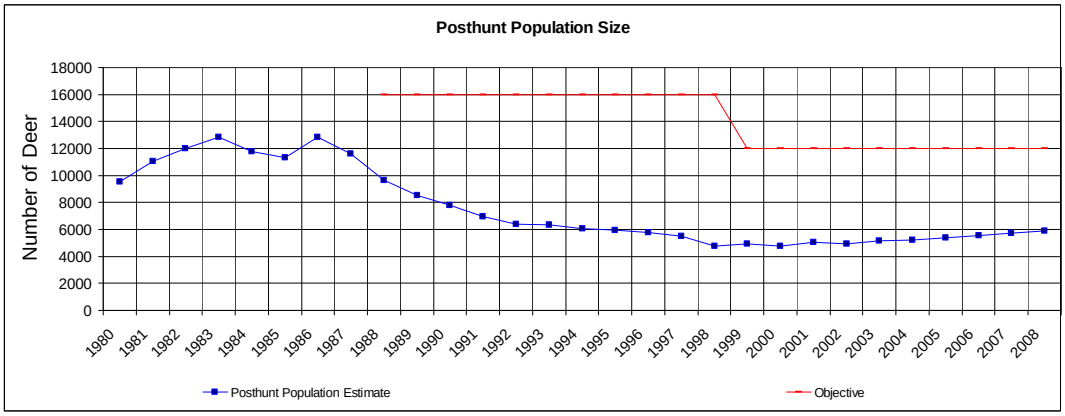
DAU D-18 (Glade Park)

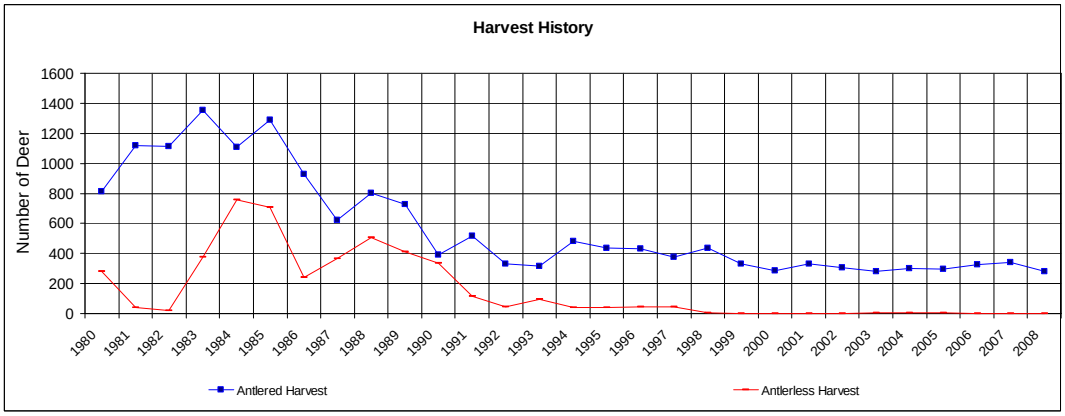
EXECUTIVE SUMMARY

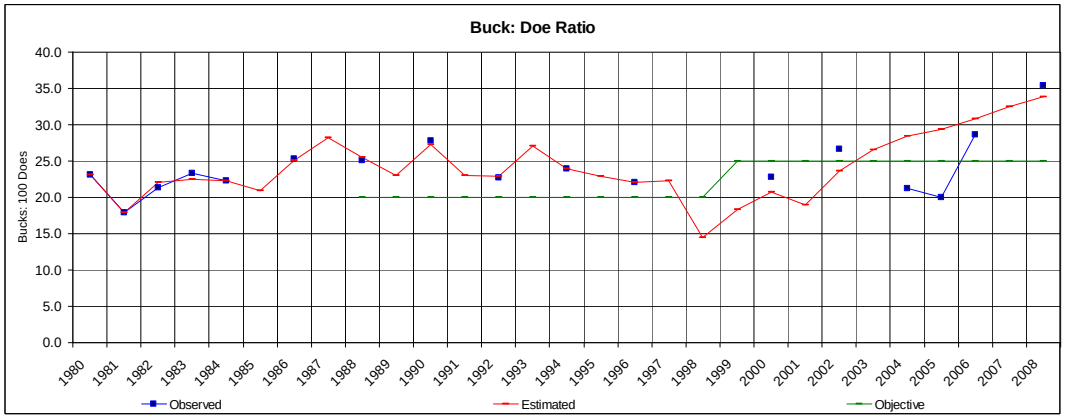
MAY 2010

GMU: 40 Land Ownership: 38% Private, 56% BLM, 2% USFS, 4% Federal

Post-hunt Population Objective: 12,000 **2008 Estimate:** 5,900
Recommended: 6,500 – 8,500
Post-hunt Composition (Bucks: 100 Does): Objective 25 **2008 Observed:** 35.4 **2008 Modeled:** 33.9
Recommended: 30 – 35







D-18 BACKGROUND

The Glade Park D-18 DAU is located in west-central Colorado and includes Glade Park and Pinon Mesa, southwest of Grand Junction, Colorado. Since 1999, the population objective for the Glade Park deer herd has been 12,000 animals. The current composition objective for deer is 25 bucks: 100 does.

The deer population was relatively high in D-18 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-18 and current models estimate a population of 5,600 deer.

The CDOW has conducted aerial sex and age composition surveys in D-18 since the late 1970's. Early records in the 1980's show that total buck: doe ratios were around 22 bucks: 100 does. These ratios have generally increased to recent levels over 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 24.0 bucks: 100 does. Post-hunt classifications in 2008 observed 35.4 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 54 fawns: 100 does.

Deer harvest in the DAU D-18 has changed substantially over time, peaking in the early 1980's, followed by significant reductions, particularly in doe harvest. Between 1980 and 1990, buck harvest averaged over 900 animals per year and doe harvest averaged approximately 360 animals per year. Since 1990, buck harvest averaged only 360 animals per year and doe harvest was virtually zero. There has been limited antlerless hunting in D-18 since 1999 and no antlerless licenses in an attempt to increase the population size.

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, and interested public.

Meetings were held to solicit input from the USFS, BLM, the local public, and the Mesa County Board of County Commissioners. 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 the low population size, competition with elk, residential development, particularly on winter range, and improving the quality of harvested bucks.

The low population size and failure to increase without antlerless licenses was the most frequently identified issue, closely followed by the increase in residential 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 a desire to see an increase in the deer population size and the buck: doe ratios and there was a corresponding demand for larger bucks.

D-18 MANAGEMENT ALTERNATIVES

Three post-hunt population objective alternatives have been proposed for D-18 (1) 4,500 – 6,500, (2) 6,500 – 8,500, or (3) 8,500-10,500. This population has been well below objective for many years with little to no growth. It is recommended that the population size be increased, with an objective range of 6,500 – 8,500 deer.

Three post-hunt composition objectives were proposed for D-18 (1) 20-25 bucks: 100 does; (2) 25-30 bucks: 100 does; or (3) 30-35 bucks: 100 does. Alternative 1 would decrease buck quality while increasing hunting opportunity. Alternative 3 would improve buck quality and decrease hunting opportunity. Alternative 2 would maintain the status quo. It is recommended that the buck: doe ratio be increased, with an objective range of 30 – 35 bucks: 100 does.

GLADE PARK
DAU D-18
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: 100 does) objective. 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 document, determines relevant issues through a public scoping process, identifies alternative management strategies to resolve these issues, and selects the preferred management objective alternative.

Once these population and composition objectives are set through the DAU planning process, the CDOW works to achieve these goals annually. The population objective determines 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).

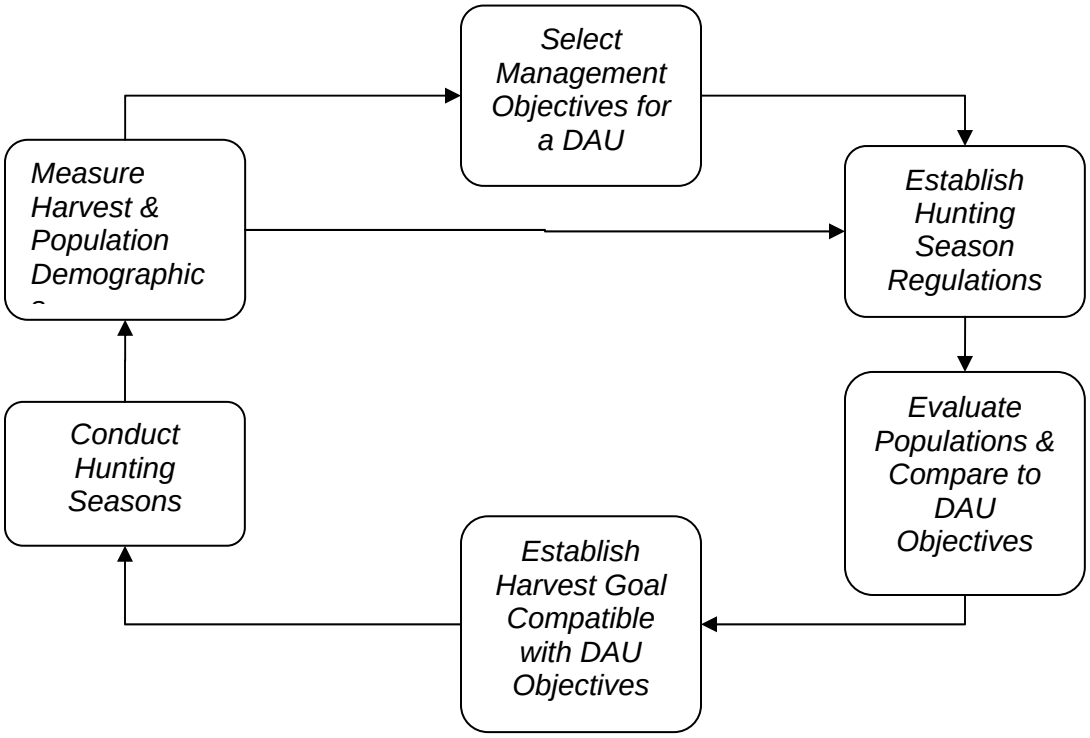


Figure 1. CDOW's Management by Objective Process.

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.

DESCRIPTION OF DATA ANALYSIS UNIT

Location

The Data Analysis Unit is located in the west central portion of Colorado and is commonly called the Glade Park DAU. Its CDOW designation is D-18. It is bounded on the north by the Colorado River; on the east by US Hwy. 50; on the south by Colo. Hwy. 141 and Dolores River; and on the west by the UT-CO state line. (Figure 2).

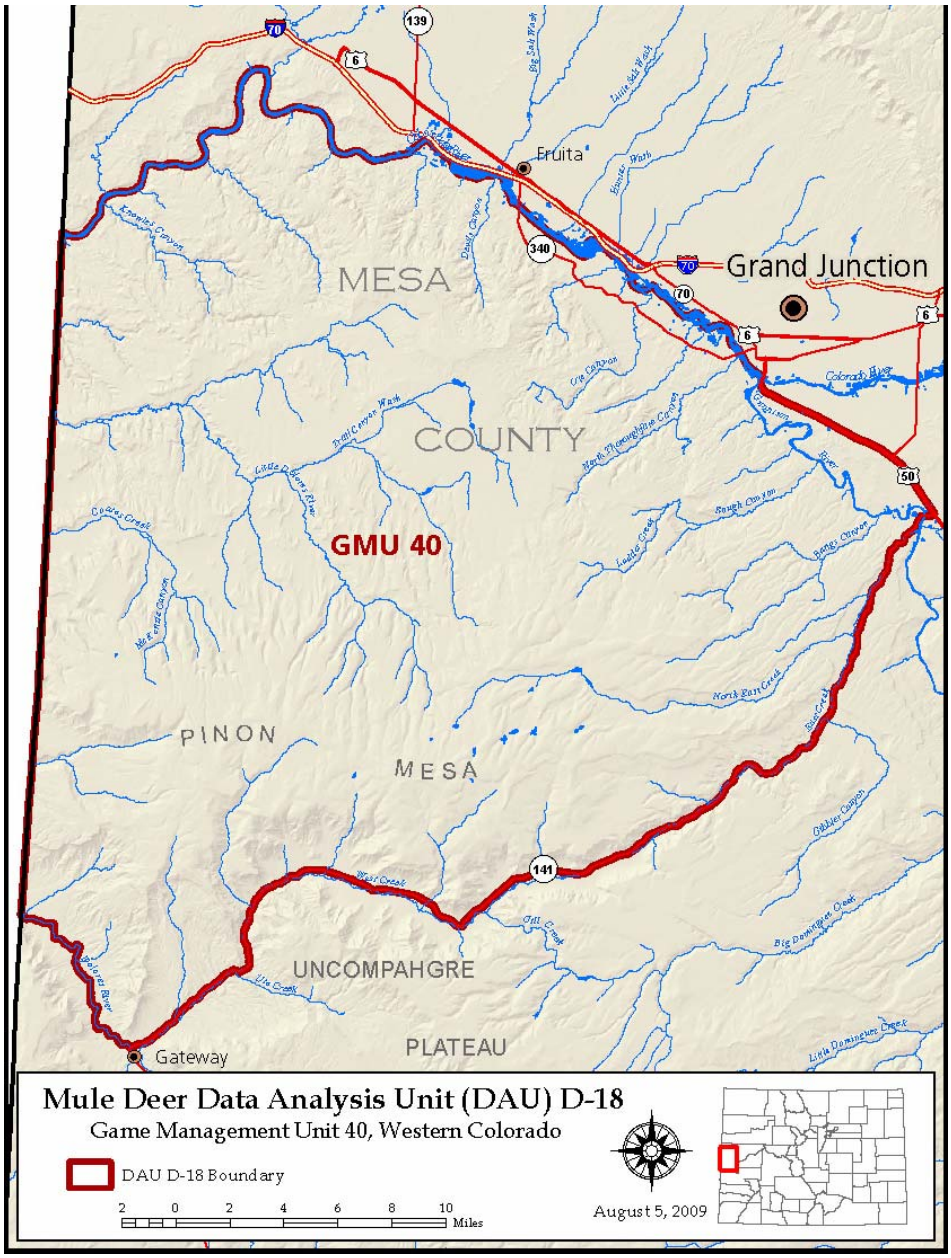


Figure 2. Location of DAU D-18 in west-central Colorado.

Physiography

This DAU can be broadly divided into two units: Glade Park, in the northern portion and Pinon Mesa rising south and west of Glade Park. The DAU is called both Pinon Mesa and Glade Park and the two are often used interchangeably. The topography varies greatly in the DAU. The highest elevations in the DAU are at its center and from there elevation decreases in all directions. The highest point is approximately 9,700 feet at the south-center of the DAU. The lowest point is where the Colorado River meets the UT state line at approximately 4,600 feet.

The Colorado River forms the northern boundary of the DAU. Interstate 70 parallels the Colorado River, forming a significant barrier which restricts deer movements throughout the northern portion of the DAU. Additionally, nearly vertical sandstone canyons on the north end of the unit prohibit much deer movement to the north.

Along the eastern boundary, the Gunnison River and the city of Grand Junction, as well as the desert-like, open terrain act as a natural barrier restricting deer movement. The Unaweep Canyon forms the eastern and southern boundary of the unit and is a well-known geologic feature. It is a broad, steep-sided canyon composed of both granite and sandstone formations. Two creeks, East Creek and West Creek, flow out of either end of the canyon.

The Dolores River forms the southern boundary of the unit for a short distance north of the town of Gateway and to the UT state line. The western boundary, the Colorado-Utah state line, is not marked by significant natural boundaries to deer movement.

Sandstone canyons are one of the dominant geologic features of this DAU. The terrain on the south side of the Colorado River from the Colorado National Monument (COLM) west to the state line is noted for it's expansive sandstone canyon system. This area, including the COLM, Black Ridge Canyons Wilderness Area, and the McInnis Canyons National Conservation Area, has extensive canyon systems.

The Colorado, Gunnison, and Dolores Rivers surround the DAU. The Little Dolores River is one main drainage that originates in the DAU. The highest elevations in the unit receive significantly more precipitation than lower elevations, and perennial and intermittent streams are quite common. There are no large natural lakes in the unit. Small reservoirs have been constructed for livestock water, irrigation, and municipal use for the town of Fruita.

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 center of the DAU. Deer are forced to migrate to lower elevations during the winter.

Annual precipitation ranges from about 8 inches in the desert country near Grand Junction to over double that amount in the highest elevations of the unit. Much of the annual precipitation is in the form of snow.

Vegetation

Vegetation in this DAU varies due to the wide range of elevations. 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. Ponderosa pine and oakbrush 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 woodlands are usually found in the lower, drier areas. Sagebrush and snowberry are commonly found in open areas in the oakbrush 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.

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.

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, particularly at the lower elevations near Grand Junction.

The vegetation in the unit has been extensively managed for livestock forage production. Cattle grazing occurs throughout the unit and domestic sheep were historically grazed in significant numbers. Although there is still significant cattle production, domestic sheep are found only in small flocks on ranchettes.

In addition to grazing, the vegetation has been heavily influenced by other human activities. Natural fire has been excluded and suppressed for many years. However, several significant fires in recent years have occurred in the unit. These fires have burned in predominantly pinon-juniper woodlands, improving overall winter range conditions for both deer and elk.

Land Ownership

The Glade Park D-18 DAU is 744 square miles in size and contains a mixture of public and private lands (Figure 3). Approximately 62% of the lands within this DAU are public property. Of the overall area, 4 % is managed by the United States Forest Service (USFS) and about 56 % by the Bureau of Land Management (BLM). The National Park Service owns 4%. The Grand Mesa National Forest manages the 12 square miles of USFS lands found in the DAU.

The BLM lands are managed by the Grand Junction Field Office. Privately owned lands make up 38 % of the total.

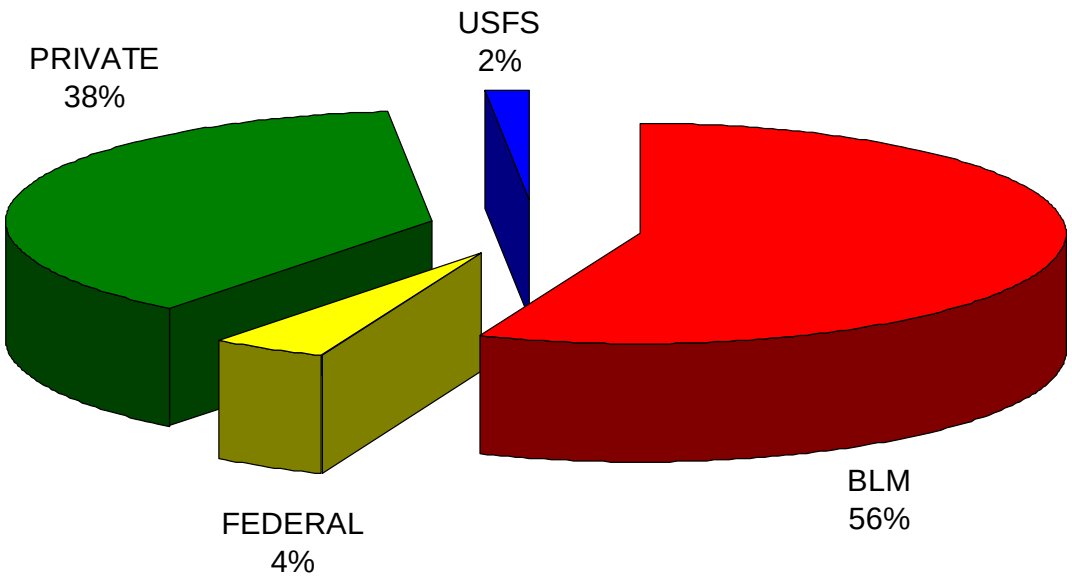


Figure 3. Land Ownership in DAU D-18.

The main population center in the DAU is found in the Grand Valley, in Grand Junction and Fruita.

The land ownership in this DAU is unique in Colorado. Unlike many areas in western Colorado, public lands in this DAU are generally found at lower rather than higher elevations. The most productive lands in this DAU are generally found at the intermediate and higher elevations. These higher elevations were homesteaded rather than the dryer, less productive lands at lower elevations.

Land Use

Because of the DAU's wide range in elevations, there are a variety of uses occurring on the lands. Livestock production and big game hunting are two of the most well-known activities in this DAU. Non-hunting recreation and tourism are also important aspects, particularly in the Colorado National Monument.

- **Agriculture:**

Much of the private land in the DAU is used to graze livestock during the spring, fall, and winter. Cattle ranchers graze livestock on USFS and BLM land during various seasons of the year. On USFS lands, livestock are grazed on allotments

during the summer and then during the fall ranchers move the livestock to home ranches for the winter.

Throughout the DAU on private lands other agricultural crops are grown, including corn, various small grains, and the production of hay for livestock.

- **Timber Harvest:**

Some commercial timber is sold and harvested on private lands in the DAU. Spruce/fir timber is cut to provide wood for the construction industry. Aspen has also been harvested, often as part of other land management practices including benefits to wildlife, including deer and elk. 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). Other significant population centers include Glade Park, Whitewater and Gateway.

In addition to the major population centers, many large pieces of private lands in this DAU have been subdivided and sold for construction of residential single family housing. Many 35 acre and smaller parcels have been developed in recent years and continues to increase. Often these parcels are large enough o maintain horses and other livestock. Subdivisions of this nature have occurred in the Glade Park, Little Park, and Unaweep Canyon areas. The fragmentation of the landscape reduces habitat quality and quantity and is located in areas that were formerly deer and elk winter range.

COUNTY	TOWN	POPULATION
Mesa	Grand Junction	45,000
	Fruita	6,600
	Glade Park	500
	Gateway	60
	Whitewater	1,500
	Total County	120,000

Table 1. Human Population Estimates within DAU E-19.

- **Recreation:**

Recreation is probably one of the most visible and extensive uses occurring on all lands in this DAU. McInnis Canyon National Conservation Area, the Black Ridge Canyons Wilderness Area, the Colorado National Monument, Bureau of Land Management lands, and the Grand Mesa National Forest lands provide significant opportunities for varied types of recreation. Excellent backcountry hiking, biking, and off highway vehicle (OHV) trails provide numerous days of recreational activity for a large number of visitors. Fishing is limited to some of the larger perennial streams and to a small number of public and private reservoirs. Big game hunting for deer, elk, bear and desert bighorn sheep provides recreational opportunities during the fall.

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

At this time there is no oil & gas development occurring in this DAU and future activities seem unlikely. Other common mining resources, including uranium, are also relatively unpromising and not expected to be developed in the near future.

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-18 have generally been declining since the early 1980s (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 efforts may have contributed 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. The decline continued during the 1990's and reached a low of about 4,800 in 1998.
In the last 5 years, this population has begun to rebound and is showing slow growth. It is unknown why this population's growth is so slow, although fawn: doe ratios are low and drought conditions don't appear to be lessening as much as in other parts of the state.

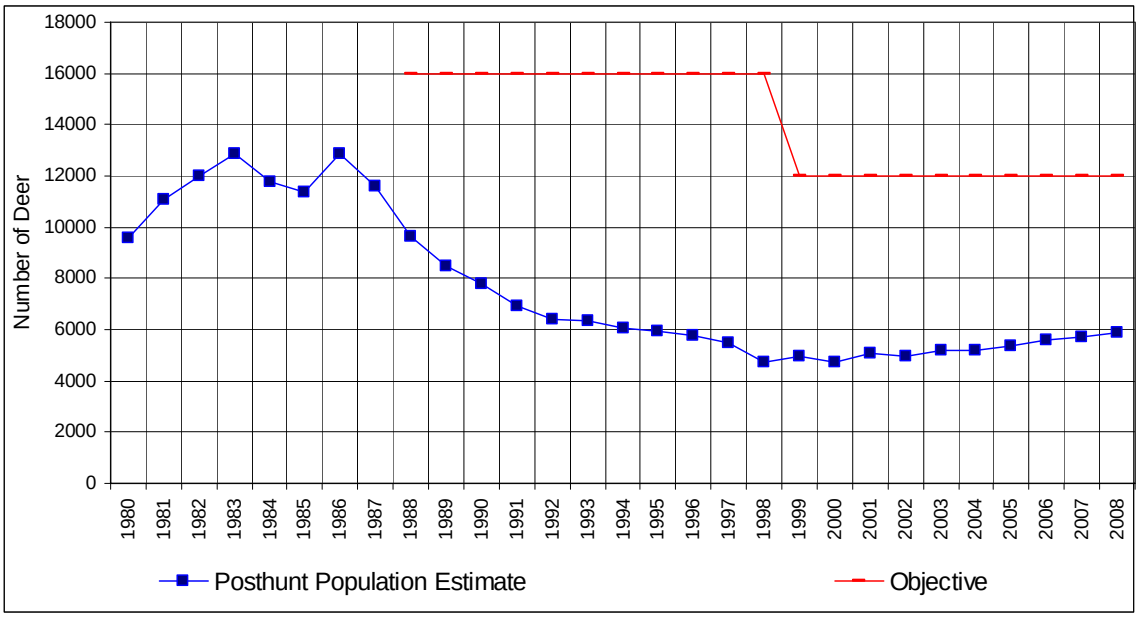


Figure 4. Posthunt Population Estimates for D-18.

Post-hunt Herd Composition

Aerial sex/age composition surveys in D-18 are generally completed every other year, based on funding and personnel time constraints. 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 generally remained between 20 and 25 bucks: 100 does in this unit since 1980. Recent years have seen improved buck: doe ratios as license numbers have increased. Between 2002 and 2008, five flights observed an average of 26.4 bucks: 100 does (Figure 5).

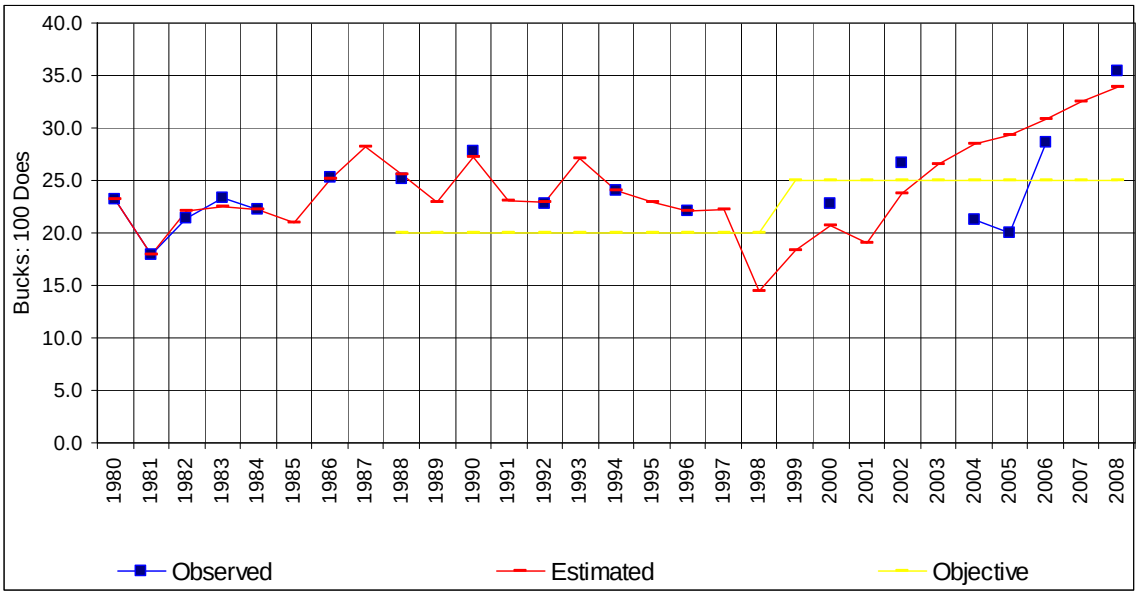


Figure 5. Buck: Doe Ratios in D-18.

- **Fawn: Doe ratios**

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 2000, when only 41 fawns: 100 does were observed. There has been some improvement in recent years. Between 2002 and 2008, five flights observed an average of 53.2 fawns: 100 does (Figure 6).

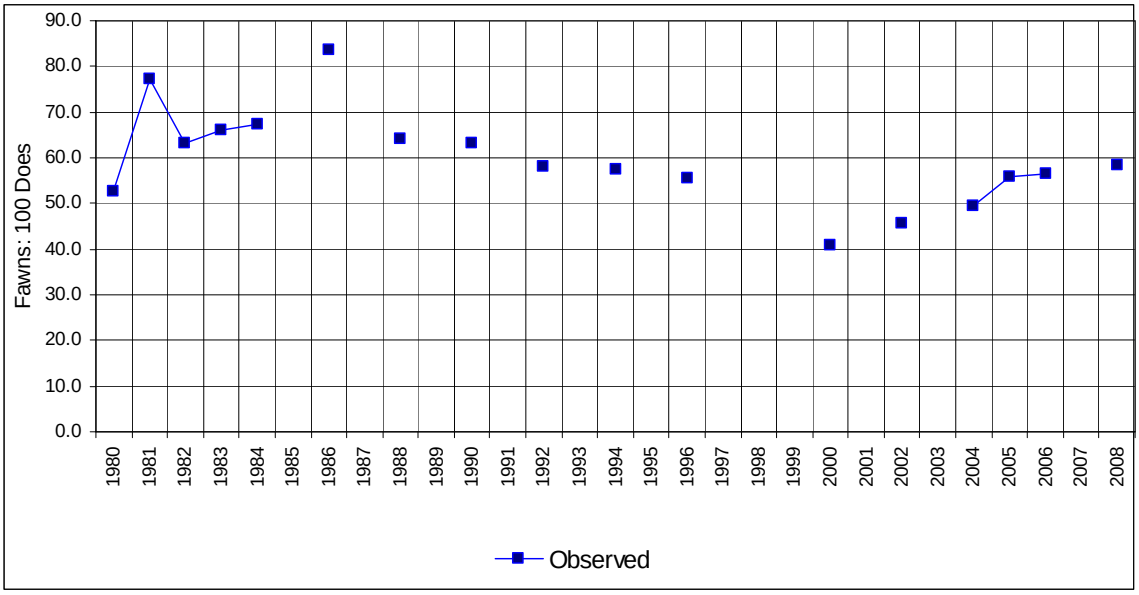


Figure 6. Fawns: 100 Does in D-18.

Harvest History

Deer harvest in the DAU D-18 has changed substantially over time, peaking in the early 1980's, followed by significant reductions, particularly in doe harvest (Figure 7). Between 1980 and 1990, buck harvest averaged over 900 animals per year and doe harvest averaged approximately 360 animals per year. Since 1990, buck harvest averaged only 360 animals per year and doe harvest was virtually zero. There has been limited antlerless hunting in D-18 since 1999 and no antlerless licenses in an attempt to increase the population size.

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.

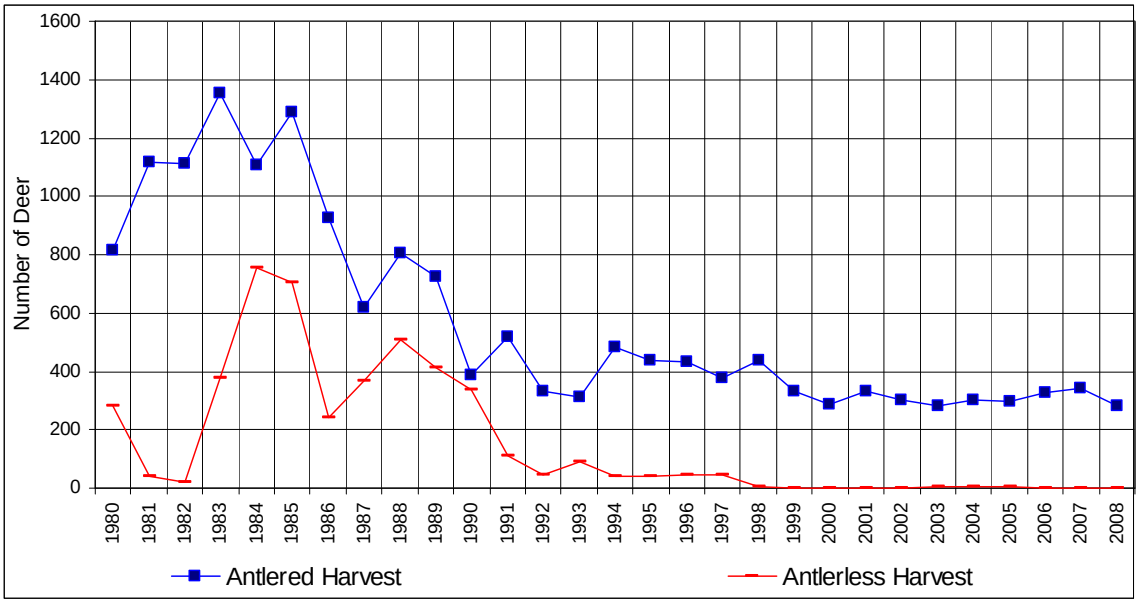


Figure 7. Annual Harvest in DAU D-18.

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 account for over 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 and there is strong demand for higher quality bucks. Generally, a preference point is required to hunt during the 3rd rifle season.

Hunting Pressure and Hunter Numbers

Hunting pressure is an important issue in this DAU due to the high quality antlered animals harvested in this unit and the high proportion of private land. The majority of hunters concentrate on the USFS land at the higher elevations of the unit, particularly during the early seasons. Hunter concentration has steadily increased in the most sought after hunting areas. Decreasing access to formerly huntable lands has increased crowding on public lands.

Since this DAU has been managed for quality antlered animals, license numbers are tightly controlled. However, demand for antlered licenses has increased dramatically. Hunter interest is very high for elk in this DAU as well as the entire

state of Colorado. The growth of the herds has stimulated and maintained a high public interest in both the viewing and hunting populations in Colorado

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

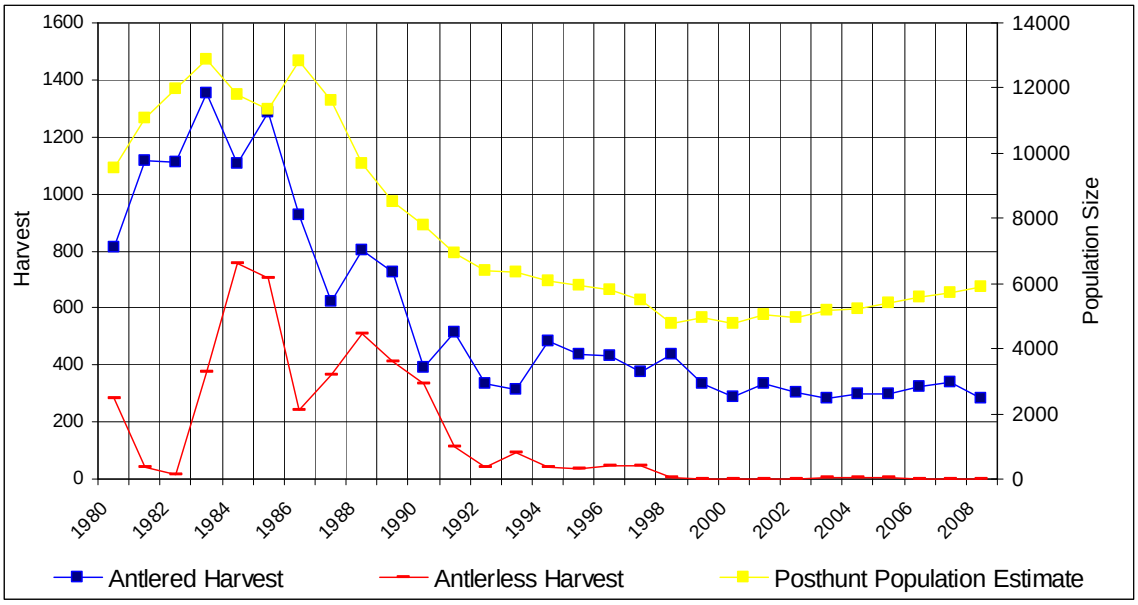


Figure 8. Deer Population vs. Harvest in D-18.

CURRENT HERD MANAGEMENT

Current Population and Composition Objectives

The current population objective for the Glade Park DAU D-18 is 12,000 deer which was established through the DAU planning process and approved by the Wildlife Commission in 1999. The current population estimate of 5,900 deer is well below the objective. Current management efforts are focused on increasing herd size.

The current composition objective is 25 bucks: 100 does. The observed buck: doe ratio in 2008 was 35.4 bucks: 100 does and there is significant demand for better quality bucks.

Harvest Management

This DAU has been managed in recent years with completely limited antlered (buck) licenses and no antlerless (doe) licenses in an effort to increase the population size. Declining herd numbers since the early 1980'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 quality buck hunting 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 roughly 300 antlered animals has been maintained since the institution of limited licenses.

- **Antlerless Licenses**

Antlerless licenses were eliminated in 1999 to encourage population growth. A handful of licenses continued to be issued on Ranching for Wildlife lands through 2005, when they were eliminated completely.

HABITAT RESOURCE

Habitat Distribution

- **Deer Overall Range**

Deer are found throughout DAU D-18 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.

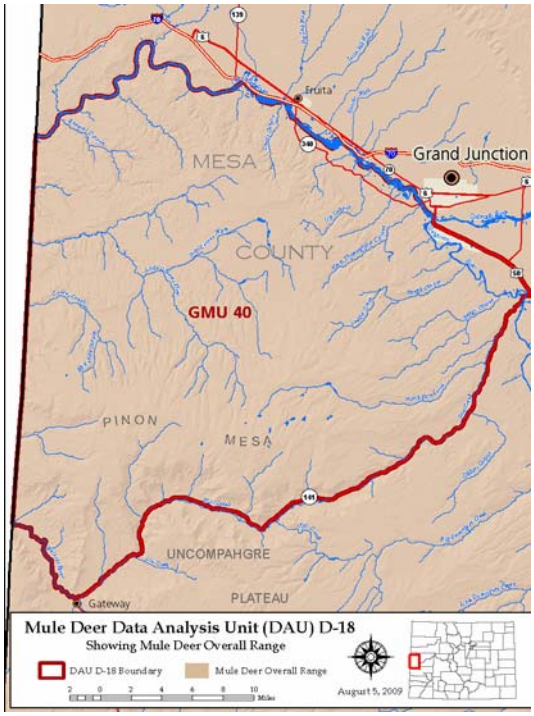


Figure 9. Deer Overall Range in DAU D-18.

- **Deer Summer Range**

Deer in D-18 summer throughout the DAU, although the majority summer in the higher elevations (Figure 10). There are approximately 267 square miles of summer range. 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. 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.

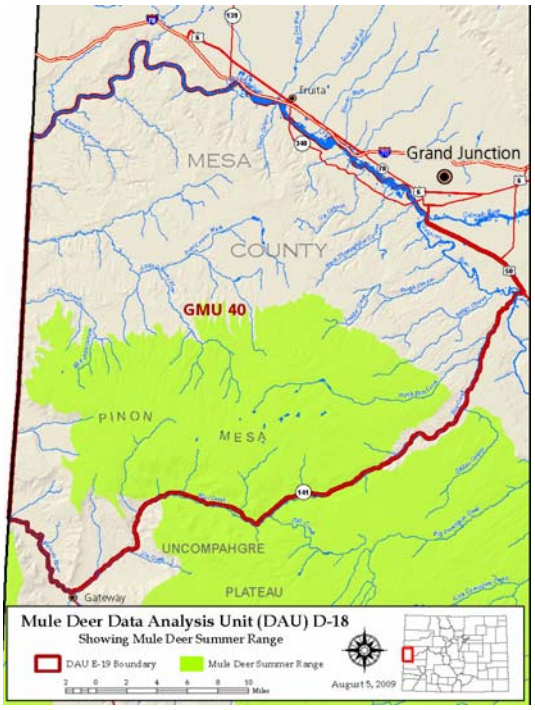


Figure 10. Deer Summer Range within DAU D-18.

- **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 487 square miles of winter range in DAU D-18. The lands that surround Pinon Mesa at lower elevations comprise important winter ranges for both deer and elk. Areas such as the area around Gateway, Grand Junction, and Glade Park 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.

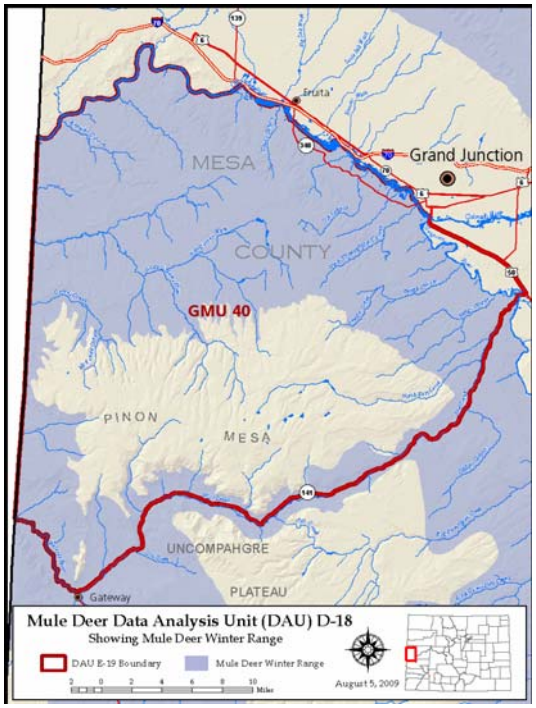


Figure 11. Deer Winter Range in DAU D-18.

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

Of the approximately 487 square miles of winter range in D-18, 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-18. 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.

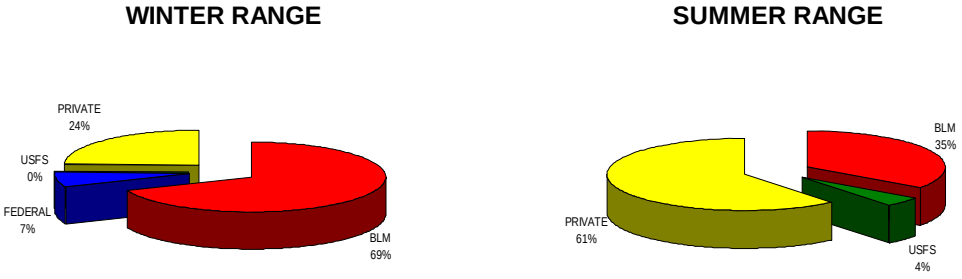


Figure 12. Land Ownership in DAU D-18 in Winter vs. Summer Range

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 elk and 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.

In many areas in DAU D-18, on both public and private land, the range and browse conditions are good and/or improving. The Bureau of Land Management completed a Land Health Assessment (LHA) of the Colorado Canyons (now McInnis Canyons) National Conservation Area in 2003. The portions of the NCA south of the Colorado River were found to be meeting land health standards 84% of the time. Another LHA on the south side of the unit, the West Creek Land Health Assessment was completed in 2004. Less than 1% of the evaluated land did not meet minimum standards.

Private land conditions are also good, primarily due to careful livestock management, reduced grazing, and habitat improvement projects. Although no broad assessments have been completed on private lands, these areas are generally in good condition and provide excellent habitat to deer and elk.

A significant impact to habitat condition in DAU D-18 is the fragmentation and destruction of habitat as a result of residential development. Deer and elk avoid areas of high activity associated with residential 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.

Habitat quality is the single most important factor affecting deer and elk populations throughout Colorado. High quality habitat allows for a higher sustainable population, maintains the herd in better condition, and provides for better reproduction and survival.

Areas of lower habitat quality are generally the result of a lack of rejuvenation, invasive weeds and increasing recreational use.

Fire suppression has resulted in decadent stands of oaks and sagebrush, as well as pinon-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.

There are areas in this unit that have seen significant fires in recent years. These fires have generally improved grazing conditions, particularly when native grasses revegetate burned areas. Fresh young grasses immediately come in, improving the overall habitat condition and providing substantial grazing

opportunities to elk. Browse species that more directly benefit deer, take longer to reestablish.

Invasive weeds such as cheatgrass, houndstongue, thistles, leafy spurge, and knapweeds are increasing dramatically in this DAU. These are brought in through residential 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.

Conflicts

The State of Colorado is liable for compensating landowners for documented damage to commercial agricultural products, livestock forage, and fences by elk and other big game provided the landowner allows reasonable hunting access. Due to the high value of bull licenses, and subsequent high fees charged for hunting access, there are very few landowners who qualify for game damage payments. Although there are some areas with high concentrations of elk, complaints are rare.

The deer population in the overlapping DAU (D-18) is stable to slightly increasing (Figure 13). There is some concern that the elk herd has negatively impacted the deer herd through direct competition for spatial and forage resources.

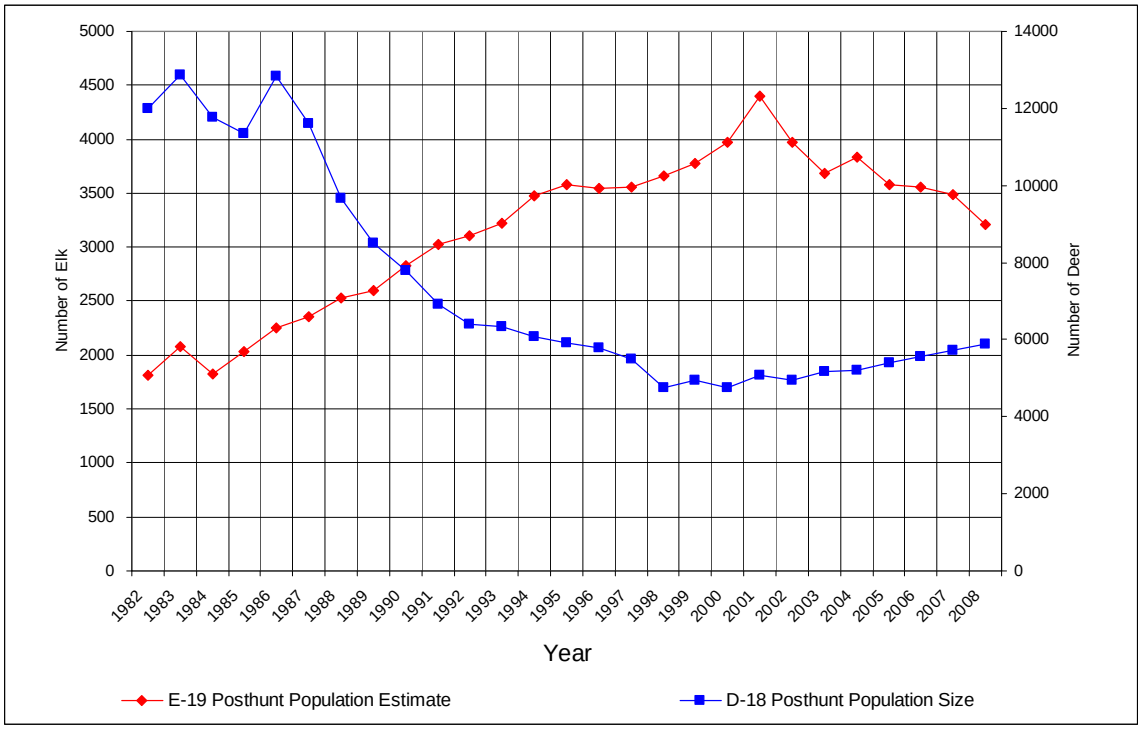


Figure 13. Elk and Mule Deer Populations in E-19 and D-18.

Although a direct relationship has never been scientifically supported, 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 E-19 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, undesirable vegetative communities, 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, and interested public.

In an effort to solicit information from the interested public, the CDOW held open public meetings in Grand Junction and Glade Park during August of 2009, to gather recommendations on the goals and objectives of the DAU plan.

The Mesa County Board of County Commissioners (BOCC) was also requested to provide input on the draft management plans and was invited to the local public meetings. No comments were received.

Letters were sent to interested stakeholders and land management agencies. A questionnaire was available at the public meetings and on the internet to further encourage public input.

Issue Identification

There are many issues associated with elk management in DAU E-19. The primary goal of this management plan is to document those issues and, whenever possible, to identify strategies for resolution through solid wildlife management principles. Some primary concerns that have been identified in this area are elk competition with deer, agriculture and domestic livestock; hunting opportunity and quality, and habitat quality and quantity. This is an adaptive process and the DAU process is repeated on a regular basis to account for the changing conditions within this DAU.

One major issue that was brought up myriad times during the planning process, but is not within the scope of the DAU plan, was license allocation. Due to the high value of antlered licenses, and the significant portion of this unit that is private land, competition between landowners for licenses is increasing. There is significant opposition to Ranching for Wildlife, and strong interest in altering the distribution of limited licenses in E-19. Interested parties were encouraged to participate in the upcoming Big Game Landowner Voucher Review Committee.

- **Issues and Concerns: CDOW**

  Housing/Ex-Urban Development

The DAU has had substantial development in areas that were once part of deer winter range, particularly in the areas surrounding Glade Park. The Unaweep Canyon is also experiencing increasing development, although to a lesser extent. Ranches have been subdivided and natural habitat quality is significantly reduced by fragmentation. This includes direct loss of habitat and effective loss of surrounding habitat due to harassment from people and pets. This

development has combined to reduce the amount of useable winter range for deer and puts added pressure on remaining lands. It is likely that this will continue to escalate in coming years.

Low Population Size

Since the 1980s, this population has been well below objective and has not reacted to management techniques to increase herd size. It is not known why the herd has not recovered from the dramatic, statewide declines of the 1990s, but it is probably due to a combination of factors, including ongoing drought, low fawn: doe ratios, fires benefiting elk habitat, and conversion of winter range to residential housing.

Hunter Access

An ongoing problem in the DAU is access to huntable lands by non-landowning hunters. With nearly 40% of the land owned by private entities, access is difficult, particularly during hunting seasons. Large tracts of privately-owned and inaccessible property create huge preserves, attracting deer to areas of less activity and reducing harvest opportunity. The problem is most critical in the highest elevations, during early seasons. Access issues are complicated by the monetary value that can be derived from hunters and access fees.

Although these issues cannot be addressed through the DAU planning process, they should be considered during the review of landowner vouchers and license allocation.

Low fawn: doe ratios

Between 200 and 2006, fawn: doe ratios have averaged below 50 fawns: 100 does. Although recent surveys have observed higher ratios (58.5 in 2008), fawn ratios are still lower than necessary to increase herd size. It is unknown why fawn numbers are lower than desired, 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-18, 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**

Input from the Bureau of Land Management's Grand Junction field office was requested by mail and attendance by BLM personnel at the public meetings was encouraged. Information regarding Land Health Assessments (referenced elsewhere in this document) was received. No other input or concerns were received.

- **Issues and Concerns: USFS**

Input from the Grand Mesa National Forest office was requested by mail and attendance by USFS personnel at the public meetings was encouraged. No input or concerns were received.

- **Issues and Concerns: Public Stakeholders**

Two public meetings were held to provide information regarding the DAU planning process and to solicit input from concerned stakeholders. At these meetings, current management objectives were presented and alternatives were presented. Input was requested, in the form of an optional questionnaire (APPENDIX C: PUBLIC QUESTIONNAIRE), from participants at the time of the meeting regarding any issues or concerns. This questionnaire was also made available on the internet. Twenty-two questionnaires were returned.

Several issues were identified as important to public stakeholders during this process. The majority of individuals contacted expressed concerns relating to buck quality, population size, and hunting opportunity. Concern was also expressed about residential development, loss of habitat, the revenue associate with deer hunting.

Analysis of the questionnaire that was distributed at the public meetings and made available on the internet indicates that a strong majority of respondents wanted the deer population size to increase and the number and quality of bulls to increase. There was more demand overall for trophy buck harvest than for providing opportunity.

The most commonly identified issue during the public input process was inequities resulting from landowner vouchers and priority drawings. Much of the deer range is privately owned and access is limited. There is significant discord relating to how licenses are distributed and where hunters can hunt deer. Ranching for Wildlife in this DAU was also identified as a major concern.

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

- **Issues and Concerns: County Commissioners**

The Board of County Commissioners from Mesa County was contacted as part of this DAU planning process. They were provided with a background of the planning process and encouraged to attend the public meetings. No comments are received from the 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**

4,500-6,500 deer; 6,500-8,500 deer; 8,500-10,500 deer

- **Sex Ratio Objective Alternatives**

20-25 bucks: 100 does; 25-30 bucks: 100 does; 30-35 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: 4,500-6,500 deer:

This alternative would maintain the population at current levels.

Antlerless License Impacts: Assuming that the population continues to be stable, no antlerless licenses would be issued. If the population begins to recover and fawn: doe ratios increase, doe licenses would be instituted on a limited basis to maintain the population within the objective range.

Antlered License Impacts: Changes to antlered licenses don't generally affect population size. Maintaining the population at current levels would have no impact on antlered licenses.

Alternative 2: 6,500-8,500 deer:

This alternative would increase the size of this herd by roughly 25%. This alternative would result in a 30% increase in the population size of this herd from the average of 2004-2008, surpassing population levels from the early 2000's.

Antlerless License Impacts: There would be no antlerless licenses issued until the population was within the objective range. Assuming the herd begins to recover and reaches objective, antlerless licenses would be available.

Antlered License Impacts: Changes to antlered licenses don't generally affect population size. However, once this population increases, there

will be a consequent increase in the number of bucks overall, leading to an increase in the number of antlered licenses available.

Fiscal Impacts: Initially, there would be no change to license sales then could be increased once the herd reaches objective. Income to the CDOW and local communities would likely increase once license numbers increase.

Alternative 3: 8,500-10,500 deer:

This alternative would result in a ~60% increase in the population size of this herd from the average of current levels.

Antlerless License Impacts: There would be no antlerless licenses issued until the population was within the objective range. Assuming the herd begins to recover and reaches objective, antlerless licenses would be available.

Antlered License Impacts: Changes to antlered licenses don't generally affect population size. However, once this population increases, there will be a consequent increase in the number of bucks overall, leading to an increase in the number of antlered licenses available.

Fiscal Impacts: Initially, license sales would drop since the population would need to be increased to the new level. Income to the CDOW and local communities would decrease to allow the population to grow, then would likely increase.

- **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.

Sex ratios are difficult to accurately observe in this unit. It is likely that a large proportion of antlered animals, particularly older age class animals, winter in Utah and are not observed during winter classification flights. This leads to what is probably a dramatic under-estimation of the actual buck: doe ratios. It is possible that using random point sampling may provide a more accurate representation of actual buck: doe ratios than current ad hoc method. This unit, in particular, relies heavily on hunter satisfaction and harvest quality to determine the overall quality of bucks.

Alternative 1: 20-25 bucks: 100 does:

This alternative would decrease the objective number of bucks within the population, and therefore would decrease the number of older age-class animals available to be harvested.

Antlered License Impacts: This alternative would increase available antlered licenses both long and short term. The CDOW would direct hunting pressure to the male segment of the population.

Alternative 2: 25-30 bucks: 100 does:

This alternative would maintain the number of bulls in this herd at current levels. There would also be no change in the season structure.

Alternative 3: 30-35 bucks: 100 does:

This alternative would increase the number of bucks in this herd. There would be more older age-class bucks available for harvest. It is likely that the size of harvested bucks would increase. Fewer antlered licenses would be available both long and short term.

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”.

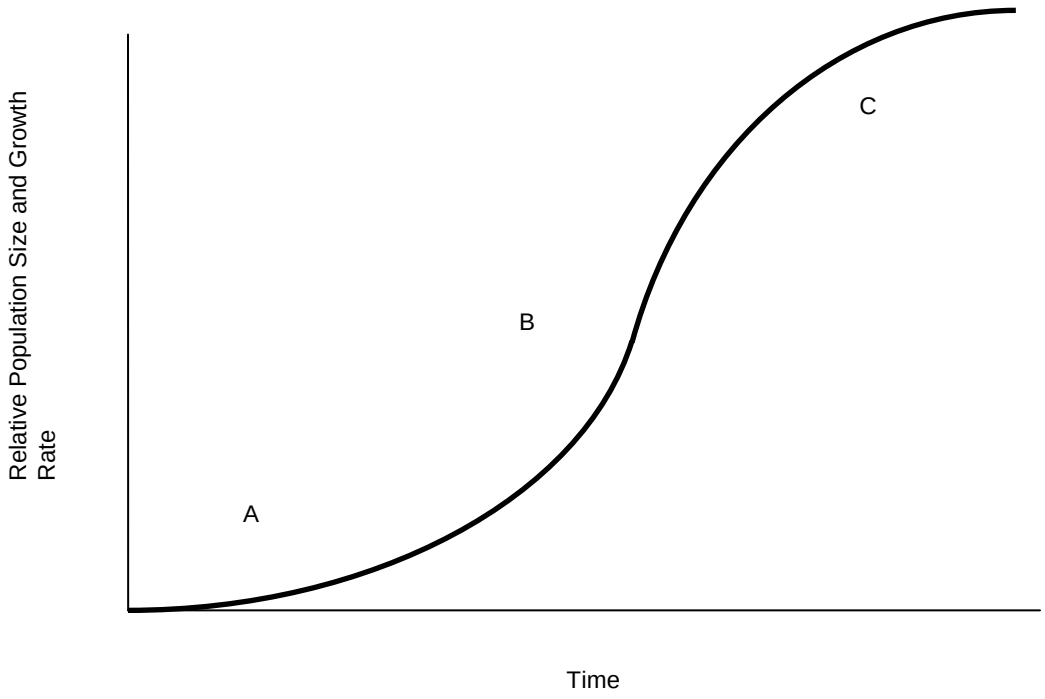


Figure 14. Sigmoid Growth Curve.

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.

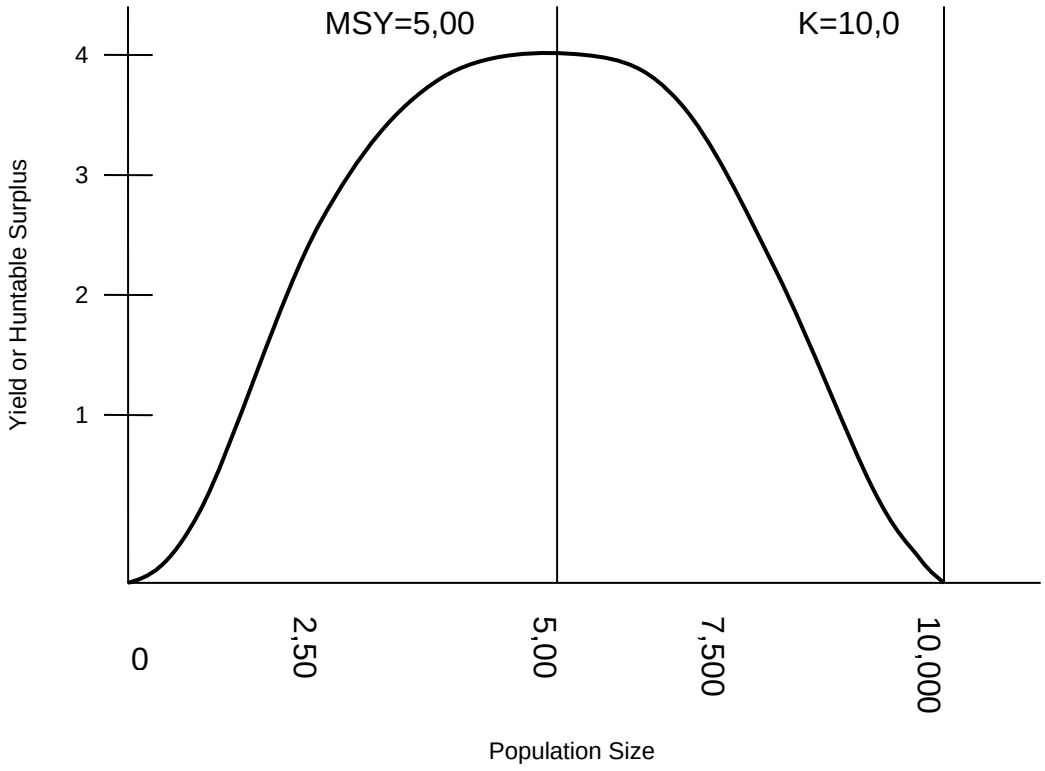


Figure 15. Maximum Sustained Yield and Maximum Carrying Capacity.

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: COMMENTS FROM PUBLIC STAKEHOLDERS WITH QUESTIONNAIRE ANALYSIS

Questionnaire Answers

Background Information

- **Question1:**

Respondents: 23
Resident: 22
Non-resident: 1

All but one of the respondents were residents of Colorado.

- **Question 2:**

Respondents: 23
Residents of D-18: 16
Non-residents of D-18: 7
The majority of respondents lived within DAU D-18.

- **Question 2A:**

Respondents: 10
Average length of residence: 25.6 years
Median length of residence: 22.5 years
Minimum length of residence: 2 years
Maximum length of residence: 60 years
Of the respondents who lived in D-18, the average length of residence was 25.6 years.

- **Question 3:**

Respondents: 19
Landowners in D-18: 14
Non-landowners in D-18: 5
The majority of respondents own or lease property in DAU D-18.

- **Question 3A:**

Respondents: 13
Average length of property ownership: 26.7 years
Median length of property ownership: 25.0 years
Minimum length of property ownership: 3.0 years
Maximum length of property ownership: 60 years
Of the respondents who owned property in D-18, the average length of ownership was 26.7 years.

- **Question 4:**

Respondents: 19
A: 5
B: 3
C: 12
D: 3
E: 17
H: 5
I: 1
The majority of respondents identified hunters/sportspersons or landowner as the group that represents their interests in deer management. Fewer respondents identified environmental or rancher groups.

- **Question 5:**

Respondents: 16
A: 2
B: 0
C: 3
D: 1
E: 10
H: 0
I: 0
When asked to indicate which group most represented their opinion, the majority of respondents identified hunters/sportspersons. Two identified rancher and three identified landowner.

People and Deer

- **Question 1:**

Respondents: 17
A: 2.2
B: 2.4
C: 1.8
D: 3.8
E: 4.0
F: 3.4
G: 2.1
H: 2.4
I: 3.1
J: 3.4
Respondents most frequently indicated that they were very concerned about predation and loss of habitat. Starvation and revenue from hunting were identified as secondary concerns by most respondents.

- **Question 2:**

Respondents: 19
Affected: 18
Not-affected: 1
The majority of respondents had been personally affected in some way by one or more of the concerns.

- **Question 2A:**

Respondents: 12
A: 2
B: 0
C: 2
D: 3
E: 4
F: 0
G: 0
H: 1
I: 0
J: 0
The respondents had been almost equally affected by deer/vehicle collision, damage to crops, and loss of deer habitat due to increased human population and development.

- **Question 3:**

Respondents: 19
Do not enjoy/nuisance: 0
Enjoy/worry: 5
Enjoy/don't worry: 14
No opinion: 0
Fourteen out of nineteen respondents indicated that they enjoy the deer in D-18 and do not worry about the problems they cause. Five respondents indicated that they enjoy the deer and do worry about problems they cause

Deer Management

- **Question1:**

Respondents: 19
Decrease: 0
Stay the Same: 3
Increase: 16
Don't know: 0
The majority of respondents wanted the deer population size to increase.

- **Question 2:**

Respondents: 18
Decrease: 1
Stay the Same: 2
Increase: 15
Don't know: 0
The majority of respondents wanted the deer population size objective to increase.

- **Question 3:**

Respondents: 17
Not Important: 0
Slightly Important: 3
Important: 3
Very Important: 11
Don't know: 0
The majority of respondents indicated that the population size very important to them.

- **Question 4:**

Respondents: 19
Decrease: 0
Stay the Same: 6
Increase: 13
Don't know: 0
The majority of respondents wanted the number of buck deer to increase.

- **Question 5:**

Respondents: 18
Decrease: 0
Stay the Same: 6
Increase: 10
Don't know: 2

A majority of respondents wanted the objective for buck deer to increase or stay the same.

- **Question 6:**

Respondents: 17
Hunt every year: 6
Equally important: 3
Trophy: 8

Nearly equal numbers of respondents indicated that it is more important to hunt every year or it is more important to harvest a trophy animal. Only three indicated that they were equally important.

Deer Hunting

- **Question1:**

Respondents: 19
Hunted: 19
Not hunted: None

All respondents had hunted deer in Colorado.

- **Question 1A:**

Respondents: 19
Average length of hunting: 29.6 years
Median length of hunting: 32.0 ears
Minimum length of hunting: 2.0 years
Maximum length of hunting: 50.0 years

The average length of hunting in Colorado was 29.6 years.

- **Question 2:**

Respondents: 18
Hunted in D-18: 16
Not hunted in D-12: 2

The majority of respondents had hunted in DAU D-18.

- **Question 3:**

Respondents: 17
Very Dissatisfied: 2
Slightly Dissatisfied: 3
Neutral: 6
Slightly Satisfied: 5
Very Satisfied: 1

The majority of respondents indicated that they were neutral to very satisfied with their hunting experience in D-18. Five out of 15 respondents expressed dissatisfaction.

- **Question 4:**

Respondents: 17
Extremely Crowded: 1
Moderately Crowded: 7
Slightly Crowded: 6
Not at all Crowded: 3

The majority of respondents indicated that they felt moderately or slightly crowded. One respondent felt extremely crowded in D-18. Two respondents did not feel crowded.

- **Question 5:**

Respondents: 14
Less Hunter Crowding: 1
Higher Hunter Success Rates: 0
More mature bucks: 9
More deer: 4

The majority of respondents indicated that seeing more mature bucks was the most likely way to improve their deer hunting experience in D-18. More deer was in second place.

- **Question 6**

Respondents: 18
Poor: 1
Fair: 9
Good: 8
Very Good: 0
Excellent: 1
No Opinion: 0

Nine of eighteen respondents indicated that the quality of deer hunting in D-18 is fair. Eight respondents indicated good hunting quality, and a single respondent each indicated very good and poor hunt quality.

- **Question 7:**

Respondents: 19
Not seeing other hunters: 2
Obtaining game meat: 8
Trophy: 5
Being outdoors: 4

Of the nineteen respondents, two indicated that not seeing other hunters was most important to them when hunting in D-18, while eight reported that obtaining game meat and 5 reported harvesting a trophy deer was most important.

Text of Written Public Comment

- **Questionnaire D-1**

No comments.

- **Questionnaire D-2**

No comments.

- **Questionnaire D-3**

Would be nice to hunt where I live (GMU 40) more often.

- **Questionnaire D-4**

No comments.

- **Questionnaire D-5**

Bucks are not reaching age class in order to be trophy size. Thanks, (name & phone number removed).

- **Questionnaire D-6**

Honestly would like to see Hunter have a chance Too hunt. Private Propety as a resident of Colorado Mesa County. Would like see the quality of animal on unit 40 Increase and If this mean point system or odd years too Hunt.

Would like opertunity to get with private Land owners giving Local Hunters whom can not afford $500 $1000 Hunt these private ranches and give opptenity to be [illegible] with and Have proper Question s for people too share Info with Land Owner.

- **Questionnaire D-7**

No comments.

- **Questionnaire D-8**

Since 1992 the Dear we see around are cabin @ 9,300_ has changed from seeing 30-40 dear down to 7 this year. 5 does and one with a baby and one Buck

- **Questionnaire D-9**

No comments.

- **Questionnaire D-10**

My most important concern is raising the number of deer in DAU D-18. Just having a license allows me to be in the field during hunting season enjoying the outdoors. I realize I do not need a license to be outdoors but it does somehow enhance the experience. Harvesting an animal is of only slight concern.

Of major concern also is acess to private property. Hunting here has become somewhat of an elitist activity and has evolved into an expensive hobby. This has been increased with the loss of the Ranching for Wildlife area.

- **Questionnaire D-11**

To the Colorado Division of Wildlife: For Additional comments for DUA E-19 (GMU 40). My concerns for this unit (GMU 40) is that I would like to see **more deer** and more **trophy bucks** I went to your meeting at orchard mesa veterans park and I was glad that you gave me a sportsman and hunter a chance to put his input in and my opinions on the game management update. I like to see the big bucks that are there when I go hunting and it makes me proud to be a native of this area.

At the meeting you said that decrease for the deer in this unit is largely dependent on the drought conditions that has happened over time, and all the other factors you stated. I understand that completely. It would be nice too have other deer herds a little larger (with of course more trophy bucks) like they were in the late 60's and early 70's or stay the same at the least! And if you could be let a little more buck licenses available so it doesn't take 5 years to get one.

Sincerily: From a hunter and native. (name removed)

- **Questionnaire D-18**

I think deer population is lower than they estimate, you see more Elk than deer.

- **Questionnaire D-13**

I think deer population is lower than indicate in the DOW meeting. I see more bull elk than deer when I'm out & about.

- **Questionnaire D-14**

I would like to see a lot more deer. Back in the 60's there were several bands of sheep – we had a lot of deer back then. Maybe the grazing was good for the deer herds – the feed didn't have a chance to get hard and rank – or maybe Then along came Elk

- **Questionnaire D-15**

No comments.

- **Questionnaire D-16**

Never had a tag for bucks # Area 40 or tried to get one so not really sure how good or bad the deer hunting is. I know I saw once before season lots of bucks!

- **Questionnaire D-17**

Deer population is being taken down by bears and coyote populations. You could stop deer hunting for a few years on Unit 40 to give the deer a chance to recoup from winter loss and predation to be addressed. I hope the DOW will not restore Ranching for Wildlife on Glade Park. It is a travesty to allow hunting for 90+ days and the method of take is wrong and is not the way game should be [*illegible*].

- **Questionnaire D-18**

No comments.

- **Questionnaire D-19**

No comments.

- **Questionnaire D-20**

No comments.

- **Questionnaire D-21**

No comments.

- **Questionnaire D-22**

No comments.

- **Questionnaire D-23**

No comments.

APPENDIX C: PUBLIC QUESTIONNAIRE

OPPORTUNITY FOR PUBLIC COMMENT

DEER MANAGEMENT

Pinon Mesa
COLORADO

Data Analysis Unit D-18
(Game Management Unit 40)

The Colorado Division of Wildlife is interested in your opinions about deer management on Pinon Mesa. The results of this effort will help wildlife managers update the deer management plan for this area. This questionnaire is your opportunity to provide input on the management of deer in Game Management Unit 40.

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

August 2009

Dear Interested Citizen:

The Colorado Division of Wildlife (CDOW) is interested in your opinions about deer on Pinon Mesa, Game Management Unit (GMU) 40. Wildlife managers have begun the process of updating the deer management plan for this area, which will affect future harvest strategies and license setting.

In Colorado, big game populations are managed for a specific geographic area, which we call a Data Analysis Unit (DAU). A DAU may include one or more GMU's. In this case, the Pinon Mesa DAU includes only GMU 40. 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 within the selected herd objective range.

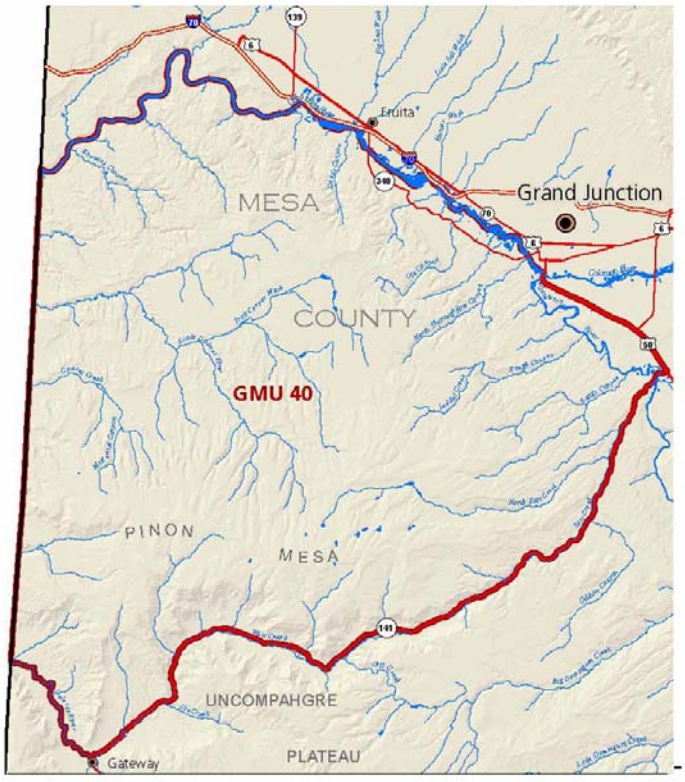
Your input is an important part of the DAU planning process. The information you provide will help develop CDOW's recommendation for deer herd objectives (population size and sex ratio) on Pinon Mesa. Our recommendation will then be incorporated into the DAU plan, which will be reviewed, and ultimately approved, by the Colorado Wildlife Commission.

Surveys must be returned to the CDOW Grand Junction Service Center by September 30, 2009.

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 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-18, Game Management Unit 40, located in West-Central Colorado, then go to Question 1.



Description of DAU D-18:
It is bounded on the north by the Colorado River; on the east by US Hwy. 50; on the south by Colo. Hwy. 141 and Dolores River; and on the west by the UT-CO state line.

BACKGROUND INFORMATION

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

2) Do you live in DAU D-18?
   _____ Yes If yes, how many years?_____
   _____ No

3) Do you own or lease property in DAU D-18?
   _____ Yes If yes, how many years?_____
   _____ No

4) Which group(s) best represent your interests in deer management in DAU D-18? *(Check all that apply)*

   _____ A) Rancher/Farmer
   _____ B) Business owner
   _____ C) Landowner
   _____ D) Guide/Outfitter
   _____ E) Hunter/Sportsperson
   _____ F) Environmental/Conservation
   _____ G) 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. ____

DEER MANAGEMENT

1) How would you like the deer population in DAU D-18 to change, if at all?
   _____ Decrease
   _____ Stay the same
   _____ Increase
   _____ Don't know

2) The population is currently significantly below the population objective. How would you like the deer population objective in DAU D-18 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 DAU D-18 to change, if at all?
   _____ Decrease
   _____ Stay the same
   _____ Increase
   _____ Don't know

5) The objective for buck deer is currently 25 bucks: 100 does. How would you like the **objective** for the number of buck deer in DAU D-18 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 in DAU D-18?
   _____ More important to hunt deer every year
   _____ Equally important
   _____ More important to harvest a trophy animal

BACKGROUND INFORMATION

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

2) Do you live in DAU D-18?
   _____ Yes If yes, how many years?_____
   _____ No

3) Do you own or lease property in DAU D-18?
   _____ Yes If yes, how many years?_____
   _____ No

4) Which group(s) best represent your interests in deer management in DAU D-18? *(Check all that apply)*

   _____ A) Rancher/Farmer
   _____ B) Business owner
   _____ C) Landowner
   _____ D) Guide/Outfitter
   _____ E) Hunter/Sportsperson
   _____ F) Environmental/Conservation
   _____ G) 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. ____

DEER MANAGEMENT

1) How would you like the deer population in DAU D-18 to change, if at all?
   _____ Decrease
   _____ Stay the same
   _____ Increase
   _____ Don't know

2) The population is currently significantly below the population objective. How would you like the deer population objective in DAU D-18 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 DAU D-18 to change, if at all?
   _____ Decrease
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   _____ Increase
   _____ Don't know

5) The objective for buck deer is currently 25 bucks: 100 does. How would you like the **objective** for the number of buck deer in DAU D-18 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 in DAU D-18?
   _____ More important to hunt deer every year
   _____ Equally important
   _____ More important to harvest a trophy animal

WRITTEN COMMENTS:

Please use the space below for any additional comments you would like to make about deer in DAU D-18 (GMU 40).