

Frying Pan River Elk Herd E-16

Data Analysis Unit Plan

Game Management Units 44, 45, 47, and 444



A cow-calf group summering on Red Table Mountain on the boundary between GMUs 44 and 444 in E-16.

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July 12, 2013



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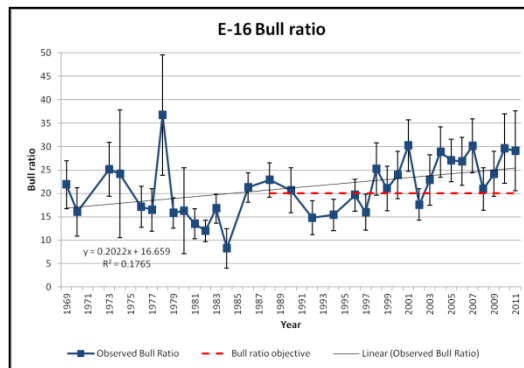
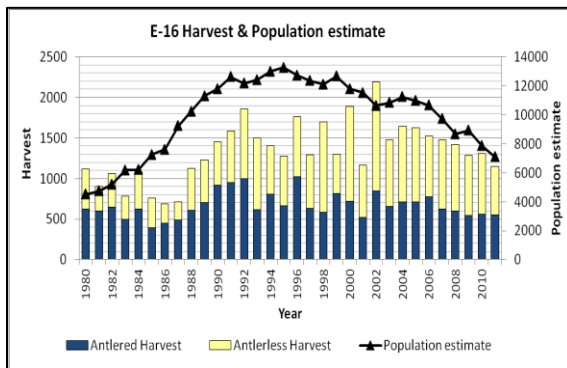
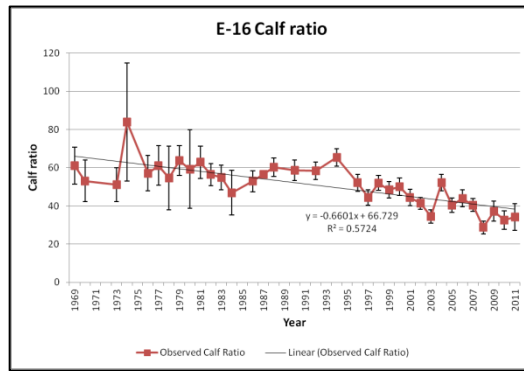
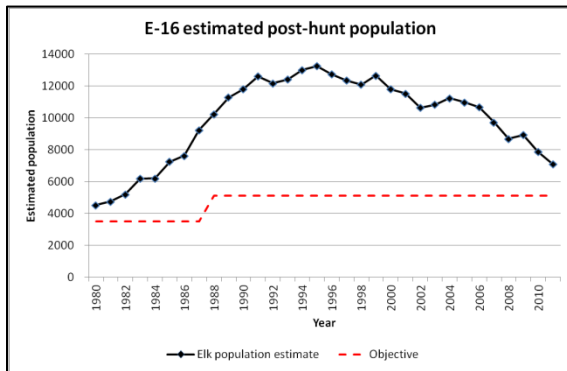
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Executive Summary

DAU: E-16 Frying Pan River
 GMUs: 44, 45, 47, and 444

Previous (1988) Population Objective: 5,100 elk
 Current Population Estimate (post-hunt 2011): 7,100 elk
New Population Objective Range: 5,500-8,500 elk

Current Sex Ratio Objective: 20 bulls/100 cows
 Current Sex Ratio (3-year average 2009-2011): 28 bulls:100 cows
Expected sex ratio range: 18-30 bulls:100 cows



Background

The Frying Pan River Elk Data Analysis Unit (DAU) E-16 is located in northwest Colorado and consists of Game Management Units (GMU) 44, 45, 47, and 444. This DAU lies in Pitkin, Gunnison, Eagle, and Garfield Counties. Major towns include Aspen, Basalt, Glenwood Springs, Gypsum, Eagle, Edwards, Avon, and Vail. E-16 covers 3,500 km² (~865,000 acres) of land area. Eighty percent of the DAU is public land, and 20% is private. Elk winter range is 63% public and 37% private land. E-16 includes the Holy Cross and Hunter-Fryingpan Wilderness areas.

Since 1988, the elk in E-16 have been managed for a population objective of 5,100 animals. Through the 1990s and early 2000s, the herd numbers increased to over 10,000 elk. To reduce the population toward the 1988 population objective, liberal antlerless licenses were provided to achieve increased cow elk harvest. This management strategy has allowed the population to be reduced to what is currently estimated at 7,100 elk.

The 1988 herd management plan set a sex ratio objective for E-16 of 20 bulls:100 cows. However, as an over-the-counter (OTC) DAU with unlimited bull licenses in 2nd and 3rd rifle seasons, E-16 is not specifically managed for a sex ratio objective, but rather to provide ample hunting opportunities. Antler-point restrictions have been effective at improving the quality of bulls and increasing the bull ratio without requiring totally limited licenses. Thus, despite being an OTC unit, the bull ratio has averaged above the previously established objective. The current (2009-2011) 3-year average is 28 bulls:100 cows, and the long-term average since 2000 is 25 bulls:100 cows.

Significant issues

Outdoor recreation and other human disturbance, habitat loss and fragmentation due to land development, continued lack of large-scale habitat improvement projects have been the major issues for this elk herd. Increased predator populations could also be affecting the elk population.

The human population in this area has grown rapidly since the 1970s, as many people are drawn to the area by the ski areas, wildlife, open space, public lands, scenery and lifestyle. As a result, recreation and habitat conversion have become the major impacts on wildlife. Land development has led to the direct loss of habitat quantity and quality in the form of conversion of habitat into houses, other buildings, and infrastructure; and fragmentation of habitat due to roads, trails, and structures. Outdoor recreation has become a year-round presence on the landscape, particularly on public lands, and is the largest indirect impact to the area's wildlife populations. There is increasing demand for more recreational trails to be established, as well as frequent use and expansion of unofficial trails, all of which fragment and diminish the quality of remaining wildlife habitat, and create disturbances to wildlife on a year-round basis. Human disturbances during critical periods for wildlife can reduce calf recruitment and increase stress on wintering wildlife. There is now human disturbance during the summer in areas previously used by wildlife for seclusion. More roads and vehicle traffic, along with increased driving speeds, have resulted in more roadkill of elk, deer, bears, and other wildlife. Dogs, both on- and off-leash, also present another stressor on wildlife and a potential source of mortality.

Existing, undeveloped habitat has been degraded not only by human recreational impacts, but also due to long-term fire suppression and lack of habitat management which has led to older-aged, less productive forage. Areas close to developments are now unlikely to be allowed to burn due to potential damage to property. The cumulative effect is that both quantity and quality of habitat has declined for elk in E-16. Development continues to occur on elk winter range; not at the rate that was observed in the 1980s through the early 2000s but the impact is still present and could escalate depending on the economy. Without large scale habitat improvements, and probably even with improvements there are certain portions of this DAU that may need to focus on the continued reduction of the elk population to try and balance the amount of habitat that is available with the number of elk this habitat can support.

Bear, mountain lion, and coyote populations are believed to have increased over the past several decades, and their predation on calves (as well as adult elk mortality by lions) could potentially limit the elk population. Whether predation has a population-level effect on the elk herd depends on how close the elk population is to carrying capacity, i.e., whether predation is additive or compensatory to other causes of elk mortality (such as malnutrition, disease, and human-caused mortality).

Alternatives for Population Objective Range

E-16's current population objective of 5,100 elk was established in 1988 and is long overdue for an update. Many changes have occurred since then in land use, human population growth, recreation pressure, habitat condition, elk population size, predator population sizes, and population modeling methods. For the past two decades or more, the effort has been made to decrease the elk population toward the 5,100-animal objective to achieve a moderate population density. However, input from public meetings and an online questionnaire indicate that many (46% of 223) respondents, nearly all of whom are hunters, prefer to maintain the current population size (another 26% prefer an increase; 19% prefer a decrease; and 9% were uncertain). Most hunters' primary interest in E-16 is in harvesting an elk for meat rather than as a trophy.

Colorado Parks and Wildlife considered three alternatives for the new population objective range. The alternative of 5,500-8,500 elk was selected as the new population objective because it will balance the public's desire to have enough elk on the landscape for hunting and wildlife viewing opportunities, while still keeping the elk population at a moderate density (i.e., below ecological carrying capacity at a number of animals the habitat can support in healthy body condition). The objective for the DAU provides guidance for the general management of the entire elk population, but there will still be flexibility to allow for management at the GMU scale to address smaller scale issues such as localized elk concentrations and landowner concerns.

Alternative 1: 7,000-10,000 elk

This alternative would increase the current population size by about 20% (range 0% to +40% change). Because elk have a high natural survival rate, reducing hunter harvest to achieve elk population growth may allow elk numbers to take off when weather conditions are favorable for survival. At a higher population density, elk will compete more intensely with each other as well as with mule deer for forage and space, particularly during hard winters. The health of individual elk may be compromised due to this heightened competition, and disease may spread through the population more easily. Mortality by predation, harvest, disease, and malnutrition would be more compensatory to each other at this higher elk density. Overall, calf recruitment rate would be lower. Winter range habitat - which has already been diminished by land development, lack of regeneration, and over-use by past high densities of ungulates - could be further degraded. Agricultural crop damage may become an issue, and damage to residential trees, shrubs, and gardens may increase. More elk-vehicle collisions may occur. Catastrophic weather, such as a very severe winter restricting access to forage and requiring animals to use more of their body fat to stay alive, could result in large numbers of elk dying.

Antlerless license numbers would need to be reduced, at least for the first several years, to achieve population growth. There would be less opportunity to draw a cow license and hunters might not be able to draw a license every year. However, those who do successfully draw would experience less crowding and would likely have a better chance of harvesting an elk because there would be more elk on the landscape. As the herd reaches the higher population objective, more antlerless licenses could be issued to stabilize the herd at the new population objective. Also at a higher population, there would be more bulls available, so bull hunters could have higher success rates. However, because bull licenses for 2nd and 3rd rifle season are unlimited, hunter crowding and success rates during these seasons would depend also on how many bull hunters choose to hunt in these units.

Economic benefits to the local community could be reduced due to having fewer antlerless licenses available and therefore fewer hunters contributing to local establishments during hunting season. This effect could be offset if more hunters purchase over-the-counter bull licenses, but is unlikely, given current declining trends in hunter participation overall.

Alternative 2: 5,500-8,500 elk (Selected)

This alternative would maintain the current population size (+/-20%). There would be less competition for forage and habitat among elk than in the past. Calf recruitment might remain relatively low given current conditions (i.e., high recreation pressure, reduced habitat availability and condition, increased predator densities), but because adult elk have high natural survival rates, the population can be maintained at this size with low recruitment rates and continued moderate harvest.

To achieve this population objective, antlerless licenses would either remain the same or initially be reduced slightly to stabilize the population at the current size. As population size is evaluated over the subsequent years, license quotas could resume thereafter back to quotas similar to current levels. Hunting opportunity, harvest success rates, and economic impact would be intermediate compared to Alternatives 1 and 3, and would be similar to those of today.

Alternative 3: 4,000-7,000 elk

This alternative would continue to reduce the population size by around 20% (range 0% to -40% change). At a lower population density, individual elk would experience less competition and overall better health. Survival rates could improve, and therefore, the herd would be more resilient to extreme weather events. However, at lower elk population density, the effects of predation could become more pronounced.

To achieve this population objective, it could take many years and would depend on harvesting enough cow elk to continue to drive the population down. Increasing antlerless quotas would not be useful because even at the current license quotas, many licenses go unsold. Therefore, antlerless license quotas would remain the same as current quotas. As the population continues to decline, harvest success rates would likely decline because of having relatively fewer animals available, and hunter crowding may be an issue. Eventually as the lower population objective is reached, antlerless licenses would need to be reduced to stabilize the herd at the new population size. Initially, economic benefits from hunting and wildlife watching would be similar to those of today; later, there would be fewer economic and recreational benefits as the elk population declines.

Expected Sex Ratio Range

For herds that have unlimited over-the-counter (OTC) bull elk licenses in 2nd and 3rd rifle seasons, CPW does not manage for a particular sex ratio. Instead, bull:cow ratio in these OTC units is determined by a combination of harvest factors (e.g., hunter participation, hunter success), biological factors (e.g., differential survival rates of bulls vs. cows, sex ratio of calves when born), and abiotic factors (primarily weather). Therefore, we report an expected sex ratio, rather than a sex ratio objective.

The expected sex ratio range for E-16 is 18-30 bulls:100 cows, based on the post-hunt bull ratios observed over the last decade since the antler-point restriction was extended to all seasons.

This plan was approved by the Colorado Parks and Wildlife Commission on July 12, 2013.

Introduction and Purpose

Herd management plans

Colorado Parks and Wildlife (CPW) manages wildlife for the use, benefit and enjoyment of the people of the state in accordance with the CPW's Strategic Plan and mandates from the Parks and Wildlife Commission and the Colorado Legislature. Colorado's wildlife resources require careful and increasingly intensive management to accommodate the many and varied public demands and growing impacts from people. To manage the state's big game populations, the CPW uses a "management by objective" approach (Figure 1). Big game populations are managed to achieve population objective ranges and sex ratio ranges established for data analysis units (DAUs).

The purpose of a herd management plan is to provide a system or process which will integrate the plans and intentions of Colorado Parks and Wildlife with the concerns and ideas of land management agencies and interested publics in determining how a big game herd in a specific geographic area should be managed. In preparing a herd management plan, agency personnel attempt to balance the biological capabilities of the herd and its habitat with the public's demand for wildlife recreational opportunities. Our various publics and constituents, including the U.S Forest Service (USFS), the Bureau of Land Management (BLM), sports persons, guides and outfitters, private landowners, county commissions, and the general public, are involved in the determination of herd population and sex composition objectives and related issues. Public input is solicited and collected by way of questionnaires, public meetings, and comments to the Parks and Wildlife Commission.

A Data Analysis Unit or DAU is the geographic area that represents the year-round range of a big game herd. It delineates the seasonal ranges of a specific herd while keeping interchange with adjacent herds to a minimum. A DAU includes the area where the majority of the animals in a herd are born and raised, as well as where they die either as a result of hunter harvest or natural causes. Each DAU usually is composed of several game management units (GMUs), but in some cases only one GMU makes up a DAU.

The primary decisions needed for an individual herd management plan are (1) how many animals should exist in the DAU and (2) the desired sex ratio for the population of big game animals, i.e., the number of males per 100 females. These numbers are referred to as the population and sex ratio objectives, respectively. Secondly, the strategies and techniques needed to reach the population size and herd composition objectives also need to be decided. The selection of population and sex ratio objectives drive important decisions in the big game season setting process, namely, how many animals need to be harvested to maintain or move toward the objectives, and what types of hunting seasons are required to achieve the harvest objective.

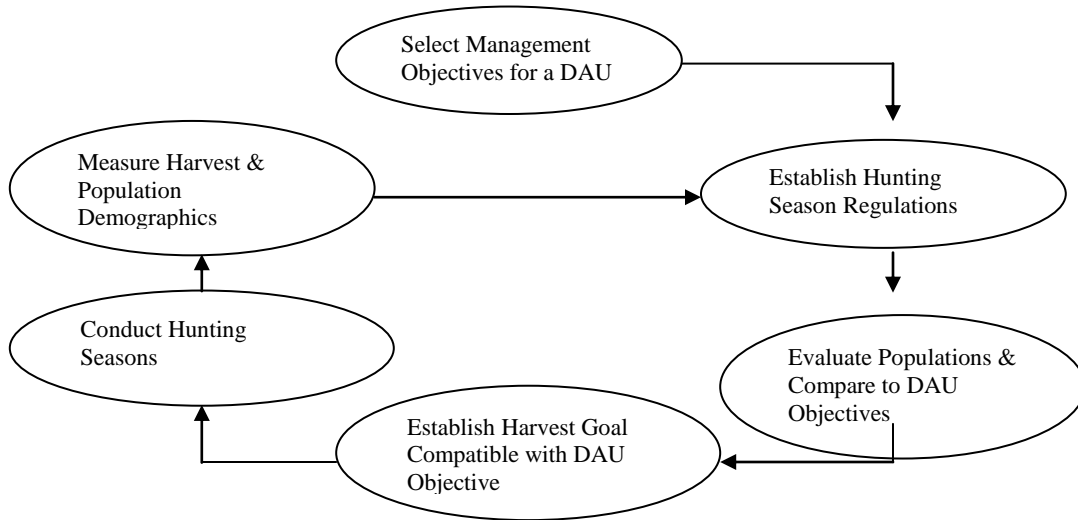


Figure 1. Management by objectives process used by the CPW to manage big game populations on a DAU basis.

Population Dynamics, Maximum Sustained Yield, and Density Dependence

Numerous studies of animal populations, including such species as bacteria, mice, rabbits, and white-tailed deer have shown that the populations grow in a mathematical relationship referred to as the "sigmoid growth curve" (Figure 2). 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 pattern occurs because the populations may have too few animals and the loss of even a few of them to predation or accidents can significantly hinder population growth.

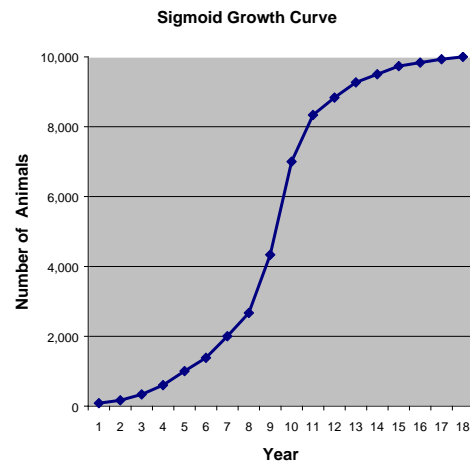


Figure 2. Sigmoid growth curve.

The second phase occurs when the population number is at a moderate level. This phase is characterized by high reproductive and survival rates. During this phase, food, cover, water and space are not a limiting factor. For example, 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 and older does have been known to produce 3-4 fawns that are very robust and healthy. Survival rates of all sex and age classes are also at maximum rates during this phase.

The final or third phase occurs when the habitat becomes too crowded or habitat conditions become less favorable. The quantity and quality of food, water, cover, and space become scarce due to the competition with other members of the population. These types of factors that increasingly limit productivity and survival at higher population densities are known as density-dependent effects. If the population continues to grow it will eventually reach a point

called the carrying capacity. At this point, the population growth rate slows to zero and the population reaches an equilibrium with its environment. The number of births each year 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 body condition, habitat condition would be degraded from over-use, 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 more towards the middle of the "sigmoid growth curve." Biologists call this mid-point "maximum sustained yield." In the example below, maximum sustained yield, which is approximately half the maximum population size, would be 5,000 animals. At this level, the population should provide the maximum production, survival, and available surplus animals for hunter harvest. Also, at this level, range habitat condition should be good to excellent and range trend should be stable to improving. Game damage problems should be lower and economic return to the local and state economy should be higher. This population level should produce a "win - win" situation to balance sportsmen and private landowner concerns.

A graph of a hypothetical elk population showing sustained yield (harvest) potential vs. population size is shown (Figure 3). Notice that as the population increases from 0 to 5,000 animals, the harvest to sustain the population at this size also increases. However, when the herd reaches maximum sustained yield at a population size of 5,000 elk, resources become scarcer; survival rates begin to decline; and the harvest potential decreases. Finally, when the population reaches the maximum carrying capacity (10,000 elk in this example), the harvest potential will be reduced to zero. Also, notice that it is possible to harvest exactly the same number of elk each year with, for example, 3,000 or 7,000 elk in the population. This phenomenon occurs because the population of 3,000 elk has higher survival and/or reproductive rates (e.g., pregnancy rate, age at first reproduction) compared to the population of 7,000 elk, so there is proportionally more harvestable surplus.

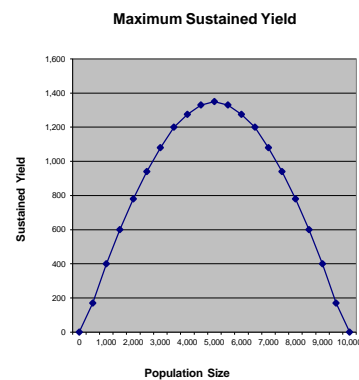


Figure 3. Maximum sustained yield occurs at moderate population size.

Realistically managing elk populations for maximum sustained yield is difficult, if not impossible, due to the amount of detailed biological information about habitat and population size required. Additionally, carrying capacity is not static; the complex and dynamic nature of the environment cause carrying capacity to vary seasonally and annually, and can also change as environmental conditions change. In most cases we would not want true maximum sustained yield management even if possible because of the potential for overharvest. Also there would be fewer mature of bulls because maximized harvest reduces the survival of individuals to reaching older age classes. However, the concept of maximum sustained yield is useful for understanding how reducing population densities can stimulate productivity and increase harvest yields. Knowing the exact point of maximum sustained yield is not necessary if the goal is to

conservatively reduce population size to increase yield. Long-term harvest data can be used to gauge the effectiveness of reduced population size on harvest yield.

Besides density-dependent factors that *regulate* populations, extrinsic factors that are independent of population density can also *limit* populations. These density-independent factors include weather, predator species, competitor species, and human activities. To further complicate matters, density-dependent and density-independent factors can interact with each other to either amplify or mitigate their overall effects on a population.

Description of Data Analysis Unit

Location

The Frying Pan River Elk Data Analysis Unit (DAU) E- 15 is located in northwest Colorado and consists of Game Management Units (GMU) 44, 45, 47, and 444 (Figure 4). It is bounded on the north by the Colorado and Eagle Rivers and Interstate 70, on the east by Eagle River- Ten Mile Creek divide and the Continental Divide, on the south and west by Colorado Highway 82.

E-16 contains the Hunter Frying Pan Wilderness and Holy Cross Wilderness areas. The DAU lies in Pitkin, Eagle, and Garfield Counties. Major towns include Aspen, Basalt, Glenwood Springs, Gypsum, Eagle, Edwards, Avon, and Vail. Interstate 70, state highways 6 & 24 and 82, U.S. Forest Roads 412 (Gypsum Creek), 400 (Eagle-Thomasville), 514 (Red Table Mountain), Pitkin County Road 105 (Frying Pan River Road), and Cottonwood Pass Road provide the main access to the area.

Climate and Precipitation

The climate varies with altitude. Low elevations have moderate winters and warm summers, and high elevations have long, cold winters and short, mild summers. Precipitation varies from 17 inches annually at 6,000 feet elevation to 30-40 inches at 14,000 feet elevation. Prevailing winds are out of the west and southwest. Temperature generally ranges from a low of -20 degrees F to a high of 95 degrees F. Deep snow at higher elevations forces the elk to winter at the lower elevations, on wind-swept ridges, or warmer south and west-facing aspects where more snowmelt occurs. Moisture comes throughout the year, although winter and spring months have more precipitation than summer and fall months.

Topography

DAU E-16 is dominated by the many high mountain ranges such as the Williams Mountains, Red Table Mountain, Hardscrabble Mountain and Holy Cross Wilderness Area Mountains with many peaks higher than 11,000 feet above sea level. The center of the DAU consists of Red Table Mountain (11,000 to 12,000 feet). The landscape slopes down to the north or west to the Roaring Fork, Eagle, and Colorado River valley floors (around 6,000 to 7,000 ft.) Elevations range from a low of around 5,763 feet above sea level at the NW corner of the unit (Colorado River at Glenwood Springs) to the high of 14,005 feet above sea level at Mount of the Holy Cross Peak.

All natural surface water in this area drains into the Colorado River, mostly through the Roaring Fork and Eagle Rivers. The DAU contains part or all of the Roaring Fork, Frying Pan, Cattle Creek, Lime Creek, Lake Creek, Brush Creek, Cottonwood Creek, Gypsum Creek, Beaver Creek, Cross Creek and Homestake Creek.

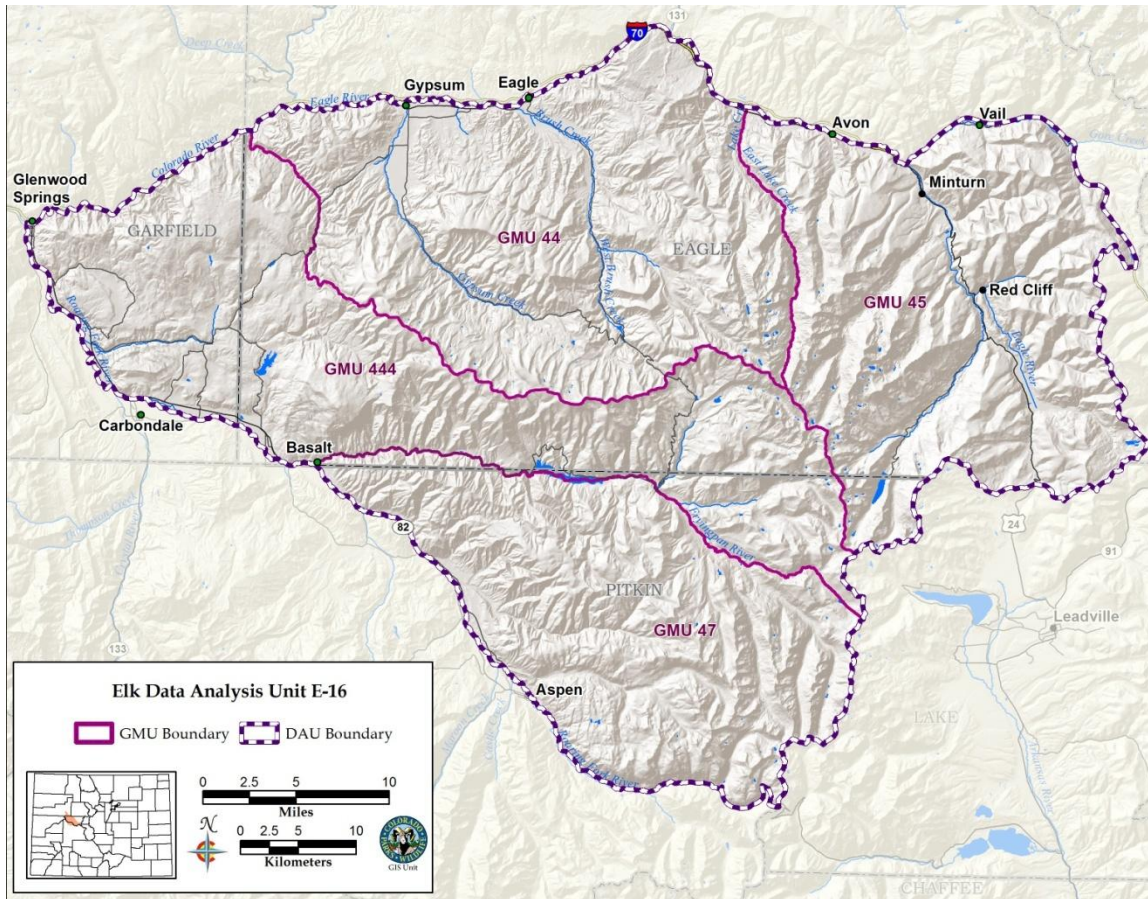


Figure 4. Location of elk DAU E-16.

Vegetation

Vegetation types in this unit are largely determined by elevation and aspect (Figure 5). The mountain peaks above approximately 11,600 feet contain mostly bare rock or alpine communities. Spruce-fir grows mostly between the elevations of 8,000 and 11,600 ft. Aspen and aspen-conifer mixes dominate the slopes from 7,000 to 8,500 feet. Mountain shrubs show up on lower slopes near 7,000 feet. Pinyon-juniper covers the lower foothills, and sagebrush parks appear on the more level sites as elevation drops. Riparian vegetation runs along the creeks and rivers. Elk prefer a diversity of vegetation types in close proximity to cover and forage.

The vegetation in this DAU can be categorized into five main groups: cropland, riparian, rangeland, forest land, and alpine.

Cropland is found in the valleys at the low elevations and is mostly hay grounds of timothy, orchard grass, wheat-grasses, and alfalfa. Much of this habitat type has been lost due to

land development in the Roaring Fork and Eagle River Valleys. Some of the better cropland areas occur in the Spring Valley, Gypsum Creek and Brush Creek areas.

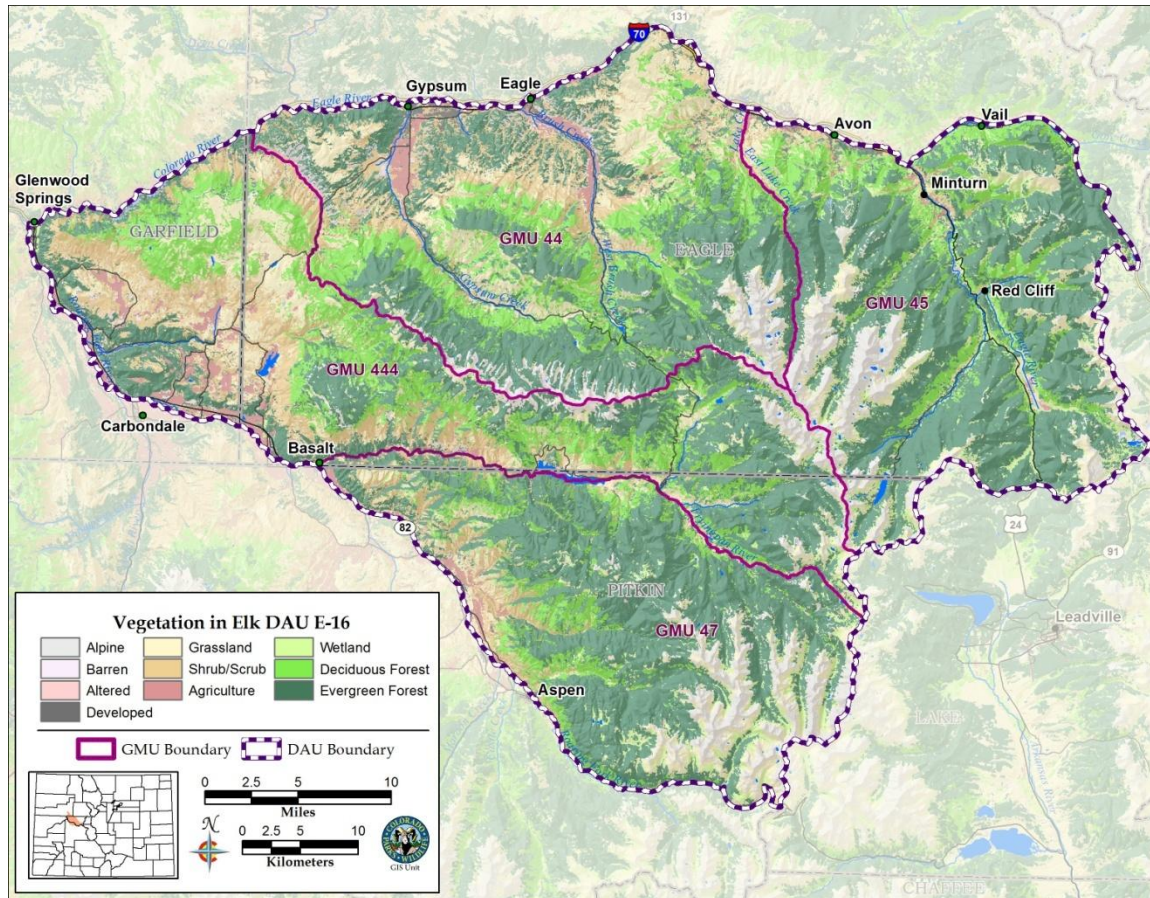


Figure 5. Vegetation types in elk DAU E-16.

Riparian vegetation is found along the major creeks and rivers. This community supports the greatest number and diversity of plant and animal species. Cover types range from spruce-fir, blue spruce, Douglas fir, ponderosa pine, aspen, narrowleaf cottonwood, and various species of willow. Some of the largest riparian areas occur along the Roaring Fork and Eagle Rivers.

Rangelands consist of sagebrush, mountain shrubs, Gambel's oak, and grassland communities. Sagebrush is the most common land cover at the lower elevations. Rabbit brush, western and slender wheatgrass, and native clovers commonly grow with the sagebrush. Mountain shrubs include serviceberry, snowberry, mountain mahogany, and Gambel's oak. The shrublands' grasses, forbs and browse provide an important forage source for elk in the winter, spring and fall transition months. Grasslands occur on the more level sites in forested areas (large bunchgrasses such as Thurber's fescue, wildrye, needlegrass, and broome) and in the alpine areas (Idaho and Thurber's fescue, Sandberg bluegrass, blue bunch wheatgrass mixed with forbs).

Forest communities fall into 5 major groups: pinyon-juniper, aspen and aspen-conifer mix, Douglas fir, lodgepole pine, and spruce-fir. Pinyon-juniper covers the foothills. They

provide good thermal and escape cover but poor forage. This type is well represented on the lower elevations just south of the Eagle River. Aspen and aspen-conifer mixes occupy the middle elevations. The understory consists of emerging conifers (where aspen is not the climax species), lush grasses and forbs, and some shrubs. This community provides important cover and summer forage areas for elk. Some of the larger aspen stands are located in the Beaver Creek and Cottonwood Pass area. Douglas fir shares the middle elevation zone mostly on the moister sites on north facing aspects, but is much less represented than the aspen ecosystems. It is a long-lived species valued for wildlife habitat diversity, scenic value, and big game cover. Lodgepole pine grows in even aged stands generally above the aspen and below the spruce-fir. In mature stands, the dense overstory limits the growth of understory forage, but provides good cover. This type is well represented in the middle elevations along the Frying Pan River and in the Vail area. Throughout portions of the DAU, the lodgepole stands have been infected by pine bark beetle. There will be a significant ecosystem-wide change that occurs when the infected trees die and are harvested or simply fall to the ground. The overstory will be reduced and there will be a conversion to grass and forb type vegetation. Spruce-fir (Engelmann Spruce, Subalpine Fir) dominates the higher elevations up to tree line. This habitat provides excellent summer cover and forage site for elk. This is the most common forest type in the Holy Cross and Hunter-Frying Pan Wilderness areas.

Alpine sites occur in the high mountain peaks and basins. Grasses, sedges, and numerous forbs are present. Short willows grow in moister areas. These sites provide excellent summer forage areas and a place for elk to avoid the pesky insects of summer.

Habitat Resource and Capabilities

Land Status

The Frying Pan River DAU E-16 covers >3,500 km² of land area. Four-fifths of the DAU is public land, and one-fifth is private (Table 1 and Figure 6). Holy Cross and Hunter-Fryingpan Wilderness areas make up 21% of the DAU.

Table 1. Area (square kilometers) by GMU and land status in elk DAU E-16. 1 km² = 0.386 mi² = 247 acres. "Other" includes city, county, land trust, and non-governmental organization lands.

Land Manager	GMU 44	GMU 45	GMU 47	GMU 444	DAU E-16 total	% of DAU
BLM	221	0.0	16	85	322	9%
USFS	539	773	678	524	2,514	71%
CPW	5	0.4	2	19	26	0.7%
Private	202	90	60	331	683	19%
Other	9	6	5	1	21	0.6%
Total area (km²)	976	869	761	960	3,566	100%
% of DAU	27%	24%	21%	27%	100%	

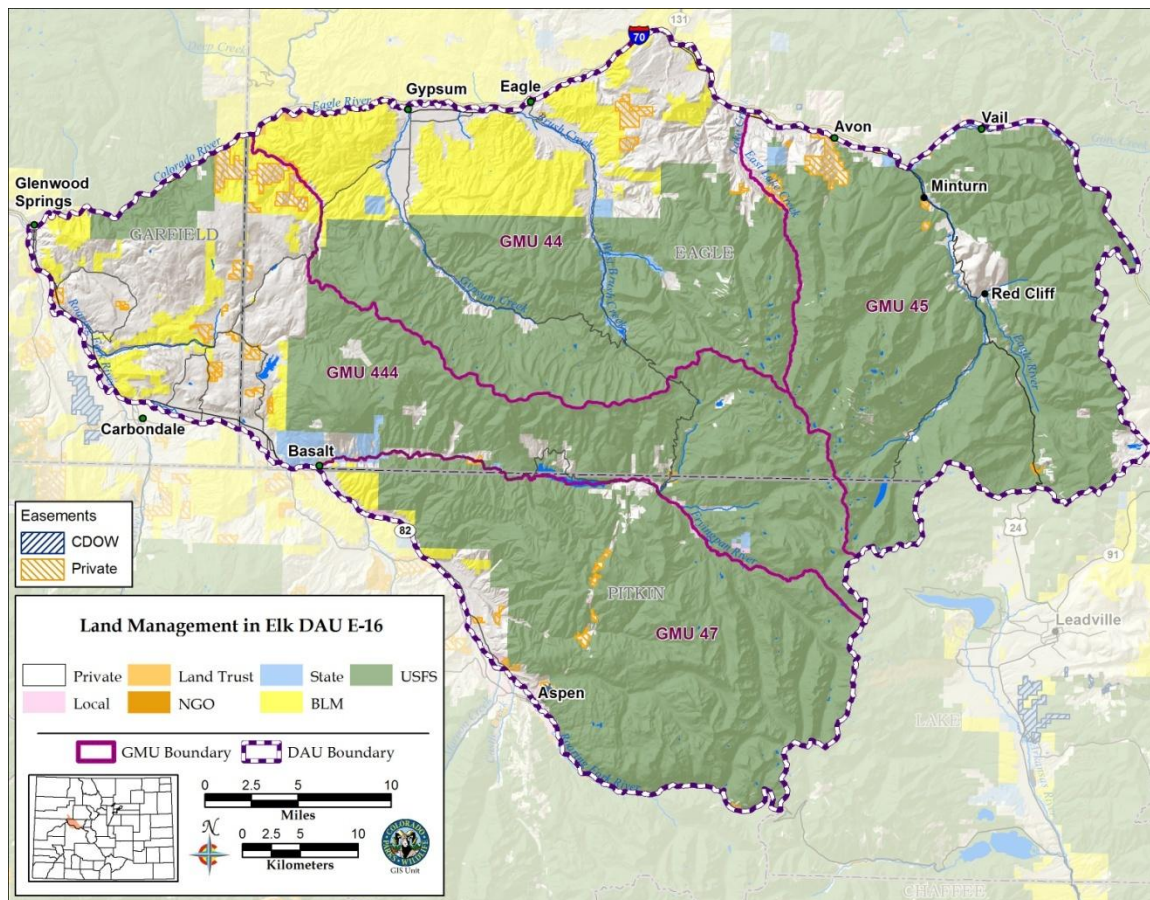


Figure 6. Land management status in elk DAU E-16.

E-16 contains 1,135 km² of elk winter range (Figure 7). Roughly 1/3rd of winter range is private land and 2/3rd is public land (Table 2). Compared to their summer range, the lower elevations where elk spend winter are areas of greater human population and land development. Winter range dates are from December 15 to April 15 (in most areas).

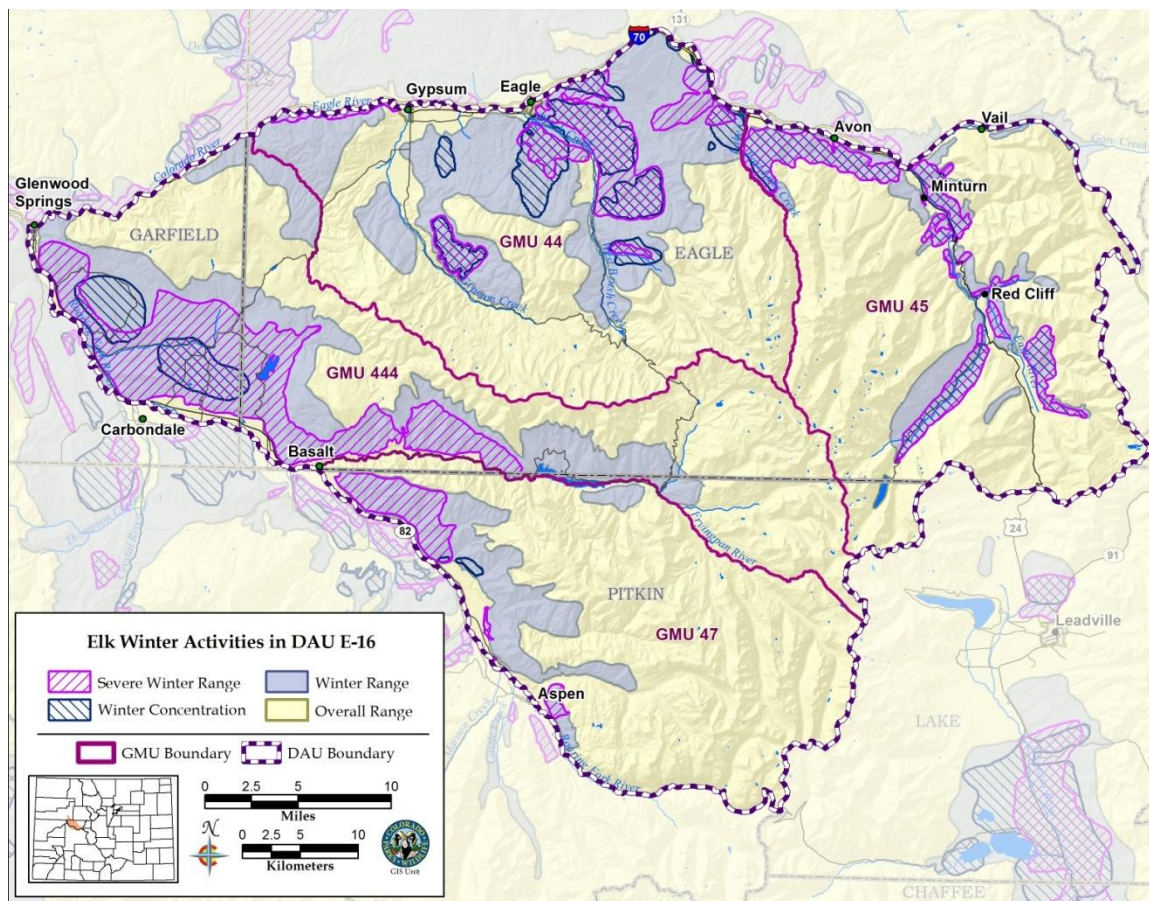


Figure 7. Elk winter range in DAU E-16.

Table 2. Elk winter range area (square kilometers) by land manager in elk DAU E-16. 1 km² = 0.386 mi² = 247 acres. “Other” includes city, county, land trust, and non-governmental organization lands.

Land Manager	Area	% of DAU
BLM	254	22%
USFS	432	38%
CPW	19	2%
Private	417	37%
Other	14	1%
Grand Total	1,135	100%

E-16 contains 440 km² of severe winter range (Figure 7). Severe winter range is defined as that part of the overall range where 90% of the individuals are located when the annual snowpack is at its maximum and/or temperatures are at a minimum in the two worst winters out of ten. There are 235 km² of winter concentration areas (Figure 7). Winter concentration areas

are defined as areas on the winter range that have a density of at least 200% more elk than the surrounding winter range density in the average five winters out of ten.

Land Use

The largest industry in the area is tourism. Tourism is based on the scenic beauty of the land and the recreational opportunities it provides. The Hot Springs Pool and the Vapor Caves are adjacent to this DAU. Vail and Beaver Creek ski areas are in GMU 45, and GMU 47 is adjacent to the 4 ski areas in Aspen and Snowmass. These areas have become four-season resorts that draw visitors for year-round recreation with skiing, golf, hiking, mountain biking, and numerous other outdoor recreational activities.

Hunting and fishing generate substantial economic revenue (BBC Research & Consulting 2008). Big game hunting draws hunters from all over the country to the DAU. Backpackers, day hikers, and mountain climbers use the two wilderness areas (Holy Cross and Hunter-Frying Pan) in the unit. Hikers, campers, mountain bikers, wildlife watchers, antler shed hunters, four-wheelers, snowmobilers, and cross country skiers increasingly use the abundant public lands. Anglers fish the “Gold Medal”-status Frying Pan and Roaring Fork Rivers and Gore Creek and the many high lakes. Reudi Reservoir provides recreation for wind surfers, skiers, sail boaters, motor boaters, and fishermen. Commercial rafters and float fishing guides operate on the major rivers. Motels, restaurants, gift shops, gas stations, and all the local businesses benefit from these visitors. Over the past few decades, however, the tremendous increase in recreational activity has become a source of disturbance and competition with wildlife for public lands. (See “Current Management Issues” section for further discussion on recreation impacts.)

Construction and real estate development and sales is the second largest industry in the area. Many visitors and the people who serve them have decided to build homes in this area. Unfortunately many of the new developments are in elk and mule deer winter range. Forty-eight percent of the elk winter range is privately owned, much of which has already been or may be subject in the future to land development. In the past 20+ years, much of the private lands along the valley bottoms and adjacent slopes have been subdivided and developed. Amount of development varies from dense suburban housing to larger ranchettes. The human population in counties in and near E-16 has grown by 1.4 to 2.4 times from 1990 to 2010, with the fastest growth occurring in Garfield and Eagle Counties (Appendix 1).

Logging contributes only a very small part to the local economy. Timber harvesting in the area has been ongoing since the 1900s. The 1950-60s spruce bark beetle outbreak killed the majority of mature spruce, and accessible areas were heavily logged through the late 1980s. In the past, timber stands were logged using a variety of methods including shelterwood, patch clearcut, group selection and salvage harvests. Current timber stands are composed of Engelmann spruce, sub-alpine fir, Douglas-fir, lodgepole pine, aspen and small amounts of Ponderosa pine. Most of the timber stands are mature and considered susceptible to insects, disease, and other stressors. Recent mountain pine beetle infestations in lodgepole pine stands have led to increased harvesting activities through clearcut, patch cut and sanitation/salvage harvests. Logging in GMU 444 in the past centered on Basalt Mountain, Red Table Mountain, and the Thomasville-Eagle Road. The Forest Service has current and future logging plans for the Lime Park, Jakeman, Coyote Park, Crooked Creek, and Burnt Mountain areas. For GMU 44,

past logging centered in the Hardscrabble, Leeman Gulch, Fulford, and Billings Springs on Forest Service land. The BLM logged at the base of Hardscrabble Mountain in the past, and currently has no future plans for logging. The Forest Service is currently looking at logging the Fulford, Hardscrabble, and Billing Springs/Crooked Creek area within the next 10 years. Most of the logging in GMU 45 on Forest Service land in the past was centered around the Vail ski area, Shrine Pass, Grouse Mountain, Camp Hale, and Tigiwon area. Current and future logging plans on Forest Service lands in GMU 45 include the Vail and Beaver Creek Ski areas, West Grouse Creek, Tigiwon and No Name areas. In GMU 47, logging occurred around Aspen, Woody Creek, and Lenado from the 1890s to the 1960s. In 2009 and 2010, 2 acres of beetle-killed lodgepole pine were removed from Smuggler Mountain in Aspen. In 2011, the USFS removed 200 acres of selected beetle-killed lodgepole on Red Mountain outside of Aspen.

Public land in the DAU is used for livestock grazing, although this use has declined with the general decline in agriculture in the DAU. Classes of livestock using these allotments include mostly cattle and horses, and some sheep and goat. The BLM has all or part of 40 active grazing allotments in the DAU. Use occurs primarily in the spring, summer, and fall. The USFS has 30 active grazing allotments occurring totally or partially in the DAU. The period of livestock use is variable, but primarily occurs from late June through October. Domestic livestock can compete with elk and mule deer for herbaceous forage, although moderate levels of grazing can also help promote shrub growth by limiting grasses. Grazing practices have changed greatly since the 1960s, such that impacts of livestock on the land are much less than earlier in the late 19th and early 20th centuries.

Some private lands are irrigated for hay production or are kept as dry land pasture. These private lands are beneficial to elk and deer because they preserve open space in their winter range. However, as discussed in the “Current Management Issues” section below, if unharmed, these properties become refuges for elk and deer from hunting pressure, making management of local sub-populations of elk difficult, and these areas may experience game damage issues.

Habitat Condition and Capability

Elk winter range in E-16 is in poor to fair condition due to maturation and succession of plant communities, as well as habitat loss and fragmentation due to land development. As a result of decades of fire suppression and lack of large-scale habitat improvement projects, pinyon and juniper woodlands have encroached upon sagebrush shrublands and converted them to much less productive sites. Pinyon and juniper stands tend to be mature with a closed canopy that severely reduces understory vegetation. Also, many of the mixed mountain and sagebrush shrublands are over-mature and less productive. Browse seedlings and young plants are not abundant, and in many areas the grass/forb understory is sparse and lacks diversity.

Heavy livestock grazing, in combination with drought, occurred on many rangeland areas in western Colorado from the late 1800s to the 1960s. Since the late 1960s the BLM and USFS have developed improved grazing management approaches that have addressed many of the historic livestock problems. Also, due to the general decline in agriculture in the area, there is much less public land grazing today compared to 40+ years ago.

Higher elk populations in the 1990s and 2000s combined with loss of winter range on private lands to land development resulted in higher elk densities on public land winter range, which probably contributed to heavy browsing of shrubs. Heavily browsed shrubs are evident on winter range areas in some parts the DAU. However, in the past decade, warmer, drier winters have allowed elk to use mid-elevation areas that were historically traditional range during early and late winter. This distributional shift, along with the reduced elk population, has reduced some of the elk grazing/browsing intensity on traditional winter range.

Land development in the Roaring Fork Valley and along the I-70 corridor has been constant from the 1970s to the mid-2000s, resulting in significant loss and fragmentation of winter range habitat. While elk still might winter in these areas, the land is not as productive due to loss of habitat to roads, structures, fences, and vegetation alterations, and elk must face the added stress of human disturbance. The growth of residential developments adjacent to public lands has also made it more difficult to achieve habitat improvement projects because some homeowners object to habitat changes that will impact their views or otherwise affect their property.

The current pine bark beetle outbreak has affected portions of E-16, mostly in GMUs 44 and 45. The USFS has several active or future timber sales intended to rejuvenate lodgepole stands by salvaging beetle-killed trees (see Land Use section above). The death of bark beetle-killed lodgepoles and the consequent opening of the forest canopy are expected to enhance understory forage for elk and deer. This effect may at least partially substitute for forest fires as a habitat improvement, although nutrient cycling in burned vs. cut areas is not the same.

Various small-scale habitat improvement projects, including prescribed burns, removal of pinyon-juniper encroachments, and improvement of sagebrush, oak, and mountain shrub habitats, have been conducted or are on-going (Table 3). Notably, in 2011 the USFS began a 10-year, >45,600-acre wildlife habitat improvement project on the Aspen-Sopris District involving prescribed fire and mechanical treatments of pinyon-juniper, shrublands, and aspen habitats (USDA Forest Service 2011). These projects include ~28,000 acres of elk winter and transitional range in GMUs 44 and 47. The Forest Service also has plans to improve sagebrush habitats in GMU 44 through pinyon-juniper removal and sagebrush mechanical treatments. Due to the loss and degradation of important elk and deer winter range throughout Colorado, the continued conservation and rejuvenation of existing habitat is paramount.

Table 3. Habitat projects in DAU E-16. * = no information available at present.

<u>Dates</u>	<u>Location</u>	<u>GMU</u>	<u>Acres</u>	<u>Treatment Type</u>	<u>Agency or Organization(s)</u>	<u>Cost</u>
Past and ongoing habitat treatment projects						
1999	Arrowhead	45	334	Fertilization	Mitigation trust	\$ 18,291
2000	Arrowhead	45	166	Fertilization	Mitigation trust	\$ 8,669
2001	East Lake Creek Ranch	45	320	Fertilization	Mitigation trust	\$ 14,400
2003	Bear Gulch	44	350.5	Fertilization	RMEF,HPP, mitigation trust	\$ 15,000
2004	East Lake Creek Ranch	45	320	Fertilization	RMEF, HPP, mitigation trust	\$ 25,518
2005- 2009	WRNF - Eagle burn block project, Dewey Park	44	712	Prescribed burns	USFS	*
2006	East Lake Creek Ranch	45	332	fertilized	HPP, mitigation trust	\$ 31,208
2006	Basalt State Wildlife Area (SWA)	444	*	P-J removal	CPW/HPP	*
2006- 2007	Hardscrabble	44	2,000	Mountain shrub mowing, reseeding	Mule Deer Foundation, Eagle Ranch Wildlife Mitigation fund	*
2007	Basalt SWA	444	*	Prescribed burn	CPW/HPP	*
2009	Basalt SWA	444	200	P-J removal	CPW/HPP	*
2009	Arrowhead/Beaver Creek	45	332	Fertilization	HPP, mitigation trust	\$ 39,840
2011	Basalt SWA	444	160	P-J removal	CPW/HPP	\$ 16,000
2011	Tigiwon	45	500	Clear cut beetle-killed lodgepole	USFS	
2011- Present	Gypsum Habitat Treatments	44	1150	Seeding, Hydro-ax, Sagebrush Treatments	BLM, Town of Gypsum	\$60,000 (so far)
2011- 2021	White River National Forest, Aspen-Sopris ranger district (Treatment units #11, 13, 14, 15, 20, 30, 31, 34, 35, 36, 38)	444, 47	28,368	Mechanical and prescribed fire – oak, aspen, P/J	USFS	~\$7 million
2012- 2018	White River National Forest, Eagle Holy Cross ranger district - Sagebrush Enhancement project	44 (and 36)	*	remove pinon pine juniper, mow sagebrush, burn sagebrush, plant/seed grass forbs sagebrush	USFS	*
Future anticipated treatments						
2013	Seven Castles/USFS	444	100	Prescribed/mechanical/h and treatment for brush clearing	USFS/CPW	Need \$15,000
2013	USFS - Eagle burn block project, Dewey Park, Hell Hole, Suicide Mountain	44	3,500	Prescribed burn	USFS	*

Conservation Easements

Conservation easements or similar protection comprise 57 km² (8%) of private lands in E-16 (Figure 6), 61% of which is on elk winter range. Only 8% of private land elk winter range is held in conservation easements. Because winter range is highly limited in this DAU and because of the high monetary incentive for land development in this area, conservation of any remaining winter range habitat, as well as calving areas, is imperative.

Agricultural Conflicts

Game damage due to elk is less of a problem in the DAU compared to in the 1980s and early 1990s due to the general decline in livestock and agricultural uses. Since 1995, 13 claims totaling \$16,961 in elk-related damages have been paid. There are still a number of working ranches in E-16 that sometimes experience damage due to elk, especially in hard winters.

Herd Management History

Overview of Procedures to Estimate Population Size

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 most cases fewer than 30% of the animals can be observed and counted.

Biologists estimate the elk population size in the DAU using a computer modeling process. Starting in the early 1970s, Colorado Division of Wildlife (CDOW) used a computer modeling program called ONE POP. In the early 1980s, CDOW switched to a personal computer program based program called POP II. After 1999, CDOW has used a computer spreadsheet model to predict population size.

In 2008, these spreadsheet models were standardized statewide based upon population modeling methods developed by White and Lubow (2002) which integrate multiple biological factors, including mortality rates, hunter harvest, wounding loss and annual production. These models are aligned on post-hunting season age and sex ratios measured during winter classification flights, and for some units, density estimates derived from line transect and quadrat surveys. At present, these population modeling methods represent CPW's best estimate of populations. It is recommended that the population estimates presented in this document be used as an index or as trend data and not as an absolute estimate of the elk population in the DAU. As better information become available, such as new estimates of age-specific or sex-specific survival rates, wounding loss, sex ratio at birth, density estimates, or modeling techniques, better population estimates may be derived in the future.

Post-Hunt Population Size

Historically elk were abundant throughout western Colorado. By the early 1900s, market hunters supplying the mining industry in Leadville and Aspen had depleted the elk herds. Between 1905 and 1913, there were no elk sightings reported. Elk were reintroduced into the Roaring Fork Valley from transplants from Yellowstone National Park: 16 elk were released on

Smuggler Mountain (now in GMU 47) in 1913; 22 more elk were released on Smuggler in 1914; and 24 elk were released near Meredith (now in GMU 444) in 1915. Since these reintroductions, the elk herds in the area slowly increased over the 20th century.

In recent decades, the population of the herd increased through the 1980s and 1990s, peaking in 1999 at an estimated 13,000 elk (Figure 8). During most of the 1980s the population objective was 3,500 elk. In 1988, the population objective was raised to 5,100 elk. With increased cow harvest in the late 1990s/early 2000s and declining calf:cow ratios over the past 3 decades, the population was reduced toward the previous objective established in the 1988 herd management plan. The 2011 post-hunt population estimate for E-16 was an approximated 7,100 elk.

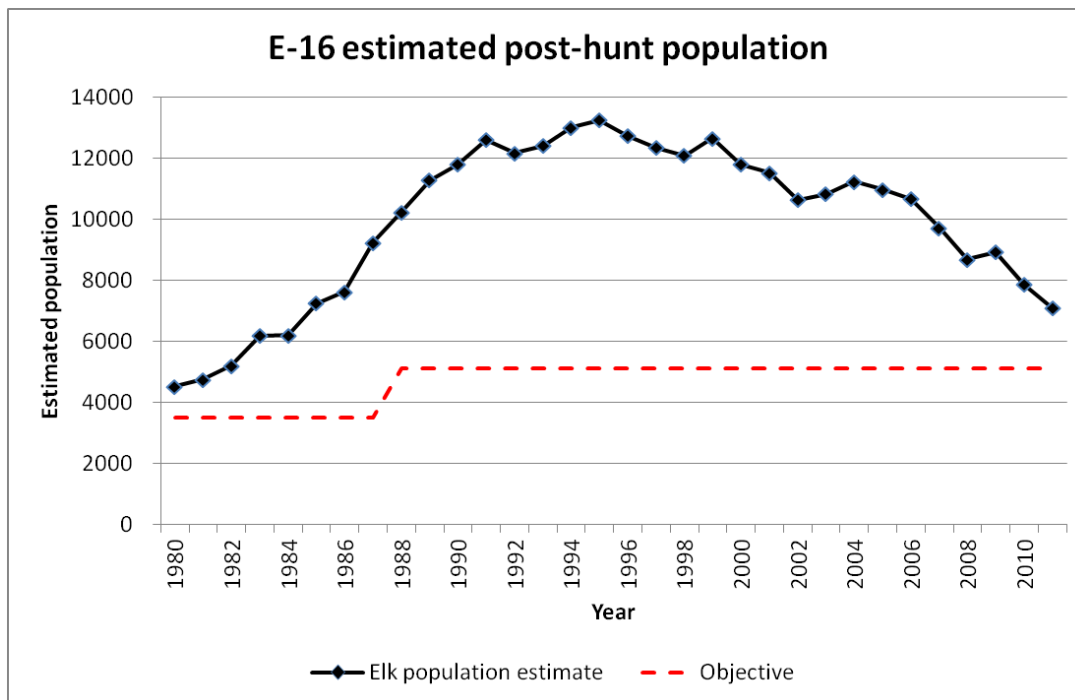


Figure 8. Post-hunt population estimate for elk DAU E-16, 1981-2011.

Post-Hunt Herd Composition

Age and sex classification surveys using a helicopter have been conducted in the DAU since 1969. The DAU was surveyed every 1-3 years in the earlier decades. Starting in 1996, flights have been conducted every year. These surveys are flown “post-hunt” in December/early January before the bulls start to shed their antlers. Loss of calves due to starvation and predation typically occurs after this time. During severe winters, the number of calves surviving through the whole winter could be significantly lower than this early winter estimate.

Calf ratio

The post-hunt calf:cow ratio, expressed as calves per 100 cows, is used as an index of herd productivity. This index grossly reflects the combined summer natality and summer-to-early winter survival rate of calves relative to cows.

In E-16, the post-hunt calf:cow ratio has been in a general decline for almost the past 2 decades (Figure 9). In the 1970s and 1980s, the calf ratio was relatively stable, averaging 57 (excluding an outlier observation in 1975) in the 1970s; 56 calves:100 cows in the 1980s; and 54 in the 1990s. However, the observed calf ratio began declining in the late 1990s, and by the 2000s, the average was 40. The current 3-year average (2009-2011) is 35.

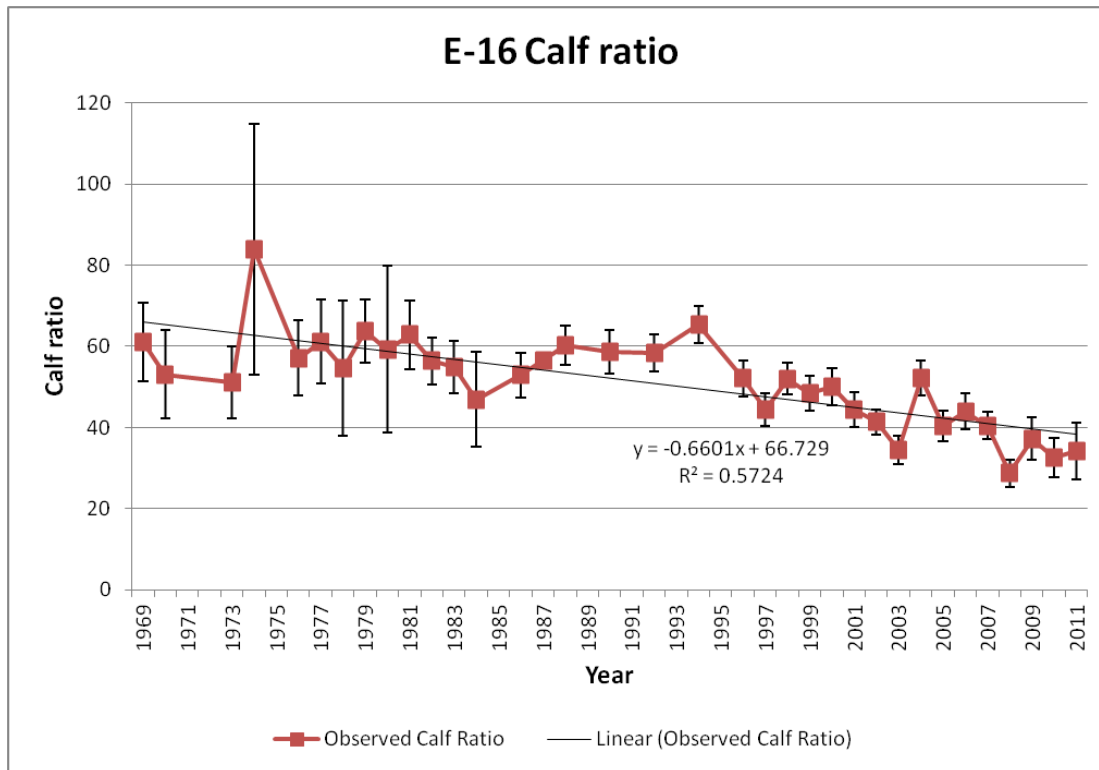


Figure 9. Calf ratio (calves per 100 cows) observed in elk DAU E-16, 1969-2011. Error bars indicate the 95% confidence intervals.

Bull Ratio

The post-hunt bull:cow ratio is used as an index of bull quality of the herd. Bull ratio (bulls per 100 cows) in E-16 declined through the 1970s and early 1980s. However, the bull ratio has increased since antler-point restrictions were enacted starting in 1986. From 1986-1999, only 4-point or larger bulls were legal in 1st and 2nd rifle seasons in efforts to increase the bull ratio. From 2000-present, this antler-point restriction was expanded to all seasons. Bull ratio has increased over this timespan (Figure 10).

The average bull ratio from 1969-1985 (excluding one outlier observation in 1978) was 17 bulls:100 cows; the average from 1987 through 1999 (no survey was done in 1986) was 20 bulls:100 cows; and the average from 2000-2011 is 26 bulls:100 cows. The current 3-year average (2009-2011) is 28 bulls:100 cows. In most years, the bull ratio objective of 20, set in the 1988 herd management plan, has been met or exceeded under the current harvest management.

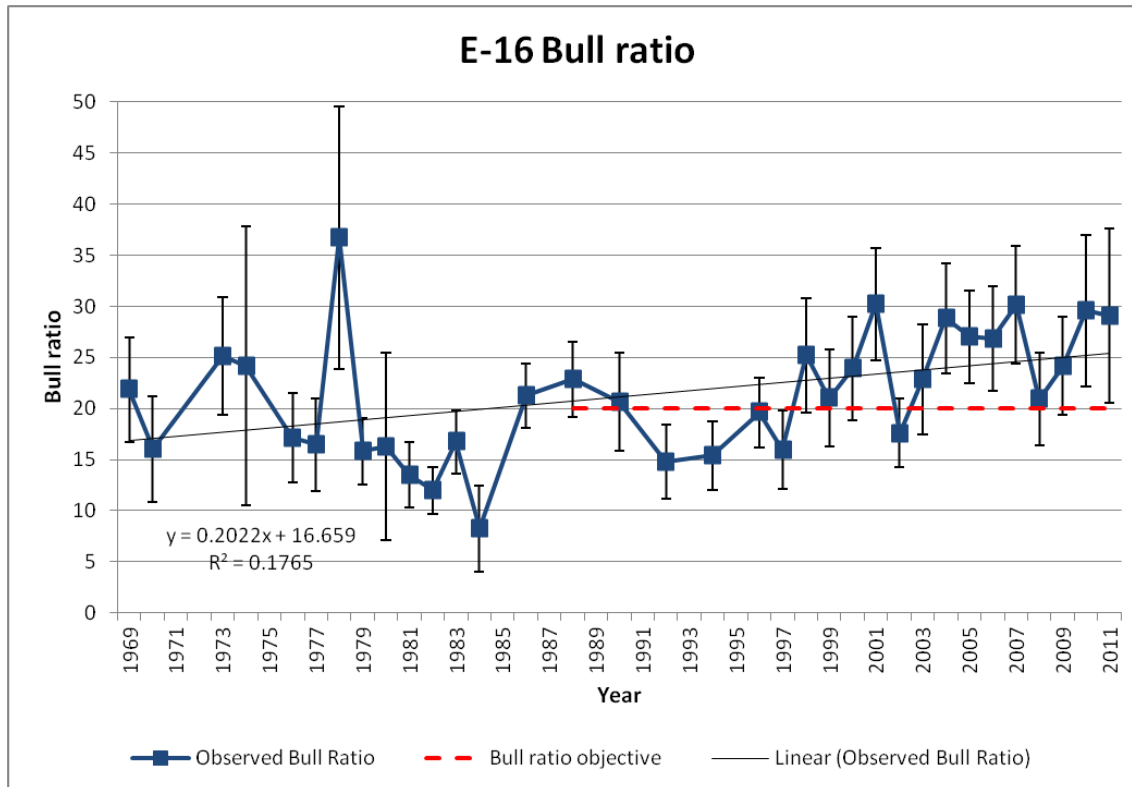


Figure 10. Bull ratio (bulls per 100 cows) observed in elk DAU E-16, 1969-2011. Error bars indicate the 95% confidence intervals.

Harvest History and Seasons

Over the last 30 years, annual elk hunting seasons in E-16 have generally included an either-sex archery season, a limited muzzleloading season and unlimited bull and limited cow rifle seasons. The Wildlife Commission approved three combined deer and elk rifle seasons to spread hunter pressure in 1986 after hunter crowding became an issue.

Low bull ratios in the 1970s and early 1980s prompted the Wildlife Commission to approve bull antler point restrictions (APR) in 1986 for the first and second combined seasons. If a DAU had been able to maintain reasonable bull ratios of at least 12 to 15 bulls per 100 cows in the past, spike elk were legal to harvest in the archery, muzzleloading and third rifle seasons. DAU E-16 met this qualification. In E-16, APR followed this seasonal pattern until 2000 at which time most of the bull elk hunting in the state, including in E-16, was restricted to four points or better.

Favorable weather through most of the 1980s and 1990s, combined with limited public access in portions of the DAU, and increased developments resulting in lower harvest than desired, contributed to the elk population growing well above the herd's population objective.

To reduce the population toward the objective, a number of measures have been taken to encourage cow harvest. Since 1995, an early cow season has been in place in GMU 45 to achieve some additional harvest in that unit. In 1998, over-the-counter/unlimited either-sex licenses for 2nd and 3rd seasons were available instead of limited antlerless licenses. However, the following

year, 2nd and 3rd seasons were reverted back to limited antlerless and over-the-counter bull licenses. Antlerless license quotas were raised in the early 2000s (Figure 11). Antlerless harvest did increase initially, but in part because of large private lands that function as refuges for elk, there is a limit to the amount of harvest possible. As license quotas were raised, success rate dropped off somewhat and many licenses went unsold. Antlerless license quotas were reduced in the mid-2000s to match demand for licenses with a realistically achievable amount of antlerless harvest. Since 2002 antlerless licenses in E-16 have been “List B” licenses, i.e., they can be purchased as a 2nd license. Also, to focus some harvest on private lands and redistribute elk onto public lands, private-land-only (PLO) antlerless licenses have been available in the DAU since 1993. Under the current season structure, PLO antlerless licenses in E-16 are valid from mid-August to mid-January.

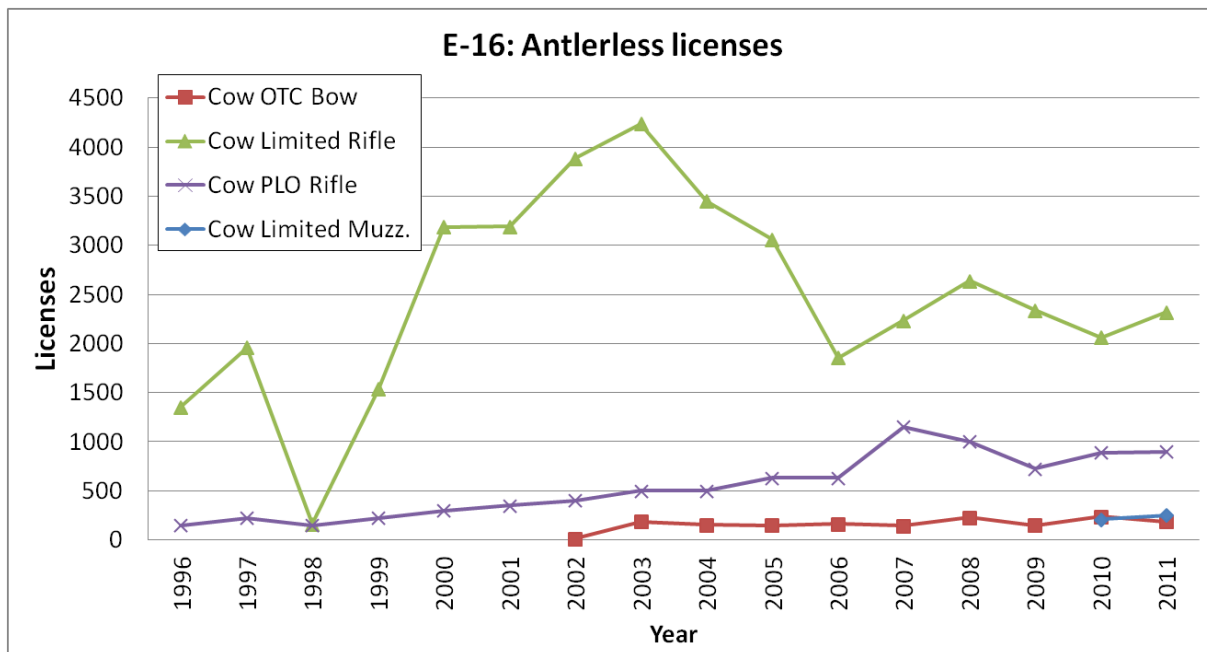


Figure 11. Antlerless license quotas for limited rifle and muzzleloader seasons and private-land-only (PLO) rifle seasons, and estimated number of licenses used in unlimited/over-the-counter (OTC) antlerless archery season in elk DAU E-16, 1996-2011. In 1998 only, 2nd and 3rd season limited antlerless and OTC bull rifle licenses were replaced with OTC either-sex licenses. Estimates for number of antlerless OTC muzzleloader licenses in the DAU prior to 2010 were not available at time of publication.

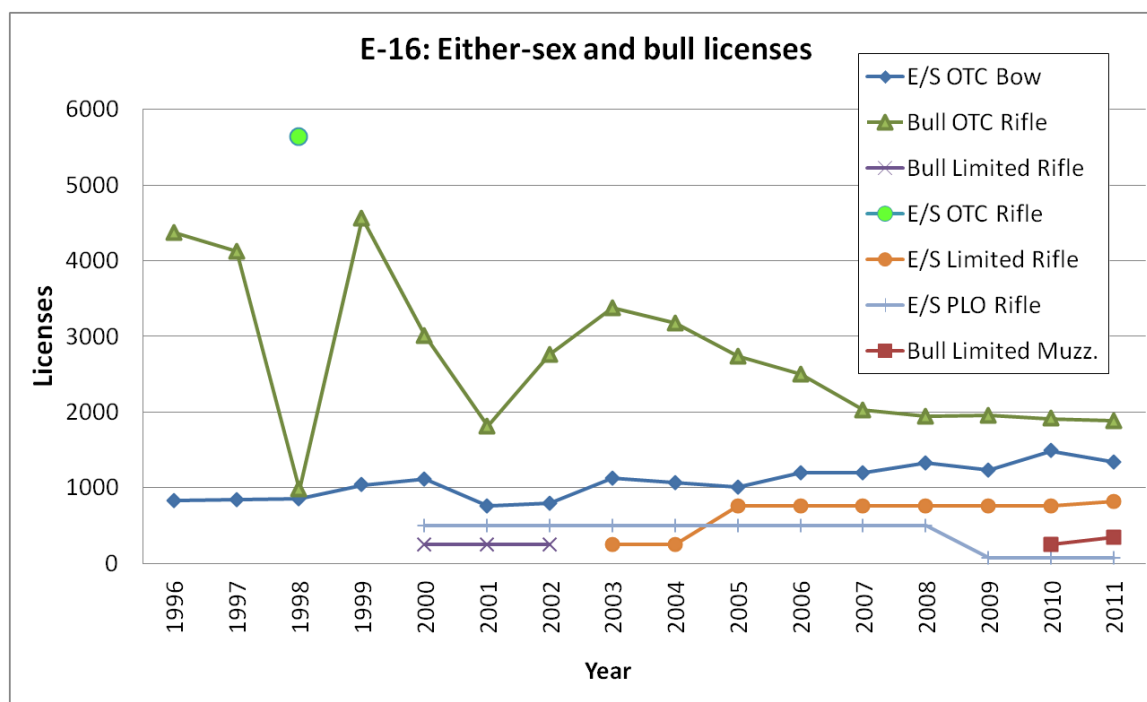


Figure 12. Estimated number of bull and either-sex (E/S) licenses used in unlimited/over-the-counter (OTC) rifle and archery seasons, and license quotas for limited muzzleloader, 1st, 4th, and private-land-only (PLO) seasons in elk DAU E-16, 1996-2011. Estimates for number of bull OTC muzzleloader licenses in the DAU prior to 2010 were not available at time of publication.

License Demand

For unlimited OTC bull licenses in 2nd and 3rd rifle seasons, the number of hunters who reported hunting in E-16 has dropped substantially since the mid-1990s and has leveled off recently at approximately 2,000 hunters annually (Figure 12). The number of archery hunters for has been growing over the past decade (Figure 11 and Figure 12). In the past 3 years, there have been about 1,300 either-sex and 200 antlerless archery hunters each year.

For most of the limited license seasons, there currently ample quota available to fulfill license demand (Appendix 2). Most of the antlerless licenses (all 4 regular rifle seasons and cow muzzleloader), as well as the either-sex 1st season PLO and 4th rifle, either never sell out or they sell out as leftover licenses. The early cow season in GMU 45, the either-sex 1st rifle licenses and the new (as of 2010) DAU-specific limited bull muzzleloader license have been selling out as 1st or 2nd choices in the draw.

Annual Harvest

The annual number of elk harvested increased from 1953 to the early 1990s. Over the past 3 decades, harvest has remained high with some fluctuations due to license numbers, hunter participation, and weather conditions during hunting seasons (Figure 13). The highest total annual harvest (2,190 elk) occurred in 2002, which was also the year that had the highest cow harvest (1,344 cows). The highest bull harvest was 1,022 which occurred in 1996. The lowest total annual harvest was 225 elk in 1954, which also had no antlerless harvest. The lowest bull harvest season was in 1953 when 184 bulls were taken.

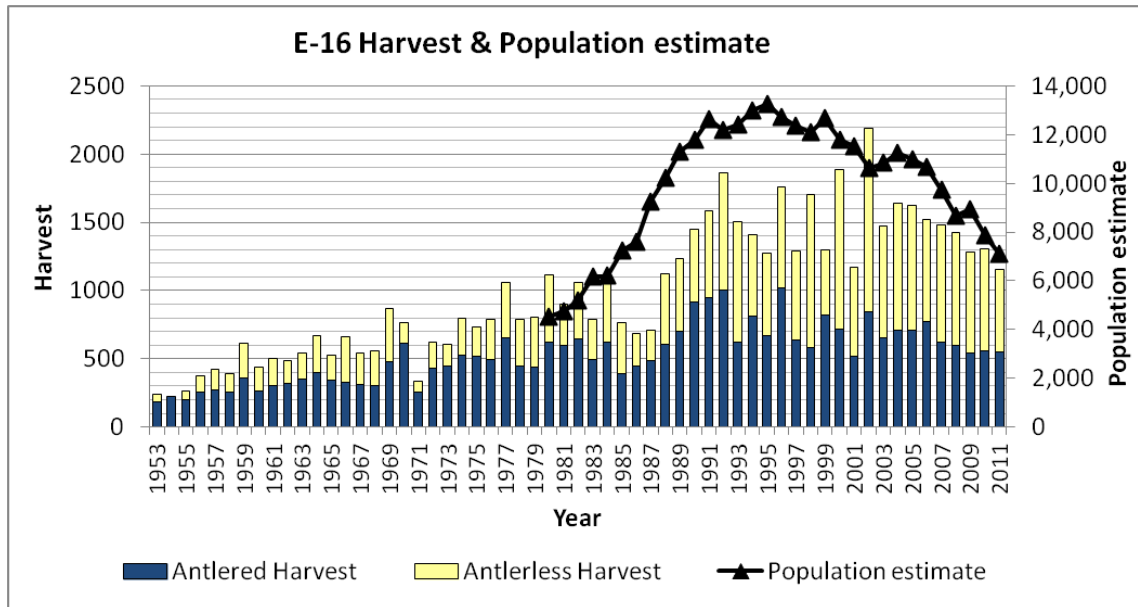


Figure 13. Annual harvest and population estimate in elk DAU E-16, 1953-2011.

Hunter Success

Hunter numbers have generally increased since 1954, although participation has recently dropped off somewhat since the peak in 2003 (Figure 14). Success rates have been fairly stable averaging 19% since 1970 (Figure 14). Over the past 10 years, there have been an average of 7,700 hunters per year, and the average success rate has been 20%.

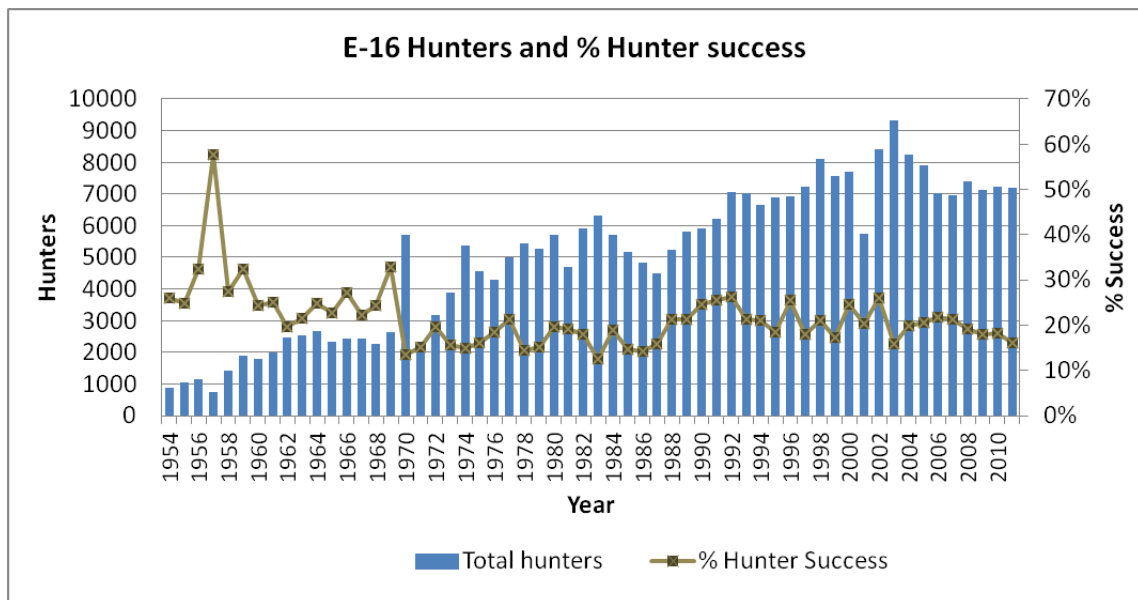


Figure 14. Number of hunters and harvest success rate in elk DAU E-16, 1954-2011. No data was available for 1953.

Current Management Status

Previous (1988 herd management plan) Objectives

Population Size Objective = 5,100 elk

Sex Ratio Objective = 20 bulls:100 cows

Current Population (post-hunt 2011)

Population Size Estimate = 7,100 elk

3-year Average Sex Ratio = 28 bulls:100 cows

Current Management Issues

1) Human disturbance

- a) *Recreation impacts* – Outdoor recreation, including hiking, dog-walking, cross-country skiing, mountain biking, ATV riding/4-wheeling, dirt-biking, snowmobiling, and antler shed hunting, has increased tremendously in the past 15-20 years. Altogether, these recreational activities are occurring throughout all elk seasonal ranges, particularly on winter and transitional ranges and during critical periods of winter and calving. Recreational use has expanded into year-round and even nighttime activities. Recent mild winters have also meant that areas without timing restrictions have opened up to biking, hiking, etc. earlier in the spring and later into fall. Even where restrictions are in place, they are often disregarded and go unenforced.

This heightened level of human activity on the landscape is a major disturbance to elk and other wildlife that can ultimately lead to reduced fitness, lower survival rates, and reduced reproductive success. For example, elk increased their travel time and decreased their foraging time in response to off-road recreation activity, with ATV riding producing the most change in behavior, followed by mountain biking, hiking, and horseback riding (Naylor et al. 2009). Summer calf ratios declined in response to experimental disturbance in the form of recreational hiking (Phillips and Alldredge 2000), but recovered to control levels in subsequent years when human disturbance was experimentally removed (Shively et al. 2005). Dogs both on- and off-leash also contribute to the harassment and mortality of wildlife (e.g., Miller et al. 2001 for mule deer). These behavioral stressors and additional mortality can reduce recruitment of calves into the population directly by limiting calf survival, as well as indirectly by pushing elk off of preferred feeding and bedding areas.

There is increasing demand for more recreational trails to be established, as well as frequent use and expansion of unofficial trails, all of which will impinge upon wildlife habitat. With human and wildlife activities now competing for the same lands, if wildlife are to be adequately protected, then wildlife conservation must be a primary value and consideration when planning land use. Measures such as timing regulations and restrictions on human recreational activities need to be enforced, especially during key seasons for elk and deer survival (wintertime through calving/fawning), to help reduce the detrimental impacts of recreation on these species.

Recreation pressure has also led to competition among ATV riders, mountain bikers, dirt bikers, and hunters in the fall for use of public lands. Complaints are becoming more common from hunters about other recreationists scaring elk and deer due to noise and the overall numbers and expansion of people using the landscape.

- b) *Land development* – Substantial land development along the I-70 corridor and in the Roaring Fork Valley has occurred in the past 3 decades. Valley bottoms and lower elevation slopes that were once elk winter range and transitional range have been severely developed and are no longer considered suitable elk habitat. Because of the high monetary value of land in the DAU, along with a decline in the livestock industry, there is great financial incentive for large ranches to subdivide and develop into residential housing. Conservation easements are difficult to secure because of the high cost of land. With over one-third of elk winter range in E-16 existing on private lands, but only 8% of these private lands protected under conservation easements, the need for conservation of the remaining habitat on both private and public lands is critical.

2) **Habitat availability and condition**

- a) *Limited winter range* - Winter snow forces elk down out of the higher elevations of the DAU to limited lower-elevation areas around 6,500-9,000 feet. Winter range is considered the most limiting factor for elk in Colorado and in this DAU. Less than one-third of the land area in E-16 serves as elk winter range. Compared to other DAUs in the area, E-16 is fortunate to have almost two-thirds of its elk winter range is on public lands. However, much of it has declined in quality due to long-term fire suppression resulting in habitat succession and also the increase in year-round recreation over the past 15-20 years. Much of the private land winter range around Beaver Creek, Eagle, Spring Valley, Missouri Heights, and Basalt to Aspen areas has been developed into residential housing.
- b) *Unfavorable range conditions* - As discussed in the Habitat Resource section, big game habitat condition on winter ranges is poor to fair. The causes of most range problems include plant successional movement towards later seral stage or climax communities as a result of fire suppression and lack of habitat improvement projects, as well as localized excessive big game use (a possible result of loss of traditional winter ranges to development, displacing and concentrating elk and deer on the remaining available habitat). Much of the landscape is composed of uniform-aged, old-growth shrubs that provide marginal nutritional value. Land development in this DAU has limited the use of prescribed burns on the adjacent public lands because of concerns about the risk of fire damaging personal property.

- 3) **Predation** – Large and medium-sized carnivores (black bears, mountain lions, coyotes) are frequently thought to be the cause of ungulate population declines and poor recruitment of young. Indeed, predation is often a major proximate cause of mortality for elk calves (e.g., Singer et al. 1997, Smith et al. 2006, Barber-Meyer et al. 2008, White et al. 2010). The effects of predation on prey populations are complex and vary with predator and prey densities and species composition, habitat cover and forage conditions, weather, body condition, and other biological and ecological factors (Singer et al. 1997, Smith et al. 2006, White et al. 2010, Griffin et al. 2011). When an ungulate population is close to its habitat

carrying capacity, the various sources of mortality (predation, harvest, disease, winter kill/malnutrition, etc.) are generally compensatory to each other. Compensatory mortality may span multiple seasons within a year, such that animals (usually young of the year) that are preyed upon in the summer might have otherwise died in the fall harvest or in the winter due to malnutrition or disease (Boyce et al. 1999).

Predator control is often suggested by the public to improve ungulate populations. Predator control may be effective when prey density is low relative to carrying capacity. For example, in an Idaho elk population thought to be below its carrying capacity, reducing black bear and mountain lion densities boosted summer calf survival (White et al. 2010) and calf ratios going into winter (C. G. White, Idaho Department of Fish and Game, *pers. comm.* 2012). However, predator control may be ineffective when prey populations are close to carrying capacity and when predation is compensatory to other sources of mortality (Bartmann et al. 1992, Ballard et al. 2001, Zager and Beecham 2006, Hurley et al. 2011).

Black bear, mountain lion, and coyote populations have likely increased in Colorado over the past several decades with the decline of sheep herding-associated kills and ban of poisons, and the readily available human foods (trash) for bears during years of berry failures. Locally, bear licenses in bear DAU B-11 have been increased up to 5-fold since 2009 and lion quotas in lion DAU L-6 were increased in 2011 to achieve higher harvest. Whether predator reduction has an effect on elk survival rates and recruitment depends on how close the elk population is to carrying capacity and how much impact other major factors, namely recreation and other human impacts, are also contributing to limiting the elk population.

- 4) **Low and declining calf ratio** - The calf ratio in E-16 declined over the past 30 years, paralleling trends across the western U.S. Low calf ratios are especially pronounced on the Roaring Fork and Frying Pan side of the DAU. This decline in calf recruitment is thought to be due to a suite of factors: intraspecific competition for forage, decrease in quality of forage, increase in predator populations, weather conditions, hunting, and human activity (Johnson et al. 2005). Nutrition is the ultimate determinant of a population's productivity, and the magnitude of the effects that other factors have on an elk population depend on the population's nutritional status (Johnson et al. 2005). Winter forage is often thought to be the most limiting factor, but summer and fall forage also determine nutritional status of elk going into winter, which in turn affects winter survival rates, pregnancy rates, and timing of breeding (Cook et al. 2004).

Despite managing E-16 purposefully for population reduction in efforts to reduce population density and improve the population's productivity, calf ratio has not rebounded as would be expected under density-dependent population dynamics. Continued declining calf ratio could be due to a combination of the impacts discussed above (#1-3).

- 5) **Private land refuges** – Large private ranches that do not allow public hunting create areas where elk may seek refuge, both for forage and for fewer disturbances from human activity. This is also true of developments where elk would rather habituate and tolerate close proximity to people rather than venture onto public lands where they could be harvested. While these areas can serve as important habitat for wildlife, they are often unavailable for

the public hunter. Many ranchers in the area are considered non-traditional ranchers in the sense that they purchased the land for their private recreation rather than for agriculture (and thus are unconcerned about crop damage by elk and deer). Other ranchers cater primarily to high-paying clients who primarily only want to hunt bull elk. The effect is that elk groups will seek out these private lands to avoid hunting pressure, cumulatively resulting in a less than desired amount of cow harvest in the DAU. Some large ranches in the area do allow hunters on their properties, which has helped to redistribute elk and to obtain some cow harvest on these private lands. To solve the elk distribution problem, CPW and the hunting public must continue to work cooperatively with private landowners to enable adequate harvest on these large parcels.

- 6) **Competition with deer** - As the elk population grew in the 1970s and 1980s, they expanded their historic winter ranges and moved to lower elevations where they compete with deer on the limited winter ranges. Elk and deer overlap in both diet and habitat types, but elk have more versatile food habits and aggregate in larger groups than deer. On a small spatial and temporal scale, deer and elk partition their resource use (Stewart et al. 2002), with deer likely avoiding elk (Johnson et al. 2000). High elk numbers may have competitively displaced deer, especially during severe winters when forage and space are particularly limited.

Public Involvement

CPW held public meetings and also conducted a questionnaire to gauge public opinion on elk management in E-16. A public meeting for both E-12 and E-16 was held in Eagle on July 19, 2012, and another public meeting for E-15 and E-16 took place in Carbondale on July 24, 2012. Thirteen people attended the Eagle meeting and 7 attended the Carbondale meeting.

The questionnaire was available online from July 11-Aug 11, 2012. Postcards with the questionnaire's website address were sent to a random sample of 1,500 people who either purchased or applied for E-16 licenses in 2010 and 2011. The questionnaire was also announced on CPW's website and publicized in a press release. Those without internet access could request paper copies of the questionnaire. There were 214 online surveys and 9 paper responses completed (Appendix 3).

Most respondents identified their interests primarily as hunters and supported maintaining the current elk population size. (*Note: at the time of the questionnaire, the alternatives under consideration were +15%, no change, and -15%. Since then, CPW has widened the alternatives to +20%, no change, and -20%, as described in the "Alternatives" section below.*) An overwhelming majority ranked obtaining game meat as their highest priority when hunting elk in E-16, and generally rated opportunity for meat as "good," and opportunity to harvest a high quality bull as "fair." Generally, respondents commented that elk numbers were either adequate or low, although a few landowners experienced game damage. Many respondents complained of lack of hunting access on private lands. Some wanted more ATV access to reach more remote areas and retrieve game, while others wanted less ATV access to reduce pressuring animals out of an area. Some experienced conflicts with motorized recreationists and mountain bikers. Some felt that mountain lion and bear numbers were high and predator control was needed. Several

were concerned about development pressure and habitat conditions.

Meetings were also held with the Lower Colorado Habitat Partnership Program (HPP) committee and Garfield, Eagle, and Pitkin County Commissioners. Comments were solicited from these entities, as well as from the USFS and BLM. Written comments from HPP, Eagle County, Garfield County, and USFS were received and are attached in Appendix 4.

A draft plan was posted on the CPW website from mid-December 2012 to mid-January 2013 for a 30-day public review period.

Alternatives for Population Management Objectives

Previous (1988) population objective:	5,100 elk
Previous (1988) sex ratio objective:	20 bulls:100 cows

Current (post-hunt 2011) population estimate:	7,100 elk
3-year (2009-2011) average observed sex ratio:	28 bulls:100 cows

New population objective alternatives considered:	
Alternative 1	7,000-10,000 elk
Alternative 2	5,500-8,500 elk
Alternative 3	4,000-7,000 elk

New expected sex ratio:	18-30 bulls:100 cows
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Population objective alternatives

Elk DAU E-16 has been managed for the past decade or more to decrease the elk population toward the objective set in 1988 of 5,100 elk. Antlerless license quotas have generally been liberal in efforts to reduce the population. Bull licenses are over-the-counter/unlimited for 2nd and 3rd rifle seasons. The latest population estimate for this herd is 7,100 elk. Many changes have occurred in land use, human population growth, recreation pressure, habitat condition, elk population size, predator population sizes, and population modeling methods, all of which warrant updating the population objective for this herd.

Colorado Parks and Wildlife considered three alternatives for the new population objective range. The objectives for the DAU provide guidance for the general management of the entire elk population, but there will still be flexibility to allow for management at the GMU scale to address smaller scale issues such as localized elk concentrations and landowner concerns.

Alternative 1: *7,000-10,000 elk*

This alternative would increase the current population size by about 20% (range 0% to +40% change). Because elk have a high natural survival rate (examples from Colorado: Lubow et al. 2002, Freddy 2000, Freddy 2003, Webb et al. 2011), reducing hunter harvest to achieve elk

population growth may allow elk numbers to take off when weather conditions are favorable for survival. At a higher population density, elk will compete more intensely with each other as well as with mule deer for forage and space, particularly during hard winters. The health of individual elk may be compromised due to this heightened competition, and disease may spread through the population more easily. Mortality by predation, harvest, disease, and malnutrition would be more compensatory to each other at this higher elk density. Overall, calf recruitment rates would be lower. Winter range habitat, which has already been diminished by land development and over-utilized by past high densities of ungulates, could be further degraded. Agricultural crop damage may become an issue, and damage to residential trees, shrubs, and gardens may increase. More elk-vehicle collisions may occur. Catastrophic weather, such as a very severe winter restricting access to forage and requiring animals to use more of their body fat to stay alive, could result in large numbers of elk dying.

Antlerless license numbers would need to be reduced, at least for the first several years, to achieve population growth. There would be less opportunity to draw a cow license and hunters might not be able to draw a license every year. However, those who do successfully draw would experience less crowding and would likely have a better chance of harvesting an elk because there would be more elk on the landscape. As the herd reaches the higher population objective, more antlerless licenses could be issued to stabilize the herd at the new population objective. Also at a higher population, there would be more bulls available, so bull hunters could have higher success rates. However, because bull licenses for 2nd and 3rd rifle season are unlimited, hunter crowding and success rates during these seasons would depend also on how many bull hunters choose to hunt in these units.

Economic benefits to the local community could be reduced due to having fewer antlerless licenses available and therefore fewer hunters contributing to local establishments during hunting season. This effect could be offset if more hunters purchase over-the-counter bull licenses, but is unlikely, given current declining trends in hunter participation overall.

Alternative 2:
5,500-8,500 elk (Selected)

This alternative would maintain the current population size (+/-20%). There would be less competition for forage and habitat among elk than in the past. Calf recruitment may remain relatively low, given current conditions (i.e., high recreation pressure, reduced habitat availability and condition, increased predator densities), but because adult elk have high natural survival rates, the population can be maintained at this size with low recruitment rates and continued moderate harvest.

To achieve this population objective, antlerless licenses would either remain the same or initially be reduced slightly to stabilize the population at the current size. As population size is evaluated over the subsequent years, license quotas could resume thereafter back to quotas similar to current levels. Hunting opportunity, harvest success rates, and economic impact would be intermediate compared to Alternatives 1 and 3, and would be similar to those of today.

*Alternative 3:
4,000-7,000 elk*

This alternative would continue to reduce the population size by around 20% (range 0% to -40% change). At a lower population density, individual elk would experience less competition and overall better health. Survival rates could improve, and therefore, the herd would be more resilient to extreme weather events. However, at lower elk population density, the effects of predation could become more pronounced.

To achieve this population objective, it could take many years and would depend on harvesting enough cow elk to continue to drive the population down. Increasing antlerless quotas would not be useful because even at the current license quotas, many licenses go unsold. Therefore, antlerless license quotas would remain the same as current quotas. As the population continues to decline, harvest success rates would likely decline because of having relatively fewer animals available, and hunter crowding may be an issue. Eventually as the lower population objective is reached, antlerless licenses would need to be reduced to stabilize the herd at the new population size. Initially, economic benefits from hunting and wildlife watching would be similar to those of today; later, there would be fewer economic and recreational benefits as the elk population declines.

Expected Sex Ratio Range

For herds that have unlimited over-the-counter (OTC) bull elk licenses in 2nd and 3rd rifle seasons, CPW does not manage for a particular sex ratio. Instead, bull:cow ratio in these OTC units is determined by a combination of harvest factors (e.g., hunter participation, hunter success), biological factors (e.g., differential survival rates of bulls vs. cows, sex ratio of calves when born), and abiotic factors (primarily weather). Therefore, we report an expected sex ratio, rather than a sex ratio objective.

The expected sex ratio range for E-16 is 18-30 bulls:100 cows, based on observed post-hunt bull ratios from 2000 (when the antler-point restriction was extended to all seasons) through 2011. The average observed bull ratio during that time period is 25 bulls:100 cows.

Selected Alternative and New Objectives

The alternative of 5,500-8,500 elk was selected as the new population objective because it will balance the public's desire to have enough elk on the landscape to provide hunting and wildlife viewing opportunities, while still keeping the elk population at a moderate density within carrying capacity. Responses from the public questionnaire (see Appendix 3) indicated that most (46%) prefer to maintain the current population (i.e., Alternative 2); 26% prefer a population increase; 19% prefer a population decrease; and 9% were uncertain. Eighty-four percent rated their preference on population objective as "somewhat" or "very" important.

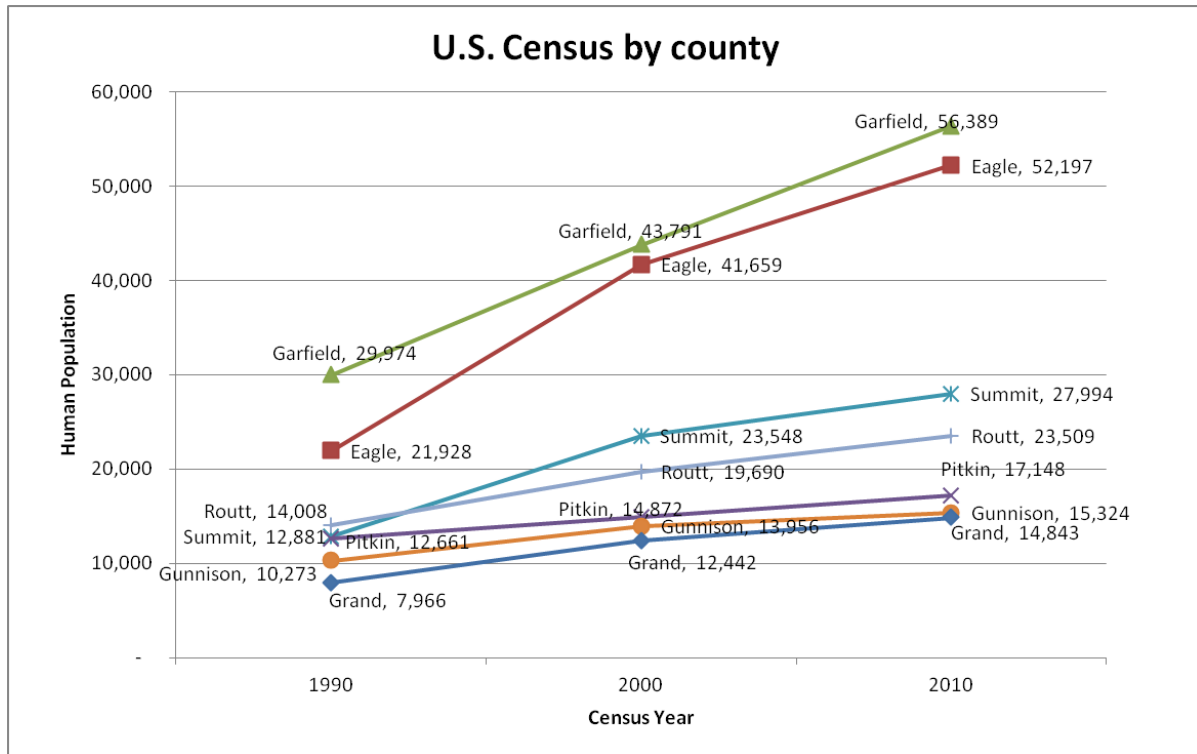
The expected sex ratio range is 18-30 bulls:100 cows, assuming continued over-the-counter bull licenses and 4-point antler restrictions.

Literature Cited

- Ballard, W.B., D. Lutz, T.W. Keegan, L.H. Carpenter, and J.C. deVos, Jr. 2001. Deer-predator relationships: a review of recent North American studies with emphasis on mule and black-tailed deer. *Wildlife Society Bulletin* 29:99-115.
- Barber-Meyer, S.M., L.D. Mech, P.J. White. 2008. Elk calf survival and mortality following wolf restoration to Yellowstone National Park. *Wildlife Monographs* No. 169. 30 pp.
- Bartmann, R.M., G.C. White, L.H. Carpenter. 1992. Compensatory mortality in a Colorado mule deer population. *Wildlife Monographs* No. 121. 39 pp.
- BBC Research & Consulting. 2008. The Economic Impacts of Hunting, Fishing and Wildlife Watching in Colorado. 24 pp.
- Cook, J. G., B. K. Johnson, R. C. Cook, R. A. Riggs, T. Delcurto, L. D. Bryant, and L. L. Irwin. 2004. Effects of summer-autumn nutrition and parturition date on reproduction and survival of elk. *Wildlife Monographs* No. 155.
- Freddy, D. J. 2000. Estimating survival rates of elk and developing techniques to estimate population size. Colorado Division of Wildlife Research Report. July: 239-258.
- Freddy, D. J. 2003. Estimating calf and adult survival rates and pregnancy rates of Gunnison Basin elk. Colorado Division of Wildlife Research Report. July:71-132.
- Hurley, M. A., J. W. Unsworth, P. Zager, M. Hebblewhite, E. O. Garton, D. M. Montgomery, J. R. Skalski, and C. L. Maycock. 2011. Demographic response of mule deer to experimental reduction of coyotes and mountain lions in southeastern Idaho. *Wildlife Monographs* 178. 33 pp.
- Johnson, B. K., J. W. Kern, M. J. Wisdom, S. L. Findholt, and J. G. Kie. 2000. Resource selection and spatial separation of mule deer and elk during spring. *Journal of Wildlife Management* 64:685-697.
- Johnson, B. K., M. J. Wisdom, and J. G. Cook. 2005. Issues of elk productivity for research and management. Pages 81-93 in Wisdom, M. J., technical editor, *The Starkey Project: a synthesis of long-term studies of elk and mule deer*. Reprinted from the 2004 Transactions of the North American Wildlife and Natural Resources Conference, Alliance Communications Group, Lawrence, Kansas, USA.
- Lubow, B. C., F. J. Singer, T. L. Johnson, and D. C. Bowden. 2002. Dynamics of interacting elk populations within and adjacent to Rocky Mountain National Park. *Journal of Wildlife Management* 66:757-775.
- Miller, S. G., R. L. Knight, and C. K. Miller. 2001. Wildlife responses to pedestrians and dogs. *Wildlife Society Bulletin* 29:124-132.

- Naylor, L. M., M. J. Wisdom, and R. G. Anthony. 2009. Behavioral responses of North American elk to recreational activity. *Journal of Wildlife Management* 73:328-338.
- Phillips, G. E. and A. W. Alldredge. 2000. Reproductive success of elk following disturbance by humans during calving season. *Journal of Wildlife Management* 64:521-530.
- Singer, F. J., A. Harting, K. K. Symonds, and M. B. Coughenour. 1997. Density dependence, compensation, and environmental effects on elk calf mortality in Yellowstone National Park. *Journal of Wildlife Management* 61:12-25.
- Shively, K. J., A. W. Alldredge, and G. E. Phillips. 2005. Elk reproductive response to removal of calving season disturbance by humans. *Journal of Wildlife Management* 69:1073-1080.
- Smith, B. L. E. S. Williams, K. C. McFarland, T. L. McDonald, G. Want, and T. D. Moore. 2006. Neonatal mortality of elk in Wyoming: environmental, population, and predator effects. U.S. Department of Interior; U.S. Fish and Wildlife Service, Biological Technical Publication, BTP-R6007-2006, Washington, D.C.
- Stewart, K. M., N. J. Cimon, B. K. Johnson, K. Bruce, J. G. Kie, and R. T. Bowyer. 2002. Temporo-spatial distributions of elk, mule deer and cattle: resource partitioning and competitive displacement. *Journal of Mammalogy* 83:229-244.
- Webb, S. L., M. R. Dzialak, J. J. Wondzell, S. M. Harju, L. D. Hayden-Wing, and J. B. Winstead. 2011. Survival and cause-specific mortality of female Rocky Mountain elk exposed to human activity. *Population Ecology* 53:483-493.
- White, C. G., P. Zager, and M. W. Gratson. 2010. Influence of predator harvest, biological factors, and landscape on elk calf survival in Idaho. *Journal of Wildlife Management* 74:355-369.
- White, G. C., and B. C. Lubow. 2002. Fitting population models to multiple sources of observed data. *Journal of Wildlife Management* 66:300-309.
- USDA Forest Service. 2011. Environmental Assessment – Aspen-Sopris Wildlife Habitat Improvement Project: Aspen, Sopris, Eagle and Rifle Ranger Districts; Eagle, Garfield, Pitkin, and Gunnison Counties, Colorado. 125 pp.
- Zager, P. and J. Beecham. 2006. The role of American black bears and brown bears as predators on ungulates in North America. *Ursus* 17:95-108.

Appendix 1. Human population in counties in and near elk DAU E-16, 1990-2010.
 Source: U.S. Census Bureau.



Appendix 2. License quota and demand in elk DAU E-16, 2007-2011. “Quota” is the maximum number of licenses CPW could issue; “Sold out” is the stage at which the hunt code sold out; “1st choice demand” is the number of 1st choice applicants as a percentage of the license quota.

Year	Season	Quota	Sold Out	Number of 1st choice applicants	1st choice demand relative to quota
2010	Cow Muzzleloader	210	Leftovers	79	38%
2011		250	Never	65	26%
2010	Bull muzzleloader	250	At Choice 1	407	163%
2011		350	At Choice 1	351	100%
2007	Cow early rifle, GMU 45	150	At Choice 2	116	77%
2008		150	At Choice 2	101	67%
2009		100	At Choice 1	119	119%
2010		80	At Choice 1	125	156%
2011		80	At Choice 1	98	123%
2007	Cow 1st rifle, DAU-wide	500	Leftovers	81	16%
2008		500	Leftovers	83	17%
2009		400	Leftovers	58	15%
2010		400	Leftovers	66	17%
2011		400	Leftovers	64	16%
2007	Either-sex 1st rifle, DAU-wide	250	At Choice 1	505	202%
2008		250	At Choice 1	560	224%
2009		250	At Choice 1	465	186%
2010		250	At Choice 1	513	205%
2011		300	At Choice 1	469	156%
2007	Either-sex, 1st PLO, DAU-wide	500	Never	8	2%
2008		500	Never	20	4%
2009		75	Never	11	15%
2010		75	Never	20	27%
2011		75	Never	26	35%
2007	Cow 2nd, 3rd, & 4th rifle, GMU 44	530	Leftovers	354	67%
2008		570	Leftovers	320	56%
2009		510	Leftovers	258	51%
2010		415	Leftovers	238	57%
2011		440	Leftovers	223	51%
2007	Cow 2nd, 3rd, & 4th rifle, GMU 45	530	Leftovers	143	27%
2008		570	Leftovers	148	26%
2009		510	Leftovers	126	25%
2010		415	Leftovers	131	32%
2011		440	Leftovers	134	30%
2007	Cow 2nd, 3rd, & 4th rifle, GMU 47	530	Leftovers	98	18%
2008		570	Leftovers	97	17%
2009		510	Leftovers	102	20%
2010		415	Leftovers	79	19%
2011		440	Leftovers	84	19%
2007	Cow 2nd, 3rd, & 4th rifle, GMU 444	530	Leftovers	356	67%
2008		570	Leftovers	271	48%
2009		510	Leftovers	231	45%

2010		415	Leftovers	247	60%
2011		440	Leftovers	226	51%
2007	Cow late PLO, GMU 44	200	Never	33	17%
2008		200	Never	18	9%
2009		200	Leftovers	27	14%
2010		250	Leftovers	27	11%
2011		200	Leftovers	34	17%
2007		Cow late PLO, GMU 45	150	Never	8
2008	150		Never	4	3%
2009	75		Leftovers	7	9%
2010	90		Never	6	7%
2011	100		Never	16	16%
2007	Cow late PLO, GMU 47	200	Never	11	6%
2008		150	Never	12	8%
2009		50	Leftovers	11	22%
2010		50	Leftovers	21	42%
2011		100	Leftovers	24	24%
2007	Cow late PLO, GMU 444	600	Never	90	15%
2008		500	Never	77	15%
2009		400	Leftovers	74	19%
2010		500	Never	60	12%
2011		500	Never	41	8%
2007	Either-sex 4th rifle, GMU 44	190	Leftovers	87	46%
2008		190	Leftovers	84	44%
2009		190	Leftovers	65	34%
2010		190	Leftovers	59	31%
2011		190	Leftovers	65	34%
2007	Either-sex, 4th rifle, GMU 45	130	Leftovers	53	41%
2008		130	Leftovers	24	18%
2009		130	Leftovers	51	39%
2010		130	Leftovers	43	33%
2011		130	Leftovers	53	41%
2007	Either-sex, 4th rifle, GMU 47	55	Leftovers	34	62%
2008		55	Leftovers	22	40%
2009		55	At Choice 2	34	62%
2010		55	Leftovers	18	33%
2011		55	Leftovers	36	65%
2007	Either-sex, 4th rifle, GMU 444	140	Leftovers	44	31%
2008		140	Leftovers	46	33%
2009		140	Leftovers	49	35%
2010		140	Leftovers	37	26%
2011		140	Leftovers	38	27%

Appendix 3. Summary of public questionnaire for elk DAU E-16.

1. What is your CID number? You can find your CID number listed above your name on the postcard you were mailed inviting you to participate in this survey or on your Colorado hunting or fishing license. If you do not have a CID number, please leave this box blank.

171 responses, 52 skipped this question

2. Are you a resident of Colorado?

156 (70.3%) Yes

66 (29.7%) No

3. Do you live in any of the following GMUs: 44, 45, 47, or 444? Please see the map on page 1.

61 (27.6%) Yes

160 (72.4%) No

4. In which of the following GMUs do you live?

22 (35.5%) GMU 44

4 (6.5%) GMU 45

14 (22.6%) GMU 47

22 (35.5%) GMU 444

5. For how many years have you lived in GMU 44, 45, 47, or 444?

Average 25 years (57 responses) Years

6. Do you own or lease any land in the following GMUs: 44, 45, 47, or 444?

42 (18.8%) Yes

181 (81.2%) No

7. In which of the following GMUs do you own or lease property?

12 (29.3%) GMU 44

3 (7.3%) GMU 45

6 (14.6%) GMU 47

20 (48.8%) GMU 444

8. For how many years have you owned or leased land in GMUs 44, 45, 47, or 444?

Average 23 years (41 responses) Years

9. During the last 12 months, have you participated in any outdoor recreation other than hunting (such as camping, backpacking, snowmobiling, etc.) in GMUs 44, 45, 47, or 444?

133 (62.1%) Yes

81 (37.9%) No

10. Which of the following groups represent your interests in elk management in GMUs 44, 45, 47, or 444? (Please check all that apply.)

- 12 (5.5%) (A) Rancher or farmer
12 (5.5%) (B) Business owner
26 (11.8%) (C) Landowner
8 (3.6%) (D) Guide or outfitter
213 (96.8%) (E) Hunter or sportsperson
22 (10.0%) (F) Member of an environmental or conservation group
14 (6.4%) (G) Other (please specify) Backpacker; Previous resident of the Frying Pan Valley; Environmental; Citizen; Wildlife Advocate; None, I like hunting on open public lands; Environmentally concerned individual; Local resident; Concerned citizen; Photography, viewing, hiking, camping; Have friends who live in the area; Consultant for municipality/water management; Environmental consulting; Camping and hiking

11. If you checked **more than one** response in question 10, write the letter corresponding to the interest group which **most** represents your opinions:

- Rancher or farmer: 5 (3.5%)
Landowner: 3 (2.1%)
Guide or outfitter: 1 (0.7%)
Hunter or sportsperson: **128 (89.5%)**
Member of an environmental or conservation group: 3 (2.1%)
Other: 3 (2.1%)

12. How interested are you in each of the following activities related to elk? (Circle only one number for each item.)

	No interest	Slight interest	Moderate interest	High interest	I am not sure
Watching or photographing elk	8 (3.8%)	24 (11.4%)	64 (30.5%)	113 (53.8%)	1 (0.5%)
Hunting trophy elk	26 (12.2%)	33 (15.5%)	61 (28.6%)	93 (43.7%)	0 (0%)
Hunting elk for meat	2 (0.9%)	2 (0.9%)	16 (7.4%)	193 (89.8%)	2 (0.9%)
Learning more about elk management	5 (2.4%)	20 (9.5%)	79 (37.4%)	106 (50.2%)	1 (0.5%)
Providing input for decisions regarding elk management	6 (2.8%)	13 (6.1%)	70 (32.7%)	121 (56.5%)	4 (1.9%)

13. How concerned are you about the following items? (*Circle only one number for each item.*)

	Very concerned	Somewhat concerned	Not at all concerned	I am not sure
Elk-vehicle collisions	45 (21.2%)	114 (53.8%)	48 (22.6%)	5 (2.4%)
Damage caused by elk to ranchers' and farmers' rangeland, crops, or fences	24 (11.2%)	126 (58.9%)	59 (27.6%)	5 (2.3%)
Damage caused by elk to homeowners' trees, shrubs, and gardens	13 (6.1%)	80 (37.6%)	113 (53.1%)	7 (3.3%)
Loss of elk habitat due to increased human population growth and land development	152 (70%)	58 (26.7%)	7 (3.2%)	0 (0%)
Potential for elk to starve during the winter	139 (64.4%)	64 (29.6%)	13 (6%)	0 (0%)
Potential for elk to spread diseases to pets, livestock, or humans	60 (27.9%)	90 (41.9%)	63 (29.3%)	2 (0.9%)
Competition for forage between elk and livestock	48 (22.4%)	99 (46.3%)	64 (29.9%)	3 (1.4%)
Competition for forage between elk and mule deer	39 (18.1%)	108 (50.2%)	62 (28.8%)	6 (2.8%)
Revenue earned by local businesses as a result of elk hunting	57 (26.3%)	111 (51.2%)	45 (20.7%)	4 (1.8%)

14. Have you personally experienced any of the following events related to elk? (Please check all that apply.)

- 19 (46.3%)** Elk-vehicle collision
9(22.0%) Economic losses because of elk damage to range, crops, or fences
16(39.0%) Economic losses because of elk damage to residential trees, shrubs, and gardens
1 (2.4 %) Elk spreading disease to pets, livestock, or humans
15 (36.6%) Competition for forage between elk and livestock

15. Which of the following best describes your general attitude about elk in the Frying Pan River area? (Please check one.)

- 0 (0.0%) I do not enjoy elk in the Frying Pan River area and regard them as a nuisance.
43 (20.1%) I enjoy elk in the Frying Pan River area, but worry about problems they may cause.
160 (74.8%) I enjoy elk in the Frying Pan River area and do not worry about the problems they may cause.
11 (5.1%) I do not have particular feelings about elk in the Frying Pan River area.

16. The Frying Pan River elk herd has been managed to decrease the elk population, and this herd is now approaching the population objective set in 1988. We are considering several alternatives for a new population objective for the next 10 years. Increasing, maintaining, or decreasing the population size will have consequences on the health of the herd and its habitat, the number of antlerless licenses issued, and the number of elk available for harvest.

Please read the descriptions below and mark the option you would most prefer to guide management of the Frying Pan River elk herd. (Please check only one response.)

56 (26.2%) 15% increase from current elk population size. Antlerless licenses would be reduced temporarily to allow the population to grow, but could increase later when the higher population objective is reached. Elk would be seen more often, but individual elk may be less healthy because of diseases and competition. A higher elk population could also further degrade winter habitat and compete more with mule deer for food and space.

98 (45.8%) Maintain the elk herd at the current population size. Antlerless license quotas would decrease initially to allow the herd to stabilize, but might resume to current quotas later. Harvest success rates would likely stay the same. Elk will be seen as often as they are now and would experience similar levels of competition for food and space as they do currently.

40 (18.7%) 15% reduction from the current elk population size. Antlerless licenses would stay the same to continue to reduce the population. Harvest success rates may decrease as fewer elk would be available for harvest and hunters may feel more crowded. Elk would experience less competition, calf recruitment might increase, and the population would have greater ability to rebound from severe winters.

20 (9.3%) I am not sure.

17. How important to you is the change in the size of the elk population you indicated in question 16? (Please check one.)

<u>101 (47.2%)</u>	Very important
<u>79 (36.9%)</u>	Somewhat important
<u>11 (5.1%)</u>	Neither important, nor unimportant
<u>2 (0.9%)</u>	Somewhat unimportant
<u>4 (1.9%)</u>	Very unimportant
<u>17 (7.9%)</u>	I am not sure

18. The following are 2 options that Colorado Parks and Wildlife may use to **decrease** elk populations in GMUs 44, 45, 47, and 444. How acceptable are these methods to you? (Please check one for each item.)

Responses for Question 18 have been subdivided based on how the respondents answered Question 16:

	Responses from those who prefer a population increase	Reponses from those who prefer maintaining current population size	Responses from those who prefer a population reduction	Responses from those who did not have a preferred population size	Overall responses	
Increase cow licenses	Very acceptable	10 (20.8%)	23 (24.5%)	30 (81.1%)	7 (36.8%)	70
	Somewhat acceptable	11 (22.9%)	39 (41.5%)	6 (16.2%)	5 (26.3%)	61
	Neither acceptable nor unacceptable	3 (6.3%)	7 (7.4%)	0 (0%)	3 (15.8%)	13
	Somewhat unacceptable	7 (14.6%)	9 (9.6%)	0 (0%)	0 (0%)	16
	Very unacceptable	13 (27.1%)	14 (14.9%)	1 (2.7%)	1 (5.3%)	29
	I am not sure.	4 (8.3%)	2 (2.1%)	0 (0%)	3 (15.8%)	9

	Responses from those who prefer a population increase	Reponses from those who prefer maintaining current population size	Responses from those who prefer a population reduction	Responses from those who did not have a preferred population size	Overall responses	
Increase either-sex licenses	Very acceptable	14 (25.9%)	25 (26.6%)	21 (53.8%)	8 (42.1%)	68
	Somewhat acceptable	9 (16.7%)	37 (39.4%)	12 (30.8%)	5 (26.3%)	63
	Neither acceptable nor unacceptable	4 (7.4%)	3 (3.2%)	4 (10.3%)	2 (10.5%)	13
	Somewhat unacceptable	7 (13%)	7 (7.4%)	0 (0%)	0 (0%)	14
	Very unacceptable	17 (31.5%)	19 (20.2%)	1 (2.6%)	1 (5.3%)	38
	I am not sure.	3 (5.6%)	3 (3.2%)	1 (2.6%)	3 (15.8%)	10

19. The following are 2 options that CPW may use to **increase** elk populations in GMUs 44, 45, 47, and 444. How acceptable are these methods to you? (Please check one for each item.)

Responses for Question 19 have been subdivided based on how the respondents answered Question 16:

	Responses from those who prefer a population increase	Reponses from those who prefer maintaining current population size	Responses from those who prefer a population reduction	Responses from those who did not have a preferred population size	Overall responses	
Reduce cow licenses	Very acceptable	25 (45.5%)	19 (19.6%)	1 (2.6%)	2 (10.5%)	47
	Somewhat acceptable	16 (29.1%)	36 (37.1%)	11 (28.2%)	5 (26.3%)	68
	Neither acceptable nor unacceptable	6 (10.9%)	14 (14.4%)	5 (12.8%)	3 (15.8%)	28
	Somewhat unacceptable	3 (5.5%)	13 (13.4%)	8 (20.5%)	4 (21.1%)	28
	Very unacceptable	2 (3.6%)	14 (14.4%)	13 (33.3%)	3 (15.8%)	32
	I am not sure.	3 (5.5%)	1 (1%)	1 (2.6%)	2 (10.5%)	7

	Responses from those who prefer a population increase	Reponses from those who prefer maintaining current population size	Responses from those who prefer a population reduction	Responses from those who did not have a preferred population size	Overall responses	
Reduce either-sex licenses	Very acceptable	21 (39.6%)	15 (15.6%)	4 (10%)	4 (20%)	44
	Somewhat acceptable	16 (30.2%)	26 (27.1%)	8 (20%)	3 (15%)	53
	Neither acceptable nor unacceptable	6 (11.3%)	21 (21.9%)	5 (12.5%)	3 (15%)	35
	Somewhat unacceptable	2 (3.8%)	16 (16.7%)	7 (17.5%)	5 (25%)	30
	Very unacceptable	5 (9.4%)	16 (16.7%)	14 (35%)	3 (15%)	38
	I am not sure.	3 (5.7%)	2 (2.1%)	2 (5%)	2 (10%)	9

	Responses from those who prefer a population increase	Reponses from those who prefer maintaining current population size	Responses from those who prefer a population reduction	Responses from those who did not have a preferred population size	Overall responses	
Eliminate List B and C cow licenses	Very acceptable	19 (40.4%)	10 (11.4%)	2 (5.4%)	0 (0%)	31
	Somewhat acceptable	7 (14.9%)	14 (15.9%)	4 (10.8%)	5 (27.8%)	30
	Neither acceptable nor unacceptable	7 (14.9%)	15 (17%)	5 (13.5%)	4 (22.2%)	31
	Somewhat unacceptable	3 (6.4%)	10 (11.4%)	4 (10.8%)	3 (16.7%)	20
	Very unacceptable	3 (6.4%)	20 (22.7%)	14 (37.8%)	4 (22.2%)	41
	I am not sure.	8 (17%)	19 (21.6%)	8 (21.6%)	2 (11.1%)	37

20. Have you ever hunted elk in Colorado? (Please check one.)

212 (98.1%) Yes
4 (1.9%) No

21. For how many years have you hunted elk in Colorado?

Average 19 years (211 responses) Years

22. Have you ever hunted elk in GMU 44, 45, 47, and 444? (Please check one.)

207 (98.1%) Yes
4 (1.9%) No

23. Overall, how satisfied were you with your elk hunting experience(s) in GMUs 44, 45, 47, and 444 in the last 3 years? (Please check one.)

59 (28.4%) Very satisfied
75 (36.1%) Somewhat satisfied
11 (5.3%) Neither satisfied nor unsatisfied
36 (17.3%) Somewhat unsatisfied
27 (13.0%) Very unsatisfied
0 (0.0%) I am not sure

24. How would you describe the crowding you felt while hunting elk in GMUs 44, 45, 47, and 444?
(Please check one.)

- 55 (26.6%) Not at all crowded
- 90 (43.5%)** Slightly crowded
- 38 (18.4%) Moderately crowded
- 24 (11.6%) Very crowded

25. Please rank (1-5) the following items based on how you feel they would improve the quality of your elk hunting experience in Colorado. Rank the item you feel would **most** improve your hunt as #1, and do not use any number more than once.

	Response (N=207)					Average rating
	1	2	3	4	5	
Seeing more elk of all ages and sexes	59 (28.5%)	47 (22.7%)	37 (17.9%)	35 (16.9%)	29 (14%)	2.65
Higher hunter success rates	49 (23.7%)	42 (20.3%)	49 (23.7%)	29 (14%)	38 (18.4%)	2.83
Fewer hunters and less crowding	26 (12.6%)	56 (27.2%)	50 (24.3%)	51 (24.8%)	23 (11.2%)	2.95
Seeing more mature bulls	36 (17.5%)	42 (20.4%)	51 (24.8%)	47 (22.8%)	30 (14.6%)	2.97
Less access for motorized vehicles	37 (17.9%)	20 (9.7%)	20 (9.7%)	45 (21.7%)	85 (41.1%)	3.58

26. How would you rate your opportunity to hunt to obtain game meat in GMUs 44, 45, 47, and 444?
(Please check one.)

- 29 (14.0%) Excellent
- 47 (22.7%) Very good
- 59 (28.5%)** Good
- 52 (25.1%) Fair
- 15 (7.2%) Poor
- 5 (2.4%) I am not sure

27. How would you rate your opportunity to harvest a high quality bull in the GMUs 44, 45, 47, and 444?
(Please check one.)

- 7 (3.4%) Excellent
- 14 (6.8%) Very good
- 25 (12.1%) Good
- 91 (44.0%)** Fair
- 54 (26.1%) Poor
- 16 (7.7%) I am not sure

28. Which of the following is MOST important to you when elk hunting in GMUs 44, 45, 47, and 444?
(Please check only one.)

- 18 (8.7%) Not seeing other hunters
- 164 (79.6%)** Obtaining game meat
- 24 (11.7%) Harvesting a high quality bull

29. Please use the space below to share any additional comments you have about the management of the elk herd in GMUs 44, 45, 47, and 444. *Note: the comments below have not been edited or verified for accuracy.*

I love wilderness hunting and these units are great for that, but man, the elk density sure is low. It would seem that those areas could stand a lot more elk. To achieve that, I'd lay off the cow tags, especially in 45 and 47 where there is a ton of wilderness
We have a ranch on McLain Flats north of Aspen. The size of the Elk herd has, and is, to this day very problematical for us. Right now, July 11, 2012, we encounter at least 30 cows and bulls each evening. We have to check our fences morning and night to make sure our horses are not out. They love our young alfalfa - grass mix hay to be cut in a few weeks time. They love the mineral licks and bully their way into the grain troughs provided to our horses. Owning Livestock here, as we used to do, is now an impossibility - they would be running all over Pitkin County because of the fence damage. Later in the summer the size of the herd usually increases to about 150 - 175 (they are very knowledgeable about being safe on private land). When wintertime comes along we can easily encounter 250 - 300 hungry bulls, cows and calves on a daily basis. In short, these herds need to be substantially reduced
It is time to think more about wildlife habitat in planning and development decisions made in the roaring fork and eagle river valleys. The loss of valley-floor habitat for elk already puts tremendous strain on their winter and transition season survival. It would be a shame to allow for more sprawl, more game fences along highways and more resource depletion to line the pockets of developers in the area.
I archery elk hunt GMU 45. The early rifle cow in GMU 45 greatly diminishes the archery hunting experience in GMU 45 for the time that is closest to the rut. It is tent city out there during this season. Based on what I see, the Colorado Parks and Wildlife are more interested in selling these high volume rifle licenses than providing a high quality archery hunting experience and a higher archery harvest rate for GMU 45. Based on the harvest rates for early rifle cow for GMU 45, I do not see the benefit of this season. I only see the elk habits adapting to the hunting pressure and archery hunters avoiding the area. If the early rifle cow for GMU 45 was eliminated, the hunting pressure would go down and perhaps the harvest rates will go up across the other seasons. As for archery only season, I see less and less hunters in GMU 45 each year. It has gotten the reputation of a low quality hunting experience. I used to live in Leadville, CO. The locals will still hunt GMU 45 during archery, but they prefer GMU 49 (need 1 PP) or 48 (need 0 PP). I see elk every year when archery hunting GMU 45. I would like to hunt it the last weekend of archery season, but I believe it is too dangerous with all those rifle hunters there at that time. They are only driving the elk deeper into the Holy Cross Wilderness, so all other seasons suffer. If you want higher harvest rates in GMU 45, eliminate the early rifle cow season to reduce the hunting pressure and enhance the hunting experience for the other seasons.
Stop the Air Force from using the area to practice combat missions.
I have been hunting in Unit 44 since I was fourteen years old. The quality of the country is excellent. I have shared this area with my father and brother and many friends over the years. While I sympathize with both ranchers and home owners, I do not believe their interests are a good match for the guiding management of Colorado's populations of game animals. Ranchers and farmers currently receive compensation for production losses to wildlife, and will continue to do so under any new management plan. Home owners should know when they move into the wildlife urban interface areas that the wildlife native to that region will be their companions and may comport themselves of their landscaping. Frankly, as a long-time Colorado resident and outdoorsman, I have no sympathy for the mega-rich and their multi-million dollar homes and landscaping. Their interests are absolutely incompatible with good game management practices. If the elk population is at a point that it seriously threatens the integrity of the environment and the viability of the Frying Pan River herd, that is a different issue. If this is an economic issue driven by ranching, farming, and second/third/fourth-homeowners the Division should put all of those parties on notice that the wildlife of Colorado belongs to all the people. Thank you for sending out this survey.
The area is VERY weather dependant. The snow levels drive animals VERY predictably. Many years the late winter allows the herds to stay very high or keep them out of the area till very late. It might be an area that the Dec and Jan hunts are quite important to hunting control. Thanks for the chance to survey with you.
Please keep me advised as things progress/decisions are made. Thank you.
I have seen a reduction in the success rate in the area in 444 that I have hunted for the last several years. Part of this has been due to unusually warm conditions. We are going to explore new areas in 444 this year due to the lack of animals in what had been a very good area in the past.
I have been hunting the first (elk only) season for the last 7 years. Crowding is usually not a problem. However, muzzleloading and the second seasons are uncomfortably crowded.
For me personally hunting in the Frying Pan River area or other areas of Colorado has not been productive. I have really started to question the data on ELK herds and harvest numbers published by the DOW. As a kid in the 1970's I never went through a season without seeing animals. Over the past 10 years this became more common. I tried for more than a decade to get my kids interested in hunting but years without success or even seeing animals and they eventually lost interest. Today they are all in their 20s and none of them hunt. My hunting group started hunting Wyoming (Elk/Deer) and Nebraska (Deer) several years ago with results that reminded me of Colorado in the 1970's. Today we no longer hunt Colorado which is sad because we are all long term residents. I wish I had a recommendation to give the DOW on how to improve the poor hunting quality in this state. Not sure if it was overhunting, excessive DOW management/regulations, the influence of private landowners, CWD or the loss of habitat to development but Colorado today does not have a quality product to sell to the average sportsman. In Short, how you manage FPR area is no longer a major concern for me or the rest of my hunting party. I do wish the DOW good luck
My hunting party has hunted near/around Mt. Whitney for approximately 8 years. The last 3 years the hunting has really declined. Last fall only 1 out of 4 of us even saw elk, but we have seen more and more hunters during the 1st rifle season. Two years ago only 1 of us harvested a bull elk and the other 3 did not see any elk. Years before that it seemed that at least 2 of us would see elk and harvest one. The elk herd population seems to have declined severely in this area.
I have been hunting GMU444 for the past 10 years and have noted seeing fewer and fewer elk and deer as the years have passed. 10 years ago the part of 9 I hunted with all harvested buck deer and several nice bull elk. The last 3 years hunting in the same area of 444, 11 (several from out of state) hunters in our party managed to harvest 2 bucks and 2 cows in total for the 3 years. No one in the party saw any bull elk, and only 3 people got glimpses of cows during the 3 years. My party was considering hunting somewhere else for this year, but I managed to convince most to give it one more try before looking for another area to hunt

<p>Leave them alone. For many years before these management "plans" the elk did fine. Dont change mother nature she always finds the right way byherself. Human encroachment on managing these animals can only hurt the herd. If the herd grows to big they will migrate to greener pastures-they can manage themselves. Also car accidents and farm crops ruined arent the herds fault we are on there land they were here first. Let mother nature take its course,fires burn 4 a reason lets leave the elk to fend for themselves as they have long before us, we must learn to live in There world.</p>
<p>The Forrest Service road closures is EXTERME and non-warranted...These roads need to be opened for hunting access and then closed ONLY AFTER HUNTING SEASONS ARE OVER. I'm am at an elderly age but still want access to PUBLIC LAND and hunting. But the Forrest service have closed most roads in these areas...NOT GOOD!!!. CPW work closely with the Forrest Srvs. and your oppinion in the matter really does influence these people. After all this land is yours AND MINE...so let me use it as well... at my age now, as I did as a young HUNTER...</p>
<p>I have hunted in this area with my dad for 10 years or so i probably seen four elk in the whole time i have hunted there. got a two shots off at elk. part of it could be the weather and there are alot of hunters everywhere. and access to back roads that have closed arnt helping the situation.</p>
<p>I would love to see a return of the muzzleloader cow statewide tag. This would allow me to camp 5 nights on Vail Pass and hunt 44 around Lake Creek the rest of muzzle loader season if I did not fill my cow tag on the pass. Other than that, I think the DOW is doing a great job of managing the elk. Thanks for a great job.</p>
<p>Hunters are being forced to hunt the same area due to road & motorized trail closures. Some of the best hunting is no longer realistic as it is harder to pack game from remote area's. Why would you want me to make 6 trips to pack out meat when i could easily drive in with an atv once. Trails should be open during season for ATV vehicles which would increase harvest records. Real stewards of the land are not the people with pristine ideals but the users who do pick up trash from tourist hikers & bicyclist who seem to disrupt wildlife during hunting seasons. The big game season should be for big game hunters, keep the tourist safe & out of harms way. They wear no orange & have no idea what the rewards from effort are obtained. Hidden gems road closures makes hunting more dangerous when we are congregated closer due to denied access. I am not a young man and the aid of ATV for relieving my harvest is imperative. I do not mind walking in the hunt but the ATV is needed for the harvest.</p>
<p>There is a major problem with private land access and herd containment within private property. Most accessible elk herd up on private land where the land owner does not allow access or if he does, charges too much money. I live in Aspen and hunt a couple different units each year. I can count hundreds of elk on any given private parcel most any time after the season starts. The year before last I hunted 10 straight days in the Lime Creek drainage never even smelling an elk. Going to the post office the day after I got home I had to stop my truck while a herd of at least 75 elk crossed McLain Flats Rd. There were several bulls and one of trophy quality. These elk were public animals but became the possession of the private landowner merely by stepping across the line. Now the fat cat landowner gets to charge me huge fees to hunt MY elk...with no cost to him. Here's an idea. Allow private land owners to receive remuneration for damages only if they allow hunting access. The elk management plan will have little affect till you resolve private land a ABUSE!!</p>
<p>You will not improve on the elk management plan until you resolve the private land abuse that goes on in Colorado. Despite your efforts the private ranches around Aspen hold a huge number of elk all year especially once the 1st elk season opens. I see it unfold before my eyes every single year. The moderate herds of summer swell to epic proportions by the end of hunting season. Its just the opposite of what use to be in the Yellowstone herd every winter when the hunters could hunt the migration routes out of the park and take their pick. It frustrates me to see MY public elk become the private possession of some wealthy landowner who then doles out access for private gain with no return to the public. Try charging the landowner for every elk on his property during the hunting season. Let him know the elk are free for him to enjoy only after the season is over....unless he allows x number of hunters for no fee. Of course this has to be a mandatory not a voluntary regulation. Hey biologists. Ever think of letting the timber companies back in to make some competitive parks/pasteurs.</p>
<p>Ranching for Wildlife licenses at various ranches to manage over population.</p>
<p>I believe your focus on managing the elk herd to respond to habitat loss caused by human development is not addressing the real issue. The real issue in this management unit is winter range habitat loss and degradation caused by constant and cumulative development in the valleys and lower slopes. It's human population growth not elk population growth that's the management problem. Why don't you issue a survey soliciting public attitudes on acceptable techniques for managing human population and development growth, instead of dealing with the symptoms of the root cause of the problem? Your survey is bias in favor of reducing the herd size to minimize elk conflicts with agriculture and suburbia.</p>
<p>How are Elk in area 45 considered part of the Frying Pan River Herd ??? How are you going to reduce the herd with the forest service closing sooo many roads????????????????? The forest service road closures is a real problem. Pretty soon we will all have to hunt from the Interstate highway. Access is a real problem. I am 68 and I do not get around like I use to. I feel I am being shut out by a bunch of tree huggers that do not give a dam. I thought the national forest was public land. They might as well give it all a wilderness designation, because that is what it is with all the road colsure!!!!!!!!!!!!!!</p>
<p>I've only hunted in 444 and I think the units in question can be quite different. I also have experienced that the OTC seasons are very crowded while the early rifle is not bad. Muzzy week is also extremely overcrowded as compared to what it was 10 years ago and more. I think there could be some value to splitting up these 4 units (at least for some of the seasons) as I think they can have very different conditions relative to wintering areas as well as public vs private property conditions. Overall, the OTC tags for 2nd and 3rd season has totally changed my hunting experience over the years and I do everthing I can to avoid these seasons as it is an extremely poor experience to hunt during this timeframe.</p>
<p>There are way to many ATV wheelers out there.The damage they do to the old logging roads andpowerline access roads is horrific.Erosion has damaged so many areas in these units.This being said by an ATV owner.I leave mine at home during hunting season.Hunting on foot and packing out harvested animals with a pack has virtually no impact on our forests and forest roads.No pollution,erosion,or noise.They(ATVs)have gotten way out of hand the last ten years.</p>
<p>While hunting in these GMU's I have not seen many elk in the past few years. In talking with other hunters and this seems to be a consistent feeling. Maybe they have been pushed to less populated or private land during the hunting seasons? I really enjoy the scenery of this area and will continue to come back.</p>
<p>Elk congregate on private land during hunting season - how can you manage herds you can not access?</p>
<p>the last 2 years has not been good as tree cutting under the power lineshas moved the elk out.i know the tree cutting has to be done</p>

and the hunting will be back. you people have done a good j!!
I hunt in the Gypsum Creek drainage area now for years. I have harvested 2 Elk in 14 years. It is very hard country to Hunt. I hunt with a Guide and Horse's and it's Still hard to hunt. There are alot of Elk there, just hard to get a shot.I have seen a major increase in Mountain Lions in this area. I believe that the Mountain lion have made the Elk very skiddish. I have seen ML every year for the past 5 years.
My brother and I have hunted 44/444 for elk for 20 years in a row. We are accomplished hunters and have each taken elk and mule deer over the years. We are actually seeing more elk in the past 3 years then the previous 17. The mule deer bucks are getting bigger, but I assume its because few can draw a tag. We usually see a good 4-5 trophies each season. Part of this will be weather patterns and perhaps we finally have figured out where they like to be during the first season. A group usually goes with us and we calculate about a 20% success rate on elk. A few members have dropped out due the the price of the tags. That in itself is becoming prohibitive. I am all about providing the state dollars, but \$500 for a chance at an elk is getting to pricey in my opinion.
My biggest concern is people are trying to close off the road up to our camp site. At one time they were going to post a guard at the gate and stop all vehicles and check to make sure they can go up.. I feel this is a direct violation of Colorado hunting laws. Also we have reported that people are driving ATV in the large park area, and some of the area is in the Wildness area.
I have noticed more herding in 45 and less hunters each year.
I Live in Aspen , but am more apt to hunt units 471 or 43
I have hunted there 10 years now and have seen a lot of animals every time I was there. We have a group of 4 men that go every other year.We always shoot some elk but never shot any big elk.We have shot some big mule deer. We started muzzel loader hunting 2 years ago and we seen a lot of bulls and a couple of big ones. I think the herd seems like it could be a little bit bigger but I dontk now how it would affect the people in the area.If all winters would be like the last one the herd could be a lot bigger but with a bad winter I would hate to see them starve to death. It is a very tough call to make.
Being an avid sportsman for most of my 57 years on this earth, I have hunted mainly in MI the state in which I reside. I enjoy fishing and hunting and I have hunted big game, small game watefowel and upland game birds. I have hunted in MI, Wyoming, Ontario, Canada, Saskatchewan, Canada and now CO. The big game I have hunted include whitetail, mule deer, antelope, moose, bear, caribou and now Elk. This is the 1st time I've hunted Elk. Therefore, I feel my answers to the survey were more or less the "middle of the road" because of not truly understanding this animal and it's habits and habitat it requires for survival. I truly rely on the biologists and wild game management professional's expertise to know more about these amazing and majestic animals and the requirements they have to keep them healthy and ensure that there is enough habitat and food to keep them at healthy levels and that the herds are not stressed or starve. The other consideration that many sportsman do not think about are the impact that these animals can have on ranches, crops and residents who reside within the Elk areas. Also, the Elk and vehicle collisions must be taken into serious consideration for many, many reasons.
From personal experiences and current or previous ownership and agricultural land leasing in 3 of the GMU's included in this survey I find that a blanket application to the management of elk is not nor will it be the most productive approach. I strongly suggest an assessment of each unit as they have distinctly unique herd characteristics and variable resources to the elk hunter. Out of state hunters in this management plan are of extreme importance to our varied business entities.
I belive the price is getting too high with land owner tags and such is starting to make hunting a rich mans sport. The prefrance point system how it was changed to if you did not have a like license the prior year you get charged is bad for money reasons and overall satisfaction. people have alot of things going on and sometimes they cant afford to hunt every year due to money and time. I feel as we are being penalized for this and the state is making a financial gain by it. Public access is a big deal for every hunter. I think more time needs to be spent on that.I think all archery tags for this unit should be either sex and a list B due to low success rate. all cow tags should be list B or C. All outfitters in this unit should have to give a % of their profit back to state to help manage the elk herd they are getting rich from.
Overall my experience has been good.Although I primarily hunt for meat having the chance to see elk after driving 4600 miles round trip would be nice. I have a 50% success rate which is good,I did not see a single elk and with a camp of 5 we only saw 1 which was a nice 5x5.With military commitments this year I will not be able to hunt this year, but hope to return next year. Keep up the good work.
In the 10 years I've been going to unit 47 and 444 I've seen the elk population and hunter success but drop off substantially. The group that I hunt with used to be able to harvest at least one animal a year. Now we are lucky to see one animal a year. We have recently decided to switch areas to hunt do to this fact.
I have hunted GMU 45 hard, know the unit well, and have been successful there. Regardless of what other management approaches CPW might take with respect to this unit, it is vital to keep road access in check and, at minimum, not allow further road/vehicle encroachment into the area. This area is one of the few areas in Colorado, and indeed in the United States, where a hunter who is willing to backpack or horsepack can get well away from roads and road hunting pressure. Allowing further road ingress will significantly decrease the quality of hunting in the area, erode the Unit's unique wilderness attributes, and contribute to the loss of truly wild places available for hunting and other wilderness recreational use. The greatest threat to wilderness areas and hunting opportunities in the upcoming decades will be pressure from development and those who would further road expansion. I would like to be informed of any CDW decisions relating to these areas, or any other areas, that would substantially alter the present unit conditions. Thank you for all your management efforts, and for intelligently considering how best to preserve Colorado's wilderness resources.
Given my lack of education in the area of game management I'm a bit concerned that public opinion, including mine, may sway game management decisions. My preference would be for these decisions to be made by people with the training and knowledge necessary to manage the elk herd so that they are healthy and do not grow in number beyond what the land will support. Impact on local farming must of course also be considered but I believe that problem should be managed by allowing farmers to harvest elk on their property any time, in season and out.
In question 11, the key term which may explain differing responses between question 10 and 11 is the word "worry". I may be concerned about one or more issues but don't devote time to worrying about them. Keep campgrounds open until end of hunting season to avoid hunter crowding. Published "take" statistics by GMU are of interest; of even more interest would be more specific geographical area given the size of the units.
I hunted the 3rd rifle season, and the animals were there, but very spooked. It might be better to leave more time between the

seasons for them to settle down.
An agreement between DOW and land owners to grant access through their lands to retrieve or pursue elk would be a welcome addition to help harvest more of the herd.
Let the timber companies start logging again. We need more parks to compete with the private pasture lands. I've been hunting the Aspen area for over 20 years and the private land abuse is out of control. Until you get a handle on the private land abuse all the surveys of the world will do no good. The private pastures are busting at the seams with elk by the end of the season. The private landowners are drowning with elk while we public land hunters lick our wounds and go home empty handed. Our public elk are now the possession of the private landowner who then doles out access, or not, for private gain with no return to the public. Start charging landowners for providing a sanctuary during hunting season...unless they allow access. After hunting season they can feed all the elk they want.
Access to private land hunting would help my satisfaction level. A hunter/landowner coordination system would help a lot of nonresident hunters with contact information to local landowners open to hunting on their land.
We need more Officers in the field to stop the road hunters and the people that ignore signs and continue to drive where ever they want. There have been too many times where I have hiked in to a spot off the roads only to find people sitting in trucks where they are not allowed. It's not fair to those of us that hike in a mile or more to find other hunters with no respect for the privileges that we have
We have been backpack hunting into the Hunter/Frying Pan Wilderness area in GMU-47 for 12 years now. 2009 was the best year I have had in sighting elk. Ever since the CPW publicized GMU-47 as a unit to find good elk on the website on the Elk Hunting University in 2010, hunter pressure has increased unbelievably, and that is the way it has been for the last two years and I expect even more this year. Because the hunter pressure is there, the elk are not there. You may see a few elk during early archery season, but as the hunting pressure increases the second week of bow/muzzleloader week, the elk have vacated the wilderness. You can routinely find hunters at all elevations in this wilderness area, a lot of them with horses where they can go just about anywhere to search for the elk, and the story is the same "Where are the elk??" All this hunting pressure pretty much pushes the elk out of this wilderness area during archery season. Many of the local Colorado residents whom have been hunting there for 20-30 years have stopped hunting this area due to the added hunting pressure. While CPW publicizing this GMU as a place to hunt in 2010 was an attempt to harvest more elk in this GMU, it has drastically changed the elk behavior in the Hunter/Frying Pan Wilderness area due to this increased hunting pressure, and I am sure the elk harvest numbers for this wilderness area have been reduced. I can not speak for the overall numbers for the four GMU's. The only way the CPW can tell is to divide the four GMU hunting zone into four individual hunting zones and adjust the elk quotas accordingly amongst the four GMUs. It is sad, our elk hunting experience was one we looked forward to each and every year with our goal being to experience the Colorado outdoors, see some elk and hopefully get one good shooting opportunity. Now we pray not to see more than 15 different hunters.
the size seems ok at current levels, however I am seeing fewer deer in these areas. I not being a scientist don't know the health of the herds or the damage they cause to give a qualified answer as to the proper level of animals.
Another option to decrease the elk herd would be to decrease the non-resident tag fee. The Frying Pan River is a rugged area. It has not been hard to obtain an elk tag here (for that reason I believe). We generally see people hunting but they typically ride their 4-wheelers around the trails. We've never run into other hunters on the mountainside or in the trees. Thank you for the opportunity to take your survey.
Please do not increase vehicle traffic or access to these units. I don't believe that more access will increase the quality of the hunt - the opposite - the reason I like these areas is because they are hard to access and there are fewer hunters than other areas. Thank you for your hard work.
Elk do a lot of damage to my property during the Winter but this comes with the territory. I would rather see elk, and have them damage my property, than not see elk. I've spoken with many old timers and they all tell stories of 200 and 300 animal elk herds wintering in this area. This no longer happens because of over-development and loss of habitat. I am very concerned, as a hunter and conservationist, about the loss of habitat, especially Winter range. I have elk and mule deer on my land and they seem to get along together just fine.
have a season for motorcycles when muzzle loading is open close riding for that week. there is nothing more frustrating than spending all that money and time to have 10 motorcycles come burning by you after it took 3 hours to get to your spot.
having hunted in 444 since 1983 I like the 4 point or better rule only thing I would change is to allow hunters to take more than one elk as most hunters seem to stay within site of the roads the ones of us who are willing to go after the elk always see plenty back away from the roads 2+ miles in
I'm not sure where the herds stand right now, if they are over crowded or under. Ultimately my concern is for the animals and the environment. I'm not so concerned with ranchers and livestock, sorry there are millions of cows but the elk and deer are natural to the area and were here first. I feel wild life should come first.
Very Happy with my Hunting experiences in the Frying Pan River Area.
I have hunted the area twice with muzzle loader and seen and heard few elk and lots of hunters and atv riders. there are atv trails everywhere and I feel unless one can get into wilderness areas there isn't much chance for having a quality hunt. I wonder if the habitat could be improved through cuts or burns or other means. I will not too likely hunt the area for a third time, I'll be hunting elsewhere.
Stop them from cutting down trees in the middle of the hunting area in third season. And stop motorcycles from riding thru the unit 44 during hunting season. It is only out of RESPECT for the hunters!!
I am disappointed to find no mention of the overpopulation of people and their encroachment into elk habitat through development as an issue with the elk population and as a leverage point. We have managed animal populations so much that I suppose we have to continue, especially to prevent disease, but we need to manage the population of people and their encroachment as well. We need to have as a priority the preservation of the necessary habitat to support the existing population and to purchase and protect more land for this purpose to eventually have an increase in elk and deer populations. It is great to recognize an increase in the number of mountain lions in these areas and there is a need to keep the ungulate populations high to support the lions and I believe more management is needed for the coyote populations because of the high number of calves and fawns they kill. I need more information to accurately answer whether to decrease the current elk population or keep it the same. I don't think it would be a good idea to increase the population due to the limited winter range available for them and the resulting decrease in the health of the

<p>gangs. I also think the plan to increase the health of the forage in these areas is a great one and should be done more to support higher populations of animals. I appreciate and respect your management of these animals and their habitat, but I also think we should be trying to figure out how to maintain these populations and increase them through the aforementioned methods, especially through the management of people and their access and development of wildlife habitat. I would enjoy being more engaged and active in these decisions. I am currently enrolled in the sustainability studies bachelor program at CMC and find this management issue to be an avenue of practicality for what we are learning.</p>
<p>ATV management is sorely needed. They are continually running up and down the main highway in Thomasville & Meredith area's and pay no attention to marked trails. There is also the problem of outfitters herding animals from public lands to private lands. This problem exists and needs to be stopped. Outfitters brag 90% success rates when your statistics show between 15 & 20%. There is only one way that can be happening. While you ask if we think the population should be increased or decreased, you do not give us a population to consider. You also do not indicate whether there is any disease or any magnitude of damage caused by the animals. The questions appear skewed to some desired result. Surveys can provide valuable information but can also be used to justify a desired result. The upper Frying Pan area is a wonderful place to hunt and fish. A sound management plan is in order.</p>
<p>implement restrictions on over-snow vehicle use, ie only for access to remove game from 10 am thru 3pm daily. We hike 2-3 miles daily to our hunt location to arrive before daylight. when there is snow covered ground, snow mobiles leave later but get there sooner and scare the elk off before we can shoot. Many times they shoot before legal shooting hours. Tighten the enforcement of guides. We experience illegal guides often where we hunt and we know there are no permits for guides in this portion of unit 45. I am a retired USFS and worked on the White River NF for 14 years and have experienced the above issues frequently.</p>
<p>i have found in the past 7 or so years the elk herd has decreased some were around 50%. for myself would like to see the herds growing, instead decreasing. thank u</p>
<p>leave it way it is</p>
<p>I have always done well in Zone 47, but last year 2011, I didn't see the Elk that I had seen in the past.</p>
<p>if hunters cant get into back country because of closed roads and trails this may be the single largest factor in game management . the frying pan area has so few roads and atv trails . access is the key</p>
<p>In the years that I have hunted unit 47 I have found that around the "beaten path" (within 1-2 miles of roads) there are quite a few hunters. However, if you get out and hike there are exponentially less the farther you get from a road. There are still several spots that you can still get away from others and find elk. DON'T SCREW THAT UP!! PLEASE!! The people that hunt the roads still kill elk and the way that it is now the people that get away from the roads also kill elk, I think that is a wonderful balance. Recently roads were graded that allowed alot better access then in previous years. I truly hope that this practice does not continue. If a road is open ad someone really wants to get down it, they will. What a poor road does is keep the truck hunters out, that is a good thing. Elk should be earned, not driven up to and then thrown in the back of the truck! I really love the access the way it is now, just enough but certainly not too much. Keep up the good work!</p>
<p>We have always enjoyed the late season cow hunts when unable to harvest a bull in the regular seasons. Problem is, too much private ground that are heavily populated with the late season elk herds and NO ACCESS! It will be a shame if the DOW works through other avenues to reduce this herd without the help of hunters who want to harvest for the enjoyment of meat. When coming from the front range there is considerable expense to get to the frying pan valley and too not harvest a cow due to access or to pay a trespassing fee is not something I will consider in the future. This herd is not being managed to benefit, me the outdoorsman who is buying hunting licenses and tags of all types. It are these licenses that are the heart of the DOW revenue stream. I am disappointed to say the least with hunting that game management unit.</p>
<p>The management of a healthy herd is very important. To see elk, which are not healthy, would put a damper on the experience for both me, and my kids.</p>
<p>Thanks for asking me to take the survey</p>
<p>As an out of state hunter paying higher license fees and with a limited time available to hunt in Colorado my preference runs to larger herds and a reasonable amount of tags of both sexes. Despite all of our group drawing cow days the last two years we have seen no elk in areas where we used to. We hunt primarily at higher altitudes above the end of the paved county road and seldom lower down. We hunt primarily second rifle season - late October, early November although we have hunted other seasons. Varying the season does not seem to have altered the number of elk seen. Two of our group harvested an antlerless elk each 4 years ago as I recall.</p>
<p>The forest service closing land off making it only accessible to horses or outfitters in the last 10 years. My friends and I have been less succesfull and the outfitters have taken over. They bring in hunters that really do not care and do not know how to hunt. They run the elk out of the area to places that are very hard to hunt much less be able to get the game out. Wilderness are fine to apoint but you can make it almost impossible to hunt. I have watched elk go hide out in such areas knowing there is no way to get to them with out a lot of money.</p>
<p>I usually hunt only cows for meat. I have a trophy elk that I obtained more than 10 years ago. If a good bull presented itself I might take it, but I think taking a cow provides the meat I want and help manage the herd size toward the goals that have been set scientifically.</p>
<p>The DOW does a graet job in the frying pan area I am thankful for the work the men and woman of DOW do</p>
<p>THERE ARE NOT AS MANY ELK IN THESE AREAS LIKE THERE USE TO BE.</p>
<p>Our hunt was compromised because of "animal activists" on the roads in the area of 444 keeping elk from crossing the road to the area we had paid for private access to a ranch to hunt on. They were there from sunrise to sunset daily, driving and honking horns to keep the elk from crossing. Needless to say, our hunt was not successful because of this. We paid non resident hunting license fees and a fee to a private ranch to hunt, so we were very disappointed. This year for the first elk hunt, we are going with a licensed outfitter to hunt bull elk in Unit 7. Hopefully there will not be "animal activist" in that area!!!!!!</p>
<p>I live in Minturn and have noticed and photographed the elk herd that winters above Minturn. In the last few years I have noticed a reduction in the elk herd. So I believe that the herd (s) have been reduced. I also believe that the early cow season in September does not work. Gun shots reduce the chances that a bowhunter or muzzleloader hunter to succeed by moving the elk into deeper timber further away. Also In unit 45 the herds that need to be reduced are in the areas of Beaver Creek, Bachelors Gulch, and Cordillera. The division needs to work with these communities to help in reducing these herds. The elk live among the houses there and damage landscaping and golf courses. As the hunting seasons begin the elk and deer in these areas congregate in these</p>

<p>areas. This is where the division needs to try to help in reducing these herds. By working with each area to see how hunters can access the land around these communities and help with population objectives.</p>
<p>First, my card does not have my # on it. I have been up there for 2 years, walked all over and hardly saw a track, let alone an elk. They pass thru but seldom stay in 444. Maybe I go with the wrong group. Last year we saw a couple taken out of 444 but not many, I would prefer a late season on private land if I could find the right land owner. Some questions make sense, others need a lot more info. Since 88 you have failed? I need to take more time to scout and study where and when to go, and not trust other people.</p>
<p>Increased use of ATVs has become a significant problem. As in many things, 10% of ATV users cause 90% of the problems. If the 10% cannot be EFFICIENTLY regulated, then it may be necessary to ban ATV use for hunting or during hunting seasons.</p>
<p>There are lots of elk. I have seen several hundred in the early spring from McLane Flats to Holland Hills on the north side of 82 in recent years. To be succesful you must get away from roads and trails. The area is rugged and timbered. I always find elk, but do not always get a shot. The first season and especially the late season are best. It is a tough job backpacking them out. It is crowded near the dirt roads on most years, but once the snow is deep it is not crowded. The elk have learned that they are safe near subdivisions and private property and often move to those areas. There are some big bulls, but they are hard to find. I have shot several small to mid size 6 points and some 5 points. Lately I have been hunting cows and my success rate is about the same as when I concentrated on bulls. Mainly, because my time to hunt is now limited.</p>
<p>Colorado has an exceptional elk herd and people developing property within the elk ranges is a decision the people are making not the elk. If hunters had better access to huntable land we could be better distributed and capable of harvesting elk that have found the "safe" spots. Archery is typically practiced by ethical and safe hunters. If game management needs to occur in populated areas, archery seems to be the logical option...</p>
<p>I do not believe the elk herd is too high, and I think you are taking too broad of an approach by lumping these units together. Hunting elk around the town of Eagle, is simply not the same as hunting them near Basalt etc. I think it is an illusion that elk numbers are too high, simply due to the fact that they are more concentrated on private land due to over development. I am a succesful hunter, but I truly believe the elk hunting around Eagle (for bulls) was better in the early 90's than it is now. Most of the Eagle herd is made up of 2.5 year old bulls, simply because they get killed almost as fast as they are legal. There should also not be any losses being paid out to local ranchers, because it is those very same ranchers that do not allow hunting on their property. It is no secret that deer and elk concentrate on private land during hunting season...Also the ratio of cows to bulls is skewed, not because there are too many cows, but because there are too few bulls. Remember, cows produce bulls too, ditch the 4th season and see what happens. Thanks.</p>
<p>I live here in Aspen so I am very familiar with the elk hurds in these Units. I believe the current management tactics are working quite well and do not need to be messed with. There is a good number of elk and I don't believe they are causing to much damage to the ranchers property. "Don't fix it if it aint broke". The Colorado Division of Wildlife should be spending more time getting rid of the predators that are keeping our deer population from coming back!</p>
<p>Since there were very few elk in the upper Fryingpan Valley after the harsh winter of year before last, and very few taken during all of last years hunting seasons, I sincerely question the numbers of animals you have reported and think need to be reduced. Since I keep motion cameras in LaMont Pastures during the summers I have a good idea of the numbers of animals and their size..Prior to the winter, year before last the herd was healthy with several trophy bulls,6x6 6x7. Last year the largest bull to show was a 5x5 with very few cows. This year the numbers have increased slightly, but not enough that you should even consider culling the herd. Where exactly did the numbers come from? It wasn't a head count so it must have been a mathematical equation.</p>
<p>the placethat i hunt in is west of slone peckjust off the top lot of hunters come in and push them back to back side of slone witch makes it hard to hunt were it makes them stay on back side and wont move back till later in the hunt i hunt 3rd to make traking and to see if there comeing back in in witch some times they do or there gone for rest of hunt i dont wont to go enywere else this is the one place i realy like to hunt and have taken some big bulls out of here and meat is good not wild tast make it right up there</p>
<p>PUBLIC ACCESS IN THE Ruedi Reservoir AREA WAS VERY CHALLENGING DUE TO PRIVATELY OWNED LAND BETWEEN THE ROAD AND THE PUBLIC LAND AND THE LIMITED AREA AVAILABLE TO CAMP.</p>
<p>The largest problem I observed last year during 1st rifle season last fall was the large number of hunters on ATVs.</p>
<p>Last year we had HUGE problems with dirt bikers riding all over while we were hunting. We were harrassed by them and they were a big problem. They rode all over the game trails where we are not allowed to ride our 4-wheelers. The dirt bikes should not be allowed in that area--they should be confined to the same roads that 4-wheelers and atv's are confined to. Opening morning 12-15 dirt bikers road right around me as I walked the game trails hunting. They don't won't blaze orange and they yell and scream at us like we're schoolchildren-- because we're on foot and they're not. Very frustrating--and the dirt bikes are so loud!!! We didn't see a single animal on opening day--huntable or not. I'm convinced that's because of these dang dirt bikers riding all over prime hunting ground all day. This was in 444.</p>
<p>I think the herds in the area I have hunted since 1952 which is 444 have been stable and at about the right size the past5-10 years and the hunters have dropped off to a acceptable level in the past 3-4 years--I still see animals killed from the muzzle loaders and not found--i have hunted this area in your good times and bad times and think u have hit on a great hunting experience the past few years. The road and ATVs up the frying pan was the worst thing for hunting as we used to have to come in from Woods Lake with Art and Dolly to hunt our area. Keep your quotas where they are now!!</p>
<p>I hunt with friends that have hunted the Frying Pan River area for over 20 consecutive years. The elk herd population in my opinion is very low. Of the 5 + years I have been hunting this area I have only seen or heard elk once and I was successful in harvesting a cow. I believe the statistics will show I am average with the hunters showing a harvest of around 20%. The real issue I have is 4 of the 5 years I have hunted this area seeing elk is almost impossible with the herd size as it is now. If the plan is to keep the herd population down then I believe there should be 2 or 3 units joined together so we can hunt in more areas especially when there are a lot of hunters so we can spread out. I primarily hunt in area 444 and it is hard to match when we put in for a cow tag draw what area the herd will be in in October or November. In fact I believe all the units for this survey should be joined together, even if it would mean there would be fewer licenses. Last year the elk sign was really hard to find. Typically there is a lot of sign, some old and some fresh, but this past season if you found one old sign per day you were really lucky. The herd may have moved to a different area or the there is something that has really changed. I believe the population in the area has been greatly reduced and not just because the herd management program, there seems to be something else going on.</p>
<p>I would like to see the elk herd increase as long as it is healthy. From the meeting I attended in Carbondale it appears winter range</p>

<p>is a significant factor to increase the herd. I certainly do not want to see a decrease from the current population. As pointed out in the meeting I believe that the private land season should be started later such as 15 Oct and end earlier 1 Dec. I also think that more pressure should be put on cat hunting in the Upper Frying Pan Valley. I work the grave yard shift and the number of cats I have seen at night traveling from the 25 mile marker on the pan to 13 mile marker during the winter months is remarkable. Since there are no deer in this area during the winter months..the cats are feeding on the elk. I am not asking to increase the quota but fill the existing quota. Maybe hunting @ night until the quota is filled? I do not want to see cats...I want to see elk in the Upper Frying Pan Valley! Thanks, Very Concerned Hunter</p>
<p>you do a good job, the country and hunting experience is topas.</p>
<p>I have hunted elk in mgmt unit 45 with a small group (4 hunters in total) for the past 12 years-providing we were able to obtain an either sex license for the first season. We had pretty good success during the first 7-8 years but have seen very few elk during the past 4-5 years. There appear to be more hunters than elk. We hunt in the Homestake drainage area outside of Red Cliff. I believe the early cow and muzzleloader hunting spooks the few elk there are in the Homestake area. Last year four of us hunted for 3 days of hard hunting and never even saw an elk. We see no reason to reduce the herd in this area as there is no ranching or residences in the area-the nearest shrubs would be in Avon or Eagle which would not be effected by the Homestake herd. We are currently looking into hunting in a different area because of the poor success of the past few years. I would recommend eliminating the early cow licenses for the Homestake area in an attempt to bring back some elk to this area. I would appreciate a response to these comments-thanks-</p>
<p>Need to increase the number of elk in units 444 and 47. Need to increase the survival rate of calves through more predator control and less human activitues at calving grounds and winter range. Do not increase the number of either sex licenses or cow licenses, especially on public lands. Work with land owners to resolve elk damage and control on private lands by allowing hunting or dispersing the elk onto public lands</p>
<p>Started hunting GMU 444 in 2006. From 2006-2008 saw a lot of either sex elk and mule deer. At least 1-2 members of our party would harvest an animal each seasonb. Deer have really tapered off in GMU 444 to the point where I don't draw for deer in this area for the past 2 years (in fact, I have not seen a deer in GMU 444 for the past 2 seasons). Elk sightings in 444 have tapered off drastically for the past two years (warmer weather has been a factor). In fact, no elk has been harvested in our party (4-6 hunters annually) for the last three seasons. We have contemplated moving to another GMU after the 2012 season if we have same results. We have also noticed a lot more hunters in GMU 444 for the past couple of years and expect that trend to continue. Suggest DOW limiting non-resident tags (either sex) or increasing the cost of a tag to reduce the number of non-residents? Appreciate the opportunity to participate - I am a firm believer in managing the herds to ensure a fair harvest opportunity for hunters, ample herd size to maintain the herd, and ensure resources are plentiful for the long winter months.</p>
<p>More emphasis on habitat enhancement/improvement. Too much emphasis is being placed on hunting as the main mgmt tool. If habitat is fair/poor, resulting in low cow/calf ratios then habitat mgmt should be the emphasis. 30 years ago there were habitat improvement projects on a yearly basis--for the last 20 years the few projects that are done are mainly instigated and paid for by conservation groups (RMEF, MDF, NWTFF) and town & county wildlife mitigation trusts. Why isn't the CPW the agency taking the lead???</p>
<p>I really appreciate the National Forest Campgrounds remaining open through the hunting seasons. The nearest lodging is more than an hour away.</p>
<p>I worry about increased number of mountain lions and I think they affect elk and deer populations. I wish there would be more hunting of mountain lions and bears.</p>
<p>I feel the access by motorized vehicles should be limitted to main roads and trails, but the use of motorized vehicles to remote areas must be prohibited and enforced</p>
<p>I usually hunt in Unit #444 with my father. I have not harvested an elk there but he has over the past 20 years harvested many elk. As the years have gone by he has seen more and more hunters and less land available to hunt. We used to hunt the Shutey property and the 1600 acers of BLM land behind it. Since John and Tony passed away this area has been virtually land locked by private property and a special hunting area closed to the public for all practical purposes. The only access is along the mountain bike trails and I'm sure the bikers and hikers don't appreciate seeing hunters along those routes. Besides it's tough getting back in there that way. The other areas of 444 are mostly private property or public land with access controlled by private land owners (again inholdings). The public land that is accessible is overcrowded and at times it is very difficult to find a place that's not crawling with hunters. I know that a land swap for the Shutey property and some land below Mt. Sopris is being considered. I don't know what kind of impact that swap would have to the Mt. Sopris area or to the hunters that have tradionally hunted that area, but we would like to see access to the Shutey property and/or the BLM inholding become easier. I also believe that no public land should ever have access blocked by land owners. The land is owned by the citizens of the state and the US and no one should ever have the right to deny public access to public land. Access points should be required every so often, for example, each 1/4 or 1/2 mile.</p>
<p>I would like to see the same amount of cow tags available for the seasons but allow a hunter who has a cow tag to have the ability to use that same tag to hunt multiple seasons. Because most hunters can only hunt weekends resulting in not enough time for the hunter to fill his/her tag. By doing this harvest rates will increase and will more easily help meet yearly objectives without using the questions in this survey. My family has hunted 444 for 20+ years and have never felt crowed by other hunters and have always had a successful season.</p>
<p>The lack of mature bulls is why I am not hunting these units. Kill more cows if you have to but back off on bull tags. Look at how many bulls are harvested on either sex tags. I bet it is more than cows. I personally love either sex but I am not sure they are effective to make guys kill cows</p>
<p>when i am out hiking it seems when i see groups of cow elk i see few caves. ex. the other day i saw 7 cows and 2 calves. this group i had good visual. the by my house i saw 70 80 cows and maybe 6 or 7 calves, i did not have great visual. the problem with this area is to many people bikes motor bikes 4 wheelers hikers snowmobiles crosscountry skiers then hunting from mid august to december.</p>
<p>I grew up in Aspen and have hunted elk in the Hunter Creek area for the past 36 years as indicated. I believe that the herd has has grown and adapted to the area of their range ever since the 4 point restriction was introduced and that the herd is doing fine. I would prefer that nothing changes for Unit 47 Thank You</p>
<p>I WANT TO HUNT ON CRYSTAL SPRINGS RANCH PROPERTY. (HA,HA, I KNOW THAT NO ONE GETS TO.)</p>
<p>The number one problem in this area is that it is over run with beef cattle. Also, there are too many hunters where there is easy</p>

access, too many road hunters.
Do not stop motorized vehicles from driving on public lands! No Hidden Gems!!
Manage for higher bull to cow ratios. Cut bull tags in all seasons that are limited.
Resident elk in the Missouri Heights and Elk Springs areas need to be managed so that the over all population of the elk in 444 will not be over harvested in the eastern portion to make up for the high population in the subdivision areas. People moved in on the elks winter range now they want the elk moved but don't want them hunted in their backyards so that will put harvesting pressure in the upper Frying Pan area.
To be successful in these GMUs a hunter must be willing to work to get to elk. Areas close to roads are generally very crowded with few elk. Scouting and long hikes are the key to success.
I would like to see the population of elk to increase, and in doing this the predator population must decrease. In recent years the population of mountain lions, bears, and coyotes have increased and are playing a factor in the lower population of calves and fawns.
As a landowner in Unit 44 I feel the elk population over the last 3 years has improved. I am seeing greater numbers of elk in general and have seen some mature bulls. There are areas where there is crowding of hunters and this makes hunting in these areas less desirable. Overall, I feel the elk numbers are finally up to a point where hunter success is at an acceptable level. I think a reduction in the elk population would be detrimental to the overall hunting experience. All the elk that we have harvested were healthy, well fed with no signs of malnutrition of disease. I feel strongly that the elk population should be maintained at the current level. Thank you
Get the elk number up to what they were before the bad winter. We saw lots of dead elk in the Homestake drainage it was terrible. There are way too many preadtors out there something needs to be done. It is great that you allow lion hunting in this area now. The bears are out of control. I find the survey to be a complete joke who are you kidding there is no useable information from this survey. Start asking real questions like what do you think the issues are facing this unit. How about predators, development, recreation and ski areas. What about something showing the weather patterns what have they done to the herds. I read in the press that you feel you are managing for a balance between trophy and opportunity. You must be silly, over the counter tags for archery and bulls in 2 seasons is not how you manage for a balance. Time for somebody to write a new plan and survey perhaps someone that has knowledge of the unit instead of someone that works at an office. There must be more information you could present on line so the public has some idea of just what the herd is doing. What I have seen to date looks like it is a cut and paste from other plans. I would like to see archery starting a week later and reduced to 21 days that is part of the problem with the elk being pushed in August when they are still trying to get fat on the summer grasses. Limited the number of archery tags also there is no reason they should have unlimited tags and 30 day to hunt. Do away with this 2-3 tags per hunter they should only be allowed if you can get rid of the tags with just one. Why are there no late seasons like in unit 36? That would allow for a better harvest and you could reduce the number of license during the fall. I think the youth hunting opportunity you are doing is the best thing I have seen that is the type of programs we need.
Your question # 16 is a loaded questions and it was impossible for me to share my feelings because it was ambiguous. Living in the Upper Frying Pan Valley, we don't see many elk during the hunting seasons. They are all in their "safe areas" on the large tracts of land (subdivisions) and ranches in the lower country where people are not allowed to hunt. If we are going to manage the herds, we have to figure out a way to allow hunting in areas where the animals congregate during the hunting seasons. These animals aren't stupid and know that they are safe in these areas. I'll bet in your "counts" you found this to be true. Please DO NOT increase the licenses sending more hunters onto public lands when the large herds are found on the private property. Aspen Glen, Missouri Heights, Otto Creek, Cap K Ranch. The herds are all here in their "safe havens". I think it was very unfair for you to not have publicized the meetings to allow more people the chance to comment. Parry Will was at the Frying Pan Caucus meeting in July and not one word was mentioned about the upcoming meetings or the survey. Maybe you really did not want us to comment. If your actions are going to be a result of the survey, you needed to be more fair about really getting feedback from the hunting population.
I believe this herd is doing good overall with its size and numbers. I certainly donot believe that the herd size should be decreased!
I only began hunting approx 5 or 6 years ago, however in just that short period there appears to have been dramatic decreases in elk sightings year to year. I began hunting in 36 and 45 but have switched to mostly 44 the past two years. 0 elk sightings while hunting the past three years in all areas during hunting season. We tend to hike in to more remote areas and do not just "road" hunt and still saw no elk. Lots of deer sightings but always out of season. Motorized access is critical for hunting access for older hunters (especially out of state unused to altitude) as well as good for packing out. The current forest service travel management plan to pretty much curtail all off road vehicles on most forest roads will likely be a severe detriment to future hunters desire to hunt in Eagle County. While there will always be those that go off road (as there are with mountain bikers creating illegal single tracks and hikers creating new "trails"), it is not in the best interest of Eagle county economically or as a place for all types of recreation, to limit the OHV access. It would be great instead if off road vehicle access could be monitored during hunting season to help keep hunters to the roads with OHV's instead of seeing the occasional individuals in places they should not be. While the travel management plan is not specifically in the question, it will eventually have an impact on the hunter draw and those the elk herd management in these areas.
I would like to see an either sex muzzleloader license available.
Over the last eight years in unit 45, where I have hunted for years the elk has diminished 50+ percent and the amount of hunters has increased that much or more. My opinion, too many cows have been taken from that unit. This is from a very concerned hunter who has lived in Colorado and has returned to hunt for 20+ years since moving from Colorado to North Carolina. Please reduce the number of cow tags that are issued to hunters.
1 I am not aware of any problems in this area except the population growth. I think the Elk population is good. I would support the increase in population of Elk as long as it won't adversely affect the local residents, and future Elk population.
I do not think the elk count of the CPW is accurate in units 44 and 444. The last three years has shown a serious decrease in elk numbers in these two units, and the deer numbers are even worse.
I feel a bit unqualified to answer questions regarding herd sizes and sex composition. I completely trust the wildlife managers to make the right decisions on behalf of the elk herd in area 47 where I hunt. I hope that the area does not get managed in a way that causes it to require a buch of points to be able to hunt. There are plenty of high quality bulls there if a hunter has the wherewithal to just get out there and hunt them. It is a rough terrain area and a lot of acreage without vehicle access. Which is perfect for me!!

Limit motorcycle travel in areas they do not belong. Limit other activities like cutting trees and helicopter fly over during hunting seasons.
I have hunted elk in Colorado since 1977 in GMU 43 until the last 4 years when my brother (Colorado resident) and I decided to switch areas due to success decline in GMU 43. Have been successfull in this area and have seen more elk. Please take great care in the management of this beautiful area. Thank you.
Predator controll needs to be implimented to a higher degree. Find a way to get elk off of private land.
Thank you for sending this survey. I think it is important to have input from hunters. I'm 83 and have hunted elk & other big game for over 60 years. I have hunted in the above GMUs for 22 years, the last several years the 1st 5 day season. The later seasons are hard on my body with heavy snow. The last 3-4 years have been bad "No elk" not even tracks. I think ATVs are a problem, they start running the roads 4-5 days before the season. "Jumping the kelly humps" the Forest Service has bulldozed. I use jeeps and park them & walk.
This is probably not what you want to hear, but I'll be 62 this hunting season. We have always been able to drive a truck to our camp and hunt on foot from there. New rules have made this an ATV area, although the roads are still there. I have some physical limitations which make an ATV extremely difficult for me to use. I was going to buy a Polaris Ranger which I can use, but which the new rules prohibit. For these reasons, this will probably be the last year I hunt in Colorado.

Appendix 4. Input from Habitat Partnership Program (HPP) committees, county commissions, and federal land management agencies.



Lower Colorado River HPP Committee
6274 County Road 301
Parachute, CO 81635

Julie Mao, Terrestrial Biologist
Colorado Division of Parks and Wildlife
0088 Wildlife Way
Glenwood Springs, CO 81601

August 10, 2012

RE: DAU Plan E-12, E15 and E-16

Dear Julie,

After reviewing and discussing the information that was presented regarding the Elk DAUs E-12, E-15 and E-16 Management Plan, it is the consensus of the Lower Colorado HPP Committee we support Alternative 2, Status Quo for all three DAUs. We as a committee feel that the bull/cow ratios are where they need to be and that the population number is at a good objective. The problems the committee sees are more due to distribution than population numbers. We support Alternative 2 for E-12, E-15 and E-16.

If you have any further questions, please feel free to contact me by phone at (970) 260-0147 or by e-mail at danielles@willowwisp.net, I will be happy to help. Thank you.

Sincerely,

Danielle Lemon
Administrative Assistant
Lower CO River HPP
6274 County Road 301
Parachute, CO 81635



January 7, 2013

Julie Mao, Terrestrial Biologist
Colorado Division of Parks and Wildlife
0088 Wildlife Way
Glenwood Springs, Colorado 81601

RE: Elk Herd Management Plans for Data Analysis Units E-12 (Piney) and E-16 (Frying Pan)

Dear Julie:

Thank you for your presentation of the draft Elk Herd Management Plans for DAU's E-12 (Piney) and E-16 (Frying Pan) to the Board of County Commissioners on December 4, 2012.

Based on the recommendation of the Colorado Parks and Wildlife, it is the consensus of the Board of County Commissioners to support Alternative No. 2 for both DAU's and that the proposed bull/cow ratios and population numbers are the preferred objectives moving forward.

If Eagle County may be of further assistance regarding this matter, please contact me at (970) 328-8750 or by email at bob.narracci@eaglecounty.us.

Sincerely,

A handwritten signature in black ink, appearing to read "Bob Narracci".

Bob Narracci, AICP
Planning Director

xc: file



January 14, 2013

Julie Mao, Terrestrial Biologist
Colorado Parks and Wildlife
0088 Wildlife Way
Glenwood Springs, CO 81601

RE: Elk Herd Management Plans for DAU E-15 (Avalanche Creek Herd) and E-16 (Frying Pan River Herd)

Dear Ms. Mao,

The Board of County Commissioners (the Commissioners) very much appreciates the presentation you made to us on December 18, 2012 where you described the work that Colorado Parks and Wildlife (CPW) is doing regarding the latest update to the Elk Herd Management Plans for DAU E-15 and DAU E-16 which include areas that specifically fall within the boundaries of southwest Garfield County.

We have reviewed the Elk Herd Management Plans for both of these areas and support Alternative 2 for the population objective range in which the current population would be maintained at its current size (+/-20%). We agree with CPW where Alternative 2 should be the **preferred alternative** as it adequately balances the public interest in preserving the herd for both hunting and viewing opportunities while managing the elk herds to levels that are consistent with the carrying capacity of the land. We also understand that this alternative will continue to allow more focused management at the GMU level (if needed) which allows even more flexibility in the herd management programs.

Without question, we fully support prudent management of the elk herds in Garfield County and surrounding areas. Please accept this letter as an endorsement by the Board of County

Commissioners of Alternative 2 as described in the Elk Herd Management Plans for DAU E-15 (Avalanche Creek Herd) and E-16 (Frying Pan River Herd). Should you have any questions, please do not hesitate to contact the Commission.


Very truly yours,



John Martin, Chairman



Mike Samson, Commissioner



Tom Jankovsky, Commissioner

Cc *Andrew Gorgey, Garfield County Manager*
Fred Jarman, Director, Garfield County Building & Planning Department



Forest
Service

White River
National Forest

Supervisor's Office
900 Grand Avenue
Glenwood Spgs., CO 81601-3602
(970)945-2521
FAX (970)945-3266

File Code: 2640

Date: January 25, 2013

Mr. Perry Will
Area 8 Wildlife Manager
Colorado Parks and Wildlife
0088 Wildlife Way
Glenwood Springs, CO 81601

Dear Perry,

Thank you for the opportunity to review and make comments on the draft Data Analysis Unit (DAU) plans for elk herd management units E-12 (Piney River), E-15 (Avalanche Creek), and E-16 (Fryingpan River). The plans are well written and include pertinent information relevant to setting elk herd population management objectives.

Attached you will find comments from the Eagle/Holy Cross and Aspen/Sopris Ranger Districts pertaining to the draft DAU plans for E-12, E-15, and E-16. Comments from district resource managers take into account continued discussions with your staff.

I understand and concur with the information and goals outlined in the DAU plans. I understand the public's desire to keep elk numbers similar to current levels for hunting and viewing opportunities. In addition, I believe that herd population management objectives should be based primarily on habitat capability of winter ranges.

White River National Forest Plan goals, objectives, standards, and guidelines provide management direction to maintain healthy and available habitats to support populations of elk, deer and other wildlife populations on the National Forest. As land managers we strive to meet these goals, and consider habitat condition and improvement important components in program planning.

While these efforts continue, current conditions of winter range habitats are described in the DAU plans as poor and declining for E-15, and poor to fair and declining for E-12 and E-16. In addition to this, increasing human pressures on these same winter ranges (including development on private land and extensive recreation use on public lands) are acknowledged. I am concerned that an increase in elk herd population objectives could lead to increased conflict and negative consequences for elk, as well as for deer, sage grouse, and other wildlife that rely on these same winter ranges for survival.

I agree that warming and drying climate trends and the increased forage available to elk in lodgepole pine stands with high levels of mortality caused by the mountain pine beetle epidemic have resulted in changes to elk distributions and timing of their use of winter ranges. Although shortening the period of time that elk spend on winter ranges has positive implications for winter range health, when severe winters occur, I am concerned about whether the winter ranges in E-12, E-15, and E-16 are adequate to maintain elk herds at the proposed higher levels (there is no



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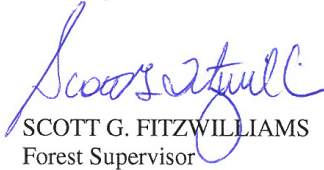


discussion in the DAU plans of supplemental winter feeding of elk under severe conditions, and I assume and agree that is not a desired scenario).

In summary, I believe elk herd population objectives for E-12, E15, and E-16 should be linked to the winter range habitat conditions and the ability to sustain increased numbers of elk along with other game and non-game species. I commend Colorado Parks and Wildlife in continuing to show reductions in elk herd population numbers through management, from their highs in the mid to late 1990s, getting ever closer to those 1988 population objectives. The White River National Forest will continue to implement the recent decisions for travel management, the sagebrush enhancement project on the Eagle/Holy Cross Ranger District, and the wildlife habitat improvement project on the Aspen/Sopris Ranger District so that elk winter and transitional ranges improve their condition to support elk, deer, sage grouse, and other wildlife species that depend on these habitats. I appreciate your help and support of these projects and look forward to our continued partnership.

If you have any questions or would like to discuss further, please contact Wendy Magwire at (970) 945-3244.

Sincerely,



SCOTT G. FITZWILLIAMS
Forest Supervisor

Enclosures

cc: Julie Mao

Comments prepared by Lara Duran, Eagle-Holy Cross District Wildlife Biologist, with minor edits by Wendy Magwire, WRNF Forest Wildlife Biologist:

Thank you for the opportunity to comment on the draft Piney River Elk Herd E-12 Data Analysis Unit Plan and the Frying Pan River Elk Herd E-16 Data Analysis Unit Plan. The Eagle-Holy Cross Ranger District appreciates close collaboration with local Colorado Parks and Wildlife managers in managing for elk and their habitats on National Forest System lands.

The Forest Service is directed to manage and balance for multiple uses, including elk management, elk hunting, elk viewing and the myriad of recreational and other pursuits that can affect elk and their habitats. In attempts to do this, the 2002 White River National Forest Land and Resource Management Plan (Forest Plan) identified American elk as a Management Indicator Species as a means to measure overall ecological conditions, monitor federal management actions on large game, effects of motorized and non-motorized travel management especially road density, and represent terrestrial wildlife species that are sensitive to recreation activities. In addition, the Forest Plan designated key areas to be managed specifically for the benefit of elk (5.41 Deer and Elk Winter Range and 5.43 Elk Habitat) with the specific guideline to collaborate closely with Colorado Parks and Wildlife and adjacent land owners to manage elk, their habitats and federal actions in doing so. This includes managing for adequate browse, forage, cover and solitude by restricting disturbance, special uses, domestic livestock grazing, vegetation management activities, infrastructure, recreation, motorized vehicle use, and road density. Seasonal restrictions are designated in the Forest Plan for these key areas, coincident with key biological times and habitats critical to elk.

Recreation, including motorized and non-motorized travel, can affect elk and their habitats. Recreation on National Forest System lands in E-12 and E-16 is expected to expand in type, number of recreationists, frequency of visits, area of use, and level of impact. Managing motorized travel on National Forest System lands is a quandary when it comes to elk and elk habitat management. On one hand, reduction in motorized use, seasonal restrictions to motorized travel and closure of roads and trails is known to benefit elk and their habitats. On the other hand, these actions may be perceived to limit hunting opportunities. Colorado Parks and Wildlife participated in many iterations of the public Travel Management Planning process, which included the opportunity to help shape management alternatives and address issues affecting elk related to motorized travel management. Motorized travel equipment, including winter transportation modes, are becoming more popular and more technically proficient in travelling over areas previously unreachable. Like other forms of recreation, motorized vehicle use is predicted to increase in numbers, frequency, and expand in area of use. Elk population objectives in E-12 and E-16 need to be cognizant of these predicted trends for recreation and motorized travel, regardless of enforcement challenges and Forest Plan restrictions.

Winter range on National Forest System lands in E-12 and E-16, for the most part, is in relatively poor condition for a variety of reasons. Elk are one of many contributing factors. It is assumed that winter range conditions are similar across other land jurisdictions throughout E-12 and E-16. Observations indicate decadent winter range conditions with depauperate grass and forb understories. Over utilization by both native and domestic ungulates along with historic fire and juniper encroachment have established vegetation trends that are concerning. Droughts limit the availability of forage and browse for elk on both summer and winter ranges, and this exerts additional pressure on the vegetation. Predicted climate change effects would exacerbate vegetation conditions on winter range. Thus, the long-term resiliency of winter range in E-12 and E-16 is a concern. While management projects in E-12 and E-16 are underway to address these concerns, we question whether the winter

range in E-12 and E-16 can continue to support the preferred population objective without more extensive habitat management across all land jurisdictions in the area. Local National Forest System and Colorado Parks and Wildlife managers will need to continue to work collaboratively to meet our mutual objectives with projects like the Sagebrush Enhancement Project.

The effect of elk population levels on mule deer population levels is a concern for the WRNF which lists mule deer as a Species of Concern in the 2002 Forest Plan. Elk are very effective at outcompeting mule deer. Maintaining the current elk populations in E-12 and E-16 would continue to exert pressure on mule deer, especially given the existing condition of winter range for both. We would like to see elk population objectives be tiered more closely to mule deer population objectives, with the management emphasis to favor mule deer over elk because of elk's strength as a competitor.

Land use conversion in E-12 and E-16 is likely to continue as it is throughout Eagle County in low lying valleys. Lands along Colorado Highway 131 are being considered for reservoir development and commercial development by private entities. Other large privately owned land tracts are posted for sale in E-16. These land use changes would not only affect elk, but also mule deer, greater sage-grouse (a candidate for listing under the Endangered Species Act), and other wildlife species that depend on those areas. Elk population objectives need to carefully consider the long-term trends in land uses on privately owned lands in E-12 and E-16 for more than just elk management.

Accurate and updated map products, data, and collaboration from Colorado Parks and Wildlife greatly assist the Eagle-Holy Cross Ranger District with implementing Forest Plan standards and guidelines designed to benefit elk and their habitats in attempts to co-manage for elk population objectives. Funding for winter range improvement projects like the Sagebrush Enhancement Project through the Habitat Partnership Program and non-game programs are valuable means of collaboration that local Colorado Parks and Wildlife managers contribute to the local National Forest System to benefit elk.

Finally, as National Forest System lands comprise over 40% of DAU E-12 and 71% of DAU E-16, the Eagle-Holy Cross Ranger District recognizes our important role in managing the habitat on which elk rely. Collaborative landscape scale conservation projects will have long-term positive effects on elk vitality and enhance the resiliency of their habitats with particular emphasis on winter range. The Eagle-Holy Cross Ranger District looks forward to working with local Colorado Parks and Wildlife managers as well as our other federal and private partners to continue managing public lands and multiple uses to benefit American elk.

Comments on the draft Data Analysis Unit (DAU) plans for elk herd management units E-15 (Avalanche Creek), and E-16 (Fryingpan River).

Prepared by Phil Nyland, District Wildlife Biologist, Aspen/Sopris R.D., January 22, 2013

Objectives for elk herd population sizes in E-15 and E-16 should remain at the current 1988 levels. This means a continued reduction in current elk numbers. Antlerless licenses should stay the same or decrease to allow the herd to stabilize based on post-harvest counts that indicate improved calf recruitment and reduced competition for food and space.

Hunting in GMUs 43, 44, 47, 444, and 471 is moderately crowded, but relatively uncrowded compared to hunting in the Flattops DAU. Harvest rates as they currently are appear to provide adequate hunting opportunities in GMU 47, and 471; GMU 43, 44, and 444 can probably sustain additional antlerless hunting opportunities since parts of these GMUs have good access for most hunters and elk numbers are probably higher. Sustaining or increasing cow licenses would be very acceptable and sustaining or increasing either-sex licenses would be somewhat acceptable. Bull opportunities appear adequate in these DAUs, with the possible exception of 444.

Eliminating list B and C cow licenses would be somewhat unacceptable. This can be a good tool for reducing cows and additional bulls in remote areas of 47, 471, and 444, if hunters purchase additional tags and are able to fill them once they get into these areas.

Elk hunting in these DAUs would be improved with higher hunter success and less motor vehicle access. Seeing more mature bulls and more elk of all ages and sexes would not necessarily improve Elk hunting in these DAUs.

Winter range is the limiting factor for herd survival and juvenile recruitment for elk in these DAUs. A high percent of winter range is found on private land, in particular in GMU 444, and 47. Winter range on public land is susceptible to increasing disturbance impacts from growing levels of year-around recreation. Key areas at Avalanche Creek, the Crystal River Valley, Four Mile, Coal Creek, and South Thompson Creek that provide winter, transition, and calving areas for elk on USFS lands have been targeted for restoration over the next 5-10 years in E-15. Similarly, key areas in E-16 at Basalt Mt, Freeman Mesa, Cattle Creek, and the upper Fryingpan River valley on USFS lands have been targeted for restoration over the next 5-10 years. Maintaining reduced elk numbers would allow these areas to adequately revegetate to a point that they can sustain elk with good juvenile recruitment, and at the same time provide forage for mule deer, a species that appears in decline in these areas. Also, providing habitat for sustained elk numbers needs to be balanced with continued livestock grazing in parts of GMU 43, 47, 444, and 471.