasing this upper limit. The current estimate of 14,500 could be the lower range of population and where it would naturally go under prohibitive situations (i.e. extreme harsh weather which we have experienced over the past decade and/or disease).

Although the initial reaction is to manage for the highest number of animals, the more prudent decision may be the opposite and choose the lower range. More deer on the landscape increases the use of available resources. There is a lag in population response as conditions degrade. This creates more animals than what the resources can support which can cause long term damage to those resources. Under these circumstances when the population responds it is usually excessive as animals compete with one another which diminishes individual health, increases stress, and increases susceptibility to disease. A population that experiences a "crash" like this has a long term recovery, even when conditions are perfect. Wildlife and land managers attempt to avoid these situations.

Management at the lower end of the population potential not only circumvents these risks, it can

also provide for a robust population when conditions are ideal. When resources are abundant the population's response is to increase which is done by does successfully raising a higher number of fawns. One of the benefits to the sportsman is that hunting opportunity increases. Also, animals under these conditions are healthier, less stressed, and better able to ward off disease.

Population Objective Indexing

Population modeling is an evolving process whereby modeled estimates can change over time based on additional data or improved modeling methodology. As such, when modeled estimates change irrespective of an actual change in the population, it might be reasonable to adjust or index population objectives relative to the new modeled estimate. The basis of harvest-based population management is to increase harvest when a population exceeds objective, decrease harvest when a population is below objective, and maintain harvest when a population is at objective. Because population objectives are only meaningful in the relative context of the population estimates available at the time the objective was established, indexing the objective maintains the integrity of the objective based on the fundamental criteria of whether there are too many, too few, or the desired number of animals in the population.

Disease

Chronic Wasting Disease (CWD) is a neurological disease occurring in members of the cervid family, including deer, elk, and moose. After extensive testing of deer and elk from 2002-2009, CWD has not been detected in DAU D-24. CPW continues surveillance for CWD through hunters voluntarily testing animals they harvest and testing of suspect animals CPW recovers from the field. The nearest CWD-positive herds are deer and elk in the La Sal Mountains of Utah which are just across the state line from D-24. Low deer densities along the state line in Colorado will slow the spread of the disease to the main portion of the population further east, but it will still make its way into the D-24 herd. If CWD is detected in DAU D-24, managers may need to reevaluate management objectives if they are deemed incompatible with CWD risks. CPW research has shown that the CWD prevalence in bucks typically is twice that in does. The prevalence among mature bucks is especially high, therefore managing for high buck:doe ratios may be contradictory to disease goals if CWD was to be detected in D-24.

Epizootic hemorrhagic disease (EHD) has been identified in adjacent deer populations and may be a factor, especially in warm, dry summers. Mule deer have a natural resistance to hemorrhagic diseases such as EHD, but individuals still succumb to it. In those years the disease is more prevalent it can cause a decrease in the population. There is not any treatment of the disease in wild populations.

Predation

Mountain lions and coyotes are found within the area of D-24 and are natural predators of mule deer. Although individual deer are killed by mountain lions and coyotes the overall relationship between predator populations and prey populations are complex and not fully understood. A couple of major studies specifically probing this relationship were recently concluded in neighboring states. The first looked at the effects of large-scale removal of coyotes on pronghorn

and mule deer productivity and abundance in Wyoming and Utah (Brown and Conover 2011). The study concluded that mule deer productivity and abundance were not correlated with either the number of coyotes removed or removal effort. The second study centered on mule deer population response to the reduction of coyotes and mountain lions in Idaho (Hurley et al 2011). Again it was found that annual removal of coyotes did not increase mule deer populations. The findings concerning mountain lion removal were a little different in that it did increase mule deer survival and fawn ratios. However, it did not significantly change mule deer population trends.

In both studies sport hunting was not enough pressure on predators and additional programs were needed for predator removal. These programs obviously required monetary funding. Hurley et al estimated the cost-per-deer produced from their coyote removal program. This figure came out to be $307 per fawn. To put a 4 year old male on the ground it was estimated to cost $17,127 per deer. These costs exceed what most people would consider reasonable.

Furthermore the Idaho study concluded that winter severity and climate were the most important factors in mule deer population growth.

6. Public Involvement

Wildlife in Colorado is owned by the people of Colorado and is to be managed for the people of Colorado and its visitors. CPW is the agency tasked with carrying out the management actions. Therefore it is imperative to involve people in deciding how to manage this population. There are a number of ways to accomplish this with all having strengths and flaws. For this management plan an internet survey was used to engage individuals.

On November 3, 2013 a survey was opened on the internet to the public with questions relating to individuals beliefs and dealings with mule deer in D-24. This survey was open to any individual interested in participating and was promoted through a press release, 1,000 post cards sent to a random sample of D-24 hunters asking for input, and the posting of it on the CPW web page. It remained open through December 10, 2013.

There were 139 individuals who completed the survey on-line and another 9 who completed and returned a hard copy of the survey. Of these 58% were Colorado residents, and 22% lived within the DAU. The majority of people completing the survey were hunters or sportsperson (87%) with conservation groups, ranchers, farmers, landowner, and guide/outfitters also involved. Issues that were of concern in regards to mule deer were loss of habitat because of human population growth, deer dying on winter range, and predation. 79% of respondents enjoyed mule deer and were not concerned about problems they may cause. Regarding the population objective for the Ground Hog deer herd, the vast majority, 79%, wanted to see an increase in the population, 16% wanted it to remain the same, and 2% wanted a decrease. For the sex ratio 45% wanted it to remain the same, 34% wanted an increase, and 12% wanted a decrease. Overall (66%) hunters were satisfied or very satisfied with their hunting experience in the DAU.

Also on November 3, 2013 letters were sent to local governments, Habitat Partnership (HPP) Committees, and other special interest groups soliciting input on mule deer management. Comments were received from the Montelores HPP Committee, Uncompahgre HPP Committee, the BLM Tres Rios Field Office, the Dolores Ranger District of the San Juan National Forest, Montezuma Board of County Commissioners, and Southwestern Colorado Livestock Association. These letters were helpful in preparing the management plan can be viewed in Appendix A. Of those who provided suggestions on the population objective and sex ratio objective alternatives, all supported keeping the population at the current level (alternative 2) or slightly higher (alternative 3). They were split between sex ratio alternative 2 and 3.

On December 16, after the deadline closed for soliciting comments and the survey closed, CPW personal (specifically local DWMs, AWMs, and biologists) met. The purpose of this meeting was to discuss the comments and survey results, and to come up with a final population and sex ratio objective recommendation.

7. Development of Alternatives and Preferred Objective Alternative

Population Objective Range of Alternatives

Population objective alternatives were developed relative to the current population estimate of 14,500. Ranges are presented in each alternative to allow for management flexibility in response to changing conditions such as drought. Licenses are issued annually to manage for a target population size within the population objective range. Based on the recent performance of this herd it is not enough to try to grow the population on hunting license allocation alone. Any goal to increase the population will require habitat improvement projects on winter range that promote and support the increase. The following 3 population objective alternatives were proposed:

Alternative 1: 9,500-13.500 (decrease population)
Alternative 2: 13,500-17,500 (current population size)
Alternative 3: 17,500-21,500 (increased population)

Sex Ratio Alternatives

The sex ratio objective dictates the number of bucks in the population. The higher the buck ratio, the more bucks, both total numbers and mature bucks, are in the population. The lower number of 20-25 bucks per 100 does provides enough bucks to sufficiently breed does. Expected results of this lower sex ratio are that more buck hunting licenses can be issued making licenses easier to obtain on an annual basis. Because there are fewer bucks the average age of bucks is lower and there are less mature bucks or "quality" bucks. This sex ratio objective also maximizes the number of does in the population and hence increases the overall recruitment potential. As the sex ratio increases less buck licenses are available and become more difficult to obtain with a trade-off of an increased number of mature, or "quality", bucks. Increase in the sex ratio will decrease the proportion of does in the population which decreases the overall

recruitment potential.

Alternative 1: 20-25 bucks:100 does
Maximum hunting opportunity, least number of mature bucks
Alternative 2: 25-30 bucks:100 does
Hunting opportunity might be decreased, more mature bucks
Alternative 3: 30-35 bucks:100 does
Less hunting opportunity, increased number of mature bucks

Preferred Alternatives

Population

The vast majority of the public who participated in the planning process were concerned about the decrease in the deer population and wanted to see it increase. Letters received from the local HPP committees, Tres Rios BLM office, Dolores Ranger District of the San Juan National Forest, and Southwestern Colorado Livestock Associations preferred to keep the population at its current level or slightly higher. Herd data indicates that the population is at an all time low and may be seeing the start of a recovery with higher recruitment the past two years. Game damage issues from CPW and HPP perspective are low. Based on this information CPW staff recommends a new proposed **population objective of 15,000-19,000** (slight increase in the current population).

Sex Ratio

Based on the public survey and comment letters there was desire to keep the sex ratio at its current level of 25:100 or to increase it. It was decided by CPW staff that the alternatives presented in this plan did not provide the ideal objective to meet expectations. Therefore CPW staff recommends a new proposed **sex ratio of 23-28 bucks per 100 does**.

The proposed population and sex ratio objectives were adopted for this DAU by the Colorado Parks and Wildlife Commission March 2014.

Literature Cited

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Appendix A: Comment Letters

Montelores Habitat Partnership Program Committee

P O Box 2283
Dolores, CO 81323

October 20, 2014

Colorado Parks and Wildlife
Brad Weinmeister – Wildlife Biologiest
151 E 16th St
Durango, CO 81301

Reference: Comments on two deer herd management plans (D-24 and D-29)

Dear Brad,

Thank you for the opportunity to comment on the Herd Management Plans for D-24 and D-29. The Montelores HPP Committee considers Population Objective Alternative 2 for D-24 and D-29 to be the best for private land owners and sportsmen in our area. Alternative 2 maintains current population levels, this alternative would be the best for private land owners. Many landowners in our area do not feel that there are too many mule deer.

If CPW were to increase the mule deer herds without proportionally reducing elk herds in the area the increase in population may add pressure on the habitat and may increase game damage on private lands. Current habitat conditions indicate that rangelands are still recovering after years of drought.

Decreasing mule deer herds would not be appropriate at this time in light of range wide declines in mule deer herds and decreased hunting opportunities

Sex ratio does not directly influence habitat conditions. However, overall big game hunting experience for hunters in the Montelores area may improve if there were more opportunity to draw a tag. Alternative 1 would provide more opportunity in the Montelores area and may increase overall hunting experience. This alternative selection would apply to both herd management plans, D-24 and D-29.

Thank you for reviewing the Montelores HPP Committee comments for revisions to the two deer herd management plans (D-24 and D-29).

Sincerely,

Eldon Simmons
Chairperson / Landowner Representative

COLORADO PARKS & WILDLIFE

Uncompahgre HPP Committee
711 Independent Ave.
Grand Junction, CO 81505
wildlife.state.co.us/LandWater/PrivateLandProgram/HPP

December 7, 2013

Brad Weinmeister
Colorado Parks & Wildlife
151 East 16th St.
Durango, CO. 81301

The Uncompahgre HPP Committee would like to make the following comments concerning the update to the herd management plan for the Groundhog Mule deer herd/ D-24.

Our preferred Population Objective would be Alternative 2, to maintain the current population size at 13,500-17,500, with the higher end of this range being preferable.

Our preferred Sex Ratio would be Alternative 2, 25-30 bucks per 100 does, an increase of where we understand the current buck:doe ratio is at 23:11.

Some members of our committee that own private property within the game management units also voiced the concern that mature bucks with deformed and lower "quality" antlers were being passed over by hunters and these bucks were doing the breeding on their private land during the rut, impacting the genetics and overall health of the deer herd. It was suggested that there should be some provision in the plan to cull these inferior animals by the CPW during the rut.

We appreciate the opportunity to comment on this planning document.

Sincerely,

Mike Surber

/for Uncompahgre HPP Committee

United States Department of Agriculture
Forest Service
Dolores Ranger District
San Juan National Forest
29211 Hwy 184
Dolores, CO 81323-9308
Phone 970-882-7296
Fax 970-882-6841
http://www.fs.usda.gov/sanjuan

File Code: 2620
Date: January 6, 2014

Brad Weinmeister
Colorado Parks and Wildlife
151 East 16th St.
Durango, CO 81301

In Reply Refer To: (6840) CPW Herd Management Plans D24, D29

Dear Mr. Weinmeister,

Thank you for the opportunity to comment on the Herd Management Plans for D-24 and D-29. The U.S. Forest Service, San Juan National Forest, Dolores Ranger District considers Population Objective Alternative 2 for D-24 and D-29 to be the best for Public Lands managed by the Dolores Ranger District. Alternative 2 maintains current population levels, this alternative would be the best for the Dolores Ranger District management of public lands. Increasing mule deer herd without proportionally reducing elk herds in the area would increase stress on the habitat. Current habitat conditions indicate that rangelands are still recovering after years of drought. Decreasing mule deer herds would not be appropriate at this time in light of current range wide declines in mule deer herds.

Although sex ratio does not directly influence habitat conditions on USFS managed lands, the overall big game hunting experience for hunters on public lands managed by the USFS may improve over time if more mature bucks are available on the landscape. Alternative 3, setting a buck: doe ration of 3 to 3.5:1 would provide more mature bucks over the long term and may increase overall hunting experience. This alternative selection would apply to both herd management plans, D-24 and D-29.

If you have any questions or would like to discuss these comments, please contact Ivan Messinger of my staff at (970) 882-6804.

Sincerely,

Derek J Padilla
District Ranger

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
TRES RIOS FIELD OFFICE
29211 Highway 184
Dolores, CO 81323
www.blm.gov/co/st/en/fo/sjplc.html

In Reply Refer To:
(6840) CPW Herd Management Plans D24, D29

DEC 19 2013

Brad Weinmeister
Colorado Parks and Wildlife
151 East 16th St.
Durango, CO 1301

Dear Mr. Weinmeister,

Thank you for the opportunity to comment on the Herd Management Plans for D-24 and D-29. The BLM Tres Rios Field Office considers Population Objective Alternative 2 for D-24 and D-29 to be the best for Public Lands managed by the Bureau of Land Management. Alternative 2 maintains current population levels, this alternative would be the best for the BLM management of public lands. Increasing mule deer herd without proportionally reducing elk herds in the area would increase stress on the habitat. Current habitat conditions indicate that rangelands are still recovering after years of drought. Grazing lessees on BLM lands have voluntarily cut livestock stocking rates in many areas of the field office to adjust management for drought conditions. Decreasing mule deer herds would not be appropriate at this time in light of range wide declines in mule deer herds.

Sex ratio does not directly influence habitat conditions on BLM managed lands. However, overall big game hunting experience for hunters on public lands managed by the BLM may improve over time if more mature bucks are available on the landscape. Alternative 3, setting a buck:doe ration of 3 to 3.5 : 1 would provide more mature bucks over the long term and may increase overall hunting experience. This alternative selection would apply to both herd management plans, D-24 and D-29.

If you have any questions or would like to discuss these comments, please contact Nathaniel West of my staff at (970) 882-6835.

Sincerely,

Connie Clementson
Field Manager

County Commissioners:
Steve D. Chappell
Keenan G. Ertel
Larry Don Suckla
County Administrator:
Ashton N. Harrison

Board of County Commissioners

109 West Main, Room 302
Cortez, CO 81321
(970) 565-8317
(970) 565-3420 Fax

November 25th, 2013

Brad Weinmiester
Terrestrial Biologist
151 E.15th Street
Durango, Colorado 81301

Re: **Mesa Verde Mule Deer Herd Management Plan (GMU's 72 & 73)**
Data Analysis Unit D-29

Dear Mr. Weinmiester:

We, the Montezuma County Board of County Commissioners offer the following comments on the Mesa Verde Deer Management Plan.

We approve of management activities that promote stable and healthy big game/predator populations and a healthy local economy at the same time. We agree that hunting is an appropriate tool to be used in achieving resource management goals.

In our opinion the Mule Deer population currently is lower than what we would desire, however we feel that the causes of the population decline are not well understood. The management plan concludes that the most significant issue concerning the Mesa Verde Herd is development and fragmentation of habitat. While we agree that development and fragmentation of habitat can have an impact, most of the habitat identified is under federal management which is not experiencing development that would fragment habitat. The plan states;

> *"Deer winter concentrations during normal winters are found south of McPhee Reservoir, north of Mesa Verde, and along the Mancos River and Weber Canyon south of State Highway 160. Quality sagebrush and mountain shrub winter forage are even more limited than acreage of winter range. The vast majority of these crucial habitats have been converted by exurban ranchettes, agriculture, and energy development."*

We agree that high concentrations of Mule Deer winter in these areas. And perhaps a majority of the private lands within this area has been altered to some degree over the past 100 years. However these areas have not been experiencing a level of development that it would contribute to significant habitat fragmentation beyond what existed prior to the onset of the mule deer population decline. Most of the lands were converted to agricultural long ago, and certainly long before the decline became apparent. While there has been some residential expansion of exurban ranchettes, very little energy development has occurred within these areas. Overall there is no data apparent to point to these factors being as significant as the management plan paints it. In fact the vast majority of the lands within the GMU have had very little change at all.

The plan states;

> *"Ute Mountain Ute Tribe is the largest landowner in the DAU (37% of area) and most of their land is deer habitat throughout the year."*

The plan then breaks down the remaining landownership patterns as follows;

- 37% Indian reservation
- 31% private
- 18% BLM
- 9% U.S. Forest Service
- 4% National Park
- Less than 1% CPW and State Land Board.

Under the habitat fragmentation scenario, 69% of the landscape remains relatively unchanged with regards to use and development patterns with the remaining 31% presumably responsible for the habitat fragmentation and development.

The plan states;

> *"In general it is recognized that to support a higher population of deer more habitat and/or better habitat is necessary. This is often in conflict with increases in residences, oil and gas development, and other commercial development encroaching in deer habitat."*

We cannot disagree that ongoing development can result in habitat fragmentation. However habitat fragmentation has become a buzzword that is often thrown about without localized data to back it up. The management plan does not quantify the level of habitat fragmentation on that 31% of private lands. Three pertinent questions would be; 1.) Within the 31% of private lands, how much of the land has undergone significant changes? 2.) How have those changes affected the quality of the habitat? And 3.) Have the changes occurred during the time frame that the Mesa Verde Herd has declined? A thorough analysis of these three questions would help to design a habitat conservation strategy with solid community buy in.

To make the determination that habitat fragmentation is the most significant issue concerning the Mesa Verde Herd a land use trend analysis must have been completed to provide the data. Absent a localized land use trend analysis, the assertion that habitat fragmentation is the most significant issue is probably an over generalization. As a concerned stakeholder Montezuma County would respectfully request that CPW share any available land use trend data as this data would also provide useful information for county planning purposes.

The solution to habitat fragmentation appears to boil down to habitat protection and restoration. We can agree that protection and preserving quality habitat offers many benefits to the mule deer herd and perhaps even to our economy and quality of life. One of our chief concerns is that "habitat fragmentation" is a catchphrase that is often bantered about far too liberally. This phrase is catchy, trendy, and it is often be hijacked by environmental organizations and manipulated for their own purposes without analyzing localized data. For the phrase to hold any real meaning it must be quantified in a localized context.

The Gunnison Sage Grouse is a perfect example of this. The USFWS has proposed listing the Gunnison Sage Grouse as an endangered species using "habitat fragmentation" almost exclusively as its rational. The trouble is that the data is generalized and does not in itself support the listing. In much of the proposed critical habitat, like within Dolores County for example, there has been very little change in the landscape during the period in which most of the population decline occurred. The term "habitat fragmentation" is a very marketable concept to the public and it is being used very effectively to sway public opinion and influence the scientific community as well.

Montezuma County has also reviewed the Groundhog Mule Deer Herd Management Plan, Data Analysis Unit D-24, Game Management Units 70, 71, and 711. Interestingly the deer populations within this adjacent herd are also in decline. The Plan does not state that habitat fragmentation is the most significant factor, presumably because CPW has done very good research on the Gunnison Sage Grouse and has been able to determine that the landscape has changed very little within the GMUs over the past 30 years . The plan states;

> *"The most significant issue concerning this herd is the decrease in population. Mule deer populations throughout their range have experienced similar decreases, but the Groundhog herd appears to be more acute with the current estimated population less than half of what was estimated 30 years ago. More troubling is that there hasn't been any factor, single or combination of, pinpointed for the decline, only speculation.*

It is pretty clear that the Groundhog GMUs have not experienced a significant level of change over the last 30 years, yet the Groundhog Mule Deer Management Plan still subtlety alludes to "habitat fragmentation", and suggests habitat preservation and restoration as the solution.

Our point is that while "habitat fragmentation" clearly does occur, and can impact deer populations, without accurate data to support that conclusion CPW may be over generalizing simply because it cannot accurately pinpoint the actual cause of the decline.

We believe the decline can be attributed to a wide range of factors. We feel the plan places much emphasis on habitat because it is a trendy subject and enjoys a great deal of popular support amongst the public. However there are other significant factors that really need to be addressed such as predation.

Anecdotally it appears that we have may more predators within the GMU than we had 30 years ago, in-particular the coyote population. Coyotes we believe, significantly impact the survival of fawns and harass the rest of the herd displacing them from good habitat and forcing them into private lands where deer can find a measure of protection by the presence of humans, and domestic dogs. In these cases exurban ranchettes provide sanctuaries for deer herds.

30 years ago we had a fairly robust fur market and consequently predator hunting was far more effective. In addition 30 years ago leg hold trapping was still a legal method of take which greatly increased the efficiency of predator control. During the 1990's public sentiment turned against the fur market and against leg hold trapping and since that time the populations of predators has increased.

Also significant during the last 30 years is the cycle of drought. The Mesa Verde region has been gripped with a significant drought for the last 14 years which coupled with increased predations would seem to

have a great effect on that ability of the Mesa Verde, and Groundhog Mule deer populations to reverse their declining trend.

Another factor that may significantly reduce the vitality of the Mesa Verde and Ground Hog Mule Deer herds is the increasing proliferation of noxious weeds which correlates strongly with agricultural lands and with the lower elevation winter ranges. The problem of noxious weed infestation is growing, resulting in very large areas of monoculture which are not suitable browse for mule deer. This loss of forage is not really habitat fragmentation but rather a steady erosion of habitat quality which is a reversible trend. Montezuma and Dolores County are both partners with CPW's Habitat Partnership Program and are actively doing as much as possible to provide CPW funded herbicide to agricultural produces in the winter habitat areas to combat the problem.

We would also like to point out that the length of the current hunting seasons may also be a factor in the health of the Ground Hog and Mesa Verde Mule Deer herds. Over the past thirty years or so the hunting seasons seem to have become longer and longer. Hunting now begins in mid-August with archery season and ends around November with the late rifle season. That means more people in the backcountry for a longer period of time. With nearly four months of hunting pressure the mule deer may be seeking refuge within more urban areas during that timeframe.

We would also ask that CPW evaluate the impacts of traffic/ deer accidents along migration corridors and winter range. Vehicular traffic does appear to have increased especially along highway corridors, and it does anecdotally appear that the number of road kills has also increased. This may also be a significant factor, however we would caution against figuring this factor into habitat fragmentation since the transportation routes have been in place long before population declines were a great concern, and much of the traffic increase may be attributable to urban population increase.

Please understand that we are not trying to be critical of CPW, but we do have concern that the proposed Management Plan may not have enough supporting data to justify the conclusion that habitat fragmentation is single most important factor. We simply wish to reinforce that the decline is probably due to multiple factors of which habitat fragmentation is one.

We fully appreciate how difficult the task is to manage big game in Colorado especially considering public pressures and a political climate controlled largely by urban populations on the front-range. Hunting is an important part of our County's natural resource and economic base, and we support management that keeps predator populations stable and available for sportsmen now and into the future.

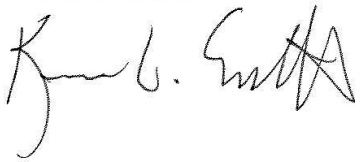
Please let us know if we can provide any support in your ongoing modeling and analysis efforts. We believe strongly in a sound scientific and data driven management plan.

Sincerely,

The Montezuma County Board of Commissioners,

Larry Don Suckla

Keenan G. Ertel



SOUTHWESTERN COLORADO LIVESTOCK ASSOCIATION

December 8, 2013

Colorado Parks & Wildlife
Brad Weinmeister
151 East 16th Street
Durango, CO 81301

Dear Mr. Weinmeister,

Southwestern Colorado Livestock Association appreciates the opportunity to provide input for the mule deer management in areas D24 and D29. Our board supports Alternative 2 for the herd population and Alternative 2 for the buck to doe ratio for both areas, D 24 and D29. There is some concern, however, that the deer population may be too high in some areas north of Cortez around small farms and subdivisions where it is difficult to use hunting as a management tool.

The board feels that it is important to continue to build good understanding and working relationships between farm and ranch community and the wildlife agency.

Sincerely,

Al Heaton

Al Heaton
Voting Secretary