DAU E-14 (Grand Mesa)
EXECUTIVE SUMMARY
REVISED MAY 2010

GMUs: 41, 42, 411, 421, 52, 521

Land Ownership: 37% Private, 19% BLM, 43% USFS

Post-hunt Population Objective: 9,000 – 11,000 **2008 Estimate:** 18,600

Recommended: 15,000 – 19,000

Post-hunt Composition (Bulls/100 Cows): Objective 20-25 **2008 Observed:** 21.5 **2008 Modeled:** 24.7

Figure 1. E-14 Posthunt Population Estimate

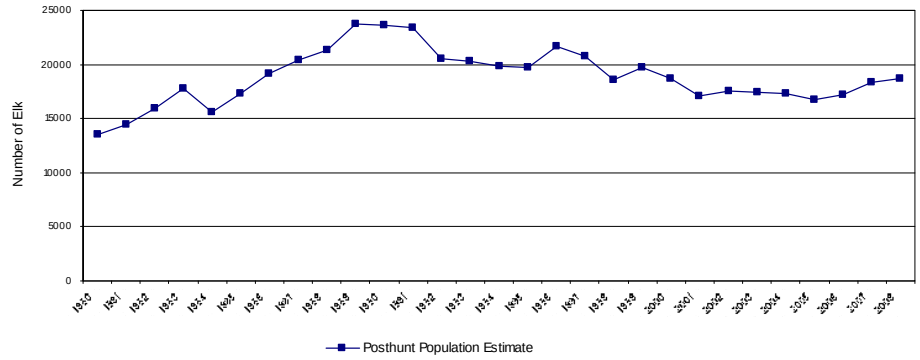


Figure 2. E-14 Harvest History

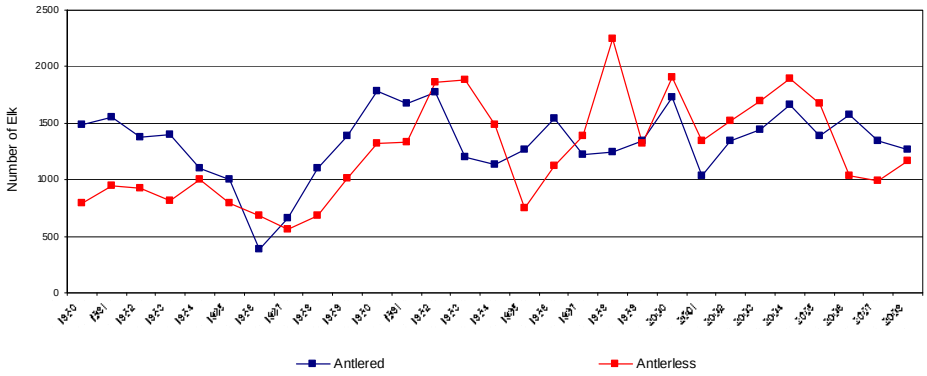
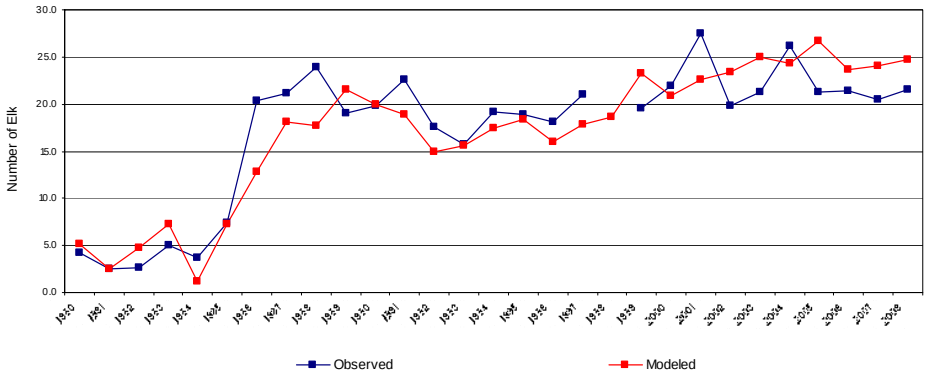


Figure 3. E-14 Posthunt Bulls: 100 Cow s



E-14 BACKGROUND

The Grand Mesa E-14 DAU is located in west-central Colorado and encompasses the Grand Mesa, directly east of Grand Junction, Colorado. Since 1994, the population objective for the Grand Mesa elk herd has been 10,500 animals. The current composition objective for elk is 25 bulls: 100 cows.

The elk population in E-14 was at similar levels to current populations during the early 1980's. There was dramatic growth of this herd during the mid-1980's through the mid 1990's, with the population increasing to approximately 17,000 animals in 1991. This large increase resulted in increases in hunting harvest which have caused a reduction of the herd. When the DAU plan was approved in 2006, models estimated a population of 11,500 animals. Updated models in use since 2007 estimate approximately 18,600 elk.

The CDOW has conducted aerial sex and age composition surveys in E-14 since the late 1970's. Early records in the 1980's show that total bull: cow ratios were as low as 4.3 bulls: 100 cows. These ratios have generally increased to recent levels of 20-25 bulls: 100 cows, in large part due to antler point restrictions. The average bull: cow ratio in the DAU for the last 26 years is 17.0 bulls: 100 cows, while the last 10 years have averaged 21.6 bulls: 100 cows. Post-hunt classifications in 2008 estimated 21.5 bulls: 100 cows.

In 1980 the age ratio was 57.5 calves: 100 cows and the ratio has remained between 40 - 55 calves: 100 cows since. The average calf: cow ratio has been 48.3 since 1980. Calf: cow ratios have been at or slightly lower than the average since 1999. It is possible that declining habitat quality has created a density - dependent situation, leading to lower calf: cow ratios.

The harvest history generally reflects the increasing elk population. The highest harvests have occurred in conjunction with the highest populations. High harvests have also occurred during the last few years when the CDOW has been aggressively trying to reduce the elk population in an effort to achieve the DAU population objective. As the population reaches the objective and stabilizes, it is likely that harvest will also decrease.

SIGNIFICANT ISSUES:

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

Meetings were held to solicit input from the USFS, BLM, the local public, and the Boards of County Commissioners from Mesa, Garfield, Delta, and Gunnison counties. A questionnaire was available at these public meetings and on the DOW web site to solicit opinions from the public.

Several significant issues were identified during the DAU planning process. The primary issues involved habitat quality and quantity, particularly on winter ranges; energy development; and damage to agricultural crops.

Winter range habitat quality and quantity was the most frequently identified issue by the general public, CDOW employees, HPP committees, and land management agencies, closely followed by the exponential increase in energy development across the landscape. Concerns over game damage have lessened in recent years and most

damage claims generally stem from problems of distribution rather than from an overpopulation of elk.

E-14 MANAGEMENT ALTERNATIVES

In 2006, three post-hunt population objective alternatives were proposed for E-14 (1) 7,000 – 9,000, (2) 9,000 – 11,000, or (3) 11,000-13,000. Alternative two was selected in 2006.

Three post-hunt composition objectives were proposed for E-14 (1) 15-20 bulls: 100 cows, (2) 20-25 bulls: 100 cows, or (3) 25-30 bulls: 100 cows. Alternative 1 would decrease the number of bulls in the herd, thereby increasing antlered license numbers available, alternative 2 would maintain the number of bulls in the herd and antlered licenses available, and alternative 3 would increase the number of bulls in the herd and require a dramatic decrease in antlered licenses available each year. Alternative two was selected in 2006. No changes are proposed to the composition objective during the revision process.

2009 POPULATION SIZE OBJECTIVE REVISION

In both 2005 and the recent revision process, most stakeholders indicated that elk population size and composition were at acceptable levels. The majority of respondents were satisfied with current management and the general consensus was to maintain the status quo.

Recent improvements to population estimation techniques and refinements to computer modeling procedures have substantially increased estimates of the E-14 elk population over previously-used models. The improved models have estimated the E-14 population size at roughly 18,600 animals after the 2008 hunting season.

The population size objectives set in 2006 reflected general satisfaction with the size of the elk herd in E-14 at the time. Therefore, a revision of the population size objective will allow the CDOW to continue managing this herd at accepted levels. The revision will incorporate the more accurate population estimate while keeping the population objective in line with the public demand to maintain the elk population size at current levels.

Therefore, during the revision process, the CDOW suggested that the objective range be increased to 14,500 – 21,500. There was both internal and external demand to decrease the size of the objective range and to not allow the herd to increase above current levels, so it is recommended that the post hunt population size objective be revised to 15,000 – 19,000 elk.

GRAND MESA
DAU E-14
HERD MANAGEMENT PLAN

Prepared by:

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

INTRODUCTION AND PURPOSE

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

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

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

The DAU plan establishes two primary management objectives: the approximate post-hunt population size objective, and the post-hunt composition (number of bulls per 100 cows) 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).

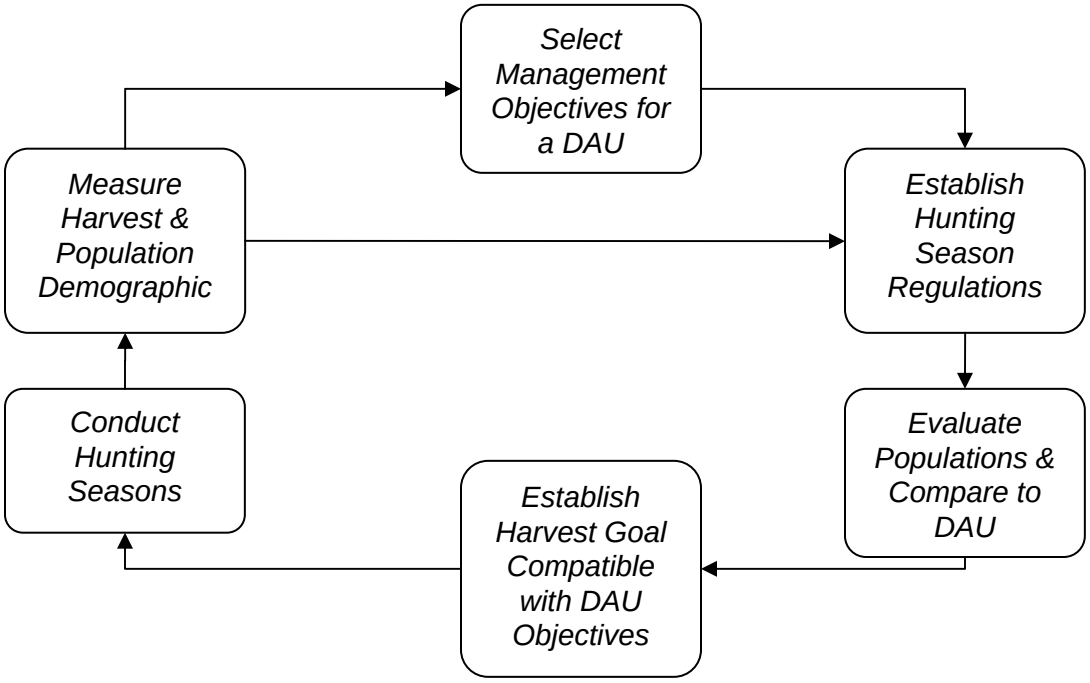


Figure 1. CDOW's Management by Objective Process

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

DESCRIPTION OF DATA ANALYSIS UNIT

Location

The Data Analysis Unit is located in the west central portion of Colorado and is commonly called the Grand Mesa DAU. Its CDOW designation is E-14. It is bounded on the north by the Colorado River, on the east by South Canyon from the Colorado River to Sunlight Peak and from Sunlight Peak along the Gunnison-Pitkin County line to McClure Pass, the White River/Gunnison National Forest boundary to Ruby Range Summit, Ruby Range Summit to Kebler Pass; on the south by Gunnison County Road 12 then by Colorado 92 to Delta and on the west by US Highway 50 (Figure 2).

Figure 2. Location of DAU E-14 in West-Central Colorado.

Physiography

The main topographic feature of this DAU is the Grand Mesa, which is a high flat-topped mountain. Elevations vary from the high flat top mountains on Grand Mesa at approximately 11,000 feet in the central portion of the DAU, to the Colorado River at approximately 4,600 feet near Grand Junction. The Colorado River forms the northern boundary of the DAU. Interstate 70 parallels the Colorado River, forming a significant barrier which restricts elk movements throughout the northern portion of the DAU. Along the western boundary and

west portions of the southern boundary the desert-like open terrain acts as another natural barrier that restricts elk movements into and out of the DAU.

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

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

The wide range of the terrain in this DAU provides a variety of physical features that elk populations find very suitable for their year-round needs. Due to this variety of landscape features, large numbers of elk can be supported in this herd unit. Elk summer ranges are found in the center of the DAU in the Grand Mesa area. Elk are forced to migrate to lower elevation surrounding the Grand Mesa during the winter.

Annual precipitation ranges from approximately 40 inches on Grand Mesa to about 8 inches in the desert country near Grand Junction and Delta. Much of the annual precipitation is in the form of snow.

Vegetation

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

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

Irrigated cropland and grassland with half-shrub mixtures and grass/alfalfa meadows are found in the valleys. Irrigated crops include corn, grains such as wheat, barley, and oats, and alfalfa and grass grown for pasture and hay. Fruit

orchards are found in the western portions of the DAU around Palisade, Colorado.

River bottoms along the Colorado River are dominated by cottonwood trees and other species including willows, boxelder and alders. Tamarisk is also found along the river corridor, particularly at the lower elevations near Grand Junction.

Land Ownership

The Grand Mesa Elk DAU contains a mixture of public and private lands (Figure 3). Approximately 63% of the lands within this DAU are public property. Of the overall range, 43% is managed by the United States Forest Service (FS) and about 19% by the Bureau of Land Management (BLM). A very small percentage is owned by the state of Colorado. Two National Forests manage lands within the DAU: the White River and the Grand Mesa Uncompahgre and Gunnison National Forests. The BLM lands are managed by the Grand Junction and Montrose Resource Areas. Privately owned lands make up 37% of the total.

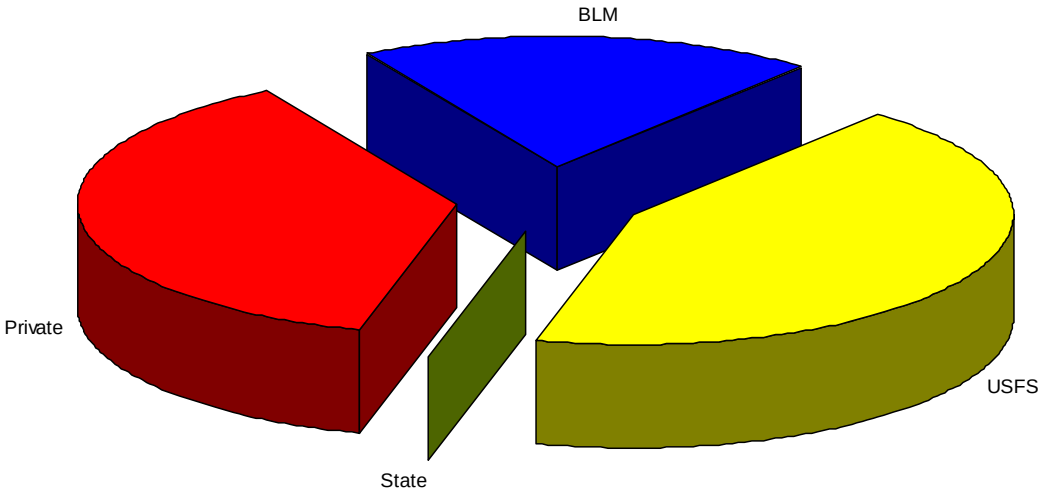


Figure 3. Land Ownership in DAU E-14.

Metropolitan areas are found around the periphery of the DAU. Major residential areas include the Grand Junction area, Rifle, Parachute, Silt, Delta and Paonia. The towns of Mesa, Collbran, Paonia and Cedaredge are also found in this DAU.

Like many areas in western Colorado, public lands are generally found at higher elevations and private lands are found at lower elevations where the land is more suitable for farming, ranching and communities. E-14 is 2,477 square miles in

size. The U. S. Forest Service manages approximately 1055 square miles and the Bureau of Land Management manages about 4754 square miles. The CDOW manages a small amount of land at Garfield Creek State Wildlife Area and Plateau Creek Wildlife Area. There are 918 square miles of private land in the DAU.

Land Use

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

- **Agriculture:**

In the extreme western portion of the DAU one of the primary uses of the private lands are for production of fruit crops. These fruit orchards include apples, peaches, cherries, apricots, and pears. Throughout the DAU on private lands other agricultural crops are grown, these include corn, various small grains, and the production of hay for livestock.

Much of the private land in the DAU is used to graze livestock during the spring, fall, and winter. Cattle and sheep ranchers graze livestock on FS and BLM land during various seasons of the year. On FS lands, livestock are grazed on allotments during the summer and then during the fall ranchers move the livestock to home ranches for the winter.

- **Timber Harvest:**

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

- **Residential Housing**

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

There has been a great deal of population growth in recent years, primarily along Interstate 70, near Collbran and Mesa, and in the Paonia, Hotchkiss, and Cedaredge areas. The majority of new housing developments have occurred in elk winter range, fragmenting former sagebrush and agricultural lands. The areas south of Rifle, Silt, and Parachute, in GMU 42 in particular, are seeing rapid conversion of agricultural lands to suburban housing developments.

COUNTY	TOWN	POPULATION
Mesa	Grand Junction	42,000
	Collbran	600
	Palisade	2,700
	Total County	116,000
Garfield	Rifle	8,000
	Parachute	1,100
	Silt	2,300
	Total County	52,200
Delta	Cedaredge	2,200
	Paonia	1,500
	Total County	28,000

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

- **Recreation:**

Recreation is probably one of the most visible and extensive uses occurring on FS lands in this DAU. The large number of lakes, reservoirs, and streams are used by fishing recreationists throughout the year. However, most fishing activity occurs during the summer. Excellent backcountry hiking, biking, and off highway vehicle (OHV) trails provide numerous days of recreational activity for a large number of visitors. Kannah Creek Basin is designated as a roadless area and is an exceptional area for backcountry hunting, camping, hiking, fishing, and observing wildlife. During the fall, big game hunting is a major event in the DAU. Approximately 14,000 elk hunters hunt in this DAU each year.

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

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

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 elk. In this manner we have established a reference point and can eliminate confusion when referring to populations.

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

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

Population Assessment Procedure Overview

Estimating populations of wild animals over large geographic areas is an extremely difficult and inexact science. Our current method of determining elk 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. As 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

Elk are highly adaptable and hardy big game species. While populations were almost extirpated from Colorado near the turn of the century due to over-hunting, they have rebounded dramatically.

Elk populations on the Grand Mesa were relatively low in the 1950's and have shown both steady and remarkable growth (Figure 4). The E-14 elk herd is currently a stable to slightly declining population. Elk populations in E-14 steadily increased until 1991, mirroring the growth of elk populations throughout Colorado and the west. Since the early 1990's, however, the population has been declining. This decline has resulted from a concerted effort to reduce populations to levels established in the initial DAU plan that was completed in 1988.

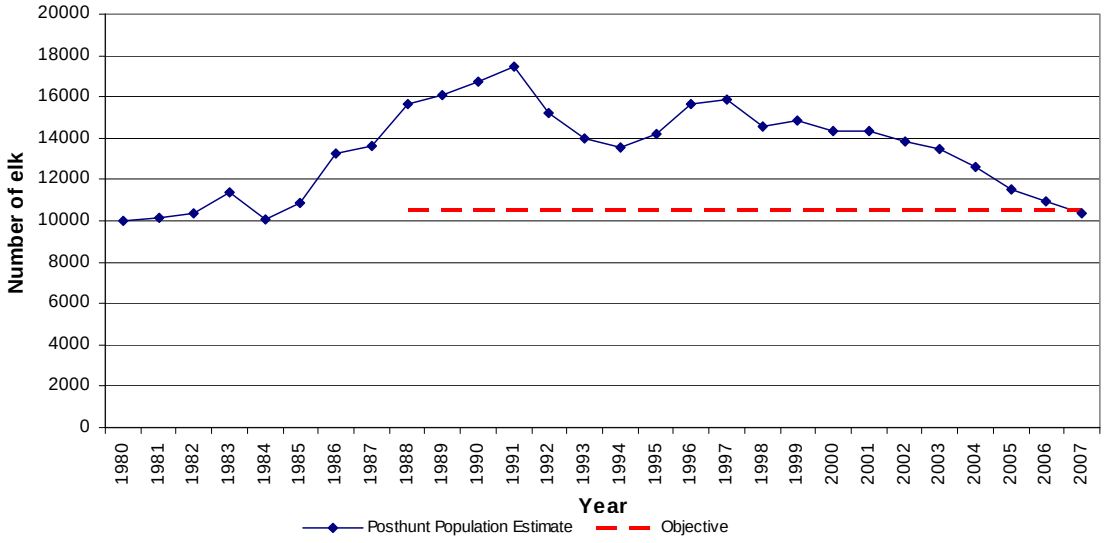


Figure 4. Posthunt Population Estimates for E-14.

Post-hunt Herd Composition

Since 1979, the CDOW has conducted aerial sex/age composition surveys in E-14. Prior to that time these classifications were conducted on a less scheduled time frame with data going back to 1974. These classifications are designed to sample the existing post-hunt population and determine the ratio of bulls to cows and calves to cows. These surveys are often mistaken by the public as total counts of the population. The results are presented as the number of bulls: 100 cows and the number of calves: 100 cows. The data provides information on

reproductive success, survival of calves, and information on the ages of the adult male segment of the population.

- **Bull: Cow ratios**

Bull: cow ratios in E-14 were very low in the early 1980's, hitting an all-time low of 2.5 bulls: 100 cows in 1981. During this time any bull, other than yearlings, were legal and restrictions were few. The bull ratios stayed around 5 bulls: 100 cows until harvest was restricted in the DAU to bulls with a minimum of 4 antler points on at least one antler. A large increase in sex ratio was observed immediately after this restriction was put into effect. In 1986 the bull ratio was 20.3 bulls: 100 cows. The largest portion of the bull component, however, was yearling bulls, often referred to as spikes, since this age class was now protected. Bull: cow ratios increased through the late 1980's and have generally stabilized since. Bull: cow ratios have generally averaged 20 – 25 bulls: 100 cows since the mid-1990's.

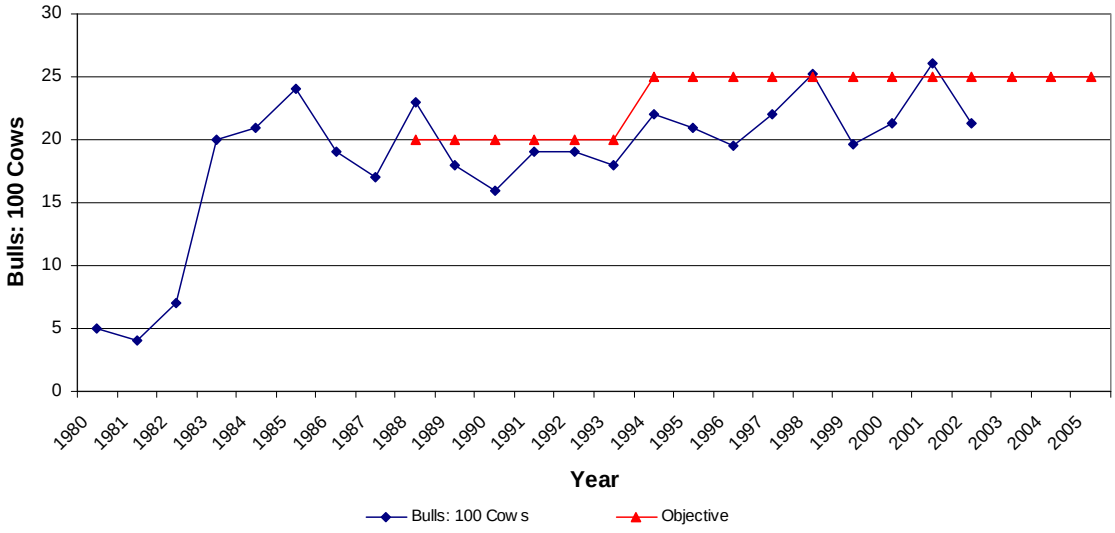


Figure 5. Bull: Cow Ratios in E-14.

- **Calf: Cow ratios**

The calf: cow ratios have not fluctuated a great deal within E-14 (Figure 6). In 1980 the ratio was 57.5 calves: 100 cows and the ratio has remained between 40 - 55 calves: 100 cows since. The average calf: cow ratio has been 48.3 since 1980. Calf: cow ratios have been at or slightly lower than the average since 1999. It is possible that declining habitat quality has created a density-dependent situation, leading to lower calf: cow ratios.

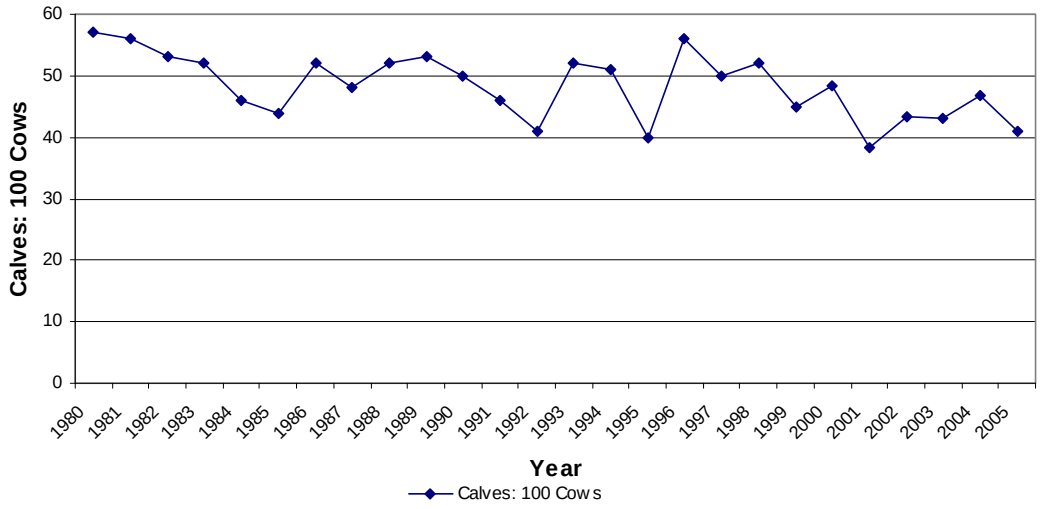


Figure 6. Calves: 100 Cows in E-14.

Harvest History

Elk harvests have changed substantially over time in this DAU (Figure 7). More than 10 times as many elk were killed in 1992 as in 1953. In 1953 the harvest was 355 elk. By 1992 the harvest had increased to a high of 3,877 elk. In 1986, the first year of antler point restrictions, the bull harvest dropped from 1001 to 386. The main reason for this drop was directly due to the small number of branch antlered bulls in the population. Since few elk had been able to survive into the third year, bulls with 4 points or better made up a small portion of the total bull segment. The following year the harvest rebounded as the yearlings from the previous year matured into branch-antlered bulls.

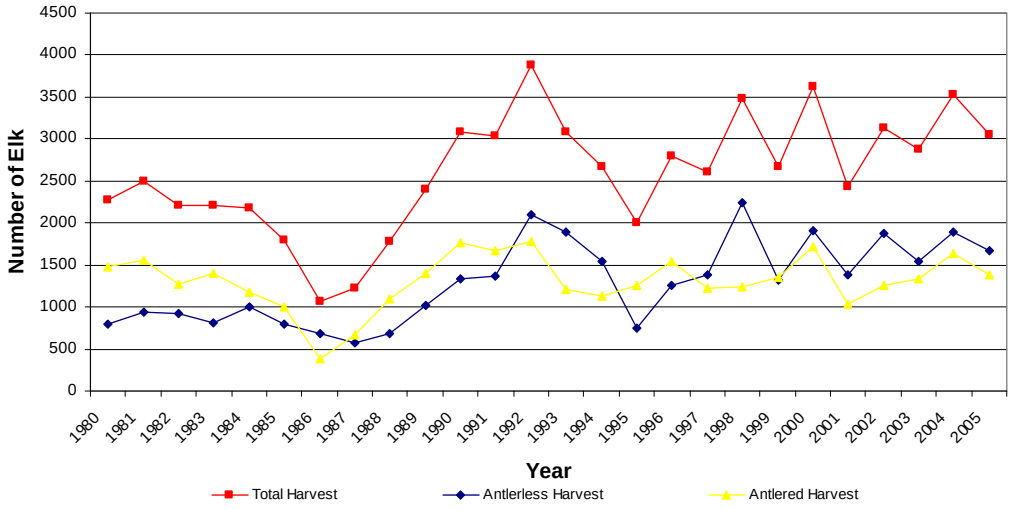


Figure 7. Annual Harvest in DAU E-14.

The harvest history generally reflects the increasing elk population. The highest harvests have occurred in conjunction with the highest populations (Figure 8). High harvests have also occurred during the last few years when the CDOW has been aggressively trying to reduce the elk population in an effort to achieve the DAU population objective. As the population reaches the objective and stabilizes, it is likely that harvest will also decrease.

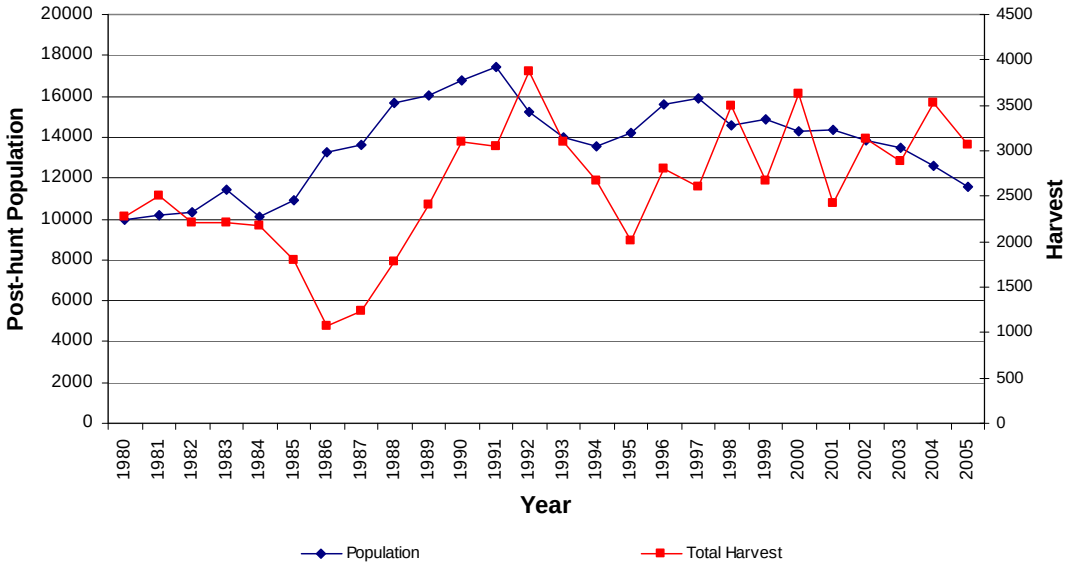


Figure 8. Annual Harvest vs. Population in DAU E-14.

Hunting Pressure and Hunter Numbers

Hunting pressure has steadily increased in a direct relationship with the elk population growth. Hunter interest is very high for elk in this DAU as well as the entire state of Colorado. The growth of the herds has stimulated and maintained a high public interest in both the viewing and hunting populations in Colorado.

This DAU, due to its proximity to Grand Junction, accessibility by vehicle, and productive elk herd, is a very popular hunting area. In 1954, approximately 1600 individuals hunted elk on the Grand Mesa. In 2005 (Figure 9), over 13,000 hunters pursued elk during the many seasons available. The growth in pressure was steady until recent years, except for a marked decline after the bad winter of 1983-84 and then followed by an even larger drop when antler point restrictions began in 1986. The CDOW has slowly begun to decrease license numbers as the population has been approaching objective.

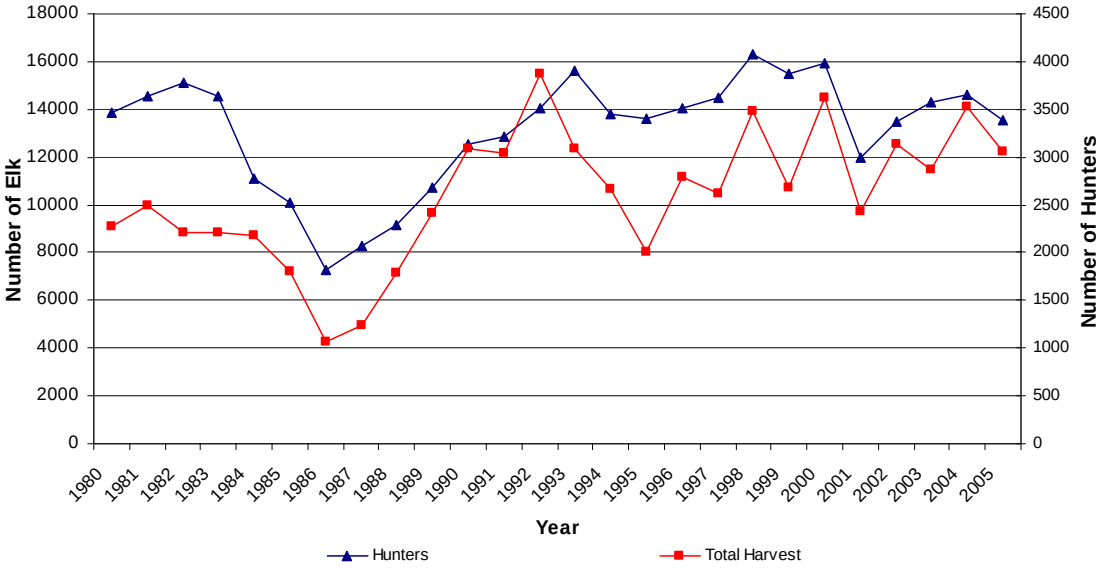


Figure 9. Elk Hunters vs. Harvest in DAU E-14.

CURRENT HERD MANAGEMENT

Current Population and Composition Objectives

The Grand Mesa elk DAU E-14 has traditionally been managed for high hunter opportunity. Until recently, the majority of antlered hunting was available over-the-counter, and archery and 2nd and 3rd seasons remain so.

During the late 1980's and early 1990's elk populations most likely grew to levels that were not sustainable on the surrounding ranges, particularly winter ranges. Game damage claims were high and local ranch lands and orchards were impacted by wintering elk. A concerted effort was begun in 1989 to reduce the elk population. Both the private landowners and CDOW felt that the number of elk using these lands had increased dramatically over historic levels and that CDOW had not met the population objective established in the DAU plan.

The CDOW responded to these concerns by increasing the overall antlerless harvest in this DAU. This was accomplished by increasing regular season licenses and by initiating both private land and late season antlerless elk hunts. Both the CDOW and landowners in the conflict areas believe that populations have decreased over the past few years.

High populations during the 1980's and 1990's resulted in very high license numbers for both antlered and antlerless animals. These high license numbers were effective in decreasing population levels, and it is expected that elk populations will reach population objective following the 2006 hunting season.

Since 1988, the population objective in DAU E-14 has been 10,500 elk. The current bull: cow ratio objective is 25 bulls: 100 cows.

Harvest Management

Elk seasons have varied over the years. Seasons have evolved from being quite simple to rather complicated. The driving force behind this change has been due to the dramatic elk population growth. The high populations coupled with the many factors exerting their force on populations have driven the hunting process to the format we have now. Both archery and muzzleloading seasons have increased from virtually nothing in the early 1970's contributing to a significant portion of the harvest. In 1994, 2,000 archery and muzzleloader hunters accounted for the harvest of 387 animals, or about 14% of the total harvest. In 2005, over 3,800 archery and muzzleloader hunters harvested 680 animals, or 22% of the total harvest.

The regular rifle seasons have also changed. In the 1950's and 1960's there was one fall hunting season. Now there are three combined rifle seasons for elk and deer and a single, first season for elk only. The elk-only first season and the three combined seasons have been established to reduce hunter pressure by distributing pressure over four seasons. This has increased the quality of the

hunts and allowed more opportunities for the hunters to choose seasons that fit their preferences.

In addition, many special seasons have been established in this DAU to mitigate and prevent game damage problems. These seasons include late hunts, usually during late November and December, with some extending into January. These special seasons have shifted the time and place of harvest. This shift has been from almost exclusively occurring on national forest lands to a substantial harvest on private lands outside the regular rifle seasons. In 1994, 22% of elk were harvested during late or private land only hunts, while in 2005, only 3% were harvested during late or private land only hunts. The likely reason for the decease has been the decreased population.

- **Antlered Licenses**

Antlered hunting in this DAU is unlimited only during the archery, second and third regular rifle seasons. Until 2005, the fourth season was unlimited. However, now the first and fourth rifle seasons are limited. Antlered muzzleloader hunting requires a limited license that is good in non-trophy units across the state.

- **Regular Season Antlerless Licenses**

Regular season antlerless licenses are available for all four regular elk season through the CDOW's limited license drawing process. These licenses are generally popular and there have been few problems in the past with large numbers of cow licenses not being taken in the initial public license drawing. During times of the highest populations, it was difficult to achieve harvest objectives solely using regular season antlerless licenses, leading to the implementation of PLO, late season and damage hunts.

- **Private Land Only, Late Season, and Damage Hunts**

Elk licenses, particularly antlerless, have been adjusted to provide opportunity and to alleviate situations where elk are causing damage. Thus, private land only licenses, late season, and damage hunts have been created to encourage harvest of elk when during late fall and early winter. As the population nears objective, it is likely that the availability of these licenses will decrease dramatically.

HABITAT RESOURCE

Habitat Distribution

- **Elk Overall Range**

Elk are found throughout DAU E-14 with the general exceptions of the largest human population areas, and the desert-like lowlands in the Grand Valley (Figure 10). Elk herds move across the remainder of the DAU during the year, utilizing different areas during different seasons.

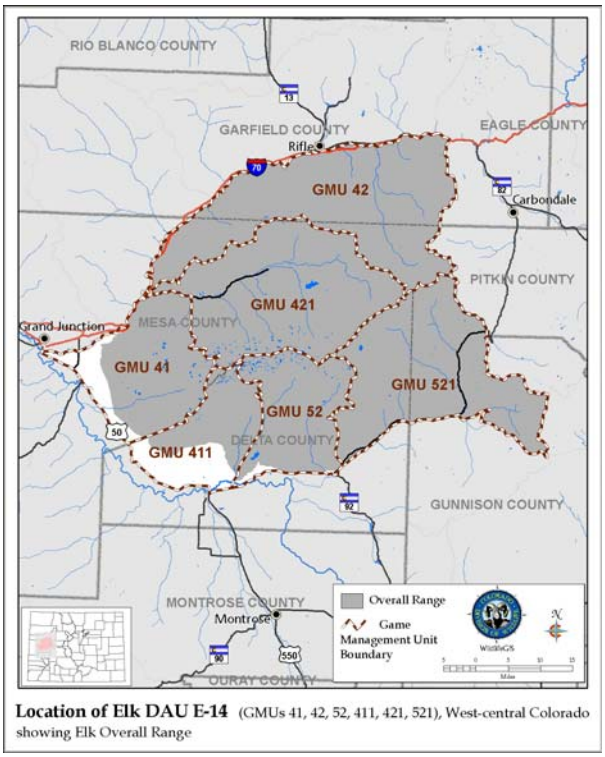


Figure 10. Elk Overall Range in DAU E-14.

- **Elk Summer Range**

Elk in E-14 summer primarily in the highest elevations near the center of the DAU (Figure 11). In the spring, they tend to follow the retreating snowline and subsequent green-up in vegetation. There are over 1270 square miles identified as summer range. The quality of summer range is important for elk to ensure they recover from winter weight loss, cows support late fetal development and lactation, and animals in the population go into winter in good body condition.

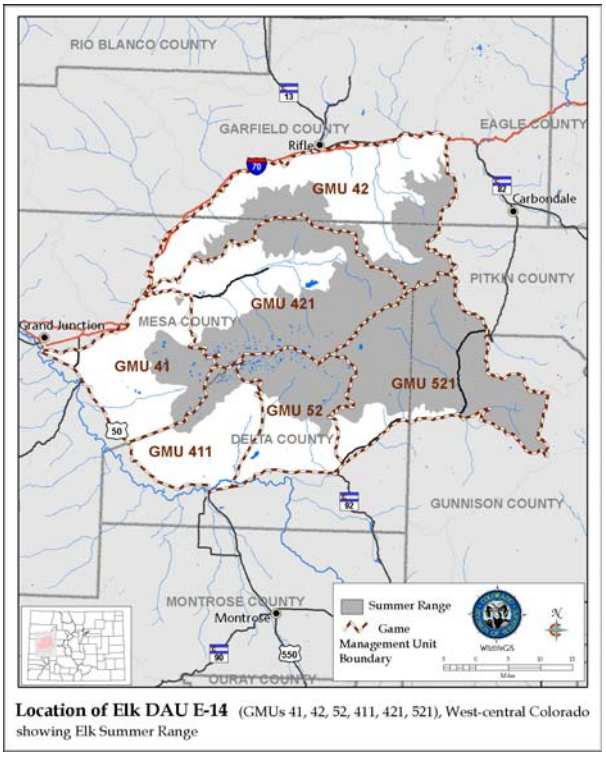


Figure 11. Elk Summer Range within DAU E-14.

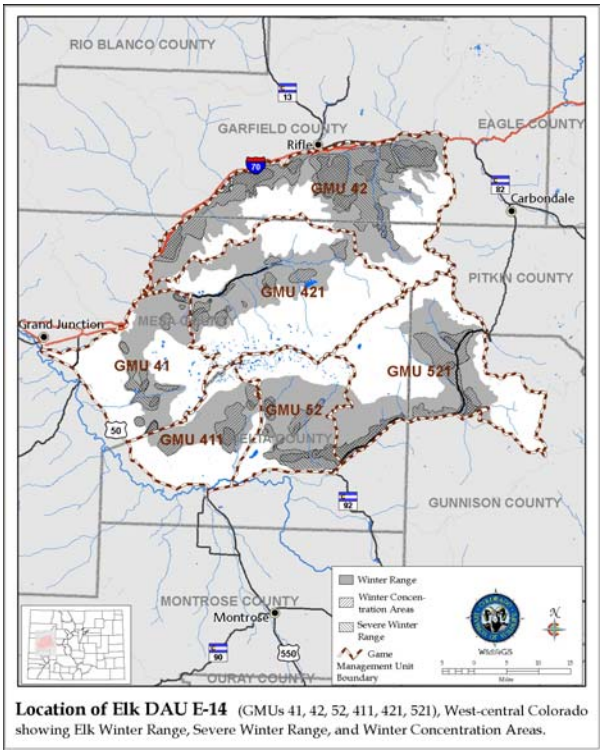
- **Elk Winter Range**

Winter range is often considered to be more important to elk 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 elk are located during the two worst winters in 10 years as determined by the maximum annual snow pack and minimum temperatures.

Due to heavy accumulations of snow on the National Forest, both deer and elk are forced to winter at lower elevations. There are approximately 1220 square miles identified as winter range in DAU E-14. The lands that surround the Grand Mesa at lower elevations comprise important winter ranges for both deer and elk. Areas such as the Surface Creek, Leroux Creek, North Fork Valley, Plateau Valley, Kannah Creek Basin, and the areas south of Rifle, Silt, and Parachute

support the DAU's elk populations during the winter (Figure 12). Favorable snow depths, slope and aspect, and winter temperatures make these areas suitable for wintering big game. Elk are often 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 lower elevations where snow levels are usually the least.



Location of Elk DAU E-14 (GMUs 41, 42, 52, 411, 421, 521), West-central Colorado showing Elk Winter Range, Severe Winter Range, and Winter Concentration Areas.

Figure 12. Elk Winter Range in DAU E-14.

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

Of the approximately 1220 square miles of winter range in E-14, 49% is on public lands and 51% is privately held. The winter ranges on public land are almost evenly split between USFS and BLM lands.

There are approximately 1270 square miles of summer range in E-14. Of this area, 18% is on private land and 82% is on public land. The majority of elk summer range on public land is managed by the USFS (Figure 13).

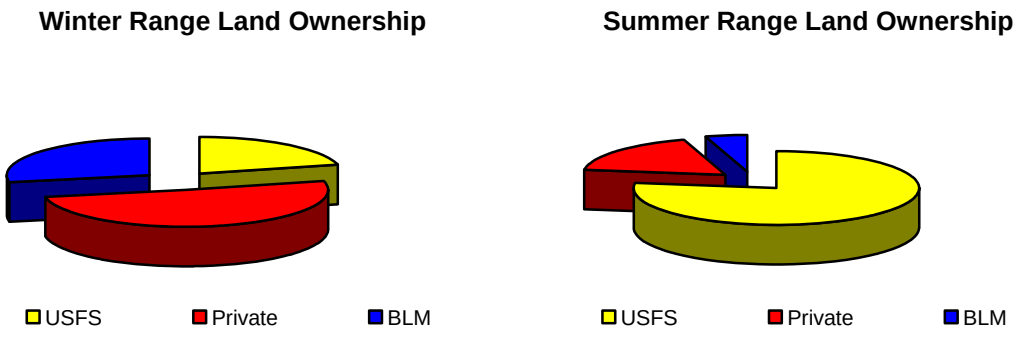


Figure 13. Land Ownership in DAU E-14 in Winter vs. Summer Range.

Habitat Condition and Capability

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

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

Another significant impact to habitat condition in DAU E-14 is the fragmentation and destruction of habitat as a result of heavy and increasing energy development. Deer and elk avoid areas of high activity associated with oil and gas development, causing direct habitat loss. Additionally, roads and fences fragment the landscape and make wildlife more vulnerable to vehicular collisions and poaching. This effectively decreases the overall habitat capability as these areas become essentially useless to elk and deer.

Noxious weed invasion is also of major concern regarding the habitat condition in E-14. Weeds such as houndstongue, cheatgrass, knapweed, and thistle degrade the habitat and provide little forage for wildlife.

- **Browse Conditions**

Throughout E-14, browse conditions are fair to good and generally improving, particularly in recent years with better precipitation. There is a lack of young, vigorous, nutritious browse throughout the DAU, primarily due to fire suppression. Higher elevations are generally in better shape than lower elevations, primarily due to more moisture.

Several issues were identified during this process relating to browse conditions in E-14. Snowberry encroachment and lack of regeneration in aspen stands has become a concern in recent years, particularly on the Battlements and in the Muddy Creek area. It is not known why aspen recruitment is low, but drought is probably a major cause. Recent studies have suggested that some form of aspen-specific pest may also be playing a role. Serviceberry, mountain mahogany, and other mountain shrubs are also being out-competed by snowberry in some areas, and there is currently low recruitment of these species into mountain shrub communities in some areas. Despite some site specific issues, the overall browse conditions at high elevations on the Grand Mesa are good.

Lower elevations browse conditions are not as good. Oak brush has been hit hard in recent years by drought and late frosts. Although multiple age-class stands improve forage availability, some thermal and escape cover is lost in the process. In the Salt Creek drainage in GMU 421, large areas of oak brush are over grazed and show signs of low vigor as a result. Sagebrush throughout the DAU on winter ranges is found in single age-class stands, with little age or size diversity and low vigor. There is significant pinon-juniper encroachment into sagebrush, which is adversely impacting winter ranges available to deer and elk.

There have been some habitat treatments in recent years to improve browse and range conditions in DAU E-14. Roller-chopping projects in GMU 41, north of Chalk Mountain have improved elk and deer winter range by removing pinon-juniper stands in former sagebrush. Prescribed burning in the lower Battlements has improved approximately 3,000 acres of deer and elk winter range. Recent habitat treatments on Garfield Creek SWA have removed pinon-juniper and treated decadent stands of sagebrush to improve winter range for elk and deer.

- **Range Conditions**

Range conditions vary widely within E-14. There are some site-specific issues across the DAU, but most rangelands are in fair to good condition, as noted by USFS and DOW personnel. Higher moisture levels in recent years have dramatically improved the range conditions and available forage.

The primary issue impacting range quality in DAU E-14 is the invasion of noxious weeds at lower elevations, particularly cheatgrass, Canada and musk thistle, annual wheatgrass, and Russian knapweed. Cheatgrass is very common on lower-elevation rangeland in E-14 and is a predominant species on much of elk and deer winter range. This invasion exacerbates the damage caused by high-

impact disturbance from activities such as oil and gas development and historic grazing practices.

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

The high quality range conditions at high elevations are due primarily to increased moisture in recent years, and, to a lesser degree, to decreased livestock grazing in some areas. The Divide Creek area in particular, provides high quality summer and transition range to elk due to improved range stewardship and good grazing practices. The Buzzard Creek area and the lower Battlements, in particular, have seen a significant decrease in livestock grazing in recent years. The institution of rotational grazing in the LeRoux Creek area has also helped to improve range conditions for wildlife. Some overgrazing by sheep in the Muddy Creek area continues to negatively impact elk. It is likely that livestock grazing is less of a negative impact to wildlife forage than is the invasion of cheatgrass, particularly on winter range.

- **Fire and Vegetative Succession**

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

There have been some recent fires in DAU E-14, both prescribed and wildland. Numerous prescribed burns in the lower Battlements and west Mamm Creek have improved winter range conditions by creating multiple age structures and opening up dense stands of woodlands and oak brush. The McGruder fire in Redlands Mesa burned over 3,000 acres of primarily pinon-juniper woodland, dramatically improving winter range for deer and elk. The Wake fire between Hotchkiss and Paonia, in 1995, was another large fire that significantly improved wildlife habitat in formerly degraded areas. The Atwell fire of the early 1980's has come back and the new vegetation provides excellent winter range for both deer and elk. More recently, a fire south of Rulison in summer 2006 and the Jolley fire southeast of Silt, have burned through over-mature oak and pinon-juniper stands. These fires, after reseeding, will improve wildlife winter range by opening up dense, overgrown stands of pinon-juniper and oak brush.

Despite the benefits of wildland fires, there is the drawback that disturbance increases the possibility of noxious weed invasion, particularly of cheatgrass. The Wake fire, although reseeded with native vegetation after the fire, is currently

being taken over by cheatgrass, thereby significantly lowering the value to wildlife.

- **Public Lands vs. Private Lands**

Overall, there is very little difference in habitat condition between public and private lands in E-14. The primary differences are seen in forage availability in dry land vs. irrigated ranges, with irrigated lands providing much greater forage amounts, plant diversity, and vigor. Noxious weed invasion is also frequently lower on private than public lands. These private lands provide valuable winter range to elk in E-14.

Conflicts

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

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

Another significant portion of each committee's involvement in local big game management is participation in the DAU planning process. They ensure that private land habitat issues are considered in setting the DAU objectives and that conflict areas are identified and solution strategies are appropriate.

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

Two HHP committees are involved with DAU E-14, one on the north side of Grand Mesa and one on the south side. Both committees, the Grand Mesa (north side) and North Fork (south side), were established in 1995.

- **Elk 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 elk and other big game provided the landowner allows reasonable hunting access. In the past, elk damage to agricultural crops, particularly growing hay, in DAU E-

14 was quite high, particularly during the mid 1990's at the highest population levels. This damage type has been decreasing with the decreasing population. However, certain areas that winter large numbers of elk have not seen a corresponding decrease in damage. This ongoing damage has resulted from distribution issues rather than from an over-population of elk.

- **Elk Competition with Domestic Livestock**

There is some competition with domestic livestock for elk forage within the DAU. These types of competition will most likely increase as human activity is increasingly spreading out from population centers and more heavily impacting traditional winter and summer ranges. It is difficult to mitigate for this type of damage, particularly as available habitat decreases due to many human disturbances. The HPP committee is a valuable cooperator in dealing with this damage.

- **Elk Competition with Mule Deer**

The deer populations in the overlapping DAUs (D-12 and D-51) are increasing slowly (Figure 14). There is some concern that the elk herd has negatively impacted the deer herd through direct competition for spatial and forage resources.

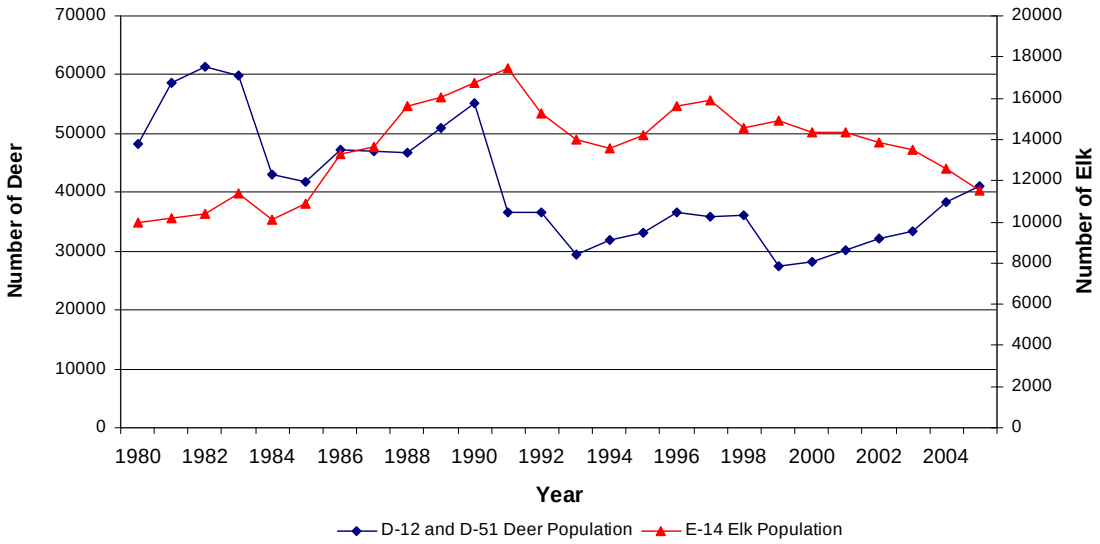


Figure 14. Elk and Mule Deer Populations in E-14, D-12 and D-51.

Although a direct 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 E-14 there is some competition between elk and mule deer, but mule deer population declines within the DAU are probably more directly related to habitat fragmentation, drought, decadent vegetation structure, and increased human activity than simply increased elk numbers.

ISSUES

Issue Solicitation Process

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

In an effort to solicit information from the interested public, the CDOW held open public meetings in Collbran, Grand Junction, Hotchkiss and Rifle during August and July of 2006, to gather recommendations on the goals and objectives of the DAU plan.

The Boards of County Commissioners (BOCC) from Mesa, Delta, Gunnison and Garfield Counties were also requested to provide input on the draft management plans and were invited to the local public meetings. No comments were received.

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

Issue Identification

There are many issues associated with elk management in DAU E-14. The primary goal of this management plan is to document those issues and, whenever possible, to identify strategies for resolution through solid wildlife management principles. Some primary concerns that have been identified in this area are elk competition with agriculture and domestic livestock; hunting opportunity and quality, habitat quality and quantity, and the present and future impacts of increased oil and gas developments. This is an adaptive process and the DAU process is repeated on a regular basis to account for the changing conditions within this DAU.

Oil and gas development is becoming an increasingly prominent issue in this DAU and its importance will only increase in the coming years. The impacts from the extensive development of these oil and gas reserves will very likely significantly impact elk management in the future. It is not within the scope of this document to anticipate and manage for all future impacts, particularly those of oil and gas development. However, through this DAU plan and planning process, the CDOW will attempt to quantify public opinion on elk management and elk populations within this DAU. In doing so, any and all impacts that detract from chosen herd management objectives and strategies will be identified as undesirable and the CDOW will work to minimize and mitigate for these impacts.

- **Issues and Concerns: CDOW**

Declining Habitat Quality, Particularly on Winter Range

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

In many areas in DAU E-14, the range and browse conditions are of significant concern. Although vegetative conditions are generally fair to good, degraded areas are more common on transition and winter ranges, which have a disproportionately severe impact on elk herd health and sustainability. Habitat quality in lower elevation areas on the Grand Mesa has also declined. Generally, the habitat quality decline has been caused by a lack of rejuvenation, invasive weeds and oil and gas development.

Although elk population numbers are generally considered to be within the objective range, and near to what the habitat should support, the distribution of elk across the range is often a source of conflict. These distribution issues could be mitigated by improved quality of the habitat available to the elk in this DAU.

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

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

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

Housing/Ex-Urban Development

The DAU has had substantial development in areas that were once part of elk winter range, particularly in the along the I-70 corridor and the areas surrounding Cedaredge, Hotchkiss and Paonia. Ranches have been subdivided and natural habitat quality is significantly reduced by fragmentation. This includes direct loss of habitat, effective loss of surrounding habitat due to harassment from people and pets. Development has significantly reduced the amount of useable winter

range. The Rifle, Silt, New Castle, Collbran and Mesa areas have all, in the last decade, seen a rapid development of housing in areas that once were elk winter ranges. Ranches have been subdivided and natural habitats have been changed or eliminated. This development has combined to reduce the amount of useable winter range for elk and puts added pressure on remaining lands.

Maintenance of Stable Elk Population and Meeting Public Demand for Elk Resource

CDOW's current objective is to maintain E-14 as a highly productive elk population that can annually support a harvest similar to those it has supported in the past. This DAU is managed primarily to provide maximum hunting opportunity. However, the maintenance of population levels that are acceptable to all segments of the interested publics is very difficult to achieve.

High populations have led to increased damage complaints in the past, but have also resulted in very high numbers of available licenses. As populations decrease toward current objective levels, there is concern that decreased license numbers will result in complaints from sportsmen who have traditionally made use of these licenses.

Hunter Access

An increasing problem in the DAU is access to huntable lands by non-landowning hunters. Large tracts of property owned by oil and gas companies, absentee landowners, and non-hunters are rarely accessible for hunting and create huge preserves, concentrating the elk, and reducing harvest opportunity. These large private properties are found throughout the DAU, but the problem is most critical in the Surface and Muddy Creek areas.

Another impediment to hunter access is found primarily in GMU 42, south of Parachute and Rifle. The elk and deer move off public lands in response to hunting pressure, and are therefore inaccessible to the majority of public hunters. This situation is not caused by a single large refuge, but by multiple small to mid-size landowners who allow access to only a small number of specific people. The result, of decreased hunter access to huntable deer and elk, is the same.

Conflict between Agricultural Interests and Elk

The majority of the internal (CDOW) and external publics consider the elk herd in DAU E-14 to be within the objective range. Thus, the damage problems result more from problems of distribution that of total numbers of animals. Concentration of elk on private land has been increasing as habitat quality has declined from development, drought, pinon-juniper encroachment, and other sources of fragmentation and disturbance.

Ranchers, primarily on the north side of the Grand Mesa, are increasingly concerned about elk foraging on summer ranges reducing available livestock forage. This is probably a minimal and localized problem associated with long-

term drought conditions and overall habitat decline. Additionally, recent spring and fall elk concentrations on hay meadows, sod farms, and other growing crops in the lower elevations are also of concern within the DAU.

Besides addressing the problems through the game damage laws, the CDOW has worked cooperatively with the local HPP committees to mitigate and compensate for damage. Late seasons have also been used to harvest elk that cause damage at lower elevations. These conflicts, while important, are localized and can be handled at a local level through the HPP committee with damage hunts and other small scale solutions. There is not a significant enough damage concern at this time to deal with damage at a population level, or by decreasing population objectives.

Natural Gas and Oil Development

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

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

These oil and gas developments generally have both direct and indirect impacts. Direct disturbance entails those impacts resulting directly from the installation and maintenance of drilling operations. They include the loss of habitat resulting form the footprint of the drill sites, fragmentation of habitat from roads and drill sites, and water quality declines associated with increased run-off, erosion, and pollutants. Elk and deer avoid areas of higher human activity and degraded habitats, and thus directly lose that habitat component.

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

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

- **Issues and Concerns: BLM**

A meeting was held in an effort to involve land management agencies in the DAU planning process. Four BLM Field Offices that manage BLM land within this DAU; the Gunnison, Montrose, White River, and Grand Junction Field Offices were invited to the meeting and requested to provide comments regarding elk management in E-14. No one from the BLM attended the agency meeting and no comments were received from any Bureau of Land Management personnel regarding issues or preferred alternatives. Input was received from the Grand Junction Resource Area regarding vegetative condition.

- **Issues and Concerns: USFS**

United States Forest Service lands within E-14 are managed by two different National Forests: the White River and the Grand Mesa, Uncomphahgre, and Gunnison Forest (GMUG). The following is a summary of recommendations from local personnel of the United States Forest Service. Full text of their comments can be read in APPENDIX B: TEXT OF COMMENTS FROM THE USFS.

The GMUG National Forests recommended that the population size objective range be changed to 10,000 – 12,000 elk, preferably nearer to 12,000 elk. The GMUG National Forests also expressed a preference for the population be managed for 20 -25 bulls/ 100 cows. The GMUG National Forests indicated that elk damage complaints were minimal in recent years. A new project to improve elk security habitat through new travel management regulations is under way to reduce overall road densities across the Forest.

The White River National Forest recommended that the elk herd be managed for a range of 10,000 – 12,000 elk and that the post-hunt bull: cow ratio objective be set at 20 – 25 bulls/100 cows. The WRNF cited very few elk damage complaints as well as future projects to maintain and improve elk winter and transition ranges in support of their recommendation. The WRNF also expressed concerns over the potential for increased energy development in this DAU and the likely impacts to winter and transition ranges.

- **Issues and Concerns: Grand Mesa and North Fork Habitat Partnership Project Committees**

Two Habitat Partnership Project Committees work with landowners and landowning agencies in DAU E-14, the Grand Mesa HPP Committee and the North Fork HPP Committee. During this planning process, both committees were advised of the DAU management plan revision and were requested to provide comments. The full text of these comments is included in APPENDIX C: TEXT OF COMMENTS FROM HPP COMMITTEES.

The Grand Mesa HPP Committee indicated that although damage is a very important issue, the levels have diminished significantly with the decreasing elk numbers in the DAU. Therefore, the Grand Mesa HPP Committee recommended maintaining the current management objectives of 10,500 elk and 20 – 25 bulls/ 100 cows.

The North Fork HPP Committee expressed a desire to slightly decrease the elk population due to winter range loss, habitat decline, and winter distribution of elk. The Committee was also interested in seeing improvements in bull quality and quantity. Therefore, the North Fork HPP Committee recommended moving to a population size objective of 9,000 – 11,000 elk and increasing the sex ratio objective to 25 – 30 bulls/ 100 cows.

Generally, both HPP Committees expressed the opinion that damage in DAU E-14 resulted primarily from high concentrations of elk on some private lands at critical times, as opposed to overall high elk numbers. In essence, the issue of damage results from distribution problems, rather than too many elk.

- **Issues and Concerns: Public Stakeholders**

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

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

Analysis of the questionnaire that was distributed at the public meetings and made available on the internet indicates that the majority of respondents wanted the elk population size to remain at current levels and the number and quality of bulls to increase, while maintaining unlimited hunting opportunities. There was more demand overall for unlimited bull hunting, and, as a result, maintaining bull/ cow ratios at current levels.

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

Colorado Mule Deer Association:

The Colorado Mule Deer Association recommended maintaining the status quo management regime for elk in DAU E-14 due to the anticipated impacts of oil and gas activities. Full text of their comments can be seen in APPENDIX D: COMMENTS FROM PUBLIC STAKEHOLDERS WITH QUESTIONNAIRE ANALYSIS.

- **Issues and Concerns: County Commissioners**

The Boards of County Commissioners from Mesa, Gunnison, Delta and Garfield counties were contacted as part of this DAU planning process. They were provided with a background of the planning process and the alternatives that were presented at the public meetings. No comments are received from any of the BOCCs.

ALTERNATIVE DEVELOPMENT

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

Post-hunt Population and Sex Ratio Objective Alternatives

- **Population Objective Alternatives**

8,000-10,000 elk; 10,000-12,000 elk; 12,000-14,000 elk

- **Sex Ratio Objective Alternatives**

15-20 bulls: 100 cows; 20-25 bulls: 100 cows; 25-30 bulls: 100 cows

Impacts of Objective Alternatives

- **Population Objective Alternatives**

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

Alternative 1: 8,000 – 10,000 elk:

This alternative would result in a 30% decrease in the population size of this herd from current levels, resulting in the lowest population levels in over 30 years.

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

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

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

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

Alternative 2: 10,000 – 12,000 elk:

This alternative would maintain the population size of this herd at current levels. There would be no change in license numbers or management regimes. Antlerless licenses will remain limited and overall numbers will be set at maintenance levels, while antlered licenses would remain at current levels.

Game Damage: Game damage problems would be moderate under this alternative. However, due to the lack of a severe winter since elk populations have been at this level, it is difficult to assess the level of damage that might occur.

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

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

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

Alternative 3: 12,000 – 14,000 elk:

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

Game Damage: Game damage problems, such as damage to growing hay, would likely increase. Local ranchers and farmers have indicated that damage has been less than that which occurred in the early 1990s.

Habitat Impacts: It is unlikely that the range can support this level of elk without impacts to habitat and other species, particularly mule deer. Intensive range improvements such as burning, fertilization, and other projects to reduce competition with elk and livestock would be necessary to maintain and hold the

population at this level. The CDOW's Habitat Partnership Program (HPP) would become vitally important for addressing fence and forage problems related to elk on both public and private lands.

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

Fiscal Impacts: Income to the DOW would likely increase. In the late 1980's and early 1990's populations at 12,400 level occurred in the DAU. So it is presumed that this population could be supported again. However, damage would increase, and the chances of disease would increase. Small die-offs might occur more often. After a severe winter, if ranges are in poor condition, harvest and license sales may be severely decreased. Initially, license sales would drop fairly dramatically since the population would need to be increased to the new level from the present level of about 11,500 elk.

- **Sex Ratio Objective Alternatives**

Sex ratio objectives determine the number of bulls: 100 cows. This characteristic most directly impacts the number of licenses issued and the quality and quantity of bulls that are available to be harvested. Since the population size objective is established separately, the total number of elk would remain the same. Therefore there would not be any effect on the habitat, the need for habitat improvement projects or game damage. There might be a minimal increase in moneys available for HPP due to increased licenses.

Alternative 1: 15-20 bulls: 100 cows:

This alternative would decrease the overall number of bulls within the population from the five year average of 22.7 bulls: 100 cows.

Season Framework: This alternative would require a change in seasons to achieve the objective. The CDOW would direct hunting pressure to the male segment of the population. This could be accomplished by lengthening the seasons and increasing licenses available in the limited 1st and 4th seasons.. Antler point regulations may need to be modified so that the bull harvest would be increased above present levels. Yearling bulls, on the average, make up more than 80% of the post-hunt bull segment. It would be necessary to harvest some males in this age class. Limited licenses allowing for harvest of yearling would be a possible alternative. If antler point restrictions were dropped completely, the bull ratio may drop below 10 bulls: 100 cows. Prior to 1986, when the 4 pt. restriction was implemented, the post-hunt bull ratio averaged 4.3

bulls: 100 cows. Another alternative would be to allow yearling harvest during the only one or two seasons.

Survival Rates, Quantity and Quality of Harvest: This alternative would produce the largest pre-hunt population because more cows would be necessary to maintain the herd at the population objective. Carrying more cows in the herd would increase the number of calves produced each year. This then would increase the overall harvest potential for the herd. Survival rates may not change, but the total number of elk lost to winter mortality may increase because more calves are being carried into winter and their mortality is somewhat higher than adults during this time. The quality of the harvest based on the production of trophy bulls would decrease in response to the hunting pressure placed on the males. It would be more difficult for bulls to survive successive hunting seasons so that they might reach the older age classes.

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

Alternative 2: 20-25 bulls: 100 cows:

This alternative would maintain the number of bulls in this herd at current levels. There would also be no change in the season structure. From 2001-2005, bull: cow ratios averaged 22.7 bulls: 100 cows, while from 1995-2005, the average was 21.6 bulls: 100 cows. Season framework, fiscal impacts, and survival rates, and quality and quantity of harvest would remain the same.

Alternative 3: 25-30 bulls: 100 cows:

This alternative would increase the number of bulls in this herd from the five year average of 22.7 bulls: 100 cows.

Season Framework: In order to attain this ratio it would be necessary to change the season structure to protect bulls in some manner. To increase the ratio, the harvest of bulls will necessarily decrease during hunting seasons. Increasing the number of bulls in the population will also require reducing the number of cows in the herd to maintain the population at the desired objective. This could be accomplished by shortening the season length, implementing more limited either-sex licenses; such as those used during the 1st and 4th limited seasons; or completely limiting all licenses in this DAU.

Survival Rates, Quantity and Quality of Harvest: The most likely method of increasing the number of bulls in the population would be to totally limit the number of licenses for both bulls and cows. This would lower the number of calves that are produced and lower the overall harvest potential for the herd. The quality (trophy bulls) of the bull harvest would be expected to improve

due to higher numbers of older age class bulls in the population. Survival rates would not change greatly, however, since there would be fewer calves in the population each year, overall rates would increase slightly.

Fiscal Impact: The number of licenses that could be sold would most likely decrease in any of the scenarios used to increase bull ratios. If totally limited licenses were used, the successful hunters would increase but total hunter numbers and recreation days would decrease. If shorter antlered seasons were used with the same number of hunters, the percent success, recreation days, and antlered harvest would decrease.

Both of the above alternatives would result in a drop in CDOW and local income and economic benefits that are derived from this herd. Totally limited licenses would result in the largest drop. However, if the number of mature bulls increased, wildlife photography and persons watching wildlife might increase. This would benefit local businesses, motels, restaurants, and others that depend on outdoor activities for income, although probably to a lesser degree than if hunting license numbers were maintained at current levels.

Additionally, although there would be no impacts to damage occurrence, less money would be generated for HPP projects, since the number of licenses sold would likely decline.

CDOW PREFERRED POPULATION SIZE AND COMPOSITION ALTERNATIVES

Preferred Population Size Objective Alternative

9,000 – 11,000 elk

Preferred Population Composition Objective Alternative

20 – 25 bulls/ 100 cows

Preferred Alternative Justification

- **Population Objective:**

The E-14 elk population has been decreasing steadily in response to hunting pressure to bring the population to objective. The current population size of approximately 11,500 animals is just above the objective of 10,500 animals that was set through the DAU planning process in 1994.

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

Land management agencies indicated overall satisfaction with the E-14 elk herd size. Although some conflict exists, range and browse conditions are generally good or improving.

Elk hunting in this unit is very popular and the demand appears to be increasing steadily during all seasons. Over the counter management provides opportunity to over 10,000 elk hunters annually. There is significant demand among sportsmen to continue providing over the counter management and liberal licenses on the Grand Mesa.

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

Due to the majority of internal, agency, and public input received, the CDOW recommends maintaining the elk herd in DAU E-14 at current levels and setting a population size objective of 9,000 – 11,000 elk. This range is not a change from the previous point objective of 10,500 animals. Rather, it is a reflection of the

inherent fluctuations in elk populations and the need for flexibility in managing large populations of wild elk.

- **Composition Objective:**

The CDOW recommendation is to change the composition objective to a range of 20 - 25 bulls/ 100 cows. DAU E-14 is one of the most popular hunting areas in the Colorado. Increasing the bull ratio would likely require a modification in the hunting season that would significantly impact hunter opportunity. Dramatic decreases in antlered license numbers would be necessary to increase bull ratios even 20%. This DAU appears to be maintaining acceptable bull ratios under current regulations.

There is some demand for older age-class bulls. However, there is significantly more demand for over the counter management.

Bull/cow ratios have generally been stable to increasing since the institution of antler point restrictions in 1986. Bull/cow ratios have averaged 22 bulls/100 cows over both the last five and ten year periods

The preferred alternative of 20 – 25 bulls/100 cows instead of 25 bulls/100 cows is not meant to alter the objective, merely to acknowledge the natural fluctuations in a wild elk herd over time. A range is a more realistic and feasible objective.

APPENDIX A: ELK POPULATION DYNAMICS

Numerous studies of biological populations of such species as bacteria, mice, rabbits, and white-tailed deer have shown that animal populations grow in a mathematical relationship that biologists refer to as a "sigmoid growth curve" or "S" curve (Figure 15). 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 15). 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".

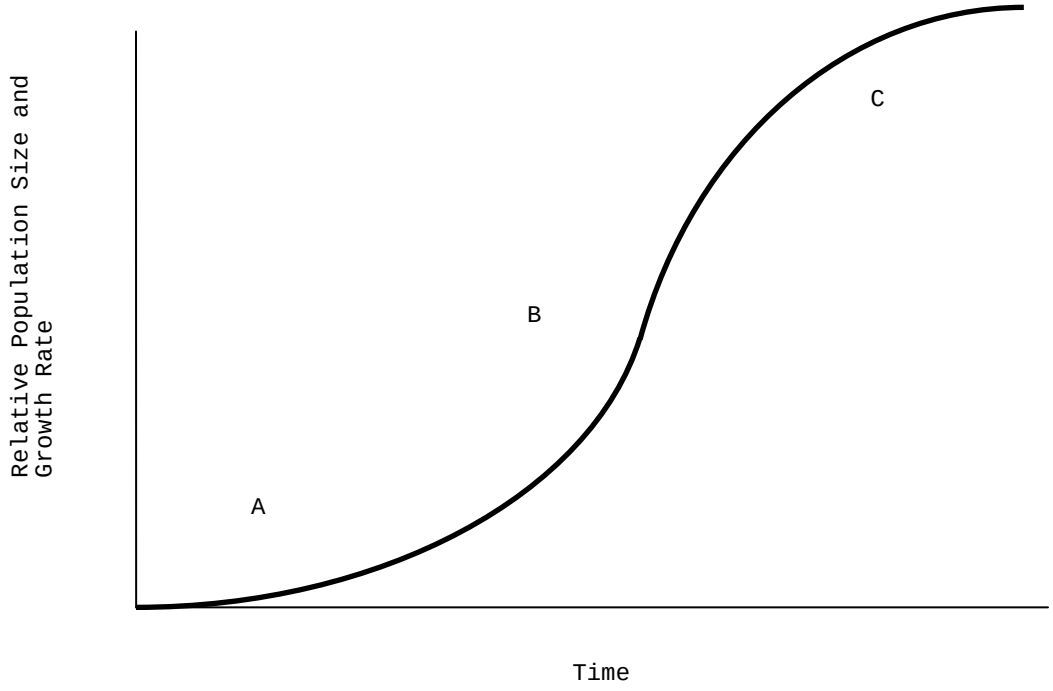


Figure 15. Sigmoid Growth Curve.

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 15). 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 15). 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 16). 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 16). 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.

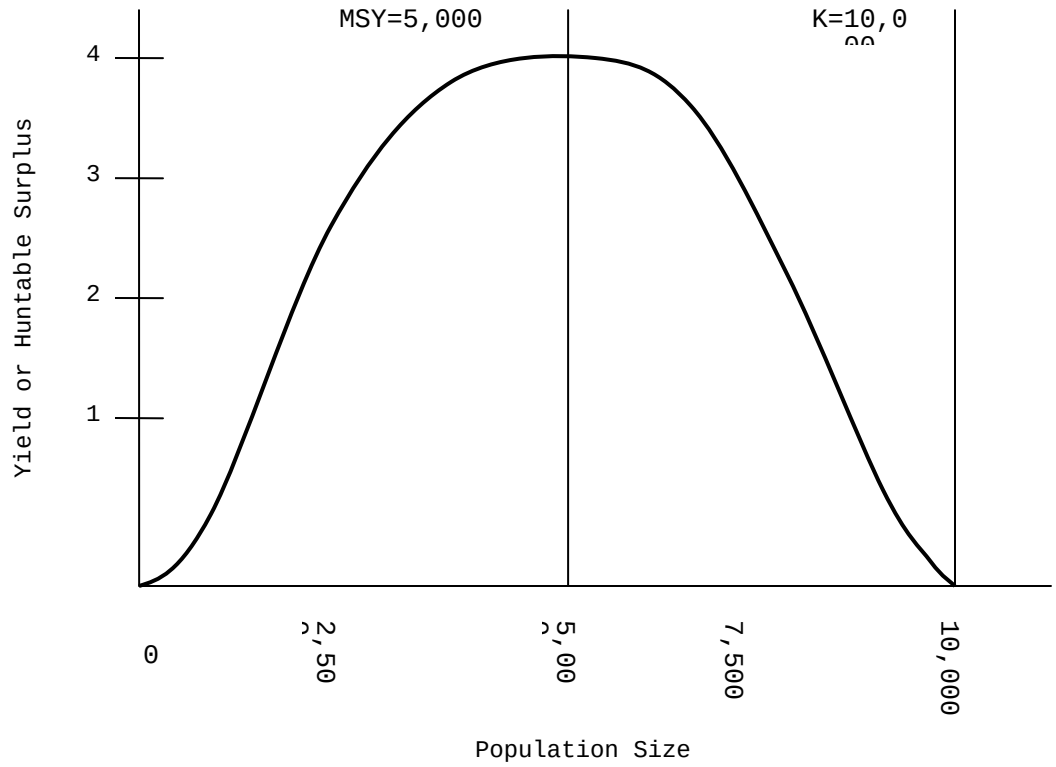


Figure 16. Maximum Sustained Yield and Maximum Carrying Capacity.

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

APPENDIX B: TEXT OF COMMENTS FROM THE USFS

Grand Mesa, Uncompahgre and Gunnison National Forests

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

Steph Dean

File Code: 2610
Date: September 6, 2006

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

Dear Ron:

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

Mule Deer DAU-12 (Grand Mesa North):

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

Elk DAU E-14 (Grand Mesa):

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

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

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

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

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Sincerely,

Steve Marquardt

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

White River National Forest

og: Russ
xc: J. Madison Steph
File copy

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

Supervisor's Office
900 Grand Avenue
P.O. Box 948
Glenwood Spgs., CO 81602-0948
(970) 945-2521
TTY (970) 945-3255
FAX (970) 945-3266

File Code: 2610
Date: September 7, 2006

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

Dear Ron:

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

Mule Deer DAU-12 (Grand Mesa North):

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

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

Elk DAU E-14 (Grand Mesa):

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

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

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

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

Sincerely,

MARIBETH GUSTAFSON
Forest Supervisor

APPENDIX C: TEXT OF COMMENTS FROM HPP COMMITTEES

Grand Mesa HPP Committee

Received September 9, 2006 via email.

Stephanie:

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

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

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

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

Thank you,

Renzo DelPiccolo
Chairman – Grand Mesa Habitat Partnership Program

North Fork HPP Committee

Received August 14, 2006 via email.

Divisional Correspondence Only

State of Colorado
DIVISION OF WILDLIFE
DEPARTMENT OF NATURAL RESOURCES

DATE: August 14, 2006

TO: Stephanie Duckett

FROM: Doug Homan, Chairman-North Fork HPP committee

Re: Recommendations to E-14 DAU plan

The North Fork Habitat Partnership Program committee makes the following recommendations to the plan:

For a population objective, the committee recommends a population range of 9000 – 11,000 which is between Alternative 1 and Alternative 2. The committee had a strong leaning to have a lower population objective then the current population level; however, they did not want to recommend the lower objective, Alternative 1. The committee based their decision on winter range loss, habitat decline and winter distribution of elk.

For a sex ratio objective, the committee recommends Alternative 3, 25 – 30 bulls / 100 cows. They wanted to see the quality of bulls increase.

The committee felt that the game damage issues involved in the committees portion of E-14 were better defined by those DWM's who managed the GMU's, therefore, their comments are included.

GMU's 411 and 52 – Bob Morris:

The game damage issues for elk in GMU 52 mostly involve ranches and farms which are located near the edge of large contiguous areas of cedars and pinon juniper around Cedaredge and Hotchkiss. The key areas of concern are Wolf Park, Cactus Park, Leroux Creek near the 7X, and the ranches north of Cedaredge. The damage involves fences, standing forage in pastures, and some hay stack damage which are not fenced. Orchards are not much concern as they are mostly fenced. In the spring there is some conflict with newly planted crops (mostly hay and oats). There is little conflict during the summer, but increased conflict after the beginning of hunting season as the elk are pushed onto private ground.

The game damage issues for elk in GMU 411 mostly involve ranches and farms which are located near the edge of large contiguous areas of cedars and pinon juniper around Cedaredge. The key areas of concern are the ranches west and northwest of Cedaredge. The damage involves fences, standing forage in pastures, and some hay stack damage which are

not fenced. Orchards are not much concern as they are mostly fenced. In the spring there is some conflict with newly planted crops (mostly hay and oats). There have been a few cows beginning to calf in the lower private country which has raised concerns with some landowners. There is little conflict during the summer, but increased conflict after the beginning of hunting season as the elk are pushed onto private ground.

GMU 521 – Kirk Madariaga:

The game damage issues for elk in GMU 521 mostly involve the river bottom corridor near the towns of Hotchkiss, Paonia and Bowie. There is some conflicts in the East Muddy Creek areas also. The mesas just to the North of Hwy 133 are also heavily used by elk in this GMU. The damage involves fences, standing forage in pastures and some hay stack damage on stacks and orchards that are unfenced (although this is less and less as we get them fenced). There is some damage on orchards that are fenced but not maintained properly to keep elk out of the orchards. In the summer there is some conflict with elk on growing hay fields.

APPENDIX D: COMMENTS FROM PUBLIC STAKEHOLDERS WITH QUESTIONNAIRE ANALYSIS

Questionnaire Answers

Background Information

- **Question 1:**

Respondents: 20
Resident: 20
Non-resident: None

All respondents were residents of Colorado.

- **Question 2:**

Respondents: 19
Residents of E-14: 10
Non-residents of E-14: 9

A slight majority of respondents lived within DAU E-14.

- **Question 2A:**

Respondents: 10
Average length of residence: 37.6 years
Median length of residence: 35.5 years
Minimum length of residence: 12 years
Maximum length of residence: 62 years

Of the respondents who lived in E-14, all had lived in the DAU for at least 12 years.

- **Question 3:**

Respondents: 20
Landowners in E-14: 9
Non-landowners in E-14: 11

The majority of respondents did not own or lease property in DAU E-14.

- **Question 3A:**

Respondents: 8
Average length of property ownership: 32.4 years
Median length of property ownership: 29 years
Minimum length of property ownership: 12 years
Maximum length of property ownership: 58 years

Of the respondents who owned property in E-14, all had owned property in the DAU for at least 12 years.

- **Question 4:**

Respondents: 19

A: 8
B: 3
C: 10
D: 3
E: 18
H: 2
I: 1

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

- **Question 5:**

Respondents: 19

A: 5
B: 0
C: 0
D: 1
E: 13
H: 0
I: 0

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

People and Elk

- **Question 1:**

Respondents: 18

A: 2.4
B: 3.5
C: 2.1
D: 3.4
E: 4.1
F: 3.9
G: 2.4
H: 3.4
I: 2.8
J: 3.2

Respondents most frequently indicated that they were very concerned about loss of habitat. Starvation of elk during winter was the second biggest concern among the respondents, followed by economic losses to rancher/farmers. Damage to homeowners' trees, shrubs, and gardens caused the least concern among all respondents.

- **Question 2:**

Respondents: 21
Affected: 12
Not-affected: 9

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

- **Question 2A:**

Respondents: 7

A: 1
B: 1
C: 0
D: 1
E: 4
F: 0
G: 0
H: 0
I: 0
J: 0

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

- **Question 3:**

Respondents: 20
Do not enjoy/nuisance: 1
Enjoy/worry: 8
Enjoy/don't worry: 9
No opinion: 2

Nine out of 18 respondents indicated that they enjoy the elk in E-14 and do not worry about the problems they cause. Eight of the respondents indicated that they enjoy the elk and do worry about problems they cause. One respondent indicated that he does not enjoy the elk in E-14 and regards them as a nuisance, while two respondents expressed no opinion for the elk in E-14.

Elk Management

- **Question1:**

Respondents: 20
Decrease: 4
Stay the Same: 12
Increase: 4
Don't know: 0

The majority of respondents wanted the elk population size to remain the same. Equal smaller percentages wanted to either increase or decrease the population size.

- **Question 2:**

Respondents: 20
Decrease: 5
Stay the Same: 10
Increase: 4
Don't know: 0

The majority of respondents wanted the elk population size objective to remain the same, while smaller percentages wanted either raise or lower the objective.

- **Question 3:**

Respondents: 20
Not Important: 2
Slightly Important: 3
Important: 5
Very Important: 10
Don't know: 0

The majority of respondents indicated that the population size change was very important to them.

- **Question 4:**

Respondents: 20
Decrease: 1
Stay the Same: 6
Increase: 13
Don't know: 0

The majority of respondents wanted the number of bull elk to increase.

- **Question 5:**

Respondents: 20
Decrease: 1
Stay the Same: 7
Increase: 12
Don't know: 0

A majority of respondents wanted the objective for bull elk to increase. There was also a significant portion of respondents who want the number of bull elk to remain the same.

- **Question 6:**

Respondents: 20
Hunt every year: 8
Equally important: 9
Trophy: 3

Eight out of 20 respondents indicated that it was more important to hunt every year, while nine responded that it was equally important to harvest a trophy animal and to hunt every year. Three respondents indicated that it was more important to harvest a trophy animal.

Elk Hunting

- **Question1:**

Respondents: 21
Hunted: 21
Not hunted: None

All respondents had hunted elk in Colorado.

- **Question 1A:**

Respondents: 19
Average length of hunting: 30.2 years
Median length of hunting: 30.0 years
Minimum length of hunting: 9 years
Maximum length of hunting: 51 years

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

- **Question 2:**

Respondents:	21
Hunted in E-14:	20
Not hunted in E-14:	1

The majority of respondents had hunted in DAU E-14.

- **Question 3:**

Respondents:	20
Very Dissatisfied:	3
Slightly Dissatisfied:	4
Neutral:	5
Slightly Satisfied:	5
Very Satisfied:	3

Thirteen out of 20 respondents indicated that they neutral to very satisfied with their hunting experience in E-14. Seven out of 20 respondents expressed dissatisfaction.

- **Question 4:**

Respondents:	20
Extremely Crowded:	4
Moderately Crowded:	7
Slightly Crowded:	6
Not at all Crowded:	3

Seven of 20 respondents indicated that they felt moderately crowded. Six respondents felt slightly crowded, and 4 respondents felt extremely crowded in E-14. Three respondents did not feel crowded.

- **Question 5:**

Respondents:	20
Less Hunter crowding:	3
Higher Hunter Success Rates:	2
Less motorized travel:	6
More mature bulls:	6
More elk:	2

Equal numbers of respondents indicated that seeing more mature bulls and less motorized travel were the most likely ways to improve their elk hunting experience in E-14. Less hunter crowding was ranked the third most likely way to improve the experience, and more elk and higher hunter success rates were ranked the least likely ways to improve experience.

- **Question 6**

Respondents:	19
Poor:	1
Fair:	3
Good:	10
Very Good:	4
Excellent:	1
No Opinion:	0

Ten out of 20 respondents indicated that the quality of elk hunting in E-14 is good. One rated the hunting poor, while 3 respondents indicated fair hunting quality. Four respondents indicated very good hunting quality and one ranked the hunt quality excellent.

- **Question 7:**

Respondents:	19
Not seeing other hunters:	5
Obtaining game meat:	8
Trophy:	6

Of the 19 respondents, five indicated that not seeing other hunters was most important to them when hunting in E-14, while 8 reported that obtaining game meat and 6 reported harvesting a trophy elk was most important.

Text of Comments from Questionnaires

E-1

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

E-2

Your game damage procedure form for winter damage costs us in time and gas to check and with no reimbursement for that you hardly pay anything and just

expect us to put up with large herds of elk on our private ground. The wildlife biologist in 521 does not feel game damage tags for cow elk will solve anything for damage so he refuses to issue any unless the elk are chasing cattle out of hay being fed. Elk seem to concentrate in areas after season is over and we need a way to move them off private land. Shooting a cow every 3 to 5 days moves them off our land and helps when the HPP committee had control of issuance of cow damage tags we at least could move the elk away. Now we have to put up with them as the field biologist has control not the HPP.

Car accident on Hwy. 133

Elk grub our pastures every year. I see where predators take a large calf toal. With a large concentration of elk in the winter, you will have a major loss if we have a hard winter. Elk deplete nutriants in from soil by eating forage that…(unreadable)

E-3

I think the elk management in these areas has been good. Good numbers of elk live in these units. Lots of elk, but not much quality. It's hard to see many quality bulls. Too many hunters! If they see a legal bull, they take it. I think the 4 pt. restriction is good, and continues to be a good rule.

E-4

No comments.

E-5

I enjoyed your presentation at P.V. school on 7-31-06. I do feel that you have near the right number of elk for the unit and that with this number we have a fair chance at a good deer herd. I think you need to try and keep the Non Res. licences [*sic*] at current levels to keep revenue for DOW and help the outfitters and bussiness [*sic*] people viable in their professions. Also figure and make available to the public the increased cost of licences [*sic*] to residents by cutting non resident licences [*sic*].

E-6

Put out guaranteed licenses for youth hunters if only cow tags. We want the youths to hunt so make sure they have the opportunity. Harvest more predators.

E-7

I fear that our elk populations are dropping much more than your numbers suggest. We are looking at the same situation we had with deer from 1984 through 1994 where we were seeing a significant drop in numbers on the ground and your numbers did not show it and you kept giving out doe licenses. I spoke with a Forest Service biologist that spent the summer of 2004 on the Grand Mesa

and saw no elk. We flew the LeRouix [*sic*] Creek and Stevens Gulch before archery season and saw very few elk.

"Survival of the Fittest" is a basic tenet of biology. By having only raghorns breeding we have removed most of the selection on the bull side weakening the overall genetic strength of our elk herds.

Our DWM's should have more control of managing our herds as they are on the ground monitors.

I would like to see 5 mature bulls per 100 cows post hunt to see a herd structure with our best bulls breeding our cows. A raghorn running with 3 cows is not a positive for our herds.

I would like to see Grand Mesa used as a pilot area where only spikes are allowed one year and only 6 point or better are allowed to be taken the next year (alternating each year).

E-8

No comments.

E-9

I believe that maintaining plentiful numbers of elk, in these (and all) GMU's is crucial to secure the participation and dedication of current and future generations of hunters.

I believe that numbers of elk are more important than size (trophies). There are always opportunities for those willing to be patient (preference points) or willing to spend more money (private hunts) to hunt for a trophy.

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

E-10

To [*sic*] many people with ATV's not riding where they should. No body walks any more. I won an ATV but am very carefull [*sic*] when and where I ride. I am not the only person out there. Stay on trail people.

E-11

I would like to see vouchers for cow elk given to ranchers who have problems with elk on hay and pasture ground or destroying haystacks. The hay they don't eat they urinate on and other livestock will not eat it. I believe a voucher system would work better than a damage hunt as the rancher could contact people that may have youth hunters or maybe handicapped persons that would give him more control in the numbers of hunters at one time.

E-12

Need to raise the mature bull ratio to 7-10 bulls per 100, the current 2 mature bulls per 100, would like to see go to a 50% draw only.

E-13

Strategy #2 is my choice, however, if the strategy drifted toward option 3 some, I think it would be OK.

Numbers of animals = same (do not increase numbers)

Impacts brought on by drilling rigs must be monitored by DOW people in the field. Keep detailed reports. Stay in touch with energy mngmnt. [*sic*] for the "Finger on the Pulse" info. Energy employees are concerned about vehicle damage caused by animals; not concerned about how many are killed unless [*unreadable*]. Example note the size and strength of guards on the front of their trucks.

E-14

Current objectives are good

Population 10-12,000 elk

Sex ratio 20-25 bulls/100 cows

We need reasonable opportunities to access all the elk on private ground during hunting seasons ($500+ trespass fees are not reasonable)

E-15

We need to do something about our elk pop. and I think at the end of all seasons if kill is poor, DOW should permit unused tags to get stamped or whatever and let hunters with unused tags to go try to fill them. DOW should provide list of landowner and phone numbers in DOW office for hunter to come down and get so we know some rancher names and numbers that are having trouble with elk. All tags not filled in there [*sic*] season will be cow tags no bull tags at all.

Stop permits to drilling or selling or trading BLM or Forest or any state or government land and if we don't we will ALL!!!! Lose.

If we don't try now we will all lose.

E-16

No comments.

E-17

No comments.

E-18

The herd is in great shape and about the right size Thank for a great job

Don White

E-19

No comments.

E-21

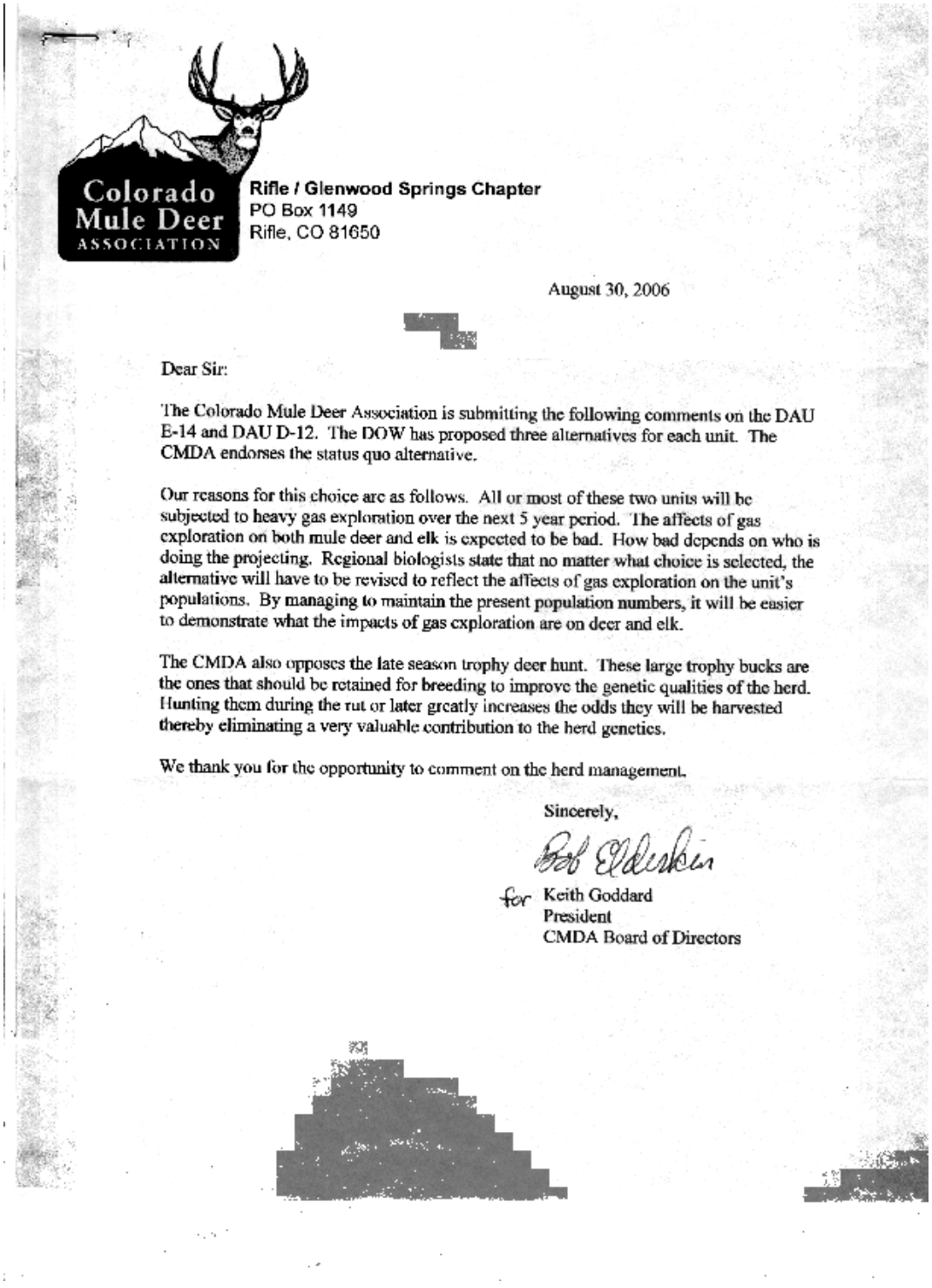
The elk in increased in 521 to the point of doing damage to the range, trees, and good will of the land owners. Harvest of the elk is hampered by people that don't allow hunting and patrol their boundaries. It is going to take a different times to hunt the area under special hunts and working with land owner much closer.

E-22

1. I continue to be upset with the attitude expressed by some DOW officers in the area in regard to the impact of high concentrations of elk on private land. They seem to feel that since we derive some income from hunters who should stop complaining about impact on our pastures and hay ground.

2. If changes are to be made in harvest numbers, numbers of licenses available for cows or bulls in each season, these numbers need to change gradually – otherwise there is potential for huge impact on income from year to year. This will impact all segments of the local economies. Dixie Luke Jacobs Ranch – McClure Pass.

Text of Comments from Colorado Mule Deer Association



Colorado Mule Deer ASSOCIATION

Rifle / Glenwood Springs Chapter
PO Box 1149
Rifle, CO 81650

August 30, 2006

Dear Sir:

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

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

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

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

Sincerely,

Bob Elderkin

for Keith Goddard
President
CMDA Board of Directors

APPENDIX E: PUBLIC QUESTIONNAIRE

OPPORTUNITY FOR PUBLIC COMMENT

ELK MANAGEMENT

In the Grand Mesa Area
COLORADO

Data Analysis Unit E-14
(Game Management Units 41, 42, 411, 421, 52, and 521)

The Colorado Division of Wildlife is interested in your opinions about elk management in the Grand Mesa Area. The results of this effort will help wildlife managers prepare elk management plans for this area. This questionnaire is your opportunity to provide input on the management of elk in Game Management Units 41, 42, 411, 421, 52, and 521.

Colorado Division of Wildlife

Northwest Region Service Center

711 Independent Ave.

Grand Junction, CO 81505

Dear Interested Citizen:

The Colorado Division of Wildlife (CDOW) is interested in your opinions about elk on the Grand Mesa, including Game Management Units (GMUs) 41, 42, 411, 421, 52, and 521. Wildlife managers have begun the process of updating the elk management plan for this area, which will affect future harvest strategies and permit setting.

In Colorado, big game populations are managed for a specific geographic area, which we call a Data Analysis Unit (DAU). A DAU generally includes several GMU's. In this case, the Grand Mesa DAU includes GMUs 41, 42, 411, 421, 52, and 521.

The purpose of the DAU plan is to determine: 1) how many elk the DAU should support, and 2) what sex ratio (number of bulls per 100 cows) 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 elk 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 elk herd objectives (population size and sex ratio) on the Grand Mesa. Our recommendation will then be incorporated into the DAU plan, which will be reviewed, and ultimately approved, by the Colorado Wildlife Commission. Please be assured that your responses will remain confidential.

Surveys must be returned to the CDOW Grand Junction Service Center by September 6, 2006.

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

TO RETURN THIS QUESTIONNAIRE:

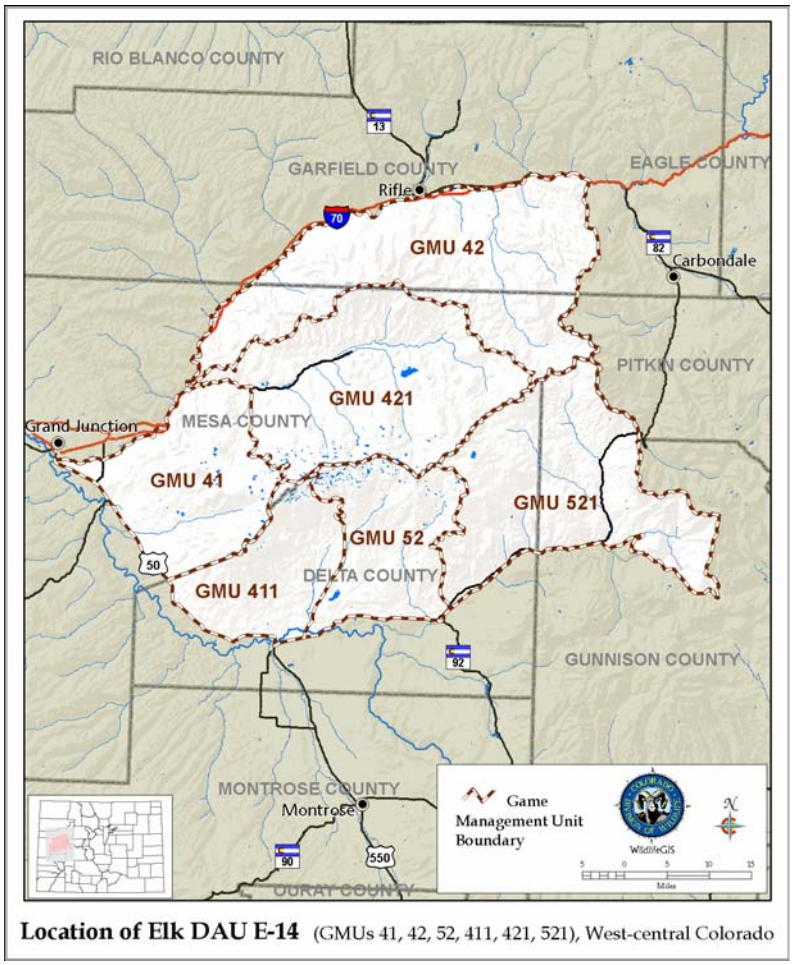
Please fold in half on dotted line, tape it closed (do not staple) and complete during the meeting, hand deliver, or mail to:

Colorado Division of Wildlife

711 Independent Ave.

Grand Junction, CO 81505

First, please examine the map and written description of the areas designated as Data Analysis Unit E-14, Game Management Units 41, 42, 411, 421, 52, and 521 located in West-Central Colorado, then go to Question 1.



Location of Elk DAU E-14 (GMUs 41, 42, 52, 411, 421, 521), West-central Colorado

Description of DAU E-14:
DAU E-14 is located in west-central Colorado. It is bounded on the north by the Colorado River, on the east by South Canyon from the Colorado River to Sunlight Peak and from Sunlight Peak along the Gunnison-Pitkin County line to McClure Pass, the White River/Gunnison National Forest boundary to Ruby Range Summit, Ruby Range Summit to Kebler Pass; on the south by Gunnison County Road 12 then by Colorado 92 to Delta and on the west by US Highway 50. The DAU is comprised of four counties: Mesa, Delta, Gunnison, and Garfield.

BACKGROUND INFORMATION

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

2) Do you live in GMU's 41, 42, 411, 421, 52, and 521?
_____ Yes If yes, how many years and in what GMU?_____
_____ No

3) Do you own or lease property in GMU's 41, 42, 411, 421, 52, and 521?
_____ Yes If yes, how many years and in what GMU?_____
_____ No

4) Which group(s) best represent your interests in elk management in GMU's 41, 42, 411, 421, 52, and 521? *(Check all that apply)*

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

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

PEOPLE AND ELK

1) Please indicate how concerned you are about each of the following in GMU's 41, 42, 411, 421, 52, and 521. *(Circle one number for each item).*

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

2) Have you been personally affected by any of the concerns listed in Question 2 in GMU's 41, 42, 411, 421, 52, and 521?

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

3) How do you personally feel about elk in GMU's 41, 42, 411, 421, 52, and 521?

(Check ONE)

_____ I do not enjoy the presence of elk in GMU's 41, 42, 411, 421, 52, and 521, AND regard them as a nuisance.

_____ I enjoy the presence of elk in GMU's 41, 42, 411, 421, 52, and 521, BUT worry about the problems they may cause.

_____ I enjoy the presence of elk in GMU's 41, 42, 411, 421, 52, and 521, AND do not worry about the problems they may cause.

_____ I have no particular feelings about elk in GMU's 41, 42, 411, 421, 52, and 521.

ELK MANAGEMENT

1) How would you like the elk population in GMU's 41, 42, 411, 421, 52, and 521 to change, if at all?
   _____ Decrease
   _____ Stay the same
   _____ Increase
   _____ Don't know

2) The population is currently slightly above the population objective. How would you like the elk population **objective** in GMU's 41, 42, 411, 421, 52, and 521 to change, it at all?
   _____ Decrease
   _____ Stay the same
   _____ Increase
   _____ Don't know

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

Not Important	Slightly Important	Important	Very Important	Don't Know

4) How would you like the number of bull elk in GMU's 41, 42, 411, 421, 52, and 521 to change, if at all?
   _____ Decrease
   _____ Stay the same
   _____ Increase
   _____ Don't know

5) The objective for bull elk is currently 25 bulls: 100 cows. How would you like the **objective** for the number of bull elk in GMU's 41, 42, 411, 421, 52, and 521 to change, if at all?
   _____ Decrease
   _____ Stay the same
   _____ Increase
   _____ Don't know

6) Is it more important to you to hunt every year or to harvest a trophy animal?
   _____ More important to hunt every year
   _____ Equally important
   _____ More important to harvest a trophy animal
   _____ Don't know

ELK HUNTING

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

2) Have you ever hunted elk in GMU's 41, 42, 411, 421, 52, and 521?

_____ Yes
_____ No

3) Overall, how satisfied have you been with your elk hunting experience(s) in GMU's 41, 42, 411, 421, 52, and 521 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 elk hunting in GMU's 41, 42, 411, 421, 52, and 521? *(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 elk hunting experience in GMU's 41, 42, 411, 421, 52, and 521. (1=most likely to improve, 4=least likely to improve) Do not use any number more than once.

_____ Less hunter crowding
_____ Higher hunter success rate
_____ Seeing more mature bulls
_____ Seeing more elk

6) Overall, how would you rate the quality of elk hunting opportunities available in GMU's 41, 42, 411, 421, 52, and 521? *(Circle ONE)*

Poor	Fair	Good	Very Good	Excellent	No Opinion

7) Which ONE factor is the MOST important to you when elk hunting in GMU's 41, 42, 411, 421, 52, and 521? *(Check ONE)*

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

WRITTEN COMMENTS:

Please use the space below for any additional comments you would like to make about elk in GMU's 41, 42, 411, 421, 52, and 521**.**