

**FINAL  
White River Elk Herd  
Data Analysis Unit Plan  
DAU E-6**

**Game Management Units  
11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33, and 34**



**Local Management Team:**

**Area Wildlife Managers:**

Bill deVergie, Pat Tucker, Susan Werner & Dean Riggs

**District Wildlife Managers:**

Bailey Franklin, Barry Dupire, Jon Wangnild, Trevor Balzer, Brian Gray, Jim Haskins,  
Sonia Marzec, Libbie Miller, Valerie Masiello & Jason Duetsch

**Terrestrial Wildlife Biologists:**

Darby Finely, John Broderick, Stephanie Duckett

**Colorado Division of Wildlife  
73485 Highway 64  
Meeker, CO. 81641**

**Phone: (970)878-6064**

**August 2005**

# Table of Contents

	Page
<b>I. EXECUTIVE SUMMARY .....</b>	<b>6</b>
<b>II. INTRODUCTION AND PURPOSE .....</b>	<b>11</b>
Management by Objective .....	11
Basic Management Principles and Concepts .....	13
<b>III. DESCRIPTION OF DAU .....</b>	<b>15</b>
Location .....	15
Physiography .....	16
Topography .....	16
Climate .....	16
Vegetation .....	16
Land Use .....	17
Land Status .....	17
Land Uses .....	18
<b>IV. HERD MANAGEMENT HISTORY .....</b>	<b>19</b>
Disclaimer for Population Size Estimation .....	19
Post-Hunt Population Size .....	19
Post-Hunt Herd Composition .....	20
Calf Ratios .....	20
Bull Ratios .....	21
Yearling Bull Ratios .....	21
Young and Mature Bull Ratio .....	21
Harvest History and Hunting Seasons .....	22
Total Harvest .....	22
Bull Harvest .....	22
Antlerless Harvest .....	23
Hunting Season History .....	23
Hunting Pressure .....	24
Hunter Success .....	24
<b>V. CURRENT HERD MANAGEMENT .....</b>	<b>25</b>
Current Objectives .....	25
Current Management Strategies .....	25
Current Management Concerns .....	25
Distribution and Movement .....	25
Long term elk Population Objectives .....	26
Game Damage .....	27
Limited Winter Range .....	27
Antlerless Harvest .....	28
<b>VI. HABITAT RESOURCE .....</b>	<b>29</b>
Habitat Distribution .....	29
Winter Range .....	29
Habitat Condition and Capability .....	30
Public Lands .....	30
Public Land Grazing .....	30
BLM & USFS Allotments .....	31
Public Land Wildlife/Livestock Conflict Areas .....	31
Winter Range Habitat Characteristics .....	33
Rangeland Conditions .....	33
Noxious Weeds .....	35
Fire and Vegetation .....	35
Energy and Mineral Activity .....	36
Private Lands .....	36
Habitat Partnership Program .....	36
Habitat Assessment Model .....	36

	<b>Page</b>
<b>VII. ISSUES AND STRATEGIES.....</b>	<b>38</b>
Issue Solicitation Process .....	38
Issue Identification.....	38
Issues and concerns – BLM.....	39
Issues and concerns – USFS .....	39
Issues and concerns – HPP .....	39
Issues and concerns – SLB .....	39
Issues and Concerns – BOCC.....	39
<b>VIII. ALTERNATIVE DEVELOPMENT .....</b>	<b>40</b>
Management Strategies.....	40
Alternative Management Strategies.....	41
Population Objectives.....	41
Sex Ratio Objectives.....	41
<b>IX. PREFERRED OBJECTIVES AND ALTERNATIVES .....</b>	<b>43</b>
Population Objective .....	43
Sex Ratio Objective .....	43
Management Strategy .....	44
<b>X. APPROVAL SIGNATURE PAGE.....</b>	<b>45</b>
<b>XI. LITERATURE CITED .....</b>	<b>46</b>
<b>XII. APPENDICIES</b>	
Appendix A – Public Survey Results and Comments .....	47
Appendix B – BLM Issues and Concerns.....	54
Appendix C – USFS Issues and Concerns.....	59
Appendix D – HPP Upper Yampa Letter .....	62
Appendix E – HPP Yampa/White River Letter .....	64
Appendix F – HPP Burns Letter .....	66
Appendix G – State Land Board Letter .....	68

## List of Figures

	<b>Page</b>
<b>Figure 1.</b> Management by objective process used by the CDOW to manage big game populations on a DAU basis.....	12
<b>Figure 2.</b> DAU E-6 and included Game Management Units .....	15
<b>Figure 3.</b> Overall land status for DAU E-6.....	18
<b>Figure 4.</b> Location of winter range in the White River Elk DAU E-6.....	29

## LIST OF TABLES

	<b>Page</b>
<b>Table 1.</b> Land ownership data for the Game Management Units in DAU E-6, presented in square miles and percentages.....	17
<b>Table 2.</b> Summary of BLM White River Field Office range conditions based on BLM Standards for Rangeland Health .....	31
<b>Table 3.</b> The Habitat Assessment Model output for DAU E-6 based on predicted, sustainable elk and deer populations using input parameters of a mean precipitation values, 2,000 pronghorn, and 10 year average livestock numbers. The highlighted row shows the current midpoint elk and deer population estimates at 30% elk and 70% deer .....	37

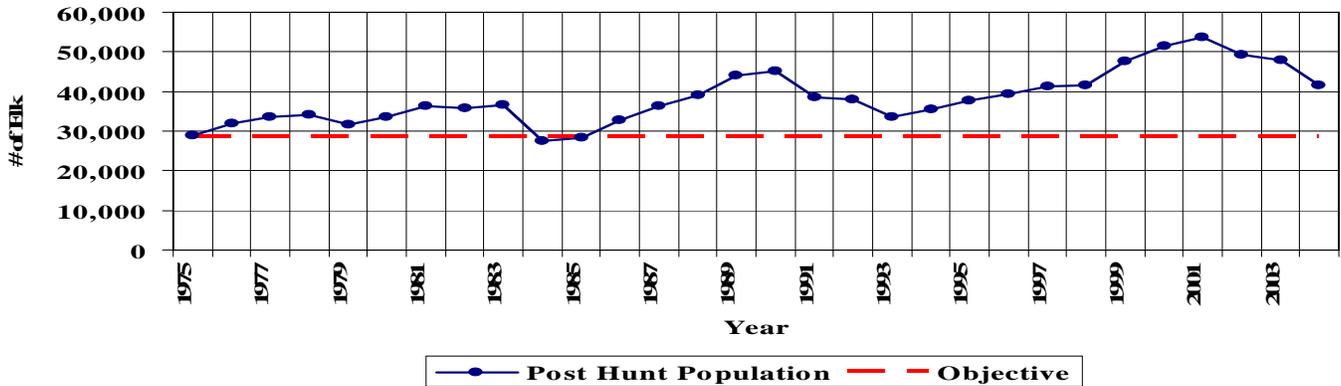
# DAU E-6 (Flattops – White River)

## EXECUTIVE SUMMARY

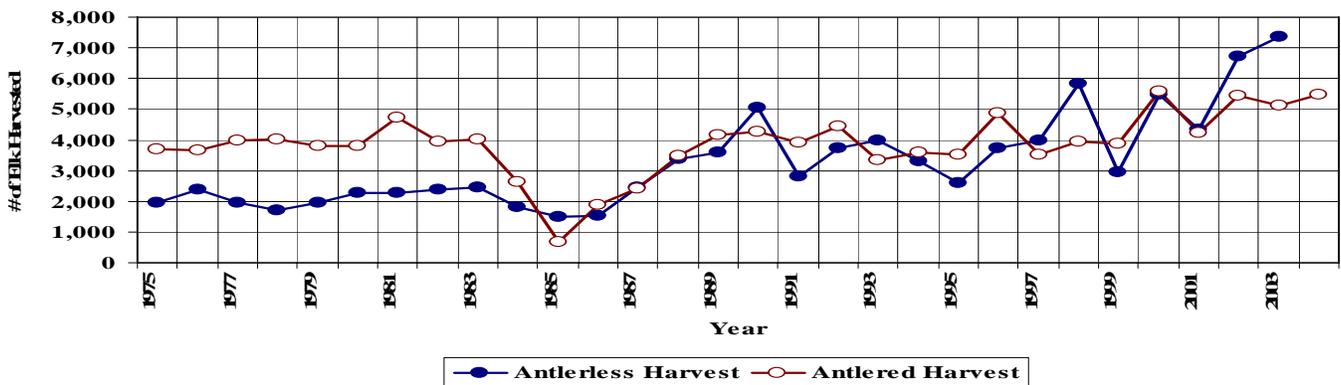
### FINAL December 5, 2005

**GMUs:** 11, 12, 13, 23, 24, 25, 26, 33, 34, 131, 211, and 231  
**Land Ownership:** 41% Private, 34% USFS, 22% BLM, 4% State  
**Posthunt Population:** Objective 28,500 2004 Estimate 41,600 Recommended 32,000 – 39,000  
**Posthunt Sex Ratio (Bulls/100 Cows):** Objective 19 2004 Observed 25 2004 Modeled 25 Recommended 20-25

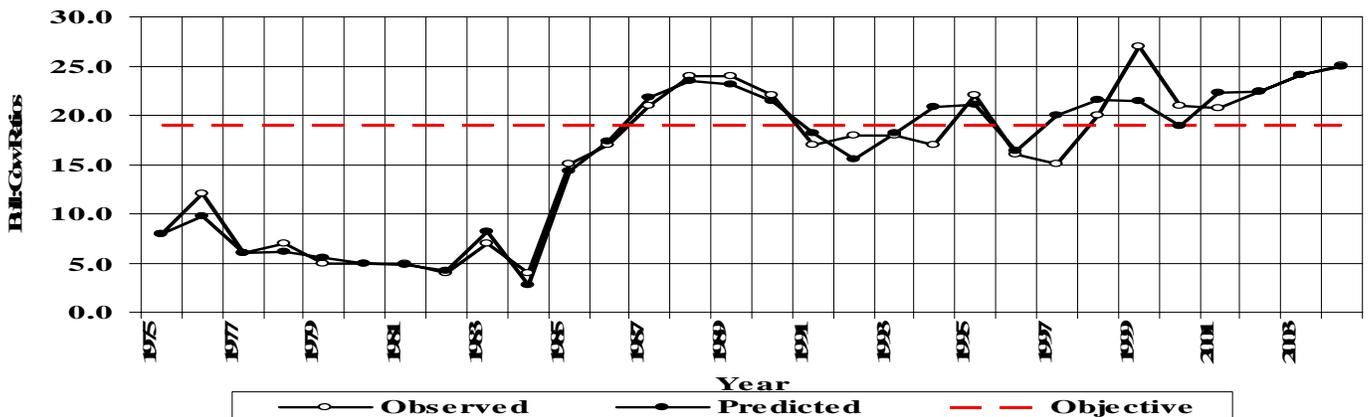
**DAU E-6 Post Hunt Elk Population**



**DAU E-6 Harvest**



**White River Elk Herd E-6 Posthunt Bulls/100 Cows**



## **E-6 Background**

The current population objective for DAU E-6 the White River Elk Herd is 28,500. This population objective was set in 1994. Recent refinements to the CDOW computer modeling procedures have substantially increased modeled estimates of post-season elk populations. These changes were largely due to more accurate estimates of adult and calf survival, which appear to be much higher than previously thought. It is proposed that the long term population objective for this herd be managed as a population range as opposed to a point estimate number. The flexibility to manage this elk herd within a range would allow the CDOW to be more adaptive in their management and take the appropriate steps needed to increase or decrease elk numbers. Several different management strategies have been implemented to increase antlerless harvest and control elk numbers. These include, additional antlerless licenses, extended PLO antlerless seasons, RFW special management licenses, late season antlerless hunts, over the counter 4<sup>th</sup> season antlerless licenses, coordinated HPP antlerless hunts, and 1<sup>st</sup> season bull licenses were changed to an either sex license to increase antlerless harvest without increasing hunting pressure. Reductions in this elk herd should produce an elk herd that is healthier and more productive, decrease site specific range degradation, and reduce elk/livestock competition.

Computer modeling data as well as other information, including harvest and aerial surveys, show that the elk herd has been increasing since the late 1950's. The highest population estimate was in 2001 when the DAU was estimated to contain 53,800 elk. The lowest population estimate was in 1953 (7,700 elk.) The CDOW has used different population objectives over the years. During the 1980's the population objective was 18,000 elk. In 1987, the CDOW raised the population objective to 25,000 elk. In 1989, the DAU was expanded to include GMU 211 and the population objective was increased to 26,500 elk to include the estimated 1,500 elk that occurred in GMU 211. In 1994, the DAU was expanded again to include GMU 11 and the population objective was raised to 28,500 elk. The White River elk herd has averaged 28,700 elk since 1953. The herd appears to have been steadily increasing except after severe winters such as 1983-84 and 1992-93. The population average by decade are: 8,500 elk in the 1950's, 15,300 elk in the 1960's, 28,800 elk during the 1970's, 30,100 elk in the 1980's, and 42,100 elk in the 1990's. During the past 5 years (2000-04) the post-hunt population has averaged 48,300 elk and the 10 year average is 46,600.

Starting in 1985, the Wildlife Commission approved antler point restrictions (APR) for the White River Elk Herd. This was the first DAU in the state to have this restriction and all bull elk hunters were required to only harvest elk that were 4 points or larger on one antler. Since then, the bull:cow ratio trend has been upward averaging 20.6 bulls:100 cows, ranging from 15-25 bulls:100 cows. The current sex ratio objective for the DAU is 19 bulls per 100 cows (Fig 2).

The post-hunt age ratio (calves:100 cow ratio) has averaged 55 since 1959. . The highest age ratio was 97 calves per 100 cows in 1960 and the lowest was 43 calves per 100 cows in 1983. The long-term trend for the cow:calf ratios appears to be stable, with lows in the early 1980s and mid-1990s.

In 2002, a draft DAU Plan for E-6 was written and public comment was received. However, due to management concerns associated with the discovery of CWD on the western slope of Colorado in DAU E-6 the DAU planning process for E-6 was put on hold until the present time. The preferred management alternative for the Plan at that time was status quo with a proposed increase in the population objective to 42,000. This was a 20% reduction from the estimated 2001 post hunt population estimate of 53,800 elk. Since 2002, record harvests have been achieved in DAU E-6 and elk population levels have been reduced to the provisional objective levels proposed in 2002.

## **E-6 Significant Issues**

The issues identified in this DAU are primarily associated with elk distribution, winter range habitat capability, and early spring elk use on public lands as elk migrate back to summer ranges.

One of the biggest challenges in achieving an adequate harvest annually in the DAU is elk seeking refuge on large blocks of private lands to avoid hunting pressure. This is particularly a problem in this DAU since 41% of the land is privately owned, almost 60% of which is elk winter range. Elk hunting is big business in

northwestern Colorado for some landowners, while other landowners do not allow hunting. Private landowners with hunting operations can make a substantial portion of their income from leasing to or outfitting for hunters. The demand is for bull hunting. Many landowners will not jeopardize their bull hunting operations by allowing cow hunters on their property during the regular seasons. The minimal hunting pressure on private land during the regular hunting seasons often results in sanctuary situations for antlerless elk, making them unavailable for harvest and increases the potential for these elk to become problem/damage causing animals later in the winter as the elk migrate west. For management purposes, due to the inaccessibility of elk to hunters during earlier regular rifle seasons, more of an emphasis has been placed on 3<sup>rd</sup>, 4<sup>th</sup>, and late season hunts to achieve antlerless harvest objectives. In order to manage this population to the long term DAU population objective, it is important for the CDOW to be able to work cooperatively with private landowners and federal land management agencies.

In addition to elk distribution issues created by the private land refuge situations, changing climate patterns resulting in range expansions and year round elk use in non-traditional areas, habitat loss and encroachment to development, and summer recreational use on public lands have all contributed to the challenges of managing elk in this DAU. It should be recognized that local issues and problems associated with elk distribution can and will occur at any population level and it is beyond the scope of this DAU plan to address some of these distribution issues.

### **E-6 Management Alternatives**

Three post hunt population objective alternatives are being proposed for E-6 (1) 30,000 – 34,000, (2) 34,000 – 38,000, and (3) 38,000 – 42,000. The CDOW does not recommend managing for more than 42,000 elk in E-6 because of habitat and conflict concerns. The majority of public comments received thus far support, no change to a slight decrease (1-25%) from current elk population levels for E-6.

Management alternatives for E-6 include (1) status quo with limited 1<sup>st</sup> and 4<sup>th</sup> season either sex and antlerless licenses and OTC bull licenses for the 2<sup>nd</sup> and 3<sup>rd</sup> seasons (the range of possible sex ratio objectives for this alternative would be 17–23 bulls:100 cows), (2) OTC elk units for all seasons (the range of possible sex ratio objectives for this alternative would be 15-20 bulls:100 cows), (3) making the DAU totally specified and managing for quality (the range of possible sex ratio objectives for this alternative would be 25-30+ bulls:100 cows), and (4) manage for moderate antlered license limitations (the range of possible sex ratio objectives for this alternative would be 23-27 bulls:100 cows).

## **CDOW Recommendation to the Wildlife Commission**

### **Population Objective: 32,000 – 39,000**

The steadily increasing elk population trend in DAU E-6 has caused the CDOW as well as the Forest Service and BLM to be concerned with maintenance of acceptable range and forage conditions. Evidence presented in this document indicates that negative range impacts associated with elk distribution may be occurring in localized areas. Record elk harvest in 4 of the last 5 years has resulted in a 20% reduction from peak population estimates in 2001.

Mild winter conditions for the past 10 years combined with the adaptive nature of elk has allowed for herd expansion and continued maintenance of a stable reproductive status. The consensus of the management agencies recommendations based on concerns regarding drought stressed range conditions, the potential impacts of oil and gas development on winter ranges, and winter range elk/mule deer competition is a reduction in this elk herd from current population levels. The CDOW is in agreement with this management recommendation.

The CDOW recommendation of managing this elk population in an objective range of 32,000 – 39,000 elk presented here represents a reduction of approximately 25%, to the lower end of the objective range, from current population estimates of elk in DAU E-6. Furthermore, it is recommended, the short term goal is for this elk population to be managed to the lower end of this population objective range (32,000) to allow for range rest and recovery from the past 5 years of drought.

As discussed earlier in this document, this proposed objective is higher than the previous population objective of 28,500 set in 1994. Some of the increase in the population objective is a result of modeled estimates based on more accurate and updated data and some of the increase is due to growth in the elk population since 1994. As a comparison to the 1993 model, the current model shows a 1993 post-hunt population of 38,323 elk. This is about 10,000 more elk than CDOW was estimating in 1993 and is due to improvements in modeling and more reliable population parameters used in models.

At current population levels there are concerns regarding catastrophic impacts to elk and deer populations in a severe winter. Issues in this regard include actual loss of elk, damage to range, game damage to livestock forage and hay, and associated loss of herd health in subsequent years due to range damage.

In order to continue to reduce this elk population, it will be necessary to maintain the elk harvest numbers the Division has achieved in recent years through innovative harvest regimes including additional cow licenses, late season hunts, HPP distribution hunts, and liberal numbers of public and private antlerless licenses.

### **Sex Ratio: 20 – 25 bulls:100 cows**

The CDOW recommendation is to slightly increase the sex ratio objective to a range of 20 - 25 bulls:100 cows. The lowest sex ratio was 4 bulls per 100 cows in 1982 and 1984. During the past 5 years (2000-2004), the herd has averaged 23 bulls:100 cows with a range of 21-25 bulls:100 cows. The Division recognizes it may be difficult to manage within this sex ratio range when elk populations are reduced to near 32,000 with over the counter bull licenses available 2<sup>nd</sup> and 3<sup>rd</sup>

regular rifle seasons, however, limited either sex licenses in the 1<sup>st</sup> and 4<sup>th</sup> rifle seasons will allow for some management flexibility within this range

### **Management Strategy: Status Quo**

The DAU management strategy recommendation by the CDOW is status quo. Currently E-6 is a combination of management strategies including seasons managed for a quality hunting experience and seasons managed for hunter opportunity. Archery and muzzleloader seasons are limited on public lands in GMUs 12, 23, 24, and 33. The archery and muzzleloader limitation on public lands has proved successful in holding elk on the National Forest and increasing harvest and success during the 1<sup>st</sup> rifle season. The 1<sup>st</sup> and 4<sup>th</sup> rifle seasons provide hunters a quality hunting experience with limited either-sex and antlerless licenses available. Unlimited antlered licenses are available during the 2<sup>nd</sup> and 3<sup>rd</sup> rifle seasons. Various antlerless hunts outside the regular seasons have been implemented in an effort to reduce the elk population in E-6. Private land only hunts, early hunts, late hunts, damage hunts, and distribution hunts all provide hunters with several different opportunities to harvest an elk. Hunter success in the DAU would remain relatively high under this strategy. Success has averaged 37% over the last 5 years. Hunter pressure would be moderate during archery, muzzleloader, and 1<sup>st</sup> and 4<sup>th</sup> rifle seasons with higher hunter pressure experienced during the 2<sup>nd</sup> and 3<sup>rd</sup> combined rifle seasons. The opportunities created by the various types of non-traditional hunts and liberal numbers of antlerless licenses made available in an effort to reduce the E-6 elk population have resulted in significant economic benefits for local businesses, landowners, guides and outfitters, and the CDOW. It is important to note that as the herds approach long term population objectives, the numbers of licenses issued for regular season hunts and late season opportunities will be reduced to maintain the elk population at the long term objective levels. Maintaining this elk population at a desired population level will require significantly fewer licenses than the number needed to reduce elk population levels.

## II. Introduction and Purpose

The purpose of this document and the DAU planning process is to provide the CDOW with an elk population management objective for the E-6 Flattops DAU that is biologically, socially, and politically acceptable. Specifically, the DAU plan identifies desired population and sex ratio (number of bulls per 100 cows) objectives that guide CDOW's elk management practices within the E-6 Flattops DAU. The CDOW is required by statute to manage all wildlife species for the benefit of all Colorado residents and visitors to the state. To ensure public needs are met, it is imperative the CDOW maintain big game herds at population levels agreed upon through a public review process (DAU planning) and approved by the Wildlife Commission. In addition to state and federal agencies, there are a wide range of stakeholders in the management of Colorado's big game, including livestock producers, guides and outfitters, sportsmen, wildlife viewers, recreationists, and local businesses.

In Colorado, populations of deer, elk and pronghorn (antelope) are managed as a group or a herd, which is called a Data Analysis Unit (DAU) or herd unit. Normally each DAU is composed of several game management units (GMUs) but in some cases only one GMU makes up a DAU. DAU boundaries follow established boundaries of GMUs in an effort to approximate the year-round range of that herd; the DAU includes the area where the majority of the animals in that herd are born and raised and where they die with as little mixing with from other herds as possible.

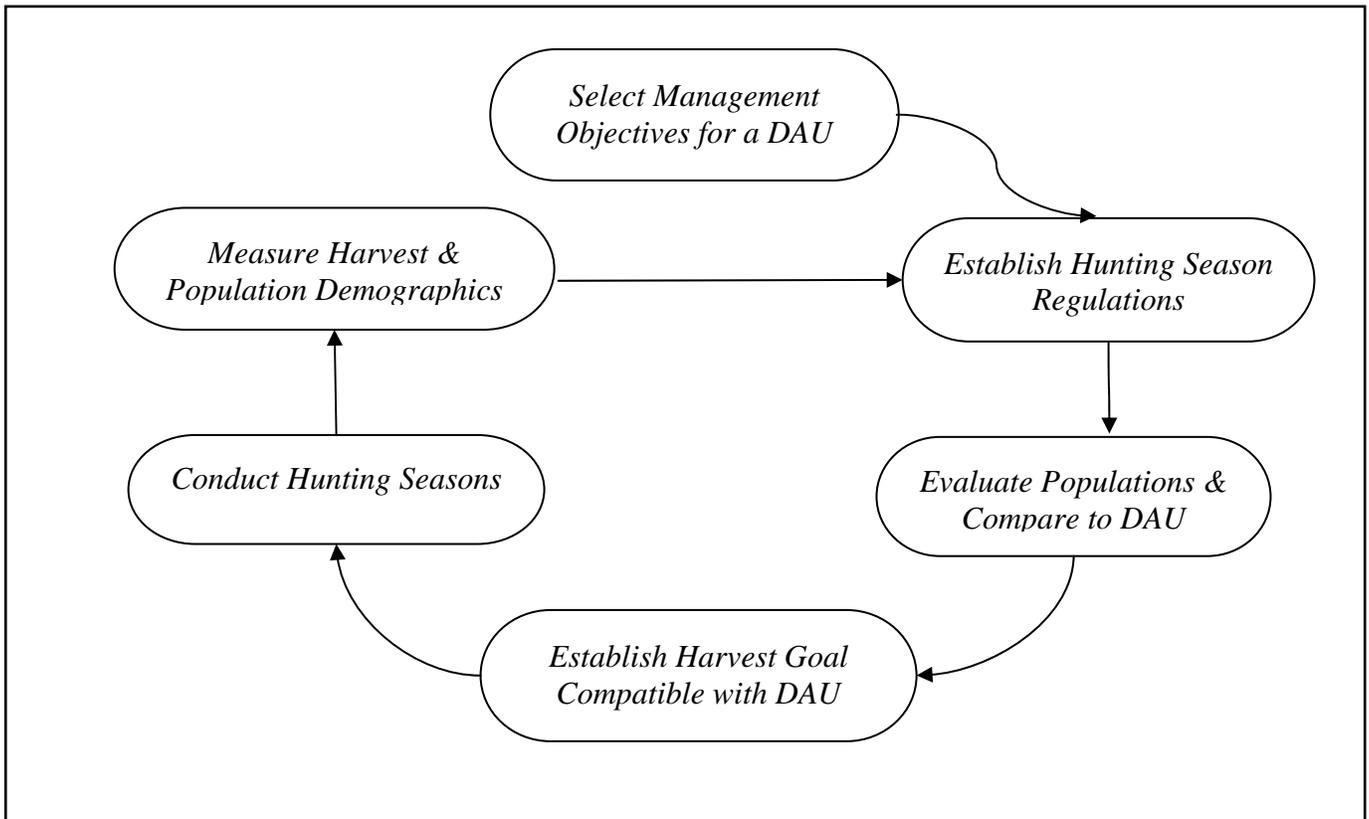
The DAU plan generates two primary decisions: 1) how many animals should the DAU contain, and 2) to a lesser extent, what is the most appropriate sex ratio (number of males per 100 females). These numbers are referred to as the DAU population and composition objectives. Secondly, the DAU plan collects and organizes most of the important management data for the herd into one utilitarian planning document; determines DAU issues through a public scoping process; identifies alternative solutions to the issues and problems identified in the scoping process; and selects the preferred alternative.

The DAU plan process is designed to examine the public's desires and biological herd capabilities and determines what is an appropriate balance of each. The public is involved in the determination of these goals by way of public meetings, questionnaires, and comments to the Colorado Wildlife Commission. DAU objectives are usually set for a period of from 5-10 years.

The DAU population objective drives the most important decision in the annual big game season setting process--how many animals need to be harvested to maintain or work toward that objective. The management by objective approach is a long-term cycle of information collection, information analysis and decision making that culminates each year in a hunting season (see diagram below). The cyclic objective setting approach is designed to key the decision making process to the collection and analysis of information. It also focuses the decision-makers, the Wildlife Commission, on goals and objectives.

This DAU plan analyzes data and supports decisions for population and composition objectives for the White River elk herd.

## CYCLE OF MANAGEMENT BY OBJECTIVE



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

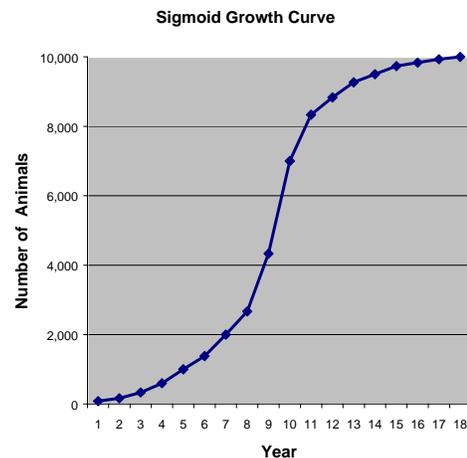
## ***Population Dynamics and the Concept Managing for Sustained Yield***

Numerous studies of animal populations, including such species as mice, rabbits and white-tailed deer, have shown that the populations grow in a mathematical relationship referred to as the "sigmoid growth curve" or "S" curve (right). There are three distinct phases to this cycle. The first phase occurs while the population level is still very low and is characterized by a slow growth rate and a high mortality rate. This occurs because the populations may have too few animals and the loss of even a few of them to predation or accidents can significantly affect the population.

The second phase occurs when the population number is at a moderate level. This phase is characterized by a very high reproductive and survival rate. During this phase, food, cover, water and space are not limiting factors. Also, during this phase, animals such as white-tailed deer have been known to successfully breed at six months of age and produce a live fawn on their first birthday; older does have been known to produce 3-4 fawns that are very robust and healthy. Survival rates of all the deer (bucks, does and fawns) are at maximum rates during this phase.

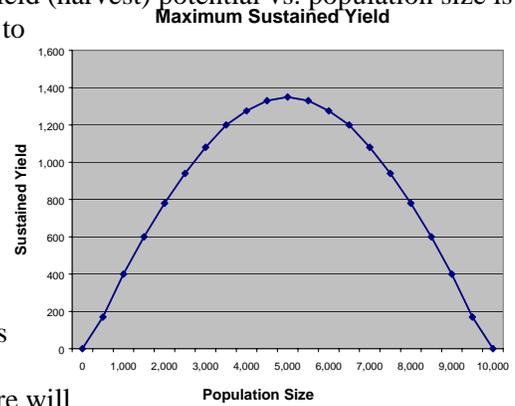
The final or third phase occurs when the habitat becomes too crowded or habitat conditions become less favorable. During this phase the quantity and quality of food, water, cover and space become scarce due to the competition with other members of the population. This phase is characterized by a decrease in reproduction and survival. Also, during this phase animals such as white-tailed deer fawns can no longer find enough food to grow to achieve a critical minimum weight that allows them to reproduce; adult does will usually only produce 1-3 fawns; and survival of all deer (bucks, does and fawns) will decrease. During severe winters, large die-offs can occur due to the crowding and lack of food. The first to die during these situations are fawns, then bucks followed by the adult does. The severe winters thus affects the future buck to doe ratios by favoring more does and fewer bucks in the population. Also, since the quality of a buck's antlers is somewhat dependent upon the quantity and quality of his diet, the antlers are stunted during this phase. If the population continues to grow, it will eventually reach a point called "K" or the maximum carrying capacity. The level is not static but varies from year to year based upon such factors as the severity of the winter. At this point, the population reaches an "equilibrium" with the habitat. The number of births each year approximately equals the number of deaths, therefore, to maintain the population at this level would not allow for any "hunnable surplus." The animals in the population would be in relatively poor condition and when a severe winter or other catastrophic event occurs, a large die-off is inevitable.

What does all this mean to the management of Colorado's big game herds? It means that if we attempt to manage for healthy big game herds, we should attempt to hold the populations around the middle of the "sigmoid growth curve or even slightly above this point." Biologists call this "MSY" or "maximum sustained yield." At this level, which is approximately half the maximum population sizes or "K", in this example it would be 5,000 animals, the population should provide the maximum production, survival and available surplus animals for hunter harvest. Also, at this level, range condition should be good to excellent and range trend should be stable. Game damage problems should not be significant and economic return to the local and state economy should be at the maximum. This population level should produce a "win - win" situation to balance sportsmen and private landowner concerns.



A graph of a hypothetical deer population showing sustained yield (harvest) potential vs. population size is shown (below). Notice that as the population increases from 0 to 5,000 deer, the sustained yield harvest also increases.

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



### III. Description of the White River Data Analysis Unit

#### *Location*

The White River elk DAU includes portions of Routt, Moffat, Rio Blanco, Garfield, and Eagle counties in northwest Colorado and consists of 12 Game Management Units (GMUs): 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34. The DAU is bounded on the north by the Colorado State Highway 318, U.S. Highway 40, the Yampa River, Colorado State Highway 13 and U.S. Highway 40; on the east by Colorado State Highway 131; on the south by the Colorado River; and on the west by Colorado State Highway 13, the White River, Wolf Creek, Coal Creek, U.S. Highway 40, Twelvemile Gulch, the Yampa River and the Little Snake River to Colorado State Highway 318. The towns of Craig, Steamboat Springs, Yampa, Oak Creek, Glenwood Springs, Rifle, Silt, New Castle, and Meeker can be found on the periphery of the DAU. DAU E-6 covers 4188 square miles (see map below).

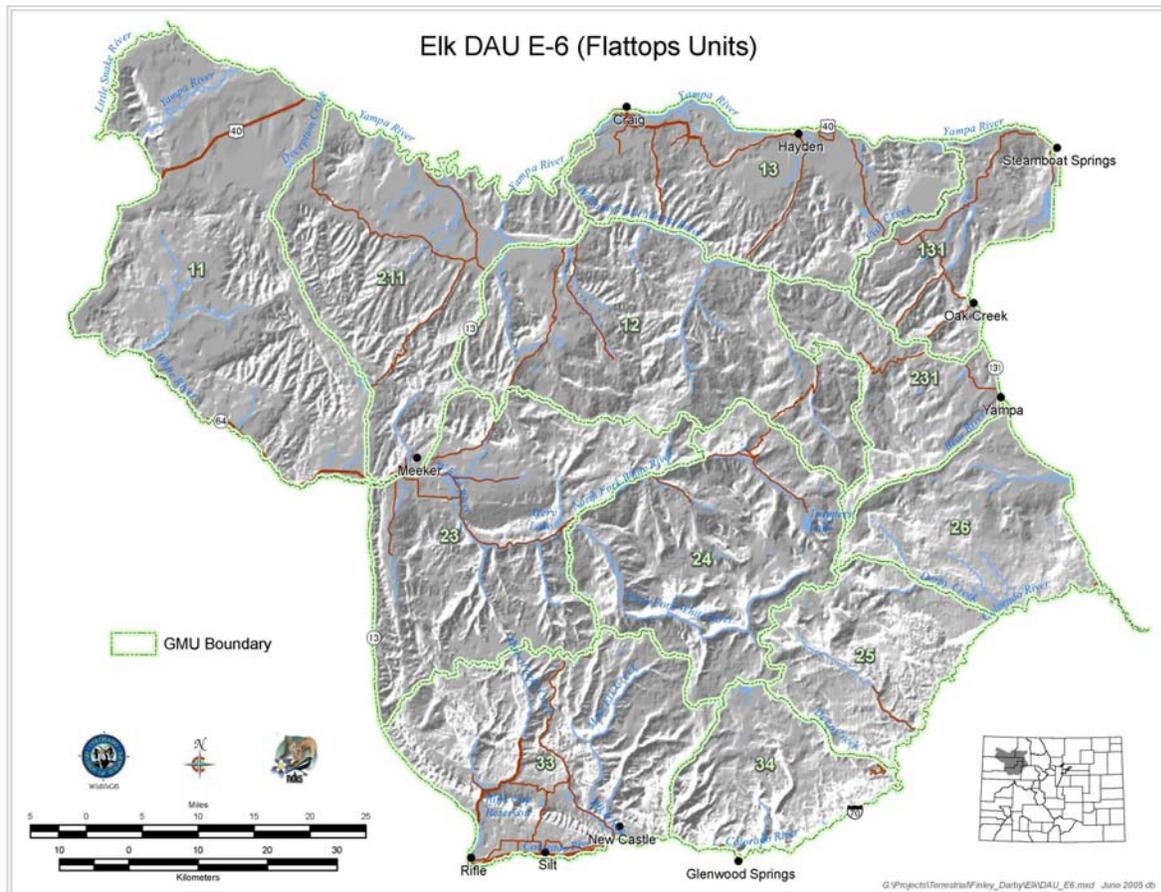


Figure 2. DAU E-6 and included Game Management Units.

# ***PHYSIOGRAGHY***

## ***Topography***

The major topographic features in the DAU include Cross Mountain and Axial Basin in the northwest, the Williams Fork Mountains in the north, the Flat Tops Wilderness Area in the center and the Grand Hogback in the southwest. Four major rivers are found in or on the border of the DAU: the Colorado, White, Williams Fork and Yampa rivers. Elevations range from 12,241 feet on Sheep Mountain (in the Flat Tops) to 5,345 feet on the Colorado River at Rifle.

## ***Climate***

The climate varies greatly across the DAU. The Northeastern and central portions have severe winters, heavy snowfall, and short cool summers. The southern portion of the DAU usually has comparatively mild winters and warmer summer temperatures. There have been exceptions, however, when winter temperatures have been as low as -67 degrees F in the northwest corner of the DAU. Mean annual precipitation at 10,000 feet in the Routt National Forest is about 40 inches, while approximately 12 inches falls at Rifle and Craig at elevations of 5,345 and 6,186 feet.

## ***Vegetation***

The varied topography and elevations in the DAU contribute to differences in habitat types across the area. Generally, vegetation types range from the montane/subalpine zone in the central, higher elevations to the transitional zone at middle elevations with the Great Basin zone at the lower elevations in the southern and northwest portions of the DAU.

Spruce-fir and aspen vegetation types characterize the Montane/subalpine zone. Depending on the degree of canopy closure and resultant understory of grasses and forbs, the spruce-fir areas represent moderate to good summer and fall forage for elk. Aspen groves and associated meadows provide high quality forage, spring through fall. The Flat Tops Wilderness Area is known for its expansive meadows interspersed with spruce/fir stands. Aspen habitat is also extremely important as calving areas for elk, especially when there is sufficient understory.

Mountain shrub zone vegetation consists of native grasses and Gamble's oak interspersed with mountain big sagebrush. Also common are serviceberry, mountain mahogany and chokecherry. This zone, roughly from 6,500 to 8,500 feet in elevation, is very important for both food and cover. The lower half of the zone serves as a large portion of the traditional elk winter range in all but the most extreme winters.

Sagebrush steppe and grasslands dominate the Great Basin Zone, occurring generally below the 6,500-foot elevation. This zone is used primarily as winter range by elk although there are some smaller bands of elk using these areas year-round. Pinyon-juniper stands are most prevalent on north aspects of higher ridges throughout this zone. Pinyon-juniper serves as important winter cover and limited winter forage. In areas where sufficient irrigation water exists, sagebrush fields have been converted for hay production of alfalfa or grasses such as timothy or orchard grass.

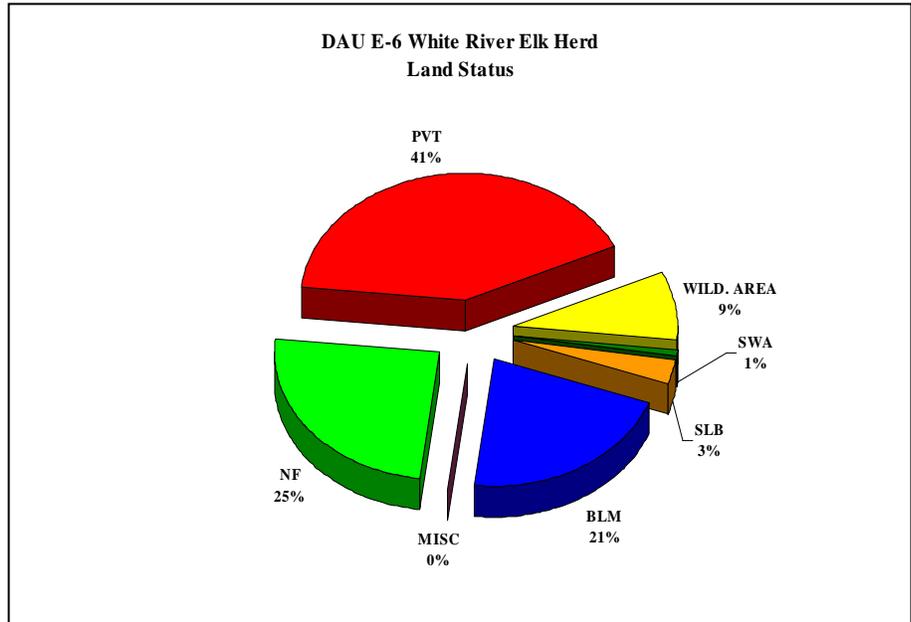
Large scale burns, especially in GMU 11, have converted habitats dominated by bitterbrush shrublands and pinyon-juniper to grassland habitats. In 1988, the "I DO" fire burned approximately 15,000 acres southwest of Maybell. Vegetation in this area was dominated by bitterbrush and served as critical deer winter range. The burn converted the landscape from a bitterbrush shrub dominated community to open grasslands. Fires burned several thousand more acres in the early to mid 1990's in the western portion of the Danforth Hills south and east of Elk Springs around Wapiti Peak and Cedar Springs. These burns have converted stands of pinyon-juniper habitats and sagebrush rangelands into large expanses of grasslands.

Wetland/riparian vegetation types are found along the river bottoms and associated irrigated meadows. Most notable is the Yampa River corridor running first north, then east to west across the northeastern and northern boundary of the DAU. Narrowleaf cottonwood and willow dominate most riparian areas in the DAU. This habitat is extremely valuable as wildlife habitat and supports the greatest abundance and diversity of wildlife species.

## LAND USE

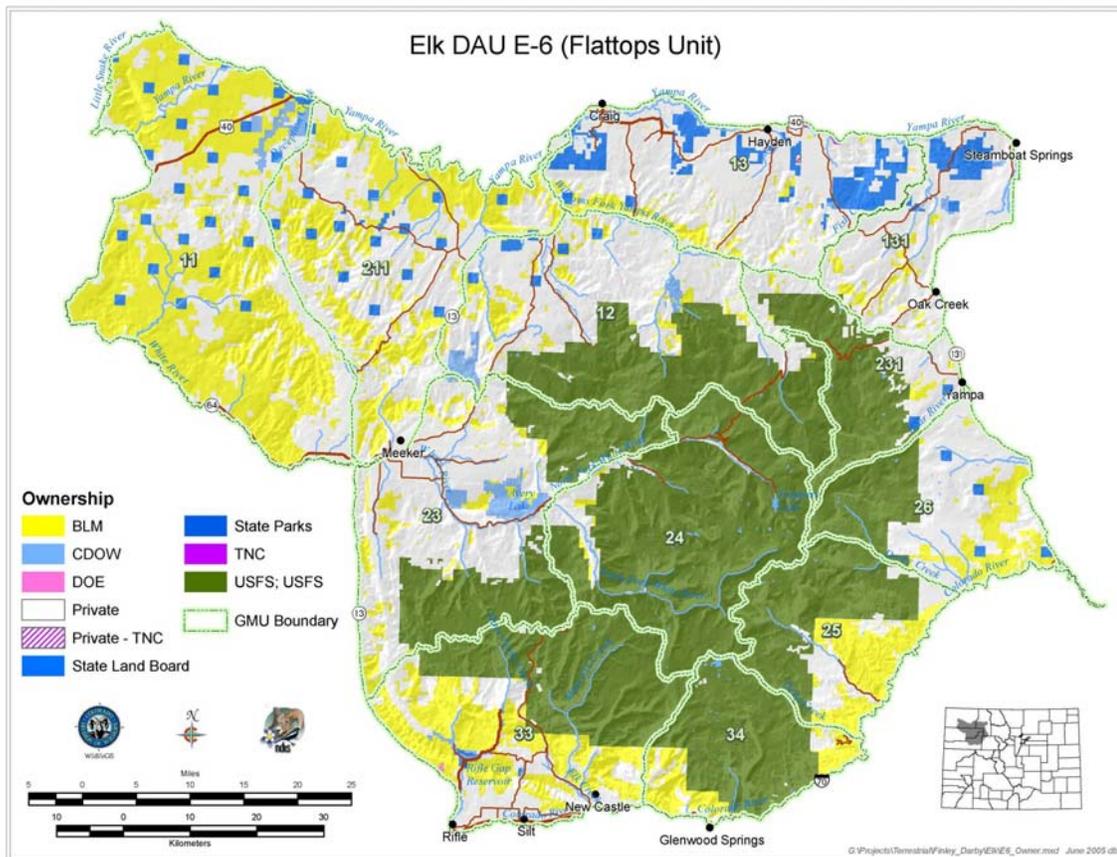
### Land Status

The White River elk DAU covers 4,176 square miles. Of this, 41% (1,725 sq. mi.) is private property, 21% (890 sq. mi.) is Bureau of Land Management (BLM) land, 33% (1,395 sq. mi.) is administered by the United States Forest Service (USFS) of this amount 9% (361 sq. mi.) is in the Flat Tops Wilderness Areas, 3% (130 sq. mi.) is State Land Board land, and less than 1% (35 sq. mi.) is Colorado Division of Wildlife (CDOW) land. See Table 1 for ownership patterns in each GMU and DAU totals.



**Table 1. Land ownership data for the Game Management Units in DAU E-6, presented in square miles and percentages.**

GMU	BLM	NF	PVT	SLB	SWA	Total
11	349.9	0.0	202.9	23.4	0.6	576.8
12	34.8	208.8	221.5	7.3	10.1	482.5
13	27.1	0.0	275.9	55.8	1.3	360.1
23	34.4	121.2	233.9	0	19.5	409.0
24	4.3	420.4	35.5	0	1.2	461.4
25	56.9	137.0	39.1	0	0	233.0
26	38.2	71.6	124.9	5.1	0	239.8
33	121.0	188.3	104.4	0	1.5	415.2
34	35.8	142.2	15.5	0	0	193.5
131	14.0	1.4	160.4	18.5	0	194.3
211	168.3	0.0	241.6	17.4	0.2	427.5
231	5.0	104.2	69.7	2.1	0	181.0
<b>Total</b>	<b>889.7</b>	<b>1,395.1</b>	<b>1,725.3</b>	<b>129.6</b>	<b>34.4</b>	<b>4,174.1</b>
<b>Percent</b>	<b>21.3%</b>	<b>33.4%</b>	<b>41.3%</b>	<b>3.1%</b>	<b>0.8%</b>	<b>100%</b>



**Figure 3. Overall land status for DAU E-6.**

### *Land Use*

From a wildlife perspective, it is fortunate that most of the land users in the White River DAU have left the majority of the area open and undeveloped. The main industries are ranching and outdoor recreation, including hunting, fishing, hiking and sightseeing. Open-pit and underground coalmines are locally important in GMUs 13, 131, and 211 while other mining and logging operations are scattered throughout the DAU. However, a growing concern in GMUs 13 and 131 is that mines are reaching their life expectancy and are transitioning towards obtaining bond release. Many of these mines are then looking to sell this acreage and developers are very interested in acquiring these parcels for subdividing. This is resulting in a major change in land use for the area and is starting to have a significant impact on elk habitat, particularly winter range in these units.

Ranching is spread throughout the DAU, with private lands mostly in hay production and winter grazing. Public lands are primarily used for summer grazing. Large tracts of land in units 13 and 131 were converted from native range to winter wheat production. Much of this land has recently been incorporated into the Conservation Reserve Program (CRP).

Hunting for both big and small game is a principal business in the DAU. It is estimated that hunting directly contributes over \$43 million annually to the economy of Moffat, Routt, Rio Blanco and Garfield counties with an additional \$37 million in secondary expenditures (1990 estimates). Hunters can pursue elk, deer, pronghorn, bear, mountain lion, rabbits, and three species of grouse, waterfowl and other game animals in the DAU.

## IV. Herd Management History

### *Disclaimer for Population Size Estimate*

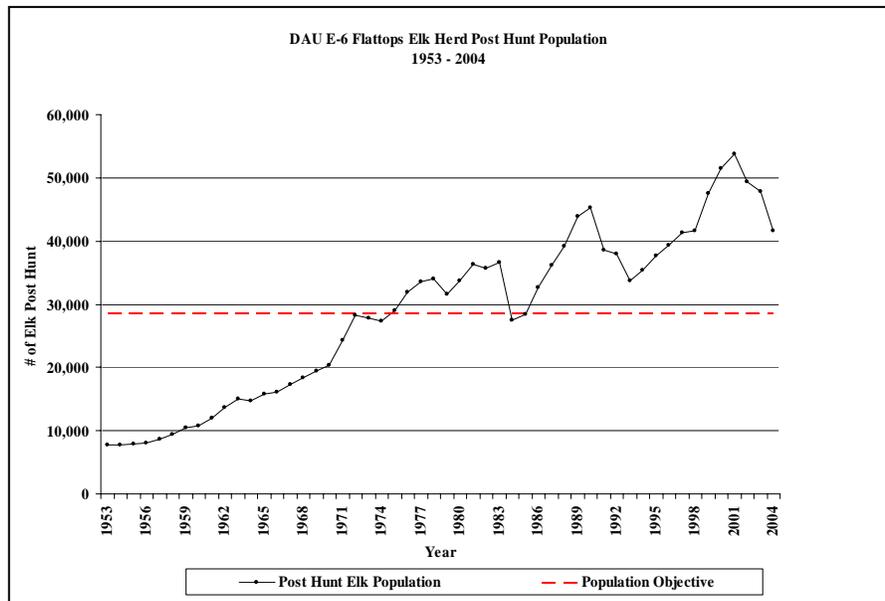
Estimating population size of wild animals over large geographic areas is a difficult and inexact exercise. In several research projects, attempts have been made to accurately count all the known number of animals in large fenced areas. All of these efforts have failed to consistently count all of the animals. In some cases less than 50% of the animals can be observed and counted. High-tech methods using infrared sensing have also met with limited success. The CDOW recognizes this as a serious challenge to our management. The CDOW attempts to minimize this problem using the latest technology and inventory methodology available. Most population estimates are derived using computer model simulations that involve estimations for mortality rates, hunter harvest, wounding loss and annual production. These simulations are then adjusted to align on measured post-hunting season age and sex ratio classification counts and in some cases density estimates derived from line transect and quadrant surveys. The CDOW recognizes the limitations of the system and strives to do the best job with the resources available. If better information becomes available, such as new estimates of survival rates, wounding loss, sex ratio at birth, density estimates, or new modeling techniques and programs, the CDOW will use this new information and the new techniques. This may result in significant changes in the population size estimates, and this could change our management strategies. It is recommended that the population estimates presented in this document be used only as an index or as trend data and not as an absolute estimate of the elk population in the DAU.

The CDOW is currently working on developing a quadrat survey methodology for obtaining more refined elk population estimates. Conducting quadrat surveys for elk are expensive, time consuming and risky for personnel flying the surveys. The reason quadrat survey methods have not been used to estimate elk populations in the past is because of the inherent variability associated with conducting these surveys, due to the social nature of elk and their tendency to congregate in large groups across their winter ranges. Currently, no other western states conduct quadrat surveys for estimating elk populations.

### *Post-Hunt Population Size*

CDOW biologists estimate the elk population size in the DAU by a computer modeling process. Starting in the early 1970s, The CDOW used a computer modeling program called ONE POP. This program was accessed off a mainframe computer at Colorado State University and was very cumbersome to operate. In the early 1980s, The CDOW switched to a personal computer program based program called POP II. Finally, in 1999, the CDOW switched to a computer spreadsheet model to predict population size. All programs worked in basically the same manner: harvest figures are entered into the computer along with estimates for mortality, initial population size, sex ratio at birth, and wounding loss. Modeled post-hunt population estimates are generated by solving for the best fit between measured vs. predicted post-hunt sex ratio data. The results of the computer generated post-hunting season population estimates are summarized in Appendix ?. The CDOW uses these computer population models as the primary method for estimating the number of deer, elk, and pronghorn antelope in Colorado. The quadrat census and line transect techniques have been used in other parts of the state to give a second, independent estimate of population size for deer and pronghorn. While the CDOW has experimented with other techniques, mainly quadrat census to develop a census method for elk, these experiments were not successful. This is primarily because of the large herd size for elk on the winter range and dealing with the problems associated with conducting and analyzing the survey data.

Computer modeling data as well as other information, including harvest and aerial surveys, show that the elk herd has been increasing since the late 1950's. The highest population estimate was in 2001 when the DAU was estimated to contain 53,800 elk. The lowest population estimate was in 1953 (7,700 elk.) The CDOW has used different population objectives over the years. During the 1980's the population objective was 18,000 elk. In 1987, the CDOW raised the population objective to

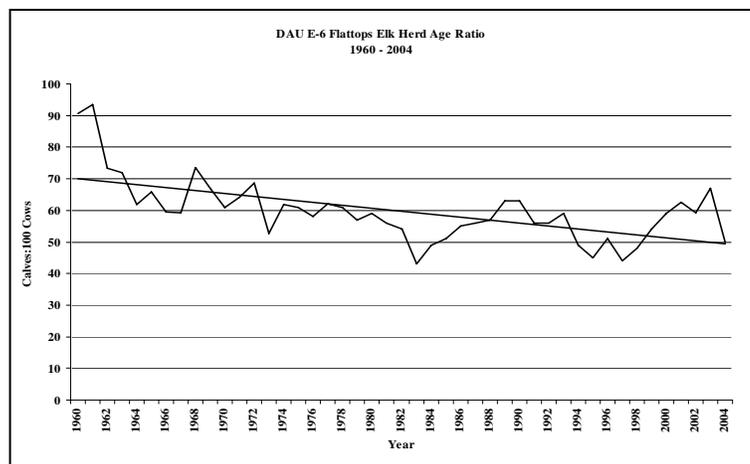


25,000 elk. In 1989, the DAU was expanded to include GMU 211 and the population objective was increased to 26,500 elk to include the estimated 1,500 elk that occurred in GMU 211. In 1994, the DAU was expanded again to include GMU 11 and the population objective was raised to 28,500 elk. The White River elk herd has averaged 28,700 elk since 1953. The herd appears to have been steadily increasing except after severe winters such as 1983-84 and 1992-93. The population average by decade are: 8,500 elk in the 1950's, 15,300 elk in the 1960's, 28,800 elk during the 1970's, 30,100 elk in the 1980's, and 42,100 elk in the 1990's. During the past 5 years (2000-04) the post-hunt population has averaged 48,300 elk and the 10 year average is 46,600 (see Appendix 3).

### ***Post-Hunt Herd Composition***

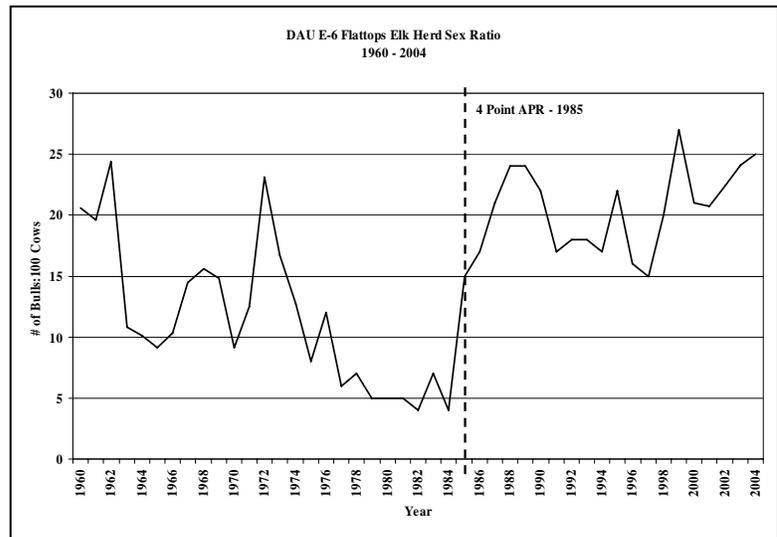
Since 1959, forty one post-season age and sex ratio aerial surveys have been conducted in the DAU, typically completed in December and January. Since many of the early research and monitoring techniques were conducted in this area, this represents the largest and most complete age and sex ratio data set for Colorado and probably the United States. To conduct the survey, a helicopter is used to position the observer over the elk, and then each elk in the group is classified into one of five categories: cows, calves, yearling bulls, young bulls and mature bulls. After the flight, the data are summarized by drainage and game management unit, and then the age ratio (calves per 100 cows) and sex ratio (bulls per 100 cows) are computed.

***Calf Ratios*** - The post-hunt age ratio (calves:100 cow ratio) has averaged 55 since 1959. The highest age ratio was 97 calves per 100 cows in 1960 and the lowest was 43 calves per 100 cows in 1983. During the past 5 years (1997-2001) the age ratio has averaged 53.6 calves/100 cows. The long-term trend for the cow:calf ratios appears to be slightly downward but has been up and down with lows in the early 1980s and mid-1990s. Since 1997, there has been an increasing trend. This is an important long term data set and trend that appears to indicate that this elk herd is still fairly productive but could be showing some indications of reduced production and survival due to competition and deteriorating range conditions. It



is important to note that these surveys were conducted in early winter prior to the end of January. Loss of calves due to starvation and predation typically occurs after this time. During severe winters, the number of calves surviving could be much lower than this early winter estimate (See Appendix 4).

**Bull Ratios** – Since 1959 the post-hunt bull ratio has averaged 15.6 bulls per 100 cows. The highest sex ratio was 34.0 bulls per 100 cows in 1959. The lowest sex ratio was 4 bulls per 100 cows in 1982 and 1984. During the past 5 years (2000-2004), the herd has averaged 23 bulls/100 cows with a range of 20.7-25 bulls per 100 cows. Starting in 1985, the Wildlife Commission approved antler point restrictions (APR) for the White River Elk herd. This was the first DAU in the state to have this restriction and all bull elk hunters were required to only harvest elk that were 4 pointS or larger on one antler. Later, this was amended to include any elk with a 5-inch brow-tine. The purpose of the APR was to increase the bull ratios in this herd. Since then, the bull:cow ratio trend has been upward with 15 bulls:100 cows in 1985 and 21.2 bulls:100 cows in 2000 (range was 15-26.8 bulls:100 cows). The current sex ratio objective for the DAU is 22 bulls per 100 cows.



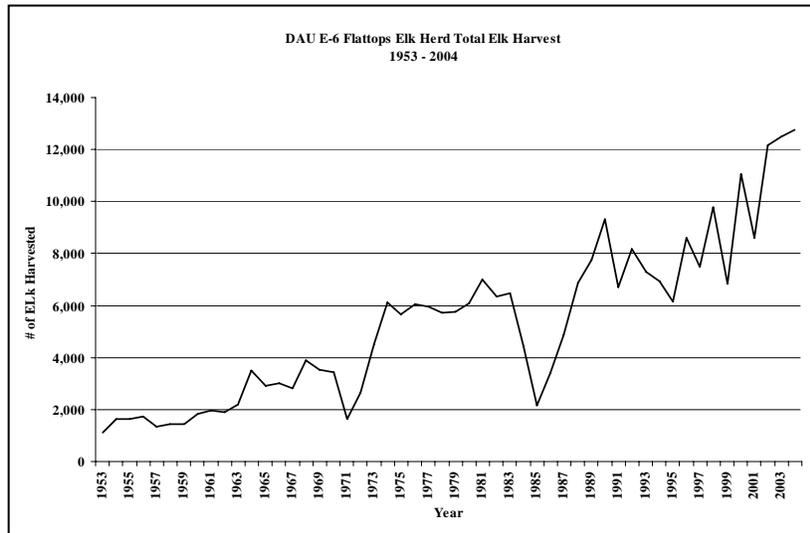
**Yearling Bull Ratios** – Since 1967, when yearling bulls were first distinguished in the age and sex surveys, the yearling bull ratio has averaged 13.3 bulls:100 cows. The highest ratio was 20 yearling bulls:100 cows in 1988-90 & 1999. The lowest sex ratio was 3 yearling bulls:100 cows in 1984. As mentioned above, since 1985, there has been a restriction placed on harvesting bulls with less than 4-points or do not have a 5-inch brow tine. Typically yearling bull elk do not have brow tines and have less than 4 points. As mentioned earlier, the White River elk herd was the first DAU to implement this restriction in 1985 and it worked so well that most of the other DAUs in the state were added in 1986. In E-6, all bull elk hunting seasons (archery, muzzleloader, and rifle) are under this restriction. Biologists like to look at yearling bull ratios as a measure of recruitment. Recruitment is survival of calf elk to the yearling age class. It is easy to identify yearling bull elk during a sex and age classification survey by their distinctive antler size and configuration. In addition, it is assumed that for every yearling bull, there is also a yearling cow elk. Once a calf reaches its first birthday and becomes a yearling, their natural survival rate greatly increases. However, for bull elk, this only lasts for about one more year or until they reach the two-year old age class and they become legal for harvest in the annual hunting seasons. The yearling bull ratio has had an increasing trend since the 1967. Due to heavy hunting pressure and the resulting lack of young bull elk in the population, the total and yearling bull ratio dipped to record lows in the mid-1970s to the mid-1980s.

Since 1985, and after the APR were initiated, the yearling bull ratio has been in a slightly increasing trend. Some of this increase could also be as a result of less illegal loss due to hunters shooting the wrong elk. CDOW researcher Dave Freddy documented that hunters sometime shoot the bulls that are not legal under the APR. However, since 1985, most CDOW people feel that this problem is decreasing and this could be the cause of the apparent increase in the yearling bull ratios.

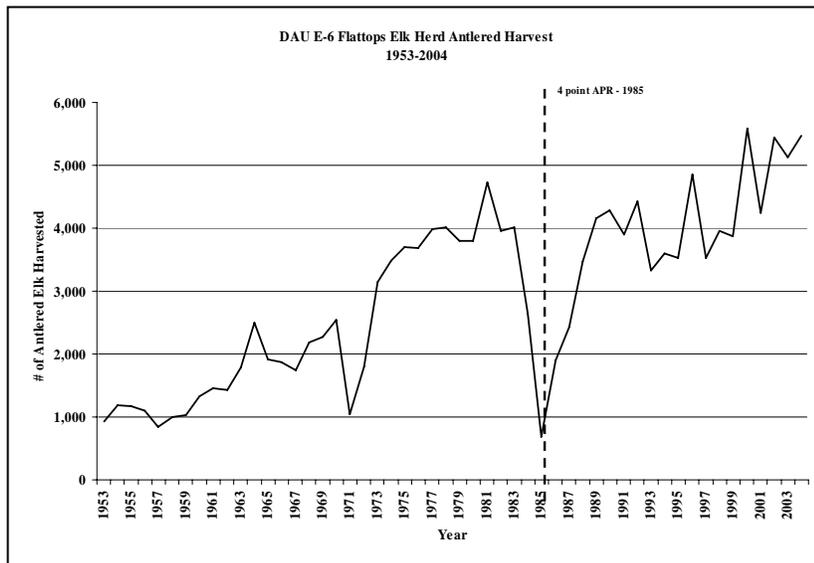
**Young & Mature Bull Ratio** – Since the APR were started in 1985. There has been a slightly increasing trend in the young and mature bull ratio in the DAU. This is probably due to some learning ability of older bulls to avoid hunters. Also, some years when hunting conditions are poor due to weather, such as 1999 and 2001, bull escapement increases.

**Harvest History and Season**

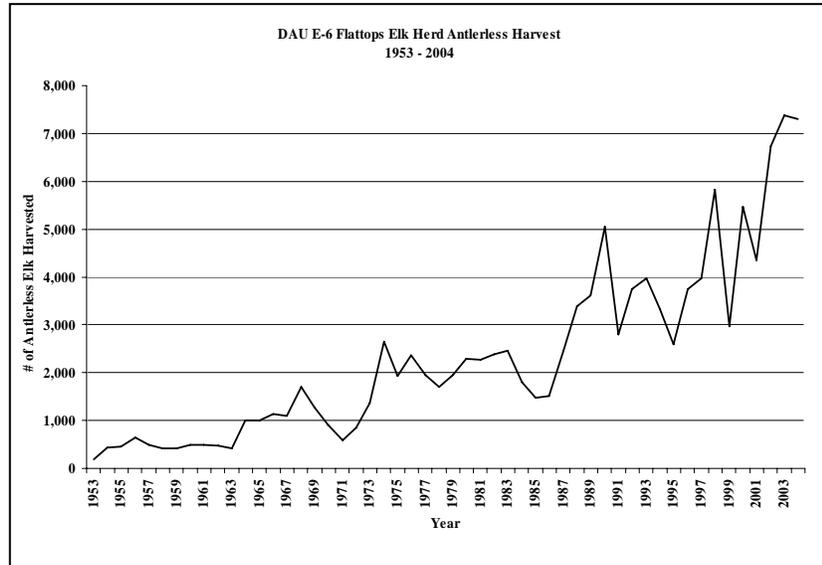
**Total Harvest** - The number of harvested elk has been steadily increasing since 1953. From 1953 to 2004, the lowest harvest was 1,119 elk in 1953, and the highest harvest was 12,770 elk in 2004. The highest antlered harvest was 5,584 in 2000. The highest antlerless harvest (cow and calves) was 7,377 in 2003 .



**Bull Harvest** – One of the better indications that elk have been increasing in the DAU is to review the bull harvest statistics over the past 50 years. During this period there has been a dramatic increase in bull elk harvest starting in the early 1970s when harvest was averaging about 1,000 bulls per year until today when the harvest is averaging about 5,400 bulls per year – a five fold increase. From 1977-2000, all bull elk hunting licenses in the DAU, except for muzzleloading, has been unlimited in number. Prior to 1977, specified “area E” (GMU 34 & 24) had limited bull elk hunting and starting in 2000, the first rifle season has limited bull elk hunting. In 2005 bull hunting was limited further by the 4<sup>th</sup> rifle season bulls becoming limited.



**Antlerless Harvest** – Antlerless harvest is somewhat influenced by management objectives since the harvest, with a few exceptions, is controlled by the number of limited licenses issued by the CDOW. However, the trend for antlerless harvest is similar to bull harvests, increasing since the early 1970s. In 1970, antlerless harvest in the DAU averaged 1,000 cows and calves per year and in 2000, the harvest averaged over 7,000. This represents a seven-fold increase.



The percentage of the total harvest that is composed of antlerless elk has greatly increased since 1990. This is out of concern by the CDOW, federal land management agencies, and other

constituents of too many elk in the DAU and the CDOW’s attempt to reduce the population. The main method used to reduce the elk population is to increase the antlerless harvest.

**Hunting Season History** - For the past 30 years, annual elk hunting seasons in E-6 have generally included an either-sex archery season, a limited muzzleloading season and unlimited bull and limited cow rifle seasons.

In 1986, the Wildlife Commission approved the three combined deer and elk rifle season structure to spread increasing hunter pressure after hunter crowding became an issue. These three combined seasons ran 5, 12, and 9 days in length for a total of 27 days of elk and deer rifle hunting. The short, five-day season was first to reduce the incentive for hunters to go to first season and get “first crack” at the animals. Low bull ratios in the 1970’s and 1980’s prompted the Wildlife Commission to approve bull antler point restrictions (APR) in 1985 for the White River Elk herd.

Mild winters, dry hunting seasons, limited hunting access to private lands, large private land refuges, and increased development have all resulted in reduced hunting opportunities and/or an inadequate harvest. All have contributed to an increasing elk population in E-6. Two management tools have been used to attempt to slow this population growth. First, biologists have dramatically increased antlerless hunting opportunity. In 1985, the antlerless harvest was 1,476 by 2000 the antlerless harvest had increased to 5,464. Secondly, the CDOW initiated many new cow elk hunting seasons such as regular season private land only seasons (PLO) in 1993, many late PLO and public land cow elk seasons, and starting in 1990, increased public hunting opportunities for cow elk on private lands with the CDOW Ranching For Wildlife program. Since 2000, the number of licenses for these antlerless hunts has dramatically increased. For example in 1995 the total licenses for these non-traditional hunts equaled 1,532, in 2000 the number of licenses for these hunts had increased to 5,845.

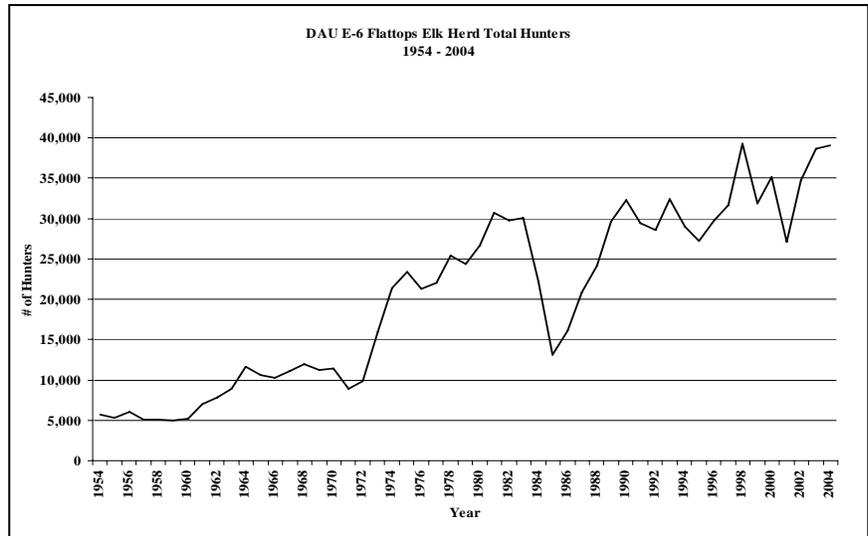
In 2005, the CDOW began a new 5-year season structure that included:

- 1) an unlimited either-sex archery season (except GMU 12, 23, 24, 33 are limited)
- 2) a limited muzzleloading season for bulls and cow elk
- 3) a limited first elk season for bull and cow elk
- 4) two combined rifle seasons (second and third season) for unlimited bull elk and limited cow elk
- 5) a limited fourth elk season for bull and cow elk

In addition to the regular seasons, there are still many late and regular season PLO cow hunts available throughout the DAU.

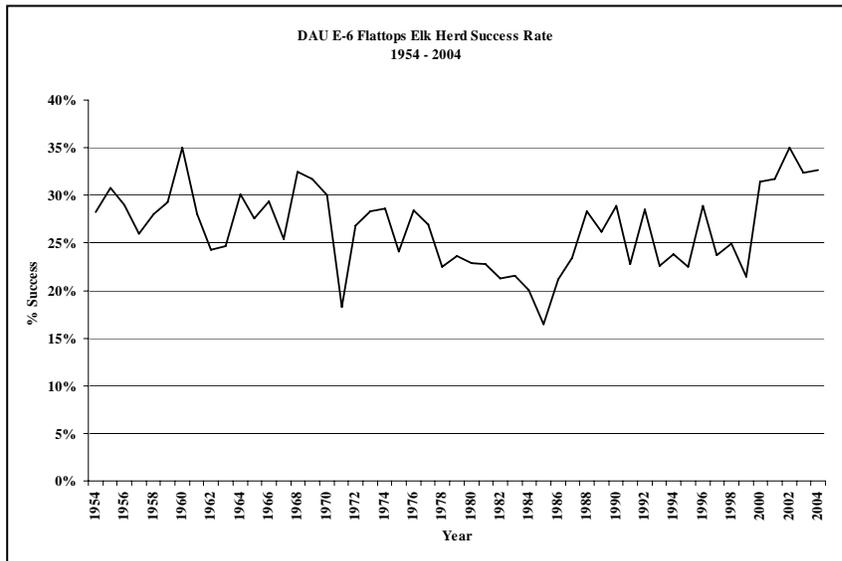
## Hunting Pressure

Hunting Pressure – Since 1953, the number of elk hunters has shown a steady increase. The average number of elk hunters over this period was approximately 19,200 hunters per year. The lowest number was 5,000 in 1959. The highest number of hunters was in 1998 with 39,300 hunters. In 1998, the CDOW permitted unlimited either-sex elk hunting. During the past five years (2000-2004) the number of hunters averaged 34,900.



## Hunter Success

Hunter percent success (antlered and antlerless combined) has exhibited an interesting trend over the past 50 years. On average, success was steadily decreasing from the early 1950s to the early 1980s. Since then success has been in an increasing trend for the past 15 years. For the past 50 years, it has averaged 25% and has ranged from a low of 16% in 1985 to a high of 35% in 1960 and 2002. However, on average it has not changed that much and as the elk herd increased in numbers so did the number of elk hunters.



## V. CURRENT HERD MANAGEMENT

### DAU E-6 White River Elk Herd

**Game Management Units:** 11, 12, 13, 23, 24, 25, 26, 33, 34, 131, 211, and 231

#### *Population Objective*

Current Population Estimate: 41,500

Current Population Objective: 28,500

#### *Sex Ratio Objective*

Current Sex Ratio: 25 bulls:100 cows

Current Sex Ratio Objective: 19 bulls:100 cows

### ***CURRENT MANAGEMENT STRATEGIES***

Currently E-6 is a combination of management strategies including seasons managed for a quality hunting experience and seasons managed for hunter opportunity. Archery and muzzleloader seasons are limited on public lands in GMUs 12, 23, 24, and 33. The 1<sup>st</sup> and 4<sup>th</sup> rifle seasons provide hunters a quality hunting experience with limited either-sex and antlerless licenses available. Unlimited antlered licenses are available during the 2<sup>nd</sup> and 3<sup>rd</sup> rifle seasons. Various antlerless hunts outside the regular seasons have been implemented in an effort to reduce the elk population in E-6. Hunts such as private land only hunts, early hunts, late hunts, damage hunts, and distribution hunts all provide hunters with several different opportunities to harvest an elk. Hunter success in the DAU would remain relatively high under this strategy. Success has averaged 37% over the last 5 years. Hunter pressure would be moderate during archery, muzzleloader, and 1<sup>st</sup> and 4<sup>th</sup> rifle seasons with higher hunter pressure experienced during the 2<sup>nd</sup> and 3<sup>rd</sup> combined rifle seasons. The opportunities created by the various types of non-traditional hunts and liberal numbers of antlerless licenses made available in an effort to reduce the E-6 elk population have resulted in significant economic benefits for local businesses, landowners, guides and outfitters, and the CDOW. It is important to note that as the herds approach long term population objectives, the numbers of licenses issued for regular season hunts and late season opportunities will be reduced to maintain the elk population at the long term objective levels. Maintaining this elk population at a desired population level will require significantly fewer licenses than the number needed to reduce elk population levels.

### ***CURRENT MANAGEMENT CONCERNS***

#### *Distribution and Movement*

Due to the vast area within DAUs, there needs to be a variety of management methods available to address specific GMUs or local problem areas within GMUs. Field personnel from the CDOW, federal agency biologists and members of the public have expressed concern about distribution of elk in the DAU. Some have concerns about localized sub-populations of elk. In these cases where the CDOW agrees that the local population of elk is too large, special hunts or other means can be used to reduce animal numbers. These methods include flexibility with licensing structure, hunting season structures, harvest methods, and other management techniques. The goal is to reduce conflicts between agriculture and wildlife and to properly align elk populations with available limited habitat. Some of the local problem areas in this DAU include:

Lack of critical winter range habitat on public land is the defining problem for GMU 26. The majority of critical habitat, winter range and severe winter range are located on privately owned lands (58% in GMU 26). Problems arise from two different areas, game damage on privately owned lands, competition with livestock,

and elk distribution.

First, privately owned land is being damaged and elk are competing with livestock for available forage. Livestock forage is being reduced by elk on transitional ranges during the spring and less AUMs are available on private summer ranges. Aspen trees, pastures and fences also receive damage from elk using the private land. Secondly, it is difficult to manage for the distribution of elk in this area. The CDOW does not set a population objective for a GMU. However, the distribution and number of elk in this area should be based on available winter and severe winter range habitat on publicly owned lands. Private pastures and fields should not be taken into account. Continuing to assume that private property will be available to wildlife for perpetuity is not reality. Eagle and Routt Counties are both experiencing a conversion from agriculture to development. Properties adjacent to the remaining winter ranges are being subdivided and are selling. Setting an artificially high population objective may result in an undesirable result. Determining a realistic population objective based on available critical habitat should reduce conflict and damage on private lands and allow over utilized habitat to heal.

The management of the elk population in GMU 26 may vary considerably from the rest of the DAU. Achieving the GMU 26 population objective and special management plan will require flexibility within the licensing/season structures and creative management techniques e.g. dealing with elk that seek refuge on private land areas that do not allow hunting.

Both GMU 13 and GMU 131 have significant issues regarding public access. This is becoming worse as mines are reaching their life expectancy and are transitioning towards obtaining bond release. Many of these mines are then looking to sell this acreage and developers are very interested in acquiring these parcels for subdividing. This is resulting in a major change in land use for the area and is starting to have a significant impact on elk habitat, particularly winter range in these units.

In GMU 231 and GMU 131 many larger agricultural ranches are being sold off due to increase cost of doing business in Routt County and/or inheritance expenses. Many of these ranches are purchased and subdivided, which has resulted in habitat loss and loss of hunting access and reduced harvest success. Others have been purchased by “gentleman ranchers”, and in many cases have resulted in the loss of hunting access and reduced harvest success.

In GMU 12, 23, and 231 there is an increasing concern that summer recreational activity and existing travel management practices on the USFS may be forcing elk to abandon their more traditional summer range and move onto adjacent private lands where there is less disturbance. This is creating a conflict with agricultural operators as elk cause damage to their growing crops and pastures. This conflict coupled with changing climatic patterns has also resulted in elk residing on some ranches year-round, which has created increased conflicts in game damage to growing crops, harvested crops, livestock forage, and in some areas has drastically influenced the health of aspen stands.

### ***Long Term Elk Population Objective***

This elk population is similar to other elk herds in the state in the fact that it is above the long-term population objectives set in 1994. In 2004, the DAU was 13,500 (32%) elk above the long term objective of 28,500 elk set in 1994. It is important to note that when the long term objective of 28,500 elk was set in 1994 the CDOW was using the POP II modeling program. The POP II modeling program limited the number of age classes included in the model. For example, the POP II program would only allow for cows up to 15 years old to be included in the modeled population. The ability to model a limited number of age classes as well as more recent radio telemetry studies by the CDOW that have shown elk have higher survival rates than previously used in modeling efforts and the fact that cow elk remain reproductive until 20+ years of age would indicate modeled population estimates using the POP II program were likely conservative estimates. As discussed previously in the plan, in 1999 the CDOW changed modeling programs to a spreadsheet modeling system. The spreadsheet program allows for an unlimited number of age classes to be modeled. Increasing the number of age classes that can be included in the model along with the adjustments to survival rates learned from

telemetry studies substantially increases modeled population estimates. Thus, when the long term population objective of 28,500 was set back in 1994 the actual number of elk on the ground was likely closer to 38,000.

Regardless of the model refinements that have occurred, elk have been steadily increasing in the DAU since the 1970s. Elk have a slower reproductive rate than deer but a higher survival rate and can live for 20+ years. The main mortality factor for elk is hunting. If elk are not harvested, cow elk in Colorado have been known to live up to 25 years. Also, elk tend to have large home ranges, usually larger than 100 sq. mi., and they have an uncanny knack for being able to find refuge areas in steep rugged terrain, road-less areas, or on private lands where hunting pressure is light. This ability to avoid hunters can result in low harvest especially in dry, warm hunting seasons. Over the years, the CDOW has tried numerous methods to increase the elk harvest, especially on cows, by 1) increasing the number of antlerless license, 2) increasing the number or days for rifle elk hunting seasons, 3) increasing the type of licenses such as private land only, either-sex licenses, additional licenses, special game damage hunts and, 4) adding additional seasons such as the late season for many of the GMUs in the DAU.

One of the biggest challenges in achieving an adequate harvest in the DAU appears to be elk seeking refuge on large blocks of private lands to avoid hunting pressure. This is particularly a problem in this DAU since 41% of the land is privately owned. Some of these landowners will not allow hunting. Others may cater primarily to hunters who only want to hunt bull elk. In order to manage this population to the long term DAU population objective, it is important for the CDOW to be able to work cooperatively with private landowners and federal land management agencies.

In addition to elk distribution issues created by the private land refuge situations, changing climate patterns resulting in range expansions, elk use in non-traditional areas, habitat loss and encroachment to development, and summer recreational use on public lands have all contributed to the challenges of achieving an adequate harvest.

### ***Game Damage***

Elk have caused game damage problems to some ranchers' harvested crops (hay stacks), growing crops, livestock forage (pasture and rangelands) and fences. Many landowners are not eligible for game damage since CRS 33-6-103 disallows game damage payments to landowners or their lessees if the ranch unreasonably restricts hunting or charges more than \$100 per hunter per season. Also, ranches that are enrolled in the CDOW Ranching-For-Wildlife program are excluded from game damage payments. The CDOW provides damage prevention materials to landowners such as haystack fencing and will sometimes approve special game damage hunts to reduce the problem or discourage the elk from frequenting the area.

### ***Limited Winter Range***

Winter snow forces elk out of the higher elevations of the DAU to the more limited winter ranges in the western and eastern portions of the DAU. In the winter, elk are more concentrated and restricted to these limited winter ranges, concentrating elk in an area usually below 7,500 - 8,000 ft. During light to normal winters, mortality rates usually don't exceed 10% of the total elk herd. However, in severe winters, the elk can be severely concentrated in the valley floors on very limited south facing or wind swept slopes. Competition for food is acute and this results in higher winter mortality, especially on calves. Mortality rates on calves during severe winter's can be high. However, adult cow mortality during most severe winters is usually less than 20%.

Large scale burns, especially in GMU 11, have converted habitats dominated by bitterbrush shrublands and pinyon-juniper to grassland habitats. In 1988, approximately 24,000 acres burned southwest of Maybell. Vegetation in this area was dominated by bitterbrush and served as critical deer winter range. These burns have contributed to significant winter range expansions of elk in E-6. One of the most significant burns that has contributed to this expansion is the area south and west of Maybell. The burn converted the landscape from a bitterbrush shrub dominated community to open grasslands. In 1989, the elk discovered this area and is now a significant wintering area for thousands of elk in E-6. Other large scale burns (~20,000 acres) have also

occurred in the western portion of the Danforth Hills south of Elk Springs around Wapiti Peak. These burns have converted stands of pinyon-juniper habitats into large expanses of grasslands well suited for wintering elk. Smaller scale burns such as the one on Pinyon Ridge in the western portion of GMU 11 has also resulted in expansions of elk wintering in areas where they haven't traditionally wintered. The fires that have taken place in these areas have resulted in large concentrations of elk wintering in these areas. Due to the large herd sizes, high concentrations of elk, and low precipitation levels in these areas the potential for range degradation is of concern.

### ***Antlerless Harvest***

Lower than desired antlerless elk harvest will increase the elk population size and eventually reduce the population, production, and survival rates. Elk harvest by hunting is the main tool used to manage the elk population. When the Division does not obtain an adequate harvest, due to poor hunting conditions, or refuge areas that preclude harvest, etc., the population can become too large and increased competition among elk for limited winter ranges, increase game damage, and increase resource damage. Adult cows have a very high survival rate and can be strong competitors to the calves in the population. Some calves cannot store enough fat to survive severe winters and consequently some calves are the first to die during a severe winter. Also, cows that are nutritionally challenged may not produce a calf the following spring. If these cows do produce a calf, the calf may be of a low birth weight and have reduced survival. It may be possible to have a smaller elk population that will have higher survival and reproductive rates and be able to produce more surplus elk for hunter harvest. This is usually a win-win situation for hunters and landowners since this scenario will mean a high harvest to benefit hunters, produce good income for local ranchers and businesses, and should minimize game damage and resource damage.

## VI. HABITAT RESOURCE

### HABITAT DISTRIBUTION

#### Winter range

The area within the DAU borders is classified by use and importance to various wildlife species using the CDOW West Region's Wildlife Resource Information System (WRIS). For elk, the WRIS maps indicate the DAU contains approximately 2,593 square miles of winter range, 851 square miles of severe winter range, 307 square miles of winter concentration areas, 136 square miles of known production areas, and 171 square miles of resident population areas. Severe winter range is defined as the area of winter range where 90% of the elk are located when the annual snowpack is at its maximum in the two worst winters out of ten. Definitions for the other WRIS classifications are contained in Appendix A. Ownership of the winter range is included in Table 1.

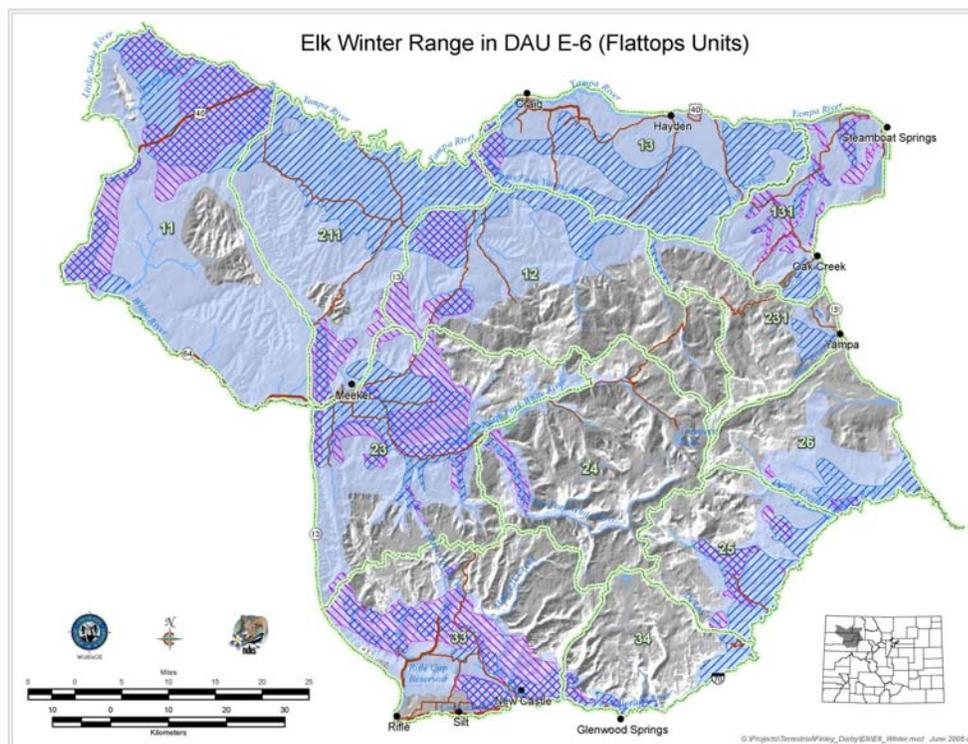
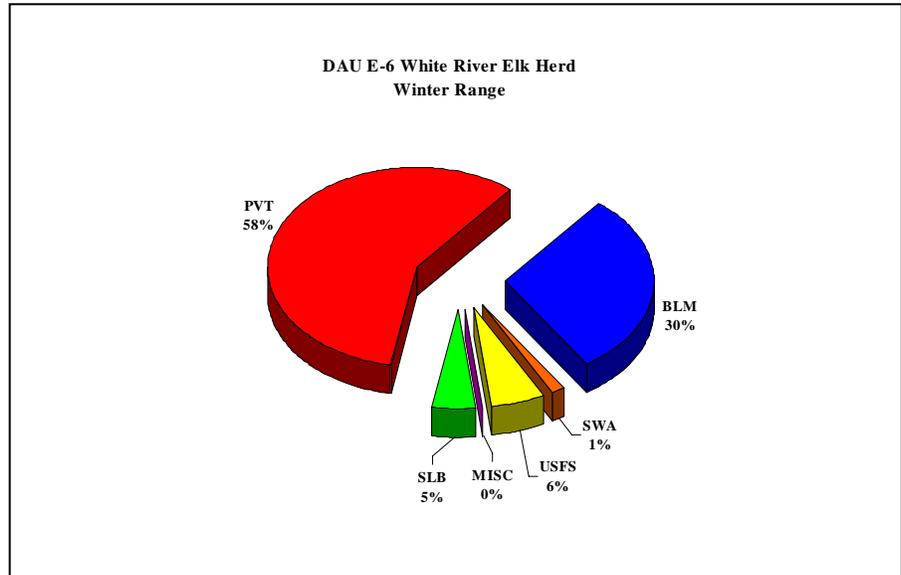


Figure 4. Location of winter range in the White River Elk DAU E-6.

## ***HABITAT CONDITION AND CAPABILITY***

There is no easy or accurate way to assess habitat capability (i.e. carrying capacity) for elk on a DAU basis. Current elk numbers have exceeded estimates from 10-20 years ago. Recent habitat models developed through funding from the CDOW's Habitat Partnership Program (HPP) are attempts to estimate habitat capability by using readily available inputs such as projected vegetation production values, mapped wildlife winter range polygons, wild ungulate offtakes, and livestock offtakes (Gary Wockner et al. 2005). Although such models can be useful tools for evaluating different management options, they are a simplistic view of very complex systems that are impossible to ground truth for accuracy. Carrying capacity is dynamic and can shift dramatically depending on weather conditions, the arrangement of habitat components, animal distribution, disturbance factors, and multispecies interactions. Body condition and population productivity are probably the best indicators of density-dependent effects and habitat capability. Low reproductive success, high mortality of young, and poor body condition are indicators that a population is near or above the capacity of the habitat. No quantitative data are available to assess these indicators for DAU E-6 except post-hunt calf:cow ratios. These ratios show a stable to slight downward trend over the past 30 years and an increasing trend over the last 5 years in E-6 suggesting the E-6 elk population is still a productive and healthy elk herd.

## ***PUBLIC LANDS***

### ***Public Land Grazing***

All of the public and agency meetings identified issues concerning land health and forage allocation among domestic livestock and deer and elk. The range of opinions included general and hunting public statements that stocking rates for livestock are too high on public lands to landowners and land management agencies indicating high game populations as the cause of forage problems and conflicts.

For management purposes the BLM and the Forest Service are primarily concerned with habitat management while the DOW manages the wildlife populations. For the purpose of the DAU planning effort, the CDOW requested information concerning the land health status of public rangelands, present utilization rates specific to livestock, and any specific concerns regarding the BLM and Forest Service public lands. Additionally, the Resource Management Plans and Environmental Assessments for each of the agencies were reviewed regarding grazing management on the public lands within the DAU (See Bibliography).

In January 1997, Colorado Bureau of Land Management (BLM) approved the Standards for Public Land Health. The standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. The Forest service also manages land health through a series of Federal regulations, national strategic goals, and forest wide Standards and Guidelines. An integral component of assessing land health is the requirement to monitor and evaluate management actions on public land (43 CFR 4180).

For each environmental analysis, required to issue grazing leases, an assessment of land health status is conducted. Changes in allotment categorization, levels of management, and permit modifications can be made if evaluation and monitoring information indicates they are warranted in order to achieve or make significant progress toward achieving the standards for rangeland health.

**Table 2. Summary of BLM White River Field Office range conditions based on BLM Standards for Rangeland Health.**

		<b>Standard 1</b>	<b>Standard 2</b>	<b>Standard 3</b>	<b>Standard 4</b>	<b>Standard 5</b>
<b>Allotment #</b>	<b>Year</b>	<b>Upland Soils</b>	<b>Wetlands</b>	<b>Wildlife/Veg</b>	<b>T &amp; E</b>	<b>Water Quality</b>
06619	1997	Achieving	N/A	Achieving	N/A	N/A
06616	2000	Achieving	Achieving	Achieving	N/A	N/A
06607	2000	Achieving	Not Achieving	Achieving	N/A	N/A
06823	1997	Achieving	Achieving	Achieving	Achieving	Achieving
06381	2001	Achieving	Achieving	Achieving	Achieving	Achieving
06610	1999	Achieving	Not Achieving	N/A	N/A	N/A
06614	1999	Achieving	N/A	Achieving	N/A	N/A
06616	1999	Achieving	Not Achieving	Achieving	N/A	N/A
06626	2001	Achieving	N/A	Achieving	Achieving	Achieving
06627	2001	Not Achieving	N/A	Not Achieving	Achieving	Achieving
06831	1997	Achieving	Achieving	Achieving	Achieving	Achieving
06832	2000	Achieving	N/A	Achieving	N/A	Achieving
06834	2000	Achieving	N/A	Achieving	N/A	Achieving
06822	2000	Achieving	N/A	Achieving	N/A	Achieving
06826	2005	Achieving	Achieving	Achieving	Achieving	Achieving
06858	2005	Achieving	Achieving	Achieving	Achieving	Achieving

The CDOW’s fundamental assertion is that if the land is maintained in a healthy state it will support the proposed herd objective. If evaluation and monitoring data indicate that land health is impaired by wildlife use, then specific herd management changes would be implemented via the “Management by Objective” framework.

The DOW will work closely with the land management agencies to establish better estimates of capacity and utilization, especially on forage conflict areas. The equitable allocation of the forage base between livestock and wildlife should be established across all habitat types, with special consideration given to critical habitats.

***BLM & USFS Allotments***

DAU E-6 covers portions of two National Forests (NF), the White River NF and the Routt NF, and two resource areas of the Bureau of Land Management (BLM), the Little Snake and White River Resource Areas. Domestic grazing is provided primarily for cattle and sheep; some allotments also allow horse use. The majority of the allotments, especially those on the forests, are used from June through September, some through mid-October. Most BLM allotments at lower elevations are used during the winter months.

***Public Land Wildlife/Livestock Conflict Areas***

The land use agencies were asked to identify areas where conflicts occur between livestock and elk within DAU E-6. Examples of conflicts were given as situations where elk had forced a change or delay in the period of use on an allotment or forage utilization by elk had caused a reduction in AUMs of forage available for livestock.

The BLM Little Snake Field Office’s concerns with elk are primarily limited to Axial Basin and areas south of Highway 318 in the Sand Hills and Cedar Springs Draw vicinities.

The issues within Axial Basin were identified as areas of elk concentration during the spring, especially, in areas south of Iles Mountain and in the Danforth Hills above the head of Wilson Creek. The BLM has been working with one grazing permittee to adjust livestock turnout in the spring to avoid excessive use in areas where elk are congregating. This is more an issue related to spring movement patterns than excessive numbers. In addition, the CDOW is involved with BLM, livestock permittees, and other landowners on the

Axial Basin Coordinated Resource Management Plan (CRM). This CRM has been successful in coordinating the diverse interests of the land users within Axial Basin. As a result of changes in livestock management and improved communication between the agencies and stakeholders, concerns with elk impacts, especially conflicts with livestock, have been largely addressed.

Increased elk numbers in the Sand Hills and Cedar Springs Draw areas have led to increased fence maintenance and, in the case of the Sand Hills Allotment, the delay in construction of a pasture fence to improve livestock rotation due to the high potential for elk damage. Much of this area burned in 1988 and heavy elk use may be affecting recovery. Re-establishment of bitterbrush and other shrubs has been slower than expected (especially on the sandy soils in the area) in the years since this fire and elk pressure may be a contributing factor.

The most prominent concern of the BLM White River Field Office is the perception that E-6 continues to act as a source of wintering elk pioneering into GMUs 10 and 21. Although the BLM recognizes that this relatively recent trend may have been exaggerated by drought conditions, it seems at least plausibly a product of animal abundance and increasing animal density to the east. The current overall harvest trends, special early season conducted in GMU 21, and declining post-hunt population estimates are encouraging, but we feel this situation warrants continued attention.

In addition, the BLM would like to see the DAU plan provide more detail to the modeling process that resulted in herd estimate adjustments and discuss its forage use implications, particularly with respect to livestock. The BLM is concerned about sizable upward adjustments to elk populations based on modeling, regardless of the animals, will have an effective influence on forage resources and will be controversial and difficult to rectify using BLM's forage allocation method (e.g., insufficient conversion ratio or inaccurate projection of elk distribution). Considering the characteristics of land ownership in GMU 11 and 211, and recognizing elk's propensity to use privately-controlled lands from the late summer through early winter months, it would be advantageous to develop an accurate picture of seasonal use on BLM lands before considering forage allocation adjustments.

The BLM is not aware of widespread instances of excessive use attributable to elk on BLM-administered lands within the DAU, but BLM livestock permittees continue to relate instances of heavy spring use, particularly in areas adjacent to or integral with large private holdings (e.g., Indian Valley, Wilson Creek). Localized elk concentrations are especially troublesome in spring, a perennial bottleneck for livestock operations and where prolonged and heavy use by elk can significantly reduce forage available for subsequent (often intentionally deferred) livestock use and where cumulative use increases the risk of adverse and long term shifts in community composition. Ongoing efforts by BLM to reduce the intensity and duration of livestock grazing during the growing season can be thwarted by concentrated elk use in the spring and early summer months and BLM recognizes that it is likely that inequitable distribution will remain a persistent management concern, but one that may be moderated or aggravated according to overall animal abundance and/or hunter distribution.

In earlier comments, BLM was concerned with large numbers of elk that remained unavailable for harvest due to the influence of large consolidated holdings of private lands (including RFW concerns). BLM stated, CDOW's continued efforts to coordinate hunting intensity and distribution across public and private lands and increasing antlerless harvest appears to be an effective strategy for curbing and reversing the expansion of elk populations in DAU-E6 and is to be commended.

The Yampa District of the Medicine Bow-Routt National Forest (MBRNF) identified early spring elk use, elk distribution, and high elk populations as creating forage utilization and cover problems in localized areas on Forest System Lands. The FS stated that livestock grazing levels have decreased on the Routt National Forest by 25% since 1980, however, during that same period elk populations were at their highest levels and this has resulted in forage allocation issues. The particular allotments identified as conflict areas include the Watson, Bear River, and Egeria cattle allotments. MBR also identified localized high elk use in various other cattle and sheep allotments, particularly in riparian areas or meadows. However, the MBR does not view these problem areas as being significant at a landscape scale.

The White River National Forest identified specific elk and livestock conflict areas as Lost Solar, the Sunnyside Allotment, and Bar H-L Aspen clearcuts. All of these areas have historically been important elk use areas, especially during elk calving seasons in the early spring. The FS recognizes that it is doubtful that a reduction in the overall elk population in the DAU will result in significant overall reductions in elk use in these areas. The WRNF is addressing these issues through changes to allotment management plans, Coordinated Resource Management Plans, and mitigation.

### ***Winter Range Habitat Characterizations***

This discussion has not changed appreciably since BLM WRFO first provided comment in 2002.

The predominant woody forage base on BLM-administered winter ranges is provided by mature to overmature stands of black and Wyoming big sagebrush that sustain heavy use by deer during the winter and early spring months. At the present time, there does not seem to be a tendency for elk to make substantial use of sagebrush on these lower elevation ranges.

Utah juniper is the predominant woodland cover on these winter ranges. BLM feels the interspersed cover of coniferous cover and winter forage types (overall forage:cover ratio of about 60:40 in the White River Resource Area) is acceptable and is not an issue that commands an immediate response. The encroachment of coniferous regeneration on these lower elevation sagebrush parks is neither prevalent nor advanced and is not believed to be an influential factor in depressing the production or availability of big game forage (see Fire section below).

BLM agrees that, in general, herbaceous expression on lower elevation big sagebrush benches, juniper woodlands, and greasewood bottomlands is below potential. Although prescribed burning or mechanical manipulation of these low elevation and often over-mature sagebrush stands or juniper woodlands appears to be an attractive option to bolster herbaceous forage supplies, these practices should be carefully weighed against the potential for proliferation of annual forbs and cheatgrass (i.e., reducing long-term site potential), long term reductions in the woody forage base for, or foraging efficiency (i.e., interspersed cover) of wintering deer, and similarly, long term influences on habitat suitability for the area's remnant sage grouse population.

### ***Rangeland Conditions***

Extremely dry climatic conditions over the past 6 years has resulted in poor range conditions across the DAU. Winter range conditions in particular appear to have declined throughout the DAU.

Browse plants in some areas are generally mature to over-mature and often decadent. Browse seedlings and young plants are sparse and in many areas, the grass/forb understory is sparse and lacks diversity. Pinyon-juniper stands tend to be mature with a closed canopy that severely reduces understory vegetation. Due to long-term fire suppression, pinyon-juniper woodlands can invade sagebrush shrublands and convert them to much less productive sites. Also, many of the mixed mountain shrublands are over-mature, less productive and can be unavailable for winter browse use.

Casual factors for most range problems identified by federal land management agencies include: plant successional movement towards more late seral stage or climax communities, inappropriate historic livestock grazing, localized excessive big game use, increasing elk populations since the late 1970s to present, increased recreation and harassment of deer and elk on the summer and winter ranges, and the invasion of noxious weeds. Improper livestock grazing probably occurred from the late 1800's to the 1960's. During this period big game winter ranges were grazed inappropriately by livestock (cattle and sheep). In some cases, this has caused some sagebrush habitats to have a higher shrub canopy density than can be achieved under more natural conditions. When the canopy density exceeds 25%, the understory plants are greatly reduced. As mentioned earlier, fire suppression has resulted in perpetuation of increased pinyon and juniper invasion and loss of valuable grass and forb understory vegetation. With the depleted understory, natural fire is much less likely to burn these areas and return the landscape to a more natural and desirable mosaic. Since the late

1960's, the BLM and U. S. Forest Service have developed improved grazing management plans that have addressed much of the historic livestock problems.

The White River BLM range conservationist reported that the Piñon Ridge/Crooked Wash area in GMU 11 is a problem area. Transects show a dramatic increase in cheatgrass. On two sheep allotments, transects are showing cheatgrass going from 15% ground cover in the past to 100% today. The transects are also showing a decrease in perennial grass cover (70% to 60%). Gardner saltbush in these allotments is almost gone. Range transects in the cattle allotment in this area are also showing declining range conditions. BLM noted that the problem seems to be along Piñon Ridge (GMU 11) and Coal Ridge (GMU 10 - not in the E-6 DAU). Saltbush flats are of particular concern because the elk concentrate in these areas and are over-utilizing the saltbush plants.

The Routt National Forest feels the small amount of winter range found on the Forest is in fair ecological condition, but localized over use is occurring. Staff from the Rifle, Eagle, and Blanco Ranger Districts of the White River National Forest also feels that winter ranges on the Forest are in good ecological condition. Furthermore, the WRNF is currently in the process of re-reading established range transects to determine long-term range condition and trend. Anecdotal information from the initial work on reading these transects indicated that overall range health has either remained static or has improved across the Forest.

District wide range condition assessments were not available from the Blanco District of the WRNF. Information received from the Blanco District included recent assessments of the Burro Mountain, Derby Peaks, Shingle Peak, Trappers Peak, and Wall Lake sheep and goat allotments. Thorough range vegetation analysis was conducted on these allotments during the early 1980's. This analysis showed a majority of the range sites in fair to good condition with a stable or slightly upward trend. Since boundary changes have occurred following those analyses and to gain current information, in 2000 Rangeland Health Matrix evaluations for key upland sites and Proper Functioning Condition (PFC) evaluations for key riparian sites were conducted on the allotments, following current Region 2 direction. These evaluations provide an indication of the range health of upland sites and riparian areas.

Using the PFC procedure, the sites were valued and rated as being in proper functioning condition. Of thirteen Rangeland Health Matrix evaluations, eleven were rated as Healthy, while two sites were rated as At Risk. The two At Risk sites were on the Derby Peaks Allotment and Shingle Peak Allotment. Comments regarding the Shingle Peak evaluation site were that the rating was due to shallow soil at the site. Comments for the Derby Peaks At Risk site indicate that the site was an old bed ground and would require close monitoring and changes in management should improvement not occur.

In addition, the Blanco District also provided monitoring results and allotment assessments for the Oakridge State Wildlife Area/Lost Park Coordinated Resource Management Plan (CRMP), Creek cattle and horse allotment, and the Ellison Mountain sheep and goat allotment. Upland and riparian vegetation on the Cattle Creek and Ellison Mountain were in satisfactory condition, with the exception of 150 acres of grassland sites and 45 acres of riparian sites on the Cattle Creek allotment that were determined to be in fair to poor condition. Causal factors for acreages in poor condition were attributed to heavy cattle use and historic grazing practices. Monitoring results from the Oakridge State Wildlife Area/Lost Park CRMP showed both sites as maintaining or improving conditions.

District range condition assessments from the Eagle and Rifle Districts of the WRNF and the Yampa District of the MBRNF have not been received at this time.

### ***Noxious Weeds***

Noxious weeds have the potential to significantly reduce habitat values for a variety of wildlife species and are a concern for all land managers. Controlling noxious weed infestations requires substantial resources and man power and can be an overwhelming task.

The White River BLM identified the most serious noxious weed problem is in Unit 11 and involves giant whitetop, which is most prevalent in the floodplains of Crooked Wash and Deep Channel Creek. Cooperative control efforts are expected to continue among BLM, Rio Blanco County, and the livestock permittees. There are localized infestations of thistles and knapweeds, but these sites have been subject to control and monitoring and are not expected to expand.

The Yampa District of the MBRNF identified concerns about noxious weed infestations in the Pagoda area, especially Salt Park, Horse Park, Corral Creek, and the South Fork of the Williams Fork. The FS Districts are active partners with the Habitat Partnership Program and the Rocky Mountain Elk Foundation to control weeds in this area.

Noxious weed infestations identified by the WRNF include Lost Solar, Crook's Park, Marvine, Pack Horse Park, and upper South Fork of the White River. The Forest is working to control these weed populations.

### ***Fire and Vegetation Succession***

Fire suppression activities over the past 30 years have interfered with plant succession patterns throughout northwest Colorado, but owing primarily to slow rates of successional advance, the role of fire in rejuvenating more xeric winter range communities has not been compromised to the point of prompting radical or extensive response.

Since 2003, the BLM White River Field Office has actively implemented its Fire Management Plan that recognizes and attempts to more fully integrate fire as a fundamental vegetation management process. Since 1996 (the earliest accurate fire mapping records available), wildfire had burned about 2,700 acres of both pinyon-juniper woodland and winter foraging types in GMU 11 within the White River Resource Area. Since 2002, an additional 3,800 acres of woodland and 2,100 acres of sagebrush communities have burned, nearly 60% of which was managed as fire use. Although these statistics are applied only to BLM lands and represent a span of only 10 years, these more recent fire years have increased the annual involvement of woodland Unit-wide (about 460 acres) to levels that would be expected to reduce the present extent of mature, lower elevation, predominantly Utah juniper woodlands (i.e., about 200 year recurrence interval). Although the calculated recurrence interval for sagebrush dominated rangelands has declined appreciably since 2002 (171 versus 249 years), these limited data continue to suggest that sagebrush dominated rangelands are likely not subject to a regimen consistent with the fire-induced rejuvenation of Wyoming big sagebrush communities (i.e., 50-100 year intervals). However, these recent fire events will likely expand the extent and distribution of forage and forage conditions amenable to elk wintering in GMU 11.

The Hahns Peak-Bear's Ears and Yampa Ranger Districts recently completed a habitat assessment on the Routt National Forest for deer and elk winter range surrounding the Yampa Valley. The goal of the assessment was to identify and subsequently prioritize areas that will have vegetation manipulation either through pre-scribed fire or other mechanical methods. The area identified through the assessment with the highest priority for habitat work in DAU E-6 was the Beaver Creek and Indian Run State Wildlife Area.

The prescribed fire program for the WRNF has been designed to improve the quality of the existing winter range, not to increase quantity. The intent of the prescribed fire treatments is to attempt to keep elk on the Forest winter and transition ranges longer in the fall and to get elk to the Forest earlier in the spring to reduce conflicts on adjacent private land.

### ***Energy Mineral Activity***

The BLM White River Field Office identified a few areas within the resource areas with potential or realized impacts from energy development. Over the past 10 years about 8000 acres on the southern end of GMU 11 has undergone relatively intensive natural gas development (i.e., lower Black's, Oil Well, Wray, and Tschuddi Gulches). Since 1996, about 105 wells were drilled in this area and, in conjunction with associated pipelines

and access, involved about 300 acres of surface disturbance. Much of this acreage has been subject to reclamation and, at least temporarily, interest in developing this field appears to have waned, with no new drilling activity having occurred here over the past 2 years. Similarly, established oil and gas fields in or near Elk Springs, Indian Valley, and Wilson Creek have remained relatively static since 2002. Interest in the Price Creek area is recent, but little development has occurred to date.

The Yampa District of the MBRNF is concerned about the potential impacts of oil and gas in the Pagoda area. This area is currently a large unroaded area with limited motorized and public access and although no recent permits have been filed to exploit oil and gas resources there is potential for exploration in the future.

There are no current areas on the WRNF where oil and gas exploration is authorized. However, they do reference potential oil and gas development on winter ranges in the western portion of the DAU as having impacts on the overall carrying capacity of the herd.

## ***PRIVATE LANDS***

### **The Habitat Partnership Program and Its Role in the DAU plan**

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

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

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

Three HPP committees are involved with DAU E-6 the Lower Colorado HPP Committee in Glenwood Springs, the Upper Yampa HPP Committee in Steamboat Springs, and the Meeker HPP Committee in Meeker.

### ***Habitat Assessment Model***

In 2001, legislation required the Habitat Partnership Program to conduct an assessment of the habitat capability for their respective areas. As a result, the Habitat Assessment Model was designed as a tool to aid HPP committees in discerning the relationships between wildlife populations and habitat sustainability. The model incorporates general habitat based management principles utilizing ArcView GIS technology. The model includes existing information generated by local, state, and federal government agencies as well as input from local community members. The Habitat Model produces a range of population values with related management implications that can be used in the DAU planning process. The range of population values are based on low, mid, and high threshold values. The threshold values in the model represent a theoretical level of grazing use based on a landscape scale. For example, the low threshold in the model represents consumption of 25% of the total annual net primary production (ANPP), the midpoint equals 28.5%, and the high threshold value equals 32% consumption of ANPP. The model is run using model inputs which include a pre-winter precipitation level and additional parameters based on the area being assessed. For example, current

habitat model projections for DAU E-6 using a mean precipitation rate, an estimated pronghorn population of 2,000, and 10 year average livestock numbers are consistent with the current modeled population estimates for DAU E-6 of 42,000 elk (Table 4).

**Table 3. The Habitat Assessment Model output for DAU E-6 based on predicted, sustainable elk and deer populations using input parameters of a mean precipitation values, 2,000 pronghorn, and 10 year average livestock numbers. The highlighted row shows the current midpoint elk and deer population estimates at 30% elk and 70% deer.**

<b>%ELK</b>	<b>ELK LOW</b>	<b>ELK MIDPNT</b>	<b>ELK HIGH</b>	<b>DEER LOW</b>	<b>DEER MIDPNT</b>	<b>DEER HIGH</b>	<b>%DEER</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>138104</b>	<b>252030</b>	<b>365955</b>	<b>100</b>
<b>10</b>	<b>11198</b>	<b>20435</b>	<b>29672</b>	<b>100782</b>	<b>183915</b>	<b>267048</b>	<b>90</b>
<b>20</b>	<b>18832</b>	<b>34368</b>	<b>49903</b>	<b>75328</b>	<b>137472</b>	<b>199612</b>	<b>80</b>
<b>30</b>	<b>24373</b>	<b>44478</b>	<b>64584</b>	<b>56862</b>	<b>103767</b>	<b>150674</b>	<b>70</b>
<b>40</b>	<b>28573</b>	<b>52144</b>	<b>75715</b>	<b>42860</b>	<b>78216</b>	<b>113573</b>	<b>60</b>
<b>50</b>	<b>31870</b>	<b>58161</b>	<b>84451</b>	<b>31870</b>	<b>58161</b>	<b>84451</b>	<b>50</b>
<b>60</b>	<b>34532</b>	<b>63018</b>	<b>91504</b>	<b>22998</b>	<b>41970</b>	<b>60942</b>	<b>40</b>
<b>70</b>	<b>36707</b>	<b>66988</b>	<b>97268</b>	<b>15747</b>	<b>28738</b>	<b>41728</b>	<b>30</b>
<b>80</b>	<b>38541</b>	<b>70334</b>	<b>102127</b>	<b>9635</b>	<b>17584</b>	<b>25532</b>	<b>20</b>
<b>90</b>	<b>40096</b>	<b>73172</b>	<b>106249</b>	<b>4451</b>	<b>8122</b>	<b>11794</b>	<b>10</b>
<b>100</b>	<b>41431</b>	<b>75609</b>	<b>109787</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## VII. ISSUES AND STRATEGIES

### Issue Solicitation Process

An important aspect of the DAU planning process is obtaining input from all segments of the affected local populations, including the BLM, US Forest Service, HPP committees, and the interested public. Scoping meetings were held to gather input from all stakeholders that have an interest in elk management, including the BLM, US Forest Service, HPP committees, and the public on the best manner to achieve the desired DAU objectives. Meetings were held on July 25<sup>th</sup> and 27<sup>th</sup>, 2005, with officials from local BLM and Forest Service offices to solicit input regarding elk management in their Resource Areas. Input from the Upper Yampa and Northwest HPP committees was also sought during their monthly meetings on July 11<sup>th</sup> and 19<sup>th</sup> respectively. These issues and concerns were noted and incorporated into this plan (Appendix ? & ?).

In an effort to solicit recommendations on the goals and objectives of the DAU plan from the interested public, the CDOW held open public meetings in Steamboat Springs and Craig on August 2<sup>nd</sup> and 10<sup>th</sup> 2005. Current management objectives and alternatives were presented at these meetings. Input was requested from participants, in the form of an optional questionnaire regarding issues and concerns they might have with elk management in the DAU. Issues and concerns were noted during the meetings and incorporated into this plan.

The Boards of County Commissioners (BOCC) from Moffat and Routt Counties were also requested to provide input on the draft management plans. They were invited to the land management agency meeting and the local public meetings. Their comments and concerns were noted and incorporated into this plan.

### Issue Identification

The primary purpose of the DAU planning process is to determine objectives for the size and structure of post-hunt population. The secondary purpose of the process is to gather input from the public that have an interest in elk management on the best manner to achieve the desired DAU objectives. In the case of DAU E-2 this includes determining objectives for the size and structure of the elk herd and various alternatives to achieve the desired objectives.

#### Population and Sex Ratio Objectives:

- Post-hunt population size
- Post-hunt bull:cow ratio

#### Management Objectives:

- Should the Bear's Ears DAU remain under the current management strategy?
- Should the Bear's Ears DAU be managed using over-the-counter licenses?
- Should the Bear's Ears DAU be managed as a quality elk DAU with all limited licenses?
- Should the Bear's Ears DAU be managed with moderate limitations on all licenses?

### **Issues and Concerns: BLM**

The Bureau of Land Management introduced the following primary concerns and issues. Full text of the comments received from the BLM from meeting notes are available in Appendix B.

### **Issues and Concerns: USFS**

The USFS introduced the following primary concerns and issues. Full text of the comments received from the USFS from meeting notes are available in Appendix C.

### **Issues and Concerns: Public**

In an effort to solicit recommendations on the goals and objectives of the DAU plan from the interested public, the CDOW held open public meetings in Steamboat Springs, Craig, Meeker, and Glenwood Springs on August 2<sup>nd</sup>, 10<sup>th</sup>, and 11<sup>th</sup> 2005. Current management objectives and alternatives were presented at these meetings. Input was requested from participants, in the form of an optional questionnaire regarding issues and concerns they might have with elk management in the DAU (Appendix A). Issues and concerns were noted during the meetings and incorporated into this plan (Appendix A).

All of the local DWMs, AWMs, Terrestrial Biologist were in attendance to answer questions and serve the public. Additionally, the DAU plans and questionnaires were made available at the local area offices.

Attendance – A total of 69 people attended the four E-6 public meetings. Thirty four people attended the Steamboat meeting, 24 people attended the Craig meeting, 11 people attended the Meeker meeting, and --- people attended the Glenwood Springs meeting.

A variety of comments and recommendations were received from the many interested parties that attended the three public meetings that were held during the development of this plan. A detailed summary of public comments can be seen in Appendix A. A questionnaire was made available at all the public meetings to determine the range of public sentiment on specific issues.

### **Issues and Concerns: HPP**

The HPP introduced the primary concerns and issues. Full text of the comments received from the HPP from meeting notes are available in Appendices D, E, F.

### **Issues and Concerns: BOCC**

The BOCC introduced the primary concerns and issues. Full text of the comments received from the BOCC from meeting notes are available in Appendix ?.

### **Issues and Concerns: SLB**

The SLB introduced the primary concerns and issues. Full text of the comments received from the SLB from meeting notes are available in Appendix G.

## VIII. ALTERNATIVE DEVELOPMENT

### *MANAGEMENT STRATEGIES*

There are three basic management strategies that the Colorado Division of Wildlife is currently using for elk DAU's. Ideally, all units within a DAU should be managed under the same strategy. These basic management strategies consider various types of hunting opportunities including ease of participation, quality of hunting experience, level of success rates, and opportunity to harvest a quality male animal.

Methods to achieve these various opportunities include offering readily available licenses, spatial and temporal distribution of hunters and license limitations. These different management strategies afford various types of hunting opportunities and are often mutually exclusive and therefore must be balanced among the desires of hunters, landowners, and economic interests.

#### ***Strategy 1. Management for Maximum Opportunity and Economic Benefits-***

This management strategy provides the best opportunity to hunt every year with the greatest likelihood of harvesting any age class of males and females in the population. Constraints on season lengths and antler-point restrictions are used to prevent excessive harvest of male animals and both over-the-counter and/or limited licenses are used to focus needed harvest on female animals to control populations. These types of hunts have higher hunter densities than other hunt types.

The current management strategy for DAU E-6 is to maximize hunter opportunity and local economic benefits and minimize landowner conflicts. This management strategy is characterized by a large number of bull hunters, low hunting success for bulls, and high annual removal of 2+ year old bulls resulting in post-hunt bull:cow ratios ranging from 15-20 bulls:100 cows. Archery and muzzleloader seasons are limited on National Forest to lessen the effects of hunters moving elk off of public lands prior to the 1<sup>st</sup> rifle season. Rifle either-sex licenses during the 1<sup>st</sup> rifle season are limited and the season is managed for a quality hunting experience. Antlerless elk are limited and issued in numbers necessary to achieve population objectives, bull licenses during 2<sup>nd</sup> and 3<sup>rd</sup> rifle seasons are unlimited in number and sold over-the-counter (OTC). Either-sex licenses for the 4<sup>th</sup> season are limited to focus harvest efforts on cow elk.

#### ***Strategy 2. Management for Improved Experience and Reduced Impacts-***

This strategy limits the number of hunters for all methods of take for all seasons to reduce hunting pressure and improve the quality of the hunting experience. This type of hunt provides significant opportunity, but hunting opportunities are available less frequently with draw success occurring every 1 to 3 years which affects local economic benefits for both businesses and landowners. This type of management strategy would have more limited opportunity hunts increase the diversity in age class of males in a population and the likelihood of harvesting older age class males. Licenses are moderately limited during all seasons and are used to manage hunter pressure, prevent excessive harvest of male animals, and allow the flexibility to focus needed harvest on females for population control through limited licenses. These hunts have lower hunter densities than maximum opportunity hunts.

#### ***Strategy 3. Management for Quality Animals and Quality Experience-***

This strategy significantly limits the number of hunters for all methods of take and for all seasons to reduce hunting pressure and improve the quality and opportunity to harvest older age class male animals. This type of management strategy has implications for local economies, landowner, and the achievement of management objectives in surrounding units. Quality management has the greatest "costs" implying not only monetary costs to local landowners and businesses but costs associated with reductions in the frequency of draw success for the hunter. License numbers are highly restricted. Hunts with this type of management strategy have very low hunter densities compared to the maximum and limited opportunity hunts.

## ***ALTERNATIVE MANAGEMENT STRATEGIES***

**Population Objective:** 30,000 – 35,000  
33,000 – 38,000  
35,000 – 40,000

**Sex Ratio Objective:** 15 – 20 bulls:100 cows  
17 – 23 bulls:100 cows  
22 – 27 bulls:100 cows  
30 – 35 bulls:100 cows

### ***Alternative 1 - Status Quo***

Currently E-6 is a combination of management strategies including seasons managed for a quality hunting experience and seasons managed for hunter opportunity. Archery and muzzleloader seasons are limited on public lands in GMUs 12, 23, 24, and 33. The 1<sup>st</sup> and 4<sup>th</sup> rifle seasons provide hunters a quality hunting experience with limited either-sex and antlerless licenses available. Unlimited antlered licenses are available during the 2<sup>nd</sup> and 3<sup>rd</sup> rifle seasons. Various antlerless hunts outside the regular seasons have been implemented in an effort to reduce the elk population in E-6. Hunts such as private land only hunts, early hunts, late hunts, damage hunts, and distribution hunts all provide hunters with several different opportunities to harvest an elk. Hunter success in the DAU would remain relatively high under this strategy. Success has averaged 37% over the last 5 years. Hunter pressure would be moderate during archery, muzzleloader, and 1<sup>st</sup> and 4<sup>th</sup> rifle seasons with higher hunter pressure experienced during the 2<sup>nd</sup> and 3<sup>rd</sup> combined rifle seasons. The opportunities created by the various types of non-traditional hunts and liberal numbers of antlerless licenses made available in an effort to reduce the E-6 elk population have resulted in significant economic benefits for local businesses, landowners, guides and outfitters, and the CDOW. It is important to note that as the herds approach long term population objectives, the numbers of licenses issued for regular season hunts and late season opportunities will be reduced to maintain the elk population at the long term objective levels. Maintaining this elk population at a desired population level will require significantly fewer licenses than the number needed to reduce elk population levels.

### ***Alternative 2 – Management for Over-the-Counter (OTC) Licenses***

This management alternative includes OTC antlered/ES licenses for all seasons and methods of take. This alternative would require that the current 1<sup>st</sup> and 4<sup>th</sup> limited rifle ES licenses be set high enough to meet hunter demand. An 80+% harvest rate on 2 ½ + year old bulls would be expected annually under this alternative. Limited antlerless licenses would remain specified under this alternative to manage to DAU population objectives. Various antlerless hunts outside the regular seasons could be implemented to address elk damage and distribution issues as well as provide hunters with late and early season opportunities. Income for local businesses, landowners, guides and outfitters, and the CDOW would benefit from increased license revenues generated by the OTC license sales. Increased hunter pressure during limited archery, muzzleloader, and rifle seasons would likely lower success and lead to lower success rates. Elk distribution and damage issues would likely increase with increased hunter pressure on public lands.

### ***Alternative 3 – Manage as a Premier DAU***

The premier management alternative would require 50 – 70% reductions in the number of antlered licenses issued for the DAU to achieve 30+ bulls:100 cows. Limited antlerless licenses would remain specified under this alternative to manage to DAU population objectives. Various antlerless hunts outside the regular seasons could be implemented to address elk damage and distribution issues as well as provide hunters with late and early season opportunities. Income for local businesses, landowners, guides and outfitters, and the CDOW would decrease dramatically due to the limited number of licenses available. Hunter success would significantly increase and hunter pressure would be significantly less under this management scenario. This alternative would require a Wildlife Commission regulation change to accommodate the limitations needed to manage this as a premier DAU.

*Alternative 4 – Manage for moderate license limitations*

Managing for moderate license limitations would require a 30 – 40% reduction in antlered licenses for all seasons and methods of take. This alternative would require a Wildlife Commission regulation change to implement limited antlered licensing for the 2<sup>nd</sup> and 3<sup>rd</sup> rifle seasons. Limited antlerless licenses would remain specified under this alternative to manage to DAU population objectives. Various antlerless hunts outside the regular seasons could be implemented to address elk damage and distribution issues as well as provide hunters with late and early season opportunities. Income for local businesses, landowners, guides and outfitters, and the CDOW would decrease due to the limited number of licenses available. Hunter success would increase and hunter pressure would be significantly less under this management scenario.

## IX. PREFERRED OBJECTIVES AND ALTERNATIVE

### *CDOW Recommendation to the Wildlife Commission*

#### **Population Objective: 32,000 – 39,000**

The steadily increasing elk population trend in DAU E-6 has caused the CDOW as well as the Forest Service and BLM to be concerned with maintenance of acceptable range and forage conditions. Evidence presented in this document indicates that negative range impacts associated with elk distribution may be occurring in localized areas. Record elk harvest in 4 of the last 5 years has resulted in a 20% reduction from peak population estimates in 2001.

Mild winter conditions for the past 10 years combined with the adaptive nature of elk has allowed for herd expansion and continued maintenance of a stable reproductive status. The consensus of the management agencies recommendations based on concerns regarding drought stressed range conditions, the potential impacts of oil and gas development on winter ranges, and winter range elk/mule deer competition is a reduction in this elk herd from current population levels. The CDOW is in agreement with this management recommendation.

The CDOW recommendation of managing this elk population in an objective range of 32,000 – 39,000 elk presented here represents a reduction of approximately 25%, to the lower end of the objective range, from current population estimates of elk in DAU E-6. Furthermore, it is recommended, the short term goal is for this elk population to be managed to the lower end of this population objective range (32,000) to allow for range rest and recovery from the past 5 years of drought.

As discussed earlier in this document, this proposed objective is higher than the previous population objective of 28,500 set in 1994. Some of the increase in the population objective is a result of modeled estimates based on more accurate and updated data and some of the increase is due to growth in the elk population since 1994. As a comparison to the 1993 model, the current model shows a 1993 post-hunt population of 38,323 elk. This is about 10,000 more elk than CDOW was estimating in 1993 and is due to improvements in modeling and more reliable population parameters used in models.

At current population levels there are concerns regarding catastrophic impacts to elk and deer populations in a severe winter. Issues in this regard include actual loss of elk, damage to range, game damage to livestock forage and hay, and associated loss of herd health in subsequent years due to range damage.

In order to continue to reduce this elk population, it will be necessary to maintain the elk harvest numbers the Division has achieved in recent years through innovative harvest regimes including additional cow licenses, late season hunts, HPP distribution hunts, and liberal numbers of public and private antlerless licenses.

#### **Sex Ratio: 20 – 25 bulls:100 cows**

The CDOW recommendation is to slightly increase the sex ratio objective to a range of 20 - 25 bulls:100 cows. The lowest sex ratio was 4 bulls per 100 cows in 1982 and 1984. During the past 5 years (2000-2004), the herd has averaged 23 bulls:100 cows with a range of 21-25 bulls:100 cows. The Division recognizes it may be difficult to manage within this sex ratio range when elk

populations are reduced to near 32,000 with over the counter bull licenses available 2<sup>nd</sup> and 3<sup>rd</sup> regular rifle seasons, however, limited either sex licenses in the 1<sup>st</sup> and 4<sup>th</sup> rifle seasons will allow for some management flexibility within this range

### **Management Strategy: Status Quo**

The DAU management strategy recommendation by the CDOW is status quo. Currently E-6 is a combination of management strategies including seasons managed for a quality hunting experience and seasons managed for hunter opportunity. Archery and muzzleloader seasons are limited on public lands in GMUs 12, 23, 24, and 33. The archery and muzzleloader limitation on public lands has proved successful in holding elk on the National Forest and increasing harvest and success during the 1<sup>st</sup> rifle season. The 1<sup>st</sup> and 4<sup>th</sup> rifle seasons provide hunters a quality hunting experience with limited either-sex and antlerless licenses available. Unlimited antlered licenses are available during the 2<sup>nd</sup> and 3<sup>rd</sup> rifle seasons. Various antlerless hunts outside the regular seasons have been implemented in an effort to reduce the elk population in E-6. Private land only hunts, early hunts, late hunts, damage hunts, and distribution hunts all provide hunters with several different opportunities to harvest an elk. Hunter success in the DAU would remain relatively high under this strategy. Success has averaged 37% over the last 5 years. Hunter pressure would be moderate during archery, muzzleloader, and 1<sup>st</sup> and 4<sup>th</sup> rifle seasons with higher hunter pressure experienced during the 2<sup>nd</sup> and 3<sup>rd</sup> combined rifle seasons. The opportunities created by the various types of non-traditional hunts and liberal numbers of antlerless licenses made available in an effort to reduce the E-6 elk population have resulted in significant economic benefits for local businesses, landowners, guides and outfitters, and the CDOW. It is important to note that as the herds approach long term population objectives, the numbers of licenses issued for regular season hunts and late season opportunities will be reduced to maintain the elk population at the long term objective levels. Maintaining this elk population at a desired population level will require significantly fewer licenses than the number needed to reduce elk population levels.

## **X. APPROVAL/SIGNATURE PAGE**

## **XI. LITERATURE CITED**

- Bear, G. D. 1993. Effect of Early Hunting Seasons on Elk Distribution. Div. Wildl. Res. Rep. July:77. Colo.
- Freddy, D. J. 1987. The White River Elk Herd: A Perspective, 1960-85. Colo. Div. Wildl. Tech. Pub. No. 37. 64 pp.
- Freddy, D. J. 1993. Personal Communication to John Gray
- Graham, V. K. 1993. Elk Movements in Northwest Colorado: the Temporal Relationship with Hunting Seasons during 1985. 11 pp. Presented at the Western Bow Hunting Conference, Bozeman, MT, May 1993.
- Camp, Dresser & McKee Inc. (CDM). 1985. Meeker PRLA elk mitigation study monitoring report. Prepared for Consolidation Coal Company, Pittsburgh, Pennsylvania.

## XII. Appendices

### APPENDIX A

#### BACKGROUND INFORMATION

1) Are you a resident of Colorado?

100% Yes

0% No

2) Do you live in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34?

66% Yes If yes, how many years and in what GMU? **Total of 507 years, average of 33.8 years**

34% No

3) Do you own or lease property in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34?

82% Yes If yes, how many years and in what GMU? **Total of 486 years, average 27 years**

18% No

4) During the last 12 months, have you participated in outdoor recreational activities other than hunting (e.g., camping, backpacking, snowmobiling, etc.) in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34?

97% Yes

3% No

5) Which group(s) best represent your interests in elk management in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34? (*Check all that apply*)

#### **Most represent interests in elk management (19 respondents)**

45% A) Rancher/Farmer

37% Rancher/Farmer

24% B) Business owner

59% C) Landowner

11% Landowner

45% D) Guide/Outfitter

26% Guide/Outfitter

76% E) Hunter/Sportsperson

26% Hunter/Sportsperson

24% H) Environmental/Conservation

<1% I) Other, please explain

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

**PEOPLE AND ELK**

1) Please indicate how interested you are in doing each of the following. (Circle one number for each item).

	No Interest		Very Interested		
Watching or photographing elk.....	7%	0%	17%	21%	52%
Hunting elk.....	0%	0%	3%	3%	90%
Seeing elk.....	3%	0%	7%	17%	69%
Learning more about elk management.....	3%	0%	14%	17%	62%
Providing input for decisions regarding elk management.....	0%	0%	7%	17%	72%

2) Please indicate how concerned you are about each of the following in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34. (Circle one number for each item).

	No Concern		Very Concerned			
A) Elk/Vehicle collisions.....	10%	21%	31%	17%	14%	
B) Economic losses to ranchers/farmers from elk damage to rangeland, crops, or fences.....	7%	7%	45%	14%	24%	
C) Damage to homeowners' trees, shrubs, and gardens caused by elk.....	31%	28%	28%	3%	7%	
D) Predation on the elk population by coyotes, bears and mountain lions.....	14%	10%	21%	24%	28%	
E) Loss of elk habitat due to increased human population & development.....	0%	0%	14%	28%	55%	
F) Potential starvation of elk during the winter.....		7%	7%	38%	10%	34%
G) Elk spreading disease to pets, livestock, or humans.....	24%	21%	24%	14%	14%	
H) Elk competing with livestock for forage.....	10%	10%	31%	21%	24%	
I) Potential competition between elk and deer for habitat.....	3%	21%	24%	17%	31%	
J) Revenue that elk hunting provides local business.....	0%	0%	31%	10%	55%	

3) Have you been personally affected by any of the concerns listed in Question 2 in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34?

77% Yes      If yes, circle one: A B C D E F G H I or J  
31% No                      4% 27% 4% 8% 23% 8% 0% 15% 4% 27%

4) How do you personally feel about elk in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34? (Check ONE)

- 0% I do not enjoy the presence of elk in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34, AND regard them as a nuisance.
- 40% I enjoy the presence of elk in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34, BUT worry about the problems they may cause.
- 60% I enjoy the presence of elk in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34 AND do not worry about the problems they may cause.
- 0% I have no particular feelings about elk in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34.

**ELK MANAGEMENT**

- 1) How would you like the elk population in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34 to change, if at all?
- 0% Decrease greatly (over 50%)
  - 14% Decrease moderately (26-50%)
  - 28% Decrease slightly (1-25%)
  - 34% No Change
  - 10% Increase slightly (1-25%)
  - 10% Increase moderately (26-50%)
  - 0% Increase greatly (over 50%)
  - 3% Don't know

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

Not	Slightly		Very	Don't
Important	Important	Important	Important	Know
<b>3%</b>	<b>17%</b>	<b>17%</b>	<b>62%</b>	<b>0%</b>

- 3) If you indicated that you would like a decrease in the elk population (in Question #1 above), what methods would you support or oppose to decrease elk numbers? (Circle one number for each item)

	Strongly	No	Strongly
	Oppose	Opinion	Support
Either sex licenses.....	<b>9%</b>	<b>0%</b>	<b>18%</b>
Additional cow tags.....	<b>0%</b>	<b>0%</b>	<b>42%</b>
			<b>55%</b>
			<b>58%</b>

- 4) How would you like the number of bull elk in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34 to change, if at all?

- 0% Decrease greatly (less than 5 bulls per 100 cows)
- 3% Decrease moderately (10 bulls per 100 cows)
- 0% Decrease slightly (15 bulls per 100 cows)
- 24% No Change (20 bulls per 100 cows)
- 38% Increase slightly (25 bulls per 100 cows)
- 31% Increase moderately (30 bulls per 100 cows)
- 3% Increase greatly (40 bulls per 100 cows)
- 0% Don't know

- 5) If you indicated that you would like an increase in the proportion of bull elk in the population (in Question #4 above), what methods would you support or oppose to increase bull elk numbers? (Circle one number for each item)

	Strongly	No	Strongly
	Oppose	Opinion	Support
Minimum antler-point restrictions (e.g., 4 or more points) .....	<b>0%</b>	<b>0%</b>	<b>25%</b>
Maximum antler-point restrictions (e.g., spikes only).....	<b>59%</b>	<b>32%</b>	<b>0%</b>
Fewer bull licenses.....	<b>13%</b>	<b>13%</b>	<b>30%</b>
Eliminate 4 <sup>th</sup> season bull hunting.....	<b>26%</b>	<b>30%</b>	<b>9%</b>
Increased cow harvest.....	<b>0%</b>	<b>4%</b>	<b>39%</b>
More restricted motorized access during hunting season.....	<b>9%</b>	<b>17%</b>	<b>22%</b>
			<b>26%</b>

1) Have you ever hunted elk in Colorado?  
**100%** Yes                      If yes, how many years? **Total 700 hunting years, average 26 years.**  
**0%** No

2) Have you ever hunted elk in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34?  
**100%** Yes  
**0%** No

3) Overall, how satisfied have you been with your elk hunting experience(s) in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34 in the last 5 years? (*Circle ONE*)

Very Dissatisfied	Slightly Dissatisfied	Neutral	Slightly Satisfied	Very Satisfied
<b>0%</b>	<b>7%</b>	<b>7%</b>	<b>30%</b>	<b>56%</b>

4) Overall, to what extent have you felt crowded by other hunters while elk hunting in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34? (*Circle ONE*)

Extremely Crowded	Moderately Crowded	Slightly Crowded	Not at all Crowded
<b>8%</b>	<b>15%</b>	<b>46%</b>	<b>31%</b>

5) Rank the following items from 1 to 5 in the order that they would most likely improve your elk hunting experience in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34. (1=most likely to improve, 5=least likely to improve)  
Do not use any number more than once.

- 3-4 50%** Less hunter crowding
- 3-4 59%** Higher hunter success rate
- 4-5 47%** Less motorized vehicle access
- 1-2 56%** Seeing more mature bulls
- 1-2 50%** Seeing more elk

6) Overall, how would you rate the quality of elk hunting opportunities available in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34? (*Circle ONE*)

Poor	Fair	Good	Very Good	Excellent	No Opinion
<b>0%</b>	<b>0%</b>	<b>33%</b>	<b>37%</b>	<b>26%</b>	<b>4%</b>

7) Which ONE factor is the MOST important to you when elk hunting in GMU's 11, 211, 12, 13, 131, 231, 23, 24, 25, 26, 33 and 34? (*Check ONE*)

- 20%** Not seeing other hunters
- 52%** Obtaining game meat
- 28%** Harvesting a trophy elk

## Public Issues and Concerns

### Written Comments-

- Too many elk in E-6
- 
- Recreational use on National Forest ATV's especially effecting elk distribution
- Too many elk, more cows should be killed
- People would buy more tags if the cow tags cost less or were given away to cow hunters
- Too many elk concentrated in one area need to distribute elk (No idea how to accomplish)
- A hard winter will help! (with elk distribution and numbers)
- Maintain a healthy herd and continue to offer hunter access to licenses
- Decrease motorized access
- As long as study's indicate over all range will handle present numbers, livestock and game, try to keep close to where you are now give or take a few thousand (roughly 42,000 elk)
- I like the forage study's and feel they can be a good guide for planning herd control up or down
- Set seasons the same for everyone who hunts.
- Disperse the elk into smaller bunches by using hunting pressure on the private lands to disperse more elk onto public lands.
- Stop winter hunts at December 1
- Ranching for Wildlife needs to be looked at very closely. They need to hunt animals on these private ranches at the same time as the rest of the big game seasons.
- Lets manage for wildlife instead of lining our pockets.
- I feel the NUMBER 1 CONCERN to the management of this elk herd is the use of motorized vehicles. Motorized vehicles should be prohibited during all elk seasons (archery, MZL, and rifle). The fact is that one hunter on an ATV chases elk to private lands.
- There is a two-fold reason for elk being pushed to private lands: 1) Livestock management on grazing permits is not adequate. Cattle put on the forest settle, for the most part, right outside the ranch fence which severely depletes the potential winter range. 2) Motorized vehicle access usually exists in same (potential winter range) area as the cattle congregate thus making a dead zone in the forest. By requiring (and enforcing) ranchers to push cattle further up the mountain and prohibiting motorized vehicles during hunting a true winter habitat could be created on public lands.
- I feel any reduction in this herd will drastically impact the local economies of the communities located within these GMU's
- I feel strongly that the DOW needs to do more to compensate local ranchers whose crops and hay are impacted by elk.

- I am willing to hunt bulls every two or three years to create more “trophy” areas.
- I really hope you look at the whole picture.
- To decrease the hunting in GMU 26 would cause a disaster of epic proportions that you don’t have studies for yet.
- I feel that the long period of hunting seasons from August to January are too long and keep the elk herds on private land, when they could return to public land.
- 1) I am concerned that sheep grazing in our national forests is promoting the spread of CWD to our elk and deer herds. Please require mandatory testing of all sheep herds before being allowed to graze in our national forests. 2) Muzzleloading ruins the hunting for everyone pushing the elk to private in every area I have hunted. Please significantly reduce the number of hunters and only allow muzzleloading hunters in a few restricted areas. Better yet remove it altogether. 3) I think sheep have a greater impact on elk herd movement than you are aware of. On several occasions I have seen elk in an area and not return after a herd of sheep moved thru. 4) Reduce the amount private landowners can charge in trespass fees to remove elk causing damage.
- Expand the either sex tags, include muzzleloading and over the counter. This is an excellent tool to achieve higher bull cow ratio and manage herd size. Focus on opening up more private land to general hunting public in order to achieve herd management objectives and to reduce elk concentrations (refuge situations) and to disperse.
- Keep additional cow tags. Try to stop the selling of public land – BLM. More trophy areas = fewer points to get a tag, not just once in a lifetime.
- Maybe consider a bow hunting season (antlerless only) that would extend into October or November when a lot of the herds congregate onto the private lands. A lot of private landowners will give permission to bow hunters rather than high powered rifles around their livestock and residences.
- I think the DOW biologist should be the final decision authorities. I will write state representatives on this. Elk herds should be maintained at high levels, more will benefit. Those that do not allow hunting on their private lands should be taxed accordingly since they are a cause to the impact on hunting. Hmmm I’ll tell the state reps that too. I’ll have to review some law on that. You all do a great job!
- I feel that the long period of hunting seasons from August to January are too long and keep the elk herds on private land, when they could return to public lands.
- I really hope you look at the whole picture. To decrease the hunting in GMU 26 would cause a disaster of epic proportions. That you don’t have studies for yet.
- I live in GMU 15, but border GMU 131 and hunt there periodically. I am willing to hunt bulls every two or three years to create more “trophy” areas.
- 1) I feel any reduction in this herd will drastically impact the local economies of the communities located within these GMU’s. 2) I feel strongly that the DOW needs to do more to compensate local ranchers whose crops and hay are impacted by elk!
- Ranching for Wildlife needs to be looked at very closely. They need to hunt animals on these private ranches at the same time as the rest of the big game seasons. Let’s manage our wildlife instead of lining our pockets.

- Am concerned about landowners getting a higher percentage of licenses. Not fair.
- Set seasons the same for everyone who hunts. Disperse the elk into smaller bunches by using hunting pressure on the private lands to disperse move elk on to public lands. Stop winter hunts at December 1.
- As long as studies indicate over all range will handle present numbers livestock and game, try to keep close to where you are now give or take a few thousand up or down (roughly 42,000 elk). I like the forage studies and feel they can be a good guide for planning herd control up or down.
- Maintain a healthy herd and continue to offer hunters access to licenses. Decrease motorized access.
- I believe there are too many elk. In my opinion, more cows should be killed. I think people would buy more tags if the cow tags were less \$ or given away to cow hunters. Also too many elk concentrated in one area need to distribute elk. No idea how to accomplish this! A hard winter would help!?
- One of your slides toward the end has a wrong date... Says you will implement new plan in Jan 2005 – I think it should be 2006! But it was pretty good!
- Realizing the economy of Meeker and its surrounds rely heavily on hunters I would say hat the increase in bulls and a decrease in cows to decrease the entire population would be beneficial since it seems that hunters come for trophy heads and the trophy hunters probably spend more money.
- From a ranchers standpoint the use of the country by elk is damaging to our grazing the elk follow the snow banks and often the forage is eaten back to a non-recoverable state. There are too many elk in certain areas and the seasons beginning in late August going through the end of the year are making the elk move out early and come back later so they are even earlier at lower elevations now. Lower the number for us --- increase the trophy stuff for the towns folk.
- I think the DOW Biologist should be the final decision authorities – I will write state representatives on this.
- Elk herds should be maintained at high levels, more will benefit.
- Those that do not allow hunting on their private lands should be taxed accordingly since they are a cause to the impact of hunting.
- Maybe consider a bow hunting season (antlerless only) that would extend into October or November, when a lot of the herds congregate onto the private lands. A lot of private landowners will give permission to bow hunters rather that the high powered rifles around their livestock and residences.
- Keep additional cow tags
- Try to stop the selling of public land – BLM
- More trophy areas = fewer points to get a tag not just once in a lifetime.

## APPENDIX B

### **BLM - Little Snake Field Office – Issues and concerns**

Concerns with elk by LSFO are primarily limited to Axial Basin and areas south of Highway 318 in the Sand Hills and Cedar Springs Draw vicinities. As you know, DOW is involved with BLM, livestock permittees, and other landowners on the Axial Basin Coordinated Resource Management Plan (CRM). This CRM has been successful in coordinating the diverse interests of the land users within Axial Basin and DOW's ongoing involvement has been invaluable. As a result of changes in livestock management and improved communication between the agencies and stakeholders, concerns with elk impacts, especially conflicts with livestock, have been largely addressed.

The current concern that has been raised within Axial Basin concerns areas of elk concentration during the spring in the area south of Iles Mountain and in the Danforth Hills above the head of Wilson Creek. We have been working with one grazing permittee to adjust livestock turnout in the spring to avoid excessive use in areas where elk are congregating. This is more an issue related to spring movement patterns than excessive numbers.

Increased elk numbers in the Sand Hills and Cedar Springs Draw areas have led to increased fence maintenance and, in the case of the Sand Hills Allotment, the delay in construction of a pasture fence to improve livestock rotation due to the high potential for elk damage. Much of this area burned in 1988 and heavy elk use may be affecting recovery. Re-establishment of bitterbrush and other shrubs has been slower than expected (especially on the sandy soils in the area) in the years since this fire and elk pressure may be a contributing factor.

### **BLM – White River Field Office – Issues and concerns**

#### BLM-White River Field Office

#### Comments/issues concerning DAU E-6 Plan (White River Elk Herd)

(contact: Ed Hollowed, 15 August 2005)

The following discussion is similar to that presented in November 2002 and focuses on GMUs 11 and 211, since BLM holdings administered by the WRFO in GMUs 23, 24, and 12 are relatively minor in extent, are often land-locked, and have limited potential for effectual management.

#### **Elk Population Objectives**

Most prominent among our concerns is the perception that E-6 continues to act as a source of elk pioneering GMUs 10 and 21. Although we recognize that this relatively recent trend may have been exaggerated by drought conditions, it seems at least plausibly a product of animal abundance and increasing animal density to the east. The current overall harvest trends, special early season conducted in GMU 21, and declining post-hunt population estimates are encouraging, but we feel this situation warrants continued attention.

As discussed in the recent agency meetings, the BLM would appreciate if the DAU plan were to detail the modeling process that resulted in herd estimate adjustments and discuss its forage use implications, particularly with respect to livestock. Sizable upward adjustments to elk populations based on modeling, regardless of the animals' effective influence on forage resources, will be controversial and difficult to rectify using BLM's forage allocation method (e.g., insufficient conversion ratio or inaccurate projection of elk distribution). Considering the characteristics of land ownership in GMU 11 and 211, and recognizing elk's propensity to use privately-controlled lands from the late summer through early winter months, it would be advantageous to develop an accurate picture of seasonal use on BLM lands before considering forage allocation adjustments.

We are not aware of widespread instances of excessive use attributable to elk on BLM-administered lands within the DAU, but BLM livestock permittees continue to relate instances of heavy spring use, particularly in areas adjacent to or integral with large private holdings (e.g., Indian Valley, Wilson Creek). Localized elk concentrations are especially troublesome in spring, a perennial bottleneck for livestock operations and where prolonged and heavy use by elk can significantly reduce forage available for subsequent (often intentionally deferred) livestock use and where cumulative use increases the risk of adverse and long term shifts in community composition. Ongoing efforts by BLM to reduce the intensity and duration of livestock grazing during the growing season can be thwarted by concentrated elk use in the spring and early summer months and BLM recognizes that it is likely that inequitable distribution will remain a persistent management concern, but one that may be moderated or aggravated according to overall animal abundance and/or hunter distribution.

In earlier comments, BLM was concerned with large numbers of elk that remained unavailable for harvest due to the influence of large consolidated holdings of private lands (including RFW concerns). CDOW's continued efforts to coordinate hunting intensity and distribution across public and private lands and increasing antlerless harvest appears to be an effective strategy for curbing and reversing the expansion of elk populations in DAU-E6 and is to be commended.

### **Habitat Characterizations**

This discussion has not changed appreciably since BLM first provided comment in 2002.

The predominant woody forage base on BLM-administered winter ranges is provided by mature to overmature stands of black and Wyoming big sagebrush that sustain heavy use by deer during the winter and early spring months. At the present time, there does not seem to be a tendency for elk to make substantial use of sagebrush on these lower elevation ranges.

Utah juniper is the predominant woodland cover on these winter ranges. BLM feels the interspersion of coniferous cover and winter forage types (overall forage:cover ratio of about 60:40 in the White River Resource Area) is acceptable and is not an issue that commands an immediate response. The encroachment of coniferous regeneration on these lower elevation sagebrush parks is neither prevalent nor advanced and is not believed to be an influential factor in depressing the production or availability of big game forage (see Fire section below).

BLM agrees that, in general, herbaceous expression on lower elevation big sagebrush benches, juniper woodlands, and greasewood bottomlands is below potential. Although prescribed burning or mechanical manipulation of these low elevation and often over-mature sagebrush stands or juniper woodlands appears to be an attractive option to bolster herbaceous forage supplies, these practices should be carefully weighed against the potential for proliferation of annual forbs and cheatgrass (i.e., reducing long-term site potential), long term reductions in the woody forage base for, or foraging efficiency (i.e., interspersion of cover) of wintering deer, and similarly, long term influences on habitat suitability for the area's remnant sage grouse population.

The most serious noxious weed problem in Unit 11 involves giant whitetop, which is most prevalent in the floodplains of Crooked Wash and Deep Channel Creek. Cooperative control efforts are expected to continue among BLM, Rio Blanco County, and the livestock permittees. There are localized infestations of thistles and knapweeds, but these sites have been subject to control and monitoring and are not expected to expand.

### **Fire and Vegetation Succession**

Fire suppression activities over the past 30 years have interfered with plant succession patterns throughout northwest Colorado, but owing primarily to slow rates of successional advance, the role of fire in rejuvenating more xeric winter range communities has not been compromised to the point of prompting radical or extensive response. Since 2003, the White River Field Office has actively implemented its Fire Management Plan that recognizes and attempts to more fully integrate fire as a fundamental vegetation management process. Since 1996 (the earliest accurate fire mapping records available), wildfire had burned about 2,700 acres of both

pinyon-juniper woodland and winter foraging types in GMU 11 within the White River Resource Area. Since 2002, an additional 3,800 acres of woodland and 2,100 acres of sagebrush communities have burned, nearly 60% of which was managed as fire use. Although these statistics are applied only to BLM lands and represent a span of only 10 years, these more recent fire years have increased the annual involvement of woodland Unit-wide (about 460 acres) to levels that would be expected to reduce the present extent of mature, lower elevation, predominantly Utah juniper woodlands (i.e., about 200 year recurrence interval). Although the calculated recurrence interval for sagebrush dominated rangelands has declined appreciably since 2002 (171 versus 249 years), these limited data continue to suggest that sagebrush dominated rangelands are likely not subject to a regimen consistent with the fire-induced rejuvenation of Wyoming big sagebrush communities (i.e., 50-100 year intervals). However, these recent fire events will likely expand the extent and distribution of forage and forage conditions amenable to elk wintering in GMU 11.

### **Rangeland Conditions**

The White River BLM range conservationist reported that the Piñon Ridge/Crooked Wash area (GMU 11) is a problem area. Transects show a dramatic increase in cheatgrass. On two sheep allotments, transects are showing cheatgrass going from 15% ground cover in the past to 100% today. Also, the transects are showing a decrease in perennial grass cover (70% to 60%). Also, Gardner saltbush is almost gone. In a cattle allotment, range transects are also showing declining range condition. He noted that the problem seems to be along Piñon Ridge (GMU 11) and Coal Ridge (GMU 10 - not in the E-6 DAU). He noted that the saltbush flats are a concern because the elk concentrate in these areas and are over-utilizing the saltbush plants.

### **Energy Mineral Activity**

Over the past 10 years about 8000 acres on the southern end of GMU 11 has undergone relatively intensive natural gas development (i.e., lower Black's, Oil Well, Wray, and Tschuddi Gulches). Since 1996, about 105 wells were drilled in this area and, in conjunction with associated pipelines and access, involved about 300 acres of surface disturbance. Much of this acreage has been subject to reclamation and, at least temporarily, interest in developing this field appears to have waned, with no new drilling activity having occurred here over the past 2 years. Similarly, established oil and gas fields in or near Elk Springs, Indian Valley, and Wilson Creek have remained relatively static since 2002. Interest in the Price Creek area is recent, but little development has occurred to date.

## Land Use Agency Issues and Concerns-BLM and National Forest (2001)

Combined meetings were held in Meeker and Glenwood Springs to discuss issues, concerns, and management problems with elk in the White River herd area. The Meeker Meeting was held on 4/26/02 and the Glenwood Springs meeting 7/16/02. This meeting was attended by 6 people from the White River National Forest: Vernon Phinney, Thomas Matza, Joe Doerr, Keith Giezentanner, Wayne Nelson, and Phil Nyland. There were two people from the BLM Glenwood Spring Resource Area: Tom Fresques and Mike Kinser.

- The Yampa District range conservationist questioned the statement in the DAU plans that state the CDOW is seeing a shift to late-successional plant communities. He does not see this shift. In fact, most of his transects indicate mostly mid to early successional plant communities. If he is not seeing a shift, he wonders if it is more of a question of decadence. He mentioned that the tall forb communities seem to be in pretty good condition. However, some concern areas include the South Fork of the Williams Fork (the Sand Point/South Fork Allotment – GMU 12). He also mentioned that permittees are concerned about high wildlife numbers on some of the allotments. He mentioned that in many grazing allotments, 80% is not grazed by livestock due to distribution problems
- The Little Snake BLM range conservationist reported that the Piñon Ridge/Crooked Wash area (GMU 11) is a problem area. Transects show a dramatic increase in cheatgrass. On two sheep allotments, transects are showing cheatgrass going from 15% ground cover in the past to 100% today. Also, the transects are showing a decrease in perennial grass cover (70% to 60%). Also, Gardner saltbush is almost gone. In a cattle allotment, range transects are also showing declining range condition. He noted that the problem seems to be along Piñon Ridge (GMU 11) and Coal Ridge (GMU 10 - not in the E-6 DAU). He noted that the saltbrush flats are a concern because the elk concentrate in these areas and are over-utilizing the saltbush plants.
- A USFS range conservationist said that he had had problems addressing elk population numbers in his Environmental Assessments. He did not know if there was any way to change elk populations on the national forest if the CDOW is primarily managing elk to be compatible only for the amount of available winter range. Some of the problems the USFS is having with elk deal with concentrations of elk on spring and summer ranges.
- Problems with the CDOW Ranching for Wildlife program were mentioned. Elk are congregating on these ranches and therefore there is not much public access to get an adequate harvest.
- The CDOW asked if the BLM/USFS if they think there are too many elk. The general response was yes and that a target of an average of a 20% reduction in the elk herd was a reasonable goal and place to start.
- The Meeker BLM commented that elk are still going in the new country – they are still expanding their range so we can expect to see stability in performance, however, they still may be impacting the range. They feel that range expansion may be an indication of too many elk. He would like the CDOW to monitor animal condition. He mentioned that the animals in Strawberry Creek (GMU 11) are in bad condition compared to elk hides in the Piceance Creek area (GMU 22).
- The last few winters have been mild, which increases elk winter survival but also leads to drought and deteriorating range trend.
- The Blanco Ranger district commented that there are distribution problems with elk. Overall range conditions seem stable. However, livestock numbers have been going down since the 1950's and the range condition is stable, which could mean that elk are a problem. The CDOW should be thinking about the impact of elk. The Blanco District transects data shows there are some problem areas. The general feeling is that the elk numbers are high and that there are some distribution and conflict areas.
- Yampa Ranger District range conservationist reported that they had to close an allotment because of poor range condition and the rumor is that it looks worse now with only elk use than with cattle.
- The Rifle Ranger District noted that the Forest is going through a Forest Plan revision and they will soon start working on a Travel Management Plan. He suggested that the CDOW needs to think about travel management with respect to elk. With the hunting population getting older, how are we going to get hunters in to the forest to get a good harvest? He wants the CDOW to get involved in the travel management planning process.

- Elk browsing on damaging aspen in recently cut or treated regeneration areas such as Coulter Mesa, King Mountain and North of Wolcott. It was generally believed this is problem related to scale and that if the cuts were small 2-5 acres, this was a bigger problem than if the treatments were much larger.
- Spring grazing by elk to rangelands is a concern. No specific areas were identified.
- Hunters violating ATV and road closures are a problem. A new travel management plan will be developed by the USFS within the next few years. This is also a problem with lack of law enforcement to regulate these closures. The new regulations on the White River National Forest will require that if the road is not posted as open, it will mean that it is closed and this could reduce the problem of users tearing down road closure signs.
- Long elk seasons increase use on public lands and can contribute to resource damage to roads and other areas.
- Winter range long-term trend appears to be in a general downward trend. While all indications are that elk productivity and survival rates and general animal condition are stable, if the range and habitat conditions decline, this will affect the long-term health of the elk herds.
- Some riparian areas could be over-utilized by elk. An example given by Mike Kinser was Dry Fork of Cabin Creek in GMU 26.
- Wildfire suppression has had a negative affect on elk range. Larger fires are generally better than small fires since they tend to concentrate the elk and over-utilization can occur.
- Lack of free water could be preventing elk from using some transitional ranges such as Luark Mesa. This problem is associated with the lower elevations typically along the USFS-BLM interface. It was generally felt that removing more woody plants such as Pinyon and Juniper by fire and other methods would improve the flow or streams and springs in these areas.
- There was general approval of everyone in the meeting that an average 20-25% reduction in the current elk population and an increase in the sex ratio objective for all of the DAU plans are reasonable goals.

## APPENDIX C



United States  
Department of  
Agriculture

Forest  
Service

White River  
National  
Forest

Supervisor's Office  
900 Grand Avenue  
P.O. Box 948  
Glenwood Spgs., CO 81602-0948  
(970) 945..2521  
TTY (970) 945..3155  
FAX (970) 945..3266

Darby Finley  
Terrestrial Biologist Colorado  
Division of Wildlife  
PO Box 1181  
Meeker, CO 81641

File Code: 2620  
Date: August 17, 2005

Dear Mr. Finley,

The following are the comments from the White River National Forest (WRNF) concerning the DAU E-6 Flattops Elk Management Plan. My staff from the Eagle, Rifle, and Blanco Ranger Districts as well as the Supervisor's Office have all worked in coordination in this response. I agree with the new general population objective of 43,000 elk. The winter range is the limiting factor on herd population capabilities. The majority of the winter range for this DAU is located on BLM and private lands rather than on National Forest System lands. The WRNF has adequate forage to support more elk than the associated winter range can ecologically support and the small amount of winter range found on the Forest is felt to be in good ecological condition overall. Reductions in the population from the current estimate to the population objective should help bring the elk population into better balance with the capabilities of the winter range. Reductions in the elk population should also result in helping the deer population to recover.

The WRNF has identified the following specific conflict areas between elk populations and existing range conditions:

Lost Park.. This area is significant for its value as early spring and calving use by elk. It is also an important cattle allotment. Historically the dual use of elk in the spring and domestic livestock in the summer led to over-utilization in some areas. This historical problem was addressed with the creation of the Oak Ridge/Lost Park Coordinated Resource Management Plan, which established a partnership between the Colorado Division of Wildlife, the Bureau of Land Management, the livestock permittee, and the Forest Service. We will continue to use adaptive management principles to perpetuate present upward ecological trends.

Sunnyside Allotment - This allotment on the northeast portion of the DAU is important to elk in the early spring and during mild winters. The level of elk use coupled with the domestic livestock use of the area in summer has led to some over-utilization on aspen and riparian areas. The allotment management plan for this area is currently being

updated and these issues have been identified as problem areas associated with this plan update.

Bar H- L Aspen clearcuts- Elk are attracted to new aspen regeneration in aspen the clear cuts that have been conducted on the Rifle and Blanco Ranger Districts since the early 1990's. Most of the clear cuts have regenerated very well, however there are a few units in the GV Spring and Irish Spring areas near Bar HL Park that have shown evidence of elk grazing. This grazing has impeded regeneration to some degree. Elk grazing compounded with domestic sheep grazing, has been shown to be the most detrimental to successful regeneration following timber management in aspen. Mitigation is now in place to help protect new cuts from domestic sheep grazing, and monitoring will continue to evaluate regeneration success.

These areas have historically been important elk use areas, especially during elk calving seasons in the early spring.- It is doubtful population-declines in the overall DAU will result in significant overall reductions in elk use of these areas. They will likely retain high levels of seasonal use with some localized problems areas of over-use regardless of herd reductions or adjustments. There are likely other specific conflict areas caused by concentration of elk on the WRNF. Forest Service range and wildlife staffs have not been able to inventory or evaluate all areas of the Forest to assess issues with domestic and/or wild ungulate use.

In general, I have not identified any significant over-utilization problem areas in our vacant or closed allotments or in the active sheep allotments within this DAU. There are likely small, isolated habitats that receive over-use by elk during one or more seasons during the year scattered across the DAU, but these areas are small enough that they are not currently considered serious problems.

The Forest is currently in the process of re-reading established range transects to determine long-term range condition and trend. The anecdotal information from the initial work on reading these transects indicated that overall range health has either remained static or has improved across the Forest. I will send you the data from these surveys as this information is finalized.

The prescribed fire program on the WRNF has been designed to improve the quality of the existing winter range; not to increase quality. Generally, our goal has been to attempt to keep elk on Forest winter and transition ranges longer in the fall and get them there earlier in the spring to reduce conflicts on adjacent private land. Where this potential conflict reduction exists, this will continue to be our major goal in the future.

Several other potential conflicts identified include noxious weed infestations and oil and gas developments. The Lost Solar, Crook's Park, Marvine, Pack Horse Park, and upper South Fork of the White River area have all been identified as having significant weed problems. The Forest is working at controlling these weed populations, but weeds have the potential to overwhelm our efforts and significantly reduce habitat values for a variety of wildlife including elk.

There are no current areas of the Forest within this DAU where oil and gas exploration is authorized. Therefore, this is not a summer range issue. However, oil and gas development has

the potential to greatly impact winter range areas on the western portion of the DAU. Reduced carrying capacity of the winter range may reduce the overall health of the elk herd using the DAU, without the reductions planned under this proposal.

Hunting contributes significantly to the economies of the local communities, particularly those on the west side of the forest. At the same time, the forest expends a disproportionate amount of our dwindling resources in managing and dealing with impacts from hunting. These include road maintenance, law enforcement, sign! gate repair and replacement, and dispersed campsite cleanup.

Thank you for the opportunity to assist with this important planning effort. If you have any questions about these comments, please contact Keith Giezentanner of my staff at (970) 945-3244.

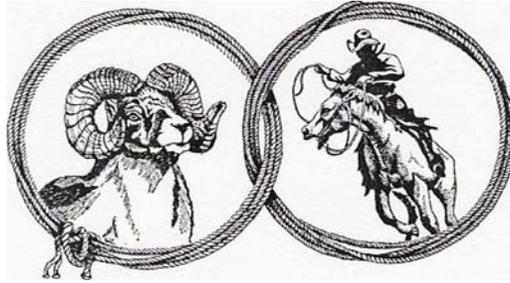
Sincerely,

MARIBETH GUSTAFSON  
Forest Supervisor

cc: Glenn R Adams, Keith Giezentanner

## APPENDIX D

### UPPER YAMPA RIVER HPP



September 6, 2005

Darby Finley; Terrestrial Biologist  
Colorado Division of Wildlife  
PO Box 1181  
Meeker, CO 81641

Ref: Committee comments on elk management in E-6 (White River DAU)

Dear Darby;

Thank you for taking the time to come to our July meeting to discuss elk management in both the Bears Ears and the White River DAUs. Our committee met on August 22nd and discussed how we would like to. *see* the Division of Wildlife manage elk in the White River DAU our recommendations are as follows:

The committee feels that on the east side of E 6 there are habitat issues related to over-use by motorcycles and off-highway vehicles and over-grazing on public lands. We strongly encourage the Division of Wildlife to work with the public land management agencies to manage some public land habitat specifically for wildlife.

The committee could not reach consensus on an appropriate level for this elk population. Some feel that the elk population in the White River DAU should be reduced from current levels, while other members feel the population is about right. All agreed that distribution of elk could be improved. None of the committee was comfortable with reducing the number of elk to historic lows. Members felt that without an accurate count, the perception of high elk numbers may be based more on the distribution rather than the numbers of these animals. The committee recognizes the critical importance of elk to the local economies.

Conflict areas:

The distribution of elk in the White River DAU is an issue. The easy availability of food on private lands causes conflicts with local landowners.

Management should be based on the number of elk that can be supported in a severe winter, not on what can be supported under normal winter conditions. Private land should not be considered the primary source of food for elk populations.

It is critical to improve forage quality and quantity on public lands to keep elk there. However, the committee is convinced that recreational use of the national forest before and

during hunting season is pushing elk onto private lands. We would like to *see* any management effort look at the role travel management plays in moving elk.

The committee is concerned about the potential of high elk numbers to impact sage grouse habitat in the southern part of Routt CDun\_ The South Routt Greater Sage grouse plan specifically indicates the potential conflict. between elk and sage grouse habitat.

And finally; the hunting seasons are currently too long. The committee feels that these long seasons keep elk on private lands rather than allowing them to return to public lands.

The committee does feel that the additional cow licenses are doing a good job of increasing the pressure on the elk population. The four point restriction is helping to keep a good bull cow ratio in this DAU

The committee is concerned that the plan is being developed in the absence of an accurate and current count of the animals, and encourages the Division to continue to work to develop an accurate elk census technique.

Thank you for allowing us to participate in this process.

Larry Monger, Chair  
Upper Yampa HPP committee

Xc:Velarde

## APPENDIX E

### YAMPA/WHITE RIVER HPP

September 23, 2005

Darby Finley, Terrestrial Biologist  
Colorado Division of Wildlife PO  
Box 1181  
Meeker, CO 81641

Re: Committee comments on elk: DAU E-6.

Dear Darby:

After considerable discussion at our September 21 HPP Committee meeting, it is the general consensus of the Committee that they would like to see a continued gradual reduction of the E-6 elk herd. Even though there appears to be some distribution problems, it is felt that an overall reduction in the herd is necessary and could lead to being better able to solve some of the distribution issues. The Committee feels that with the number of elk we now have, even a moderately hard winter could be disastrous. The last significant winter we've had was in 1992-93.

The drought over the last several years, has actually helped with some of our winter damage problems in some areas, but has led to some water and distribution problems in the lower country. We have cooperated on a number of water projects to help alleviate some of these concerns. One major issue is the large numbers of elk migrating into the northern and western portions of the DAU during late fall. We have cooperated with the Northwest HPP Committee on a distribution hunt the last two winters which has met with success. This hunt should probably continue if circumstances allow.

Once again, it is felt by our Committee that a gradual reduction in this elk herd should continue. It's believed that by reducing the overall population, we will be able to more easily address distribution issues.

Sincerely

Barry Dupire DOW  
Representative

**These comments were generated at the Yampa/White River HPP Meeting (2001).**

The entire minutes from this meeting are in the E-6 DAU plan file and can be obtained from the Yampa/White River HPP Committee. Some of these comments are not in the minutes but were recalled by the three CDOW people at the meeting- Dan Prenzlou, Barry Dupire and Gene Byrne. Gene Byrne, using an overhead projector, presented the past management data from the E-6 DAU. The following are the comments from this meeting:

Mike Grady – explained that Wade Cox has a few conflict areas with elk – Hatch Flats, North of the River and West of the River. Dan Prenzlou said that measures have been taken and will continue to be taken to control this problem. Also, this area is not in the DAU E-6 but it is on the border in GMU 10 and some of these elk are coming out of E-6. Dan reported that cow licenses have been increased by 20% for this area to help decrease the elk population.

Joe Collins – reported that due to ability to shift his spring grazing away from the Lost Park area to the CDOW's Oak Ridge property, his conflict with elk has been greatly reduced. He felt that by having the elk remove the residual forage on Oak Ridge was benefiting the elk winter range by stimulating fall regrowth.

Gene Byrne – asked the general question of how people felt about the CDOW's DAU plan proposal to reduce elk in E-6 by approximately 20% (53,000 to 43,000). The general feeling was that the HPP committee supported this recommendation and this was an appropriate reduction.

## APPENDIX F

### Comments & Questions - HPP Committee – DAU Plan Meetings – Burns

4/10/02

Burns Baptist Church

6-9 p.m.

These comments, suggestion and recommendation were gathered at the Burn Hole HPP meeting and were recorded on a flip chart. Some of the comments have been edited or expanded to preserve the meaning. Some of the comments apply more to the five-year season structure discussion. The next new season structure will be implemented in the 2005. These comments should be reviewed and presented as part of these deliberations.

#### White River Elk – E6

- Why increase the population objective, there are more elk than the habitat can maintain.
- Need to reduce size of E-6 and include fewer GMUs.
- Other GMUs in E6 besides GMU 26 have large private ranches without hunting.
- How do we keep elk population to or at the proposed objective of 43,000?
- Best cow harvest in past was the unlimited, either-sex seasons in 1998, we should return to that season structure.
- Comment – not many people will buy an additional cow license.
- Comment – it is difficult to obtain the correct type of license for private land.
- More cow tags than resident hunter will use.
- Finding private ground that is available and affordable to hunt is difficult. Most hunters are unwilling to pay high fees to hunt cow elk.
- Livestock numbers will have to be cut due to drought conditions yet elk numbers stay high and are not cut.
- Why not have Over-the-counter cow licenses.
- Why not reduce elk population below objective and then manage from that point.
- CDOW is more concerned about money management.
- Why not limit the number of over-the-counter cow license to 200,000 to increase harvest yet prevent from serious over-harvest of elk
- High non-resident fees are discouraging out of state hunters from coming to hunt Colorado.
- Colorado is the dumping ground for elk hunters. They come here after they are rejected from by states.
- Elk are degrading habitats in by over-use, blackening aspen trees, etc.
- Cattle grazing allotments are vacated early due partially to elk use.

- CDOW needs to survey (study) where elk are in the summer months.
- Some elk do not leave private lands move to public land summer ranges.
- Need to consider an early August antlerless elk hunt on private lands.
- Need to limit archery hunters.
- Ranching for Wildlife – can these ranches hunt out of the established hunting seasons? CDOW reply - Public push elk on to ranches and then RFW can push elk back onto the public land – this is usually beneficial for obtaining a good harvest.
- Has CDOW looked at winter range conditions? They should base population objective on the amount and condition of the winter range.
- All second choice applicants should receive antlerless license. Everyone who applies for a license whether first or second choice should receive a license – basically unlimited antlerless licenses for elk.
- CDOW should allow unsuccessful hunters in the 1, 2 and 3<sup>rd</sup> seasons to hunt a cow elk in the 4<sup>th</sup> season.
- Additional licenses as separate page in the brochure - The brochure question is a matter of format of the hunting brochure. The HPP committee would like licenses that were consider as additional be placed in a separate area from antlerless license areas that would be considered a primary license for easier understanding during the application process.
- CDOW needs contingency plan for bad winters – how to control game damage and feed elk, etc.
- Landowner distribution of licenses - the landowner's should have control of licenses and have the ability to sell an antlerless license to anyone they choose during a season at the CDOW price with all the money going to the CDOW.
- Heavy recreation on public lands in summer not allowing elk to disperse off the private lands

August 11, 2005

---

ERS: Dennis V. Brinker, Holly Propst, John R. Stulp, Patrick Teegarden, Shirley W. Watson

Mr. Darby Finley  
Terrestrial Biologist  
Colorado Division of Wildlife  
P.O. Box 1181  
Meeker, CO 81641

Re: DAU E-2 and E-6 Comments

Dear Mr. Finley:

Based on discussions with lessees and inspections of state trust lands across the area, I have prepared a spreadsheet that reflects the reduction in grazing use by our lessees and the dollar cost if they have a reduction in use or no use at all. The State Land Board did provide a 35% drought credit to lessees in 2002, but they have continued to cut numbers or not graze the lands in an effort to protect our lands as a result of the drought and wildlife use. Attached is a spreadsheet that reflects those reductions covering the area beginning north of Hayden to the Utah state line. I realize some of the leases are not in E2 or E6, but the information may be useful to you in any case.

I can provide you with a CD of the inventories and monitoring that have occurred on state trust lands throughout Moffat County for the past five years if you are interested. This might help in your evaluation of range condition and in determining what the range resource will support. Please let me know if you are interested in this information or have questions regarding the spreadsheet.

In areas I have inspected on state trust lands, it is apparent from the range usage that the number of elk is higher than the resource will currently support. It is difficult to determine what the level of wildlife usage should be, because coupled with the drought and the fact that the highest numbers existed in the worst of those conditions, damage that occurred in 2002 has not been able to recover. It would make sense to make the objective number of elk a range rather than a fixed number so there is flexibility to manage the herd for existing conditions. Realizing it can take at least two years to react if the numbers are too high, the objective number range should be conservative.

Thanks you for considering this information. We look forward to further discussions as the DAU process moves forward.

Sincerely,

Beverly Rave  
Acting Field Operations Section Manager

Attachment: Lessee Spreadsheet

CC: Brit Wessner

