Data Analysis Unit E-52

Elk Management Plan

Game Management Units 53 & 63

Colorado Division of Wildlife
300 W. New York Av.
Gunnison, CO 81230

Prepared by
Brandon Diamond
Terrestrial Biologist
December 2005

TABLE OF CONTENTS

DAU E-52 (Coal Creek/Fruitland Mesa)
EXECUTIVE SUMMARY
December 2005

GMUs: **53 and 63**
Land Ownership: **32% Private, 47% USFS, 14% BLM, 5% NPS, < 2% State**
Posthunt Population: Objective **2,200-2400** 2004 Posthunt Estimate **2,700**
Posthunt Sex Ratio: Objective **18-23:100** 2004 Posthunt Observed **22:100** 2004 Modeled **18:100**

Figure 1. E-52 Posthunt Population Estimate

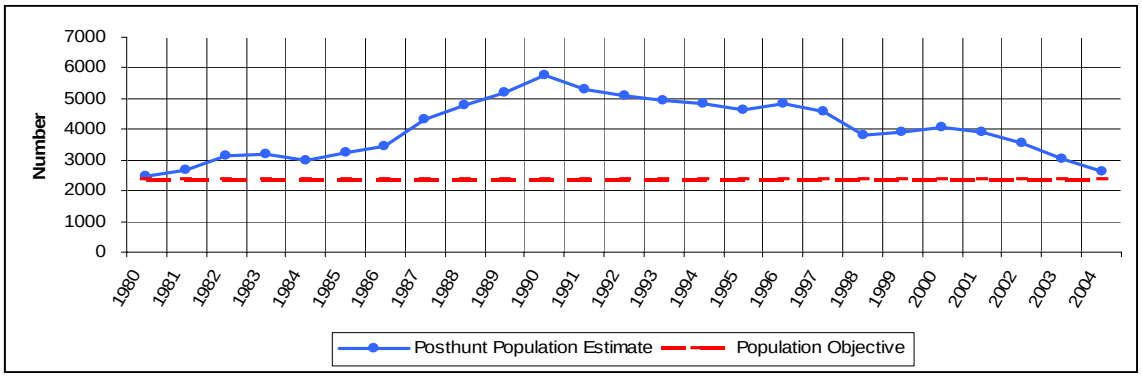


Figure 2. E-52 Harvest

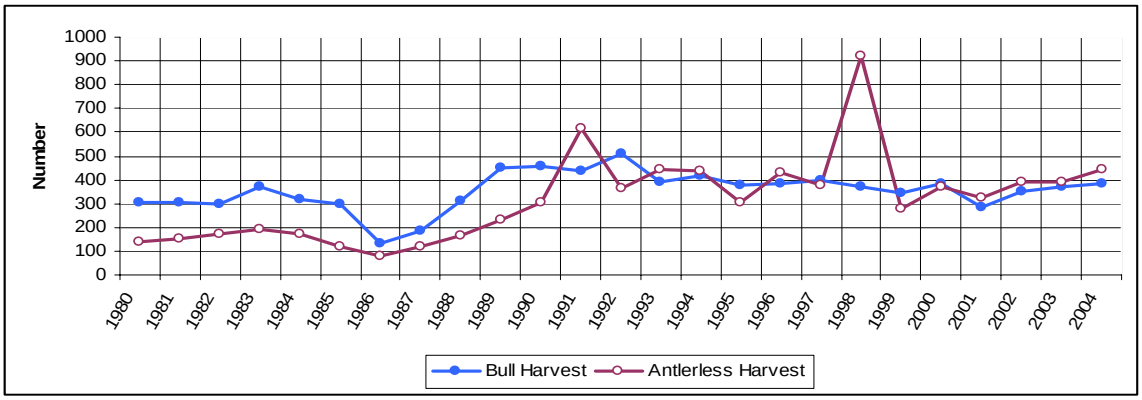
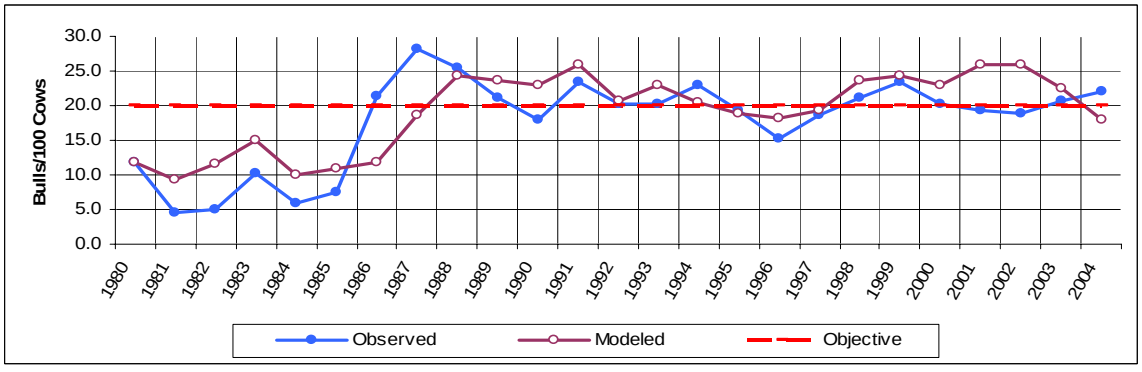


Figure 3. E-52 Posthunt Sex Ratios



E-52 Background

E-52 has traditionally been a popular hunting destination for resident and non-resident hunters. The DAU was established in 1996 following a radio collar study in former DAU's E-42 (GMU 53) and E-44 (GMU 63) that demonstrated overlap between elk ranges in those units. Units 53 and 63 are both currently managed for maximum opportunity, and most bull licenses are available over-the-counter.

The 2004 posthunt population estimate is approximately 2700 animals, which is over the current objective. Modeled estimates indicate that the elk population in E-52 experienced a significant increase in the late 1980's which continued into the early 1990's. Efforts were made to increase antlerless harvest in the DAU, with a record harvest of more than 900 cows and calves taken during the 1998 hunting season. Models indicate that subsequent to 1998, the elk population in this DAU has been stable to decreasing. The bull to cow ratio in this DAU has averaged 20:100 over the last ten years, which is meeting the current objective of 20:100 and has been compatible with maximum bull hunting opportunity.

Over the last twenty years, total hunter numbers have averaged around 3400 annually with a peak of 5600 occurring in 1998. During the last ten years success rates have been near 19% with approximately 800 elk being harvested annually.

E-52 Significant Issues

The CDOW recognizes that the elk herd is currently over objective in this DAU and has continued to issue liberal numbers of antlerless licenses in order to boost harvest and achieve objective. The majority of public comments received during this planning process have indicated that the current population objective is acceptable, but distribution problems exist throughout E-52. Animal distribution is certainly an issue in this DAU with apparently increasing numbers of "resident" elk on private lands which is leading to conflicts throughout the year. It has been hypothesized by various stakeholders that increasing human recreational and early-season hunting pressure on public lands is driving elk to private lands and National Park Service lands during the late summer and early fall where they are unavailable to the majority of public land hunters. These issues appear to be most pronounced in the Montrose County portion of GMU 63 between Black Mesa and the Black Canyon of the Gunnison National Park. The majority of this DAU is public land, but most of the elk winter range is situated on or adjacent to lower elevation private lands where agricultural operations predominate. Development, noxious weed invasion, plant succession, and game damage are all key issues on the winter ranges in E-52.

The North Fork HPP committee has recognized these issues and has worked diligently to facilitate and improve landowner communication and cooperation. A significant number of projects have been done on private and public lands during the last five years to address fence and forage conflicts throughout the DAU. HPP has also facilitated a joint research project that is underway between the CDOW, USGS, BLM, and NPS, which is intended to provide insight into elk movement patterns in relation to motorized use on public lands.

Limiting bull hunting across all seasons is another significant issue that has been suggested repeatedly throughout this planning process with three primary objectives discussed: one, increase the bull:cow ratio and maintain more older age-class bulls in the population, two, decrease hunter crowding and enhance the hunting experience, and three, attempt to influence elk distribution throughout the year by lessening hunting pressure on public lands.

E-52 Management Alternatives

Three posthunt population objectives were proposed for E-52 (1) 2200-2400, (2) 2400-2600, (3) 2000-2200. The suggested alternatives have been presented as population ranges rather than a fixed number. Setting an objective as a range recognizes that population modeling is a continuously evolving, inexact science, but more importantly, a range allows greater flexibility on an annual basis for management actions in a DAU. The CDOW does not recommend increasing the population objective for E-52 (alternative 2)

due to winter range limitations and the potential for game damage conflicts. Most of the public comments received supported maintaining the current population objective.

There have been two posthunt sex ratio objectives proposed during this DAU planning process, which are also presented as ranges (1) maintain status quo (18-23 bulls:100 cows), or (2) increase the postseason bull:cow ratio objective to 25-30:100. In E-52, the existing bull:cow ratio objective of 20:100 is being achieved, however, the CDOW has received a substantial number of letters supporting limited bull hunting in the DAU in order to increase the bull:cow ratio. Those interested in limited bull hunting were made aware of the nomination process established by the CDOW in 2004. No formal nomination occurred for limiting bull hunting in E-52 during this planning process.

Proposed Alternatives:

Alternative #1
Maintain the population near the current objective (2200-2400), with a post season bull:cow ratio of 18-23:100.

Alternative #2
Increase the population above the current objective by approximately 10% (2400-2600), with a post season bull:cow ratio of 18-23:100.

Alternative #3
Decrease the population below the current objective by approximately 10% (2000-2200), with a post season bull:cow ratio of 18-23:100.

Alternative #4
Maintain the current population objective (2200-2400), but increase post-season bull:cow ratios to 25-30 bulls:100 cows.

Area 16 Division of Wildlife staff recommends *Alternative #1* as the preferred alternative. Alternative #1 is essentially status quo, with a slightly modified population objective (range of 2200-2400), and bull:cow ratio objective (18-23:100). Ranges have also been recommended for setting the bull:cow ratio objective. This will allow greater flexibility in annual management, and takes into account the annual variability in classification data.

Throughout this planning process, there was little support for increasing or decreasing overall elk numbers in E-52. The majority of public comments received during planning supported increasing the post season bull to cow ratio in the DAU, although it is unlikely that this could be accomplished without additional bull hunting restrictions during those seasons with unlimited licenses. Antlerless licenses will continue to be adjusted to facilitate maximum harvest until this population is at objective. Pending research focusing on local elk movements, timing, and distribution will hopefully provide wildlife managers with an enhanced ability to target animals for harvest throughout the year.

INTRODUCTION AND PURPOSE

The Colorado Division of Wildlife (CDOW) manages wildlife for the use, benefit and enjoyment of the people of the state in accordance with the CDOW's Strategic Plan and mandates from the Wildlife Commission and the Colorado Legislature. Colorado's wildlife resources require careful and increasingly intensive management to accommodate the many and varied public demands and growing impacts from people. To manage the state's big game populations, the CDOW uses a "management by objectives" approach (Figure 1). Big game populations are managed to achieve population and sex ratio objectives established for data analysis units (DAUs). Each DAU generally represents a geographically discrete big game population. The DAU planning process establishes herd objectives that support and accomplish the broader objectives of the CDOW's Strategic Plan.

COLORADO'S BIG GAME MANAGEMENT BY OBJECTIVE PROCESS

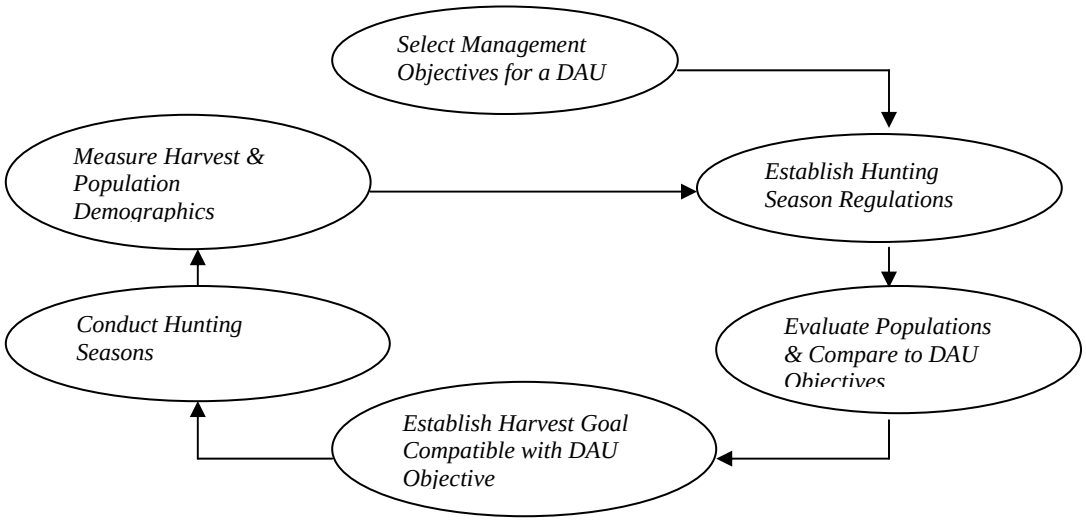


Figure 1. Management by objectives process used by the CDOW to manage big game populations on a DAU basis.

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

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

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

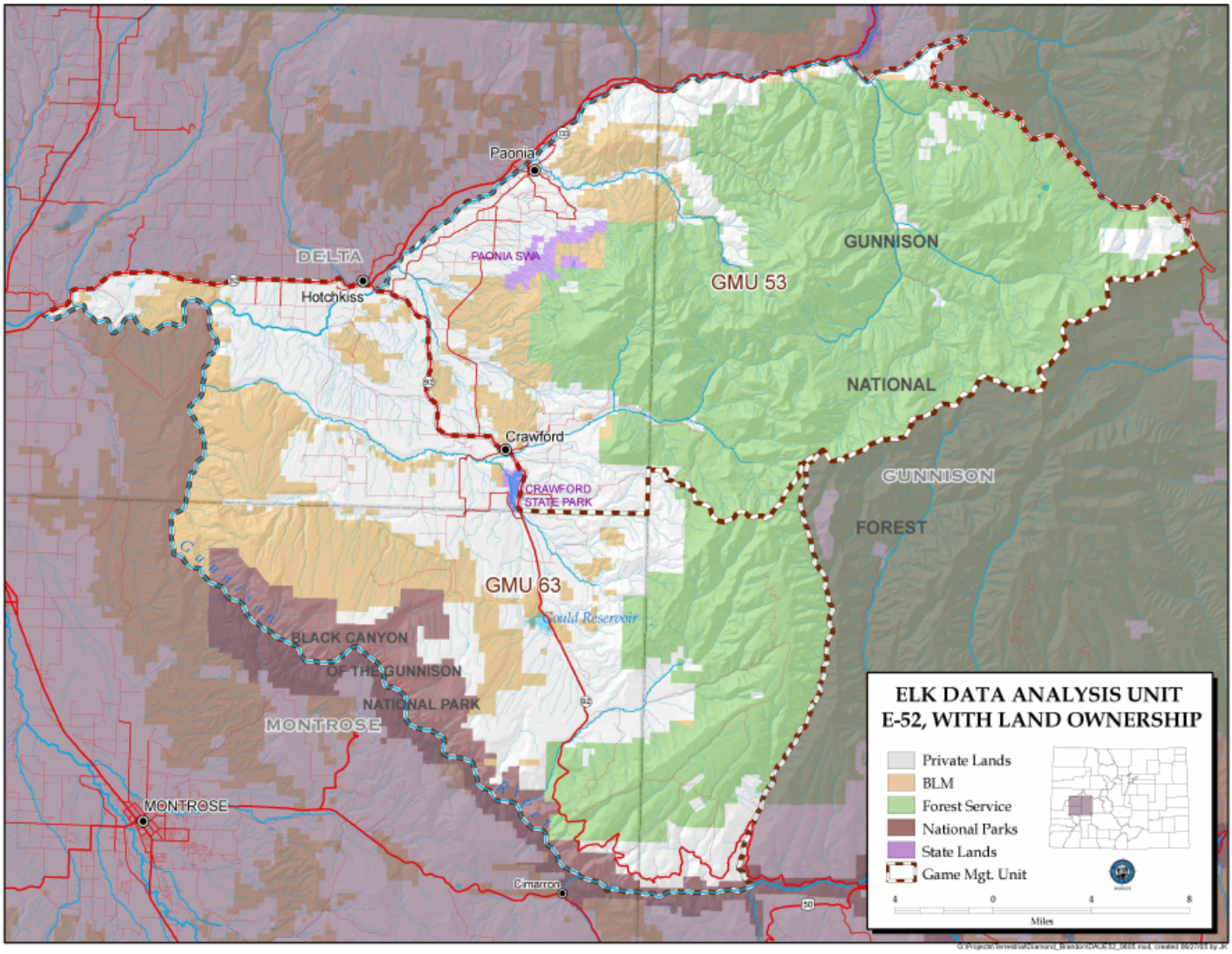
A computer model calculates the population's size and structure based on the most accurate information available at the time. The final step in the process is to calculate harvest recommendations that will align population estimates with the herd objectives.

DESCRIPTION OF DAU E-52

Location

Data Analysis Unit (DAU) E-52 is located in west-central Colorado and includes Game Management Units (GMU's) 53 and 63 (Figure 2). The DAU encompasses approximately 765 square miles and includes portions of Gunnison, Montrose, and Delta counties. E-52 is bounded on the north by County Road 12, the North Fork of the Gunnison River and Highway 92, on the west and south by Highway 92 and the Gunnison River, and on the east by Curecanti Creek and the Gunnison River/North Fork Gunnison River divide. Communities adjacent to or within the DAU include Somerset, Paonia, Hotchkiss, and Crawford.

Figure 2. DAU E-52



Topography/Climate

Elevations within the DAU range from approximately 5,100 ft near the Gunnison River/North Fork of the Gunnison confluence, to almost 13,000 ft at the summit of Mount Gunnison. Some of the most prominent geographic features within E-52 are found in the West Elk Wilderness Area, which takes in multiple peaks

over 12,000 feet. High elevation snow-packs contribute to a number of perennial creeks and rivers, including the Gunnison and North Fork of the Gunnison Rivers, the Smith Fork, and Minnesota, Coal, and Dyer Creeks. Large mesas occur within the DAU that are often separated by steep, broken canyons. These include Black Mesa on the southern end of the DAU, Fruitland and Scenic Mesas on the southwestern side of GMU 63, and Cottonwood, Lamborn and Lennox Mesas on the northwestern flank of the DAU. The Gunnison Gorge, recently designated as a National Park, is a remarkable geologic feature bounding the western side of E-52. Elevation and season have a profound effect on climate within the DAU. Low elevation valleys in E-52 experience warmer temperatures and lower annual precipitation, while high-elevation mountainous environments are prone to heavy snowfalls and low temperatures. The majority of annual precipitation is in the form of snow, with levels often exceeding 40 inches above 11,000 feet. Near the town of Hotchkiss, mean annual precipitation is generally around 16 inches. This diversity in topography and climate accommodates excellent year-round habitat for the local elk herd. Connectivity between high and low-elevation habitats within the DAU is critical, as elk move throughout the year based on snow accumulations and forage availability.

Vegetation

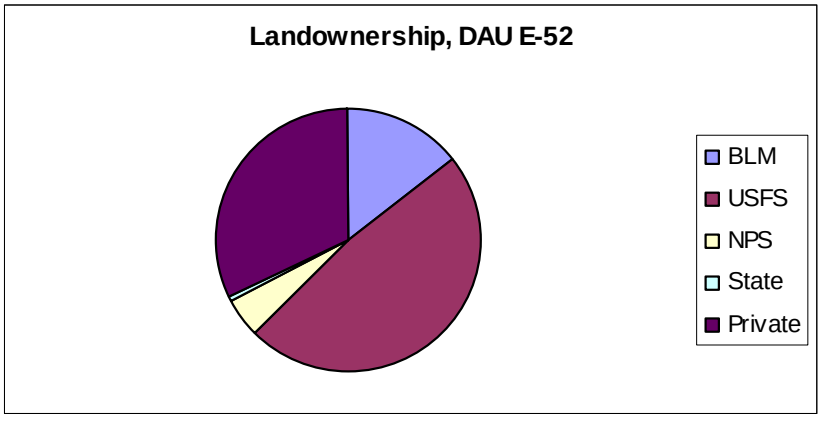
Plant communities are diverse in this DAU and vary depending on many factors including elevation, aspect, moisture regime, and soils. At the lowest elevations, native plant communities are typical of the high mountain desert with dominant shrub species consisting of four-wing saltbush, greasewood, and rabbit brush. A significant amount of private farmland is also present in the North Fork Valley, with irrigated hay meadows (grass & alfalfa), artificially seeded rangelands, cornfields, and orchards being common. Big sagebrush/mixed grassland, Pinyon/Juniper woodlands, and mixed mountain shrub communities (Gambel oak, service berry, mountain mahogany) are prominent at slightly higher elevations and are considered important transition and winter ranges for elk in the DAU. Above the mountain shrub zone extensive stands of aspen and mixed spruce/fir forest occur below the highest-elevation alpine ecosystems. Riparian areas along the many rivers and streams within the DAU provide important habitat for elk and other wildlife species throughout the year. Common plant species found in riparian zones include narrowleaf cottonwood, chokecherry, and a variety of willows. Noxious weed invasion and expansion is of growing concern to wildlife and range managers in the DAU. Some species of concern found in E-52 include cheat grass, Russian knapweed, hoary cress, tamarisk, and leafy spurge.

Land Use

♦ *Ownership-*

E-52 contains a mixture of public and private lands (Figure 3). Approximately 68% of the DAU is public land, with the majority being managed by the USFS (47%). All of the Forest Service land in the DAU falls under the jurisdiction of the Gunnison National Forest, with BLM management primarily focused out of the Montrose field office. Major residential areas associated with the DAU include Somerset, Paonia, Hotchkiss, and Crawford.

Figure 3. E-52 Landownership



♦ ***Agriculture***

In E-52 farming and ranching continue to be of importance to local economies, and are perhaps one of the most significant land uses in the DAU both on private and public lands. Private lands are concentrated primarily on the western side of the DAU in the areas surrounding Crawford, Paonia, and Hotchkiss. Fruit and hay production (grass and alfalfa) are the two most common farming practices in E-52. Livestock producers raise both cattle and sheep with grazing occurring on public and private lands throughout the year. There are also a number of domestic elk ranches in operation on the south and southwestern sides of the DAU. Similar to many mountainous areas in Colorado, the private land in E-52 is mostly situated in valley bottoms and riparian corridors where productivity is high. Many of these areas have traditionally been used by elk during winter when snow-depths at higher elevations become overwhelming. These circumstances have sometimes led to conflict between people and elk, mostly in the form of competition for available forage and damage to fences. These same issues often arise on public land grazing allotments within the DAU where elk and livestock use areas overlap.

♦ ***Mining***

There are various coal mines in operation in and adjacent to E-52. Some of the most productive coal mines in the United States are present outside of the towns of Somerset and Bowie on the northern edge of the DAU. More than 16.5 million tons of coal were produced from mines located in Montrose, Delta, and Gunnison counties in 2003 (http://www.energybulletin.net/277.html). Open pit mining does not generally occur in the North Fork area, with underground longwall mining being the most common method of coal extraction. Above ground impacts from mining generally consist of the development of utility road networks, and construction of degasification well pads above mines that are in operation.

♦ ***Recreation***

The Gunnison National Forest and adjacent public land receives a significant amount of recreation throughout the year. Many different forms of recreation occur in E-52 including hunting, hiking, camping, fishing, cross-country skiing, horseback riding, shed antler hunting, mountain biking, OHV use, and snowmobiling. People from across the country come to the area throughout the year to engage in these activities. The DAU includes the West Elk Wilderness Area and the Black Canyon of the Gunnison National Park, both of which are popular tourist destinations. There is growing concern in this DAU that burgeoning recreational activity, including hunting, is having a deleterious effect on elk distribution within the DAU. Elk harboring on private lands and within the National Park are issues that have definitive impacts on the Colorado Division of Wildlife's ability to harvest elk annually. Research efforts are currently underway to help gather information intended to help direct hunting pressure prior to elk reaching these refuge areas.

♦ ***Exurban Development***

Over the last ten years development in E-52 has increased significantly. Montrose and Delta Counties have experienced growth rates of 5-10% over the last five years. With the increasing human population has come a corresponding demand for recreational opportunities and natural resources, which increases the potential for conflict with area wildlife. Most of the urban expansion in the DAU is occurring in the lower elevation areas that elk rely on during the late fall and winter months. Loss of transitional and winter ranges, alteration of traditional movement corridors, and conflicting management between neighboring landowners are just some of the issues facing wildlife managers relative to human population growth in the DAU.

HERD MANAGEMENT HISTORY

Herd History

Like many places in western Colorado, elk numbers were greatly reduced in this DAU following European settlement and the advent of large-scale market and subsistence hunting. Formal hunting laws and regulations initiated in the early 1900's promoted the conservation of elk around the state and populations have been flourishing ever since. The elk herd in GMU's 53 and 63 were historically managed separately

and consisted of DAU's E-42 (unit 53), and E-44 (unit 63). In 1990, a long-term research project was initiated by area District Wildlife Managers and the North Fork HPP (Habitat Partnership Program) committee to ascertain movement patterns, survival rates, and cause-specific mortality factors for elk in the North Fork area. Information gathered during that project prompted wildlife managers to recommend that the elk in units 53 and 63 be managed as one herd. Based on this recommendation, the Division of Wildlife formally designated the DAU as E-52 in 1996 and updated herd objectives at that time.

Seasonal Elk Range Information

Annual elk movements in the DAU are primarily driven by climatic variables. Altitudinal migrations occur in the late fall and spring in relation to snow depth and forage availability. Elk will generally follow the receding snow line to higher elevations during April and May and move back towards winter ranges in late October and November. Seasonal recreational activity and hunting pressure are also believed to exert some influence over elk movements throughout the course of the year in this DAU. Winter range is of key importance to elk, representing a potential bottleneck for herd productivity and may determine local carrying capacity. Fragmentation and loss of quality winter range through exurban development, noxious weed invasion, and plant community succession are important issues in E-52. These issues are paramount as much of the winter range is currently located within private lands in the DAU. A winter range map for E-52 is provided in Appendix 2. Spring and summer ranges are more expansive in the DAU and are essential for providing elk with calving grounds and high-quality forage throughout the growing season.

1990's Elk Movement Study

In his 1996 report to the North Fork Habitat Partnership Committee, local District Wildlife Manager Doug Homan describes four distinct elk herd movements within the North Fork valley based on radio collar data. A total of 627 elk were marked throughout the course of this study which included 49 radio collars. The herd movements pertinent to this DAU are described in Table 1.

Table 1. Generalized elk movements by season of the year

HERD	WINTER	SPRING	SUMMER	FALL
Black Mesa	Fruitland Mesa; North Rim Black Canyon	Poison Springs; Spring Gulch	Black Mesa; Crystal Creek	Crystal Creek; Pine Ridge; Green Mountain
West Elk	West of Landsend Peak; Fruitland Mesa	Landsend Peak; Little Coal Creek	Minnesota Creek; Little Elk Basin	Minnesota Creek; Mt. Lamborn & Landsend Pk.

These data and more recent observations indicate that seasonal elk movements may be having an impact on annual elk harvest in the DAU and contributing to game damage conflicts, most notably in the Montrose County portion of unit 63. When elk move down from public lands and cross the Gunnison-Montrose county line they are essentially unavailable to the majority of public hunters until they move to BLM lands west of Highway 92. There are growing concerns that elk are moving quickly to Black Canyon National Park in response to hunting pressure and modifications in management are currently being discussed by agency personnel. Conflicts have also arisen in E-52 where neighboring private landowners have different philosophies on elk management. Landowners vary in their tolerance for elk residing on their property, which can have significant effects on elk distribution within a given area and increase the potential for game damage.

E-52 Management Summary

Estimating population numbers of wild animals over large geographic areas is an inexact science. Whenever attempts have been made to account for a known number of animals in large fenced enclosures, investigators have consistently failed to see every animal. In some cases, less than 50% of the animals have been observed. High-tech methods using remote sensing have also met with very limited success.

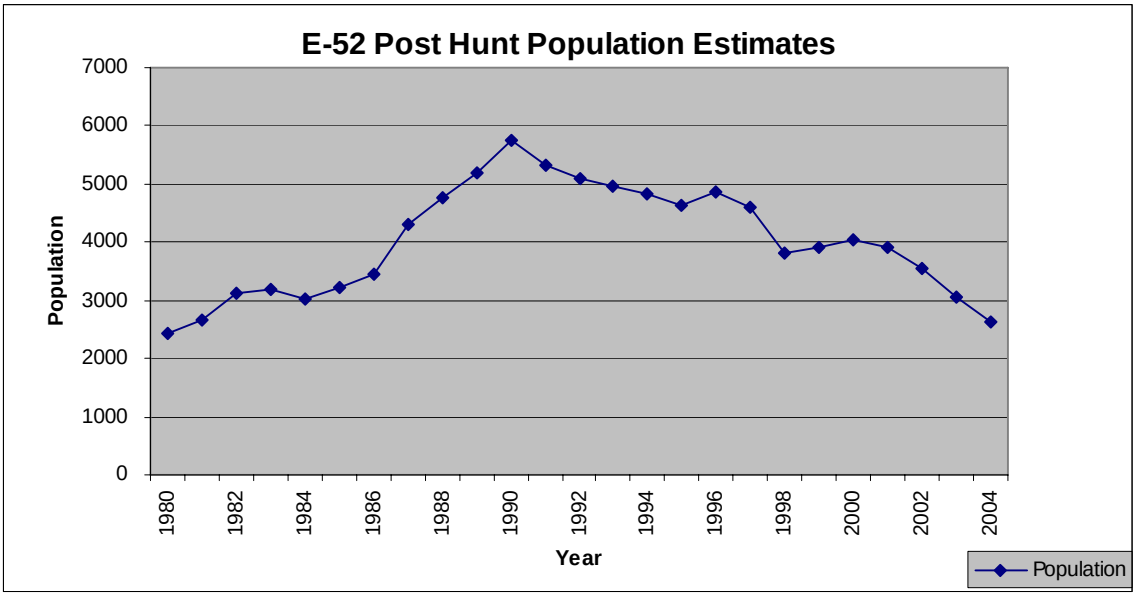
Most population estimates derived using computer model simulations involve estimations of sex ratio at birth, survival rates, wounding loss and annual production. These simulations are then adjusted to align on measured post-hunt age and sex ratio data, or in some instances density estimates derived from line-transect or quadrat surveys. The Division of Wildlife recognizes population estimation as a serious limitation in our management efforts and attempts to minimize this problem by using the latest technology and inventory methodology available. As better information is obtained on survival rates, wounding loss, fetal sex ratios and density estimates, and whenever new modeling techniques and programs have emerged, these have been assimilated into the process for estimating populations. These changes may result in significant differences in the population size estimate and make new management strategies more appropriate. It is recommended that the population estimates presented in this document not be viewed as an exact representation of the number of animals in the DAU; instead, their utility is in helping to evaluate population trends over time.

The CDOW has traditionally used *post-hunt* population information to assess annual trends in overall numbers and sex and age composition. All data presented in this DAU plan, other than harvest, is derived from post-season classification flights and modeling sessions. Post season flights are conducted in order to classify a representative sample of the overall population and should not be misinterpreted as an all-inclusive population "count".

Post-hunt Population Size

Population objectives are generally established based on a number of different biological and social variables. These often include the productivity and condition of animal and plant communities, agricultural and private land concerns, local economics, and hunting opportunity. The elk population in E-52 has fluctuated over the last 20 years. Models indicate that this herd increased throughout the 1980's and early 1990's, and has generally been in a state of decline since the mid 1990's (Figure 4). This elk herd is currently modeled at between 2600-2700 animals, which is above the current DAU objective.

Figure 4. E-52 Post hunt population estimates 1980-2004

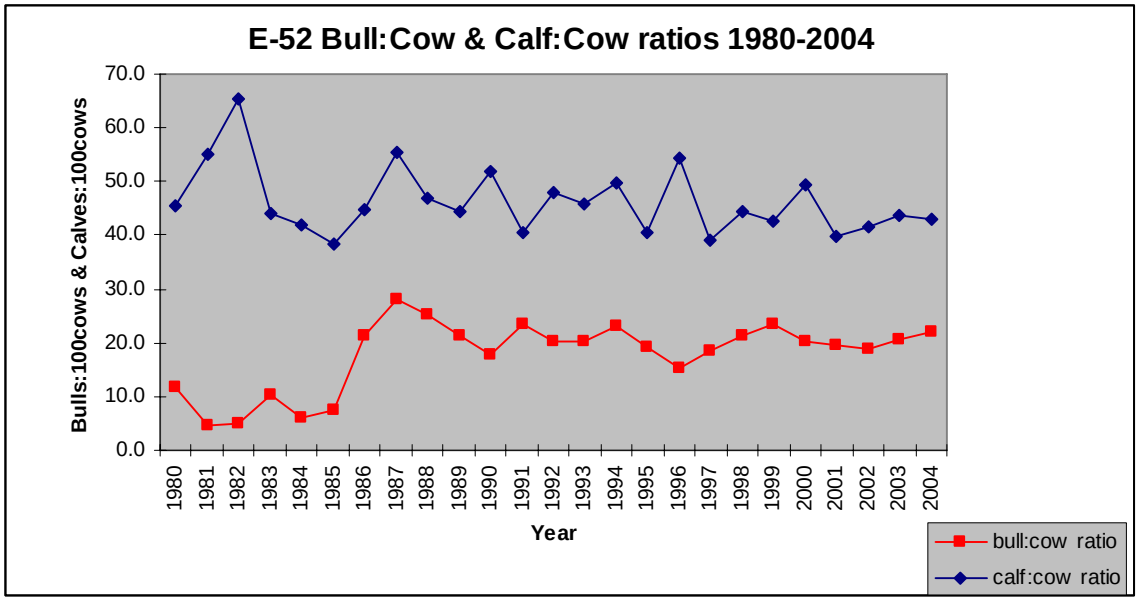


Post-hunt Herd Composition

The management strategies applied to a DAU normally dictate herd composition objectives, particularly post-hunt male:female ratios. In heavily hunted "over-the-counter" elk units in Colorado, observed bull to cow ratios over 20:100 post-season are rare as the majority of legal bulls are taken by hunters annually. Therefore, setting objectives beyond this threshold is often unrealistic. In E-52, four-point antler

restrictions lead to increased bull to cow ratios in the 80's, with recent averages being around 20 bulls:100 cows. Maintaining this level of bulls in the population is generally compatible with maximum bull hunting opportunity. A potential trade-off under this scenario is fewer total males and less older age-class males in the population. Calf to cow ratios have been relatively constant in E-52 and have averaged around 46:100 since 1980. Wildlife managers have much less influence over calf to cow ratios, but consider them as one important indicator of overall herd health. Figure 5 includes post-season bull to cow and calf to cow ratios from 1980 to 2004.

Figure 5. E-52 sex and age ratios 1980-2004



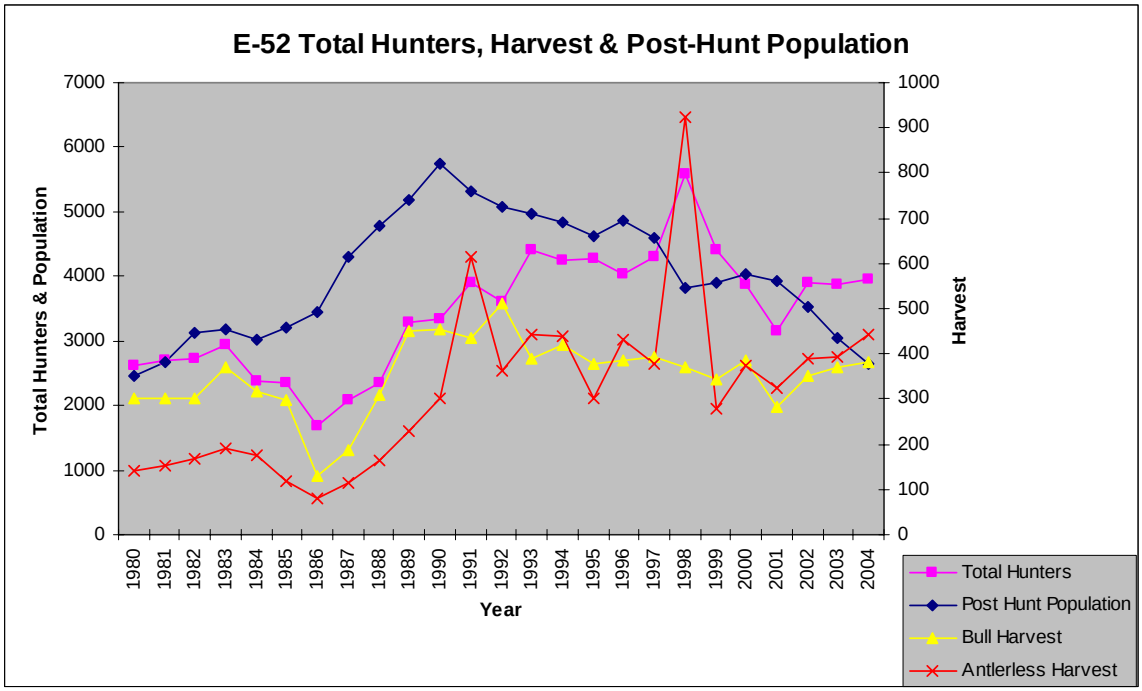
Harvest History

GMU's 53 and 63 have traditionally been popular elk hunting destinations for both residents and non-residents. Between 1980 and 2004, the average number of hunters across all seasons in the DAU was approximately 3400. Hunter numbers in E-52 were lowest in 1986 with approximately 1700, and peaked in 1998 with around 5600. Season structures have changed periodically over the last 20 years, and currently there are a variety of different seasons for hunters to participate in. Archery and muzzleloader seasons take place in August and September prior to the four regular rifle seasons. In 2005, all 1st and 4th season elk licenses are issued through a drawing while 2nd and 3rd combined seasons have over-the-counter bull licenses available. Following the regular rifle seasons, both units 53 and 63 have late season antlerless elk hunting which typically begins in December and extends through January. These seasons were created to increase antlerless harvest and help address distribution/damage issues on private lands.

Elk harvest estimates are generated each year based on information provided by a representative sample of hunters from each DAU. It is not currently possible to contact every hunter so statistically valid samples of hunters are called which allows managers to extrapolate total harvest estimates for a given unit. Elk harvest in E-52 has increased since the 1980's. Total harvest over the last ten years has averaged close to 800 animals, with overall success rates approaching 19%. The largest elk harvest in the DAU occurred in 1998 with nearly 1300 animals taken, while the lowest harvest was recorded in 1986 with 209 elk harvested. One likely reason for the low bull harvest in 1986 was the implementation of antler-point

restrictions at a time when there were relatively few branch-antlered bulls in the population. Figure 6 shows hunter numbers and harvest in relation to the population estimates since 1980.

Figure 6. Total hunters, harvest, and post-hunt population estimates 1980-2004



CURRENT MANAGEMENT STATUS

The previous population objective for E-52 has been 2350 since units 53 and 63 were combined into one DAU in 1996. Post hunt 2004 modeled estimates indicate that this elk herd is over objective, and the CDOW will continue to emphasize antlerless harvest in the DAU. Models provide managers with population estimates, but more importantly, serve as a tool for assessing trends. The E-52 elk herd, although still over objective has been gradually decreasing in size over the last 3-4 years based on current models. Liberal regular season and late season cow licenses have provided abundant elk hunting opportunities and promoted antlerless harvest. Trends in bull harvest can also serve as an indicator of population growth or decline. In E-52, above average bull harvests occurred during the late 1980's and early 1990's, which corresponds to the apparent peak in the overall elk population during that time. Bull harvest over the last five years has been relatively constant at around 350 animals, indicating that the elk population in E-52 is likely not increasing. It is important to evaluate all available information when determining future management actions for the DAU.

Public Participation

The DAU planning process should provide interested parties with an opportunity to comment on issues pertaining to the deer or elk population being evaluated. In order to provide this opportunity, local Division of Wildlife staff held meetings during June and July of 2005. The first meeting took place on June 30, 2005 at a regularly scheduled North Fork HPP committee meeting in Hotchkiss. A brief synopsis of E-52 was presented and comments were solicited from the committee as a whole as well as from the different entities represented (i.e. stock growers, sportsmen, and land management agencies). A larger public meeting was conducted on July 26, 2005 at Memorial Hall in Hotchkiss, with 22 people in attendance. That meeting began with a presentation on the history of elk management in the DAU and potential DAU plan alternatives, which was followed by a question/comment period. Issues of concern were documented during these meetings and were also obtained through written comment forms and phone calls received

following the meetings. A total of 25 comments were received following public meetings. A variety of issues were raised by different constituents, many of which shared common themes.

KEY ISSUES

The following issues were raised during this planning process and appear to be central to discussions pertaining to elk management in E-52:

Game Damage and Elk Distribution
Perhaps the most frequently raised issue by local landowners, outfitters, sportsmen, and agency personnel was the apparent increase in "resident" elk on private lands, and the overall distribution of elk between the private and public lands throughout the year. This is of greatest interest in the southwestern portion of the DAU between Black Mesa and the Gunnison Gorge. Distribution of elk between private and public lands has been of growing concern over the last 5-10 years, and is addressed in the North Fork HPP committee's Habitat Management Plan (HMP). Not only are these localized distribution issues leading to increased fence and forage conflicts, but they are also limiting the opportunities for public land hunters and the CDOW to harvest elk during annual hunting seasons. In the North Fork HMP, the committee attributes early movements of elk onto private lands to "early hunting seasons and other early recreation use on the forest." They speculate that the burgeoning human activity on public lands is pushing elk to lower elevations and in some situations elk are staying on private lands or National Park Service lands throughout the year where they have found refuge. Elk hunting on private lands in E-52 is primarily for bulls, with most hunting done by individual landowners or through outfitters. Landowners and outfitters with private land access report relatively high success rates for their hunters during the earlier seasons prior to elk moving through to NPS lands or adjacent private lands. Following the hunting seasons, elk move back onto private lands during the winter and spring which has led to conflict over available forage and fence damage. The CDOW and the majority of folks attending the public meeting agree that there is a distinction between the total number of elk in a population and localized distribution problems.

Availability of winter range
Although the majority of the DAU is public land, most of the winter range is situated in the midst of lower elevation private parcels where agricultural operations occur. Development, noxious weed invasion, plant succession, and game damage conflicts are all issues of concern on the limited winter range in E-52. Preservation and enhancement of public land winter range areas, continued cooperation and communication with local landowners through the HPP committee and other programs, and continual monitoring of elk migration routes and timing will all be important for future elk management in the DAU.

OHV's and Human recreation
The issue of increasing OHV use during the summer and fall has been brought up by virtually every stakeholder group that we have heard from. The concern is that OHV use on public lands has reached a threshold that has led to changes in distribution and habitat use by big game. Travel management on public lands has been the subject of much debate over the last ten years, and is an issue that requires further attention. Our cooperative elk study being initiated by the USGS, CDOW, BLM, and NPS will hopefully provide additional insight into this issue and present potential solutions.

Potential listing of Gunnison Sage-grouse under the Endangered Species Act
The Gunnison Sage-grouse is currently petitioned for listing under the Endangered Species Act, with a proposed rule expected in the near future. If the ruling is warranted, listing may take place as early as 2006. It is currently unknown if or how listing would impact elk management in E-52, but occupied sage-grouse habitat exists in the southwestern portion of the DAU. These sage-grouse are commonly referred to as the Crawford subpopulation.

Increasing Post-Season Bull:Cow Ratios / Limited Bull Hunting
The issue of totally limited bull hunting in E-52 has been raised repeatedly during this planning process. There have been three primary objectives discussed for implementing limitations in the DAU; one, increase the bull:cow ratio and maintain more older age-class bulls in the population, two, decrease hunter crowding and enhance the hunting experience, and three, attempt to influence elk distribution throughout the year by

lessening hunting pressure on public and private lands. Whether all of these objectives can be acheived through limitations is unknown. During August of 2005, a letter was sent to all members of the public that expressed interest in limited bull hunting in the DAU (Appendix 3). The purpose of the letter was to describe the nomination process established by the Colorado Wildlife Commission in 2004. To date, no nominations have been received.

ALTERNATIVE DEVELOPMENT

This section includes some of the potential alternatives for managing the E-52 elk herd. For DAU planning, there are logically three general alternatives available with some variation. The alternative selected will determine the total population and sex/age objectives, and subsequently the number of licenses issued in a GMU. These three alternatives include status quo (no change or minor change), increased population and/or sex and age objectives, or decreased population and/or sex and age objectives. These alternatives are presented and discussed with some incorporation of comments obtained during the planning process. It is the recommendation of local CDOW staff that population & bull:cow ratio objectives for this DAU plan be set as a range rather than a fixed number. Setting an objective range recognizes that population modeling is a continuously evolving, inexact science, but more importantly, a range allows greater flexibility on an annual basis for management actions in a DAU.

Alternative #1

Maintain the population near the current objective (2200-2400), with a post season bull:cow ratio of 18-23:100.

Post-season 2004 estimates indicate that the elk herd in this DAU is approaching objective. The current population size appears to be providing an acceptable level of hunting opportunity while attempting to minimize game damage conflicts in the area. Localized game damage problems in the DAU are an issue which the North Fork HPP committee and public land management agencies will continue to try and address. Setting the population objective as a range, rather than a fixed number, will allow wildlife managers more flexibility in manipulating elk numbers as conditions dictate (i.e. drought). In alternative #1, many of the seasons will continue to provide over-the-counter bull hunting in GMU's 53 & 63 making a bull to cow ratio objective over 20:100 somewhat unrealistic due to the high rate of bull harvest annually. A bull to cow ratio of 20:100 will generally be achievable under current 5-year season structure parameters, and will provide maximum bull hunting opportunity.

Alternative #2

Increase the population above the current objective by approximately 10% (2400-2600), with a post season bull:cow ratio of 18-23:100.

Setting the population objective at this level would essentially mean that the DAU is at objective based on current modeled estimates. Managing for this alternative would likely result in an overall decrease in the number of antlerless licenses issued in 2006. Bull hunting opportunity and bull:cow ratios would likely be maintained at current levels (20:100) and would not be influenced greatly by increasing the population objective. Increasing the population objective by 10% would likely not change the game damage situation in GMU's 53 and 63 appreciably. However, landowners dealing with elk damage may not be in favor of any proposed increases in population objectives.

Alternative #3

Decrease the population below the current objective by approximately 10% (2000-2200), with a post season bull:cow ratio of 18-23:100.

In order to decrease the population objective by 10% the CDOW to will have to continue to aggressively harvest cow elk in the DAU. Late season licenses will continue to be readily available and efforts will be made to improve distribution and harvest of elk on public and private lands. Decreasing the population objective by 10% will not solve many of the game damage problems in the DAU, and will probably not be viewed favorably by local sportsmen. When this objective is reached it is likely that both antlered and antlerless limited licenses will be decreased, as reduced harvest will be necessary to maintain the population at a lower level.

Alternative #4

Maintain the current population objective (2200-2400), but increase post-season bull:cow ratios to 25-30 bulls:100 cows.

This alternative has been suggested in the DAU, and would entail making E-52 totally limited for bull elk hunting during all seasons. Archery, muzzleloader, and the 2nd and 3rd regular rifle seasons currently offer over-the-counter bull elk hunting. These seasons would have to be limited and license numbers specified in order to achieve higher bull to cow ratios. In many cases, bull license reductions of 50% or more have been required in order to appreciably increase the number of bulls in a population. Annual cow harvest, private land refuges, and weather conditions also exert some influence over the number of bull elk observed during post season classification flights. There would be a variety of social and economic factors to be considered during implementation of this alternative. Adjacent GMU's that remained unlimited would likely be impacted by the increased pressure from displaced hunters who did not apply for a limited license or were unsuccessful in the draw.

CDOW Preferred Alternative:

Currently, the preferred management alternative for E-52 is to adjust the post hunt population objective to 2200-2400 animals, with an observed bull to cow ratio of 18-23:100 (Alternative #1).

Potential advantages:

- This alternative will continue to provide maximum bull hunting opportunity, with no social or economic changes anticipated
- Alternative #1 has been agreed to by the North Fork HPP committee; game damage is expected to be manageable under this scenario during most years
- Antlerless licenses will continue to be plentiful until the elk herd is at objective, at which point some reductions will likely occur
- A population objective range will allow the CDOW to try and manage the elk herd at the lower end of the range when necessary (i.e. extended drought)

Potential disadvantages:

- It will not be feasible to increase the number of bull elk in the population under Alternative #1, nor will it be possible to improve the distribution of age classes in the male segment of the population; most branch antlered bulls will continue to be in the two year-old age class

- With stable or increasing hunting pressure in the DAU, particularly during early seasons, issues will continue to exist with elk moving off of public land to areas where they are no longer accessible to hunters
- Success rates likely will stay between 15-20% on an annual basis across all seasons

Implementation:
Selection of this Alternative would require no regulatory changes, other than final adoption of the new DAU plan by the Colorado Wildlife Commission.

Appendix 1. E-52 Data Tables 1980 to 2004

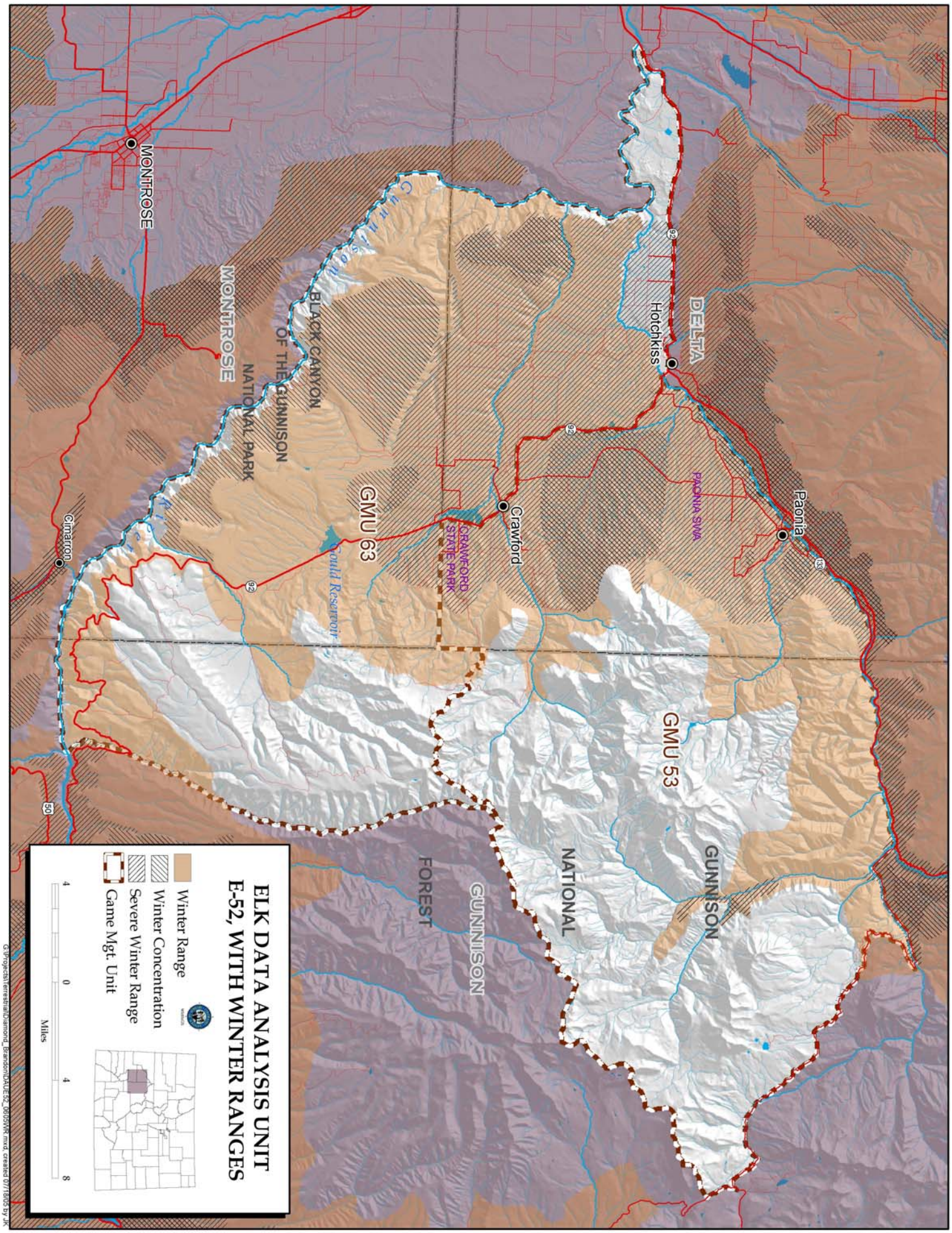
Table2. Post season bull:cow ratios, calf:cow ratios, and survey sample sizes 1980 to 2004

YEAR	BULL:COW	CALF:COW	SAMPLE SIZE
1980	11.8	45.4	239
1981	4.5	55.0	177
1982	5.0	65.5	406
1983	10.3	43.9	766
1984	5.9	42.0	528
1985	7.4	38.4	961
1986	21.4	44.7	1040
1987	28.2	55.5	1334
1988	25.3	46.8	1494
1989	21.2	44.3	1196
1990	17.8	51.8	1103
1991	23.5	40.6	930
1992	20.2	47.9	1022
1993	20.2	46.0	690
1994	23.0	49.9	880
1995	19.3	40.4	1011
1996	15.3	54.2	1332
1997	18.5	39.2	792
1998	21.2	44.4	1373
1999	23.4	42.8	773
2000	20.2	49.3	1034
2001	19.4	39.7	1066
2002	18.8	41.5	1366
2003	20.6	43.5	**no data*
2004	22.1	43.1	973

Table 3. E-52 hunter numbers and elk harvest by sex and age 1980 to 2004

YEAR	Total Hunters	Bull Harvest	Cow Harvest	Calf Harvest	Total Harvest
1980	2622	303	125	16	444
1981	2698	303	136	18	457
1982	2736	301	149	20	470
1983	2950	371	171	18	560
1984	2383	316	166	8	490
1985	2339	298	103	17	418
1986	1689	130	60	19	209
1987	2074	187	101	15	303
1988	2362	309	149	14	472
1989	3298	450	207	23	680
1990	3343	455	266	37	758
1991	3911	437	545	71	1053
1992	3608	512	323	41	876
1993	4400	389	396	48	833
1994	4236	418	381	57	856
1995	4288	377	249	53	679
1996	4047	386	391	39	816
1997	4296	395	343	34	772
1998	5573	370	837	85	1292
1999	4415	344	249	28	621
2000	3877	386	326	47	759
2001	3161	283	288	35	606
2002	3890	350	350	40	740
2003	3866	372	355	39	766
2004	3958	382	386	55	823

Appendix 2. E-52 Winter Range Map



Appendix 3. Letter sent describing nomination process

August 25, 2005

Dear Interested Party,

You are receiving this letter because you have expressed support for limited bull elk hunting in Units 53 and 63 (Data Analysis Unit E-52). The Division of Wildlife held a public meeting to discuss elk management in E-52 on July 26, 2005 and considerable discussion took place regarding limitations. The purpose of this letter is to describe the process for nominating a Data Analysis Unit for limited bull hunting.

In 2004, the Colorado Wildlife Commission approved a process for public entities to nominate elk DAUs for limited bull hunting. The Division of Wildlife recognizes that changing management strategies has the potential to impact areas economically, agriculturally, and in terms of hunting opportunity for resident and nonresident hunters. Therefore, a process has been established in which members of the public have the opportunity to not only nominate a unit for limitation, but also establish that sufficient support exists within local communities for limitations. Recent decisions to make DAUs limited have been strongly influenced by the level of local support demonstrated to the Wildlife Commission. Therefore, if you are interested in nominating E-52 for limited bull hunting you must provide the following information to the Colorado Wildlife Commission:

1. To nominate E-52 or any other DAU for limitation, you must initially write a brief letter that outlines which DAU you are interested in nominating and any other information that you believe is pertinent for initial discussions.
2. You will be responsible for making contacts within your local communities to demonstrate that there is support for potential limitations. Documented support may consist of letters from businesses, chambers of commerce, outfitters, ranchers, and local sportsmen, and/or signature petitions.
3. The Wildlife Commission has expressed their desire to obtain input from local County Commissioners on these types of issues. E-52 includes portions of Gunnison, Montrose, and Delta Counties. Letters of support from County Commissioners would be of great interest to the Wildlife Commission.

The Division of Wildlife in Gunnison has received a significant number of letters and phone calls supporting limited bull hunting in E-52. It would certainly be more efficient for those individuals interested in limitations to form a temporary partnership to more effectively solicit input from their communities. It is important that this process is initiated as soon as possible to move forward. The first step will be to write a brief letter nominating E-52 for limitations, then move quickly on to steps two and three described above. If you decide to initiate this process through a nomination letter, please send to the **Colorado Division of Wildlife attn: Mike King, 6060 Broadway, Denver, CO 80216.** For additional information pertaining to the nomination process refer to the Division of Wildlife's web site at http://wildlife.state.co.us/hunt/elkunitnominations/index.asp. This web page should be updated in the near future.

If you need additional information or would like to discuss this process further, please feel free to contact Brandon Diamond at (970) 641-7071. Thank you for your interest in Colorado elk management.

Cordially,

Brandon Diamond
300 W. New York Av
Gunnison, CO 81230

LITERATURE CITED

Bain, Ron. "US: Western Slope Coal Production Enters Age." Energy Bulletin. 16 May 2004 http://www.energybulletin.net/277.html.

Homan, Doug. 1996. Report to North Fork Habitat Partnership Program Committee on Elk Migration and Distribution in the North Fork Valley. Unpublished Report. 27 pp.

North Fork HPP Committee. 2005. North Fork Habitat Partnership Program Habitat Management Plan. Unpublished Report. 34pp.