

ELK MANAGEMENT PLAN

DATA ANALYSIS UNIT E-9 Saint Vrain Herd

GAME MANAGEMENT UNIT
20

Prepared for:
Colorado Division of Wildlife

By:
Sherri Huwer
Terrestrial Wildlife Biologist
Northeast Region

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Elk en route to Estes Park 1912 – 1914 to reestablish a herd in the area.
Photo courtesy of Bob Givens; Lyons, Colorado.

DAU E-9 (St. Vrain) EXECUTIVE SUMMARY

GMUs: 20
Land Ownership: 44% Private, 25% USFS, 22% RMNP, 7% City/County, 1 % State
Post hunt Population: **Previous Objective** 2,400 **2005 Estimate** 3,400 **Current Objective** 2,200 – 2,600
Post hunt Sex Ratio: **Previous Objective** 35 **2005 Observed** N/A **2005 Modeled** 35 **Current Objective** 40-45

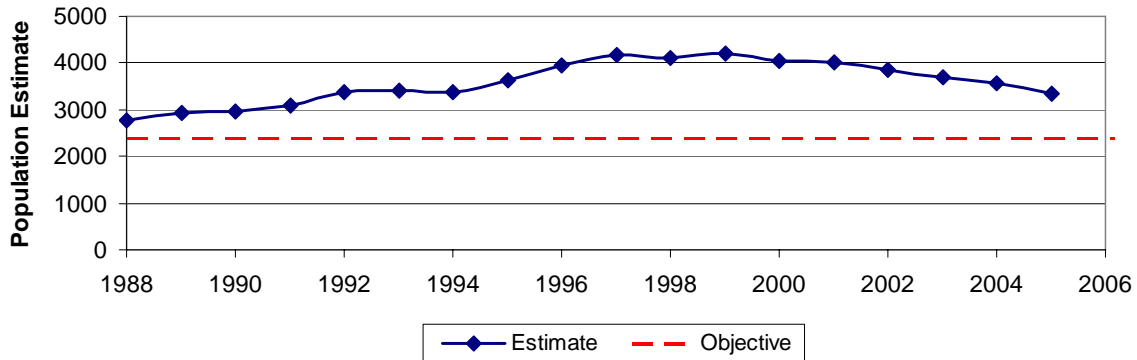


Figure 1: E-9 elk population estimate from 1988 to 2005.

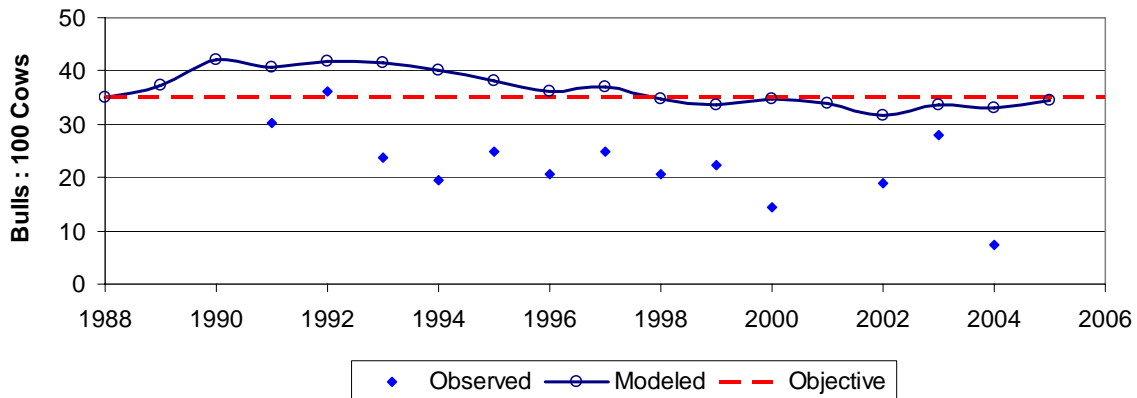


Figure 2: Observed, modeled and objective sex ratios for E-9 from 1988 to 2005.

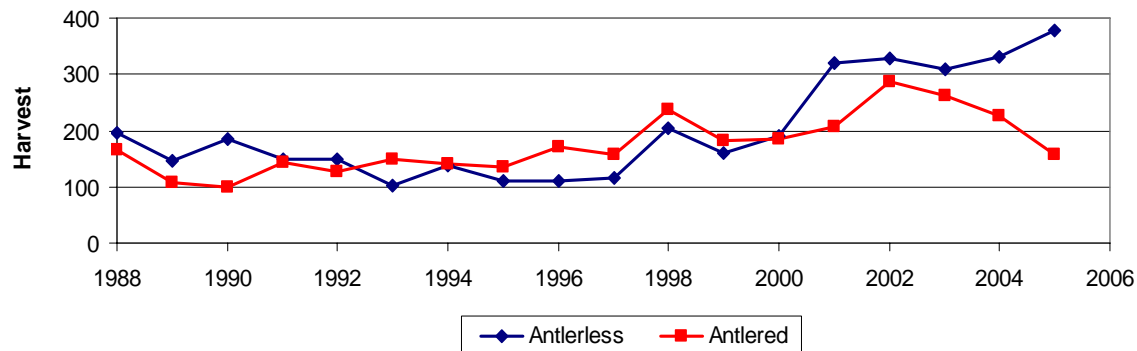


Figure 3: E-9 antlerless and bull elk harvest estimates from 1988 to 2005.

E-9 Background

The Saint Vrain elk herd (E-9) consists of Game Management Unit (GMU) 20. It includes southern Larimer and northern Boulder Counties and the eastern portion of Rocky Mountain National Park (RMNP). Large numbers of elk migrate between RMNP and other areas within the DAU presenting challenges to maintaining herd numbers at objective. The Colorado Division of Wildlife (CDOW) has management responsibility for elk when they are outside the RMNP. Elk and other wildlife within the boundaries of RMNP are managed by the National Park Service (NPS). This E-9 elk management plan does not address elk management within the boundaries of RMNP as that is the mandate of the NPS not the CDOW.

The current population objective for this herd is 2,400 elk. Population models indicate that the post-hunt population grew from approximately 2,800 elk in 1988 to approximately 4,400 elk by 1999. From 1997 to 2006, hunting seasons were added and license numbers were increased to reduce the population. This strategy succeeded and the population began to decrease from to approximately 3,400 elk by 2005. The current bull-cow ratio objective and estimate is 35 bulls: 100 cows. The sex ratio decreased from 40 - 45 bulls: 100 cows in the early 1990s, to 30 – 35 bulls: 100 cows in the early 2000s.

Elk Distribution and Huntability Land

Hunter harvest is the primary management tool available for bringing this herd down to the population objective. One limitation to the effectiveness of this tool is the large area within this unit where hunting is either prohibited or impractical. These refuges include RMNP, city and county open spaces, and urban and exurban areas consisting of small acreage parcels. The number of refuges and the total refuge acreage in the unit has increased over the last 30 years. Currently, more than 2/3 of the elk in this unit concentrate in these refuges during the winter. The elk population on National Forest lands, on the other hand, has decreased recently due to increasing harvest levels and use of refuges by elk.

RMNP's Elk and Vegetation Management Plan / Environmental Impact Statement

RMNP has recognized the overabundance of elk on winter range within RMNP and the Estes Valley and have drafted an *Elk and Vegetation Management Plan / Environmental Impact Statement* to address the effects of elk herbivory (National Park Service 2006). This management plan analyzes possible alternatives to reduce the elk population within RMNP. If this plan is implemented, the number of elk within RMNP and the Estes Valley and their distribution is expected to change. It is currently uncertain what this change will be and the effect it will have on the elk population in the areas adjacent to RMNP that are managed by the CDOW.

Bull Numbers and Size

Although the size and age of bulls in E-9 remains high relative to other herds in Colorado, there has been a decrease since the early 1990s. This decrease was probably due to a combination of an increase in bull harvest and density dependent effects resulting from the overabundance of elk in the Estes Valley and RMNP. Some hunters and wildlife viewers have expressed concern over the decrease in the number and size of mature bulls in the unit over the past 5-10 years. They have also expressed a desire for more and larger mature bulls.

Elk Viewing

Elk viewing is an important activity in E-9 and an important consideration in this management plan. Elk viewing is enjoyed throughout the unit, but is concentrated in the Town of Estes Park and in the adjacent portions of RMNP. Elk viewing contributes substantially to the economy of

the Town of Estes Park. Many local residents consider the opportunity to view elk in their towns as increasing their quality of life.

Population Objective Alternatives

This DAU plan presents 3 population alternatives. Alternative 1 is to reduce the current population by approximately 50% to 1,400-1,800 elk. It is unlikely that this magnitude of a reduction could be achieved through public hunting. This large of a reduction would result in a decrease in satisfaction for hunters and wildlife watchers. Guides, outfitters and the economy of the Town of Estes Park would be negatively impacted. However, this reduction would likely lead to a decrease in human / elk conflicts as well as a decrease in the frequency of game damage claims if elk are also redistributed to areas away from human development and agriculture. Alternative 2 is to reduce the current population by 25 - 35% to 2,200 - 2,600 elk. If current harvest levels are maintained, this objective could be reached through public hunting by 2009. However, it is unclear whether current harvest levels can be maintained without reductions in the number of elk in refuges. If elk distribution does not change, a reduction of this magnitude is likely to increase hunter dissatisfaction and may not significantly reduce human-elk conflicts. This alternative is expected to lead to a slight decrease in human / elk conflicts and frequency of game damage claims. Income from elk viewing related recreation is not expected to be affected substantially. Alternative 3 is 3,000 - 3400 elk and has the current population estimate as the upper limit. In order to maintain the herd at this level, the number of cows harvested each year would need to be decreased. However, any increase in the refuge acreage in the unit would impede the ability to maintain the herd at this level. Watchable wildlife recreation opportunities and satisfaction will probably remain at current levels. Income from elk viewing related recreation, human/elk conflict and game damage claims are not expected to change substantially from current levels.

Herd Composition Alternatives

This DAU plan presents 3 herd composition alternatives, all of which are considered high relative to most other elk herd objectives in Colorado. Alternative 1 is 30 – 35 bulls: 100 cows. Current levels of wildlife viewing opportunity and satisfaction would be maintained by this alternative. Relative to the other 2 alternatives, this alternative would result in the most bull licenses, but the fewest mature bulls for hunting and viewing. Alternative 2 is to increase the current objective to 40 – 45 bulls: 100 cows. Relative to most other Colorado elk DAUs, this would result in a higher number of mature bulls available for hunting and viewing. Alternative 3 is to increase the objective to 50 – 55 bulls: 100 cows. This would require the greatest decrease in bull licenses, but would result in the most mature bulls for viewing and a sex ratio comparable to or exceeding Colorado's premier elk hunting units.

Preferred Alternatives

The CDOW recommends a population objective of 2,200 – 2,600 elk (Alternative 2). This alternative represents no change over the current population objective and will require a reduction in the overall number of elk in the unit from the current estimate of 3,400. This reduction will target elk that currently concentrate in refuges where elk densities are high (e.g., RMNP, Estes Valley, west Loveland, other private lands). The CDOW recommends herd composition objective of 40 – 45 bulls : 100 cows (Alternative 2). This alternative represents an increase from the current objective and will require an increase in the current ratio of approximately 35 bulls : 100 cows. This alternative is consistent with public input received during the planning process.

This DAU plan was approved by the Colorado Wildlife Commission on May 3, 2007.

TABLE OF CONTENTS

INTRODUCTION AND PURPOSE.....	1
DESCRIPTION OF DAU	2
Location.....	2
Physiography.....	3
Climate and Topography.....	3
Vegetation	3
Land Use	3
Ownership	3
Habitat Resources.....	5
Elk Distribution.....	5
Habitat Condition and Capability	6
HERD MANAGEMENT HISTORY	7
Post-hunt Population Size	7
Chronic Wasting Disease	9
Post-hunt Herd Composition.....	9
Past Management Strategies.....	10
Season Structure and License Numbers	10
Harvest	13
Hunters.....	16
Watchable Wildlife	21
Economic Impacts of Elk.....	21
Conflicts.....	22
Game Damage Hunts	22
CURRENT HERD MANAGEMENT.....	22
Post-hunt Population	22
Post-hunt Herd composition.....	22
Current Management Strategies	23
Current Management Problems.....	23
Elk Distribution and Concentrations in Refuges.....	23
Habitat Damage.....	24
Antler size	25
ISSUES AND STRATEGIES	25
Summary of Issues	26
ALTERNATIVE DEVELOPMENT	27
Population Objective.....	27
Alternative 1: 1,400 – 1,800 elk post season	27
Alternative 2: 2,200 - 2,600 elk post season	28

Alternative 3: 3,000 – 3,400 elk post season	28
Herd Composition - Sex Ratios.....	29
Alternative 1: 30 - 35 Bulls: 100 Cows.....	29
Alternative 2: 40 – 45 Bulls: 100 Cows	29
Alternative 3: 50 – 55 Bulls: 100 Cows	29
Preferred Alternatives.....	29
APPROVAL / SIGNATURES	32
LITERATURE CITED.....	33
APPENDIX A: Public Input Survey	34
APPENDIX B: Public Comments	38
Comments from Public Meetings.....	38
Written Comments from Surveys.....	39
Comments on 1 st Draft	54
APPENDIX C: LIST OF ACRONYMS	59

LIST OF TABLES

Table 1: Number of elk licenses offered in GMU 20 from 1988 to 2005. ES = Either Sex; PLO = Private Land Only.	12
Table 2: Average hunter success rates and range per season type in DAU E-9 from 1988 to 2005.....	19
Table 3: E-9 resident, non-resident and total elk hunter numbers, with percentage of total hunters shown in parentheses.....	20
Table 4: Total, antlered and antlerless elk harvest numbers with percentage of total harvest shown in parentheses for resident (resid) and nonresident (nonres) hunters in E-9. Also shown is overall success for resident and nonresident hunters.....	20
Table 5: Minimum Preference points needed by residents (R) and nonresidents (NR) to draw limited licenses in E-9 from 2004 to 2006 by season.	21
Table 6: A summary of the answers to questions 1 and 2 of the E-9 DAU plan public survey. Question 1 asked; "Would you like the number of elk in GMU 20 to increase, decrease or remain the same?" Question 2 asked, "Would you like the distribution of elk to change (e.g., less elk in the Estes Valley, more elk on National Forest land)?" The number of respondents is shown.	27

LIST OF FIGURES

Figure 1: E-9 elk population estimate from 1988 to 2005.....	i
Figure 2: Observed, modeled and objective sex ratios for E-9 from 1988 to 2005.....	i
Figure 3: E-9 antlerless and bull elk harvest estimates from 1988 to 2005.....	i
Figure 4: Management by Objective process used by the Colorado Division of Wildlife to manage big game populations by Data Analysis Unit.....	1
Figure 5: Geographic location of elk Data Analysis Unit E-9.....	2
Figure 6: Land ownership in elk DAU E-9.....	4
Figure 7: Overall, summer and winter ranges of elk in DAU E-9.....	6
Figure 8: Population estimates for E-9 from 1988 to 2005.....	8
Figure 9: Observed, modeled and objective sex ratios for E-9 from 1988 to 2005.....	10
Figure 10: Total License numbers in E-9 from 1976 to 2006.....	11
Figure 11: Total, antlerless, antlered and either sex license numbers in E-9 from 1988 to 2006. All either sex licenses are archery licenses.....	11
Figure 12: Total, antlerless and antlered elk harvest in DAU E-9 from 1976 to 2005. The DAU boundaries were changed in 1988 creating a DAU that was 50% larger than previously.....	13
Figure 13: Total license numbers and harvest in E-9 from 1988 to 2005.....	14
Figure 14: E-9 harvest as a function of license numbers.....	14
Figure 15: License numbers and harvest during the late seasons in E-9 from 1988 to 2005.....	15
Figure 16: Late season harvest as a function of license numbers.....	15
Figure 17: Number of elk harvested in GMU 20 from 1988 to 2005 during archery, muzzleloader, regular rifle, late rifle and PLO seasons.....	16
Figure 18: Numbers of antlerless, antlered, either sex hunters in DAU E-9 from 1988 to 2005. All either sex licenses are archery licenses.....	17
Figure 19: Number of elk hunters in GMU 20 from 1988 to 2005 during archery, muzzleloader, regular rifle, late rifle and PLO seasons.....	17
Figure 20: Overall success rates and license numbers for E-9 from 1988 to 2005. Success rates are calculated as the number of elk harvested divided by the number of hunters who participated in the hunt.....	18
Figure 21: E-9 success rates in the regular rifle, PLO and late rifle seasons combined as a function of license numbers. Success is calculated as the number of elk harvested divided by the numbers of hunters that participated in the hunt.....	19

INTRODUCTION AND PURPOSE

The 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 Colorado 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 human impacts. The CDOW uses a "Management by Objective" approach to manage the state's big game populations (Figure 4).

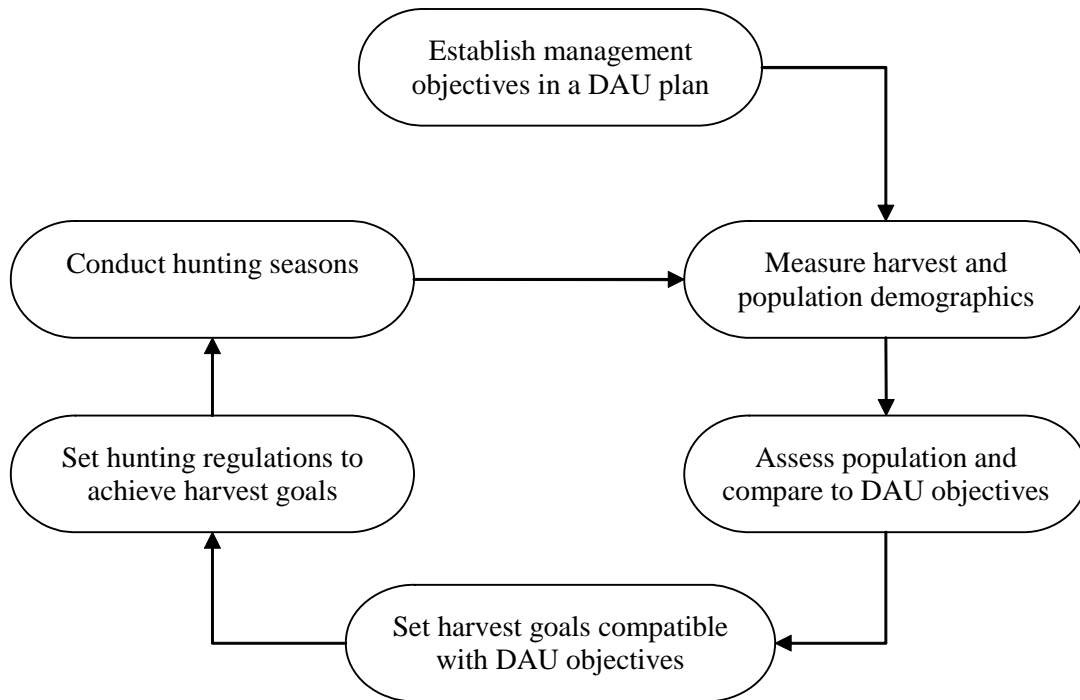


Figure 4: Management by Objective process used by the Colorado Division of Wildlife to manage big game populations by Data Analysis Unit.

In this approach, big game populations are managed to achieve population objectives established for a Data Analysis Unit (DAU). A DAU is the geographic area that includes the year-round range of a big game herd. A DAU includes the area where the majority of the animals in a herd are born, live and die. DAU boundaries are delineated to minimize interchange of animals between adjacent DAUs. A DAU may be divided into several GMUs in order to distribute hunters and harvest within a DAU.

Management decisions within a DAU are based on a DAU plan. The primary purpose of a DAU plan is to establish population and herd composition (i.e., the number of males per 100 females) objectives for the DAU. The DAU plan also describes the strategies and techniques that will be used to reach these objectives. During the DAU planning process, public input is solicited and collected through questionnaires, public meetings and comments to CDOW staff and the CWC. The intentions of the CDOW are integrated with the concerns and ideas of various stakeholders including the United States Forest Service (USFS), the Bureau of Land Management, hunters, guides and outfitters, private landowners, local chambers of commerce and the general public. In preparing a DAU plan, agency personnel attempt to balance the biological capabilities of the herd

and its habitat with the public's demand for wildlife recreational opportunities. DAU plans are approved by the CWC and are reviewed and updated every 10 years.

The DAU plan serves as the basis for the annual herd management cycle. In this cycle, the size and composition of the herd is assessed and compared to the objectives defined in the DAU plan. Hunting seasons are then set and licenses are allocated to either maintain the population or move it toward the objectives.

DESCRIPTION OF DAU

Location

Elk DAU E-9 consists of GMU 20. It encompasses 1206 square miles in southern Larimer and northern Boulder Counties (Figure 5). The portion of RMNP east of the Continental Divide is within E-9. The DAU is bounded on the north by Larimer County Roads 44H (Buckhorn Road), 27, 38E, 19 and Harmony Road and on the east by Interstate 25. The southern boundary is defined by Colorado State Road 52, US Highway 287, Boulder County Road 34 (Niwot/Neva Road), US Highway 36, Boulder County Roads 94, 81, 106, 95 (Lefthand Canyon Drive), 102 (Brainard Lake Road), and the ridgeline from Brainard Lake west to Pawnee Peak. The western boundary is formed by the Continental Divide, the RMNP boundary and the Pennock Creek-Elk Creek Divide. The Saint Vrain, Little Thompson and Big Thompson watersheds are the main drainages in E-9. Municipalities include Loveland, Longmont, Lyons, and Estes Park.

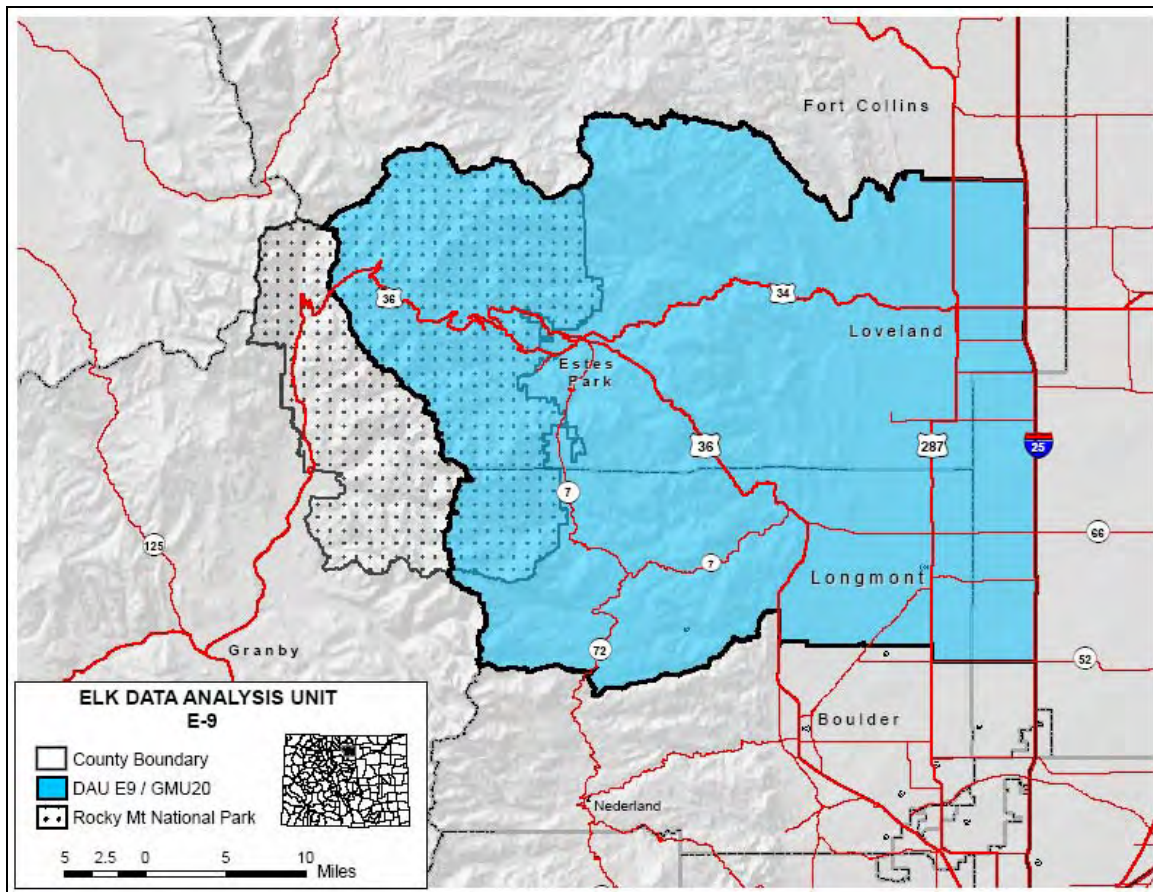


Figure 5: Geographic location of elk Data Analysis Unit E-9.

These have been the boundaries of GMU 20 and DAU E-9 since 1988. Prior to 1988, the unit was approximately 340 square miles smaller. The eastern boundary was formed by US Highway 287, which is 4 to 7 miles west of the current boundary. The southern boundary prior to 1988 was formed by US highway 66 to US Highway 7 to US Highway 72 to the middle St. Vrain Creek to the Continental Divide. This boundary was 5 to 8 miles north of the current boundary.

Physiography

Climate and Topography

Elevations in E-9 range from approximately 5,000 feet in the east to over 14,000 feet in the west. Climate varies across the DAU as a function of elevation. Conditions in the east are typical of the foothills/short-grass prairie interface, with relatively mild winters, less snow accumulation and hotter summers than in the west. The higher elevation portions experience a harsher climate, with colder winters, abundant snowfall and mild summers. Wind and typically mild and sunny conditions on elk winter range keep southern and western exposures virtually snow free during the winter. Temperatures on elk winter range are comparatively mild and winter weather moderate, punctuated with snowfall events followed by quick warming and melting of snow. Weather-related winter elk mortality is not a major factor in E-9.

Vegetation

Vegetation is diverse depending on elevation and climate. Vegetation in the eastern portion of the DAU is composed of short-grass prairie shrubs and plants. Native and non-native grasses, croplands and residential developments dominate much of the landscape, with areas of rabbitbrush and cacti. Cottonwoods, alders and willows surround many riparian areas. Noxious weed invasion is a problem in many areas of this portion of the DAU.

Foothills vegetation flourishes from approximately 5,500 to 7,000 feet with various shrub types and ponderosa pine dominating the area. Shrubs such as mountain mahogany, juniper, wild plum, chokecherry and currents are present, although the localized diversity varies greatly. Mountain riparian communities are found along streams, wetlands and irrigation ditches from 5,600 to 11,000 feet. Willows, chokecherries, alders and narrowleaf cottonwoods are common species. Noxious weed invasion is a problem in the foothills portion of the DAU.

Above the foothills is the montane zone. Ponderosa pine forests may continue into the zone, to elevations above 8,000 feet. Often Douglas-fir stands begin at these middle elevations and continue up to 9,000 feet. Both aspen and lodgepole pine appear as early colonizers, inhabiting areas of disturbance. Noxious weed invasion is a problem in the foothills portion of the DAU.

Western portions of the DAU represent the subalpine region. Aspen is present at the lower end of the zone, giving way to lodgepole stands as elevation increases. Spruce/fir communities are the standard forest type through the subalpine to timberline at approximately 11,500 feet. Above timberline, the landscape is dominated by tundra vegetation such as cushion plants, alpine grasses and sedges, and willows.

Land Use

Ownership

The federal government is the largest land owner in this unit, accounting for 47% of the land. Most of this land is managed by either the USFS or the National Park Service. The USFS

manages much of the mid-elevation portions of E-9 with stewardship over 298 square miles (25% of DAU). RMNP encompasses 264 square miles in the western portion of E-9, accounting for 22% of the DAU. Private land encompasses 531 sq. miles, or 44% of the DAU. Most of this private land is located in the eastern part of the DAU and surrounding the Town of Estes Park, although there is also private land interspersed throughout the areas managed by the USFS. Boulder County Parks and Open Space and Larimer County Parks and Open Lands manage 57 square miles (5%) mostly in the plains and foothills. Cities own 24 square miles or 2% of the DAU. Slightly more than 1% of the DAU (14 square miles) is owned by the state, with State Land Board properties making up the largest proportion (Figure 6).

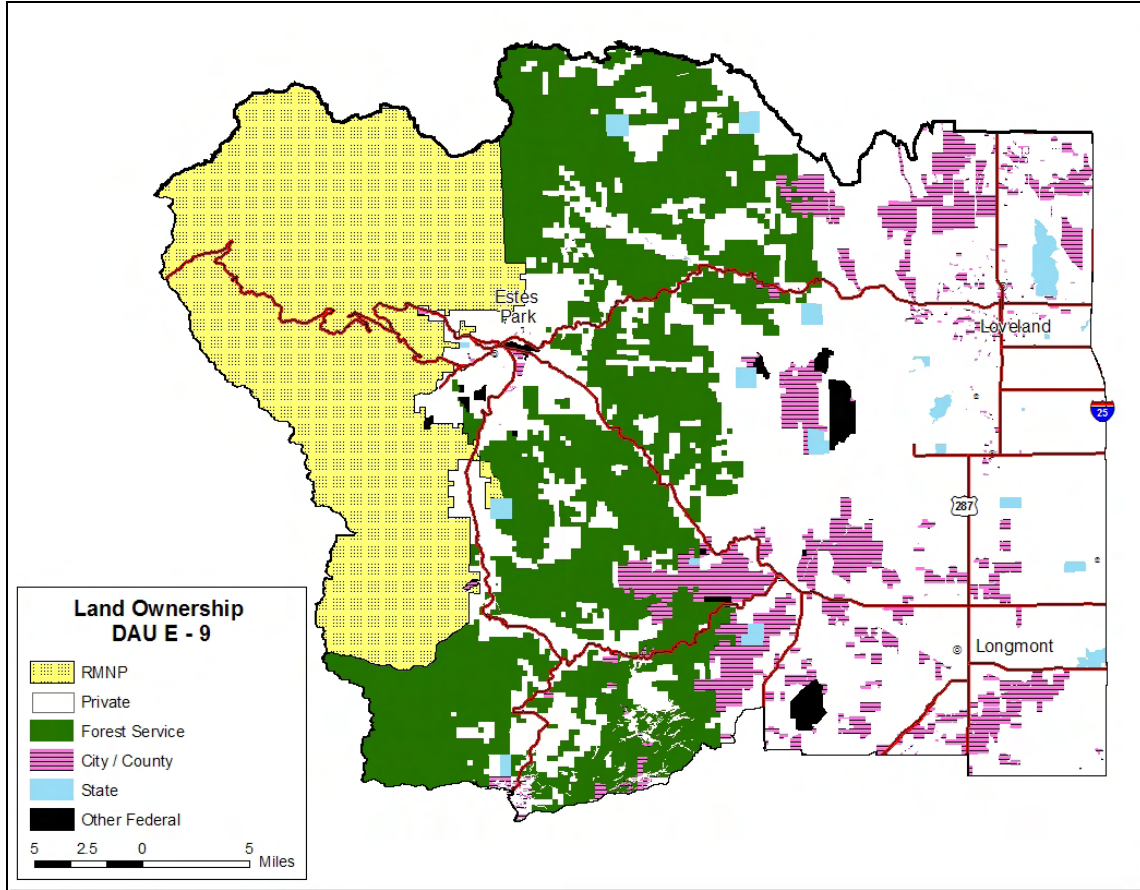


Figure 6: Land ownership in elk DAU E-9.

The amount of outdoor recreation that occurs on public lands is substantial. Hiking, off-road vehicle use, horseback riding, mountain bike riding, angling, hunting and wildlife viewing are primary uses. Agriculture activities on private land consist of hay production, grain production and cattle and horse grazing. Several large agricultural holdings have been converted in recent years to City and County Open Space or subdivided and converted into residential areas. These types of conversions will likely continue.

Habitat Resources

Elk Distribution

Elk distribution was determined using several sources of information including, radio telemetry studies, visual collar and ear tag re-observations, and observations by CDOW field staff, other natural resource agencies' staffs, hunters and local residents.

Most of the elk range is located in the western $\frac{3}{4}$ of the DAU (Figure 7). Most of the elk summer in the western half of the unit above 8,000 feet, although there are elk year round at lower elevations near the foothills. Summer range is comprised mostly of RMNP, National Forest land and private land. During the winter months, most of the elk move to winter ranges below 9,000 feet, where they concentrate at mid elevations (especially in the Estes Valley) and lower elevations (especially in the foothills). A small number of elk winter at high elevations within RMNP on windswept alpine meadows. Land ownership on winter range includes RMNP, National Forest, private and city and county open space. Approximately $\frac{2}{3}$ of the elk winter in the Estes Valley and the lower elevations of RMNP. The other $\frac{1}{3}$ of the elk are distributed throughout the remainder of the DAU, with the highest concentrations wintering on private lands and on city and county open spaces near Lyons and Loveland. Approximately 15% of the herd spends a majority of the winter on National Forest lands.

In the early 2000s, a greater portion of the elk wintering in RMNP and the Estes Valley expanded their winter range to include lower elevation areas near Loveland. Prior to 2002, about 80 elk were regularly observed near Loveland. In 2002, 400 elk were observed wintering in this area. It is thought that this distribution change was made in response to the drought conditions experienced in the unit beginning in 2002. Radio collar data shows that at least some of these elk move up to the continental divide in RMNP each summer and returned to Loveland each winter. A separate radio collar study showed that large groups in the southern part of the unit make a parallel movement from the foothills near Lyons in the winter to the higher elevations in the summer.

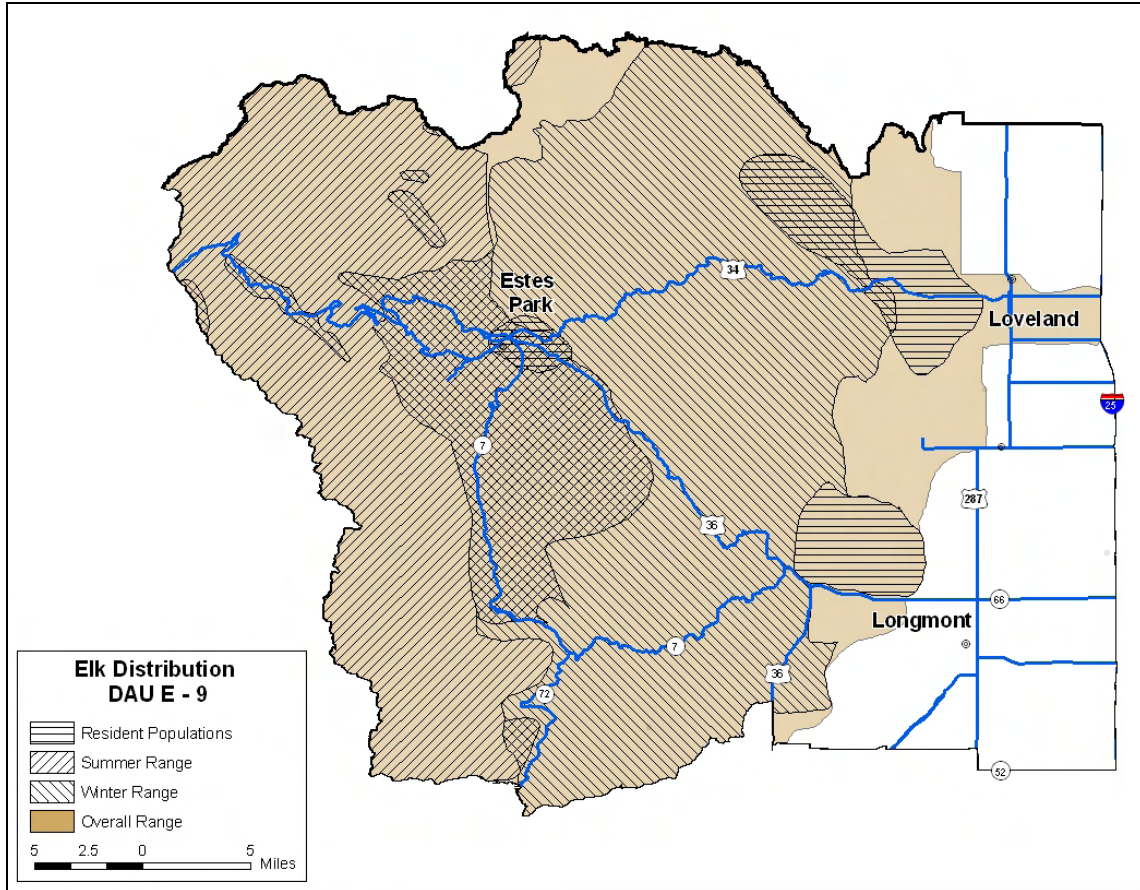


Figure 7: Overall, summer and winter ranges of elk in DAU E-9.

Habitat Condition and Capability

The habitat within RMNP has been severely affected by an elk population that has reached carrying capacity (National Park Service 2006). Concerns about the effects of elk herbivory on the ecosystem and other wildlife species within RMNP has led to the drafting of an Elk and Vegetation Management Plan / Environmental Impact Statement, which explores possible management strategies to reduce these effects (National Park Service 2006). The elk habitat within the Estes Valley has been similarly affected by elk overuse, although not to the extent of the habitat within RMNP.

The habitat on the lands managed by the USFS has been less severely impacted by elk use, due to the fact that elk do not concentrate on these lands at the densities nor for the duration that they concentrate in the Estes Valley and RMNP. There are no recent studies of habitat impacts outside of RMNP, but there are currently no areas of concern. Several fires have occurred on National Forest lands that have improved the habitat for elk. These include the Bobcat fire, the Crosier Controlled burn, the Lefthand fire and the Overland Fire.

There are currently 5 active grazing allotments within the unit.

1. 8830 acres, 25 cow-calf-pairs from June 1 - September 30
2. 7647 acres, 22 cow-calf-pairs from July 1 - August 20
3. 4033 acres, 10 cow-calf-pairs from July 1 - December 15
4. 2096 acres, 5 cow-calf-pairs from July 1 - September 30
5. 8562 acres, 37 cow-calf-pairs from June 15 - September 5

HERD MANAGEMENT HISTORY

Elk were plentiful in the area prior to the mid 1800s. After western expansion brought settlers to the area, the elk population declined rapidly due to unregulated market hunting. By 1880 there were very few, if any, elk left in the area. In 1913, the Colorado Legislature banned elk hunting. In March 1913, 25 elk from the Yellowstone herd were shipped to Lyons, Colorado and then trucked up to Estes Park where they were released in order to reestablish an elk herd in the Estes Valley (see cover photograph). In April 1914, 25 more elk from the Yellowstone herd followed. RMNP was established in 1915 and state game refuges were created in the foothills to allow the herd to become established and grow. The population grew to approximately 350 by 1930, at which time concerns of elk overpopulation were first raised. By 1941, the herd had grown to approximately 1000 elk and habitat damage to core winter range was documented. Also in 1941, a special hunting season was initiated adjacent to RMNP to remove excess elk. In order to reduce the herd and habitat damage, RMNP culled 301 elk in the winter of 1944-1945 and controlled the population by culling elk annually from 1949 to 1962. In 1962, RMNP ceased its culling operations, but continued to remove elk through trapping and transplanting operations until 1967. In 1963, the Colorado Department of Game and Fish (now known as the Colorado Division of Wildlife) initiated a hunting seasons in January and February adjacent to RMNP, in hopes of controlling the RMNP elk herd through public hunting of the elk that migrated out of RMNP during those months. In 1969, RMNP adopted a policy of natural regulation, which continues to today. The population grew within RMNP substantially until the 1980s when growth slowed as the herd approached the biological carrying-capacity of the habitat. This slow down in growth was the result of a decrease in calf and yearling survival rates (Lubow et. al, 2002) and dispersal into adjacent areas including the foothills west of Loveland. A study from 1979 to 1982 found that malnutrition was the greatest source of calf mortality (Bear 1989). This study also found that most malnutrition caused mortality occurred in the first few weeks after birth and attributed this mortality to cows being in poor body condition. RMNP is currently working on an elk and vegetation management plan to reduce the number of elk within RMNP (National Park Service 2006).

In the late 1970s, elk from RMNP pioneered into the Town of Estes Park. The CDOW continued to hold special hunting seasons in an effort to manage elk population growth; however this segment of the herd grew rapidly to approximately 2,400 elk by the year 2000. Growth in this segment slowed by 2001 as the sub herd approached the biological carrying capacity. Hunting and dispersal also contributed to the slow down in growth and in the reduction in the number of elk in the Estes Valley in recent years. The numbers of elk on refuges at lower elevations have also increased in recent years. Prior to 2002, about 80 elk were regularly observed wintering near Loveland. In 2002, this number increased to approximately 400 elk, including 2 cows that had been radio collared in RMNP. The drought conditions in RMNP and the Estes valley in that year may have driven these elk to lower elevations. Since 2002, approximately 400 elk have wintered west of Loveland, including the 2 radio collared cows, which move back to RMNP during the spring / summer. The numbers of elk on National Forest lands have not shown a similar pattern and have, in fact, declined in response to hunting pressure.

Post-hunt Population Size

The geographic size of E-9 was increased by approximately 50% in 1988 when the DAU boundaries were changed (see the *Description of DAU* section). As a result, comparable population estimates for the current DAU are not available prior to 1988. The current population objective for this herd is 2,400 elk. Population models indicate that the post-hunt population grew from approximately 2,800 elk in 1988 to approximately 4,400 elk by 1999. Additional

seasons were added and license numbers were incrementally increased from 1997 to 2006 in an effort to reduce the population. This strategy succeeded in halting the population increase by 1999. The population then began to decrease to approximately 3,400 elk by 2005 (Figure 8).

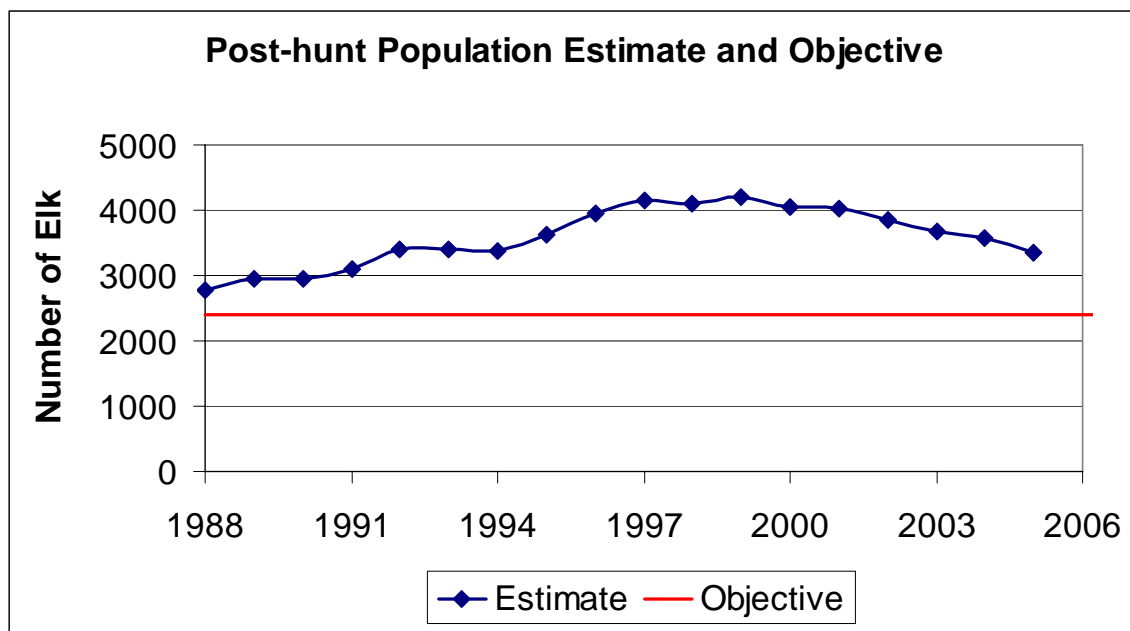


Figure 8: Annual population estimates for E-9 from 1988 to 2005.

These population estimates are derived from computer models, which incorporate estimates of mortality, population size, sex ratio at birth, observed age ratios, hunter harvest, and wounding loss. In the case of E-9, population size inputs for the model in biyears 1988 to 2000 were derived by adding the population estimate for RMNP and the Estes Valley (Lubow et al. 2002) to CDOW estimates of the number of elk in the remainder of the unit. The estimates for RMNP and the Estes Valley were achieved through a joint RMNP / CDOW project. The estimates for the Estes Valley were based on coordinated ground survey data for all years and a mark-resight study from 1994 to 2000. The estimates for RMNP from 1993 to 2000 were derived from helicopter count data and a sightability model developed specifically for use in RMNP. The CDOW estimates of the number of elk in the remainder of the unit were based on field observations, helicopter surveys and professional judgment.

Estimating population numbers of wild animals over large geographic areas is a difficult and approximate science. Numerous attempts have been made to accurately count known numbers of wild animals in large fenced areas. All of these efforts have failed to count 100% of the animals. The CDOW recognizes the difficulties of estimating the size of elk populations as a challenge in managing populations and attempts to maximize the accuracy of these estimates by using the latest technology and inventory methodology available. As better information and techniques become available (e.g., new estimates of survival/mortality, wounding loss, sex ratios, density, or new modeling techniques and software) they are evaluated and used where appropriate. The population estimate presented in this document should, therefore, not be considered a completely accurate enumeration of the animals in the DAU.

Chronic Wasting Disease

Chronic wasting disease is a fatal neurological disease found in deer, elk and moose. It belongs to a family of diseases known as transmissible spongiform encephalopathies or prion diseases. The disease attacks the brains of infected animals, causing the animals to become emaciated, display abnormal behavior and incoordination, and eventually die. The three year average CWD prevalence rate for 2003 to 2005 in hunter-harvested elk from GMU 20 is 1.7% with a 95% confidence interval of 0.9% to 2.5%. This prevalence rate is based on 956 samples and is the highest prevalence rate of all wild elk herds in Colorado.

Post-hunt Herd Composition

Field work conducted by the CDOW and RMNP provided the data on herd composition. Lubow et al. (2002) reported data collected during helicopter surveys in RMNP. These include observed sex ratios for biyears 1991 to 2000 and age ratios for 1988 to 2000. Observed herd composition ratios for RMNP from 2001 to 2004 were provided by RMNP staff (personal communication). Lubow et al. (2002) also provides observed herd composition ratios for the Estes Valley collected during ground surveys for biyears 1988 to 2000. For biyears 2001 to 2005, observed herd composition ratios for the Estes Valley were derived from CDOW ground surveys. Ground surveys by the CDOW provided observed herd composition ratios for the remainder of the unit for biyears 1999, 2000, and 2003; a helicopter survey was conducted in 2004. The observed DAU-wide herd composition ratios, for the years in which data was available in all 3 areas, were calculated by averaging the ratios in these 3 areas (i.e., RMNP, Estes Valley, remainder of E-9) weighted by the proportion of the herd in each area. The resulting observed post-hunt sex ratios were 22, 14, 28 and 7 for 1999, 2000, 2003 and 2004, respectively. The observed post-hunt age ratios were 37, 22, 32 and 20 for the same years. For the remaining years from 1991 – 2004 for which data is only available the Estes Valley and RMNP, the weighted averages for these 2 areas was used (Figure 9).

Elk in the St. Vrain DAU are difficult to survey from the ground or by helicopter. Elk frequent residential areas and areas with heavy conifer cover, limiting visibility and access. High winds and lack of consistent snow cover further add to the difficulty of post-hunt elk surveys. Sex ratios are often underestimated due to behavioral and, therefore, sightability, differences between sexes. Cows, calves and young bulls gather in large groups, often exceeding 100 animals in open grassland areas. In contrast, bulls greater than 2 years old segregate into smaller bachelor groups and use low visibility habitats such as steep, timbered slopes. As a result, more bulls than cows are overlooked during surveys and observed sex ratios usually underestimate actual sex ratios to an unknown, but likely substantial, degree.

Computer modeling indicates the sex ratio in the early 1990s was over 40 bulls to 100 cows (Figure 9). This ratio decreased during the late 1990s and early 2000s to 30 - 35 bulls: 100 cows due to the increased harvest of bulls relative to cows during this period. The current sex ratio is approximately 35 bulls: 100 cows. The increase in the sex ratio in 2005 was due to 2.3 times more cows being harvested than bulls in 2005. This estimate and trend is supported by field observations, hunter success rates, and the age and antler size of harvested bulls.

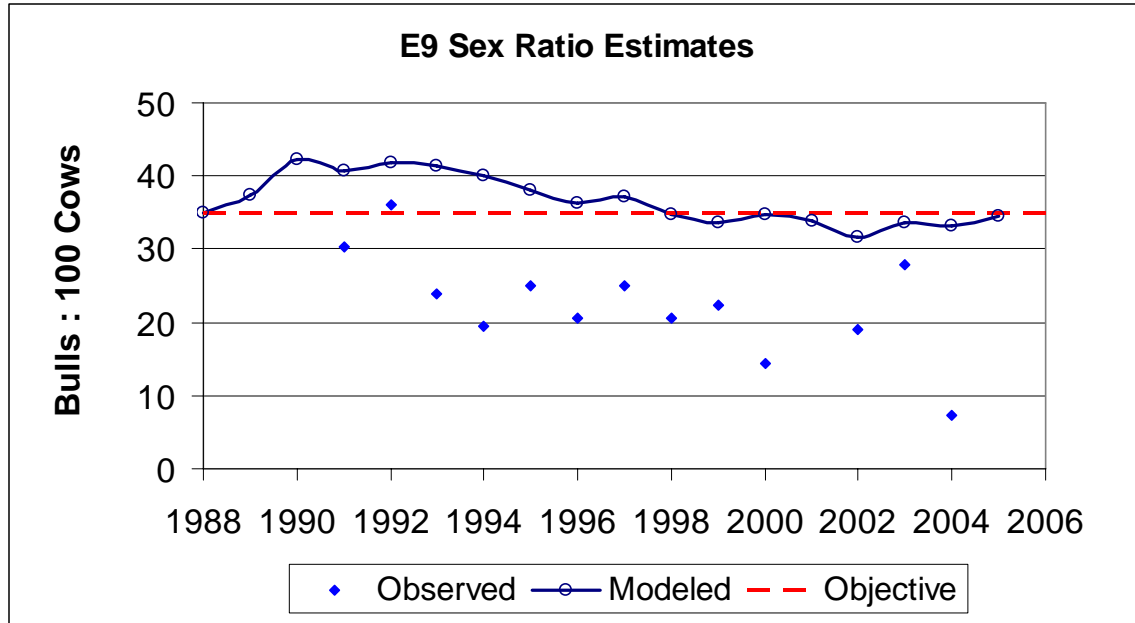


Figure 9: Observed, modeled and objective sex ratios for E-9 from 1988 to 2005.

Past Management Strategies

Season Structure and License Numbers

Over the last 30 years, several changes have been made to the season structure in order to increase harvest of elk as the population grew. Most of these changes have targeted elk that use refuges within the GMU without over harvesting elk using National Forest lands most of the year. Late elk seasons in January and February and a special hunt zone (“T” zone) were initiated in the 1960’s. Special February seasons in the 1990s were used in years during which weather events moved elk out of RMNP onto National Forest lands. In 1999, a private land only (PLO) cow season was added in order to increase the pressure on elk that concentrate on private lands. In 2003, cow licenses were reinstated to the regular rifle seasons. Also in 2003, the late rifle seasons were changed from 2 long seasons to 3 shorter seasons in an attempt to increase harvest without increasing hunter crowding. In 2004, the archery season was altered in order to allow better control of hunter and elk harvest distribution and to ensure cow harvest in the Estes Valley, where elk concentrations were increasing, while keeping hunter numbers at appropriate levels in residential areas. The majority of archery licenses in the DAU remained either sex licenses, but these were no longer valid in the Estes Valley. A limited number of antlerless archery licenses and even fewer archery bull licenses were made available that were valid anywhere in the unit, including the Estes Valley.

In addition to these changes, there have also been statewide changes to season structure that have affected GMU 20. The muzzleloader and late seasons changed from either sex licenses to antlered and antlerless specified licenses in 1989, and a 4th rifle bull season was added in 2000.

Licenses for each hunting season in GMU 20 are limited in number. License numbers in this unit have oscillated over the last 30 years, increasing from 500 in 1976 to 2050 in 1982, then decreasing to 850 in 1996 due to concerns that the elk on national forest lands were being over harvested. From 1988 to 1996, the elk population in this herd was above objective and increasing steadily (Figure 8). In an effort to reduce the population to objective, hunting seasons were

added, as explained previously, and license numbers were increased from 1997 to a high of 3155 licenses in 2006 (Figure 10). These increases were incremental in order to enable evaluation of the effects of each small increase on harvest, success and hunter satisfaction. All seasons reached the maximum acceptable number of licenses between 2002 and 2004 except for the PLO cow season which continued to increase until 2006. The number of archery licenses was decreased due to hunter crowding in 2003 (Table 1 and Figure 11).

Bull license numbers have also been affected by requirements of CWD monitoring and management. In order to ensure an adequate number of samples for the estimation of CWD prevalence in the herd, the number of bull licenses was increased from 455 to 700 in 2002. Most of this increase was in the regular rifle seasons (Figure 11). In 2002-2003 CWD monitoring in deer revealed significantly higher CWD prevalence rates in males than in females, with prevalence in older males being significantly higher than in younger males. In light of this information, the increased pressure on male elk established in 2002 was maintained through the 2004 season in order to determine if a similar pattern existed in elk. This CWD monitoring in elk failed to show a higher CWD prevalence rate in males than females. In response to this, and in response to a decreasing sex ratio and hunter crowding, the number of bull licenses were decreased by 25% in 2005.

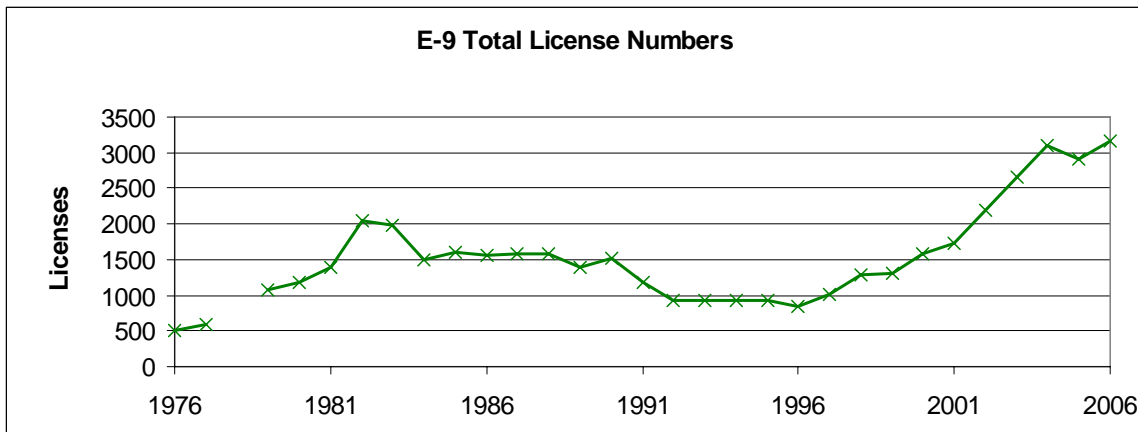


Figure 10: Total License numbers in E-9 from 1976 to 2006.

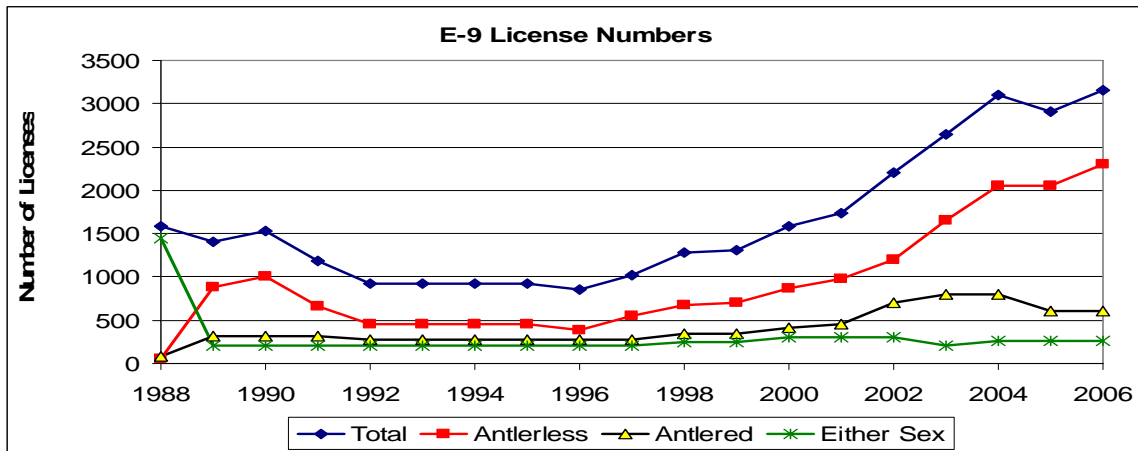


Figure 11: Total, antlerless, antlered and either sex license numbers in E-9 from 1988 to 2006. All either sex licenses are archery licenses except in 1988 when there were 1000 rifle either sex licenses.

Table 1: Number of elk licenses offered in GMU 20 from 1988 to 2005. ES = Either Sex; PLO = Private Land Only, A'less = Antlerless.

Season	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Archery ES	380	200	200	200	200	200	200	200	200	200	250	250	300	300	300	200	200	200	200
Arch A'less																	50	50	50
Arch Antler																	5	5	5
Muzzle ES	60																		
Muzzle A'less		20	20		50	50	50	50	45	45	55	55	75	75	100	100	100	100	100
Muzzle Antler		40	40	40	50	50	50	50	50	50	65	65	75	75	100	100	100	75	75
Rifle A'less 2	30	30	34	30												100	100	100	100
Rifle A'less 3	30	30	34	30												100	100	100	100
Rifle A'less 4																100	100	100	100
Rifle Antler 1	30	30	30	30	30	30	30	30	35	35	45	45	50	50	100	100	100	75	75
Rifle Antler 2	25	25	25	25	25	25	25	25	25	25	30	30	45	50	100	100	100	75	75
Rifle Antler 3	25	25	25	25	25	25	25	25	25	25	30	30	30	50	100	100	100	75	75
Rifle Antler 4													30	50	100	100	100	75	75
Late ES 1	500																		
Late ES 2	500																		
Late A'less 1		400	460	300	200	200	200	200	160	250	310	300	300	300	350	250	300	300	300
Late A'less 2		400	460	300	200	200	200	200	175	250	315	300	300	300	350	250	300	300	300
Late A'less 3																250	300	300	300
Late Antler 1		100	100	100	70	70	70	70	65	70	90	90	90	90	100	100	100	75	75
Late Antler 2		100	100	100	70	70	70	70	70	70	90	90	90	90	100	100	100	75	75
Late Antler 3																100	100	75	75
PLO A'less												50	200	300	400	500	750	750	1000
Total	1580	1400	1528	1180	920	920	920	920	850	1020	1280	1305	1585	1730	2200	2650	3105	2905	3155

Harvest

The total annual harvest in E-9 has oscillated with license numbers over the last 30 years increasing from 103 in 1976 to 504 in 1986, then decreasing to 255 in 1985, then increasing to 617 in 2001 before decreasing again to 534 in 2005 (Figure 12). Bull and cow harvest have shown similar trends except cow harvest has continued to rise since 2001.

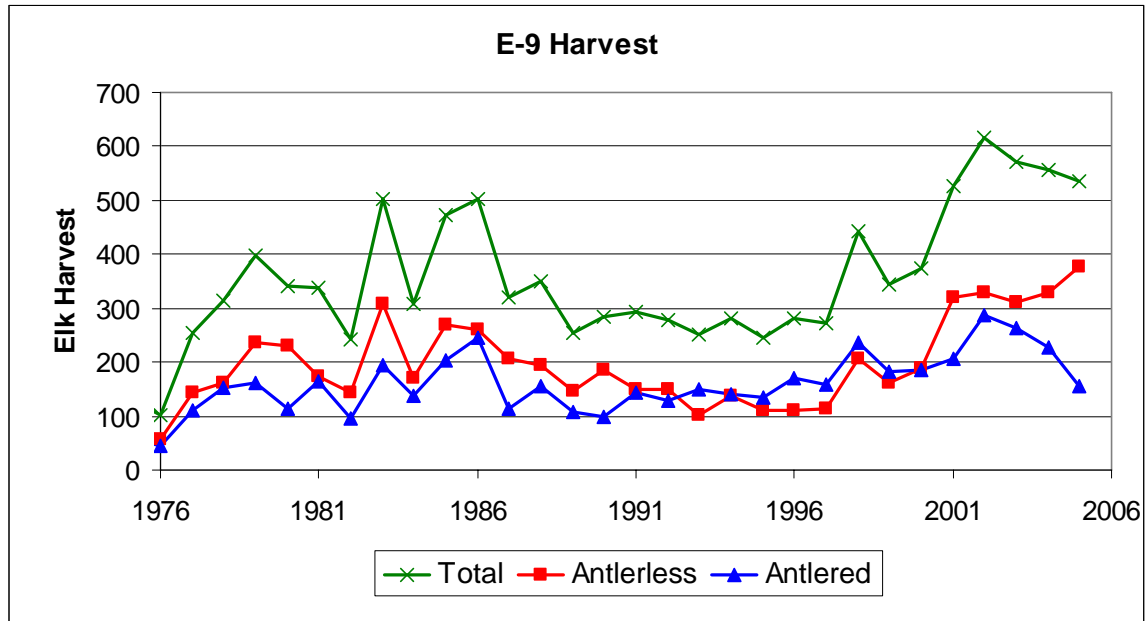


Figure 12: Total, antlerless and antlered elk harvest in DAU E-9 from 1976 to 2005. The DAU boundaries were changed in 1988 creating a DAU that was 50% larger than previously.

Factors affecting the number of elk harvested in E-9 each year were: 1) the number of specified licenses sold in GMU 20; 2) weather; 3) season structure; 4) areas open to hunting; and 5) hunter success. Factors 1-4 are discussed in the following paragraphs. Factor 5 is discussed in the *Hunter Success Rates* section below.

The total harvest in the GMU has increased in response to the increase in the number of licenses made available (Figure 13 and Figure 14). This direct relationship between license numbers and harvest is found for both bulls and cows and for all season types except for the late seasons (Figure 15). The harvest during the late seasons has not increased with increasing license numbers. Weather has a great influence on harvest during the late seasons. In years in which more than 6 inches of snow accumulated in the Estes Valley during or shortly before the late seasons, hunter success rates and harvest increased as elk were pushed out of the Estes Valley, where little hunting occurs, and onto public and private land where hunting does occur.

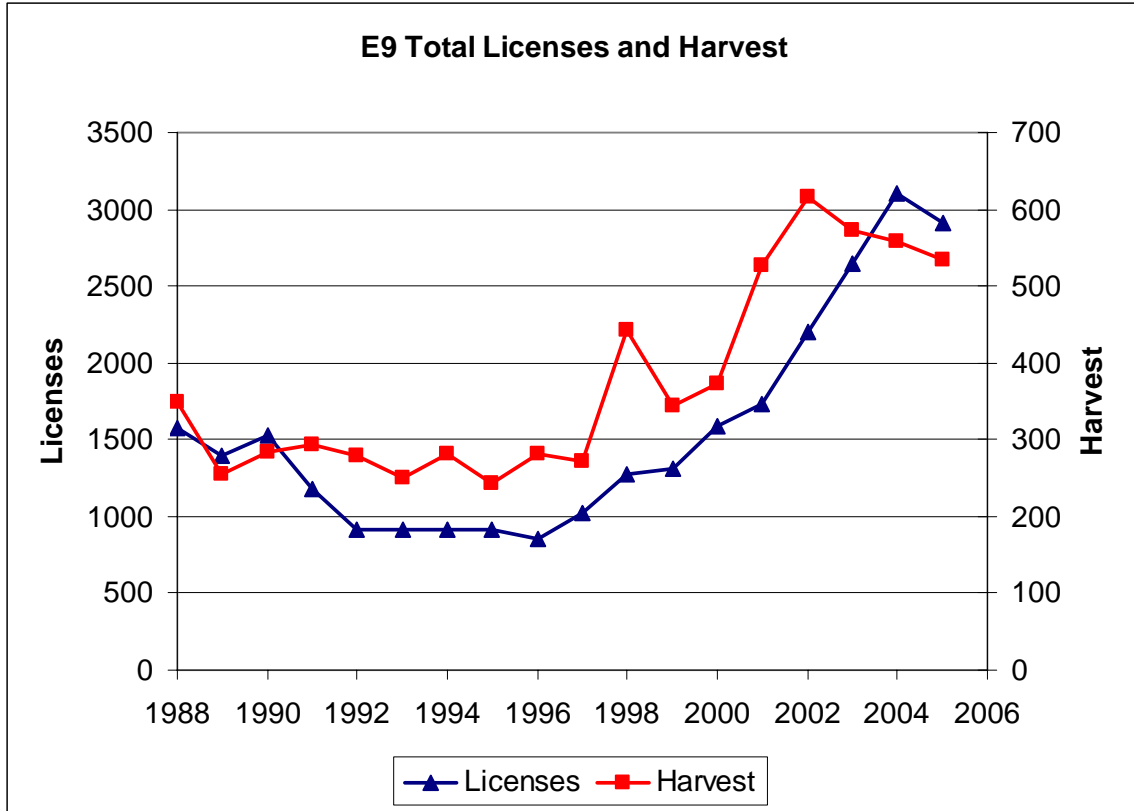


Figure 13: Total license numbers and harvest in E-9 from 1988 to 2005.

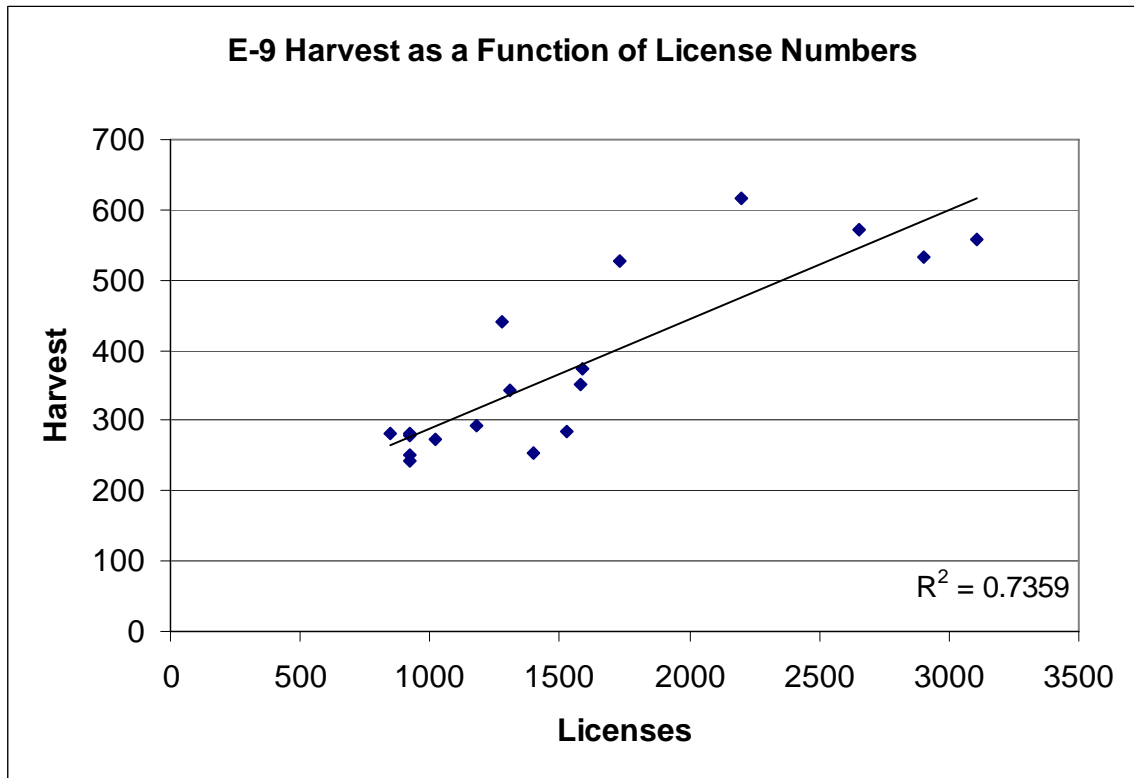


Figure 14: E-9 harvest as a function of license numbers.

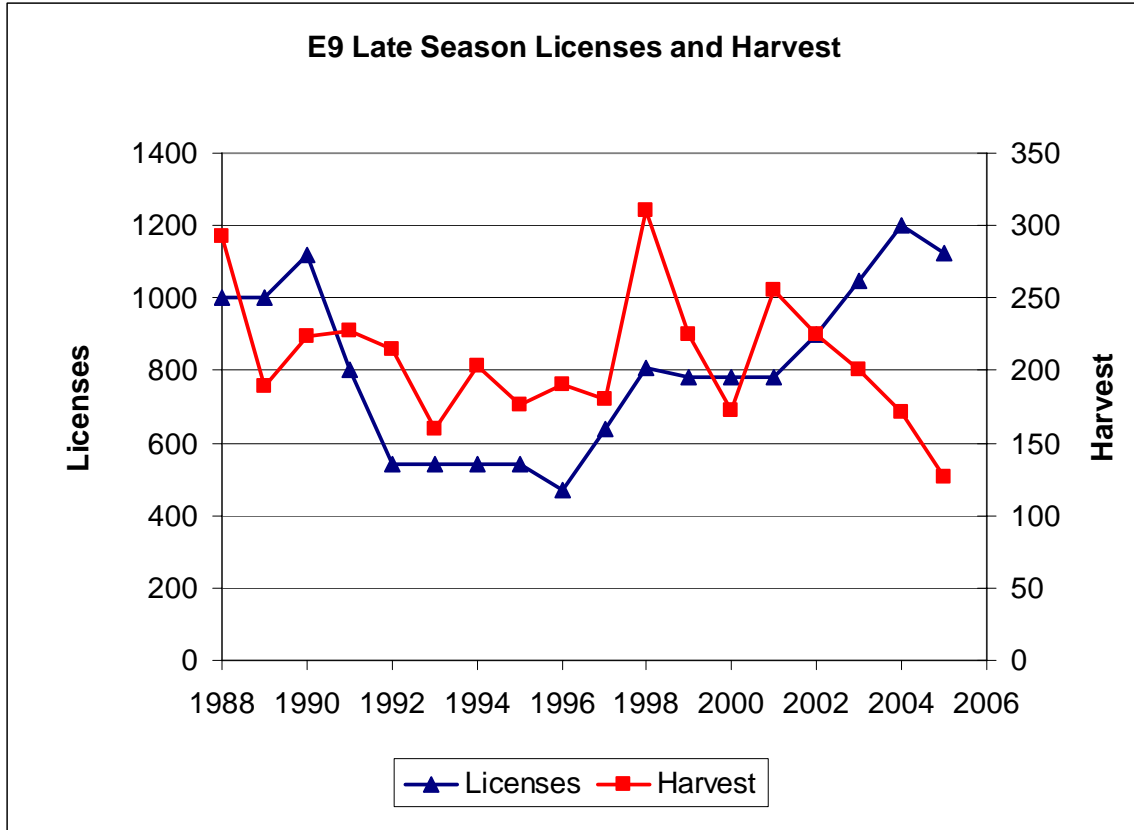


Figure 15: License numbers and harvest during the late seasons in E-9 from 1988 to 2005.

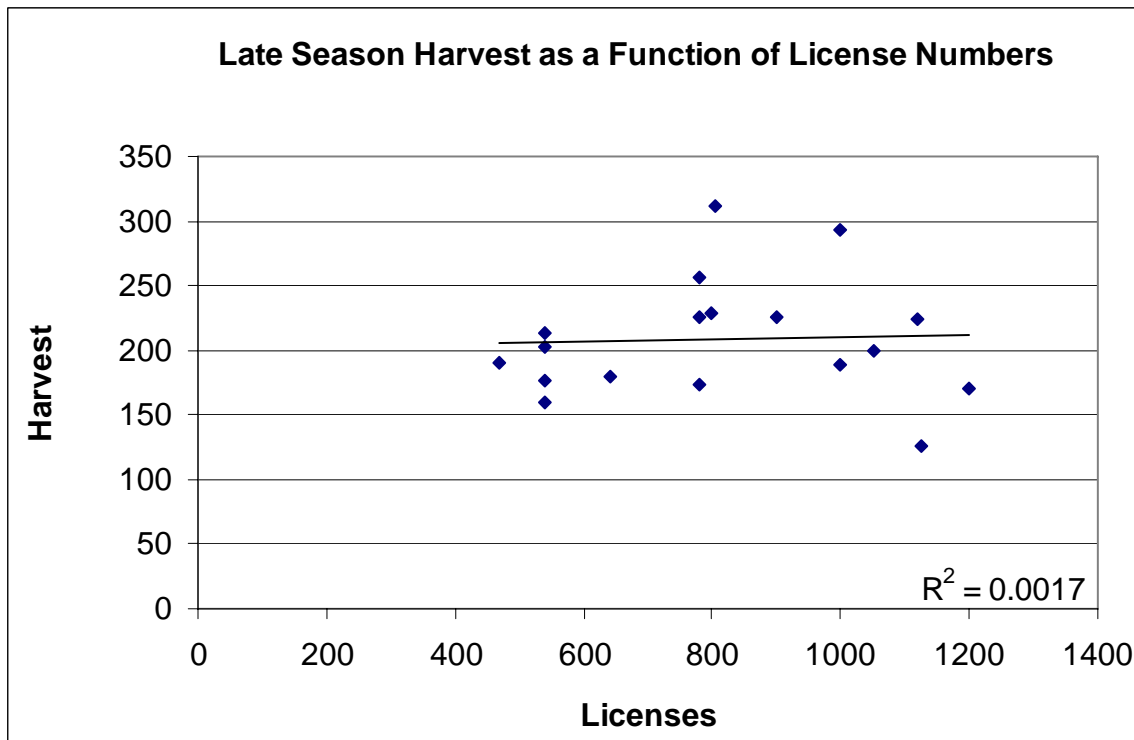


Figure 16: Late season harvest as a function of license numbers.

Season structure has also affected harvest. Most notable was the addition of a PLO cow season, which targets elk that concentrate on private lands. This season was instated in 1999 with 50 licenses and proved to be popular with hunters and successful in increasing cow harvest and dispersing elk from these areas. The license numbers were incrementally increased to 1000 by 2006. In 2005, 2/3 of the total antlerless harvest came from PLO licenses. The addition of cow licenses to the regular rifle seasons also increased cow harvest. In 2003, a 3rd late season was added. This was done in order to reduce hunter crowding and increase elk harvest by shortening season length and increasing the number of seasons. It has been shown that harvest is positively correlated with the number of opening days (Freddy 1992).

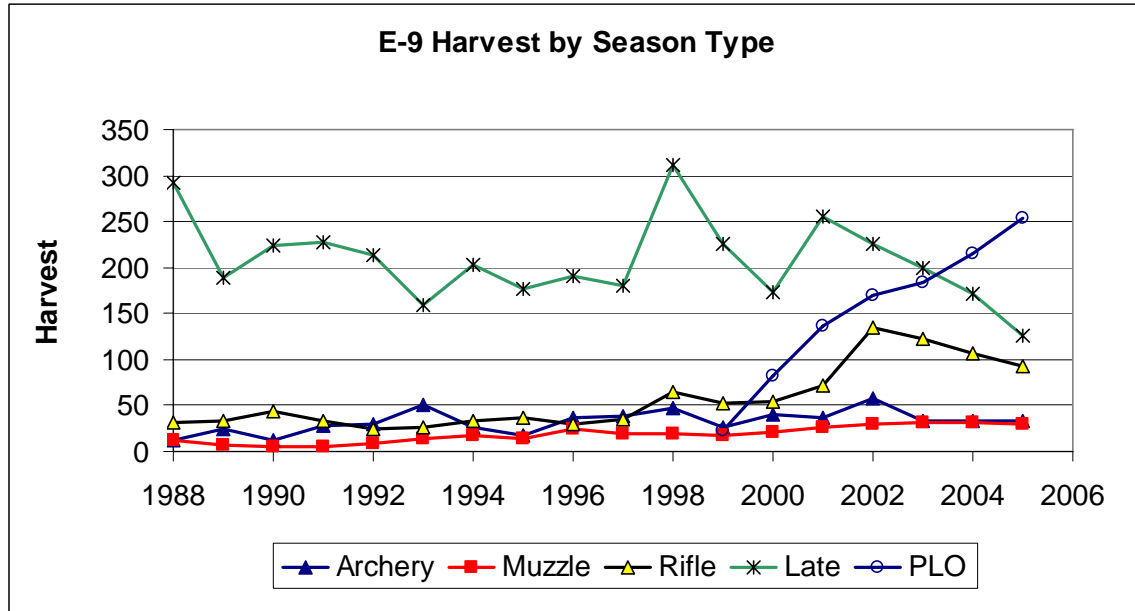


Figure 17: Number of elk harvested in GMU 20 from 1988 to 2005 during archery, muzzleloader, regular rifle, late rifle and PLO seasons.

The overall area open to hunting has decreased in this unit over the last 30 years. Most notably through the purchase of large privately owned ranches by cities and counties for use as open space and through the subdividing of large holdings into smaller parcels. This reduction in huntable area has had a negative effect on harvest.

Hunters

Hunter numbers

The number of licenses offered in each elk seasons in GMU 20 is limited and all licenses offered sell. As a result, hunting pressure is closely correlated with license numbers. As with license numbers, total pressure decreased from 1988 to 1992 and then increased from 1996 to 2004 (Figure 18). The number of rifle and late season hunters followed this general trend; archery hunters increase from 1988 to 2002 and then decreased; while muzzleloading hunters increased from 1988 to 2004; PLO hunters increase dramatically from 1999 to 2005 (Figure 19).

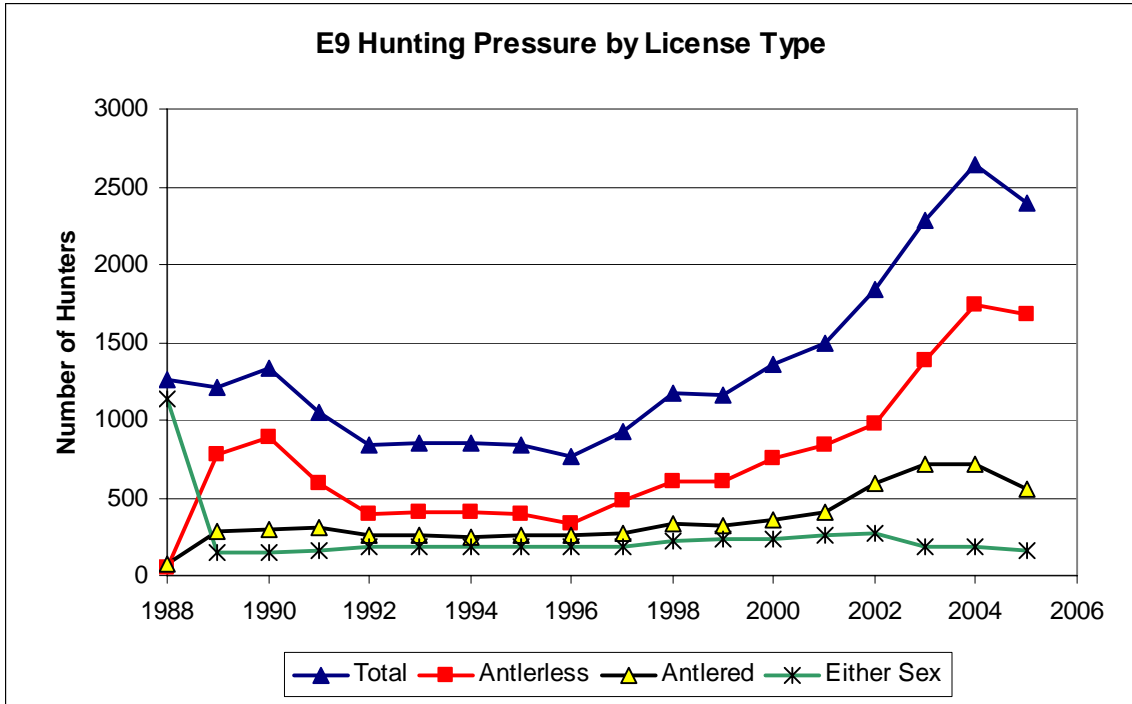


Figure 18: Numbers of antlerless, antlered, either sex hunters in DAU E-9 from 1988 to 2005. All either sex licenses are archery licenses except in 1988 when there were 1000 late rifle either sex licenses.

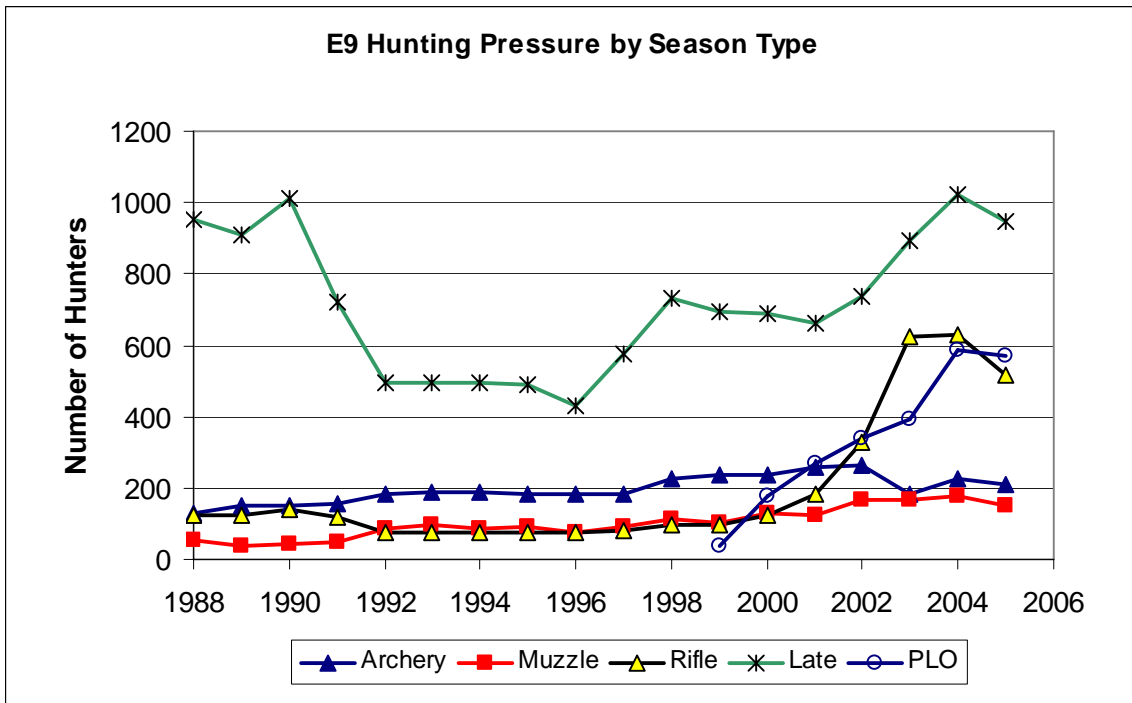


Figure 19: Number of elk hunters in GMU 20 from 1988 to 2005 during archery, muzzleloader, regular rifle, late rifle and PLO seasons.

Hunter Success Rates

Success rates were calculated as the number of elk harvested divided by the number of hunters who participated in the hunt. The overall success rate in E-9 fluctuates from year to year (Figure 20) and by season type (Table 2). Success rates have decreased as license numbers increased during all of the rifle seasons (i.e., regular rifle, late rifle and PLO seasons). This relationship appears to exist for both bulls and cows during all of the rifle seasons, although it appears to be stronger in bull seasons than in cow seasons. This relationship does not appear to exist for the archery and muzzleloader seasons. Although, this relationship may be confounded with the effects of population size on success rates, it suggests that license numbers in all of the rifle seasons may have reached the point of diminishing returns. That is, although the harvest continues to increase with license numbers, the amount that harvest increase achieved per unit increase in license numbers is decreasing as license numbers increase.

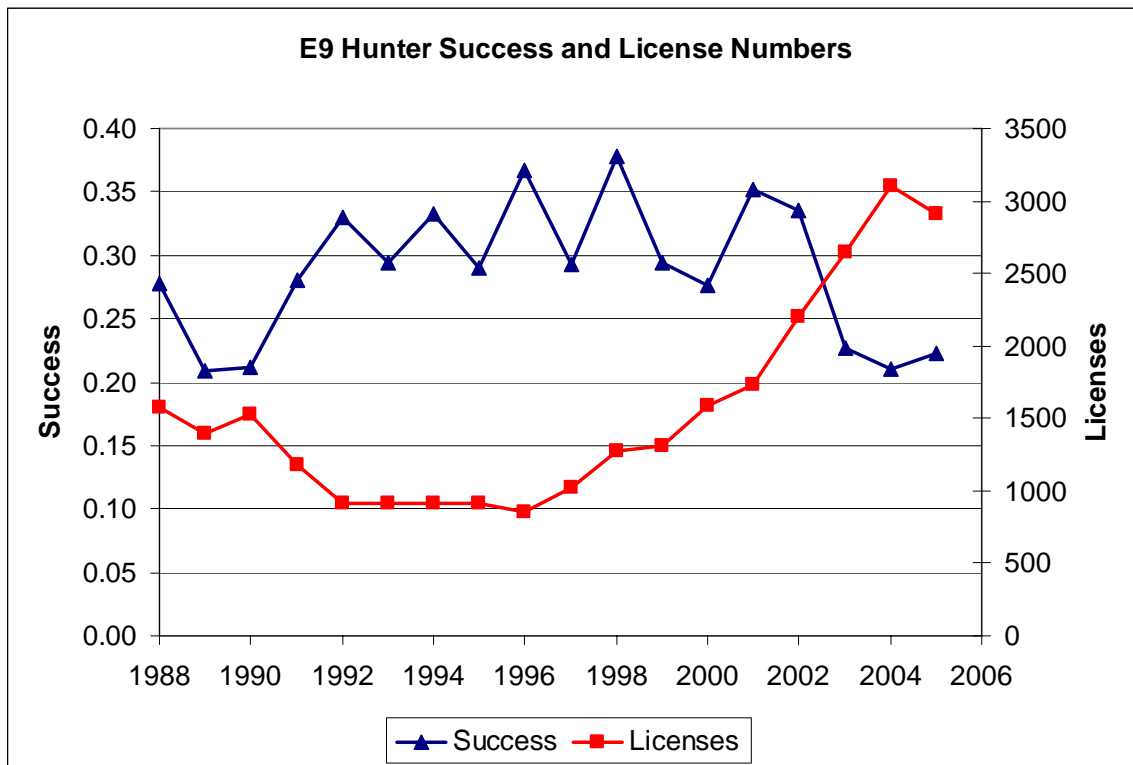


Figure 20: Overall success rates and license numbers for E-9 from 1988 to 2005. Success rates are calculated as the number of elk harvested divided by the number of hunters who participated in the hunt.

Table 2: Average hunter success rates and range per season type in DAU E-9 from 1988 to 2005.

Season Type	% Success (Range)
Archery	16 (8 - 26)
Muzzleloader Cow	11 (0 - 19)
Muzzleloader Bull	24 (13 - 40)
Rifle Cow	16 (4 - 26)
Rifle Bull	39 (22 - 65)
Late Cow	25 (10 - 41)
Late Bull	48 (26 - 67)
PLO Cow	48 (37 - 61)
All Seasons	29 (21 - 38)
All Bull Seasons	40 (24 - 58)
All Cow Seasons	27 (18 - 38)

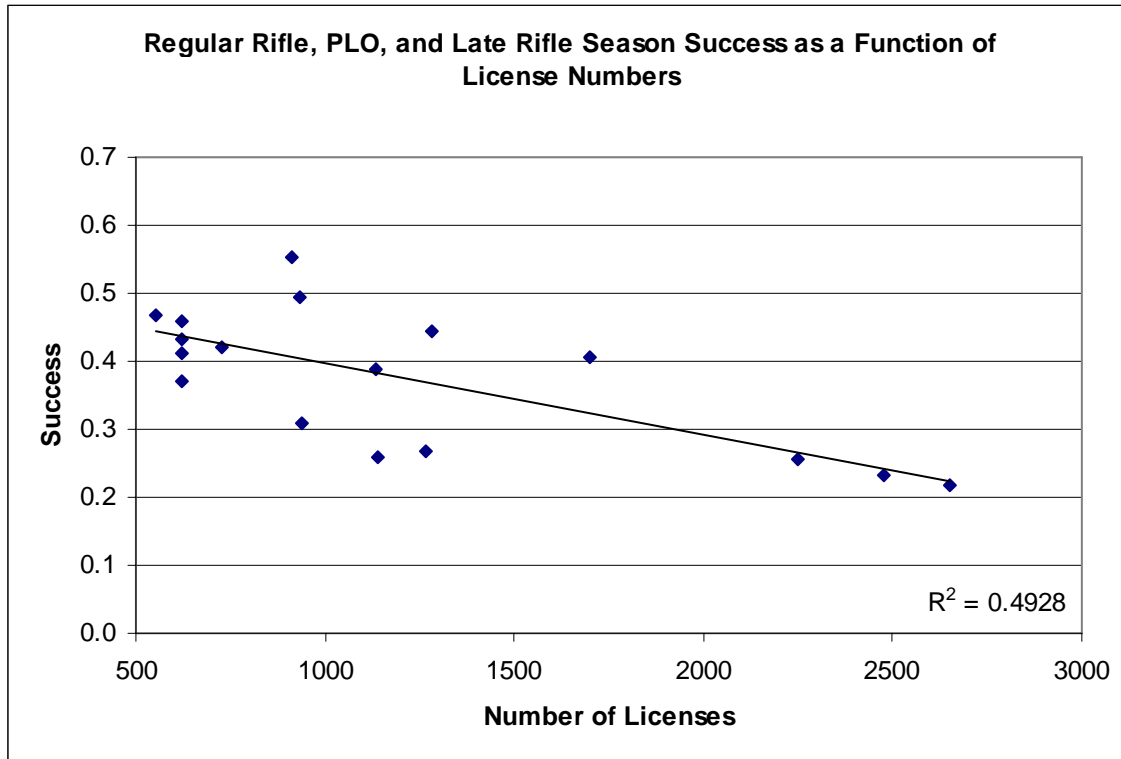


Figure 21: E-9 success rates in the regular rifle, PLO and late rifle seasons combined as a function of license numbers. Success is calculated as the number of elk harvested divided by the numbers of hunters that participated in the hunt.

Hunter Residency

Resident hunters made up 81 – 86% of the hunters in E-9 between 2000 and 2005 (Table 3) and accounted for between 73 – 83 % of the total elk harvested during this same time frame. They were responsible for 54-74% of the antlered harvest and 86 – 93% of the antlerless harvest (Table 4).

Table 3: E-9 resident, non-resident and total elk hunter numbers, with percentage of total hunters shown in parentheses.

	Hunters		
	Resident	Nonresident	Total
2000	1123 (81)	271 (19)	1394
2001	1293 (86)	205 (14)	1498
2002	1566 (85)	272 (15)	1838
2003	1723 (86)	284 (14)	2007
2004	2240 (84)	412 (16)	2652
2005	2057 (85)	362 (15)	2419

Table 4: Total, antlered and antlerless elk harvest numbers with percentages of total, antlered and antlerless harvest, shown in parentheses for resident (resid) and nonresident (nonres) hunters in E-9. Also shown is overall success for resident and nonresident hunters.

Year	Total Harvest			Overall Success		Antlered Harvest		Antlerless Harvest	
	Resid	Nonres	Total	Resid	Nonres	Resid	Nonres	Resid	Nonres
2000	274 (73%)	99 (27%)	373	24%	37%	102 (55%)	82 (45%)	172 (91%)	17 (9%)
2001	436 (83%)	91 (17%)	527	34%	44%	138 (67%)	69 (33%)	298 (93%)	22 (7%)
2002	513 (83%)	104 (17%)	617	33%	38%	213 (74%)	75 (26%)	300 (91%)	29 (9%)
2003	401 (79%)	104 (21%)	505	23%	37%	140 (70%)	60 (30%)	261 (86%)	44 (14%)
2004	452 (81%)	109 (19%)	561	20%	26%	156 (68%)	74 (32%)	296 (89%)	35 (11%)
2005	444 (81%)	103 (19%)	547	22%	28%	90 (54%)	76 (46%)	354 (93%)	27 (7%)

Preference Points

The minimum preference points required to draw a license in E-9 for residents and nonresidents over the last 3 years are shown in Table 5. No preference points were required to draw any cow license during these years. Zero to 3 preference points were required to draw a bull license depending on the season and year.

Table 5: Minimum Preference points needed by residents (R) and nonresidents (NR) to draw limited licenses in E-9 from 2004 to 2006 by season.

Season	Hunt Code	Minimum Preference Points (R / NR)		
		2004	2005	2006
Arch Either	EE020O1A	0 / 0	0 / 0	0 / 0
Arch Cow	EF020O1A	0 / 0	0 / 0	0 / 0
Muzzle Cow	EF020O1M	0 / 0	0 / 0	0 / 0
Rifle Cow 2	EF020O2R	0 / 0	0 / 0	0 / 0
Rifle Cow 3	EF020O3R	0 / 0	0 / 0	0 / 0
Rifle Cow 4	EF020O4R	0 / 0	0 / 0	0 / 0
Late Cow 1	EF020L1R	0 / 0	0 / 0	0 / 0
Late Cow 2	EF020L2R	0 / 0	0 / 0	0 / 0
Late Cow 3	EF020L3R	0 / 0	0 / 0	0 / 0
PLO Cow	EF020P5R	0 / 0	0 / 0	0 / 0
Arch Bull	EM020O1A	1 / -	2 / -	3 / -
Muzzle Bull	EM020O1M	1 / 1	1 / 1	1 / 2
Rifle Bull 1	EM020O1R	0 / 0	0 / 1	0 / 0
Rifle Bull 2	EM020O2R	0 / 0	0 / 0	1 / 1
Rifle Bull 3	EM020O3R	0 / 0	0 / 0	0 / 0
Rifle Bull 4	EM020O4R	0 / 0	0 / 0	0 / 0
Late Bull 1	EM020L1R	1 / 1	1 / 1	0 / 0
Late Bull 2	EM020L2R	1 / 1	1 / 1	1 / 1
Late Bull 3	EM020L3R	3 / 3	3 / 3	2 / 3

Watchable Wildlife

Elk viewing is an important activity in E-9. Elk viewing is enjoyed throughout the unit, but is concentrated in the Town of Estes Park and in the adjacent portions of RMNP. Elk viewing draws tourists into Estes Park year round, with activities peaking every year during the first week of October when the Town of Estes Park hosts “Elk Fest.” Elk viewing contributes substantially to the economy of the town. Many local residents consider the opportunity to view elk in town as improving their quality of life.

Managing the E-9 elk herd to preserve opportunities for non-consumptive use has always been an important goal. Non-consumptive uses of this elk population will be considered when selecting management objectives and strategies.

Economic Impacts of Elk

The economic impact of elk in E-9 includes expenditures by both hunters and wildlife viewers. Hunting expenditures include lodging, meals, gas, licenses, equipment and services. According to a report on the economic impacts of hunting, in Colorado, in 2002, each resident big game hunter in Colorado spent \$35.10 per hunting day excluding license fees and each non resident spent \$299.70 per day (BBC Consulting 2004). In 2005, resident hunters spent 13,660 days hunting elk in E-9 and nonresident hunters spent 1,874 days. Using the expenditures per day given above, resident hunters are estimated to have spent \$479,466 and nonresident hunters spent \$561,638, for a total of \$1,041,104 in 2005. In addition, E-9 hunters spent an estimated \$240,418 on hunting licenses in 2005.

Elk contribute both positively and negatively to the economy of the entire area in a variety of non-hunting related ways, especially in the vicinity of the Town of Estes Park. Elk draw large numbers of visitors to RMNP and the surrounding areas. Elk visitation to the Estes Valley is responsible for 15% of the Town of Estes Park's sales tax revenue (approximately \$900,000 per year), \$30 million in sales of goods and services, \$10 million in personal income, and 750 jobs in the area (National Park Service 2006). Elk also cause landscaping damage to public and private property, which then needs to be repaired by local landscapers or the Estes Valley Recreation and Parks District. Elk cause traffic congestion and vehicle accidents, resulting in vehicle damage and increased auto repair business. The presence of elk in the Estes Valley has a positive influence on property values and the quality of life for local residents (National Park Service 2006).

Conflicts

The human elk conflicts are concentrated in the Estes Valley and on private lands at lower elevations near the towns of Loveland and Lyons. Conflicts include elk / vehicle collisions; damage to lawns, trees and gardens; damage to agriculture; and encounters between elk and people. The CDOW receives many reports each year about each of these types of conflicts.

Game Damage Hunts

The CDOW pays approximately \$7000 a year in elk game damage in GMU 20. Game damage hunts are held on specific properties with the goal of decreasing the amount of game damage to these properties. The primary purpose of damage hunts is not to achieve DAU harvest objectives, but to help alleviate ongoing damage to specific properties by removing or redistributing the animals that are causing damage. Most of the damage hunts in GMU 20 have been held to alleviate damage to agricultural products (i.e., corn, alfalfa, and pumpkins). Damage hunts can be held between August 15th and February 28th. In 2003-2004, 23 cow licenses were approved. In 2004-2005, 5 either sex and 7 cow licenses were issued. In 2005-2006, 14 either sex licenses were issued.

CURRENT HERD MANAGEMENT

Post-hunt Population

The population objective for this herd is 2,400 elk. There are currently approximately 3,400 elk in the DAU. The population has been decreasing steadily since 1999 in response to increased cow harvest. If current harvest levels can be maintained and all other parameters remain the same (e.g., adult and juvenile survival, calf: cow, hunter success rates, etc), this herd is predicted to reach the population objective in 2009. It is uncertain whether this level of harvest will be maintained as the herd approaches the population objective (see "Current Management Problems" section).

Post-hunt Herd composition

The 2005 post hunt sex ratio projection was at the 35 bulls per 100 cows objective. During the early 1990s the sex ratio was projected to be higher than objective, but then it decreased, dropping below objective from 2002 to 2004. In 2005, the number of bull licenses was reduced resulting in the estimated sex ratio increasing to objective. If current harvest levels can be maintained and all other parameters remain the same, the sex ratio is expected to continue to rise above the current objective.

Current Management Strategies

The current management strategy is to continue to bring the population towards objective by maximizing cow harvest. Success and participation rates indicate cow license numbers have been maximized in most of the seasons already; however, it may be possible to increase cow harvest slightly by making alterations to the late hunting seasons. The late seasons target elk migrating out of the Estes Valley in response to snow events. When snow accumulates in the Estes Valley, the elk that concentrate there are pushed to lower elevations where they can be hunted. During the past 18 years, these snow events have occurred more often in November and February, than in December and January. Currently there are 3 late seasons, one each in November, December and January. It may be possible to increase harvest slightly by moving either the December or January season to February when snow events are more likely. The absence of hunting pressure in either December or January may also result in more elk moving out of refuges and being available for hunting during a February season.

RMNP is currently completing an *Elk and Vegetation Management Plan / Environmental Impact Statement* (National Park Service 2006) to address the effects of elk herbivory on the habitat of the core elk winter range. This management plan recognizes that the elk on winter range in RMNP are overabundant and analyses alternatives to reduce the elk population within RMNP. If this plan is implemented, the number of elk within RMNP and their distribution is expected to change. It is unknown what effect this will have on the elk population in the areas managed by the CDOW that are adjacent to RMNP. As RMNP implements its management plan, the CDOW will evaluate the effects and adjust its elk management in the adjacent areas accordingly in order to achieve the management goals delineated in this management plan.

Current Management Problems

Elk Distribution and Concentrations in Refuges

The distribution of elk in this DAU has changed over the last 20 years with a greater proportion of the herd now concentrating in refuges during the winter, where elk are not hunted, and fewer elk remaining on National Forest land. Refuges in GMU 20 include RMNP, city and county open spaces, and in urban and exurban areas. This elk distribution change has been the result of many factors. The number of refuges and the total refuge acreage in the unit have increased as more land is developed for human habitation or purchased for city and county open spaces. Elk are attracted to these refuges because of the lack of hunting pressure in them and the abundance of human enhanced and maintained vegetation found in these areas (irrigated and fertilized landscaping, hay fields, corn fields, golf courses, etc.). The elk concentrations in areas where hunting is allowed have decreased due to direct removal of elk from these areas and through their redistribution as they move to refuges to avoid hunting. Currently, during most of the winter, more than 80% of the elk in this unit concentrate on refuges, leaving less than 20% on National Forest land.

The high concentrations of elk in refuges have lead to increased habitat damage and human-elk conflicts (e.g., vehicle, collisions, damage to landscaping and agricultural crops, elk/human encounters). At the same time, some hunters are concerned about the decrease in the number of elk available on National Forest lands. Redistribution of elk would alleviate both of these concerns, however, effectively redistributing animals will be challenging.

There are several alternatives that should be considered to affect this distribution change. First, where practical, hunting should be promoted in areas where elk concentrate as a means to decrease concentrations directly and as a means of redistributing elk. The CDOW should

continue to work with private land owners, city and county governments and Rocky Mountain National Park to encourage hunting and / or other dispersal techniques in these areas. For example, special hunts could be established in urban and exurban areas, city and county open spaces, or RMNP. Second, hunting seasons and license numbers should be changed, where possible, to reduce the pressure that causes elk to move to refuges. These changes could include changing the timing of late seasons, reducing the number of antlerless licenses in the regular and late rifle seasons while maintaining relatively high numbers of PLO licenses, and issuing licenses only valid in areas of the GMU where harvest is desired. Third, the CDOW should work with the USFS to explore possible elk habitat improvements on National Forest lands (e.g., prescribed burns, grazing management, noxious weed control) and management strategies to prevent elk from being pushed off of National Forest lands (e.g., off-road vehicle management).

Other methods to redistribute elk may not be practical or publicly acceptable. At this time, the most cost effective is culling (lethal non-hunting removal) by CDOW personnel or other authorized personnel. However, culling is not preferred over hunting by the CDOW or by the public. A 1997 survey of Evergreen, Colorado residents found that culling was one of the least preferred population management alternatives to reduce elk concentrations. Likewise, recent experiences using culling of deer for CWD management proved unpopular to both hunters and non-hunting members of the public.

Transplanting elk to control populations is not practical due to the prevalence of CWD in this herd. Even if CWD was not present, or if an effective live test becomes available, there are few places that are willing to receive elk. Elk numbers in other areas of Colorado are approaching or have exceeded objectives and elk damage complaints occur in most areas of the state. Most other states with elk herds have similar problems with elk damage. Occasionally, another state will accept elk for reintroductions, but these projects are too infrequent and small to depend on for long-term population control removals.

Fertility control would be expensive and logistically difficult in a free ranging ungulate population as large as the St. Vrain elk herd. Although there have been few surveys on preference of elk population management methods conducted in Colorado, one, of Evergreen area residents, found sterilization or fertility control was acceptable to only 15% of the respondents.

All non-hunting elk removal options have a cost associated with them and the question of who will fund these activities must be answered before any could be implemented. The CDOW is funded primarily by the sale of hunting licenses and associated equipment, thus it can be argued that the use of non-hunting techniques should be funded by other sources, including agencies that preclude elk hunting from within their jurisdictions. Precedence has been set in other states where local governments have paid for non-hunting options in many instances where deer population numbers have exceeded public tolerance. In these cases, state wildlife agencies continue to oversee and authorize all wildlife removals, but implementation and costs are borne by local governments or agencies whose decisions have precluded hunting as a management tool.

Habitat Damage

The elk populations in RMNP and the Estes Valley are either at or close to the biological carrying capacity. This in combination with the fact that elk in the area are less migratory and more concentrated than they used to be has lead to ecological damage within RMNP due to overuse by elk. These effects have been well documented by the National Park Service (National Park Service 2006). RMNP is currently working on a management plan to address these concerns.

Antler size

Some hunters, wildlife viewers and photographers have expressed dissatisfaction over the decrease in the number and size of mature bulls observed in this DAU over the last 5-10 years. Although the number and size of bulls in E-9 remains high relative to many other herds in Colorado, there has been a decrease, especially in the northern range of the herd. This decrease was partly the result of the aggressive license numbers and hunting seasons instituted by the CDOW in an attempt to bring this population towards the population and sex ratio objectives, to facilitate the collection of adequate samples for CWD sampling, and to manage CWD. The seasons were designed to target elk that migrate out of RMNP in recognition of the fact that elk in RMNP were overabundant. The result of this hunting strategy was a reduction in the proportion of mature bulls in the herd. The bull harvest peaked in 2002. The proportion of bulls in the herd and bull antler size have both begun to increase in response to the decrease in bull harvest since 2002.

Another factor that may have contributed to the decrease in the body and antler size of mature bulls is forage quality and availability. The total number of animals that the habitat can support is known as carrying capacity. As a population approaches this carrying capacity, the amount and quality of forage available to each animal is reduced. Drought lowers the carrying capacity of an area by reducing the amount and quality of forage available. The reduction in nutritional resources available to each animal has been shown to result in lower calf survival, lower recruitment rates, reduced body condition of adults, reduced antler size in bulls. The reductions in calf survival and recruitment result in a stabilization or reduction in the population size and are known as density dependent effects. A study in RMNP published in 2002 concluded that the elk within RMNP reached carrying capacity in the early 1990s and that the town sub herd was either at or closely approaching carrying capacity at that time (Lubow 2002, RMNP 2006). The study also documented 2 expected density dependent effects, a decline in calf survival and calf recruitment, in both the town and RMNP sub herds. An earlier study provided similar results. George Bear (1989) found that, from 1979 to 1982, malnutrition was the greatest source of calf mortality in the area. Bear's study also found that most malnutrition-caused-mortality occurred in the first few weeks after birth and attributed this mortality to cows being in poor body condition. There have been no empirical studies to monitor the other expected results of nutritional limitation such as a decrease in the body size of adults and in the antler size of mature bulls. However, field observations and reports from hunters and wildlife viewers indicate that both of these effects are being exhibited in the herd. Reducing the population to below the carrying capacity of the habitat can be expected to result in increased calf survival, increased calf recruitment, improved adult body condition, and increased antler size.

ISSUES AND STRATEGIES

Issues were identified at public meetings and through written comments from June to December 2006. The E-9 DAU plan was discussed at the Sportsman's Advisory Group meeting held in Loveland on June 20, 2006. This meeting was advertised in newspapers, on the CDOW website and through personal notification of groups or individuals known to be interested. Three additional meetings were held in August and September in Loveland, Estes Park, and Longmont. The Loveland and Estes Park meetings were advertised through an announcement on the Estes Park radio channel and personal notification of groups or individuals known to be interested. The Longmont meeting was advertised in newspapers, on the CDOW websites and through personal notification of groups or individuals known to be interested. These meetings were attended by CDOW personnel (the Area Wildlife Manager, the Senior Terrestrial Biologist, District Wildlife

Managers and the Terrestrial Biologist). Representatives from RMNP attended the Loveland and Estes Park meetings in August. Approximately 60 members of the public attended the June 20 meeting in Loveland. Approximately 40, 50, and 20 people attended the August and September Loveland, Estes Park, and Longmont meetings respectively. Surveys (Appendix A) were distributed at these meetings, at CDOW offices and through the CDOW website. People were encouraged to complete and return these surveys. A draft management plan was posted on the CDOW website and sent to local governments and land management agencies for review in November and December 2006. Individuals, land management agencies and local governments were invited to submit comments on the draft DAU plan.

Summary of Issues

In total, 60 people responded to the survey and 9 people submitted comments on the draft plan (at least 4 of these 9 had also responded to the survey). Boulder County Parks and Open Space Department, the Forest Service, and Rocky Mountain National Park also provided comments on the draft plan. Appendix B contains the individual comments received during the public input process. The following paragraphs contain a summary of the most common comments. Many of the comments at the meetings and in the surveys were directed specifically towards RMNP's *Elk and Vegetation Management Plan / Environmental Impact Statement* (National Park Service, 2006). These comments are not applicable to the CDOW's management of the elk in E-9 and, therefore, have not been included in this document.

Most members of the hunting community that responded to the survey expressed concern over the decrease in the number of elk available to be hunted on National Forest land. Some of them also said that the antler size of bulls in the unit has declined over the past 5 - 10 years and expressed a desire for the bull numbers and antler size to return to previous levels. Several people also expressed frustration with the lack of access that hunters have to the elk concentrating on private lands and in refuges during hunting season.

People that live in the Estes Valley had both positive and negative comments. On the one hand some find elk to be a nuisance by causing damage to property and by causing traffic incidents and other conflicts. On the other hand, many people stated that the presence of elk in town improved the resident's quality of life and attracted tourists, which contributed to the town's economy. Most people enjoyed elk viewing to some extent, although several people would prefer to see healthy elk in a natural habitat behaving normally rather than seeing elk walking down Main Street.

Three people expressed opposition to all elk hunting.

In response to the survey question asking whether they would like to see the elk population increase, stay the same, or decrease, the responses were fairly evenly split (Table 6). However, of the 19 people who wanted an increase, 17 of them wanted the increase so that there would be more elk available on National Forest land for hunting. This was confirmed by the answers to question 2 in which a majority of the people wanted an increase of elk on National Forest land and a decrease in the Estes Valley and RMNP. People who wanted the population to decrease gave reasons such as ecosystem degradation due to overuse by elk, unstable elk populations due to overpopulation, human/elk conflicts, and unnatural and undesirable elk habituation to people.

Table 6: A summary of the answers to questions 1 and 2 of the E-9 DAU plan public survey. Question 1 asked; "Would you like the number of elk in GMU 20 to increase, decrease or remain the same?" Question 2 asked, "Would you like the distribution of elk to change (e.g., less elk in the Estes Valley, more elk on National Forest land)?" The number of respondents is shown.

	E-9	Estes Valley	National Forest	RMNP	Low Elevation
Increase	19	1	30	2	2
Stay the Same	17	4	2	4	0
Decrease	20	16	2	13	1
Don't know	1				
Don't decrease	2				
No answer	1				
Total	60	21	34	19	3

Of the 56 responses to Question 3, which asked hunters whether the bull segment of the herd should be managed for quality hunting or for increased hunting opportunity, 12 (21%) people responded that the unit should be managed for more hunting opportunity; 34 (61%) respondents preferred the unit be managed for quality bull hunting; 10 (18%) respondents chose the status quo.

Being able to see large bulls was the factor that was most important to the respondent's wildlife viewing experience, followed by being able to easily find elk, followed by being able to see elk in large groups. Another factor that was important to respondents was being able to see healthy elk in balance with the ecosystem in a natural setting behaving naturally.

Fifty-two of the respondents reported living in GMU 20. The remaining 8 respondents were from elsewhere in Colorado.

ALTERNATIVE DEVELOPMENT

Population Objective

Alternative 1: 1,400 – 1,800 elk post season

This would require approximately a 50% reduction from the current population estimate and a 33% reduction from the current population objective. This magnitude of a reduction cannot be achieved through public hunting and would require non-hunting alternatives in elk refuges, such as culling elk by CDOW or other authorized personnel or fertility control.

The goal of the RMNP elk and vegetation management plan is to achieve a population of 1,200-2,100 elk in RMNP and the Estes Valley. This alternative is not compatible with that goal. If RMNP achieves this population objective, this alternative would only allow for, at most, a few hundred elk in the remainder of the unit.

If this population was achieved, assuming expected survival and recruitment rates, approximately 30% of the 2005 cow harvest would be required annually to maintain the population at this level. The low elk numbers on National Forest lands would result in a large decrease in satisfaction for hunters and wildlife watchers outside of refuges. Guides and outfitters would be negatively

impacted as would hunter-supported businesses. A reduction of this magnitude in herd numbers would likely lead to a decrease in human / elk conflicts as well as a decrease in the frequency of game damage claims.

Alternative 2: 2,200 - 2,600 elk post season

This alternative is consistent with the current population objective. Previously, population objectives were stated as point objectives. Population objectives are now given as ranges in recognition of the difficulties of precisely estimating and managing populations and variation in range capacity due to weather. If this alternative is chosen the herd will be managed for the midpoint of this range (i.e., 2400 elk) in most years, which is equal to the current objective. This would require a 30% reduction in the elk herd. This alternative is compatible with the lowest end of the population range objective in RMNP's Elk and Vegetation Management Plan.

If current harvest levels are maintained, this objective could be reached through public hunting by 2009. However, it is unclear whether current harvest levels can be maintained without a change in elk distribution from refuges to National Forest land where they can be hunted. Any increase in the number of refuges in the unit would impede the ability to achieve and maintain the herd at this level. This alternative will require the CDOW to work with refuge land managers to affect elk distribution changes and the reduction in elk densities in refuges. Once the population reaches 2,400 elk, assuming expected survival and recruitment rates, approximately 45% of the 2005 cow harvest would be required annually to maintain the population at this level.

This alternative may cause a decrease in hunter satisfaction unless elk distribution is changed. This herd reduction is expected to lead to a decrease in human / elk conflicts and the frequency of game damage claims. However, the current conflicts and game damage claims are more a function of elk distribution than of total elk numbers. If elk distribution does not change, the frequency of conflicts and game damage claims may not be reduced. This alternative is not expected to have appreciable effects on elk viewing nor the economic impacts of elk viewing (National Park Service 2006).

Alternative 3: 3,000 – 3,400 elk post season

This alternative is 33% higher than the current objective and has the current population estimate as the upper limit. Assuming expected survival and recruitment rates, approximately 55% of the 2005 cow harvest would be required annually to maintain the population at this level. However, any increase in the number of refuges in the unit would impede the ability to maintain the herd at this level. Watchable wildlife recreation opportunities and satisfaction will remain at current levels. Income from elk viewing related recreation is not expected to be affected.

This alternative is compatible with the RMNP's Elk and Vegetation Management Plan. If RMNP's plan is implemented and is successful, the number of elk in RMNP and the Estes Valley would be reduced, this would allow for a greater proportion of the herd to be present outside of RMNP and the Estes Valley. This elk distribution would lead to increased hunter satisfaction and decreased human / elk conflicts in the Estes Valley, and a reduction in the habitat damage caused by elk in RMNP.

If elk redistribution is not achieved, human / elk conflicts, damage by elk on private land, and hunter satisfaction would likely not change much from current levels. However, increasing human populations within elk range could result in higher rates of damage and other conflicts. Hunter satisfaction levels are expected to increase if elk distribution is changed.

Herd Composition - Sex Ratios

All three of the sex ratio alternatives listed below is expected to result in a herd that will produce quality hunting and wildlife viewing opportunities.

Alternative 1: 30 – 35 Bulls: 100 Cows

This alternative has the current sex ratio estimate and objective as the upper end of the range. This sex ratio objective is relatively high compared to most elk herds in Colorado. Compared to the other alternatives, this would result in the greatest number of bull licenses, the smallest antlered bulls, the fewest bulls in the population, and the smallest increase in the number of preference points required to draw a bull license. If the herd were to reach the current population objective of 2,400 elk and 30 - 35 bulls: 100 cows, approximately 70% of the current bull licenses would be required to maintain the population at 30 -35 bulls: 100 cows, assuming expected harvest, wounding loss, survival and recruitment rates.

Within the range of the alternatives listed here, the lower the bull-cow ratio, the greater the reproductive potential of the herd. This is due to the fact that the lower the bull-cow ratio at a given population level, the greater the number of cows in the herd and the higher the number of calves that can be born annually. Of the 3 alternatives, Alternative 1 would result in a herd with the highest breeding potential. Because this DAU has a large number of refuges where management activities are limited, low reproductive potential may be advantageous in this DAU.

Alternative 2: 40 – 45 Bulls: 100 Cows

This alternative would require an increase of 5 to 10 bulls: 100 cows. It is estimated that this bull-cow ratio is similar to that of the herd in the early 1990s. This alternative represents a sex ratio objective that would be one of the highest for Colorado elk herds. If the herd were to reach the current population objective of 2,400 elk and 40 - 45 bulls: 100 cows, approximately 60% of the current bull licenses would be required to maintain the population at 40 - 45 bulls: 100 cows, assuming expected harvest, wounding loss, survival and recruitment rates. Alternative 2 would result in a herd with an intermediate reproductive potential relative to the other alternatives. It would also lead to an intermediate increase in the number of preference points required to draw a bull license.

Alternative 3: 50 – 55 Bulls: 100 Cows

This alternative would require an increase of 15 to 20 bulls: 100 cows. Compared to the other alternatives, this would result in the fewest bull licenses, but the largest-antlered bulls and the greatest number of bulls in the population. If the herd were to reach the current population objective of 2,400 elk and 50 - 55 bulls: 100 cows, approximately 50% of the current bull licenses would be required to maintain the population at 50 -55 bulls: 100 cows, assuming expected harvest, survival and recruitment rates. Of the 3, Alternative 3 would result in a herd with the lowest reproductive potential and the highest number of preference points required to draw a bull license.

PREFERRED ALTERNATIVES

Preferred Population Alternative

The CDOW recommends population Alternative 2, which calls for 2,200 – 2,600 elk. This recommendation is based on public input and field staff evaluation of habitat conditions, recreational opportunity, conflicts and current herd levels.

This alternative represents no change from the current population objective and will require a reduction in the overall number of elk in the unit from the current estimate of 3,400. This reduction will target elk that currently concentrate in refuges where elk densities are high (e.g., RMNP, Estes Valley, west Loveland, other private lands). Elk densities on National Forest lands are relatively low; these elk will therefore not be targeted for reduction. One of the goals of this alternative is to produce a shift in the distribution of elk in the unit away from areas where they are currently concentrated to other areas of the unit.

This alternative is consistent with the public input received during the DAU planning process. A majority of the survey respondents called for an increase in the numbers of elk on National Forest Lands and a reduction in the number of elk in the Estes Valley and RMNP. Game damage and human / elk conflicts are expected to decrease as the population decreases especially if the desired distribution changes can be achieved.

Alternative 1 represents too large of a reduction in the number of elk. It is uncertain if this large of a reduction could even be achieved without large-scale non-hunting removal efforts. This large of a reduction would also be expected to lead to increased hunter and wildlife viewer dissatisfaction and would negatively impact the economics of the area.

Alternative 3, an increase in the population objective, is not advisable as this would result in more, relative to Alternative 2, human/elk conflicts and habitat damage in areas where elk concentrate. In addition, as the human population increases and expands, elk management in this area will become more challenging making a lower elk population desirable.

Preferred Herd Composition Alternative

The CDOW recommends herd composition Alternative 2, which calls for 40 – 45 bulls per 100 cows. This recommendation is based on public input and field staff evaluation of recreational opportunity, conflicts and current herd levels.

This alternative represents an increase from the current objective and will require an increase in the current ratio of approximately 35 bulls per 100 cows. This alternative is consistent with public input received during the DAU planning process. A majority of the survey of the respondents called for an increase in the number and size of mature bulls for both hunting and wildlife viewing purposes.

An objective of 40 – 45 bulls per 100 cows is equal to the highest DAU herd composition objectives in the state. This is expected to result in high quality hunting and wildlife viewing opportunities.

Alternative 1 is not desirable as evident from the public input calling for increase in the number and size of mature bulls in the unit. A higher herd composition objective (Alternative 3) is also not advisable as this would lead to very restricted bull hunting opportunity. Also, much of the elk game damage in this unit is caused by bulls. A large increase in the proportion of bulls in the population may therefore lead to increased game damage.

Management Implications

The current management strategy in E-9 is to reduce the number of elk by maximizing antlerless harvest. Over the past 5 years, this strategy has succeeded in reducing population, but has also led to suboptimal elk distribution. As the herd approaches the goal of 2,200 – 2,600, this strategy

will need to change in order maintain required harvest levels while achieving the desired elk distribution. First, the DOW will need to continue to work with land managers (e.g., private land owners, city and county governments and Rocky Mountain National Park) to redistribute elk from areas of high concentration to areas of lower concentration. Second, the CDOW should work with the USFS to explore possible elk habitat improvements on National Forest lands (e.g., prescribed burns, grazing management, noxious weed control) and management strategies to prevent elk from being pushed off of National Forest lands (e.g., off-road vehicle management). Third, hunting seasons and license numbers should be changed, where possible, to increase pressure on elk that use refuges while reducing the pressure that causes elk to move to refuges. A simple increase in license numbers is not expected to result in increased harvest due to the fact that license numbers currently meet or exceed season capacities and the fact that the high pressure on elk may be encouraging them to use refuges. Changes to hunting seasons could include: altering the timing of late seasons to better coincide with weather events that push elk out of refuges; reducing the number of antlerless licenses in the regular and late rifle seasons while maintaining relatively high numbers of PLO licenses; issuing licenses only valid in areas of the GMU where harvest is desired; using special late seasons in years with conducive weather events; allowing individual hunters to purchase unlimited numbers of cow licenses for certain seasons (i.e., adding certain cow seasons to List C). Dispersal hunts will continue to be used to decrease game damage.

Once a population of 2,200 – 2,600 elk with 40 – 45 bulls per 100 cows is achieved, the total number of licenses will need to be reduced by approximately 50% in order to maintain this population. The number of preference points required to draw a license is, therefore, expected to increase.

APPROVAL / SIGNATURES

We the undersigned, hereby accept and approve this wildlife management plan for the St. Vrain Data Analysis Unit, E-9, on behalf of the Colorado Division of Wildlife and the Colorado Wildlife Commission.

Bruce McCloskey, Director
Colorado Division of Wildlife

Date _____

Thomas M. Burke, Chairman
Colorado Wildlife Commission

Date _____

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APPENDIX A: PUBLIC INPUT SURVEY



OPPORTUNITY FOR PUBLIC COMMENT

ON ELK MANAGEMENT

In Data Analysis Unit E-9
(Game Management Unit 20)

Dear Interested Citizen:

Elk herds in Colorado are managed at the Data Analysis Unit (DAU) level. The management of each herd is guided by a herd specific management plan called a DAU plan. DAU plans describe herd population and management histories, population objectives and management strategies for a 10 year period. The DAU planning process is the (CDOW) method for incorporating the concerns and desires of the public with the biological capabilities of a specific elk herd. Public input is, therefore, a very important part of the DAU planning process.

Wildlife managers have begun the process of updating the elk management plan for the St. Vrain elk herd (GMU 20). The CDOW is, therefore, seeking your input on the future management of this herd. The information you provide will help the CDOW develop objectives and management strategies for the St. Vrain elk herd.

Please complete the following survey and return it to:

COLORADO DIVISION OF WILDLIFE
Attn: Sherri Huwer
4207 W. CR 16E.
Loveland, CO 80537

**Surveys must be received by the
CDOW by September 17, 2006.**

The St. Vrain Elk Data Analysis Unit (DAU E-9) consists of Game Management Unit (GMU) 20. This area is bounded by the Continental Divide on the west, Interstate 25 on the east. This area included the southern portion of Larimer County and the northern portion of Boulder County, including the towns of Estes Park, Loveland, and Longmont. The portion of Rocky Mountain National Park east of the continental divide is included in this DAU (Figure 1).

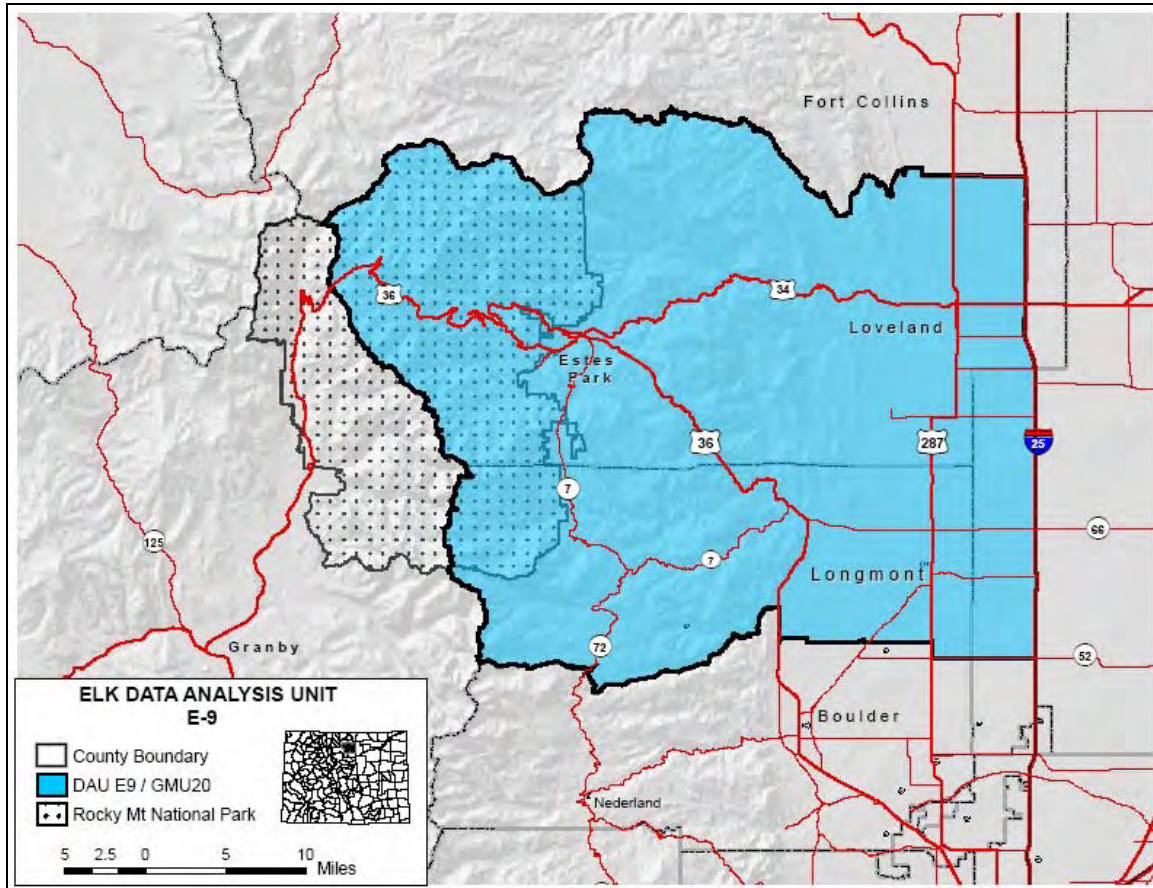


Figure 1: Elk Data Analysis Unit E-9.

The Division of Wildlife manages elk herds to provide the public with hunting and viewing opportunities while minimizing conflicts and damage caused by the herd. In order to do this, a balance is needed in both the total number of elk and the proportion of bulls in the herd. Elk management plans (DUA plans), therefore, define 1) a population objective and 2) a bull to cow ratio objective (see below).

Population objectives: The Division strives to manage elk populations within both the biological and social carrying capacity of the herd. The biological carrying capacity is the number of animals that can be supported by the available habitat. The social carrying capacity is the number that will be tolerated by the people who are impacted by the herd. When elk populations are controlled at levels below both the biological and social carrying capacity, people enjoy viewing, photographing and hunting elk while elk/human conflicts are minimized. As the number of elk in an area increases, conflicts between elk and people arise due to, auto/animal collisions, impacts to gardens or yards, damage to agriculture, encounters between people and aggressive elk, etc.

Question 1:

Would you like the number of elk in GMU 20 to:

_____ **Increase**

_____ **Stay the same**

_____ **Decrease**

_____ **Don't Know**

Why?

Question 2:

Would you like the distribution of elk to change (e.g., less elk in the Estes Valley, more elk on Forest Service land)? Why?

Bull to Cow ratio Objective: Each elk herd can be managed to maximize the bull hunting opportunity or to maximize the quality of bulls available for hunting, or some compromise between the 2. The quality of bulls is usually defined by their antler/body size. If the herd is managed to maximize the quantity of hunting opportunity, more bull hunting licenses are made available and bull hunters will be able to hunt more frequently and possibly every year. However, this results in fewer total bulls in the herd (lower bull to cow ratio) as well as fewer large/older bulls. If a herd is managed to maximize the “quality” of the bulls, fewer bull licenses are issued in order to increase the number of bulls in the population (higher bull to cow ratio). As a result, the size of bulls harvested will be larger, but, the frequency that hunters are able to hunt bulls decreases and it may be 3 or more years between licenses. There is, therefore, a trade off between the number of licenses (amount of opportunity) and the quality of bulls available for hunters. Currently, GMU 20 is a limited license unit and is managed for a moderate bull: cow ratio and medium bull hunter opportunity.

Question 3:

For the purposes of hunting, should GMU 20 be managed:

_____ Increased **quality** of hunting opportunity (higher bull to cow ratio, but more difficult to draw a bull license)

_____ Increased **quantity** of hunting opportunity (lower bull to cow ratio, but easier to draw a bull license)?

_____ Status Quo.

Question 4:

Please rank the following in terms of which is the most important to your wildlife viewing experience (most important = 1, least important = 4):

_____ Being able to see large groups of elk

_____ Being able to easily find elk

_____ Being able to see large-antlered bulls

_____ Other (please explain below):

Question 5:

Where do you live (circle one)?

Estes Park

Loveland

Longmont

Lyons

Other in GMU 20

Outside GMU 20 in Colorado

Outside Colorado

Please provide additional comments on the future management of DAU E-9 below.

APPENDIX B: PUBLIC COMMENTS

Comments from Public Meetings

The comments received during the 4 public meetings through the survey. They are not listed in order of importance. Some statements may contradict others and may not be supported by data or research.

- Non-resident tags should be cheaper. My son has moved out of state and can no longer afford to come hunt with his dad.
- The number of non-resident tags should be decreased so there are more available for Coloradans.
- ATVs and motorbikes scare the elk out of areas that can be hunted. They should be banned.
- Elk should be herded out of RMNP and the Estes Valley with helicopters and onto National Forest land where they can be hunted.
- More private land needs to be made available to hunters.
- Elk population objectives should be based on science and habitat capability not on public opinion.
- Hunting pressure needs to be reduced on National Forest land so that the elk will leave Estes Park, RMNP and other refuges.
- The quality of bulls has decreased dramatically in recent years.
- The number of elk on National Forest land decreased with increase in hunting license numbers.
- There are too many hunting licenses now. They have increased licenses over last 5 years, but the amount of land available to hunting has decreased due to more development and more open space.
- CDOW needs to work with cities and counties to open more open space to hunting.
- CDOW should work with RMNP to reduce RMNP elk populations through hunting rather than through culling.
- The CDOW should work with the USFS to improve habitat on National Forest land in order to draw the elk out of the Estes Valley and RMNP.
- The CDOW has increased licenses outside RMNP in an attempt to reduce the numbers of elk in RMNP and the Estes Valley. The result has been the reduction in the number of elk on National Forest land where the hunting occurs. The hunters are paying the price

because the problem of overpopulation in the Estes Valley and RMNP is not being addressed there.

- Bull elk rifle success has fallen from 52% in 1999-2000 to 19% in 2005. Late cow elk hunting has fallen to less than 10%. Overcrowding is a big issue.
- I could support PLO licenses if there was also a decrease in license numbers on USFS.
- Number of big bulls has decreased in GMU 20. There are other areas nearby to maximize hunting opportunity so that people can just hunt elk. GMU 20 used to be special.
- Give cow hunters a 2 week late season after bull seasons. Remove cow hunters in early seasons. Make it quality.
- All bull licenses should be converted to either sex to increase cow harvest.
- The reason that the herds don't migrate is that the lead cows have been shot and the rest don't know how to migrate. You need to protect the lead cows to maintain migration. You should put collars on the lead cows and make it illegal for hunters to shoot the collared animals.
- You should castrate the bulls in Estes Park in order to reduce the population.
- You should set up a hunter hotline in order to put landowners who want to get rid of elk in touch with hunters who want to hunt them.
- Increase the bag limit so each hunter can kill more cows per license.
- The DAU should be divided into at least 2 GMUs so that harvest can be targeted to the elk in over populated areas.
- You should allow people to buy as many elk licenses as they want.

Written Comments from Surveys

Comments from written surveys are shown below. Comments that were summarized in the "Summary of Issues" section are not listed below, nor are comments directed specifically at RMNP's Draft elk and vegetation management plan.

1

It is obvious that the RMNP elk herd is overpopulated and unsustainable. I am concerned about the spread of disease and potential starvation of this herd.

The conflict between wildlife/humans is problematic. I'd prefer to see smaller herds that are sustainable in the NF & RMNP.

I'd like to see healthy, big, beautiful elk in smaller groups year round & large groups during the rut.

I am in full support of careful managed hunting. In RMNP & Estes Park, I would favor PARK RANGERS taking some of the cows and poor quality elk. I am adamantly opposed to allowing the general public to hunt in either of these areas.

I have concerns about contraceptive use. There are plenty of problems in humans using hormones, so it is NOT unreasonable to assume hormone treatment may cause trouble in the elk. I'd rather see predators increase (wolves and cats) in the NAF land and RMNP – I also consider hunters to be predators.

4

[Elk numbers] seem “artificially” high at present. Current levels have deleterious impact on other species and components of the community.

[I would like to] see very healthy elk, even if fewer in number

[I would like to] See elk in natural environment.

5

More elk, better success, feed my family. I love to view wildlife with a camera and a weapon. Find a way to make this happen

More in Forest Service land, but if you increase hunting licenses, the success has decreased. Until there is a way to have access to private land, there will always be an increase in elk due to the lack of hunting pressure in the 48% of private land

Find a way to allow hunters (hunters are someone who not only harvest the animal but eat the animal) to hunt in park or find a way to persuade the elk to leave the park during hunting seasons.

I realize that elk will go where the least hunting pressure is.

Is there a chance to persuade or pursue more “ranching for wildlife” on all or surrounding private lands?

I like big elk and am willing to go 2 to 5 years to draw a tag in order to get this.

6

Too many elk in Estes Park and RMNP. Eat up our garden. Too many hit by cars. Elk can be aggressive to individuals

Fertility control on cows should be a good alternative.

7

Add a 4 pt or better restriction on bulls.

Move December season to January

Longer breaks between seasons

8

[I would like to have] easier assess ability [for hunting elk].

9

Elk are fun to watch. I like to camera hunt. Within the constraints of damage, I think more elk in Estes Valley but more elk in Loveland would be great.

But, more elk on hunt able public land like the Forest Service is the best goal.

More elk in Loveland.

I moved to Loveland in 1974 because I wanted the mountain experience particularly to hunt elk and deer. I was very successful hunting cow elk in area 20 in the late 70's and early 80's. Then it seemed there were no (or few) elk on public land to hunt. It was particularly frustrating to hunt hard in the morning and then go into Estes Park for lunch and have to chase elk out of the road in town.

10

There are too many when you see them mating/breeding at 8:00 in the morning on the double yellow line in the middle of Elkhorn Ave in November. There are too many. I don't want to see them wasted. It needs to be tasteful and humane. The meat is very good and should be consumed.

I would like to see "ALL" unnecessary fences removed in the Estes Valley. On our property which is on Lake Estes we left the fence posts but removed the fence. If we are going to effectively co-habitate with the elk we should do everything possible to accommodate them. Fences are especially a problem for the young calves which have great difficulty jumping and getting tangled up and eventually die. I'm not saying that the DOW should do the removal/disposal but they could do a press release requesting property owners remove unnecessary fences.

I also liked the idea of an elk hot line where one could get info about herd location. The biggest problem is permission and access to the herd. Too many bleeding hearts that don't want them hunted but have no problem with seeing them starve or be slaughtered and end up in the land fill. They are great eating.

11

The elk don't bother me. I have plenty of ground and I don't mind sharing it with the elk.

The distribution is fine at the present.

I am over 80 years and got my own private ground to hunt elk on. Why do I have to pay more for a license when all I want to harvest is a young cow elk for eating? Why can't the cost of a license be cut in half for us people over 80 and on private ground? Please let me know about the license costs. I cannot afford a license this year.

14

Unit 20 offers some excellent opportunities to harvest large mature bulls. To be as successful hunting these "trophy" type bulls a hunter must scout hard and spend as much time as possible in the field (out of the pickup). If the number of elk on public land remained the same we would still have a true elk hunt with a chance at harvesting a trophy bull. I realize we have an over population of elk which can hurt the genetics of these type of bulls but this overpopulation is not located in the national forest but in the Estes valley and RMNP.

The only way I would like to see a change of distribution would be if the DOW managed the elk herd for the optimal bull to cow ratio to keep producing trophy bulls and regulate several seasons to weed out bad genetics like a 5 pt and under season.

I believe unit 20 offers some good opportunities for mature bulls. If the unit was managed for mature bulls it would be the most sought after “trophy” bull unit in the state due to the number of elk and the genetics that already exist in unit 20.

If the DOW chooses to move the elk a regulated season needs to be placed to minimize bad genetics and smaller bulls. It also needs to have an ideal bull to cow ratio.

Unit 20 has always produced 330-390 class bulls. They are hard to come by but they are there. Please allow the hunters looking for this class of bull to continue to hunt this unit.

16

While possibly indigenous a hundred yrs ago, the elk are certainly not natural to the Front Range now. My 12 acre property has suffered thousands of dollars in damage to fences and trees. I’ll gladly share my pasture with the vandals, but keeping my own livestock contained is my priority.

There is adequate park and Forest Service land available for a significant number of elk to enjoy and hunt without letting the population increase to the point of nuisance and self destruction.

The most sensible suggestion I heard at your meeting was to allow more than one animal per license to be snuffed.

I’ve seen enough elk.

It took the park service 20 years to notice the damage to their aspen groves. It took me 1 season to realize there was an overpopulation problem. Please do the most efficient, cost effective process to reduce these herds by at least 50%, ASAP.

17

The huntable number of elk in GMU 20 is low. We have far too many licenses for the low number that are huntable. Estes Park and RMNP have too many but if they aren’t going to work with the sportsmen then let’s just get aggressive in increasing our huntable herd.

Elk in the Estes Valley are more for viewable wildlife. Quite honestly that is what RMNP is for. Having elk in the parking lot at Safeway or McDonalds on a regular basis is not a natural viewing area. These elk are unmanageable within town. If hunters are to assist in the management plan of elk then the elk need to be in areas available to manage or hunt.

Being able to see or find large groups of elk antlered or non antlered on huntable land, USFS land preferably.

I believe that we should separate unit 20 and DAU E9 so the Estes Valley or city proper and RMNP do not influence data numbers. I find it ridiculous that we use the total estimated number in our management strategies and surveys. I believe we need to increase the herd size in unit 20 outside of the City of Estes and RMNP. If this means that the herds in Estes Valley and RMNP increase dramatically too then unfortunately it needs to happen. Maybe then these two locations will work with the best management tool to date “the sportsmen”. I applaud the DOW for this opportunity to voice my opinion.

18

I believe we really have 2 areas – Area 20 A – RMNP and 20-B what we can hunt. We need to come up with a new language for RMNP. Instead “hunting” get the act out of congress, a couple of big vocabulary attorneys to implement a new word “harvest”. Harvest can be used only during times of need. Hunting can be its own everyday animal it is. Harvest is to do something outside of hunting. If they don’t like the word hunting add a new vocab!

I propose a plan to manage only cows for “harvest”. I believe the town of EP has in place a central location for elk information – the new visitors center could be a central location for a “elk hot line”. This line would be available for:

1. Education on elk – push one
2. Where some of the herds are this week – push two
3. Hunting info – push three

In the hunting piece it could serve like this. This year the DOW with other good PR representatives could call a special meeting of all private land owners with “harvest potential” land for cows. At this meeting (or a letter of invitation) land owners have an opportunity to call into the elk hot line when cow elk are on their property. They can call the elk hot line and offer whatever # of harvest opportunity hunters the ability to come to their property. A number is given to the elk hot line. The hunter calls in, asks if there is any harvest opportunities. If say, for example, the private land owner says “I will let 3 on this morning” the elk hot line tells the first three callers to report to _ address. The elk hot line gives directions, possible info of the contact person, where to meet, and instructions from the land owner, example “meet me at the gate, I will have an orange vest on, I will instruct you from there”. From here the land owner has the right to tell the hunters where to shoot, take all remnants with them, don’t or do drive out on my property, etc.

Now here is where the DOW can give incentives like the walk-in policy for land owners). DOW could give back to the land owner something for every kill or harvest. Certificates of landscaping or nursery items – trees, shrubs, etc. GC to area restaurants or \$ back for participation – whatever!

The program could manage what we are trying to do. If this worked and the harvest plan was presented more gently to the public, maybe a “harvest” plan could help in RMNP.

Pro’s of the elk hot line:

1. Control of the # of cows taken.
2. Increase hunter education to private land owners.
3. Pressure on the elk to move more to national forest
4. Increase good PR on harvest and control
5. Meets the goal of the # of cows taken
6. Bridges the communication between hunter, DOW and PLOs.
7. increases education for non hunters, i.e. elk hotline info line
8. Incentives for PLOs – gifts, kick backs

Procedures for helpful harvest tips could be created as a guideline for good PR practices when harvesting in populated areas. This could be a great model across the state in other areas.

19

[The elk population needs to] get back in line with the food supply.

If there is no hunting in the Estes Valley the elk need to be moved from there to FS land. They could also herd some on to the part of the FS land. Open some of the private and closed areas to hunting.

Elk herd needs to move outside protected area. Elk are using west Loveland as a safety zone. Population has forced elk down the mountain.

Why isn't the DOW more involved in the park herd? The DOW isn't work for the Colorado hunters to help lower herd numbers in the park. I have hunted elk in Colorado for 40 yrs and there are more elk now than in the past, but the hunt was better. There is so much property now that can't be hunted and that is where the animals are. Mountain lions have moved the deer and elk out of some of the best hunting areas. I own property in area 19 – lions have either killed or run deer and elk out of area. Turkey's are also gone.

20

Elk that congregate on the golf courses or those in the other parts of Estes Park. Allowing these elk to congregate along hwys and rural areas in the Estes area create hazards to people who stop to take pictures as well as hinder traffic.

21

To lessen the impact on the environment. We are in a drought – there is less for the elk to eat, so they will be less healthy going into the winter.

I want what is best for the environment, plants, erosion, etc.

22

I would like to see better numbers in the northern part of GMU 20 on FS land. Also as a private property owner, more elk in the northern section of GMU 20 would expand recreation hunting in the area and a bit more economic growth bringing in more sportsmen. Second, recreational viewing in the fall would attract people to the area and bring economic opportunities. These currently seem to be quite an uneven distribution of elk within the GMU 20. Please build the herd numbers and quality in the northern section.

23

With correct management of access there can be better hunting control of the population.

The distribution of elk needs to change in relation to areas that can be reached. I do not think it is elk movement; it is the lack of access and the poor management by the FS and DOW to try and give hunters a means to control the elk. Access roads are not drivable – illegal gates are allowed to be put up cutting of FS roads. License applications are not being filled but the unit is unsubscribed – that does not make sense.

To include filling all license applications for both bulls and cows. I believe the bull/cow ratio is out of balance with probably 1 bull to 4 cows instead of 1 to 10.

To help management in Area 20 and especially in the Estes Valley and proximity:

1. Work with RMNP to access elk
2. Work to get access to the Honda school section – used to get 100+ elk there.
3. Combine with other interest groups (elk foundation, Larimer city parks/open space) to acquire the Hermit Park acreage.

4. Access from Hermit Park to Homestead Meadows, Grizzly Gulch and Pearson Park.
5. Mentored hunting at Park Boundary – MacGregor and McGraw ranches, YMCA and Twin Sisters/Cheley camp areas.

24

There are too many elk in unit 20. The herd becomes weaker as a whole due to overpopulation.

If we get more elk on FS lands, we can get more hunters involved to thin the herd.

Important to see healthy animals.

26

Increase opportunity for successful hunting.

It would be great to distribute the elk from the valley to FS land. The elk in and around Estes seems both too numerous and unnatural. Naturally, it would also improve the hunting opportunities as well.

27

It is important to me that I not see too many people hunting.

28

There are not as many elk to hunt as there used to be.

Less hunting pressure on public land.

My family would rather hunt big bulls in unit 20. We can go elsewhere to hunt smaller bulls if we want.

29

We have plenty of good habitat in the middle of the DAU that we have pushed the elk away from with too much pressure.

More elk on FS so they are available to hunters. Lessen pressure on public land.

It is important to me that I not see so many hunters while I am hunting.

Increase bull/cow ratio to 40+/100.

Increase population objective to Alternative 3. Have a February cow only hunt to lessen pressure on bull hunters who spend preference pts on earlier hunts.

31

Elk are an integral part of Estes Park and the Estes Valley. They are the main attraction for tourists to RMNP. Over the Labor Day weekend I personally saw as many as 100 people watching a herd of elk in the park. These people are the life's blood of Estes Park's tourists based economy. They are the people who shop in the store's and eat in restaurants. EP's economy depends on these visitors. I have been a homeowner in EP for several yrs and I have yet to meet even one person who wants the elk herd reduced. We currently have a healthy, growing herd of elk that enjoys a textbook 34% cow to bull elk ratio. This is a wildlife mgmt success and a prime example of letting nature take its course. The elk are not causing accidents and the residents of

town want them to stay and prosper. Reduction of the elk herd in EP is unwarranted, unnecessary, unwanted by the residents of the area and represents a threat to the economy of EP.

We would like to see the elk herd remain as it is. The herd is in the proper distribution now and it should be allowed to survive in the area in its natural habitat.

Hunting of elk should not be permitted in RMNP for any reason.

If elk are hunted in Estes Valley they will retreat to the highlands making them unavailable for viewing.

If there is a perceived danger of destruction of some habitat in the RMNP then I suggest alternative methods of protecting these areas such as high fencing and the possible introduction of a two pairs of wolves into the park.

The DOW should devote a substantial budget to the development of a less invasive, non-lethal way to test elk for CWD. Once this can be done, it opens up relocation as an alternative for any perceived elk over population in the area/ this would enable elk to be sent to other national parks for viewing and further growth instead of destroying this natural resource.

I also think you should restructure the boundaries of the area you have used for this stuffy. Almost all of the elk that are subject to this study reside in RMNP. It is extremely rare to see any elk east of Pinewood Springs. The flatlands and foothills should be considered a separate area then RMNP for the purposes of establishing the elk population in these areas as combining time distorts the results.

Until you have a more effective way to determine the actual size of the elk herd in the area it is not prudent for your office to authorize the destruction of this many animals. It would take the herd many yrs to recover from this type of reduction. The people of the area don't support this reduction, the tourists don't want it and our business owners can't afford it.

32

We believe there are too many elk in RMNP and damage is being done to the ecological balance. There are generally too many within Estes Park – although they're great for tourism, the damage to property, people and the elk is too high. Do not have personal knowledge of the rest of the GMU.

33

I want to see them live as natural as possible. To reduce the herd by killing is not an acceptable solution. If the numbers must be reduced, let's administer anti-fertility drug to some of the cows.

More in RMNP, because the habitat is right and they have always been better protected there.

Being able to see them living in harmony with their environment as they always have.

Please keep the welfare of the animals foremost. They do not exist for human use or enjoyment. Much of the over-browsed vegetation will replenish during wet summers. And to keep the herds from over populating in the future, plan ahead and use anti-fertility measures, since this appears to be the only really humane option.

34

Maybe having them distributed in the GMU more evenly – I know without hunting pressure in the PLO and the Estes Valley with post or pre seasons in these areas that is not going to happen. The elk get real comfortable in these areas where it is getting harder for anyone to hunt. No permission granted or with the building that has taken place in these areas, etc. smaller parcels to hunt on safely.

I think you 30-35 bulls per 100 cows is too high a ratio in this GMU because of the way they are distributed.

I would like to see more days between seasons for a cool down period. Also for hunting later in the year for the longer season – weather has a lot to do with good hunting. For the last several yrs the early seasons have been warm to hunt and take care of meat. I have never been a trophy only hunter. As for cows the later seasons lets their years calves to have a better chance of survival. What to do in RMNP will have a lot to do with what happens down here. They need to ask for a controlled special hunt.

35

The elk have taken over the town of Estes. They are moving out into the lower country from over population and they are killing the tundra eating everything down to the nubs.

There needs to be a clause put in the bylaws of hunting private land. There are a lot of people that would be glad to harvest an elk to eat, but they need help. They need to be able to use private property for a couple of years.

36

The elk are a national treasure and should not be hunted/shot to “cull” the herd. Rather, money should be raised to feed the existing herd. We previously lived in NC and they issued a special license plate to fund maintenance of the Blue Ridge Parkway part of the national park system. Colorado should make available a “save the elk” license plate to preserve the elk, a national treasure, not shoot them as planned (a really dumb idea).

37

I travel this area frequently and have not witnessed the elk population causing vehicle accidents. Tourists come to the area to see the natural beauty. Wildlife is part of that excitement they want to see. Hunters, both local and out of state hunters spend money in their attempt to bag an elk for the meat or a trophy. I realize we can't hunt them in RMNP. Is the park elk herd reduction the reason for this survey? It shouldn't be.

People built their homes, vacation homes, etc. already knowing there is abundant wildlife in the area. It is like someone building a home next to an airport then complaining about the noise.

38

Elk should be considered a national treasure. We must be caretakers of this unique opportunity to live among nature in a way. Most people will never have the opportunity to do.

This perceived “problem” is so likely to have a terrible ending. As a person who has been to all continents and 55 countries, I can attest that we have something so unique and so exciting and interesting here that is our duty to protect it. We have no right to interfere by killing! What if

many are killed and suddenly disease strikes the remaining herd and we lose many more? Get the rangers out on horseback to disperse the herd.

Spend money figuring that out or money spent fencing fragile areas until recovery takes place. If we can afford to set up a murder for hire program, we can afford to do more intelligent and enlightened “managing”. Stop confusing that word with “killing”. These are 2 very different things. Are we all too stupid to figure out a better way to care for our wildlife? The distribution of elk is just fine. Cherish this special Eden we have here – adjust your lives to it or live elsewhere!

Please devote more time, money and manpower to become a world leader of enlightened wildlife caretaking, not just another group of humans who solve challenges by killing. Put more brain power and effort into this! Your job is not successful with such a bad decision. Show everyone how to do this correctly.

39

Especially in RMNP and the Estes Park Area the overpopulation of elk is damaging the habitat and causing too many unnatural elk/human accidents. It also creates an unnatural picture of human/elk interaction. They are wild creatures not pets. Too much human interaction removes the elk’s natural suspicion and wariness – making them less truly wild.

I don’t think a huge influx of hunters into the area so close to RMNP is desirable. A high number of preference pts for bulls is probably warranted. Cow tags being more readily accessible makes sense to me.

I feel something must be done for the sake of the elk and the habitat to reduce elk numbers in Estes Valley/RMNP. Elk that are so heavily populated in such close proximity to so many people (tourists and local residents) lose too much “wildness” – their inherent wariness of humans.

Perhaps CWD is more easily transmitted in dense, crowded populations?

I oppose introduction of wild predators like wolves. If they spread in from WY on their own that is one thing. But the proximity to so much human population is not favorable for wolves as a control on elk populations.

I believe controlled hunting (even in RMNP – probably in there by NPS or DOW Hired professionals) is the only feasible way to reduce elk numbers while restoring some of their natural wariness of human interaction.

41

Degradation of habitat due to elk overpopulation in the park is well documented. Hunting should be allowed in the park (With proper restrictions) to reduce the herd.

[It is important to have] the herd balanced with the habitat such that all wildlife prospers, not just elk.

42

People’s lack of education about elk is more of a problem than the elk themselves. Estes Park has always had an elk population. People to the area have increased and they are trying to change nature to accommodate them selves.

The elk distribute themselves naturally due to food availability and protection purposes.

I am avidly against hunting. I find it barbaric that man has an insatiable need to kill. Animals cull themselves naturally – either through disease or lack of food.

Being able to look out my windows during certain times of the year and see elk grazing or laying nearby.

I find it absolutely awful that hunters are even being considered as having importance in this matter. Nothing would be worse than allowing them to access to hunting in the park. I don't care to have to dodge bullets from murdering idiots. The on-going charm of the RMNP and Estes Park has always been the elk being everywhere. I moved to Estes Park because of the animals. A lot of other places have great scenery, but not the animals. If the DOW with their so called "wisdom" starts unnecessarily destroying our elk, I can assure you that I will no longer want to live here and will withdraw any and all financial support to the national park system.

43

Most of the elk in the unit live in RMNP and the Estes Valley so there is miles and miles of habitat more than adequate to support a larger herd.

Need to reduce the pressure on the elk on the FS land so that they feel safe there and move back to this area.

Many areas in CO offer hunters a place to hunt elk every year and are excellent places to hunt elk. Unit 20 used to be an excellent place to hunt elk every 4-5 years with the opportunity to harvest a large antlered mature animal. Many people I know would like to see unit 20 return to what it used to be.

44

I have lived in the town of Estes Park for 27 years. I think it is good to have an "adequate" number of elk but now we are way over populated. They are damaging property and cows and bulls are becoming a safety hazard.

The total number in Estes Park, RMNP and the FS are over populated. You cannot pick one area and reduce the number in that area only. Changing hunting does not help as they go to the protected area.

We have too many cows producing too many calves.

The only practical, effective and economical way to reduce the total numbers is by "selectively" shooting them. The number shot each year has to be more than enough to offset the calf crop each year. This method worked before in 1965 and will work again.

45

I think the population is okay. But distribution is off kilter.

We need more public access to viewing and harvesting. The large number of animals in and around Estes Park and RMNP will eventually damage the herd. Without thinning of the animals – the entire herd will grow weak and be susceptible to disease and decimation. Also the park habitat will be overused. It would be better to redistribute the animals or harvest than to have mass starvation.

I hunt cow elk. I have no desire for a trophy animal. My concern is that the herd be strong and older mature bulls are accessible to the cows. The quality of the entire herd and not just bulls is considered for long term management.

I have simple requirements – the ability to harvest one cow elk per year on public land is my goal. No need to be greedy or set records.

Long term herd management is the primary goal. A constantly strong and healthy herd rather than good years and bad years would be my preference. Also, there is something to be said for allowing some protection for older, larger bulls, like old growth forests. Big mature 7 x 7 animals are a delight and should be allowed to exist. RMNP is a good spot for this.

46

I think there will be quality bulls in the area regardless of bull tag numbers due to the large amount of “refuge” land (RMNP and private land not hunted). I would like to be able to draw a bull tag at least every other year.

47

Can't hunt most of the land. A decrease would mean less elk to hunt in the land we can hunt.

I think they need a special season in the park.

48

Elk often concentrate in the Estes Valley or drop through Estes and move further east to other private lands making them unavailable for public hunters.

Increasing the number of quality units may help reduce the current preference point creep.

However, if goal is to reduce elk numbers, kill elk. After getting GMU 20 closer to objective, then decrease # of bull licenses.

49

The present numbers would enable more animals to be in the unit to see and to hunt rather than meeting an objective of less numbers.

50

Elk habitat inside RMNP and the Estes Valley is in poor condition while elk habitat outside this area is in relatively good condition.

Although it is exciting to view elk in RMNP and the Estes Valley, elk numbers are too high to sustain a healthy range condition as well as a healthy elk population. Adjacent Forest Service land is currently underutilized by elk. Spruce Gulch, Crosier Mtn and Bobcat wildfires have provided great regrowth and vegetation for elk and other wildlife; however, elk numbers in these and other areas on national forest is fairly low.

Hunters and wildlife viewers would benefit from re-distribution of more elk onto public service land.

Elk hunting pressure on GMU 20 is currently extremely high. In 2006, elk seasons in GMU stated August 26 and continue through January 31 cow elk season. This is almost 5 months of

hunting pressure and elk have learned to remain inside RMNP or private land where they are not hunted. Increasing elk tags will only increase hunting pressure on public land and prevent elk from migrating out of RMNP where they can be harvested. Fewer elk tags will also offer a better hunting experience, higher success rates and increase the quality of bulls available.

I live in GMU 20 and spend a great deal of time hiking, filming, and hunting in this unit. It is fairly obvious that the elk numbers inside RMNP and Estes Valley is considerably higher than the elk population outside these areas where hunting is allowed.

I believe it would be a mistake to increase elk tags and hunting pressure in GMU 20 since this is likely part of the existing problem. Currently GMU 20 hunting seasons begin August 26 and continue to January 31. This is almost 5 months of hunting seasons which pressures elk back onto RMNP and private land where they cannot be hunted.

There is extraordinary elk habitat available outside of RMNP and the Estes Valley that currently have only light elk use. I have listed a few options for alleviating the booming population of elk in RMNP and the Estes Valley:

1. Restructuring hunting seasons to maximize elk movements out of RMNP and the Estes Valley. Elk movements out of RMNP are likely highest during late November and December with snowfall. Lower tag numbers during these critical migration/movement times (no cow tags, fewer bull elk tags?)
2. Minimizing hunting pressure on adjacent lands to RMNP and the Estes Valley (road and/or hunting closures in critical migration zones and areas with critical elk habitat on national forest).
3. Range improvements on national forest adjacent to RMNP and the Estes Valley to encourage movements away from areas with high elk concentration and poor habitat (prescribed burns, timber thinning, water enhancement, etc.).
4. Prescribed burns, selective thinning of dense trees and other measures to increase migration/movement corridors from RMNP and the Estes Valley to adjacent FS land.
5. Hazing of elk away from RMNP and the Estes Valley to migration/movement corridors on national forest.
6. Decrease motorized travel in critical elk habitat areas during critical migration/movement periods and hunting seasons.

51

Bulls licenses should be increased (they are not baby carriers). You should convert bull licenses for the last several days of season to cow or either sex. This may get more cows removed.

The DOW should explore the possibility of planting FS with native plants that elk prefer. More elk on FS land would be a benefit as there, they can be harvested.

Most important is a managed population that has an average impact on the environment. This will be most beneficial for the animals and the people.

Distribution should be shifted to FS land – helicopter herding a good idea.

Perhaps tax incentives (county, property) for landowners that allow hunting.

Thorn bush fences around the Estes golf course – it works in Africa!

Late seasons should run through February.

Establish a list of landowners that allow hunting. This information should go to only ethical hunters and carry a special penalty for those that hunt unethically.

Identify the migration routes for elk that leave the park. Make this information public so hunters can concentrate on “park” elk.

Weighted preference points for those that are successful in the Estes Valley.

If possible, you should provide water sources outside the park. Perhaps some small dams in areas of FS land. Drought makes this something that may draw some elk out of the park.

Plant riparian areas outside the park.

Hunting is a better management method than large carnivore reintroduction. Large carnivores will mean that wildlife viewing will be limited to those that hike the back country and are lucky enough to see what few will be left. Please provide enough opportunities to cull or harvest so large carnivores are not needed.

52

The elk density is good but not well distributed across the unit.

There are few GMU’s managed for trophy quality on the Front Range. It would be nice to take advantage of the good potential of the unit and manage for a quality hunting experience.

53

The west Loveland herd is creating uncompensated damage to yards, landscaping and the golf course. Same for the Estes herd. My desire would be to see redistribution to public land where the hunting success opportunity would be increased.

A damage control hunt should be implemented to reduce the Loveland herd to no more than 10-15 animals. They are fun to see close to town, but they have become a nuisance. The herd is too large.

54

Many traffic issues in Estes Park.

View elk in natural setting, not in downtown. This use of town is not normal habitat. Elk viewing is primarily in RMNP and really only applies to the national park.

I’ve found it’s fairly easy to find nice bulls in the 4x4 and above class. It is almost impossible to find cows. I would like to see more cows on public land. It could be the cows are still at timber line during black powder. Now during late rifle again no cows, they are in Estes Park or down around Lyons on Boulder County “Closed” space.

Keep bull draw preference points and quota as is. Just work with RMNP on moving cow onto public ground during hunting season. Collar the herd cows and shock them if they stay in RMNP or Estes Park.

55

Open the park to hunters.

Open the park up to bow hunter certified bow hunters only. This would limit the number of hunters and assure responsible hunters. Another positive about how hunting is there isn't a noise factor and the threat of the arrow damaging property very small.

57

The concentration of elk is clearly too much for the habitat. Nobody in the greater Estes Park area has to cut their grass or trim their bushes. The elk keep all grasses and plants trimmed down.

1. More elk on public NFS land for hunting.
2. More elk in RMNP.
3. Less elk in Estes Park.

People make special trips to RMNP for the sole purpose of seeing elk. It attracts thousands of people. Less elk will translate into fewer visits, lost revenue for local businesses.

Unit 20 already has quality and a high bull to cow ratio (38:100). If you want healthier herd, sell more bull tags in 20. But you'll have to move elk off private lands for the hunting to be more of a management tool. Allow bow hunters only in RMNP.

It is important to be able too see elk on public lands or lands that allow hunting open to the public.

Consider a wildlife refuge in RMNP during winter (Nov-March). Feed the elk, tag them, and test them. Consider following what WY does to manage their elk which is the best management in the Rocky Mountain region. If you feed the elk the alfalfa pellets they will stay in RMNP. Allow bow hunting to manage their numbers.

58

As hunters, we need access to elk that don't exist now.

Viewing is done in RMNP (until they are wiped out by NPS) don't need to see them elsewhere.

It seem like a major objective should be for DOW to put extreme pressure on the FEDS (NPS) to allow licensed hunters (CO residents) to take any excess animals in RMNP.

I suspect taxpayers are going to be much more excited when they hear that NPS is spending \$15,000 + to kill elk in RMNP, rather than DOW getting license \$ to hunt elk. And, right or wrong, DOW will be greatly to blame for the fiasco. You might check into the 1967 Yellowstone uproar to get an idea of what can happen.

59

The elk are two thirds in the park and they do little migration out. So, if we decrease numbers in the park there will not be none left outside the park. Pressure will move outside elk into the park and into Estes.

Reduce the number of out of state licenses in area 20. Too much private property for them to have conflict with angering landowners against all hunters.

Yes, at least more on public land, too many in suburbia cause problems – none on public land means no revenue from license sale for DOW.

I'm not concerned with this. Estes is full of elk. Other management is a waste of resources.

Hunting is moving in the direction of going to the highest bidder. This is wrong. Limit the draw and hold prices – out of state is too high. My son, a native of CO, can't afford to come here and hunt with his dad.

In addition, area 20, where I live, out of state licenses have been increased considerably and along with it ATV's out of the wazoo damaging the migration route. I hunt east of the part. Also, PETA sends in shooters who blast away all weekend. Twin Sisters' area. Frankly, the quality of hunting has diminished considerably in the last 10 years. My son is advocating we go to WY or MT.

60

They are not allowing any new aspen to grow and are becoming a public nuisance. Too many of one species is not good for the environment. Elk are a great enjoyment to watch, but they are becoming used to humans and cars and need to live more in the wilds.

We live in Estes Valley and there are elk on the front lawns, porches, in the streets and in downtown. This is not unusual, but regular. During the winter there is a herd of elk about 350 in number that move up and down the north end valley. This size seems excessive for the valley plus they make regular nuisances of themselves. Every tree planted has to be protected or they destroy it. The elk are far too tame for their own good. A smaller elk herd and population would provide a better balance. For instance, it is almost impossible for our aspen to grow. It seems if the current situation remains unchecked we will be over run with elk.

It is important to be able to see elk in their natural habitat and exhibiting natural behaviors.

Elk need to have natural predators around like wolves to help manage the distribution and control numbers. Hunters have gone in the north end area asking to hunt, but with homes of five acres or less and with the range of high powered rifles it is too dangerous to allow hunting.

Comments on 1st Draft

Below are the 7 comments that were received in response to the 1st draft of the DAU plan. At least 4 of the 7 comments (i.e., 1, 2, 3, and 6) came from people who had also responded to the survey.

1

Fine job on your report! Thanks for the opportunity to review and comment. I support increasing the bull-cow ratio toward the 50 threshold with increased opportunities to view and harvest trophy bulls. I also encourage implementation of dispersal activities to move the elk to public land for improved hunting encounters. Archery hunting in RMNP is a great idea, but beyond the scope of the DOW authority. The Estes hunting hotline idea is interesting and merits further investigation. Why not expand this all of GMU 20? It allows relief for the private property

owner experiencing damage and increased hunting opportunities—a rare win-win scenario. Current communication technology makes this a viable option.

2

I am amazed after reading the proposal, that, all I am reading, concerns HUNTING! Are hunters so influencing decisions made by Park biologists, & other so-called experts, that every decision made is based on the will & need of hunters to kill when there are so many other alternatives? Have any outside groups more conducive to the preservation of wildlife been consulted? Or are we trusting this decision to the “intelligent government & NRA members”? Look at history & why so many beautiful & necessary creatures are now extinct. Because of man's insatiable need to KILL! There ARE alternatives to hunting. Why are the park, (government) so-called, educated employees opposed to finding a less violent & destructive way of solving this problem? Too timely? Too costly? Too requiring of intelligent thought & decision-making? How much lobbying has the NRA done to achieve killing more animals? Just a few questions I want answered, although I doubt, in the face of a group as large as the NRA, that will ever happen.

3

I find it [the report] very accurate as to how my successes in the big game hunting department, have gone over the past 10 yrs. I am very interested in finding out what the plan will be for the next 5 yrs as far as license allocations. I would like to see the bull to cow ratio go back up to at least 40 bulls: 100 cows. I understand that will mean less licenses available, but that's ok with me. I am proud to be an outfitter in unit 20 and like the fact that we have a good number of quality bulls.

4

I live in Estes Park and would like to comment on the elk reduction method. I feel hunting licenses should be sold to the public (60% non-resident charging \$1000 per license and 40% to residents \$?). All fees would go to the DOW to offset the cost of this project. Obstacles, such as, the safe discharge of firearms would be an issue, in certain areas. The best time to hold such a special hunt would be after Thanksgiving.

5

.I live in Estes Park and do love watching the elk. Since we have an overpopulation problem why can't there be year round hunting? Why when I speak with hunters, they say in 2006 it was still difficult to get a license? I think we should charge to have the herd population taken down, not have the Federal Government paying snipers to bring the herd down.

Other parts of the country have a huge deer overpopulation but they do not have year round hunting either.

Our government wants to spend tax payers money to reduce the herd when all they have to do is give year round licenses? The previous studies showed that elk population was brought down by having extended harvesting times, correct?

6

The elk are very adaptable animals, I suggest you allow them to adapt to their environment as it is. Change nothing, allow the animals to control their own population. Once the herd size becomes too large to be supported by the land area then the herd will divide and move to other areas. Nature will take care of itself it always has. If CWD is an act of nature to control the herd then so be it.

I am a hunter for the purpose of eating a healthier alternative to domestic products. I am willing to have testing done on my harvest before consumption. I live in Estes Park and enjoy the viewing opportunities that exist in unit 20 and would be disappointed to see them diminish.

I feel that your job is not to manage the animal population in the state but to manage the human interaction with the animal population. The elk will manage themselves, it is the human interaction that you need to control.

7

I have just finished reading over much of your recent report and general comments from the public. Before I give you a few suggestions I should let you know that my family has resided in Estes Park since the late 1890's. I have personally witnessed much of what your report tries to depict. I, and most everyone else, recognize that there are too many elk in the Park and in Estes Park. Your agency needs to bite the bullet and reduce the herd (probably by the 50% number) and do it soon. Some in the public will be upset, but you and I both know that this is the correct thing to do.

Some observations:

1. You are correct in your assumptions as to why the herd has grown so much. Essentially what has happened is that in the 70's Estes Park began to grow and with the increased population the hunting that used to go up to the Park boundary no longer was available. In essence what happened was that the Park boundary actually moved a few miles east of Estes Park and with the greater protected area came the exploding growth of the herd.
2. I totally discount your references to public perceptions from Evergreen with studies that were made years ago. Their elk contacts are minimal when compared to the situation in Estes Park.
3. As for who will pay if you do the correct thing and quickly address the problem and go for the 50 % reduction. Your agency and the Park need to pay. It was because of your inadequate reaction to an obvious growing problem that we have reached a point where drastic rather than remedial actions need to be taken. The lack of response back in the late 80's by both of your agencies has created a much bigger problem than existed back then. Hunting may have been a viable cure if it had been used back then.
4. Elk contraception---It is a viable alternative that can be used in conjunction with other means. I have been in limited contact with a group out of Billings MT that can do this. If you do not know of them, you should. He also states that they have done work for the National Park Service and the U. S. Dept of Commerce.
5. There was a recent story in the Denver Post (12/3/06) about the culling of the deer herd in Rapid City, S.D. You should read it.
6. Here at the golf course we have to deal with major elk damage and I would be very happy if we were dealing with 75 elk each night instead of the 300-400 that we see daily. The damage to trees and willows in the Estes Park region is extensive and will not be something that will recover rapidly. The elk viewers will be just as happy with the small (and healthy) herd. Estes Park will forever have to live with the elk---the question is how many?

In conclusion, I would hope that practical people in both agencies will do what is necessary so that the herd reduction can take place soon. A much smaller herd will still be available for

viewing, damage will slow down and maybe the herd can become healthy enough to reverse the CWD.

8

I would like to express my support for Option number three of your Elk management plan which calls for an increased level of Elk in the area. I believe you are trying too hard to appease the hunters in the area at the expense of the Elk herd. Hunter “satisfaction” should not even be a consideration in your study. There are many Elk preserves that hunters can visit to fill their trophy cases. The current levels of Elk in the Estes Valley and in the area are fine where they are and it is a real success story at this time. Any of these other options would undo the good progress that has been made.

I also disagree with the plan’s assessment that relocating Elk is not a viable option. I think if your agency seriously wanted to try this that both the funds and means could be found to reduce the herd via this means.

I sincerely hope that clearer heads will prevail and your department will endorse Option 3. Up to this point you have not received a lot of opposition on this but if the Elk levels are reduced as laid out in Option 1 of this plan you will find that there will be a great deal of opposition to this in the immediate future.

9

All in all I like the depth and completeness of your work. It helps interested observers like me to understand and to put the elk population issues into the regional perspective beyond what I see for myself. I have included my comments [below] and hope they are of value.

I personally will not attempt to tell the expert biologists how to manage the elk herd in and around the Estes Valley. But I will offer my opinion on what must be done.

Facts:

- The current elk population is greater than the proposed long-term objective for the population for this Unit.
- Hunttable land within the Unit will not increase, and probably will continue to decrease.
- The local elk herds are becoming habituated to human proximity and have learned to take refuge in human inhabited areas where their population is most difficult to control.
- Even with increased elk populations and elk hunting licenses, the total elk harvest has been decreasing since 2002.

Observations and expectations:

- There are simply far too many elk for the dwindling environment, and I am concerned that RMNP and CDOW actions may be too little and too late. I firmly believe that, to allow the habitat / flora to recover, the total herd population must be severely reduced below the proposed objective of a population of 2400 for the unit for a few years.
- Any elk population management activity within RMNP will have little meaningful impact on the elk population outside of RMNP for a number of years. The RMNP plan, based on small herd reductions with observations of resulting habitat recovery (with annual cycle periods) will be a very slow process. Thus the CDOW should not wait for the RMNP to act.
- Although hunter success and mature bull elk population is a prime objective of the CDOW, this must yield to elk population reduction and habitat recovery for a number of

years.

- Bull “quality” is still high in the unit compared to most other areas in Colorado.
- Bull quality should not be the prime factor in management within this unit until the habitat has recovered and the population is under control.
- Elk habitat damage is severe on my own property. This is 4 acres east of Fish Creek Road and east of the south end of the 18-hole golf course. I have ~ 1 acre of aspen with adjacent properties having another 1 to 2 acres. Over the past 10 years we have had no new aspen growth; the elk chew the new aspen shoots off at the ground. 25 years ago when we bought the property we had healthy aspen with trees of all sizes and a healthy ratio of new growth. Now the grove is only mature and dying trees. I have no alternative but to fence off my part of the grove to protect it from further elk destruction.
- During the fall the elk take refuge in the Town of Estes Park and they often collect on the golf courses in the evenings. This is because that is where they find the best grass in the valley. The elk watchers crowd them, often approaching within a few yards to get photos of themselves or their children standing close to an animal. Most of us know the risk, but city people seem to think they are in a petting zoo. This is too much of a good thing and someday will result in disaster.
- I personally have no problem with CDOW hunters culling the herd. It simply must be done.

Other factors which should be taken into account in the elk population control effort must include:

- The atypically high incidence of chronic wasting disease may be a result of the population density within the herd.
- The inevitable effects of pine bark beetle will change the composition of the habitat and must be taken into account along with the damage already done by elk over-population.
- The effect of probable continuing drought conditions must be included in the elk population management plan.

APPENDIX C: LIST OF ACRONYMS

CDOW – Colorado Division of Wildlife
CWD – Chronic Wasting Disease
DAU – Data Analysis Unit
E-9 – Elk Data Analysis Unit 9
GMU – Game Management Unit
NPS – National Park Service
RMNP – Rocky Mountain National Park
USFS – United States Forest Service