DAU D-11 (Bookcliffs)
EXECUTIVE SUMMARY

GMUs: 30 and 21 **Land Ownership:** 19% Private, 80% BLM, 1% State
Post-hunt Population Objective: 10,000- 12,000 **2004 Estimate:** 8,600 **Previous:** 20,000
Post-hunt Composition (Bucks/100 Does) Objective: 30-35 **2004 Observed:** 27
2004 Modeled: 24 **Previous:** 35

Figure 1. D-11 Post-hunt Population Estimate

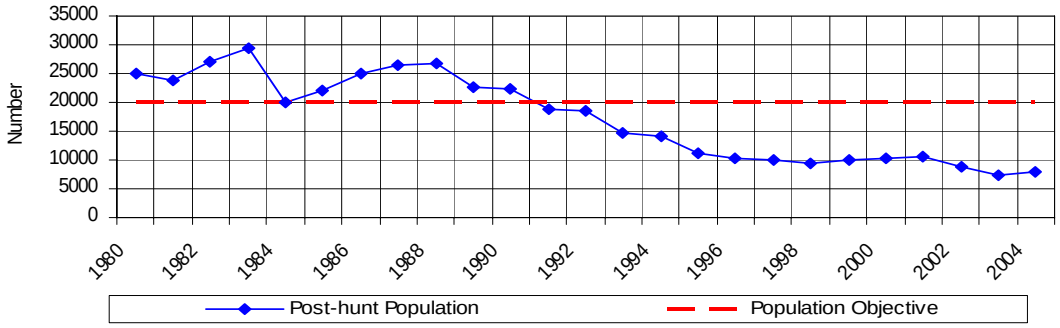


Figure 2. D-11 Harvest

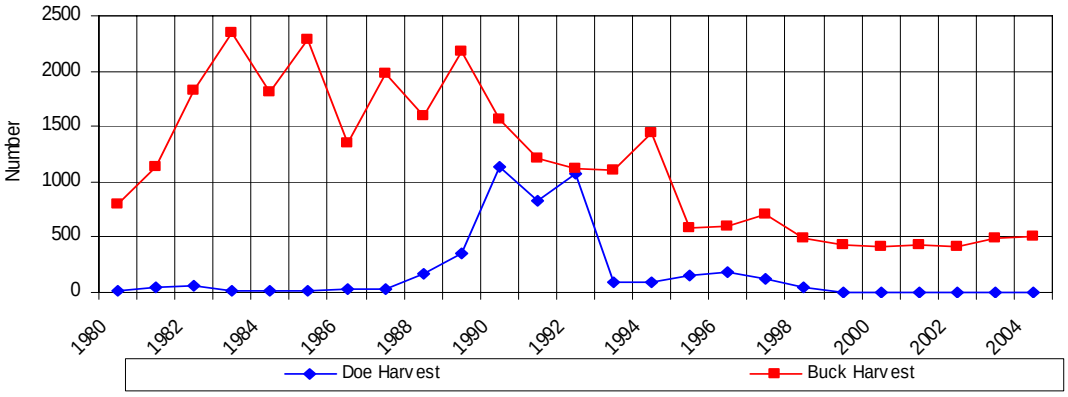
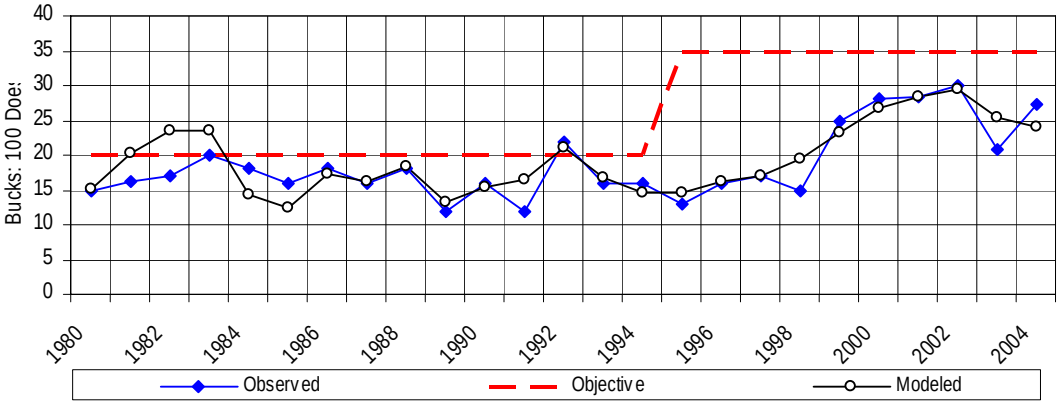


Figure 3. D-11 Post-hunt Bucks/ 100 Does



D-11 BACKGROUND

The Bookcliffs deer herd was very low at the turn of the century, but rebounded dramatically through the 1950s and 1960s.

Deer populations in DAU D-11 continued to generally increase and were relatively high until the 1990's. Since that time, the herd has shown a steady decline. The decline of this herd mirrored the falling numbers in most mule deer populations throughout Colorado and the Western U.S., although it was more dramatic in this instance, and has been more prolonged. Current models estimate a population of 8,600 deer.

The CDOW has conducted aerial sex and age composition surveys in D-11 since 1981. Early records in the 1980's show that total buck: doe ratios were around 15 bucks: 100 does. These ratios have steadily increased to recent levels of 25-30 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 22 years is 19.6 bucks: 100 does. Post-hunt classifications in 2004 estimated 27.2 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 1992, however, fawn production has been virtually static at 40-45 fawns: 100 does.

Deer harvest in the DAU D-11 has changed substantially over time, peaking in the late 1980's and early 1990's, followed by dramatic reductions, particularly since 1996. Prior to 1996 hunters averaged a harvest of about 1500 deer a year. Since 1996, an average of 452 deer was harvested each year.

D-11 SIGNIFICANT ISSUES:

The most important aspect of the DAU planning process is obtaining input from all segments of the affected local populations, including the BLM and interested public.

Public meetings were held to solicit input from the BLM, the local public, and the Boards of County Commissioners. A questionnaire was available at these public meetings and on the DOW web site to solicit opinions from the public.

The BLM response presented no objections to current deer management in this DAU. Public opinion was very centered on increasing deer herds, predation, and the loss of deer habitat to development. No response was received from any of the three BOCC's in this DAU.

Other issues within this DAU have arisen internally. The most significant issues involve habitat quality on winter range, continued inability of this herd to thrive, elk competition with mule deer, and, to a lesser degree, oil and natural gas development. The most significant of these is the continued inability to significantly increase deer herd size.

In recent years, the CDOW's objective for this deer DAU has been to increase the population size. However, the deer population is stable and not growing significantly. Although there are many contributing factors, winter range declines, competition with elk, and overall habitat quality degradation are the most likely contributors.

D-11 MANAGEMENT ALTERNATIVES:

Three post-hunt population objective alternatives were proposed for D-11 (1) 10,000-12,000, (2) 18,000–20,000, or (3) 24,000–26,000. The long-term population objective has been 20,000 for many years. Despite a management regime of virtually no doe harvest, this population objective has not been reached since the early 1990's. It is likely that there are limiting factors, including habitat loss and degradation that are keeping this population below objective.

Three composition objectives were being proposed for D-11 (1) 15-20 bucks: 100 does; (2) 25-30 bucks: 100 does; or (3) 30-35 bucks: 100 does. Under current management with very limited buck licenses in both GMUs this composition objective of 30-35 bucks: 100 does will be achievable and maintainable. Decreasing the composition objective would require an increase in buck licenses.

This plan was presented to the Wildlife Commission in November 2005 and approved in January 2006.

BOOKCLIFFS

DAU D-11

HERD MANAGEMENT PLAN

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BOOKCLIFFS DEER 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 DAUs, 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).

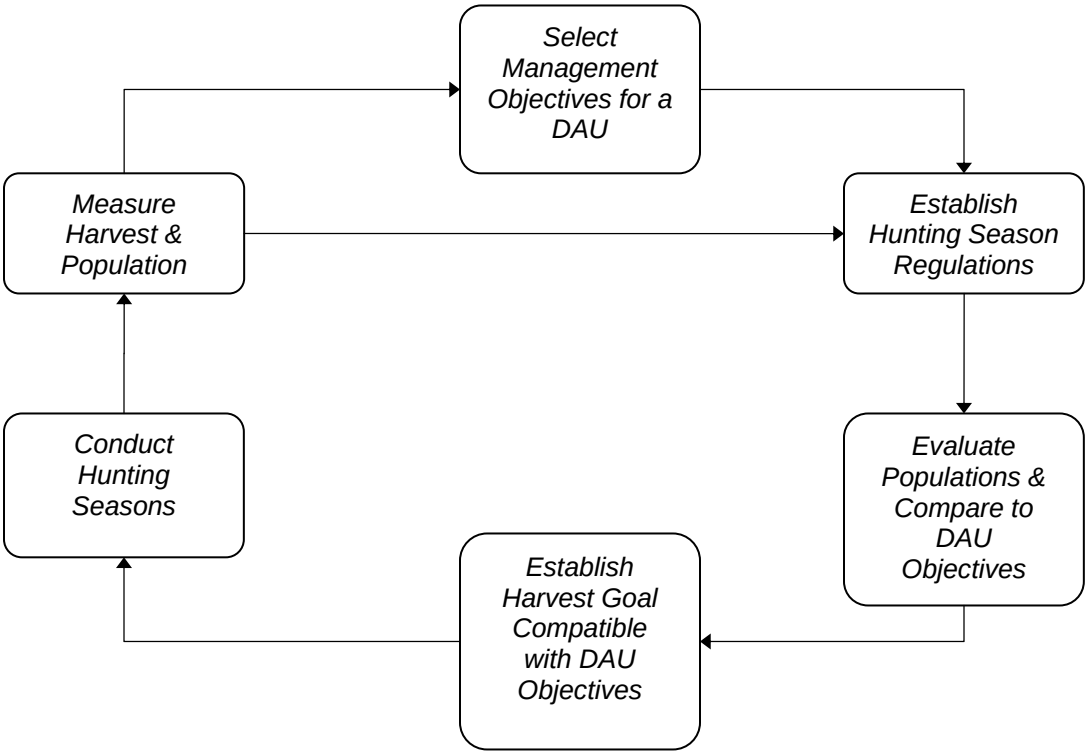


Figure 1. CDOW's Management by Objective Process.

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.

DESCRIPTION OF DAU D-11

Location

Data Analysis Unit D-11 is located in west-central Colorado and is commonly called the Bookcliffs DAU. It is bounded on the north by the White River; on the east by Monument Gulch, Colo. 64, Monument Gulch Rd., Rio Blanco CR's 26 and 103, and E. Salt Crk./Roan Crk. Divide, Big Salt Wash/Roan Crk. Divide, and the Little Salt Wash/Roan Crk. Divide, and the Bookcliffs; on the south by the Colorado River, and on the west by the Colorado-Utah state line (Figure 2). There are three counties within the DAU: Mesa, Garfield, and Rio Blanco.

Location of Mule Deer DAU D-11 (GMUs 21, 30), West-central Colorado

Figure 2. DAU D-11 and its location within Colorado.

DAU D-11 is comprised of two GMUs: 21 (890 square miles) and 30 (870 square miles) and is approximately 1760 square miles in size.

Geography

The southern portion of the DAU is dominated by the Bookcliffs, an escarpment that runs from the Utah state line to Rifle, CO. In the northern portion of the DAU, Douglas Creek drainages comprise a large portion of the area.

The topography varies greatly in the DAU. The highest elevations are at the center at the top of the Bookcliffs, and the elevations decrease to the north and south from there. The highest elevation in the DAU is approximately 8,700 near the dividing line between the two GMUs. The lowest elevation is approximately 4,600 feet where the Colorado River meets the Utah state line. The area is noted for its canyon country to the south and rolling pinyon-juniper/sagebrush/mountain shrub steppe to the north.

The Colorado River forms the southern boundary of the DAU. Interstate 70 parallels the Colorado River over a large portion of the southern boundary, forming a significant barrier that restricts deer movements throughout much of the southern portion of the DAU. Additionally, desert-like, open terrain north of Grand Junction acts as another natural barrier restricting deer movements in this area. Along the eastern boundary, the divide between the Roan Crk. drainage and several others is the DAU boundary and is the most likely area where substantial deer ingress and egress from the DAU can occur.

Steep-sided sandstone and shale canyons are one of the dominant geographic features of this DAU. The Bookcliffs are a generally continuous, uniformly high cliff formation with canyons and washes running north to south toward the Colorado River. In the upper reaches of both GMUs, large canyons bisect the topography at frequent intervals.

The Colorado and White Rivers border the DAU on the north and south. Large drainages in the DAU include Douglas Creek and East Salt Creek. There are numerous dry washes throughout the DAU. However, due to the significantly higher elevations in the center of the unit, considerable moisture falls throughout the year, such that perennial streams are not uncommon. There are no large natural lakes in the DAU although small reservoirs, primarily for livestock, have been constructed.

The wide range of terrain in D-11 provides a variety of physical features that deer populations find very suitable for their needs year-round. The majority of deer summer in the interior of the DAU at high elevations. Winter ranges are generally on the periphery, at lower elevations.

Vegetation

Vegetation within this DAU varies with the wide range of elevations that occur. At lower elevations, the vegetation is typical of most semi-arid regions in western Colorado. Saltbush, sagebrush, and greasewood are common shrub species found in the open desert areas. Cheatgrass dominates the lower understory in many areas in the desert. Pinyon-juniper woodlands are common on the lower and intermediate slopes throughout the DAU. Oakbrush is found in the pinyon-juniper woodlands at higher elevations. A combination of sagebrush and snowberry are commonly found in open areas in the oakbrush zone at intermediate and higher elevations. Higher elevations, which receive

considerably more moisture, are dominated by aspen and Douglas fir woodlands, sagebrush steppe, and serviceberry dominated shrublands. Often, the aspen and fir are found in pockets, as opposed to large, continuous forested areas. Vegetative communities grade into each other in response to slope, aspect, and moisture condition, forming a mosaic pattern across the landscape.

At lower elevations in valleys, irrigated lands composed primarily of grass/alfalfa meadows are common. Cottonwoods, willow, sagebrush and greasewood are commonly found in riparian areas throughout the DAU. Other riparian species include box elder, tamarisk, and alders.

Extensive crop production of corn, wheat, alfalfa, beans, and onions are produced in the Grand Valley-an area used most extensively as winter range, although some deer use the area throughout the year.

The vegetation in the DAU, particularly within deer range, has been intensively managed for livestock forage. Cattle grazing occurs throughout the unit. Historically, domestic sheep were grazed in significant numbers, but are now limited to a few small flocks.

Human activities have strongly influenced the vegetation in D-11. Natural fire has been suppressed in the DAU for many decades, and pinyon-juniper encroachment on the sagebrush steppe is a significant concern that is impacting wildlife populations by reducing forage suitable for deer.

Land Ownership

The DAU contains a mixture of public and private lands. Approximately 81% of the total 1757 square miles within DAU D-11 is public property. Of the entire DAU, 80% (1412 sq. mi.) of the land is owned by the Bureau of Land Management, 0.4% (6.3 sq. mi.) is owned by CDOW, 0.2% (3.3 sq. mi.) is owned by the State Land Board and 19% (334 sq. mi.) is privately owned (Figure 3).

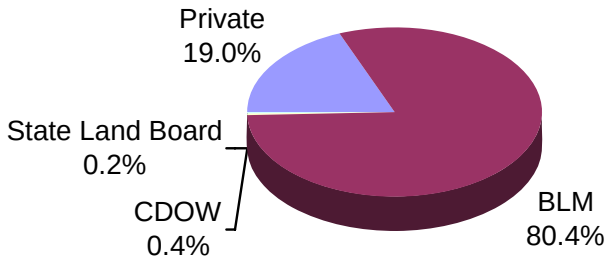


Figure 3. Land Ownership in DAU D-11.

The BLM lands are managed jointly by two field offices, located in Grand Junction and Meeker. The land owned by CDOW falls within the Square S summer range (GMU 21 & 31).

Primary human population concentrations exist in Grand Junction and throughout the Grand Valley and in Rangely.

Land Use

Because of the wide range in elevation found in DAU D-11, there are many uses occurring across the landscape. Livestock production and outdoor recreation in its many forms are both significant land uses throughout the DAU. Agriculture, in the form of crop production, is limited to specific areas within the DAU, but plays a significant role in wildlife management. Development is primarily limited to concentrated population centers. The major land use that will see significant increases and changes in coming years is the potential for oil and gas development within the DAU.

- **Agriculture**

Much of the private land in the DAU is used to graze livestock throughout the year. Cattle and sheep ranchers graze livestock on BLM lands during various seasons of the year. Livestock are grazed on allotments during the summer and are then moved to home ranches for the winter. Some livestock grazing occurs on BLM during the winter months. The Grand Valley area around Grand Junction and Fruita is extensively farmed with irrigated field.

- **Timber Harvest**

Commercial timber is limited mostly to small blocks on private lands. Some Douglas fir has been harvested in recent years. Most of this harvest occurs in GMUs 21 in rugged canyon areas. Aspen has also been harvested, sometimes as part of other land management practices including benefits for wildlife, including deer and elk. Some firewood is harvested, both commercially and privately.

- **Development**

The DAU has several population centers that primarily occur along the major river drainages. The Grand Valley, in Mesa County, has the largest population in 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 in the Grand Valley and along Interstate 70. The majority of new housing developments have occurred in deer winter range, fragmenting former sagebrush and agricultural lands. The area north of Grand Junction, in GMU 30 in particular, is 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	48,000
	Fruita	8,100
	Debeque	480
	Total County	127,500
Garfield	Total County	48,400
Rio Blanco	Rangely	2,100
	Total County	6,000

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

- **Recreation**

Recreation is probably one of the most visible and extensive uses occurring on all lands in this DAU. Excellent back county 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 several public and private reservoirs.

During the fall, big game hunting is a major event in the DAU. Approximately 700 deer hunters are afield each season in this DAU. Archery and muzzleloading seasons attract approximately 150 hunters during late August and September, accounting for approximately 15-20% of the annual harvest.

Vehicular access varies throughout private and public lands. A network of roads provides ample access to many areas that are open to multi-purpose land uses.

- **Mining and Oil & Gas Development**

At the present time, no significant oil and gas development projects are planned in this DAU. However, future mineral development may impact the area if the natural gas and oil deposits lying below this DAU are made available for extraction. Most current drilling activity is currently limited to the western edge of GMU 21.

These impacts have already begun to occur within some areas of to the south and east of D-11. Currently, both summer and winter ranges have been affected by past and present oil and gas development. However, it is likely that any developments would be concentrated more heavily on winter ranges, increasing the impact of each development. If this development does occur it will likely significantly impact the quality of deer and elk herds within this DAU. A discussion of these potential impacts can be found in the Issues and Strategies section under Issues and Concerns: CDOW.

HABITAT RESOURCE

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 and capability influence the overall value of the habitat to wildlife.

Roads and fences fragment the landscape and make wildlife more vulnerable to vehicular collisions and poaching. Elk and deer both tend to avoid roads and other areas of increased human activity. This effectively decreases the overall habitat capability as these roaded areas become essentially useless to elk and deer. Fences impede movement and contribute to mortality in both elk and deer.

- **Browse Conditions**

Understory deciduous browse in lower elevation winter ranges generally suffer from low plant vigor and production due to excessive and persistent utilization. The age distribution of these plants is invariably skewed heavily to mature and over mature age classes. Through at least 1989, preferred browse on transitional and early winter ranges incurred average browse utilization levels of 80 to 90% of current annual growth, with the condition intensifying (well in excess of 100% of current leader growth) on lower elevation severe winter ranges where site conditions impose further limitations on plant reproduction and recovery and where maximum animal densities are attained. These utilization levels exceed rates considered maximum for sustained productivity and regeneration (60-70% dormant season use of current annual growth). Since the mid-1990's, declines in deer populations have provided considerable relief to bitterbrush, mountain mahogany and serviceberry plants on the GMUs winter ranges, but it is likely that overall utilization on lower elevation severe winter ranges remains near 100% of current annual growth.

Similarly, and also characteristic of low elevation winter ranges in the Douglas Creek drainage, Wyoming big sagebrush, black sagebrush, and rubber rabbitbrush sustain heavy utilization during the later winter and early spring months. These plants are generally capable of withstanding intense use, but in many cases, and particularly in the case of big sagebrush, stands are mature or over mature, which may reduce their forage production potential.

In GMU 21, there has been a considerable die-off in sagebrush, primarily among basin big sage stands. These die-offs appear to be primarily among decadent sagebrush stands and may be drought related. This large scale loss of sagebrush could significantly contribute to the overall decline in winter range habitat quality for deer and elk.

Serviceberry dominated stands (7200' and above) are mature and appear to be composed almost entirely of large 30-year old plants whose meager annual growth is beyond the reach of big game. These communities show little history of fire over the last 50 years and are believed to require extreme natural fire conditions to burn. These types have been the target of a number of prescribed burns by BLM over the past 20 years. Much of this habitat type has come under private control since patenting of the 82,000 acres of oil shale claims.

- **Rangeland Conditions**

Essentially all livestock operations within the DAU are on a deferred rotation system and range conditions within the DAU generally meet the BLM's Standards and Guidelines for Rangeland Health. Herbaceous composition, density, and growth remaining after the livestock use period are acceptable throughout the uplands. Herbaceous composition and production are consistently in an upward trend. Instances of excessive use or those areas that fail to meet Standards and Guides (estimated at about 5% of the Unit) is generally confined to the larger drainage bottoms and near sources of water and are typically represented by introduced and/or grazing-tolerant species (e.g., Kentucky bluegrass, cheatgrass). These areas are slow to respond to improved grazing management practices, but recent and continuing emphasis on reducing the duration and intensity of seasonal livestock use is expected to yield progressive improvements on these sites over time. Of mounting concern is the influence of yearlong wild horse use in the larger drainages and basins in the upper Texas Creek drainage where season-long grazing is expanding the conversion of cool-season bunchgrass communities to warm season grasses (i.e., blue grama). Once established, these warm season grass communities are very stable, grazing tolerant, and offer inferior ground cover and forage production properties.

The northern quarter of Unit 21 is made up of a shadscale/sagebrush/Utah juniper complex that is used primarily as winter sheep range. These ranges invariably display excellent range conditions and host strong herbaceous residual through the winter.

Herbaceous composition, vigor, and ground cover are generally acceptable throughout the uplands, but improving trends are evident only outside the HMA. Herbaceous understory trends within the HMA have tended to remain in a slowly declining trend since about 1990 when horse populations became elevated. Instances of areas failing to meet Standards and Guides are estimated to comprise between 5 and 10% of the DAU, are generally confined to the larger drainage bottoms and near sources of water. These areas are slow to respond to improved grazing management practices, but recent and continuing emphasis on reducing the duration and intensity of seasonal

livestock use, as well as continuing efforts at intervening with seeding treatments, are expected to yield progressive improvements on these sites over time.

The most serious noxious weed problem in this DAU is houndstongue, which is most prevalent in the aspen and mountain shrub communities and in riparian sites. Cooperative control efforts continue among BLM, Rio Blanco County, and the livestock permittees. There are localized infestations of yellow toadflax, leafy spurge, and the knapweeds in this DAU, but these sites have been subject to intensive control and monitoring and are not expected to expand.

- **Horse Background**

Although horses compete with big game for forage resources, authorized forage use within the Piceance/East Douglas Herd Management Area (HMA) has been integrated in a multiple use context. The HMA presently encompasses 15-20% of general winter, severe winter, and summer and transitional ranges available to big game in Piceance Basin (~GMU 22), and 15% of general winter range, 5% of severe winter ranges, and 2% of summer ranges available in the Douglas basin (~GMU 21).

BLM is in the final stages of considering whether to authorize the establishment of a population of horses in the central half of GMU 21 (West Douglas Herd Area) through a land use plan amendment. This Herd Area involves 64% of the general winter range, 40% of the severe winter range, and 16% of summer range available in the Douglas basin.

- **Fire and Vegetative Succession**

Fire suppression activities over the past 30 years have interfered with plant succession patterns in these GMUs, but, owing primarily to slow rates of successional advance, the role of fire in rejuvenating these more xeric communities has not been compromised to the point of prompting radical or extensive response. Over the past 3 years, the White River BLM Field Office has actively implemented its Fire Management Plan that attempts to more fully integrate fire as a fundamental vegetation management process. Although a continuing pattern of small scale fires throughout the DAU's pinyon-juniper and sagebrush communities is desired, the recent drought has accelerated the frequency and especially the individual size of fire events since 2002.

In the past 5 years, there have been several small (500-700 acre) fires throughout the DAU. The fires opened up many vegetation types, including areas of decadent pinyon-juniper. These burned areas are at different stages of successional advance, but all provide excellent habitat to many wildlife species, particularly elk. The benefits of these small fires, while locally significant, have not benefited the habitat condition DAU-wide. Although the distribution of woodland involvement is thought to be less than ideal in terms of big game (especially deer) management, an annual rate of 1,889 acres per year is fairly consistent with the gross number of acres thought necessary to maintain the present extent of mature woodlands assuming a 350-year rotation interval. Over the

past 20 or so years, wildfire has burned a large number of acres of pinyon-juniper woodland in GMU 21 with an additional 100-200 acres per year cleared during mineral development and firewood sale activities.

Recent drought conditions and active implementation of prescribed fire programs and, particularly, fire use strategies (i.e., natural ignitions allowed to burn for resource benefit) appear to have increased the rate of woodland acreage burned in these GMUs over the past 6 years. Since 2003, prescribed and fire-use burns have accounted for a significant amount of woodland and shrubland acreage burned in this DAU. Large acreages of sagebrush and moderate amounts of mountain shrub and Douglas-fir/spruce-fir forest have also burned.

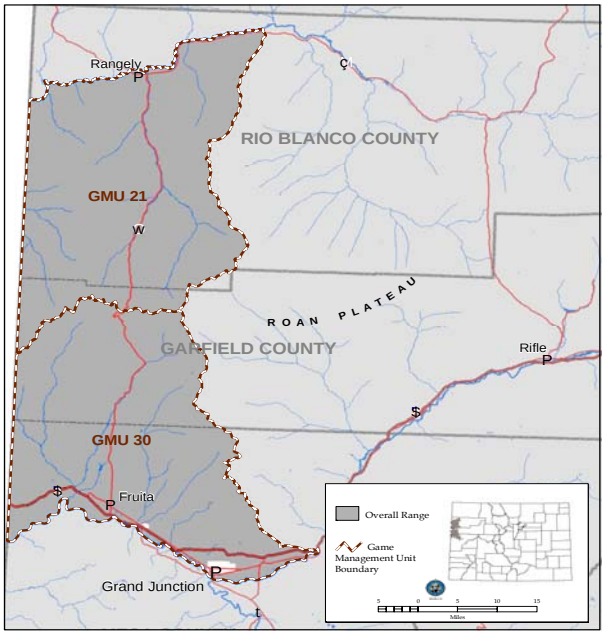
Most apparent in the Dragon Trail area, between 7,200 and 7,800 feet, pinyon pine is aggressively colonizing several thousands of acres of mountain shrub (primarily Utah serviceberry) and mountain big sagebrush communities. This situation is problematic since there is little to indicate that these mixed shrub types have had a fire history over the last 50 or more years that is capable of maintaining the extent and condition of these fire-induced disclimax communities. The serviceberry stands in particular may require a young pinyon component before becoming susceptible to natural fire. Additionally, in the absence of fire, Gambel oak/mountain shrub communities have become increasingly dense and mature, resulting in restricted wildlife movement, less accessible forage, and reduced understory productivity.

Throughout the DAU's mid-elevation pinyon-juniper ranges, tree regeneration (especially Utah juniper) is progressively encroaching on sagebrush parks between about 6,500' and 7,000'. The rate of advance is slow and the degree of encroachment highly variable depending on the time since the last fire event had maintained the disclimax. Predictably, more conspicuous tree regeneration in these parks appears to correlate strongly with an aged sagebrush component and a declining herbaceous understory.

Habitat Distribution

- **Deer Overall Range**

Deer are found throughout DAU D-11 with the general exceptions of the largest human population areas, and the desert-like lowlands in the Grand Valley (Figure 4). Deer herds move across the remainder of the DAU during the year, utilizing different areas during different seasons.

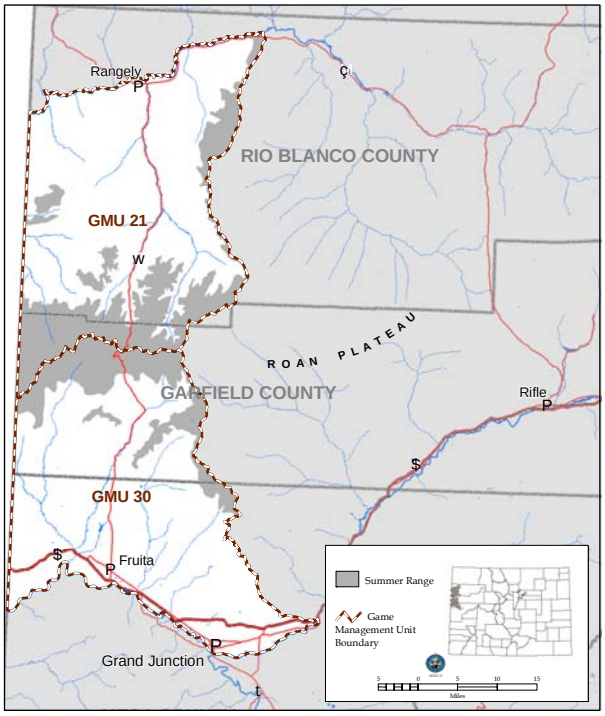


Location of Mule Deer DAU D-11 (GMUs 21, 30), West-central Colorado showing Deer Overall Range.

Figure 4. Deer Overall Range in DAU D-11.

- **Deer Summer Range**

The majority of deer summer in the highest elevations, near the center of the DAU (Figure 5). 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 approximately 302 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.



Location of Mule Deer DAU D-11 (GMUs 21, 30), West-central Colorado showing Deer Summer Range.

Figure 5. Deer Summer Range within DAU D-11.

- **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:

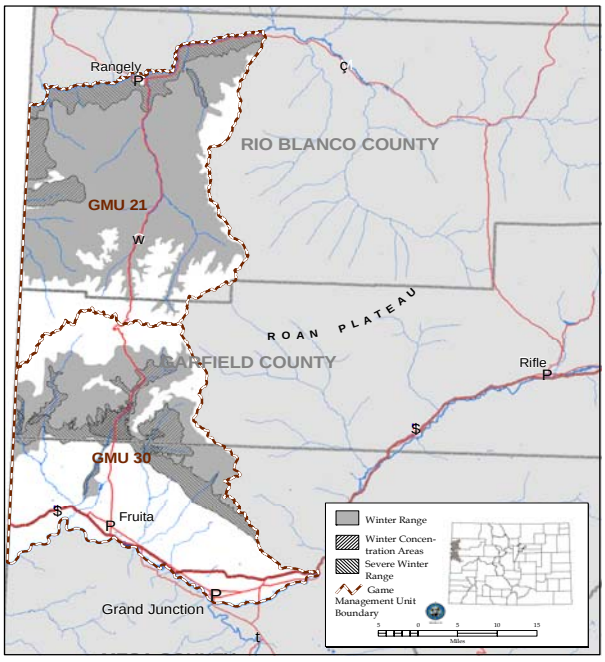
Winter Range: that part of the range where 90% of the animals are located during average winters.

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 deer are located during the two worst winters in 10 years as determined by the maximum annual snow pack and minimum temperatures.

DAU D-11 has approximately 1150 square miles of suitable deer winter range as estimated by CDOW GIS mapping (Figure 6). Of this winter range, approximately 91% is found on public land, and 9% is held by private landowners. The majority of deer are wintered on public lands. Important private land wintering areas are found in the lower drainages throughout the DAU. The lower elevation lands across the DAU comprise the most important winter range for both deer and elk. Areas such as the White River bottom, Douglas Creek, and the Bookcliffs, support the DAU's deer populations during the winter. Favorable snow depths, slope and aspect, and winter temperatures create accessible forage and make these areas suitable for wintering big game. Elk are generally found at higher elevations than mule deer due to their ability to forage in deeper snow conditions. However, during severe winters, both deer and elk are forced to winter at the lower elevations.

Deer winter range in DAU D-11 is becoming a particularly important concern due to increasing oil and gas development.



Location of Mule Deer DAU D-11 (GMUs 21, 30), West-central Colorado showing Deer Winter Range, Severe Winter Range, and Winter Concentration Areas.

Figure 6. Deer Winter Range, Winter Concentration Areas, and Severe Winter Ranges in DAU D-11.

Conflicts

- **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 and charges no more than $100 per hunter. DAU D-11 has traditionally seen little damage from deer to agricultural crops. This damage type, however, is increasing. Recently, farmers and ranchers have complained more frequently about damage to growing hay and corn in the spring and nurseries.

- **Elk Competition with Mule Deer**

The elk in the overlapping DAU (E-10) are a generally stable to increasing population. There is concern that the increasing elk herd has negatively impacted the deer herd through direct competition for spatial and forage resources.

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-11 there is some competition between elk and mule deer, but the 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.

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 a combination of variables that are woven together in a manner, best suited to satisfy all the demands, to arrive at the final objective number. The variables involved include biological data, economic considerations, political considerations, recreational considerations, domestic livestock concerns, and vegetative considerations to name some of the most prominent factors. 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 range's MSY and carrying capacity (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* at the end of this section.

Population Assessment Procedure Overview:

Estimating populations of wild animals over large geographic areas is an extremely difficult and inexact science. As an example, there is currently no statistically sound method available to determine deer population densities. The CDOW, as well as other western states, are conducting research studies to try and answer these questions concerning populations. There are several systems being studied that may hold some promise, but the techniques are not refined and very expensive to perform. Difficulties with censuses are due to deer habitats and distribution problems. They tend to group into large herds, which play havoc with statistics and randomization. Numerous studies have attempted to accurately count all the known number of animals in large fenced areas. All of these efforts have failed to consistently count 100% of the animals. In some cases less than 50% of the animals can be observed and counted. Highly sophisticated methods using infrared sensing have also met with very limited success. The CDOW attempts to minimize this problem using the latest technology and inventory methodology that is available today.

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

The Bookcliffs deer herd was very low at the turn of the century, but rebounded dramatically through the 1950s and 1960s. Deer populations in DAU D-11 continued to generally increase and were relatively high until the 1990's. Since that time, the herd has shown a steady and remarkable decline (Figure 7). The decline of this herd mirrors the falling numbers in most mule deer populations throughout Colorado and the Western U.S.

There are two aspects to the mule deer decline: long term and short term. For the long, even without good population, we can safely assume that present deer populations are significantly lower than they were 30-35 years ago, most likely due to a reduction in the quality and quantity of suitable habitat. Recent studies have shown that habitat, not predation, appears to be the limiting factor for western mule deer herds. Additionally, long-term drought, increased human activity, oil and gas development, habitat fragmentation, and minimally, competition with elk all contribute to the decline in this mule deer herd.

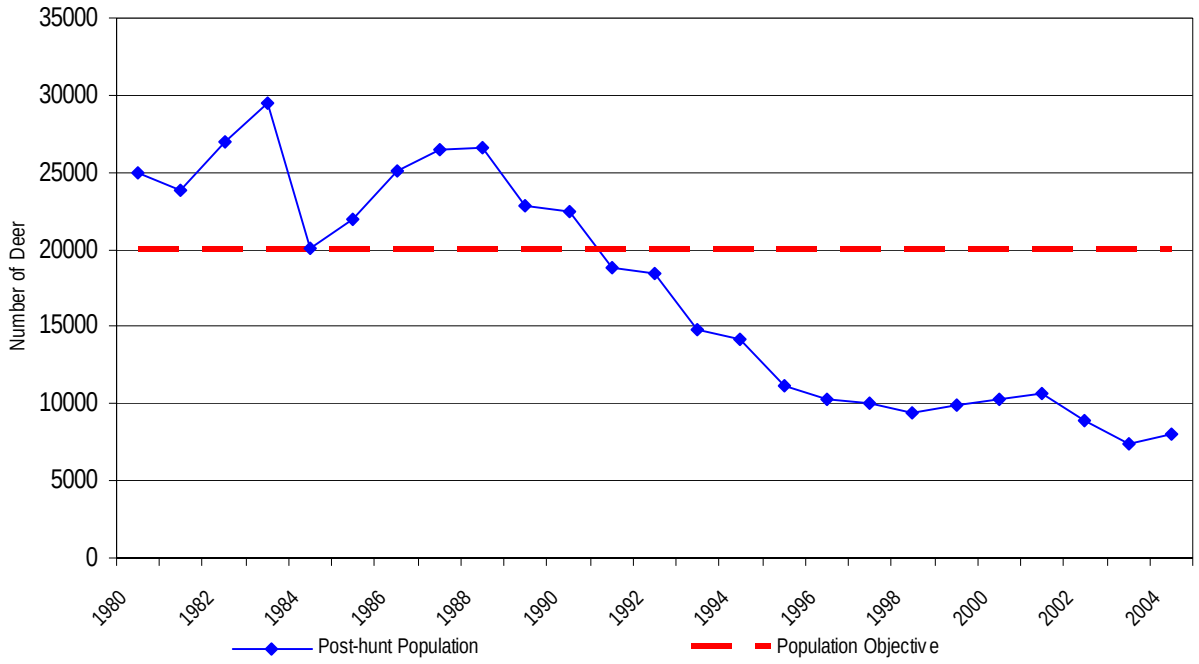


Figure 7. DAU D-11 Deer Population Over Time.

Post-Hunt Herd Composition

The CDOW has conducted aerial sex and age composition surveys in D-11 since 1981. Initially, these surveys were conducted sporadically, depending on available funding. However, in recent years, the surveys have been done every other year; when funds are available they may be conducted more often. These surveys, accomplished by

helicopter, are designed to sample only a portion of the existing post-hunt population and determine the ratio of bucks to does and fawns to does. These surveys are often mistaken by the public as total counts of the population. The results are presented as the number of bucks/100 does and the number of fawns/100 does. Usually, the buck ratios are subdivided into yearling bucks, young bucks (2-4 yrs old), and mature bucks.

The CDOW began statewide classification surveys in the 1970s. Initially, these surveys were done without much thought and with untrained observers. By the late 1970s Data Analysis Units had been established and a systematic survey system was instituted. Observers were trained and data was analyzed statistically.

Early records in the 1980's show that total buck: doe ratios were around 15 bucks: 100 does. These ratios have steadily increased to recent levels of 25-30 bucks: 100 does (Figure 8). The average buck: doe ratio in the DAU for the last 22 years is 19.6 bucks: 100 does. Generally, buck: doe ratios above 10 bucks: 100 does are sufficient to sustain a relatively healthy herd. Ratios below 10 bucks: 100 does indicate that the male segment of the population may be too low to ensure a viable herd. Since 1980, this herd has never fallen below 10 bucks: 100 does: the lowest figure is 12 bucks: 100 does in 1989 and 1991.

Before 1995, buck licenses were unlimited in number. Buck ratios tended to be relatively stable during the 1980's and 1990's. In 2000, all deer hunting statewide became limited and available through the CDOW's limited drawing process. Since buck licenses in this DAU became limited, buck: doe ratios in the DAU have steadily increased, as have the size and quality of bucks harvested each year. Hunters generally report improved success and satisfaction with the quality of bucks under the limited regulations.

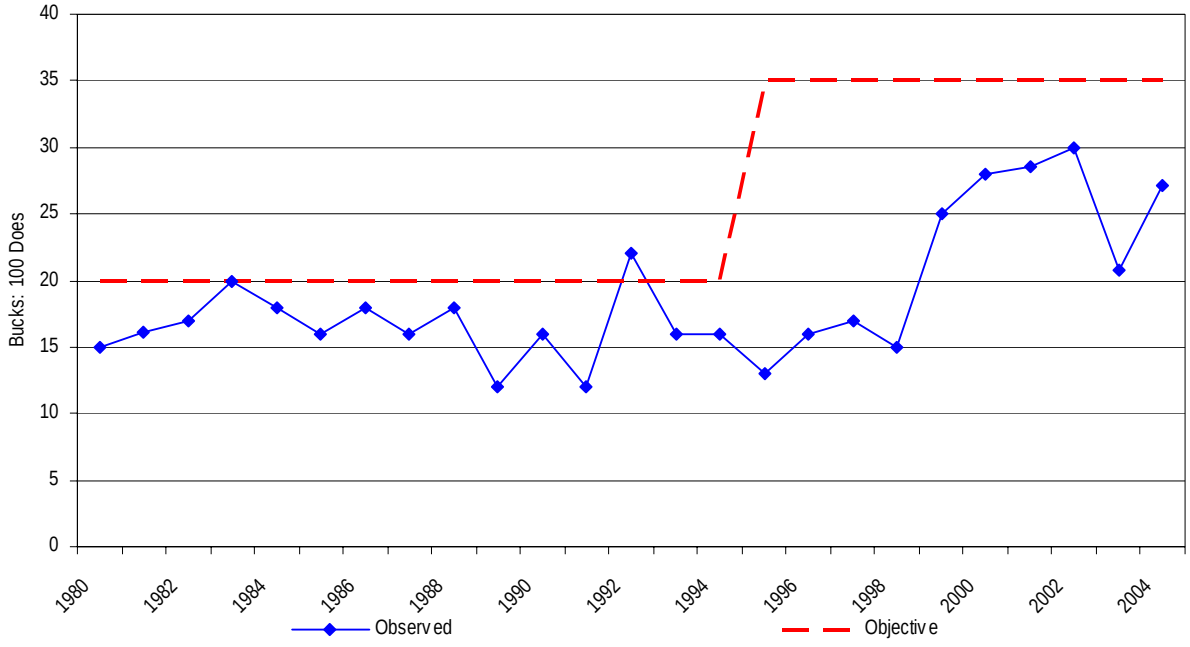


Figure 8. DAU D-11 Post-Hunt Buck: Doe Ratios.

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. Prior to the 1990's, fawn production in the DAU was very good over the years generally remaining between 60 and 70 fawns: 100 does (Figure 9). Since 1992, however, fawn production has been virtually static at 40-45 fawns: 100 does. This decline in productivity mirrors the decline in the overall population numbers. This herd has not increased significantly, despite dramatic harvest reductions. 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.

In the Piceance Basin, DAU D-7, the adjacent DAU, CDOW biologists have been carrying out a survival study among mule deer fawns and does. Since 2002, the average winter survival for fawns have been in the low 70%'s, which is significantly higher than previous estimates of 40-50%. Annual doe survival for the last 4 years has averaged in the high 80%'s.

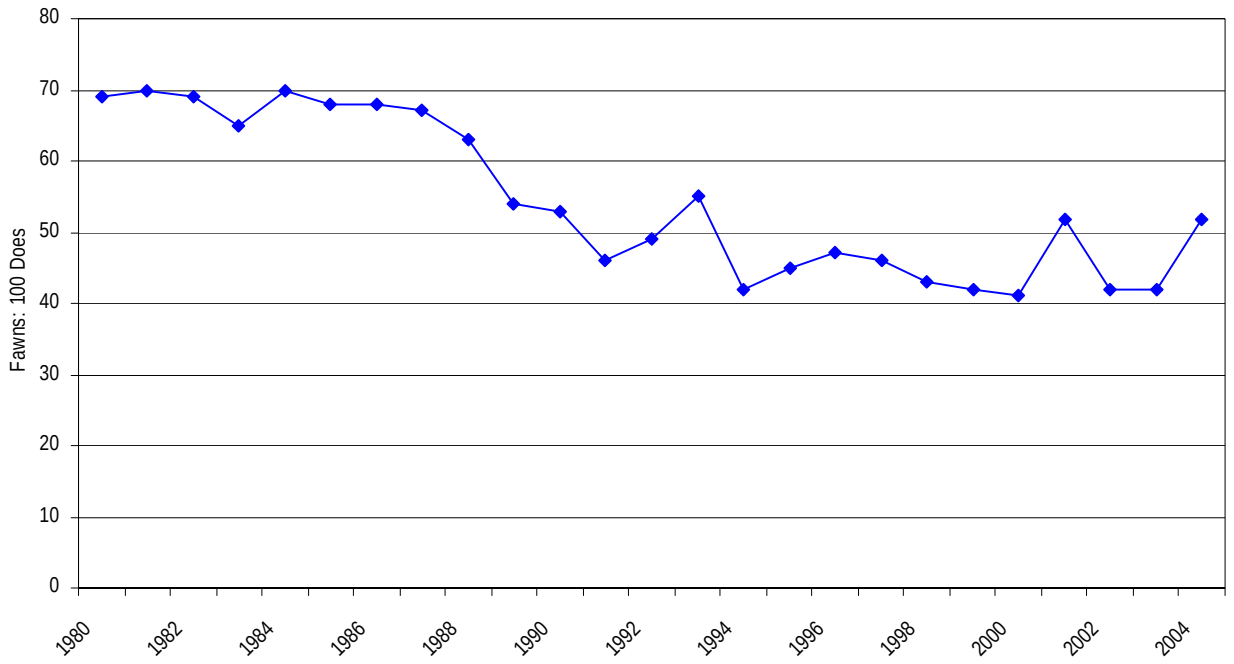


Figure 9. DAU D-11 Post-Hunt Fawn: Doe Ratios.

Harvest History

Deer harvest in the DAU D-11 has changed substantially over time, peaking in the late 1980's an early 1990's, followed by dramatic reductions, particularly since 1996 (Figure 10). In 1991 the harvest was 1134 does and 1571 bucks, for a total of 2705 deer. In 1999, doe harvest was eliminated and harvest was decreased to approximately the levels currently maintained. 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.

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. Hunting pressure in both archery and muzzleloading special seasons have increased from virtually nothing in the early 1970's to the numbers we see now. Archery and muzzleloading seasons attract approximately 150 hunters during late August and September, accounting 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.

Hunter interest remains very high for deer in this DAU as well as the entire state of Colorado. Non-resident hunters may use as many as 9 preference points to draw a 3rd season license in the GMU 21, and as many as 4 preference points in GMU 30. The limited buck hunting and resulting quality have stimulated and maintained a high public interest in both the viewing and hunting populations in Colorado.

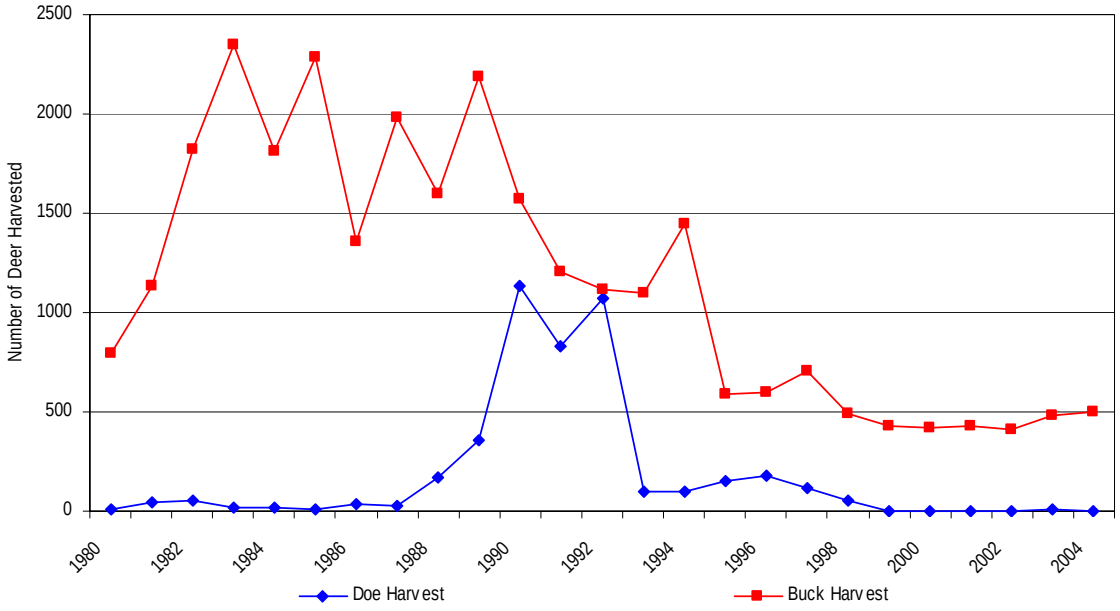


Figure 10. DAU D-11 Annual Harvest.

Hunting Pressure and Hunter Numbers

Hunting pressure and hunter numbers have mirrored the population trends in this unit. As the herd has declined, the CDOW has issued fewer licenses, decreasing overall hunter numbers (Figure 11).

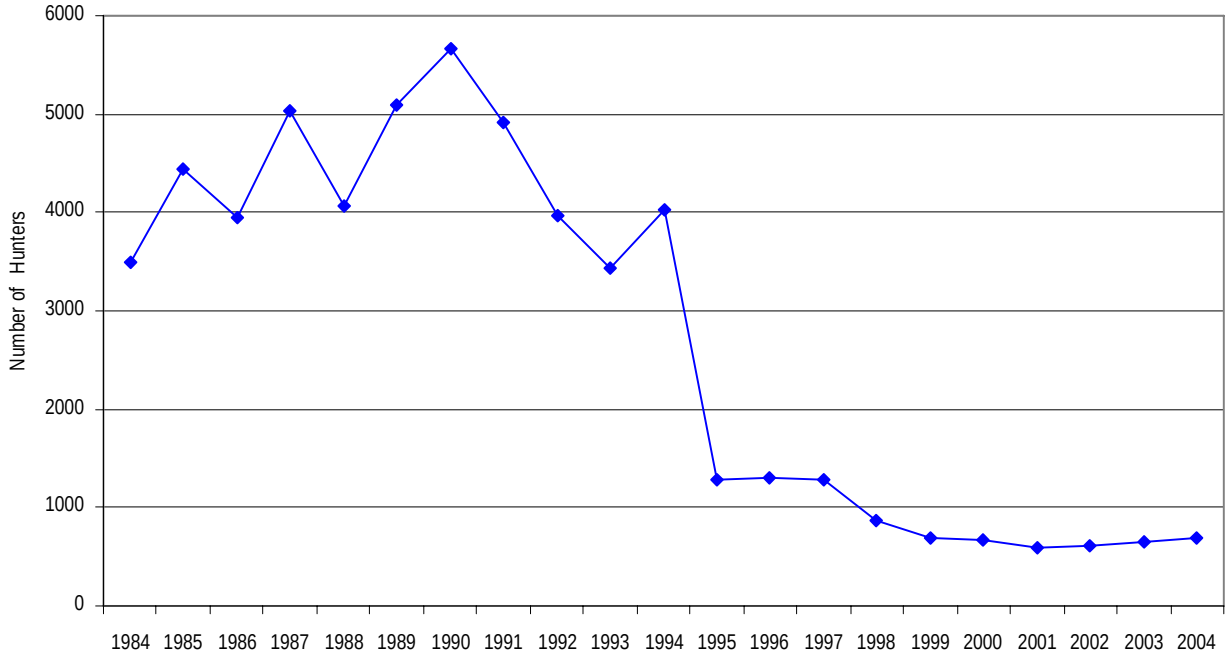


Figure 11. DAU D-11 Hunter Numbers.

However, application rates for these two GMUs have steadily increased in DAU D-11 (Figure 12). This DAU has some of the highest hunter interest in the state. The large amount of public land and the close proximity of Grand Junction make this an attractive area for many local hunters. Local ranchers and outfitters also attract a number of non-resident hunters to this DAU every year. In some parts of the DAU, hunter access is somewhat difficult due to the rugged terrain and patterns of private landownership in the bottom of the drainages. In these areas the access to the best deer hunting areas requires hiking up into steep canyon country. Harvested deer in these situations are difficult to retrieve and usually are packed out in quarters.

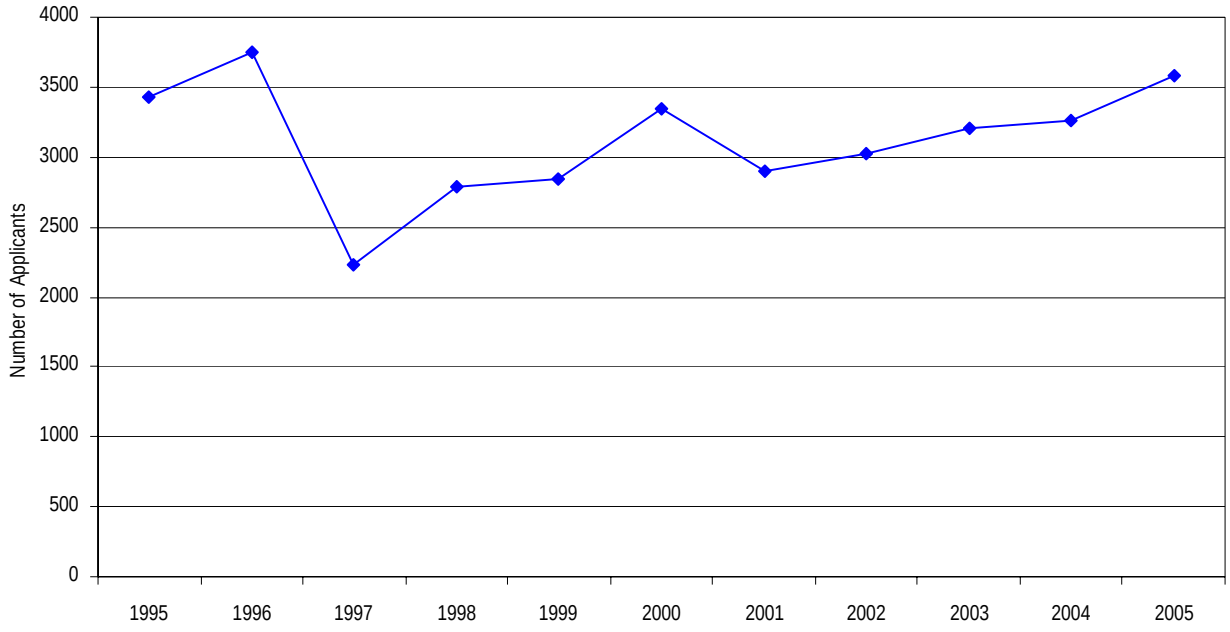


Figure 12. Application Rates for DAU D-11 for Limited Antlered Licenses.

CURRENT HERD MANAGEMENT

Current Population and Composition Objectives

The population objective for the Bookcliffs DAU is 20,000 deer and is considered to be a provisional objective because no final DAU plan has been approved. The population objective was established prior to the development of DAU plans and process of development of population objectives. Thus, there has not been extensive public review or review by the BLM.

The current population estimate is approximately 8,600 deer. This is dramatically below the objective and well below historical levels. Current management efforts are focused on improving herd size and health.

The current composition objective is 30 bucks: 100 does. Current composition estimates are generally between 25 and 30 bucks: 100 does, which is probably a more feasible objective under the current management regime.

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 1990's have caused the CDOW to be aggressive in scaling back annual harvest objectives in this DAU for at least the last decade. This DAU has been managed as a premium DAU since 1995. The emphasis is on a quality hunt and larger numbers of trophy bucks.

- **Antlered Licenses**

The CDOW initiated completely limited antlered licenses in this DAU in 1995. A harvest objective between 400-500 antlered animals has been maintained since 1997.

- **Antlerless Licenses**

Antlerless licenses were eliminated in 1999 to encourage population growth. In 2003, 5 antlerless animals were harvested; other than those animals, no does have been legally harvested since 1998.

ISSUES AND STRATEGIES

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 BLM and interested public. A meeting was held in Rifle on August 2, 2005, with officials from local BLM offices to solicit input regarding deer management in their Resource Areas. BLM officials were provided a draft copy of the plan prior to the meeting to have advance time to prepare issues and concerns. These issues and comments were noted and have been incorporated into this plan. Exact text of these comments can be seen in Appendix D of this document.

In an effort to solicit information from the interested public, the CDOW held open public meetings in Rangely, Grand Junction, and Rifle, CO during August, 2005, 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 C), from participants at the time of the meeting regarding any issues or concerns. Notes on comments and concerns were taken during the meetings and these 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 B of this document.

The Boards of County Commissioners (BOCC) from Mesa, Rio Blanco, and Garfield Counties were also requested to provide input on the draft management plans. They were invited to the meeting with the Bureau of Land Management and 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.

Issues and Concerns: CDOW

- **Habitat Quality on Winter Range**

Deer populations throughout Colorado are closely tied to the amount and quality of available winter range. In D-11, after migrating from the summer ranges on BLM and private lands, generally, deer are forced by snow into the valleys surrounding the high county in the upper Bookcliffs.

Deer populations in D-11 are probably restricted to a maximum size due to limitations on the quality of available winter range; in this DAU, the quantity of winter range is not of primary concern. Rather, declines in habitat quality on the winter range are a more serious issue in this DAU. Vegetation is predominately pinyon-juniper interspersed with smaller amounts of mountain shrub. In many areas, range conditions are less than optimal. Sagebrush ranges appear to be over-mature in many areas. Pinyon-juniper

encroachment in these declining sagebrush areas is exacerbating the declines associated with decadent sagebrush stands.

Cheatgrass often dominates where native grasses have been crowded out. In many sagebrush communities, grasses represent only a small portion of the available forage.

- **Housing/Ex-Urban Development**

The DAU has had substantial development in areas that were once part of deer winter range, particularly in the Grand Valley north of Grand Junction. 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.

- **Declining Mule Deer Population and Potential Competition with Increasing Elk Population**

In recent years, CDOW's objective for this deer DAU has been to increase the population size. However, the deer population is stable. No doe licenses are issued in this DAU but this reduction in doe mortality has not compensated for other mortalities. As previously mentioned, there is concern that the increasing elk population is negatively impacting the mule deer herds. An important aspect to the elk DAU plan is minimizing the impact of the elk herd on the deer herd. In particular, the expansion of elk onto winter ranges that in the past were used solely by deer is a primary concern.

- **Hunter Access**

Due to limited and often difficult access to public lands, hunter crowding on available public lands is sometimes an issue. Although few deer licenses are issued, comparatively large numbers of elk licenses are issued and deer hunters are frequently crowded by elk hunters.

- **Natural Gas and Oil Development**

Natural gas and oil development may significantly impact the deer habitat and population within this DAU if substantial development occurs. 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. Elk and deer avoid areas of higher human activity, 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, habitat quality decline from introduction of non-native weeds.

Issues and Concerns: BLM

Comments were solicited from two BLM Field Offices that manage the majority of land within this DAU; the White River Field Office and the Grand Junction Field Office. The full text of these comments is available in Appendix D.

The White River Field Office did not indicate significant concerns regarding deer populations within this DAU, and stated that land management that emphasized deer herd health would complement a healthy management of woodland and shrubland communities. There were no objections raised regarding the current population objective of 20,000 deer, but the Field Office response did not indicate a desire to lower the population objective. The Field Office did not comment on the composition objective. The primary concern related to the quality of lower elevation mule deer winter range.

The Grand Junction Field Office also did not indicate any significant concerns regarding deer populations in this DAU and raised no objections to the population objective or composition objective preferred alternatives.

Issues and Concerns: Public Stakeholders

The following is a summary of responses received from the public questionnaire available at the public meetings and the CDOW website. A total of nine questionnaires were returned and full text of these questionnaires is available in Appendix B.

The majority of respondents indicated that their interests were primarily as hunter/sportspersons, while the next largest group was rancher/farmers, followed by guide/outfitters. All had hunted deer in Colorado, although one had not hunted in this DAU.

The issue that was most concerning to the majority of respondents was predation on deer, followed by the loss of deer habitat due to increased population and development. Deer/vehicle collisions were also a concern for many respondents. There was the least amount of concern overall for damage to trees, shrubs, and gardens by deer.

The majority of respondents, when asked about their personal feelings regarding deer, indicated that they enjoyed the presence of deer and did not worry about the problems they cause. A small minority of respondents indicated that they enjoy the deer but worry about problems they may cause.

When asked about the size of the deer population, the majority of questionnaire respondents and meeting attendees indicated a desire to see the herd size increase,

and a corresponding increase in the objective. The interest to increase the objective was not nearly as strong as the interest in increasing the herd. All respondents indicated that changing the deer population was either important or very important to them.

All respondents desired to either maintain or increase buck deer numbers in the DAU, with the majority wanting an increase. However, the majority of interest was in seeing the buck ratio objective remaining the same, as opposed to increasing the objective.

Hunter satisfaction was moderate in this DAU, with most respondents indicating slight satisfaction. A few hunters indicated they were either very dissatisfied or very satisfied.

Hunter crowding was somewhat of an issue among deer hunters, as all respondents indicated feeling either slightly or moderately crowded.

Overall hunting quality was rated as fair to very good by all respondents, with the majority reporting very good hunting quality in this DAU.

The majority of respondents felt that seeing more mature bucks was the most likely way to improve their hunting experience. Surprisingly, improved success rates were the item least likely to improve hunting experience. The majority of respondents reported that harvesting a trophy deer was the most important aspect of their hunting in this DAU.

Issues and Concerns: County Commissioners

Although input was solicited from all three Boards of County Commissioners within this DAU, no comments or concerns were received at the time of this draft. If any information is received, it will be included in future drafts.

PREFERRED ALTERNATIVE

Preferred Population Size Objective Alternative:

10,000 – 12,000 deer

Preferred Population Composition Objective Alternative:

30 – 35 bucks/ 100 does

Preferred Alternative Justification:

- **Population Objective**

The D-11 deer population has steadily declined in this DAU for much of the last 15-20 years, but has stabilized somewhat in recent years. Management of this herd with strictly limited buck hunting and no doe harvest has provided a basis for stabilization of this herd. The long-term management philosophy of this herd has been to increase this population. Although this management strategy has stabilized the decrease in deer numbers, it has not succeeded in significantly increasing the size of this deer herd.

The results of the public survey that was conducted during the preparation of this plan showed that there was generally a similarity of opinion on how the population, and thus the harvest of deer, should be managed. This alternative to significantly lower the population objective to an achievable number, while still seeking to increase the population size, is based on the following significant issues.

The majority of both landowners and hunters indicated a desire to see the deer population in the DAU increase, while a small minority of both groups wanted the population to stay the same. There is little concern about deer damage or competition with livestock in this DAU. Of greater concern is the competition between elk and deer and wild horses and deer. These animals should be managed jointly to maintain healthy, sustainable habitats that support a diversity of vegetative communities. There is some concern that elk may out-compete mule deer for limited forage on both summer and winter ranges. There may also be social interactions that favor elk. The preferred alternative, which considers a broad spectrum of issues, also reflects this concern.

The BLM indicates that deer populations currently appear to be at levels consistent with the management of the range resources and public lands. Winter range conditions are critical to mule deer populations. The large decline in mule deer populations has reduced the pressure on habitats that were being heavily browsed. This may have allowed for some vegetative recovery in these habitats and increasing use by elk may delay or reverse this trend. Both BLM field offices support focusing management activities toward the deer populations, and therefore a population objective that would maintain or increase population, is supported by the BLM.

Deer hunting popularity in this unit very high and the demand appears to be increasing; some non-resident hunters used up to nine preference points to draw antlered licenses

for GMU 21. There is significant demand for quality trophy bucks in both GMUs of this DAU. However, one of the major concerns in this DAU is the distribution of hunters who hunt on public lands. Currently, public lands in this DAU are considered by many to be near the limits of hunter density. Questionnaire respondents reported feeling slightly to moderately crowded under the current license numbers. However, increasing populations would cause a proportional increase on lands that are already saturated with public hunters and unacceptable levels of crowding would probably occur. If populations are increased, it may be necessary to change season structure to distribute hunter pressure and reduce crowding. This is exacerbated by high numbers of elk hunters in the overlapping elk DAU E-10. This elk DAU is managed primarily for opportunity, and the resulting high hunter numbers impact deer hunters as well.

Another concern is refuge situations caused by large blocks of land owned by oil and gas companies that do not allow big game hunting. These tracts of land provide unhunted habitat that provides seclusion for deer and elk and protection from harvest.

The results of the questionnaire indicate that a reduction in deer is not desired. The overwhelming majority of internal, public, and agency response, has been to increase the mule deer population in this DAU.

The D-11 mule deer population objective has been 20,000 deer since at least 1980, yet deer numbers have declined, then stabilized. In an effort to acknowledge this stabilization, and to recognize that other factors, primarily related to habitat, play a role in population size, the CDOW recommends that the deer population objective be set at a lower, more attainable level for the next five years. Although the population objective will decrease, the management strategy will still seek to increase the overall population. This decrease in population objective is not an effort to decrease the size of this population, but only to provide a more attainable goal, that can be revised once it is reached.

Due to the majority of internal, agency, and public input received, the CDOW recommends increasing the deer population above current levels from approximately 8,600 animals to 10,000-12,000 animals.

- **Composition Objective**

The CDOW recommendation is to modify the current composition from 35 bucks/ 100 does to 30-35 bucks/ 100 does. The population is currently estimated to have 27 bucks/ 100 does and hunter satisfaction is high regarding the quality of trophy bucks. Buck/ doe ratios have generally been increasing since the limiting of buck licenses in 1995. Hunter demand is already very high in this unit. Although sportsmen indicated some demand to increase the ratio of larger trophy bucks, there is very little corresponding demand for further limiting licenses to achieve the higher buck ratios and have more, larger bucks. The implementation of a range as a composition objective is not meant to alter the objective, merely to acknowledge the natural fluctuations in a wild deer herd over time.

APPENDIX A: DEER POPULATION DYNAMICS

Numerous studies of biological populations of such species as bacteria, mice, rabbits, and white-tailed deer have shown that animals' populations grow in a mathematical relationship that biologists refer to as a "sigmoid growth curve" or "S" curve (Figure 13). 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 13). 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".

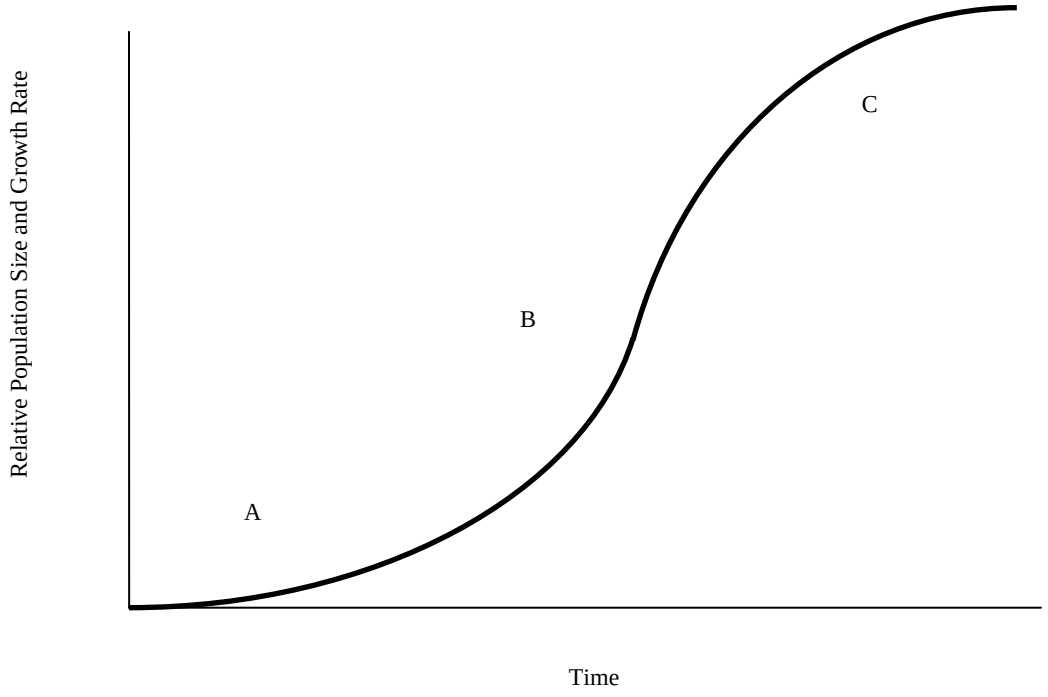


Figure 13. Sigmoid Growth Curve.

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 13). 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 13). 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 14). 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 14). 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.

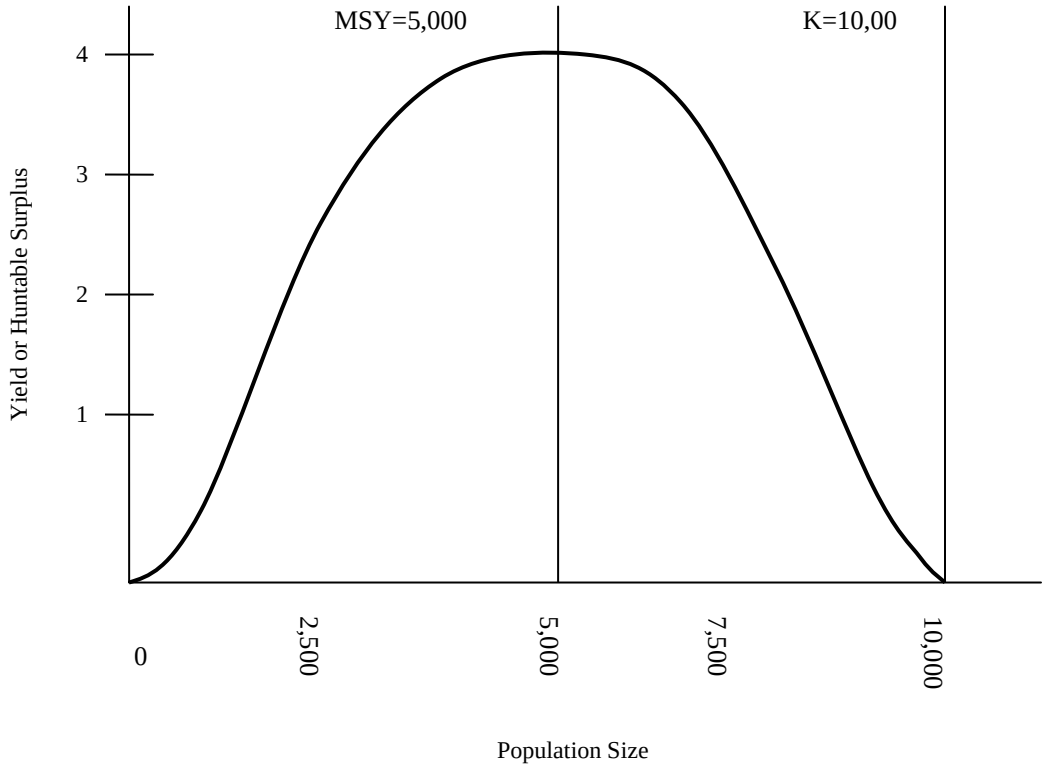


Figure 14. Maximum Sustained Yield and Maximum Carrying Capacity.

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: PUBLIC QUESTIONNAIRE RESPONSE

Background Information

1. Are you a resident of Colorado?
   __9__ Yes
   __0__ No
   100% of responders were residents of Colorado.

2. Do you live in GMUs 21 or 30?
   __9__ Yes
   __0__ No
   All responders lived in GMUs 21 or 30.

2a. If yes, how many years and in what GMU?_____
   6 responses
      6 GMU 21
   7 responses
      min: 4 yrs
      max: 60 yrs
      range: 56.0 yrs
      Avg.: 29.1 yrs
      Median: 20 yrs
   Of the six that that chose to respond, all (6) were from GMU 21.
   Of the 7 that chose to respond, the average time living in the DAU was 29.1 years, the minimum was 4 years, and the maximum was 60 years.

3. Do you own or lease property in GMUs 21 or 30?
   __4__ Yes
   __5__ No
   Of the 9 responders, 44.4% owned or leased property within the DAU, while 55.6% did not.

3a. If yes, how many years and in what GMU?_____
   3 responses
      3 GMU 21
   4 responses
      min: 7 yrs
      max: 43 yrs
      range: 36 yrs
      Avg.: 26.3 yrs
      Median: 27.5 yrs
   Of the three that that chose to respond, all (3) owned or leased within GMU 21.
   Of the 4 that chose to respond, the average time leasing or owning property within the DAU was 26.3 years, the minimum was 7 years, and the maximum was 43 years.

4. Which group(s) best represent your interests in deer management in GMUs 21 and 30? (Check all that apply)
   ___3__ A) Rancher/Farmer
   ___1__ B) Business owner
   ___2__ C) Landowner
   ___2__ D) Guide/Outfitter
   ___7__ E) Hunter/Sportsperson
   ___1__ H) Environmental/Conservation
   ___0___ I) Other, please explain _____

   Of the 9 that responded, 7 identified themselves as hunter/sportsmen, three as rancher/farmer, 2 as landowners, 1 as business owner, 2 as guide/outfitter, and 1 as environmental/conservation.

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. ____

   A: 2
   B: 0
   C: 0
   D: 1
   E: 5
   H: 0
   H: 0

   Of the 8 that responded, 5 identified themselves as primarily hunter/sportsmen, 2 as primarily rancher/farmer, and 1as primarily guide/outfitter.

People and Deer

1. Please indicate how concerned you are about each of the following in GMUs 21 and 30. (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 fence	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

9 responses

A: Deer/Vehicle collisions
Mean: 3.7 (concerned)
Mode: 5.0 (very concerned)

B: Deer damage to ranchers/farmers
Mean: 2.3 (little concern)
Mode: 2.0 (little concern)

C: Deer damage to homeowners
Mean: 2.0 (little concern)
Mode: 1.0 (no concern)

D: Predation on deer
Mean: 4.1 (concerned)
Mode: 4.0 (concerned)

E: Loss of deer habitat to development
Mean: 3.9 (concerned)
Mode: 3.0 (some concern)

F: Deer starvation during winter
Mean: 3.2 (some concern)
Mode: 2.0 (little concern)

G: Spread of disease
Mean: 2.1 (little concern)
Mode: 1.0 (no concern)

H: Deer competition with livestock
Mean: 2.6 (some concern)
Mode: 1.0 (no concern)

I: Elk and deer competition
Mean: 3.3 (some concern)
Mode: 3.0 (some concern)

J: Revenue from deer hunting
Mean: 2.8 (some concern)
Mode: 3.0 (some concern)

The highest average concern was for predation on deer (average response: 4.1 concerned). The most frequent highest concerns were loss of habitat due to development (3 respondents indicated they were “concerned”) and deer vehicle collisions (3 respondents indicated they were concerned. The other major concern was loss of habitat (mean 3.9- concerned)

2. Have you been personally affected by any of the concerns listed in Question 2 in GMUs 21 and 30?
   __8__ Yes
   __0__ No
   Of the 8 respondents, all had been personally affected by one of the concerns.

2a. If yes, circle one: A B C D E F G H I or J
Of the 6 respondents who responded correctly, 4 had been affected by J-the revenue produced from deer hunting; 2 had been affected by D-predation.

3. How do you personally feel about deer in GMUs 21 and 30? (Check ONE)
__0__ I do not enjoy the presence of deer in GMUs 21 and 30, AND regard them as a nuisance.
__2__ I enjoy the presence of deer in GMUs 21 and 30, BUT worry about the problems they may cause.
__7__ I enjoy the presence of deer in GMUs 21 and 30 AND do not worry about the problems they may cause.
__0__ I have no particular feelings about deer in GMUs 21 and 30.

Of the 9 respondents, 77.8% enjoyed the deer and did not worry about problems. The remainder, 22.2%, enjoyed the deer and did worry about problems they may cause.

Deer Management

1. How would you like the deer population in GMUs 21 and 30 to change, if at all?
   _____ Decrease
   __1__ Stay the same
   __8__ Increase
   _____ Don't know
   1 out of 9 (11.1%) respondents wanted the deer population to stay the same, while 8 respondents (88.9%) wanted the population to increase.

2. The population is currently 40% of the population objective. How would you like the deer population objective in GMUs 21 and 30 to change, if at all?
   __0__ Decrease
   __3__ Stay the same
   __6__ Increase
   __0__ Don't know
   3 out of nine (33.3%) respondents wanted the deer population objective to stay the same, while 6 respondents (66.7%) wanted the population objective to increase.

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	Very Important	Don't Know

5 out of 9 respondents (55.6%) indicated that the change was important to them. Four (44.4%) indicated that the change was very important.

4. How would you like the number of buck deer in GMUs 21 and 30 to change, if at all?
   _____ Decrease
   __2__ Stay the same
   __7__ Increase
   _____ Don't know

   The majority of respondents (7 out of 9, or 77.8%) wanted the number of buck deer to stay the same. The remainder of respondents (2 out of 9, or 22.2%) wanted the number of buck deer in the DAU to increase.

5. The objective for buck deer is currently 35 bucks: 100 does. How would you like the objective for the number of buck deer in GMUs 21 and 30 to change, if at all?
   _____ Decrease
   __6__ Stay the same
   __2__ Increase
   _____ Don't know

   The majority of respondents (6 out of 8, or 75%) wanted the buck deer objective to stay the same. The remainder of respondents (2 out of 8, or 25%) wanted the buck deer objective in the DAU to increase.

Deer Hunting

1. Have you ever hunted deer in Colorado?
   __9__ Yes
   _____ No

   All nine respondents (100%) had hunted deer in Colorado.

1a. If yes, how many years? _____

The average number of years hunted in Colorado was 27.4, with the least being 2 years, and the most being 55 years.

2. Have you ever hunted deer in GMUs 21 and 30?
   __8__ Yes
   __1__ No

   Eight of the nine respondents (88.9%) had hunted deer in this DAU, while one (11.1%) had not hunted deer in this DAU.

3. Overall, how satisfied have you been with your deer hunting experience(s) in GMUs 21 and 30 in the last 5 years? (Circle ONE)

Very Dissatisfied	Slightly Dissatisfied	Neutral	Slightly Satisfied	Very Satisfied

The majority of respondents (5 out of 8 or 62.5%) were slightly satisfied with their hunting experience in the DAU. Three respondents indicated they were very dissatisfied (1: 12.5%), neutral (1: 12.5%), or very satisfied (1: 12.5%).

4. Overall, to what extent have you felt crowded by other hunters while deer hunting in GMUs 21 and 30? (Circle ONE)

Extremely Crowded	Moderately Crowded	Slightly Crowded	Not at all Crowded

Out of the eight respondents, 3 (37.5%) indicated feeling moderately crowded, and 5 (62.5%) felt slightly crowded.

5. Rank the following items from 1 to 5 in the order that they would most likely improve your deer hunting experience in GMUs 21 and 30. (1=most likely to improve, 5=least likely to improve) Do not use any number more than once.

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

57.1% of respondents (4 out of 7) indicate that seeing more mature bucks would most likely improve their hunting experience in the DAU. Higher hunter success rates were ranked as the item least likely (5 out of 11 respondents or 45%) to improve the hunting experience.

6. Overall, how would you rate the quality of deer hunting opportunities available in GMUs 21 and 30? (Circle ONE)

Poor	Fair	Good	Very Good	Excellent	No Opinion

50% of respondents (4 out of 8) indicate that hunting opportunity quality was very good, while 37.5% (3 out of 8) indicate that hunting opportunity quality was fair.

7. Which ONE factor is the MOST important to you when deer hunting in GMUs 21 and 30? (Check ONE)

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

Of the seven respondents, 5 (62.5%) indicated that obtaining harvesting a trophy deer is the most important. Not seeing other hunters and obtaining game meat were equally important, with one hunter choosing each.

Written Comments

1. Option 3
2. I would like to see more big bucks. Limit out of state hunters to 10% - 25%.
3. My big problem with the season as is – if it stays the same I'll hunt the second deer season 3 or 4 more times in my life spand (sic), I'm 51 - every 7 - 10 year? And 8 + 10 times with the first season 2 – 4 points to draw. Thank you!
4. Takes too many points to get tags.
5. I think residents should have more chances to draw a buck licence than do out of state hunters. We should have a 80 – 20 split.
6. Raise objective to the 35 bucks/ 100 does/ keep deer draw as is/ make the poor land owner get his tag or tags for family through the draw like everyone else – the land owners have a huge money making stake in this area and the sportsman who can't hunt or even trespass on private land doesn't have a chance for a real trophy deer – landowner vouchers are money in there pocket. The public sportsman should be able to take his tag he has been waiting 5 to 8 years and sell it for the same price the vouchers go for this would most definitely get some people out of debt. Poaching in this unit runs rampad (sic) when a poacher is caught, prosecute to the hilt, don't plea bargain. When all is done put a story of it in all the area papers, including Utah, your wildlife officers can't keep up. More officers in these good units – if a person knows the area well he can get away without getting caught if he decides to poach. Reduce the number of out of state tags 85% to 15% we sportsman of Colorado pay more taxes here than do the out of staters – carrying capacities for deer at the objective is about 10,000 – what about cattlemen/sheepmen in the winter everything goes to the best place for food-

   10,000 deer
   8700 elk
   5,000 cows
   10,000 sheep
   600 horses
   _____
   = overgrazed

   _____
   Thanks
7. The draw has worked well but 8 – 10 years to hunt a deer in an area I live in is way out of balance. To live here and not be able to get a license for so long is crazy.

APPENDIX C: PUBLIC QUESTIONNAIRE

OPPORTUNITY FOR PUBLIC COMMENT

DEER MANAGEMENT

In the Bookcliffs Area

COLORADO

Data Analysis Unit D-11

(Game Management Units 21 and 30)

The Colorado Division of Wildlife is interested in your opinions about deer management in the Bookcliffs 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 21 and 30.

Colorado Division of Wildlife

Northwest Region Service Center

711 Independent Ave.

Grand Junction, CO 81505

July 2005

Dear Interested Citizen:

The Colorado Division of Wildlife (CDOW) is interested in your opinions about deer in the Bookcliffs Area, including Game Management Units (GMU) 21 and 30. 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 GMUs. In this case, the Bookcliffs DAU includes GMUs 21 and 30. 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 Bookcliffs 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
August 20, 2005.

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,

WRITTEN COMMENTS:

Please use the space below for any additional comments you would like to make about deer in GMUs 21 and 30.

First, please examine the map and written description of the areas designated as Data Analysis Unit D-11, Game Management Units 21 and 30 located in West-Central Colorado, then go to Question 1.

Location of Mule Deer DAU D-11 (GMUs 21, 30), West-central Colorado

Description of DAU D-11:

Data Analysis Unit D-11 is located in west-central Colorado and is commonly called the Bookcliffs DAU. It is bounded on the north by the White River; on the east by Monument Gulch, Colo. 64, Monument Gulch Rd., Rio Blanco CR's 26 and 103, and E. Salt Crk. /Roan Crk. Divide, Big Salt Wash/Roan Crk. Divide, and thee Little Salt Wash/Roan Crk. Divide, and the Bookcliffs; on the south by the Colorado River, and on the west by the Colorado-Utah state line.

BACKGROUND INFORMATION

1) Are you a resident of Colorado?

_____ Yes

_____ No

2) Do you live in GMUs 21 or 30?

_____ Yes If yes, how many years and in what GMU?_____

_____ No

3) Do you own or lease property in GMUs 21 or 30?

_____ Yes If yes, how many years and in what GMU?_____

____ No

4) Which group(s) best represent your interests in deer management in GMUs 21 and 30? *(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. ____

DEER MANAGEMENT

1) How would you like the deer population in GMUs 21 and 30 to change, if at all?

_____ Decrease

_____ Stay the same

_____ Increase

_____ Don't know

2) The population is currently 40% of the population objective. How would you like the deer population objective in GMUs 21 and 30 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		Very Important	Don't Know

4) How would you like the number of buck deer in GMUs 21 and 30 to change, if at all?

_____ Decrease

_____ Stay the same

_____ Increase

_____ Don't know

5) The objective for buck deer is currently 35 bucks: 100 does. How would you like the **objective** for the number of buck deer in GMUs 21 and 30 to change, if at all?

_____ Decrease

_____ Stay the same

_____ Increase

_____ 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 GMUs 21 and 30?

_____ Yes

_____ No

3) Overall, how satisfied have you been with your deer hunting experience(s) in GMUs 21 and 30 in 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 GMUs 21 and 30? *(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 GMUs 21 and 30. (1=most likely to improve, 5=least likely to improve) Do not use any number more than once.

_____ Less hunter crowding

_____ Higher hunter success rate

_____ Less motorized vehicle access

_____ Seeing more mature bucks

_____ Seeing more deer

6) Overall, how would you rate the quality of deer hunting opportunities available in GMUs 21 and 30? *(Circle ONE)*

Poor	Fair	Good	Very Good	Excellent	No Opinion

7) Which ONE factor is the MOST important to you when deer hunting in GMUs 21, and 30? *(Check ONE)*

_____ Not seeing other hunters

_____ Obtaining game meat

_____ Harvesting a trophy deer

PEOPLE AND DEER

1) Please indicate how concerned you are about each of the following in GMUs 21 and 30. *(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 fence	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 GMUs 21 and 30?

_____ 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 GMUs 21 and 30? *(Check ONE)*

_____ I do not enjoy the presence of deer in GMUs 21 and 30, AND regard them as a nuisance.

_____ I enjoy the presence of deer in GMUs 21 and 30, BUT worry about the problems they may cause.

_____ I enjoy the presence of deer in GMUs 21 and 30 AND do not worry about the problems they may cause.

_____ I have no particular feelings about deer in GMUs 21 and 30.

APPENDIX D: BUREAU OF LAND MANAGEMENT RESPONSE

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
White River Field Office
73544 Highway 64
Meeker, Colorado 81641

TAKE PRIDE IN AMERICA

SEP 12 2005

Stephanie Duckett, Terrestrial Biologist
Colorado Division of Wildlife
711 Independent Ave.
Grand Junction, Colorado 81501

Dear Ms. Duckett,

Based on supporting information provided to the Colorado Division of Wildlife (CDOW) for the Yellow Creek Elk Management Plan, the Bureau of Land Management's (BLM) White River Field Office supports a long-term objective that would maintain current elk populations and their prevailing influence on BLM-administered lands. This position is consistent with BLM's continuing efforts to enhance or restore proper rangeland functions, in particular, by attempting to reduce the intensity and duration of collective growing season use by wild and domestic ungulates through improved livestock management, noxious weed control, and more aggressive implementation of our Fire Management Plan. We believe that effective elevation of elk abundance on BLM-administered lands would tend to counteract or retard rangeland gains achieved by these means. BLM supports the management flexibility inherent in proposing a desired population range and is encouraged by CDOW's recent success in managing burgeoning elk populations in DAU E-6. In the same vein, and although we do not anticipate dramatic changes in current elk distribution patterns, BLM has lingering concerns in the event energy development in Piceance Basin prompts substantive redistribution of elk onto BLM-administered lands in GMUs 21 and 22.

Although we believe that present vegetation status and a pattern of increasingly large wildfire events in GMU 21 argues for a period of sustained advantage for elk, the BLM's White River Field Office has no basis to object to current deer population objectives for DAU D-11. We feel land management applied with an emphasis toward deer would continue to complement balanced management of woodland and shrubland communities across GMU 21 and would add impetus for restoring ecological conditions and processes that better meet the BLM's Public Land Health Standards.

If you have questions concerning our response to your DAU Plans, please contact myself of Ed Hollowed of my staff at 970-878-3834.

Sincerely,

for Kent E Walter
Field Manager

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Grand Junction Field Office
2815 H Road
Grand Junction, Colorado 81506

IN REPLY REFER TO

TAKE PRIDE IN AMERICA

October 4, 2005

Ms. Stephanie Duckett
Terrestrial Biologist
Colorado Division of Wildlife
711 Independent Ave.
Grand Junction, CO 81501

Dear Ms. Duckett,

The Grand Junction Field Office (GJFO) of the Bureau of Land Management (BLM) appreciates the opportunity to comment on elk and deer management in Game Management Units (GMUs) 30 and 31. Based on review of the information you provided, we concur with CDOWs deer and elk management objectives for these two GMUs.

The BLM continues efforts to enhance or restore rangeland functions and conditions across the GJFO. By virtue of site location, our work to monitor big game use – by conducting annual pellet group counts on winter range – has been geared more toward assessment of mule deer use than that of elk. Even with considerable natural variation in those assessments, that work generally indicates that deer use has declined in recent years. We have observed that substantial decline of range condition associated with drought years (particularly 2002-2004) have recently been reversed with increased precipitation this year. We conclude that, at current big game population levels, recent trends in range condition on BLM-administered public land appear to be influenced more by annual environmental factors than by utilization by ungulates.

You have presented evidence that elk and deer populations are within objectives, and CDOWs recent successes in managing above-objective elk populations in other GMUs encourage our support of your current management strategies in GMUs 30 and 31.

If you have further questions, please contact me at 970-244-3012.

Sincerely,

Brendan Moynahan, Ph.D.
Wildlife Biologist