DAU D-12 (Grand Mesa North)

EXECUTIVE SUMMARY

January 2007

GMUs: 41, 42, 421 **Land Ownership:** 39% Private, 38% USFS, 21% BLM, .01% State

Post-hunt Population Objective: 28,000 – 30,000 **2005 Estimate:** 30,500 **Previous:** 29,500

Post-hunt Composition Objective: 25 – 30 bucks: 100 does **2005 Observed:** 24.9 **2005 Modeled:** 26.5 **Previous:** 20

Figure 1. D-12 Posthunt Population Estimate

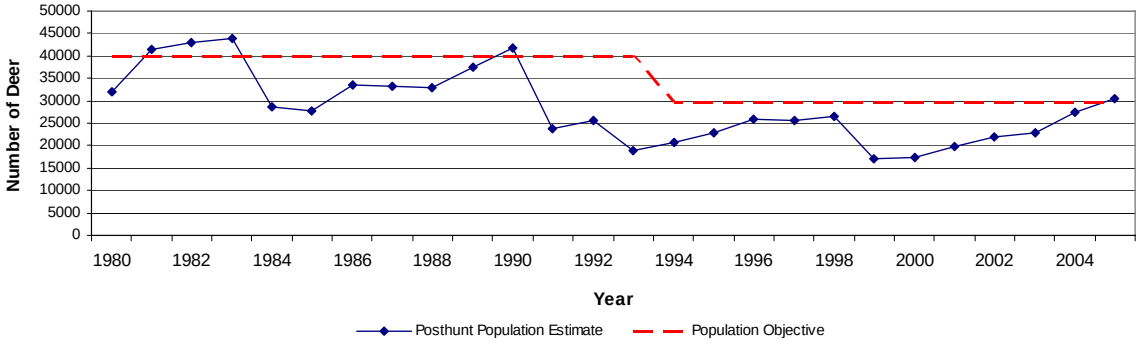


Figure 2. D-12 Harvest

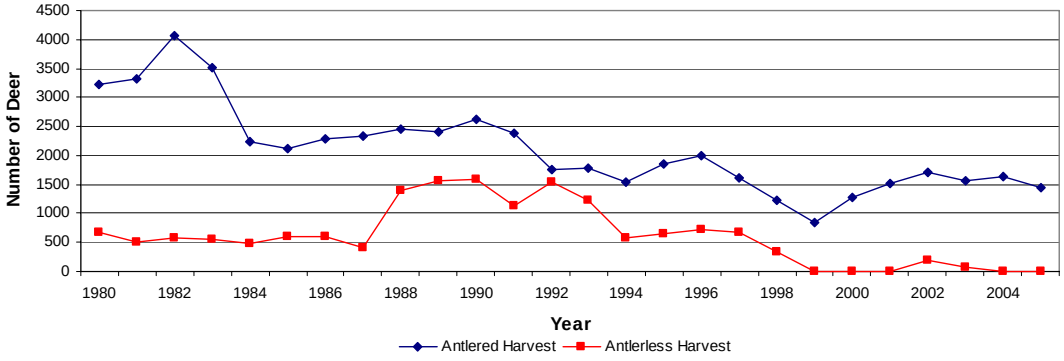
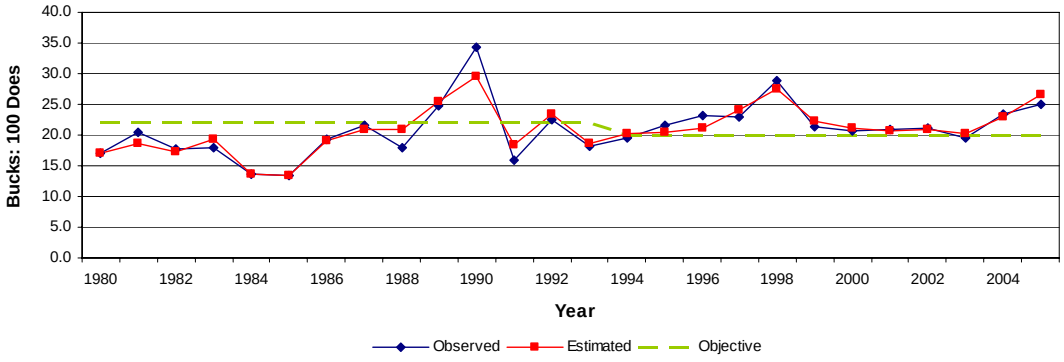


Figure 3. D-12 Posthunt Bucks:100 Does



D-12 BACKGROUND

The North Grand Mesa D-12 DAU is located in west-central Colorado and includes the north side of the Grand Mesa, directly east of Grand Junction, Colorado. Since 1994, the population objective for the Grand Mesa North deer herd has been 29,500 animals. The current composition objectives for deer are 20 bucks: 100 does and 70 fawns: 100 does.

The deer population was relatively high in D-12 during the early 1980's through the early 1990's. Since that time, the herd declined dramatically, and then rebounded in recent years. The decline of this herd mirrored the falling numbers in most mule deer populations throughout Colorado and the Western U.S. Recent years have shown increased numbers of deer in D-12 and current models estimate a population of 30,500 deer.

The CDOW has conducted aerial sex and age composition surveys in D-12 since the late 1970's. Early records in the 1980's show that total buck: doe ratios were around 17 bucks: 100 does. These ratios have generally increased to recent levels of 20-25 bucks: 100 does, in large part due to totally limited male licenses implemented in 1995. The average buck: doe ratio in the DAU for the last 26 years is 20.9 bucks: 100 does. Post-hunt classifications in 2005 estimated 24.9 bucks: 100 does.

The post-hunt fawn: doe ratios are indicators of how successful the reproduction was for the past spring and how well fawns survived until December. This is a critical indicator of the condition of the herd. Fawn production in the DAU has been good over the years, generally remaining between 50 and 70 fawns: 100 does. Since the early 1990's, production has averaged 53 fawns: 100 does.

Deer harvest in the DAU D-12 has changed substantially over time, peaking in the late 1980's and early 1990's, followed by significant reductions, particularly in doe harvest. Between 1980 and 1990, buck harvest averaged over 2000 animals per year and doe harvest averaged approximately 800 animals per year. Between 1995 and 2005, buck harvest averaged only 1500 animals per year and doe harvest averaged only 200 animals per year. There has been limited antlerless hunting in D-12 since 1998: antlerless licenses were issued primarily to prevent damage situations. In 2005, 1441 bucks were harvested and no does or fawns were taken. Antlerless licenses will be issued again for the 2006 hunting season.

SIGNIFICANT ISSUES:

The most important aspect of the DAU planning process is obtaining input from all segments of the affected local populations, including the US Forest Service and Bureau of Land Management, HPP committees, and interested public.

Meetings were held to solicit input from the USFS, BLM, the local public, and the Boards of County Commissioners from Mesa and Garfield counties. A

questionnaire was available at these public meetings and on the DOW web site to solicit opinions from the public.

Several significant issues were identified during the DAU planning process. The primary issues involved habitat quality and quantity, particularly on winter ranges; energy development; and low fawn: doe and buck: doe ratios.

Winter range habitat quality and quantity was the most frequently identified issue by the general public, CDOW employees, HPP committees, and land management agencies, closely followed by the exponential increase in energy development across the landscape. There is some concern, primarily within the CDOW, that fawn: doe ratios are not as high as would be expected. It is possible this is due to density-dependence related to winter range declines. Many stakeholders expressed interest in increasing buck: doe ratios and thereby improving buck quality.

Generally, most stakeholders indicated that deer population size and composition are at acceptable levels, although there is significant demand for larger bucks. The majority of respondents were satisfied with current management and the general consensus was to maintain the status quo population size and increase the buck: doe ratio objective.

D-12 MANAGEMENT ALTERNATIVES

Three post-hunt population objective alternatives have been proposed for D-12 (1) 25,000 – 27,000, (2) 27,000 – 29,000, or (3) 29,000-31,000. This population has been at or slightly over objective for the last several years, and a downward or stable trend will maintain the population within the current objective range.

Three post-hunt composition objectives were proposed for D-12 (1) 20-25 bucks: 100 does; (2) 25-30 bucks: 100 does; or (3) 30-35 bucks: 100 does. Alternative 1 would maintain the current management regime; both alternative 2 and 3 would necessitate a decrease in buck licenses available, with alternative 3 requiring a dramatic decrease in buck licenses available each year.

As a result of this DAU planning process, a final population size objective of 28,000 – 30,000 deer was selected and a population composition objective of 25 – 30 bucks: 100 does was selected to manage the D-12 deer herd.

GRAND MESA NORTH
DAU D-12
HERD MANAGEMENT PLAN

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INTRODUCTION AND PURPOSE

The Colorado Division of Wildlife (CDOW) manages wildlife for the use, benefit, and enjoyment of the people of the state within the guidelines set forth in the CDOW's Strategic Plan, Five Year Season Structures, and mandates from the Wildlife Commission and Colorado legislature. Colorado's wildlife resources require careful and increasingly intensive management to accommodate the many and varied public demands, as well as increasing impacts from a steadily growing human population. The primary tool that the CDOW uses to manage game wildlife within the state is annual hunting seasons. Historically, big game season have been set as a result of tradition or political pressures. Often, the seasons that resulted did not adequately address big game population dynamics or current habitat conditions and pressures.

More recently, big game herds within the state are managed at the herd level, called a Data Analysis Unit (DAU). DAU boundaries are drawn so that they approximate an area where most of the animals are born, raised, and die with as little ingress or egress from other herds as possible. Normally, each DAU is composed of several game management units (GMUs). Within these DAU's, the herd is managed using the guiding principles set forth in the comprehensive DAU plan.

These DAU plans are updated at five year intervals through a public planning process that incorporates big game management principles and the many and varied public interests associated with Colorado's wildlife, as well as the mandates of the Wildlife Commission and state legislature. As many interested parties as possible are involved in the planning process, including the U.S. Forest Service, Bureau of Land Management, sportsmen, guides and outfitters, farmers, ranchers, the business community, outdoor recreationists, anglers, and the wildlife viewing public. All these groups have a vital interest in the size and composition of the state's big game herds.

The DAU plan establishes two primary management objectives: the approximate post-hunt population size objective, and the post-hunt composition (number of bucks per 100 does) objective. They are referred to as the DAU population and composition objectives, respectively. These two objectives determine the overall size and structure of the population and influence the management strategies used to reach the goals. The DAU plan also collects and organizes most of the important management data for the herd into one planning document, determines relevant issues through a public scoping process, identifies alternative management strategies to resolve these issues, and finally selects the preferred management objective alternative.

Once these population and composition objectives are set through the DAU planning process, the CDOW has the responsibility to work to achieve these goals on a yearly basis. The population objective drives the most important decision in the establishment of the annual big game hunting seasons: how many animals need to be harvested to maintain or achieve the population objective. To reach these

objectives, the CDOW uses a method called “Management by Objectives” approach (Figure 1).

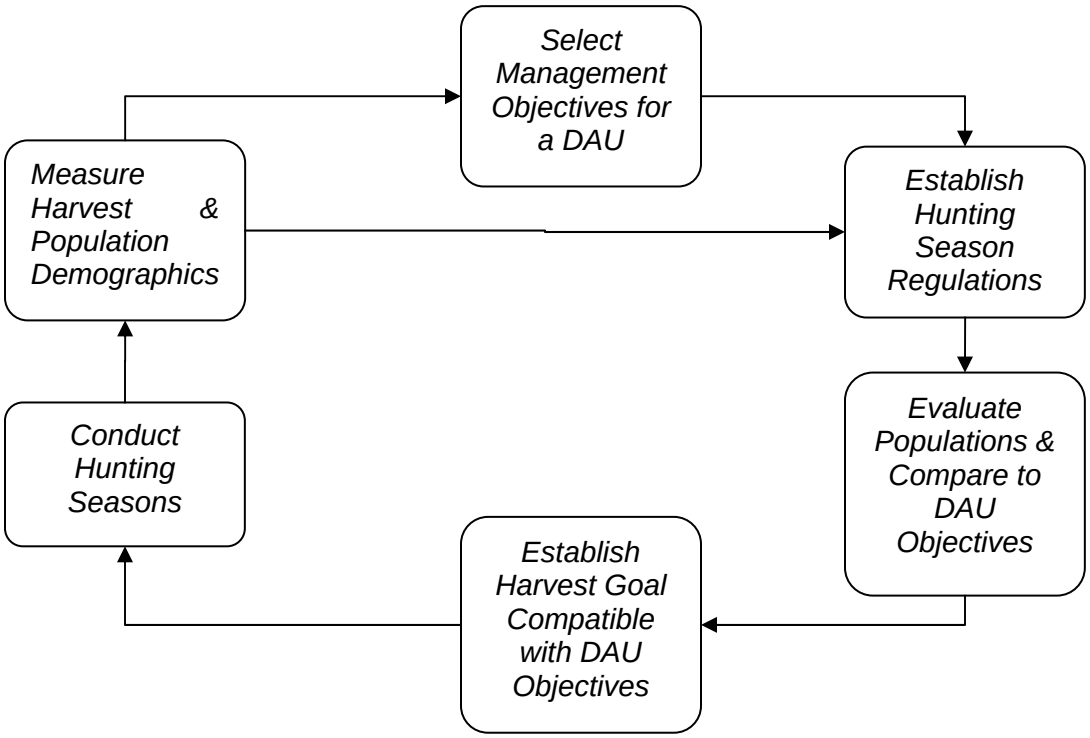

Figure 1. CDOW's Management by Objective Process.

To collect and analyze the data necessary to attain these goals, CDOW biologists use post-hunt aerial classification surveys and computer models. The data collected during annual aerial surveys are used in these computer models and allow biologists to estimate population size and structure. These estimates are then used to generate harvest recommendations that will align population estimates with the herd population objectives generated by the DAU planning process.

In the past, DAU D-12 was composed of 6 GMUs: 41, 411, 42, 421, 52 and 521. Since the late 1980s the CDOW has been studying deer movements in this DAU and information developed indicated that movements across the top of Grand Mesa, north to south, were insignificant. A decision was made in 1994 to split this DAU into two separate and new DAUs. GMUs 41, 42 and 421 were placed into DAU D-12; this includes the north portion of the old DAU. GMUs 411, 51 and 521 were placed into a new grouping that included the south half of the old DAU.

DESCRIPTION OF DATA ANALYSIS UNIT

Location

Data Analysis Unit D-12 is located in west-central Colorado and is called the Grand Mesa North DAU. It is bounded on the west and north by the Colorado River from Grand Junction to South Canyon near New Castle; on the east by South Canyon from the Colorado River to Sunlight Peak and then along the divide between the Roaring Fork-Crystal drainages and the Baldy Creek-Divide Creek drainages to the common point of the Mesa-Pitkin-Gunnison County lines; on the south along the Divide Creek-Muddy Creek divide to Spruce Mountain then along the Mesa-Delta County line to Colorado Highway 65, then along the Lands End road from Colorado Highway 65 to the Flowing Park road, the Flowing Park road to the Mesa-Delta County line, one mile south of Chambers reservoir, then along the Mesa-Delta County line to US highway 50; and on the west by Highway 50 from the Mesa-Delta County line to the Colorado River (Figure 2).

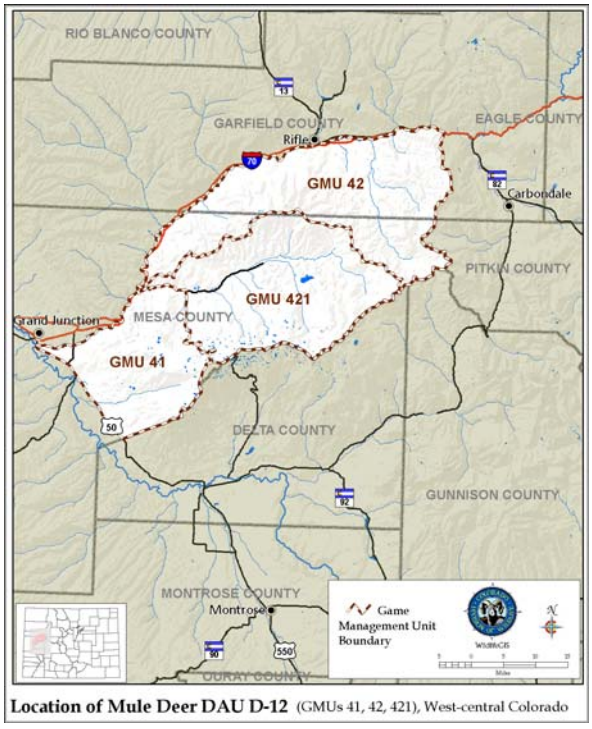

Figure 2. Location of DAU D-12 in west-central Colorado.

Physiography

The main topographic feature of this DAU is the Grand Mesa, which is a high, flat-topped mountain, formed by volcanic basalt activity. Elevations vary from about 11,000 feet on Grand Mesa in the south-central portion of the DAU, to the flood plain of the Colorado River at approximately 4,600 feet near Grand Junction. The Colorado River forms the northern boundary of the DAU. Interstate 70 parallels the

Colorado River, forming a significant barrier which restricts deer movements in and out of the DAU throughout the northern portion of the unit. Along the western boundary and west portions of the southern boundary the desert-like open terrain acts as another natural barrier that inhibits deer movements in and out of the DAU.

Battlement Mesa (The Battlements) located south of Rifle and Parachute is another outstanding feature. The Battlements are a relatively narrow ridge of mountains running east to west. The western portion of this area contains steep, open shale slopes that are recognizable due to their white color.

Hundreds of natural and man-made lakes and reservoirs dot the surface of Grand Mesa. The water is used for recreational purposes, agricultural irrigation, and domestic water supplies. Fishing is a very popular sport in the lakes, reservoirs and streams. Major drainages include the Colorado River, Plateau Creek, Mamm Creeks, the Divide Creeks and Kannah Creek.

The wide range of the terrain in this DAU provides a variety of physical features that deer populations find very suitable for their year-round needs. Due to this variety of landscape features, large numbers of deer can be supported in this herd unit. Deer summer ranges are found in the southern and eastern portions of the DAU along the slopes of Grand Mesa. Much of the summer range is found within the boundaries of both the White River and Grand Mesa National forests. Major concentration areasinclude the Hightower-Porter Mountain area; Divide Creek; the Battlements; and areas south of Collbran.

Deer are forced by deep snows to migrate to lower terrain surrounding the Grand Mesa during the winter. Annual precipitation ranges from approximately 40 inches on Grand Mesa to about 8 inches in the desert country near Grand Junction. Much of the annual precipitation falls in the form of snow.

Vegetation

Vegetation in this DAU varies due to the wide range of elevations that occur and also between the Grand Mesa and the Battlements. The high precipitation on the Grand Mesa allows for very different vegetative communities than does the significantly lower precipitation found in the Battlements.

Vegetative communities grade into each other in response to slope and aspect. Higher elevations, which receive considerably more moisture, are composed of aspen and spruce-fir forests. Oak brush communities are found just below the aspen/spruce/fir zone. Pinon-juniper woodlands are found on the lower and intermediate slopes throughout the DAU. These pinon-juniper-juniper woodlands are usually found in the lower, drier areas. Sagebrush and snowberry are commonly found in open areas in the oak brush zone at intermediate and higher elevations. Sagebrush is found throughout the DAU at lower elevations also. Desert shrubs types, including greasewood and sagebrush are found along drainages at the lower elevations, particularly in the Battlement areas. Irrigated

cropland and grassland with half-shrub mixtures and grass/alfalfa meadows are found in the valleys. Irrigated crops include corn, grains such as wheat, barley, and oats, and alfalfa and grass grown for pasture and hay. Fruit orchards are found in the western portions of the DAU around Palisade, Colorado. River bottoms along the Colorado River are dominated by cottonwood trees and other species including willows, boxelder and alders. Tamarisk is also found along the river corridor.

Land Ownership

The Grand Mesa North deer DAU contain a mixture of public and private lands (Figure 3). Approximately 60% of the lands within this DAU are public property'; 38% is managed by the United States Forest Service (FS) and about 21% by the Bureau of Land Management (BLM). Less than 1% is managed by the State of Colorado. Two National Forests manage lands within the DAU; these include the White River and Grand Mesa National Forests. The BLM lands are managed by the Grand Junction District office and include the Glenwood Springs and Grand Junction Resource Areas. Privately owned lands make up 39% of the total.

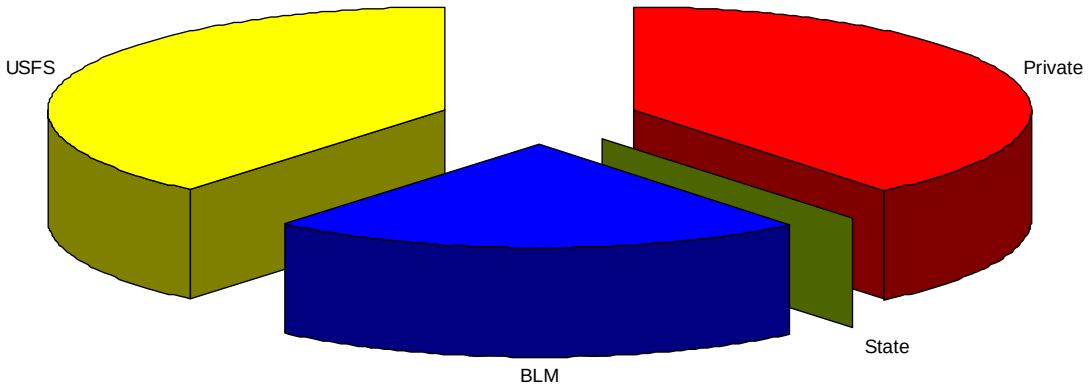

Figure 3. Land Ownership in D-12

Metropolitan areas are found around the edges of the DAU. Major residential areas include the Grand Junction area, Rifle, Parachute, Debeque, Silt, and New Castle. Located near the center of the Grand Mesa, the towns of Mesa and Collbran are also located in this DAU.

Like many areas in western Colorado, public lands are usually situated at higher elevations and private lands are found at lower elevations where the land is more suitable for farming, ranching and communities. D-12 is 1475 square miles in size. The Forest Service manages approximately 564 square miles and the Bureau of

Land Management manages about 315 square miles. The CDOW manages about 26 square miles of land at Garfield Creek State Wildlife Area and Plateau Creek Wildlife Area. There are approximately 569 square miles of private land in the DAU.

Land Use

Because of the DAU's wide range in elevations, there are a variety of uses occurring on the land. These range from livestock production to some of the best big game hunting in western Colorado and the western United States.

- **Agriculture:**

In the extreme western portion of the DAU, one of the primary uses of the private lands is for production of fruit crops. These fruit orchards include apples, peaches, cherries, apricots, and pears. Throughout the DAU on private lands other agricultural crops are grown, including corn, various small grains, and the production of hay for livestock. Much of the private land in the DAU is used to graze livestock during the spring, fall, and winter months. Cattle and sheep ranchers graze livestock on FS and BLM land during various seasons of the year. On FS lands, livestock are grazed on allotments during the summer and during the fall ranchers move the livestock to home ranches for the winter.

- **Timber Harvest:**

Commercial timber is sold and harvested on the National Forests in the DAU. Spruce/fir timber provides wood for the construction industry. Aspen has also been harvested, and has been used for the construction of wafer board for the building industry. Some firewood is harvested, both commercially and privately.

- **Residential Housing**

The DAU has several population centers that primarily occur along the major river drainages. The Grand Valley, which borders this DAU to the west, has the largest population in the area surrounding the DAU. Grand Junction is the largest town and is surrounded by other growing populations (Table 1).

The DAU has seen a great deal of population growth within recent years, primarily along Interstate 70 and, to some extent, near Collbran and Mesa. The majority of new housing developments have occurred in deer winter range, fragmenting former sagebrush and agricultural lands. The areas south of Rifle, Silt, and Parachute, in GMU 42 in particular, are seeing rapid conversion of agricultural lands to suburban housing developments. The resulting loss of deer and elk winter range is a significant and increasing concern within the DAU.

COUNTY	TOWN	POPULATION
Mesa	Grand Junction	42,000
	Collbran	600
	Palisade	2,700
	Total County	116,000
Garfield	Rifle	8,000
	Parachute	1,100
	Silt	2,300
	Total County	52,200

Table 1. Human Population Estimates within DAU D-11.

- **Recreation:**

Recreation is probably one of the most visible and extensive uses occurring on USFS and BLM lands in this DAU. The large number of lakes, reservoirs, and streams are used by fishing recreationists throughout the year. Excellent backcountry hiking, horseback riding, biking, and off highway vehicle (OHV) trails provide numerous days of recreational activity for a large number of visitors. During the fall, big game hunting is a major event in the DAU. Over the last five years, D-12 has provided hunting opportunity to an average 3,500 deer hunters. Approximately 2,400 deer hunters are in the field during the two rifle hunting seasons in October and November. Archery and muzzleloading seasons attract another 500 hunters during late August and September. Vehicular access varies throughout the USFS and BLM lands but an extensive network of roads provides ample access to many areas that are open to multi-purpose land uses.

- **Mining and Oil & Gas Development:**

Natural gas and oil exploration is occurring throughout the DAU. Extensive reserves of natural gas have been discovered in the area from Debeque to New Castle and also around the Collbran area. It is anticipated that the drilling, piping and production of gas and oil is in the beginning stages and the forecasts call for extensive future development. Both oil and gas well locations, access roads, and pipe line corridors are expected to increase dramatically in the next 10 years.

HISTORICAL HERD MANAGEMENT

Prologue

The total number of animals in a big game population fluctuates throughout the year. Normally, the population peaks in the spring just after birth of the young. Populations then decline throughout the year as natural mortality and hunting seasons take animals from the population. Traditionally, the CDOW uses post-hunt populations (immediately after conclusion of the last hunting season) as a frame of reference when we refer to the size of a population of deer. In this manner we have established a reference point and can eliminate confusion when referring to populations.

Realistically, deer population objectives are determined by taking into account many different variables to arrive at a final population objective number. Some prominent variables include biological data, political and economic considerations, recreational interests, domestic livestock concerns, and vegetative capabilities. Population objectives are often set at a level consistent with the herd's maximum sustained yield (MSY). However, it is very difficult to determine the MSY and carrying capacity for any given area and herd (see Appendix A for a brief summary of the concept of MSY and carrying capacity).

Post-hunt populations in this plan have been generated by the computer model referenced in the Introduction and Purpose. These population estimates are just that: estimates, and are used primarily to identify trends and issues of major concern. A brief discussion concerning population assessment is contained in a *Population Assessment Procedure Overview*.

Population Assessment Procedure Overview

Estimating populations of wild animals over large geographic areas is an extremely difficult and inexact science. Our current method of determining deer populations is based upon population models, which integrate measured biological factors into a computer generated population simulation. The biological factors used include post-hunt sex and age ratios data taken from helicopter surveys in December and hunter harvest information. The surveys provide baseline information which is used to align the models. Hunter harvest surveys are another factor. Other data requirements include winter survival for different age classes and sexes, wounding loss, and winter severity factors. If better information becomes available, such as new estimates of survival rates, wounding loss, sex ratio at birth, density estimates, or new modeling techniques and programs, the CDOW reserves the right to use this new information and the new techniques. Making these changes may result in significant changes in the population estimate. It is recommended that the population estimates presented in this document be used only as an index or as trend data. They represent CDOW's best estimate of populations at the time they are presented.

Post-hunt Population Size

Deer populations in D-12 have fluctuated over the years (Figure 4). The CDOW has presumed that populations were at their maximum during the late 1950s and early 1960s. Deer harvests throughout Colorado and the western part of the United States were at the highest levels ever recorded during this period. Deer herds had been building in a response to improved game management practices. Habitat conditions apparently were ideal and predator control effort may have been effective enough to allow for unprecedented fawn survival. Since population size and harvest are usually directly related, then the assumption that populations were at their peak is likely correct. Populations declined during the late 1960s and into the early 1970s, possibly by as much as 40%. Why this decline occurred is speculative. Hunting seasons remained liberal during this time and winter losses may have increased. Habitat and vegetative conditions may also have changed in a way that adversely impacted mule deer.

Populations peaked again in the early 1980s. A large die-off occurred during the very severe winter of 1983-84. Virtually all fawns died over winter, which started early in mid-November and lasted well into April. An estimated 20-30% of adult animals also succumbed to the long, cold winter. Populations fluctuated until about 1990. During the 1990's, numbers declined and reached a low of about 17,000 in 1999. In the last 5 years, this population has rebounded and is back to near the objective levels. The major factor that appears to be slowing the population's ability to rebound is the lack of recruitment of fawns into the adult population.

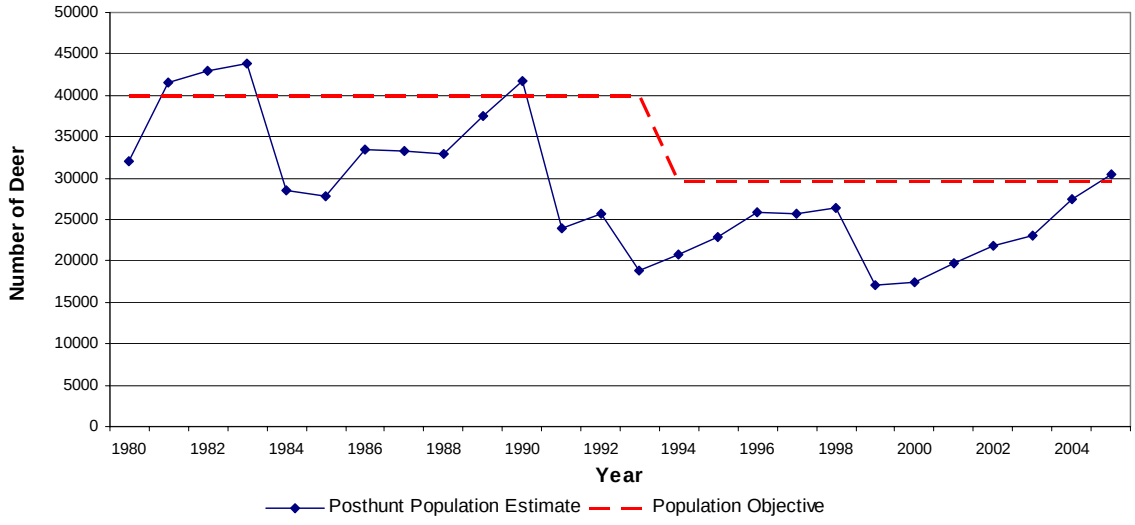

Figure 4. Post hunt Population Estimates for D-12.

Post-hunt Herd Composition

Since 1974, the CDOW has conducted aerial sex/age composition surveys in D-12. Since 1978 these surveys have been completed every year. Prior to 1978 these classifications were conducted on a less scheduled time frame with data going back to 1971. These classifications are designed to sample the existing post-hunt population and determine the ratios of bucks and fawns to does. They are often mistaken by the public as total counts of the population. This is not the case; the data only represent a sample of the population. The results are presented as the number of bucks: 100 does and the number of fawns: 100 does. The data provides information on reproductive success, survival of fawns, and information on the ages of the adult male segment of the population.

- **Buck: Doe ratios**

Generally, buck: doe ratios above 10 bucks: 100 does are sufficient to sustain a relatively healthy herd. The number of bucks: 100 does has varied from a low of nearly 13 in the mid-1980's to highs in the 30's in the early 1990's. The average buck: doe ratio from 1995-2005 was 22.6. (Figure 5).

Early records indicate that D-12 buck: doe ratios were usually greater than 40 bucks: 100 does; from 1974 to 1979 the ratio was 33.2. During this time any buck was legal and restrictions, such as antler point limitations, were few. In 1984 the buck ratio was 13.4: 100 does; the lowest ever recorded. Antler point restrictions were implemented during the late 1980's through late 1990's. Some increase in the buck: doe ratio was observed, but, generally, there was an overall decrease in mature bucks. Buck: doe ratios have shown some improvement as a result of completely limited buck hunting.

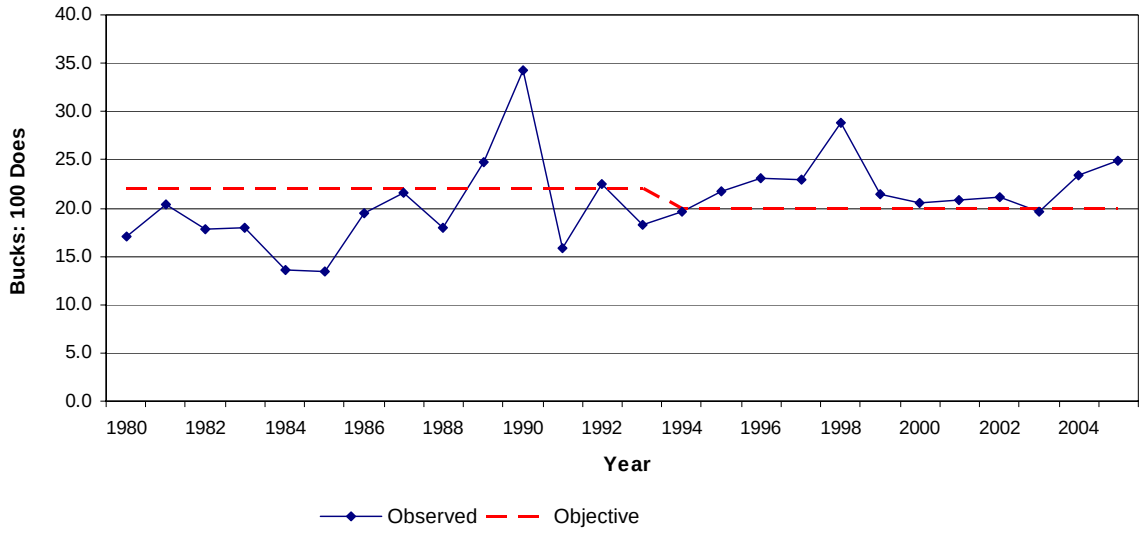

Figure 5. Buck: Doe Ratios in D-12.

- **Fawn: Doe ratios**

As discussed above, mule deer classifications have been flown consistently for over 20 years. The post-hunt fawn: doe ratios are indicators of how successful the reproduction was for the past spring and how well fawns survived until December. This is a critical indicator of the condition of the herd. Good fawn recruitment indicates a strong, healthy herd, while low recruitment may show poor or declining herd health. Generally, fawn production at 75-85 fawns/100 does indicates a growing deer herd. When fawn production drops below 60 fawns: 100 does, there is concern for the herd's ability to sustain itself.

Since the late 1980's, fawn: doe ratios have fluctuated and have shown an overall decline. This decline in productivity mirrors the decline in the overall population numbers. Although this herd has increased in recent years, it is likely that a decline in winter range quantity and quality is creating a situation of density-dependence and the deer herd has reached the population limit the winter range can support.

The lowest fawn ratios were seen in 1998 and 2002, when only 48 fawns: 100 does were observed. There has been some improvement in the last three years (Figure 6).

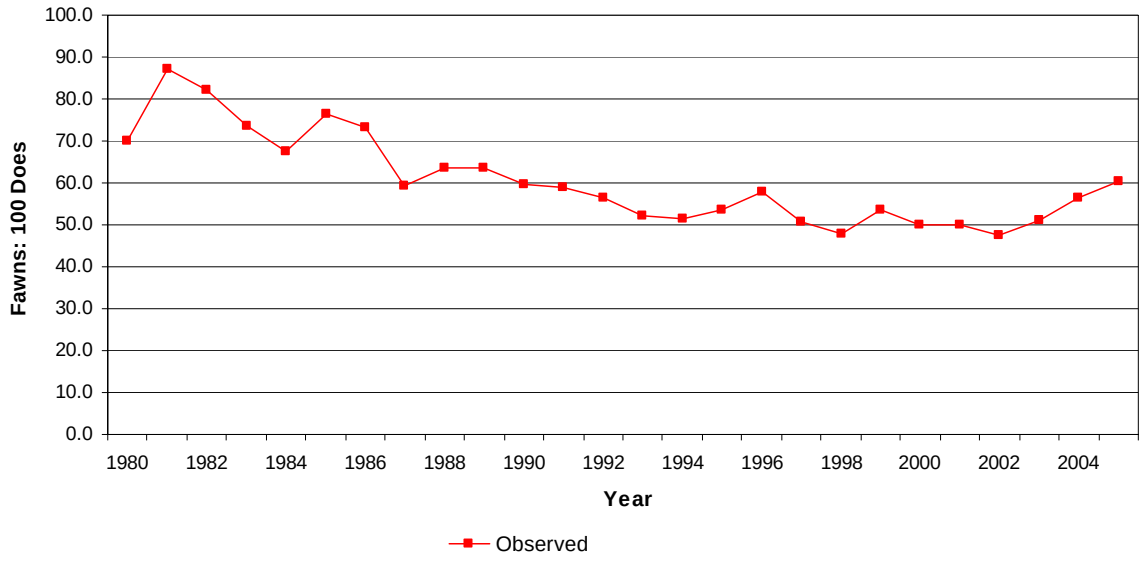

Figure 6. Fawns: 100 Does in D-12.

Harvest History

Deer harvest in the DAU D-12 has varied by substantially over time and by sex. Buck harvest peaked in the early 1980's, followed by gradual reductions, particularly since 1990 (Figure 7). Doe harvest was minimal in the 1980's and peaked in the early 1990's. The highest harvests occurred in 1990, when 1584 antlerless animals were harvested and in 1982, when 4,061 antlered animals were taken. Doe harvest

has been minimal since1999, and has generally been used to control or prevent damage by deer. Generally, the highest harvests have occurred in conjunction with the highest populations. Lowest harvests have occurred during the last few years when the CDOW has been attempting to increase the deer population from current low numbers.

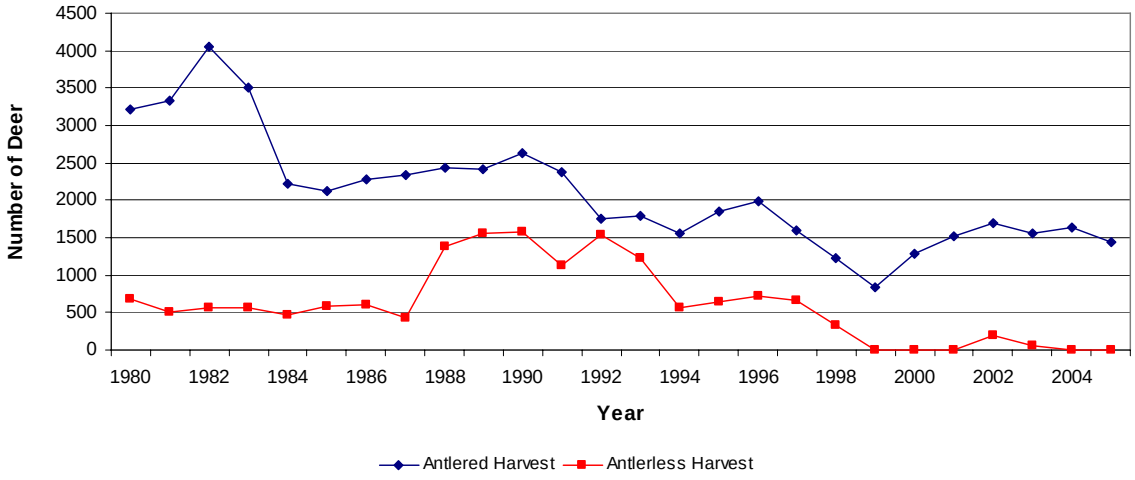

Figure 7. Annual Harvest in DAU D-12.

Deer seasons have evolved from being quite simple to rather complicated. The driving force behind this change has been due to the dramatic deer population decline. The herd numbers of today coupled with the many factors exerting their force on populations have driven the hunting process to the format we have now. In the 1970's there were very few non-rifle hunters. Now, archery and muzzleloading seasons attract approximately 150 hunters during late August and September, and account for approximately 15-20% of the annual harvest.

The rifle hunting seasons have also changed. In the 1950's and 1960's there was one fall hunting season. Now there are three rifle seasons for deer, and while hunter demand is very high, relatively few licenses are issued each year.

Interest remains very high for deer in this DAU. Generally, a preference point is required to hunt during the 2nd and 3rd rifle seasons. The 4th season is a highly sought after time to hunt.

Hunting Pressure and Hunter Numbers

Hunting pressure and hunter numbers have mirrored the population trends in this unit. As the herd declined, the CDOW has issued fewer licenses, decreasing overall hunter numbers (Figure 8). License numbers have remained low in recent years in an attempt to maintain lowered harvest and increases in the population. This DAU has some of the highest hunting pressure in the State. The abundance of both deer

and elk and the system of roads in the National Forest allows good access to excellent hunting areas. Both archery and muzzleloading hunters find this area very attractive and hunting pressure is intense during these seasons.

Since 1999, when licenses became totally limited, success rates have increased dramatically, further decreasing the number of licenses available.

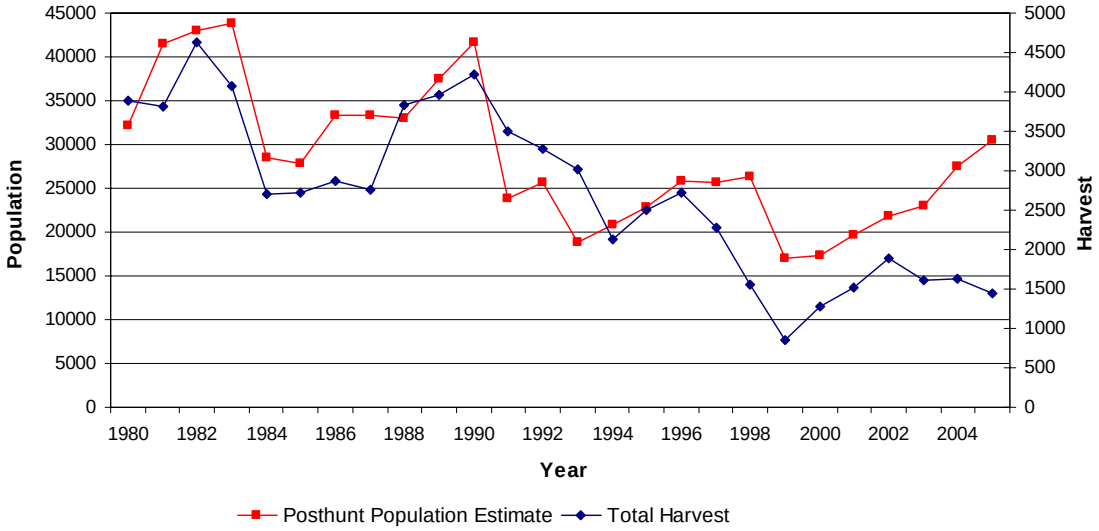

Figure 8. Deer Population vs. Harvest in D-12.

CURRENT HERD MANAGEMENT

Current Population and Composition Objectives

The current population objective for the Grand Mesa North DAU is 29,500 deer. This objective was approved through the DAU planning process completed in 1994. The current population estimate is approximately 30,500 deer. This is within reasonable proximity to the objective. Current management efforts are focused on maintaining herd size and improving fawn: doe ratios.

The current composition objective is 20 bucks: 100 does. Current composition estimates are generally between 20 and 25 bucks: 100 does, which is a feasible objective under the current management regime.

Harvest Management

This DAU has been managed in recent years with completely limited antlered (buck) licenses and very few antlerless (doe) licenses in an effort to increase the population size. Doe harvest has come primarily from damage control situations. Declining herd numbers since the early 1990's caused the CDOW to be aggressive in scaling back annual harvest objectives in this DAU for at least the last decade. The management emphasis in this DAU is on providing maximum buck hunting opportunity while maintaining and increasing the size of the herd.

- **Antlered Licenses**

The CDOW initiated completely limited antlered licenses in this DAU in 1999. A harvest objective of less than 1500 antlered animals has been maintained since that time. A 4th rifle season was instituted in 2006 to provide a high quality, highly sought after hunting opportunity to a very small number of hunters.

- **Antlerless Licenses**

Antlerless licenses were eliminated in 1999 to encourage population growth. In 2002 and 2003 doe licenses were issued and a total of almost 250 antlerless animals were harvested. Other than those animals, no does have been legally harvested since 1998. Doe licenses will be issued during the 2006 season in response to increasing deer populations and declining fawn: doe ratios.

HABITAT RESOURCE

Habitat Distribution

- **Deer Overall Range**

Deer are found throughout DAU D-12 with the general exception of the largest human population areas (Figure 9). Deer herds move across the remainder of the DAU during the year, utilizing different areas during different seasons.

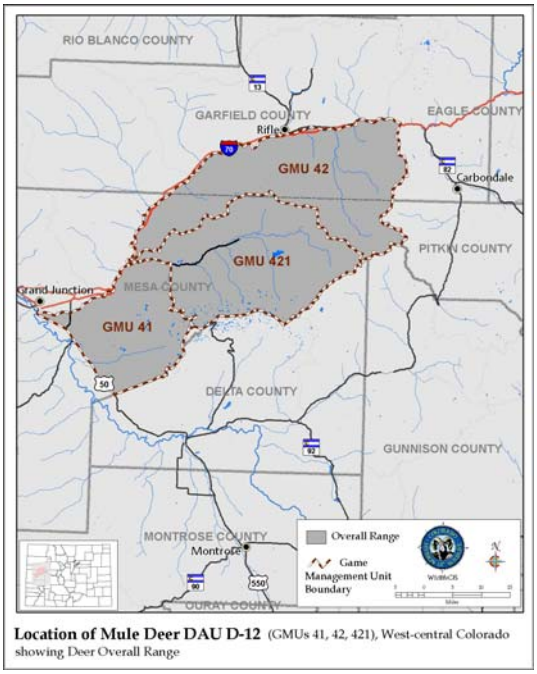

Figure 9. Deer Overall Range in DAU D-12.

- **Deer Summer Range**

Deer in D-12 summer throughout the DAU, although the majority summer in the higher elevations (Figure 10). In the spring, they tend to follow the retreating snowline and subsequent green-up in vegetation. Although some deer remain at low elevations year-round, the majority move to higher elevation summer ranges. There are nearly 840 square miles of summer range. The quality of summer range is important for deer to ensure they recover from winter weight loss, does can support late fetal development and lactation, and all animals in the population go into winter in good body condition.

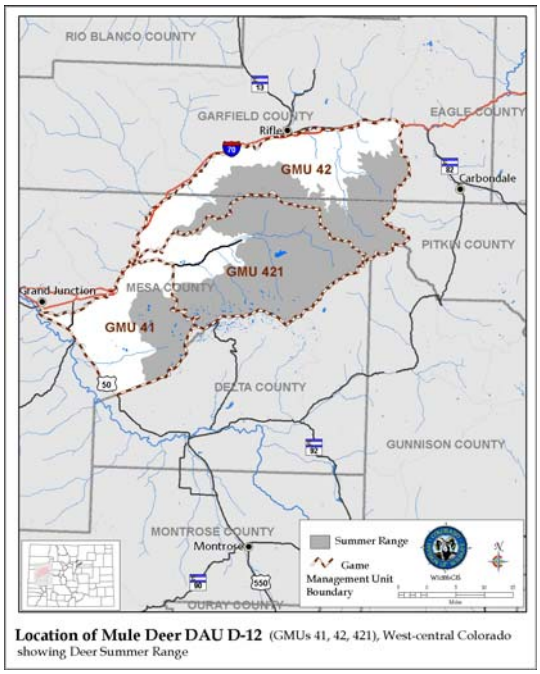

Figure 10. Deer Summer Range within DAU D-12.

- **Deer Winter Range**

Winter range is often considered to be more important to deer than summer range because it is generally more limited due to weather conditions. The CDOW characterizes winter range into winter range, winter concentration areas, and severe winter range. They are defined as:

> *Winter Range:* that part of the range where 90% of the animals are located during average winters.
>
> *Winter Concentration Area*: the part of the range where densities are at least 200% greater than the surrounding winter range in average winters.
>
> *Severe Winter Range:* that part of the range where 90% of the animals are located during the two worst winters in 10 years as determined by the maximum annual snow pack and minimum temperatures.

Due to heavy accumulations of snow at higher elevations, both deer and elk are forced to winter at lower elevations. There are approximately 550 square miles of winter range in DAU D-12. The lands that surround the Grand Mesa at lower elevations comprise important winter ranges for both deer and elk. Areas such as the area around Mesa, the Plateau Valley, Kannah Creek Basin, and the areas south of Rifle, Silt, and Parachute support the DAU's deer populations during the winter (Figure 11). Favorable snow depths, slope and aspect, and winter temperatures make these areas suitable for wintering big game. During severe

winters both deer and elk are forced to winter at even lower elevations where snow levels are usually the least.

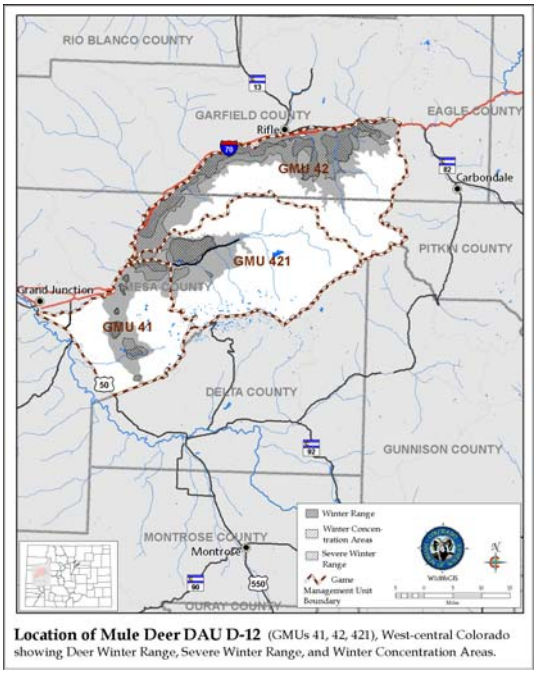

Figure 11. Deer Winter Range in DAU D-12.

- **Land Status in Deer Winter Range vs. Deer Summer Range**

Of the approximately 550 square miles of winter range in D-12, 42% is on public lands and 58% is on private holdings. The majority of the winter ranges are found on BLM and private lands, with only about 4% of the winter range found on USFS lands. There are approximately 840 square miles of summer range in D-12. Of this area, 26% is on private land and 74% is on public land. The majority of deer summer range on public land is managed by the USFS.

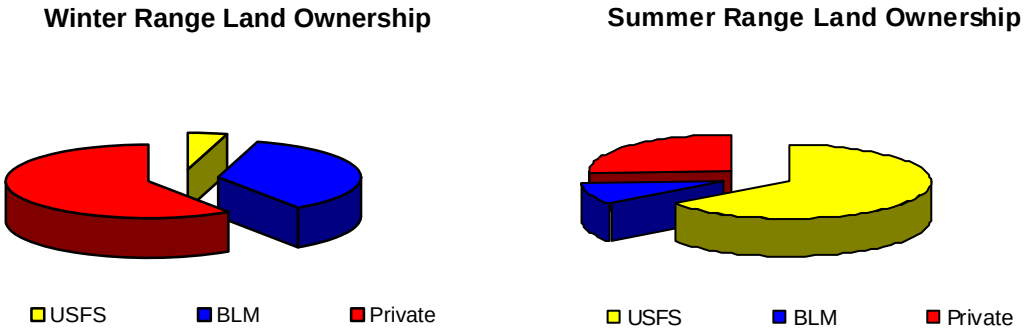

Figure 12. Land Ownership in DAU D-12 in Winter vs. Summer Range

Habitat Condition and Capability

The value of the habitat resource is measured by both its condition and its capability (quality and quantity). Both aspects are integral in the overall health and value of the environment available to deer. Availability of food, water and cover are the most basic needs of all wildlife. However, many other aspects of habitat condition influence the overall value of the habitat to wildlife.

A primary issue for both deer and elk is the decline of winter range throughout the DAU. The reasons for this decline are many and varied. Pinon-juniper encroachment into former sagelands has decreased the amount of winter range available. Mature pinon-juniper stands provide little food for deer and large, uninterrupted pinon-juniper woodlands have limited value for deer except as thermal and escape cover. The value of pinon-juniper woodlands to deer can be improved by creating mosaic openings to create more forage and diversity. In addition to pinon-juniper encroachment, a lack of recruitment into sagebrush has created single age-class stands of older plants that provide far less nutrition and forage to wintering big game animals.

Another significant impact to habitat condition in DAU D-12 is the fragmentation and destruction of habitat as a result of heavy and increasing energy development. Deer and elk avoid areas of high activity associated with oil and gas development, causing direct habitat loss. Additionally, roads and fences fragment the landscape and make wildlife more vulnerable to vehicular collisions and poaching. This effectively decreases the overall habitat capability as these areas become essentially useless to elk and deer.

Noxious weed invasion is also of major concern regarding the habitat condition in D-12. Weeds such as houndstongue, cheatgrass, knapweed, and thistle degrade the habitat and provide little forage for wildlife.

- **Browse Conditions**

Throughout D-12, browse conditions are fair to good and generally improving, particularly in recent years with better precipitation. There is a lack of young, vigorous, nutritious browse throughout the DAU, primarily due to a lack of fire. Higher elevations are generally in better shape than lower elevations, primarily due to more moisture.

Several issues were identified during this process relating to browse conditions in D-12. Snowberry encroachment and lack of regeneration in aspen stands has become a concern in recent years, particularly on the Battlements. It is not known why aspen recruitment is low, but drought is probably a major cause. Recent studies have suggested that some form of aspen-specific pest may also be playing a role. Serviceberry, mountain mahogany, and other mountain shrubs are also being out-competed by snowberry in some areas, and there is currently low recruitment of these species into mountain shrub communities in some areas. Despite some site

specific issues, the overall browse conditions at high elevations on the Grand Mesa are good.

Lower elevations browse conditions are not as good. Oak brush has been hit hard in recent years by drought and late frosts. Although multiple age-class stands improve forage availability, some thermal and escape cover is lost in the process. Sagebrush throughout the DAU on winter ranges is found in single age-class stands, with little age or size diversity and low vigor. There is significant pinon-juniper encroachment into sagebrush, which is adversely impacting winter ranges available to deer and elk.

There have been some habitat treatments in recent years to improve browse and range conditions in DAU D-12. Roller-chopping projects in GMU 41, north of Chalk Mountain have improved elk and deer winter range by removing pinon-juniper stands in former sagebrush. Prescribed burning in the lower Battlements has improved approximately 3,000 acres of deer and elk winter range. Recent habitat treatments on Garfield Creek SWA have removed pinon-juniper and treated decadent stands of sagebrush to improve winter range for elk and deer.

- **Range Conditions**

Range conditions vary widely within D-12. There are some site-specific issues across the DAU, but most rangelands are in fair to good condition. Higher moisture levels in recent years have dramatically improved the range conditions and available forage.

The primary issue impacting range quality in DAU D-12 is the invasion of noxious weeds at lower elevations, particularly cheatgrass, Canada and musk thistle, annual wheatgrass, and Russian knapweed. Cheatgrass is very common on lower-elevation rangeland in D-12 and is a predominant species on much of elk and deer winter range. This invasion is exacerbates the damage caused by high-impact disturbance from activities such as oil and gas development and historic grazing practices.

Higher elevation rangeland is in much better condition and provides significant high quality forage to wildlife, particularly elk. High elevation areas on the top of the Grand Mesa and in the Battlements have high grass and forb diversity with good native vegetation component.

The high quality range conditions at high elevations are due primarily to higher moisture in recent years, and, to a lesser degree, to decreased livestock grazing in some areas. The Divide Creek area in particular, provides high quality summer and transition range to deer due to improved range stewardship and good grazing practices. The Buzzard Creek area and the lower Battlements, in particular, have seen a significant decrease in livestock grazing in recent years. It is likely that livestock grazing is less of a negative impact to wildlife forage than is the invasion of cheatgrass, particularly on winter range.

- **Fire and Vegetative Succession**

Fire is an integral and necessary component of habitat health and regeneration. Over 100 years of fire suppression has allowed woody species to continue to mature and become denser and less productive. In addition, fire suppression has allowed fuels to build up to the point that when infrequent fires do occur they are much more intense and destructive. Deer show a strong preference for burned areas and seek the nutritious new growth that occurs after fire. Burned areas are generally considered to be beneficial for deer.

There have been some recent fires in DAU D-12, both prescribed and wildland. Numerous prescribed burns on the north and south sides of the lower Battlements and in west Mamm Creek have improved winter range conditions by creating multiple age structures and opening up dense stands of woodlands and oak brush. In 2006, the fire south of Rulison and the Jolley fire southeast of Silt, have burned through over-mature oak and pinon-juniper stands. These fires, after reseeding, will improve wildlife winter range by opening up dense, overgrown stands of pinon-juniper and oak brush. The Atwell fire of the early 1980's has come back and the new vegetation provides excellent winter range for both deer and elk.

Despite the benefits of wildland fires, there is the drawback that disturbance increases the possibility of noxious weed invasion, particularly of cheatgrass.

- **Public Lands vs. Private Lands**

Overall, there is very little difference in habitat condition between public and private lands in D-12. The primary difference are seen in forage availability in dry land vs. irrigated ranges, with irrigated lands providing much greater forage amounts, plant diversity, and vigor. Noxious weed invasion is also frequently lower on private than public lands. These private lands provide valuable winter range to deer in D-12.

Conflicts

- **The Habitat Partnership Program and Its Role in the DAU Plan.**

Colorado's Habitat Partnership Program (HPP) was initiated in 1989 to help address the problems private landowners and federal land management agencies have with big game animals. The program is designed to assist in resolving forage and fence problems, directly and with local input. A committee of local landowners, sportsmen and federal agency personnel is established to ensure appropriate public involvement in identifying range management problems and recommending solutions to these problems. Five percent of the total deer and elk license revenues produced from the DAU are available to the committee for habitat improvement work and other management programs to alleviate conflicts.

Another significant portion of each committee's involvement in local big game management is participation in the DAU planning process. They ensure that private

land habitat issues are considered in setting the DAU objectives and that conflict areas are identified and solution strategies are appropriate.

The committee develops a 5-year Big Game Distribution Management Plan. This plan identifies locations and seasons of big game concentrations, which the landowner or land manager considers to be conflict areas. For each conflict area identified, the plan includes a strategy by which the CDOW and the landowner/land manager agree to eliminate or reduce the conflict.

The Grand Mesa HPP committee was established in 1995 to work cooperatively with landowners and land management agencies in D-12 to minimize and mitigate damage by deer and elk in the area.

- **Deer Damage to Agricultural Crops**

The State of Colorado is liable for compensating landowners for documented damage to commercial agricultural products, livestock forage, and fences by deer and other big game provided the landowner allows reasonable hunting access. DAU D-12 has traditionally seen little damage from deer to agricultural crops. Recently, farmers and ranchers have complained more frequently about damage to growing hay in the spring and summer. There are also increasing complaints DAU-wide regarding deer damage to orchards. Very mild winters in recent years have significantly mitigated damage and fewer complaints have been documented.

- **Deer Competition with Domestic Livestock**

There is very little competition with domestic livestock for deer forage within the DAU. These types of competition will most likely increase as human activity is increasingly spreading out from population centers and more heavily impacting traditional winter and summer ranges. It is difficult to mitigate for this type of damage, particularly as available habitat decreases due to many human disturbance.

- **Elk Competition with Mule Deer**

The elk in the overlapping DAU (E-14) are a slowly decreasing population (Figure 13). There is some concern that the elk herd has negatively impacted the deer herd through direct competition for spatial and forage resources.

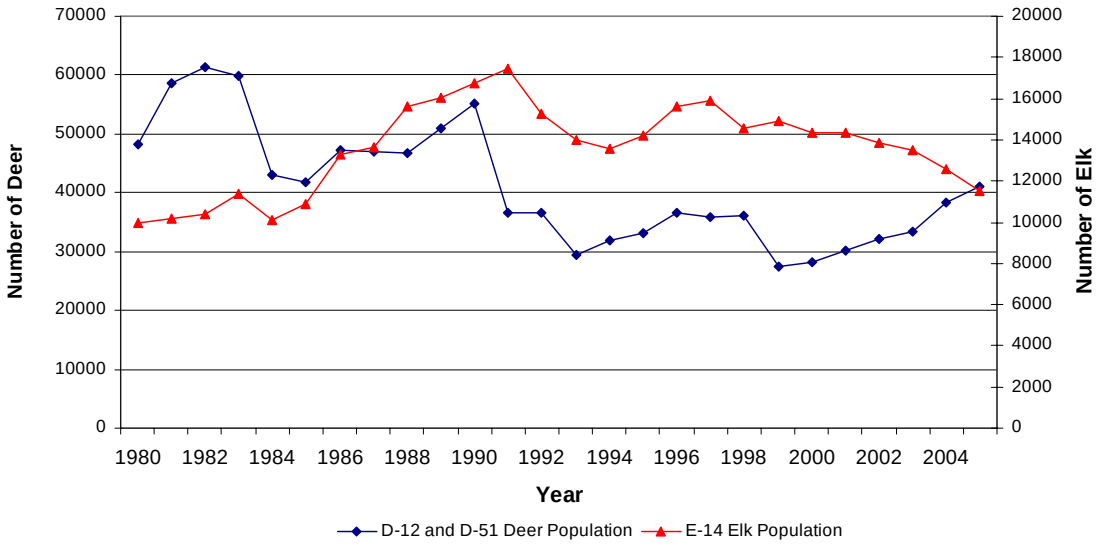

Figure 13. Elk and Mule Deer Populations in E-14, D-12 and D-51.

Although a causal relationship has never been concretely established, state-wide mule deer declines have coincided with increasing numbers of elk. Several studies in the western U.S. have shown that mule deer and elk have only moderate dietary overlap except during periods of food shortage such as during severe winters. Elk generally prefer to graze on grass, sedges, and forbs during much of the year; while deer tend to prefer forbs, young grasses, and new leader growth during the growing season, and select browse during the winter. Thus, except during severe winters, dietary overlap is probably minimal. It is likely that within DAU D-12 there is some competition between elk and mule deer, but mule deer population declines within the DAU are probably more directly related to habitat fragmentation, drought, decadent vegetation structure, and increased human activity than simply increased elk numbers.

ISSUES

Issue Solicitation Process

The most important aspect of the DAU planning process is obtaining input from all segments of the affected local populations, including the USFS, BLM, HPP committee, and interested public. A meeting was held in August, 2006 to solicit input from local land management agencies.

In an effort to solicit information from the interested public, the CDOW held open public meetings in Collbran, Grand Junction, and Rifle during August and July of 2006, to gather recommendations on the goals and objectives of the DAU plan. At these meetings, current management objectives were presented and alternatives were presented. Input was requested, in the form of an optional questionnaire (APPENDIX E: PUBLIC QUESTIONNAIRE), from participants at the time of the meeting regarding any issues or concerns. Concerns and comments and the questionnaire responses have been incorporated into this plan. A comprehensive analysis of these comments, along with text of written comments, is available in APPENDIX D: COMMENTS FROM PUBLIC STAKEHOLDERS WITH QUESTIONNAIRE ANALYSIS.

The Boards of County Commissioners (BOCC) from Mesa and Garfield Counties were also requested to provide input on the draft management plans and were invited to the local public meetings. At the time of this writing no comments had been received from any of the BOCC's. If any input is received, it will be incorporated into this plan at a later date.

A meeting was held with the Grand Mesa HPP committee in August 2006 to provide them with information about the DAU planning process and the management alternatives being considered.

Issue Identification

- **Issues and Concerns: CDOW**

The main concern identified by CDOW personnel was declining winter range quality and quantity. The impacts of energy development on deer, particularly on winter ranges, was also of major concern.

Declining Habitat Quality, Particularly on Winter Range

Habitat quality is the single most important factor affecting deer populations throughout Colorado, particularly on winter ranges. High quality habitat allows for a higher sustainable population, maintains the herd in better condition, and provides for better reproduction and survival. Winter range is generally the limiting factor determining deer numbers, as it is less available than other ranges.

In many areas in DAU D-12, the range and browse conditions are of significant concern. Although browse conditions are generally good, degraded areas are more

common on transitional ranges, especially oak brush; and on winter ranges, including sagebrush. Generally, the habitat quality decline has been caused by a lack of rejuvenation, invasive weeds, oil and gas development.

Fire suppression has resulted in decadent stands of oaks and sagebrush, as well as pinon-juniper-juniper encroachment. Without fire, young, vigorous plants are unable to out-compete the more mature individuals, resulting in older age-class stands of less productive shrubs and trees. These over-mature stands are much more vulnerable to large scale die-offs, particularly in recent drought years. .

Invasive weeds such as cheatgrass, houndstongue, thistles, leafy spurge, and knapweeds are increasing dramatically in this DAU. These are brought in through oil and gas development, increasing motorized recreation, and widespread development. These invasive species do not have the nutritional value of native species and decrease the amount of forage available to deer and elk.

Ultimately, the decline in habitat quality is the primary issue affecting the deer and elk herds in this DAU. Although there are many different causes of this degradation, it is vital to the health of these herds that habitat quality be improved.

Housing/Ex-Urban Development

The DAU has had substantial development in areas that were once part of deer winter range, particularly in the along the I-70 corridor and the areas surrounding Cedaredge, Hotchkiss and Paonia. Ranches have been subdivided and natural habitat quality is significantly reduced by fragmentation. This includes direct loss of habitat, effective loss of surrounding habitat due to harassment from people and pets. Development has combined to reduce the amount of useable winter range. The Rifle, Silt, New Castle, Collbran and Mesa areas have all, in the last decade, seen a rapid development of housing in areas that once were deer winter ranges. Ranches have been subdivided and natural habitats have been changed or eliminated. This development has combined to reduce the amount of useable winter range for deer and puts added pressure on remaining lands.

Natural Gas and Oil Development

Natural gas and oil development is and will continue to significantly impact the deer habitat and population within this DAU. Oil and gas development has already impacted significant acreages in Plateau Valley and the north face of the Battlements. Further exploration and development is planned for these areas and on the north side of the Grand Mesa.

There is very little data available documenting the impact of oil and gas development on deer populations. It is not within the scope of this planning document to determine, prevent, or mitigate these impacts. However, it is mandatory that the likely negative impacts be noted and mitigation practices be recommended wherever possible.

These oil and gas developments generally have both direct and indirect impacts. Direct disturbance entails those impacts resulting directly from the installation and

maintenance of drilling operations. They include the loss of habitat resulting form the footprint of the drill sites, fragmentation of habitat from roads and drill sites, and water quality declines associated with increased run-off, erosion, and pollutants. Elk and deer avoid areas of higher human activity and degraded habitats, and thus directly lose that habitat component.

Indirect impacts are frequently as or more significant than direct impacts and include increased deer/vehicle collisions, erosion in disturbed areas, noise disturbance, displacement away from human activity, increased poaching near roads and drill sites, and habitat quality decline from introduction of non-native weeds.

These impacts result in dispersal and distribution conflicts when deer concentrate in areas that have not been impacted by oil and gas development. These distribution problems then result in increased conflicts, increased pressure on valuable habitats, and, most likely, in declines in overall herd health and sustainability.

Low fawn: doe ratios

Fawn: doe ratios have average below 55 fawns: 100 does for at least the last 15 years. It is unknown why fawn numbers are so low, but it is likely that a density dependent situation is occurring and is contributing to slow population recovery. High fawn mortality is often a characteristic of an over population of deer and perhaps competition with elk.

Increasing the number of mature bucks

There is considerable interest within the CDOW to improve the quality of bucks in D-12, while still maintaining hunter opportunity. Most CDOW personnel expressed a desire to increase the number of mature bucks and maintain a buck: doe ratio closer to 30 bucks: 100 does.

- **Issues and Concerns: BLM**

A meeting was held in an effort to involve land management agencies in the DAU planning process. Two BLM Field Offices that manage the majority of land within this DAU; the White River Field Office and the Grand Junction Field Office were invited to the meeting and requested to provide comments regarding deer management in D-12. No one from the BLM attended the agency meeting and no comments were received from any Bureau of Land Management personnel regarding issues or preferred alternatives. Input was received from the Grand Junction Resource Area regarding vegetative condition.

- **Issues and Concerns: USFS**

United States Forest Service lands within D-12 are managed by two different National Forests: the White River and the Grand Mesa, Uncompahgre, and Gunnison Forests (GMUG). The following is a summary of recommendations from local personnel of the United States Forest Service. Full text of their comments can be read in APPENDIX B: TEXT OF COMMENTS FROM THE USFS.

The Grand Mesa, Uncompahgre, and Gunnison National Forests recommended that the population size objective range be changed to 28,000 – 30,000 deer, preferably nearer to 30,000 deer. The GMUG National Forests also expressed a preference for the population be managed for 20 -25 bucks: 100 does. The GMUG National Forests noted that the deer population had been doing well on the Grand Mesa in recent years.

The White River National Forest recommended that the deer herd be managed for a range of 28,000 – 30,000 deer and that the post hunt buck: doe ratio objective be set at 20 – 25 bucks/100 does. The WRNF cited very few deer damage complaints and current and future projects to maintain and improve elk winter and transition ranges in support of their recommendation. The WRNF also expressed concerns over the potential for increased energy development in this DAU and the likely impacts to winter and transition ranges.

- **Issues and Concerns: Grand Mesa Habitat Partnership Project Committee**

The Grand Mesa Habitat Partnership Project Committee works with landowners and landowning agencies in DAU D-12 to minimize and mitigate for damage by deer to agricultural crops. During this planning process, the Grand Mesa HPP Committees was advised of the DAU management plan revision and was requested to provide comments. The full text of these comments is included in APPENDIX C: TEXT OF COMMENTS FROM GRAND MESA HPP COMMITTEE .

The Grand Mesa HPP Committee recommended managing for 29,000 deer and for improving the buck/ doe ratio to 23 – 27 bucks: 100 does. There was little concern on the part of the HPP committee for significant agricultural damage by deer, but there was a great deal of interest in improving buck ratios and quality.

- **Issues and Concerns: Public Stakeholders**

Several major issues were identified as important to public stakeholders during this process. The majority of individuals contacted expressed concerns relating to habitat loss and decline, particularly on winter ranges; improving buck quality and quantity; the impacts of increasing energy development; and, to a lesser degree, damage to agricultural crops.

Analysis of the questionnaire that was distributed at the public meetings and made available on the internet indicates that the majority of respondents wanted the deer population size to remain at current levels and the number and quality of bucks to increase. Half of the respondents indicated that it was equally important to hunt every year and to harvest a trophy deer.

A full analysis of the questionnaire responses, as well as full text of written comments, is included in APPENDIX D: COMMENTS FROM PUBLIC STAKEHOLDERS WITH QUESTIONNAIRE ANALYSIS.

Colorado Mule Deer Association:

The Colorado Mule Deer Association recommended maintaining the status quo management regime for deer in DAU D-12 due to the anticipated impacts of oil and gas activities. Full text of their comments can be seen in APPENDIX D: COMMENTS FROM PUBLIC STAKEHOLDERS WITH QUESTIONNAIRE ANALYSIS.

- **Issues and Concerns: County Commissioners**

The Boards of County Commissioners from both Mesa and Garfield counties were contacted as part of this DAU planning process. They were provided with a background of the planning process and the alternatives that were presented at the public meetings. No comments are received from either Mesa or Garfield County BOCC.

ALTERNATIVE DEVELOPMENT

During this process, the various interested groups were made aware of different alternatives to population size and composition. Both population size and composition must be considered when determining objectives and management strategies for this herd. Both characteristics of the herd will dramatically influence management regimes.

Post-hunt Population and Sex Ratio Objective Alternatives

- **Population Objective Alternatives**

26,000-28,000 deer; 28,000-30,000 deer; 30,000-32,000 deer

- **Sex Ratio Objective Alternatives**

15-20 bucks: 100 does; 20-25 bucks: 100 does; 25-30 bucks: 100 does

Impacts of Objective Alternatives

- **Population Objective Alternatives**

Population objective determine the overall number of deer in the herd, regardless of sex or age class. Changes in population size objectives will impact the interspecific competition, quality of the habitat, game damage conflicts, and available licenses.

Alternative 1: 26,000-28,000 deer:

This alternative would result in a 10% decrease in the population size of this herd from current levels, although it would still be a larger number of deer than have been present in this DAU for the approximately the past 10-15 years.

Game Damage: Game damage problems would be slightly below present levels. Game damage would still likely occur during severe winters. Landowners would notice a decrease in the size of herds. Fence damage would decrease. At this level deer would possibly utilize natural forage to a greater extent and probably disperse over the winter range to a larger degree, which would reduce damage.

Habitat Impacts: Competition with elk would be reduced, assuming maintained or decreased numbers of elk. Vegetation may recover somewhat from the current poor to fair rating on winter ranges. Benefits from the Habitat Partnership Program would potentially be more significant to local landowners, since damage may be greatly reduced or eliminated in certain areas.

Season Framework: Initially, antlerless license numbers would increase, probably through more late seasons and longer regular seasons. Soon, however, harvest would necessarily decrease and late seasons would probably be eliminated. Private land hunts might not be necessary or would be reduced in duration or authorized on some other yearly rotation. This would mean a larger portion of the harvest would take place during regular seasons.

Fiscal Impacts: In order to achieve a lower population level license sales would initially increase. However, a lower population could not sustain the harvest levels currently maintained. This would cause lower license numbers, reducing income to local communities and to the CDOW. Game damage payments would likely be reduced, even during bad winters.

Alternative 2: 28,000-30,000 deer:

This alternative would maintain the population size of this herd at the 2005 post-hunt estimate level. There would be adaptive management to maintain the population size. License numbers would vary each year slightly to maintain the current management regimes. Antlerless licenses will remain limited and overall numbers will be set at maintenance levels, while antlered licenses would remain at current levels.

Game Damage: Game damage problems would be moderate under this alternative. However, due to the short duration of deer populations at this level and the fact that there has not been a recent severe winter, it is difficult to assess the level of damage that might occur.

Habitat Impacts: Habitat improvement projects would still be required to consistently hold the population at this level, especially during severe winters. The projects may not need to be as large and intensive as those found at higher population levels.

Season Framework: The present season framework of three combined rifle seasons could be maintained during the regular season. The potential would remain for late seasons which would be necessary to mitigate game damage problems on private lands and in areas of the winter range where high deer concentrations are affecting overused winter ranges.

Fiscal Impacts: Generally, license sales will remain the same, although some increases in antlerless licenses will be necessary as management strategies move from a herd growth mode to a maintenance mode.

Alternative 3: 30,000-32,000 deer:

This alternative would increase the population size of this herd from current levels. There would be an initial decrease in license numbers, followed by an increase in license numbers. Antlerless licenses would remain limited and overall numbers would most likely decrease dramatically, and then remain at lower, maintenance levels.

Game Damage: Game damage problems, such as damage to orchard crops, would likely increase. Local ranchers and farmers have indicated that damage has been increasing with the increasing deer populations in recent years.

Habitat Impacts: Range improvements such as burning, fertilization, and reduction of competition with deer, elk and livestock would be necessary to maintain and hold the population at this level. The CDOW's Habitat Partnership Program

(HPP) would become increasingly important for addressing fence and forage problems related to deer on both public and private lands.

Season Structure: Initially, the populations would be increased in size from present levels by reducing the number of limited antlerless hunting licenses. Once the new objective is attained, more antlerless licenses would likely be necessary on private land and late season hunts. These types of seasons would be necessary to reduce damage to stored and growing crops. An alternative would be the use of distribution hunts authorized through the HPP's Distribution Management Plan. All of these methods would be used more often than at lower population levels.

Fiscal Impacts: Income to the CDOW and local communities would likely increase. Prior to the late 1990's, populations at up to 40,000 deer occurred in the DAU, so it is presumed that this population could be supported again. However, damage would increase, and the chances of disease would increase. Small die-offs might occur more often. After a severe winter, if ranges are in poor condition, harvest and license sales may be severely decreased. Initially, license sales would drop somewhat since the population would need to be increased to the new level from the present level of about 30,500 deer.

- **Sex Ratio Objective Alternatives**

Sex ratio objectives determine the number of bucks: 100 does. This characteristic most directly impacts the number of antlered licenses issued and the quality and quantity of bucks that are available to be harvested. Since the population size objective is established separately, the total number of deer would remain the same. Therefore there would not be any effect on the habitat, the need for habitat improvement projects or game damage.

Alternative 1: 15-20 bucks: 100 does:

This alternative would decrease the overall number of bulls within the population from the five year average of 22.0 bucks: 100 does.

Season Framework: This alternative would require a change in seasons to achieve the objective. The CDOW would direct hunting pressure to the male segment of the population. This could be accomplished by increasing licenses available in the 2nd, 3rd, and 4th seasons.

Survival Rates, Quantity and Quality of Harvest: This alternative would produce the largest pre-hunt population because more does would be necessary to maintain the herd at the population objective. Carrying more does in the herd would increase the number of fawns produced each year, increasing the overall harvest potential for the herd. Survival rates may not change, but the total number of deer lost to winter mortality may increase because more fawns are being carried into winter and their mortality is higher than adults during this time. The quality of the harvest based on the production of trophy bucks would decrease due to the fewer bucks surviving to maturity.

Fiscal Impact: This alternative would increase hunter success, total harvest and recreation days. It would produce the maximum harvest potential for the herd. This would increase license sales and the number of hunters. This alternative would have a beneficial fiscal impact to local communities in this DAU, as well as guides, outfitters, meat processing facilities, and other hunting-dependent businesses.

Alternative 2: 20-25 bucks: 100 does:

This alternative would maintain the number of bucks in this herd at current levels. There would also be no change in the season structure. From 2001-2005, buck: doe ratios averaged 22.0 bucks: 100 does, while from 1996-2005, the average was 22.7 bucks: 100 does.

Alternative 3: 25-30 bucks: 100 does:

This alternative would increase the number of bulls in this herd from the five year average of 22.0 bucks: 100 does.

Season Framework: To increase the buck: doe ratio, the harvest of bucks will necessarily decrease during hunting seasons. Increasing the number of bucks in the population will also require reducing the number of cows in the herd to maintain the population at the desired objective. This could be accomplished by decreasing antlered licenses, implementing either-sex licenses or shortening antlered season lengths.

Survival Rates, Quantity and Quality of Harvest: The most likely method of increasing the number of bucks in the population would be to restrict the number of licenses for bucks, while increasing doe licenses. This would lower the number of fawns that are produced and lower the overall harvest potential for the herd. The quality (trophy bucks) of the buck harvest would be expected to improve due to higher numbers of older age class bucks in the population. Survival rates would not change greatly, however, since there would be fewer fawns in the population each year, overall rates would increase slightly.

Fiscal Impact: The number of licenses that could be sold would most likely decrease in any of the scenarios used to increase buck ratios. If totally limited licenses were used, the successful hunters would increase but total hunter numbers and recreation days would decrease. If shorter antlered seasons were used with the same number of hunters, the percent success, recreation days, and antlered harvest would decrease. Both of the above alternatives would result in a drop in CDOW and local income and economic benefits that are derived from this herd. However, if the number of mature bucks increased, wildlife photography and persons watching wildlife might increase. This would benefit local businesses, motels, restaurants, and others that depend on outdoor activities for income, although probably to a lesser degree than if hunting license numbers were maintained at current levels. Additionally, although there would be no impacts to damage occurrence, less money would be generated for HPP projects, since the number of licenses sold would likely decline.

CDOW PREFERRED POPULATION SIZE AND COMPOSITION ALTERNATIVES

Preferred Population Size Objective Alternative

28,000 – 30,000 deer

Preferred Population Composition Objective Alternative

25 – 30 bucks: 100 does

Preferred Alternative Justification

- **Population Objective:**

The D-12 deer population has been increasing in recent years, following many years of very low population numbers. The current population size of approximately 30,500 animals is just above the objective of 29,500 animals that was set through the DAU planning process in 1994.

Public surveys, land management agency input, and HPP committee participation all indicate a general agreement that the deer herd is at or near desirable and sustainable levels. There is little to no support for a decrease of the population size and little support for increasing the herd.

Land management agencies indicated overall satisfaction with the D-12 deer herd size. Although some conflict exists, range and browse conditions are generally good or improving.

Deer hunting in this unit is very popular and the demand appears to be increasing steadily during all seasons. Liberal, limited licenses provide opportunity to approximately 3,500 deer hunters annually. There is significant demand among sportsmen to continue providing significant deer hunting opportunity on the Grand Mesa, while at the same time improving buck quality.

A major factor influencing the deer herd now and in the coming years is the increasing oil and gas activity in the DAU. Although it is impossible to predict how this activity will impact the deer in this DAU, it is likely that winter ranges will be disproportionately impacted by drilling. These impacts may decrease the quality and availability of winter range, which will affect the overall number of deer the landscape can support. It is incumbent upon the Division of Wildlife to monitor this and to manage this deer herd adaptively in response to major impacts from energy activities.

Due to the majority of internal, agency, and public input received, the CDOW recommends maintaining the deer herd in DAU D-12 at current levels and setting a population size objective of 28,000 – 30,000 deer.

- **Composition Objective:**

The CDOW recommendation is to increase the composition objective to 25 - 30 bucks: 100 does. DAU D-12 is one of the most popular hunting areas in the Colorado. There is significant demand for both high hunter opportunity and for improved buck quality. However, there was significantly more demand for more mature bucks, both internally and externally. Due to the majority of internal, agency and public input received, the CDOW recommends increasing the buck: doe ratio to 25 – 30 bucks: 100 does

APPENDIX A: DEER POPULATION DYNAMICS

Numerous studies of biological populations of such species as bacteria, mice, rabbits, and white-tailed deer have shown that animal populations grow in a mathematical relationship that biologists refer to as a "sigmoid growth curve" or "S" curve (Figure 14). There are three distinct phases to this cycle. The first phase occurs while the population level is still very low and is characterized by a slow growth rate and a high mortality or death rate (see A in Figure 14). This occurs because the populations may have too few animals and the loss of even a few of them to predation or accidents can significantly affect the population. In other words, there appears to be some truth to the old saying "There's strength in numbers".

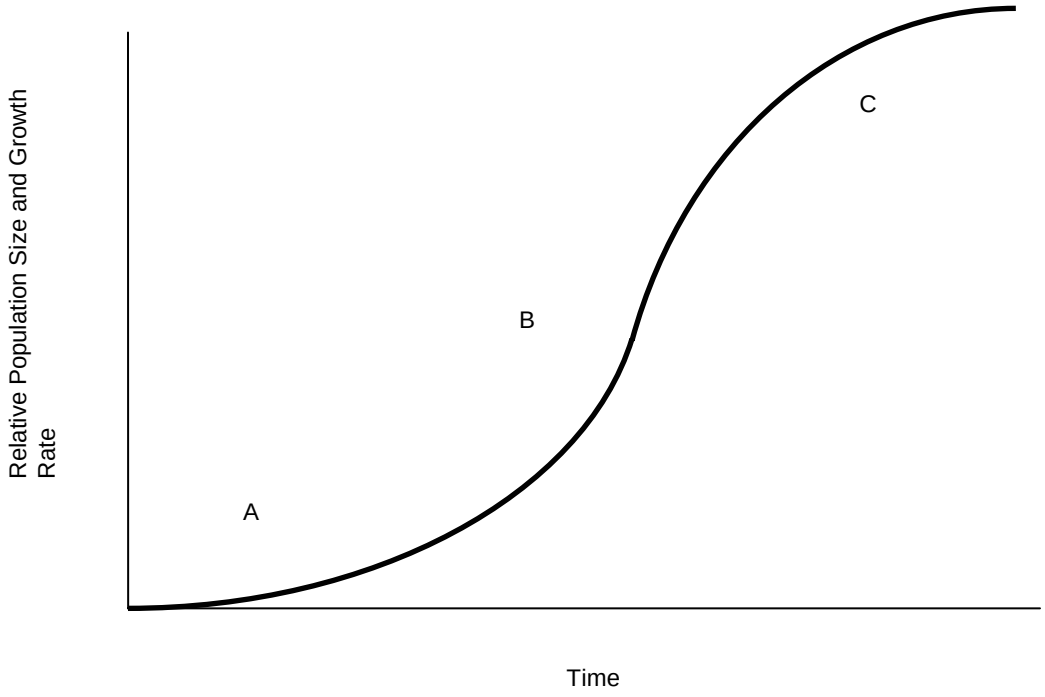

Figure 14. Sigmoid Growth Curve.

The second phase occurs when the population number or density is at a moderate level. This phase is characterized by a very high reproductive and survival rate (see B in Figure 14). During this phase, food, cover, water, and space (habitat) is optimal

and abundant. These high reproductive rates during this phase can be seen in white-tail deer, when does may breed successfully at 6 months of age and produce a live fawn on their first birthday. Older does have been known to produce 3-4 fawns that were very robust and healthy. Survival rates of all deer (bucks, does, and fawns) are at maximum rates during this phase.

The third and final phase occurs when the habitat becomes too crowded. The quality and quantity of food, water, cover, and space become scarce and poor due to the competition with other members of the population. This phase is characterized by decreased reproduction and survival (see C in Figure 14). For example, white-tail deer fawns can no longer find enough food to grow to a critical minimum weight to reproduce; adult does will only produce 1-3 fawns, and survival of all deer (bucks, does, and fawns) decreases. During severe winters, large die-offs can occur due to overcrowding and lack of forage. The first to die in these situations are fawns, followed by bucks, finally followed by adult does. Thus, severe winters affect future buck: doe and fawn: doe ratios by favoring more does in the populations. Additionally, since buck's antlers are dependent upon nutrition, antlers are stunted during this phase.

If the population continues to grow, it will eventually reach the maximum carrying capacity, or "K" (Figure 15). At this point, the population reaches a dynamic equilibrium with the habitat. The number of births each year equals the number of deaths, therefore, maintaining the population at this level would not allow for any "huntable surplus." The animals in the population would be in relatively poor condition and when a severe winter or other catastrophic event occurs, a large die-off is inevitable. Thus, another old expression, "the bigger they are the harder they fall" may be appropriate here. A recent example of such a population die-off occurred in the relatively unhunted Northern Yellowstone elk herd during the severe winter of 1988-89. This winter followed the forest fires of 1988 that raged in the National Park.

What does all this mean to the management of Colorado's big game herds such as deer and elk? It means that if we attempt to manage for healthy big game herds, we should attempt to hold the populations at about the middle of the "sigmoid growth curve." Biologists call this "MSY" or "maximum sustained yield." At this level, which is exactly half the maximum population size or "K", the population will display the maximum production, survival and available surplus animals for hunter harvest (Figure 15). Also, at this level, range condition and trend should be good to excellent and stable, respectively. Game damage problems should not be significant and economic return to the local and state economy should be at the maximum. This population level should produce a "win - win" situation to balance sportsmen and private landowner concerns.

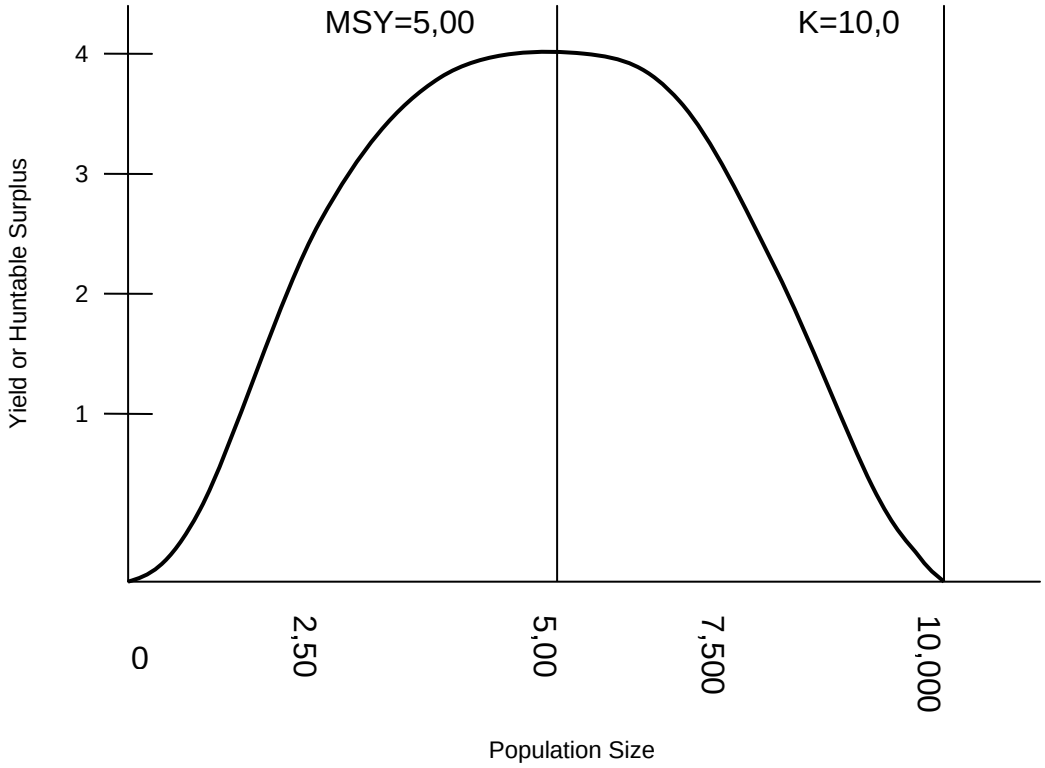

Figure 15. Maximum Sustained Yield and Maximum Carrying Capacity.

A graph of a hypothetical deer population showing sustained yield (harvest) potential vs. population size is shown above. Notice that as the population increases from 0 to 5,000 deer, the harvest also increases. However, when the population reaches 5,000 or "MSY", food, water and cover becomes scarce and the harvest potential decreases. Finally, when the population reaches the maximum carrying capacity or "K" (10,000 deer in this example), the harvest potential will be reduced to zero. Also, notice that it is possible to harvest exactly the same number of deer each year with 3,000 or 7,000 deer. This phenomenon occurs since the population of 3,000 deer has a much higher survival and reproductive rate compared to the population of 7,000 deer.

APPENDIX B: TEXT OF COMMENTS FROM THE USFS

Grand Mesa, Uncompahgre and Gunnison National Forests

USDA United States Department of Agriculture | Forest Service | Grand Mesa, Uncompahgre and Gunnison National Forests | 2250 Highway 50, Delta, CO 81416, Voice: 970-874-6600, TDD: 970-874-6660

Steph Dean

File Code: 2610
Date: September 6, 2006

Mr. Ron Velarde
Regional Manager
Colorado Division of Wildlife
Northwest Region Service Center
711 Independent Ave.
Grand Junction, CO 81505

Dear Ron:

Thank you for the opportunity to comment on the 10 year update of the Grand Mesa Elk Data Analysis Unit Plan DAU E-14 (Grand Mesa) for Game Management Units 41, 411,42, 421, 52, and 521 and for the Deer DAU D-12 (Grand Mesa North) Units 41, 42, and 421. Personnel from the Grand Mesa, Uncompahgre and Gunnison National Forest and the White River National Forest attended the DAU Plan Meeting in Grand Junction on August 7, 2006. This DAU covers all of the Grand Mesa area and portions of the Ragged Mountains and western portions of the White River National Forest. Stephanie Duckett did an excellent job of presenting data on elk and mule deer population and age and sex ratio trends for these DAU's.

Mule Deer DAU-12 (Grand Mesa North):

Our preferred alternative recommendation for Mule Deer DAU D-12 (Grand Mesa North) is to continue managing the mule deer population at the current objective level of 29,500, or slightly above, as mule deer herds continue to prosper on the Grand Mesa. Fawn production and fawn:doe ratios seem to be doing well at the present time. Buck:doe ratios of 25 bucks per 100 does is also working well as the quality of bucks has increased over the last 5 years. Alternative 2 would have a post hunt population objective of 28,000 to 30,000. We recommend Alternative 2 and would prefer to maintain the population closer to the 30,000 level. We also recommend Alternative 2 for a post hunt buck:doe ratio of between 20 and 25 bucks per 100 does.

Elk DAU E-14 (Grand Mesa):

Our preferred alternative recommendation for Elk DAU D-14 (Grand Mesa) is to continue managing the elk population at the current objective level of approximately 10,500 or slightly above. Calf production and calf:cow ratios could be somewhat better than they currently are. A bull:cow ratio objective of 25 bulls per 100 cows is close to what we have now. Alternative 2 would have a post hunt objective of 10,000 to 12,000 animals. We recommend Alternative 2 and would prefer to maintain the population closer to the 12,000 level, which is still below levels of the early and mid 1990's. We also recommend Alternative 2 for a post hunt bull:cow ratio of between 20 and 25 bulls per 100 cows.

The Forest has not had many elk damage complaints in this DAU over the past several years. The Grand Mesa, Uncompahgre and Guinnison National Forests has been working hard to improve elk habitat effectiveness and provide elk security habitat on the Grand Mesa and adjacent areas by implementing new travel management regulations which will reduce overall

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road densities. A new signing effort with five cooperators is now underway to educate hunters on the benefits of restricted access and adhering to road management regulations. This new program will provide additional security areas for both deer and elk, thereby improving not only the quality of hunting, but should also maintain or improve buck:doe and bull:cow ratios. This habitat improvement program may also benefit the recruitment of fawns and calves. The Grand Mesa elk security program should also slow the movement of big game herds onto private property and will keep the animals on public lands longer providing more hunting and wildlife viewing opportunities.

Thanks again for the opportunity to make recommendations on these DAU revisions.

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Sincerely,

Steve Marquardt

/s/ Charles S. Richmond
for CHARLES S. RICHMOND
Forest Supervisor

White River National Forest

cy: Russ
xc: J. Madison Steph
File copy

USDA United States Department of Agriculture | Forest Service | White River National Forest

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File Code: 2610
Date: September 7, 2006

Mr. Ron Velarde
Regional Manager
Colorado Division of Wildlife
Northwest Region Service Center
711 Independent Ave.
Grand Junction, CO 81505

Dear Ron:

Thank you for the opportunity to comment on the 10 year update of the Grand Mesa Elk Data Analysis Unit Plan DAU E-14 (Grand Mesa) for Game Management Units 41, 411,42, 421, 52, and 521 and for the Deer DAU D-12 (Grand Mesa North) Units 41, 42, and 421. Personnel from the Grand Mesa, Uncompahgre and Gunnison National Forest (GMUG) and the White River National Forest (WRNF) attended the DAU Plan Meeting in Grand Junction on August 7, 2006. This DAU covers all of the Grand Mesa area and portions of the Ragged Mountains and southwestern portions of the White River National Forest. Stephanie Duckett did an excellent job of presenting data on elk and mule deer population and age and sex ratio trends for these DAU's.

Mule Deer DAU-12 (Grand Mesa North):

Our preferred alternative recommendation for Mule Deer DAU D-12 is to continue managing the mule deer population at the current objective level of 29,500, or slightly above, as mule deer herds continue to prosper on this portion of the WRNF. Fawn production and fawn:doe ratios seem to be doing well at the present time. Buck:doe ratios of 25 bucks per 100 does seem to also be working well as the quality of bucks has increased over the last 5 years. Alternative 2 would have a post hunt population objective of 28,000 to 30,000. We recommend Alternative 2 and would prefer to maintain the population closer to the 30,000 level. We also recommend Alternative 2 for a post hunt buck:doe ratio of between 20 and 25 bucks per 100 does.

The WRNF has not been experiencing any major complaints from local landowners about the current population levels of mule deer in this area. One area of potential concern involves the level of energy exploration and development throughout this portion of the state. Current activity has not yet developed into a major concern on National Forest System lands, but the potential exists for this to become an issue as more leases are developed. This has the potential to affect deer and elk use of winter and transition ranges on this portion of the Forest. The importance of the winter and transitional range located on the WRNF and adjacent BLM lands will likely increase as drilling activity continues to increase on nearby private lands.

Elk DAU E-14 (Grand Mesa):

Our preferred alternative recommendation for Elk DAU D-14 (Grand Mesa) is to continue managing the elk population at the current objective level of approximately 10,500 or slightly above. Calf production and calf:cow ratios could be somewhat better than they currently are. A bull:cow ratio objective of 25 bulls per 100 cows is close to what we have now. Alternative 2 would have a post hunt objective of 10,000 to 12,000 animals. We recommend Alternative 2 and would prefer to maintain the population closer to the 12,000 level, which is still well below levels of the early and mid 1990's. We also recommend Alternative 2 for a post hunt bull:cow ratio of between 20 and 25 bulls per 100 cows.

The Forest has not had many elk damage complaints in this DAU over the past several years. The WRNF has been working with the Rocky Mountain Elk Foundation to improve elk transition and winter range habitat quality through a program of prescribed burns and noxious weed control. One of the major goals of this enhancement program is to slow the movement of big game herds onto private property and keep the animals on public lands longer providing more hunting and wildlife viewing opportunities. As mentioned above for deer, increased energy development and its effects on transition and winter ranges also applies to elk habitat on the Forest.

The WRNF is currently revising its Travel Management Plan. This important document is currently out in draft form for public comment. The potential impact to elk habitat effectiveness was a critical analysis issue during the development of this draft plan. Elk security issues will continue to be a primary issue during the finalization of this guidance document.

Thanks again for the opportunity to make recommendations on these DAU revisions.

Sincerely,

MARIBETH GUSTAFSON
Forest Supervisor

APPENDIX C: TEXT OF COMMENTS FROM GRAND MESA HPP COMMITTEE

Received September 9, 2006 via email.

Stephanie:

First let me thank you again for presenting the Grand Mesa DAU plans to the Grand Mesa HPP committee. I believe all members were impressed and felt like the presentation was well done and comprehensive allowing us to make an informed recommendation to the Division. Elk damage issues were clearly of more concern to the committee than deer damage issues. Many areas that we had identified when Grand Mesa HPP first solicited input from the public on big game issues in 1996, have diminished, disappeared or have been addressed by HPP and our DWM'. Of no small consequence however, is the fact that the division has reduced the herd from around 18,000 elk to our long term objective of about 10,500.

Therefore, the committee seemed consistent in there recommendation that the elk be managed in generally the same manner. Specifically, continue managing at approximately 10,500 with a 20-25 bull: cow ratio.

The committee, especially Harley Metz, our sportsman's rep, recommended that we try and manage for a better buck doe ratio of 23-27 bucks per hundred does. The committee felt that this was a good recommendation and all concurred. They also recommended the herd size be managed at the same level as it is presently at about 29,000 post hunt.

The committee appreciated the opportunity to discuss and comment on the DAU plans and hopes their input was useful.

Thank you,

Renzo DelPiccolo
Chairman – Grand Mesa Habitat Partnership Program

APPENDIX D: COMMENTS FROM PUBLIC STAKEHOLDERS WITH QUESTIONNAIRE ANALYSIS

Questionnaire Answers

Background Information

- **Question1:**

Respondents: 19
Resident: 19
Non-resident: None

All respondents were residents of Colorado.

- **Question 2:**

Respondents: 18
Residents of D-12: 8
Non-residents of D-12: 10

The majority of respondents lived outside of DAU D-12.

- **Question 2A:**

Respondents: 8
Average length of residence: 29.8 years
Median length of residence: 22 years
Minimum length of residence: 12 years
Maximum length of residence: 60 years

Of the respondents who lived in D-12, all had lived in the DAU for at least 12 years.

- **Question 3:**

Respondents: 19
Landowners in D-12: 6
Non-landowners in D-12: 13

The majority of respondents did not own or lease property in DAU D-12.

- **Question 3A:**

Respondents: 6
Average length of property ownership: 24 years
Median length of property ownership: 20 years
Minimum length of property ownership: 8 years
Maximum length of property ownership: 51 years

Of the respondents who owned property in D-12, all had owned property in the DAU for at least 8 years.

- **Question 4:**

Respondents: 19

A:	5
B:	1
C:	7
D:	2
E:	16
H:	3
I:	1

The majority of respondents identified hunters/sportspersons as the group that best represents their interests in deer management. Five and seven respondents, respectively, identified with as rancher/farmers and landowners groups. Only one individual responded that business owner groups best represent his interests. Two individuals indicated that guide/outfitters groups best represent his interests and three respondents identified environmental/conservation groups as best representing his interests. One respondent identified their interests as wildlife photography.

- **Question 5:**

Respondents: 19

A:	1
B:	0
C:	1
D:	2
E:	14
H:	0
I:	0

When asked to indicate which group most represented their opinion, the majority of respondents identified hunters/sportspersons. Two identified guide/outfitter as most representing their opinions, and one each chose landowner and rancher/farmer.

People and Deer

- **Question 1:**

Respondents: 18

A: 3.3
B: 3.2
C: 2.2
D: 4.0
E: 4.2
F: 3.8
G: 2.5
H: 2.9
I: 2.7
J: 3.1

Respondents most frequently indicated that they were very concerned about predation and loss of habitat. Deer/vehicle collisions and economic losses to rancher/farmers were identified as secondary concerns by most respondents. Starvation of deer during winter was also a concern among the respondents. Damage to homeowners' trees, shrubs, and gardens was the least concern among all respondents.

- **Question 2:**

Respondents: 17
Affected: 10
Not-affected: 7

The majority of respondents had been personally affected in some way by one or more of the concerns.

- **Question 2A:**

Respondents: 6

A: 0
B: 1
C: 0
D: 1
E: 3
F: 0
G: 0
H: 1
I: 0
J: 0

The majority of respondents had been personally affected by loss of deer habitat due to increased human population and development. .

- **Question 3:**

Respondents: 18
Do not enjoy/nuisance: 1
Enjoy/worry: 8
Enjoy/don't worry: 8
No opinion: 1

Eight out of 18 respondents indicated that they enjoy the deer in D-12 and do not worry about the problems they cause. An equal number of respondents indicated that they enjoy the deer and do worry about problems they cause. One respondent indicated that he does not enjoy the deer in D-12 and regards them as a nuisance, while one respondent expressed no opinion for the deer in D-12.

Deer Management

- **Question1:**

Respondents: 19
Decrease: 1
Stay the Same: 11
Increase: 7
Don't know: 0

The majority of respondents wanted the deer population size to remain the same.

- **Question 2:**

Respondents: 18
Decrease: 1
Stay the Same: 11
Increase: 6
Don't know: 0

The majority of respondents wanted the deer population size objective to remain the same.

- **Question 3:**

Respondents: 17
Not Important: 2
Slightly Important: 2
Important: 6
Very Important: 7
Don't know: 0

The importance of the population size change from Question 1 was variable in its importance to the respondent. The majority of respondents indicated that the population size was important or very important to them.

- **Question 4:**

Respondents: 18
Decrease: 1
Stay the Same: 5
Increase: 11
Don't know: 1

The majority of respondents wanted the number of buck deer to increase.

- **Question 5:**

Respondents: 18
Decrease: 1
Stay the Same: 4
Increase: 12
Don't know: 1

A strong majority (67%) of respondents wanted the objective for buck deer to increase.

- **Question 6:**

Respondents: 16
Hunt every year: 5
Equally important: 8
Trophy: 3

Half of the respondents indicated that it was equally important to harvest a trophy animal and to hunt every year. Five respondents indicated that it was more important to hunt every year, while three respondents indicated that it was more important to harvest a trophy animal.

Deer Hunting

- **Question1:**

Respondents: 19
Hunted: 19
Not hunted: None

All respondents had hunted deer in Colorado.

- **Question 1A:**

Respondents: 18
Average length of hunting: 29.4 years
Median length of hunting: 28.5ears
Minimum length of hunting: 9 years
Maximum length of hunting: 50 years

All respondents had hunted in Colorado for at least 9 years.

- **Question 2:**

Respondents: 19
Hunted in D-12: 16
Not hunted in D- 12: 3

The majority of respondents had hunted in DAU D-12.

- **Question 3:**

Respondents: 15
Very Dissatisfied: 1
Slightly Dissatisfied: 1
Neutral: 6
Slightly Satisfied: 3
Very Satisfied: 4

The majority of respondents indicated that they were neutral to very satisfied with their hunting experience in D-12. Two out of 15 respondents expressed dissatisfaction.

- **Question 4:**

Respondents: 16
Extremely Crowded: 2
Moderately Crowded: 8
Slightly Crowded: 5
Not at all Crowded: 1

The majority of respondents indicated that they felt moderately crowded. Two respondents felt extremely crowded in D-12. Five respondents felt slightly crowded and only one respondent did not feel crowded.

- **Question 5:**

Respondents: 15
Less Hunter Crowding: 3
Higher Hunter Success Rates: 1
More mature bucks: 10
More deer: 0

The majority of respondents indicated that seeing more mature bucks was the most likely way to improve their deer hunting experience in D-12. Less hunter crowding was far behind in second place.

- **Question 6**

Respondents:	16
Poor:	0
Fair:	4
Good:	7
Very Good:	4
Excellent:	0
No Opinion:	1

Seven of sixteen respondents indicated that the quality of deer hunting in D-12 is good. Four respondents indicated fair hunting quality, and an equal number indicated very good hunt quality. One respondent had no opinion.

- **Question 7:**

Respondents:	18
Not seeing other hunters:	4
Obtaining game meat:	6
Trophy:	7

Of the 18 respondents, four indicated that not seeing other hunters was most important to them when hunting in D-12, while 6 reported that obtaining game meat and 7 reported harvesting a trophy deer was most important.

Text of Written Public Comment

- **Questionnaire D-1**

Deer numbers need to be decreased. Ranchers cannot hope to make a reasonable profit, and therefore stay in business if they are continually forced to feed large numbers of deer. Habitat Partnership Program is working to increase wildlife habitat rather than decrease wildlife numbers. Ranchers are forced to participate in these programs to offset a portion of their losses, because wildlife damage claims are so biased and constrained that claims are denied altogether, or reduced to the point where they become negligable. HPP encourages forage enhancement programs and will pay a portion of the cost of fertilizer used where wildlife damage occurs. This would appear on the surface to be a reasonable solution to the problem, but in reality it makes the rancher use more water, more labor and depletes soil nutriants to raise more feed for more wildlife. And this increase in feed does not offset the increase in wildlife numbers. Ranchers are asked to cooperate with the DOW to reduce wildlife damage in the form of encouraging more hunting and putting up potential wildlife deterants, such as fencing, or white tape on fencing to scare the wildlife. Here again, these appear to be reasonable solution son the surface, but in reality ranchers can't allow hunting amid their livestock, nor should they be putting up fencing to deal with the wildlife. The DOW has the responsibility to keep the wildlife from causing problems, the same as ranchers have the responsibility to care for their domestic livestock. Hunting vouchers to purchase a license are issued to landowners, but it doesn't seem quite right for ranchers to go into the business of selling hunting licenses for the DOW, particularly when it's designed to deal with damage. Ranchers who charge a fee for hunting in a damage situation are frowned upon, as the DOW should be. Wildlife adapt to danger quickly, but will continue to eat and survive whether it's hunting season or not. They are visible and eat during daylite hours, during non-hunting season periods of time. But during hunting season they primarily eat at nite. Therefore, hunting, as defined by daylite hours, florescent orange, and one animal per hunter is not the solution to the elk damage problem. The DOW needs to deal with this in a worthwhile and adequate manner, whether it be in the form of fair and adequate damage compensation without a pile of paperwork, the issue of free licenses to ranchers or working shoulder to shoulder with ranchers to harvest elk in damage areas. The meat could be donated to needy people, low income families, assisted living facilities, or even school lunch programs. Wildlife damage is a very serious problem and the DOW needs to deal with it judiciously and profoundly.

- **Questionnaire D-2**

I would like to see more trophy bucks. I would rather hunt 1 in 5 years for a trophy. Deer do not compete as much as elk do with livestock, but can be a problem in green hay fields during summer and fall.

- **Questionnaire D-3**

I would like to see more opportunity for “quality” hunting in this and all other units, ie. special seasons with reduced hunter density.

Otherwise, current population/sex ratio objectives are good.

- **Questionnaire D-4**

No comments.

- **Questionnaire D-5**

No comments.

- **Questionnaire D-6**

No comments.

- **Questionnaire D-7**

I believe the number of deer in unit 421 is about normal. The does this year seem to have a good number of twins and some triplets, however most of these animals seem to be on private ground. There is a good number of bucks but few mature bucks. I would like to see the point restriction reinstated and more doe permits given and maybe a special doe season for youth hunters at a reduced cost on private ground.

- **Questionnaire D-8**

I believe that maintaining plentiful deer numbers in these GMUs and all others throughout the state, is crucial for younger/future generations in order to ensure the security of the future of hunting.

I believe numbers are more important than size (trophies). There are always opportunities for those willing to be patient (by accumulating preference points) to hunt for a trophy.

Numbers are needed to provide ample opportunity to hunt, with a reasonable expectation of success, so that hunters (new and old) don’t become discouraged and abandon the sport.

- **Questionnaire D-9**

No comments.

- **Questionnaire D-10**

No comments.

- **Questionnaire D-11**

I see our deer herds in the Cedaredge area residing on private property year round. Few are on public lands available to the average hunter.

I am more concerned about mature buck ratios than total bucks per 100 does.

I still only see 30% of the deer that I saw in the mid 1980's.

The DOW needs to look at new technology to do their counts.

At 15 bucks per 100 does we will again see spotted fawns in September indicating second or third estrus breeding.

I would like to see 5 mature bucks per 100 does.

I am against any licenses for the 4th season. This is removing our very best bucks.

- **Questionnaire D-12**

No forth season buck hunts until you achieve a greater than 30 bucks/100 does.

- **Questionnaire D-13**

No comments.

- **Questionnaire D-14**

I have observed a nice abundance of deer in 421. I believe the game management plan has been [*unreadable*]. I have also observed a growth in quality bucks. I think the present rule of taking any buck with antlers has really helped.

- **Questionnaire D-15**

Put out guaranteed licenses for youth hunters if only doe tags. We want the younger generation to hunt, so make sure they have the opportunity.

Harvest more does. This will improve our buck heads.

Harvest more predators. I believe this is the single most survival problem with fawns.

- **Questionnaire D-16**

I am tired of hearing about landowner crop damage. The rancher take his cattle up to the mountains lets them graze all summer, so come fall theres very little forage left. What do they expect the deer to do when the snow falls and everythings grazed down to the dirt. They should shorten the grazing season. Also I am concerned about the way deer populations are counted. I believe there is a huge + or – factor. I also keep hearing that hunter numbers are down. I can't even walk for 20 min. without running into another hunter. Theres to many hunters in the woods its dangerous. Landowner vouchers are a joke. The landowner get these vouchers to compensate for crop damage. But sells the voucher but does not let that person hunt on the land where damage occurs. Seems to me the voucher should be good for that private land only.

- **Questionnaire D-17**

I have been hunting in Colo since 1969 mostly in Unit 40 until 1979, then I staring hunting on the Grand Mesa and have had many great hunts. The past 4 yrs Ive

hunted combo elk and deer south of Larimie on Bull Mt., Muzzleloading. But this yr I drew out on the Grand Mesa. 2nd season rifle. I really enjoy going up on the Mesa and always take our out of town guest up there and show them all the deer and other wildlife up there. It looks like the deer and elk are in good condition and that tells me the herds are about the right size and not overgrazing the Mesa. I personialy don't feel the ranchers and home owners up there shouldn't complain too much, they knew the animals were there and they should make the adjustments. Let them live a month in downtown Denver then come home and complain about the deer and elk! Keep up the great work in my humble opiion all is well on the Mesa!

Thanks Don White

- **Questionnaire D-18**

No comments.

- **Questionnaire D-19**

I feel the DOW has been successful in bringing back the deer population. I would like to further this effort to increase # of trophy bucks.

Text of Comments from the Colorado Mule Deer Association

Colorado Mule Deer Association
Rifle / Glenwood Springs Chapter
PO Box 1149
Rifle, CO 81650

August 30, 2006

Dear Sir:

The Colorado Mule Deer Association is submitting the following comments on the DAU E-14 and DAU D-12. The DOW has proposed three alternatives for each unit. The CMDA endorses the status quo alternative.

Our reasons for this choice are as follows. All or most of these two units will be subjected to heavy gas exploration over the next 5 year period. The affects of gas exploration on both mule deer and elk is expected to be bad. How bad depends on who is doing the projecting. Regional biologists state that no matter what choice is selected, the alternative will have to be revised to reflect the affects of gas exploration on the unit's populations. By managing to maintain the present population numbers, it will be easier to demonstrate what the impacts of gas exploration are on deer and elk.

The CMDA also opposes the late season trophy deer hunt. These large trophy bucks are the ones that should be retained for breeding to improve the genetic qualities of the herd. Hunting them during the rut or later greatly increases the odds they will be harvested thereby eliminating a very valuable contribution to the herd genetics.

We thank you for the opportunity to comment on the herd management.

Sincerely,

Bob Elderkin

for Keith Goddard
President
CMDA Board of Directors

APPENDIX E: PUBLIC QUESTIONNAIRE

OPPORTUNITY FOR PUBLIC COMMENT

DEER MANAGEMENT

In the Grand Mesa North Area
COLORADO
Data Analysis Unit D-12
(Game Management Units 41, 42, 421)

The Colorado Division of Wildlife is interested in your opinions about deer management in the Grand Mesa North Area. The results of this effort will help wildlife managers prepare deer management plans for this area. This questionnaire is your opportunity to provide input on the management of deer in Game Management Units 41, 42, and 421.

Colorado Division of Wildlife
Northwest Region Service Center
711 Independent Ave.
Grand Junction, CO 81505

Dear Interested Citizen:

The Colorado Division of Wildlife (CDOW) is interested in your opinions about deer in the Grand Mesa North Area, including Game Management Units (GMUs) 41, 42, and 421. Wildlife managers have begun the process of updating the deer management plan for this area, which will affect future harvest strategies and permit setting.

In Colorado, big game populations are managed for a specific geographic area, which we call a Data Analysis Unit (DAU). A DAU generally includes several GMU's. In this case, the Grand Mesa North DAU includes GMUs 41, 42, and 421.

The purpose of the DAU plan is to determine: 1) how many deer the DAU should support, and 2) what sex ratio (number of bucks per 100 does) the herd be managed for.

The DAU planning process attempts to balance biological considerations with public preference. An appropriate balance is sought and reflected in the deer herd objectives (population size and sex ratio). Annual hunting seasons are then designed with the intent of keeping the population at or near the selected herd objectives.

Your input is an important part of the DAU planning process. The information you provide will help develop CDOW's recommendation for deer herd objectives (population size and sex ratio) in the Grand Mesa North area. Our recommendation will then be incorporated into the DAU plan, which will be reviewed, and ultimately approved, by the Colorado Wildlife Commission. Please be assured that your responses will remain confidential.

Surveys must be returned to the
CDOW Grand Junction Service Center by
September 6, 206.

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS SURVEY. YOUR INPUT WILL HELP THE COLORADO DIVISION OF WILDLIFE MANAGE YOUR WILDLIFE!

TO RETURN THIS QUESTIONNAIRE:

Please fold in half on dotted line, tape it closed (do not staple) and

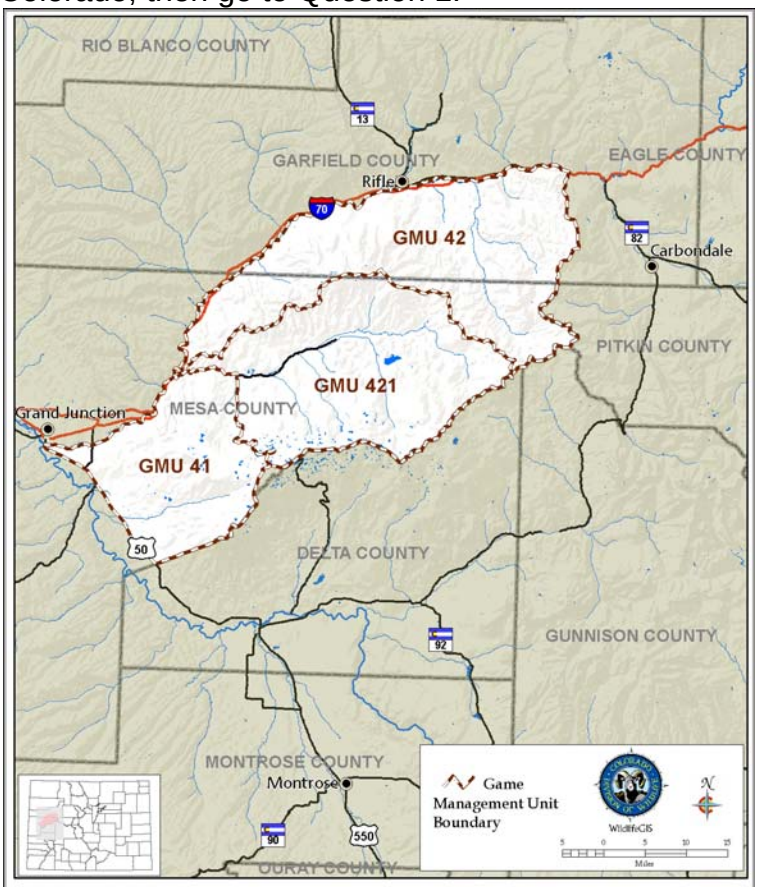
complete during the meeting, hand deliver, or mail to:

Colorado Division of Wildlife

711 Independent Ave.

Grand Junction, CO 81505

First, please examine the map and written description of the areas designated as Data Analysis Unit D-12, Game Management Units 41, 42, and 421 located in West-Central Colorado, then go to Question 1.



Location of Mule Deer DAU D-12 (GMUs 41, 42, 421), West-central Colorado

Description of DAU D-12:
It is bounded on the west and north by the Colorado River from Grand Junction to South Canyon near New Castle; on the east by South Canyon from the Colorado River to Sunlight Peak and then along the divide between the Roaring Fork-Crystal drainages and the Baldy Creek-Divide Creek drainages to the common point of the Mesa-Pitkin-Gunnison County lines; on the south along the Divide Creek-Muddy Creek divide to Spruce Mountain then along the Mesa-Delta County line to Colorado Highway 65, then along the Lands End road from Colorado Highway 65 to the Flowing Park road, the Flowing Park road to the Mesa-Delta County line, one mile south of Chambers reservoir, then along the Mesa-Delta County line to US highway 50; and on the west by Highway 50 from the Mesa-Delta County line to the Colorado River.

BACKGROUND INFORMATION

1) Are you a resident of Colorado?
_____ Yes
_____ No

2) Do you live in GMU's 41, 42, or 421?
_____ Yes If yes, how many years and in what GMU?_____
_____ No

3) Do you own or lease property in GMU's 41, 42, or 421?
_____ Yes If yes, how many years and in what GMU?_____
_____ No

4) Which group(s) best represent your interests in deer management in GMU's 41, 42, and 421? *(Check all that apply)*

_____ A) Rancher/Farmer
_____ B) Business owner
_____ C) Landowner
_____ D) Guide/Outfitter
_____ E) Hunter/Sportsperson
_____ H) Environmental/Conservation
_____ I) Other, please explain _____

5) If you checked more than 1 response in the above question, write the letter corresponding to the interest group which most represents your opinions. ____

PEOPLE AND DEER

1) Please indicate how concerned you are about each of the following in 41, 42, and 421. *(Circle one number for each item).*

	No Concern				Very Concerned
A) Deer/Vehicle collisions……..	1	2	3	4	5
B) Economic losses to ranchers/farmers from deer damage to rangeland, crops, or fences……	1	2	3	4	5
C) Damage to homeowners' trees, shrubs, and gardens caused by deer……	1	2	3	4	5
D) Predation on the deer population by coyotes, bears and mountain lions……..	1	2	3	4	5
E) Loss of deer habitat due to increased human population & development……..	1	2	3	4	5
F) Potential starvation of deer during the winter……	1	2	3	4	5
G) Deer spreading disease to pets, livestock, or humans…….	1	2	3	4	5
H) Deer competing with livestock for forage……	1	2	3	4	5
I) Potential competition between elk and deer for habitat……	1	2	3	4	5
J) Revenue that deer hunting provides local business.	1	2	3	4	5

2) Have you been personally affected by any of the concerns listed in Question 2 in GMU's 41, 42, and 421?

_____ Yes If yes, circle one: A B C D E F G H I or J
_____ No

3) How do you personally feel about deer in GMU's 41, 42, and 421? *(Check ONE)*

_____ I do not enjoy the presence of deer in GMU's 41, 42, and 421, AND regard them as a nuisance.
_____ I enjoy the presence of deer in GMU's 41, 42, and 421, BUT worry about the problems they may cause.
_____ I enjoy the presence of deer in GMU's 41, 42, and 421 AND do not worry about the problems they may cause.
_____ I have no particular feelings about deer in GMU's 41, 42, and 421.

DEER MANAGEMENT

1) How would you like the deer population in GMU's 41, 42, and 421 to change, if at all?
   _____ Decrease
   _____ Stay the same
   _____ Increase
   _____ Don't know

2) The population is currently slightly above the population objective. How would you like the deer population objective in GMU's 41, 42, and 421 to change, if at all?
   _____ Decrease
   _____ Stay the same
   _____ Increase
   _____ Don't know

3) How important to you is the change in the size of the deer population that you indicated in Question 1 above? *(Circle One)*

Not Important	Slightly Important	Important	Very Important	Don't Know

4) How would you like the number of buck deer in GMU's 41, 42, and 421 to change, if at all?
   _____ Decrease
   _____ Stay the same
   _____ Increase
   _____ Don't know

5) The objective for buck deer is currently 20 bucks: 100 does. How would you like the **objective** for the number of buck deer in GMU's 41, 42, and 421 to change, if at all?
   _____ Decrease
   _____ Stay the same
   _____ Increase
   _____ Don't know

6) Is it more important to you to hunt deer every year or to harvest a trophy animal? *(Circle One)*

   _____ More important to hunt deer every year
   _____ Equally important
   _____ More important to harvest a trophy animal
   _____ Don't know

DEER HUNTING

1) Have you ever hunted deer in Colorado?
_____ Yes If yes, how many years? _____
_____ No

2) Have you ever hunted deer in GMU's 41, 42, or 421?

_____ Yes
_____ No

3) Overall, how satisfied have you been with your deer hunting experience(s) in GMU's 41, 42, and 421in the last 5 years? *(Circle ONE)*

Very Dissatisfied	Slightly Dissatisfied	Neutral	Slightly Satisfied	Very Satisfied

4) Overall, to what extent have you felt crowded by other hunters while deer hunting in GMU's 41, 42, and 421? *(Circle ONE)*

Extremely Crowded	Moderately Crowded	Slightly Crowded	Not at all Crowded

5) Rank the following items from 1 to 5 in the order that they would most likely improve your deer hunting experience in GMU's 41, 42, and 421. (1=most likely to improve, 4=least likely to improve) Do not use any number more than once.

_____ Less hunter crowding
_____ Higher hunter success rate
_____ Seeing more mature bucks
_____ Seeing more deer

6) Overall, how would you rate the quality of deer hunting opportunities available in GMU's 41, 42, and 421? *(Circle ONE)*

Poor	Fair	Good	Very Good	Excellent	No Opinion

7) Which ONE factor is the MOST important to you when deer hunting in GMU's 41, 42, and 421? *(Check ONE)*

_____ Not seeing other hunters
_____ Obtaining game meat
_____ Harvesting a trophy deer

WRITTEN COMMENTS:

Please use the space below for any additional comments you would like to make about deer in GMU's 41, 42, and 421.