YELLOW CREEK ELK
HERD MANAGEMENT PLAN

DATA ANALYSIS UNIT E-10

GAME MANAGEMENT UNITS 21, 22, 30, 31, & 32

PREPARED FOR

COLORADO PARKS AND WILDLIFE

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EXECUTIVE SUMMARY

Yellow Creek Elk Herd (DAU E-10)	**GMUs: 21, 22, 30, 31, 32**
Posthunt Population: Previous Objective: 7,000-9000 elk; Estimate for 2020: 12,067. **Preferred Alternative: 8,500-10,500**	
Posthunt Sex Ratio (Bulls:100 Cows): Previous Objective: 18-22; Post-hunt 2020 observed: 24.8; modeled: 23.6. **Future Management: Status Quo OTC, expected ratio of 18-25**	

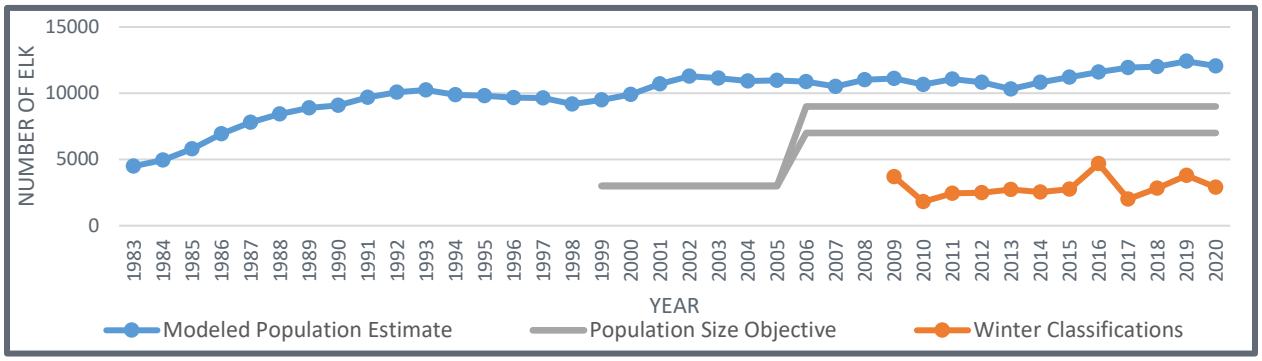

Figure 1. E-10 Modeled Post-hunt Population Estimate, Objective Range, and Classifications, 1983 – 2019.

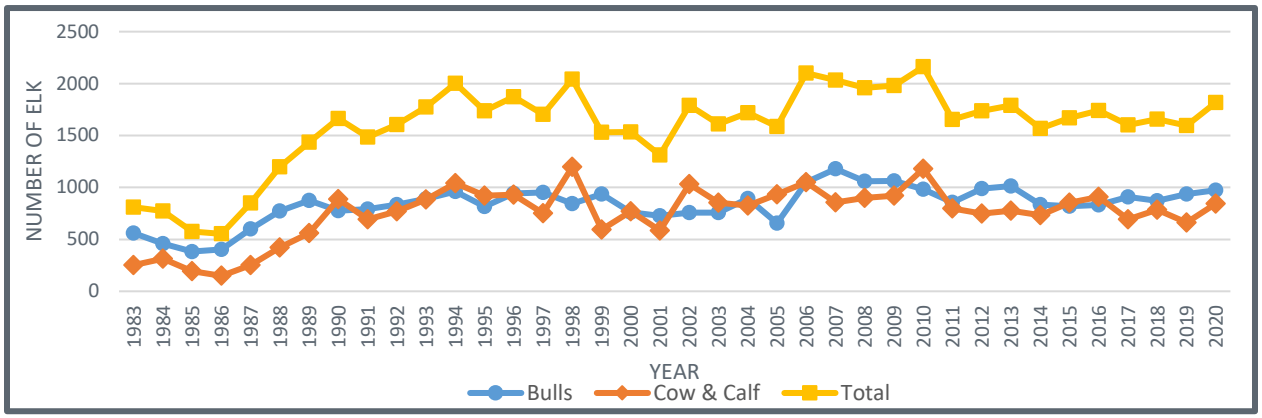

Figure 2. E-10 Annual Harvest Estimate, 1983 – 2019.

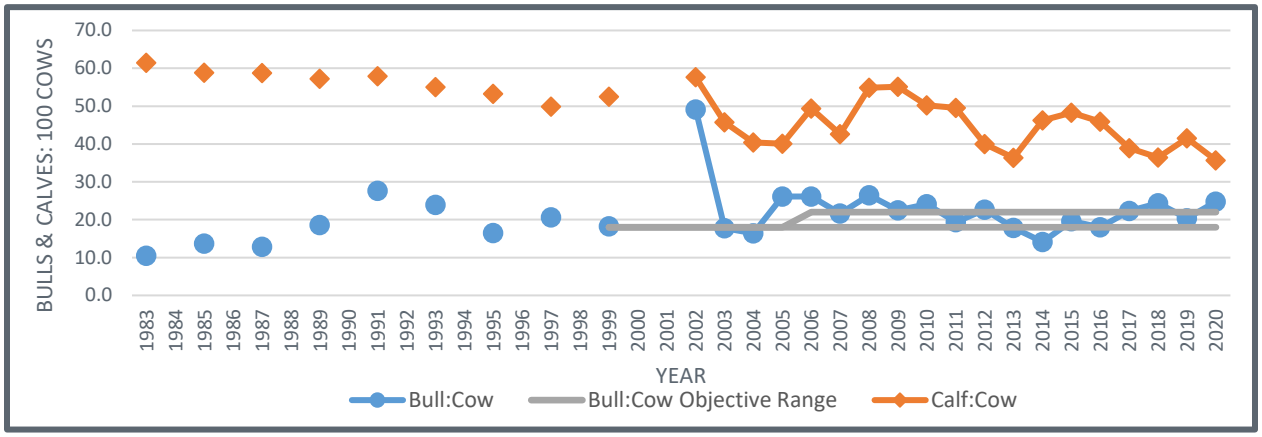

Figure 3. E-10 Observed Bull:Cow and Calf:Cow Ratios and Bull:Cow Objective Range, 1983 – 2019.

Background Information

The Yellow Creek elk herd (DAU E-10) is comprised of GMU's 21, 22, 30, 31, and 32 located in portions of Mesa, Garfield, and Rio Blanco Counties. Approximately 29% of E-10 is privately owned while the Bureau of Land Management manages most of the remaining land. Major geographic features include the Bookcliffs and the Roan Plateau and significant drainages include Yellow, Roan, Piceance, and Parachute Creek. Elevations range from 4,600 ft. to nearly 9,300 ft. Lower elevations are used for agricultural production and residential developments while higher elevations are grazed by livestock during the spring, summer and fall. Oil and gas production is common throughout much of the DAU. Population centers include Grand Junction, Rangely, Palisade, Parachute, and Rifle.

The elk population in E-10 has mirrored the larger population in Colorado. Unregulated market hunting following European expansion nearly extirpated elk from the state by the early 1900's (Barrows and Holmes 1990). The elk population in E-10 remained extremely low through much of the 20th century but grew steadily through the 1980s and early 1990s. Since the mid-1990s, the growth has slowed because of increased harvest to better manage the herd. Calf:cow ratios have declined steadily from over 60 calves:100 cows in the early 1980s to 36.5 calves:100 cows in 2018. It is likely that the low calf:cow ratios are due to overall degraded condition of the habitat, habitat fragmentation, and increasing recreational activities.

Significant Issues

Elk management in E-10 is affected by habitat quality decline, competition with feral horses, long-term drought, increasing recreational activity, oil and gas development, large-scale wildfire, and the resulting changes in herd distribution. CPW collaborates with private landowners and land management agencies on habitat projects to benefit all species of wildlife. Calf:cow ratios in E-10 have been declining steadily, which mirrors the trends in many elk herds in Colorado. Additionally, hemorrhagic, and chronic wasting diseases have been documented in E-10 and may be impacting the population. Predation may also be affecting calf survival. Elk distribution and public hunting access is complex and requires cohesive and uniform management strategies.

Management Alternatives

Three alternatives were proposed for the population size in E-10 for the next ten years. The three options were framed as changes from the 2019 population size estimate of 12,411: a) to remain at status quo, b) a slight decrease from the current population size estimate and c) a moderate decrease from the current population size estimate. There was strong public support for managing the elk herd well below the DAU's diminished forage capacity due to feral horses, long-term drought, fire, and habitat fragmentation by energy development. A smaller elk population will decrease resource competition with mule deer and lower the potential for population-level impacts from CWD in the future. For these reasons, CPW staff recommend a slight reduction in the population size objective range, from the current population estimate of 12,067, to 8,500-10,500 elk. Changing license allocation from over-the-counter to limited requires a public petition to the Parks and Wildlife Commission. For this reason, the DAU will continue to have OTC licenses and the bull cow ratio objective, based on observed data over the last 10 years, will be an expected ratio of 18-25 bulls:100 cows.

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INTRODUCTION AND PURPOSE

Colorado Parks and Wildlife (CPW) manages wildlife for the use, benefit, and enjoyment of the people of the state in accordance with the CPWs agency'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 human impacts.

CPW establishes general season structure guidelines statewide, known as the Big Game Season Structure (BGSS). CPW uses the BGSS as a standardized framework for annual big game hunting regulations to ensure predictability and consistency geographically and annually for big game seasons. This framework is updated every five years through a public process and establishes what types of hunting opportunities will be available, when opportunities will be available, where opportunities will be available, and how the opportunities will be divided amongst methods of take.

Within these overarching frameworks, CPW manages big game populations as individual herds called Data Analysis Units or DAUs. A DAU is the geographic area that represents the year-round range of a big game herd and delineates the seasonal ranges of a specific herd that naturally experiences little interchange with adjacent herds. A DAU includes the area where the majority of the animals in a herd are born, live, and die. Each DAU usually is composed of several game management units (GMUs) designed to distribute hunters within the DAU. In some cases, only one GMU makes up a DAU.

CPW uses a "management by objective" approach (Figure 1). With this approach, CPW manages big game populations to achieve population and sex ratio objective ranges established through an intensive public process that culminates in Herd Management Plans (HMPs). The purpose of an HMP is to provide a process to integrate the plans and intentions of CPW with the concerns and ideas of land management agencies and interested publics in determining the management practices of each big game herd.

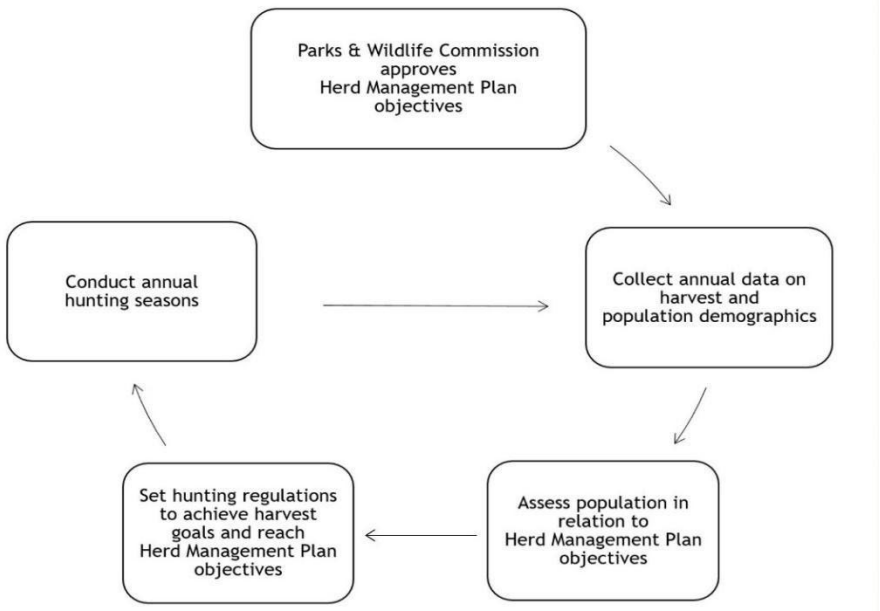

Figure 1. CPW's Management by Objective process.

In preparing an HMP, CPW strives to balance the biological capabilities of the herd and its habitat with the public's demand for wildlife recreational opportunities.

Primarily, the HMP process produces objective ranges for the number of animals in the DAU and the desired sex ratio (e.g., the number of males per 100 females). These numbers are referred to as the DAU population and herd composition objectives, respectively. Secondarily, the HMP process identifies strategies and techniques to reach the population size and herd composition objectives. 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. Various constituents, including the U.S Forest Service, the Bureau of Land Management, sports persons, guides and outfitters, private landowners, local chambers of commerce and the general public, are involved in the determination of DAU population and composition objectives and related issues. During the HMP process, public input is solicited, collected, and incorporated through surveys, public meetings, and written comments to the Parks and Wildlife Commission. The purpose of this herd management plan is to set population and harvest objectives for the Yellow Creek elk herd (E-10; GMUs 21, 22, 30, 31 & 32). The herd management plan will be in place from 2021-2031 with the expectation that it will be reviewed and updated in 2031.

YELLOW CREEK ELK DATA ANALYSIS UNIT

Location

The Yellow Creek elk herd, DAU E-10, is located in west-central Colorado and includes portions of Mesa, Garfield, and Rio Blanco counties (Figure 2). The unit is bounded on the north by the White River, on the east by Colorado Highway 13/789, on the south by the Colorado River, and on the west by the Utah-Colorado state line. The Game Management Units in E-10 include 21, 22, 30, 31 and 32. The entire DAU is approximately 9,700 km^2. Human population centers occur on the periphery of the DAU in the cities and towns of Grand Junction, Fruita, De Beque, Rifle, Rangely, and Parachute. The town of Meeker lies just outside of the DAU to the northeast.

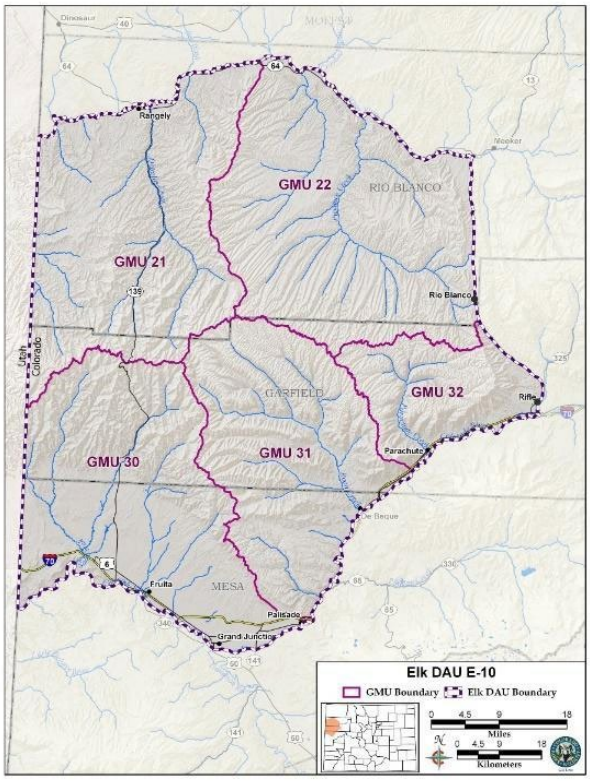

Figure 2. Location of Data Analysis Unit E-10 in northwestern Colorado.

Physiography

Topography

The topography in DAU E-10 is highly varied. Elevations range from approximately 4,600 ft. where the Colorado River meets the Utah state line to nearly 9,300 ft. near Anvil Point northwest of Rifle. Generally, the highest elevations are at the center of the DAU where the five GMUs meet, and the lowest elevations are at the periphery of the DAU on the north, east, and south boundaries. Topography progresses from flat, low elevation desert and agricultural areas, up into steep foothills, rolling hills, and ridges bisected by nearly vertical canyon walls. This diverse topography results in a wide variation of available wildlife habitats. Major drainages in the DAU include the Colorado and White Rivers, and Piceance, Sheep, Government, West Salt, East Salt, Roan, Parachute, Yellow, and Douglas Creeks.

Climate

The climate in E-10 varies with the elevation gradient of the DAU. Lower elevations are characterized by moderate winters and very hot summers with low to moderate precipitation. Most low elevation areas receive approximately 10 inches of precipitation annually. Much of the precipitation at these low elevations is associated with summer monsoons and relatively little occurs in the form of snow. Although the lower elevations are generally warmer throughout the year, temperature inversions can result in dramatically lower winter temperatures in valleys compared to higher elevations. Aside from anomalous inversions, valley temperatures generally average between 10ºF and 100ºF.

The higher elevations are characterized by long, cold winters and short mild summers with relatively higher precipitation accumulations of 20-25 inches per year. Temperatures generally average between 0ºF and 85ºF. Heavy winter snowfall accumulates at the top of the DAU, including Douglas and Baxter Passes, and the Roan Plateau. Deep snow generally forces elk to lower elevations on south-faces or wind-blown slopes for the winter. This seasonal migration is typical of elk herds in western Colorado.

Land Status

Land Ownership

The Bureau of Land Management manages approximately 70% of the 9,700 km^2 in E-10. Twenty-nine percent of the land is privately owned. The state of Colorado and other federal agencies manage the remaining 1% of the total land (Figure 3). Unlike much of western Colorado, the US Forest Service does not manage any public lands in E-10.

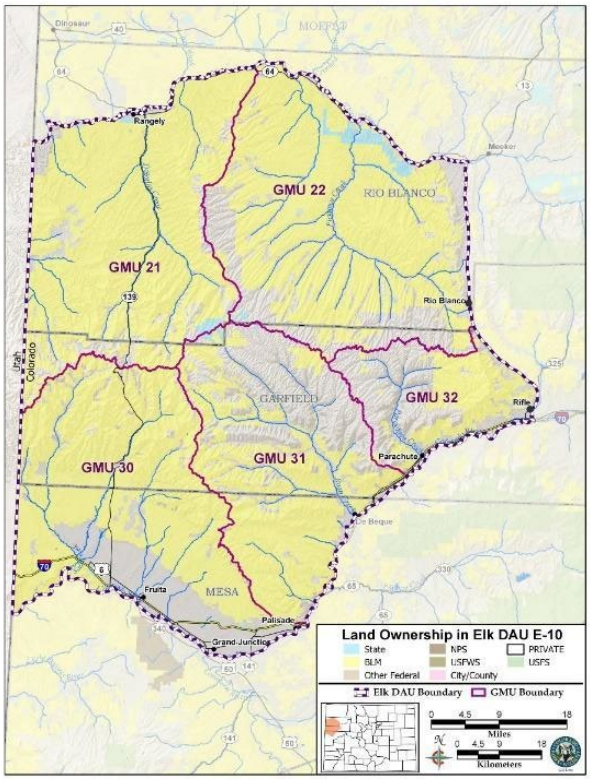

Figure 3. Land ownership in Data Analysis Unit E-10 in northwestern Colorado.

Land ownership varies between winter and summer ranges. Elk rely more heavily on private lands in the summer than they do in the winter. Although 70% of all the lands in E-10 are managed by the BLM, less than 60% of summer range is managed by them (40% is privately owned). Although elk rely more heavily on BLM lands for winter range (Figure 4), approximately 25% of winter range is privately owned, resulting in some conflicts with landowners.

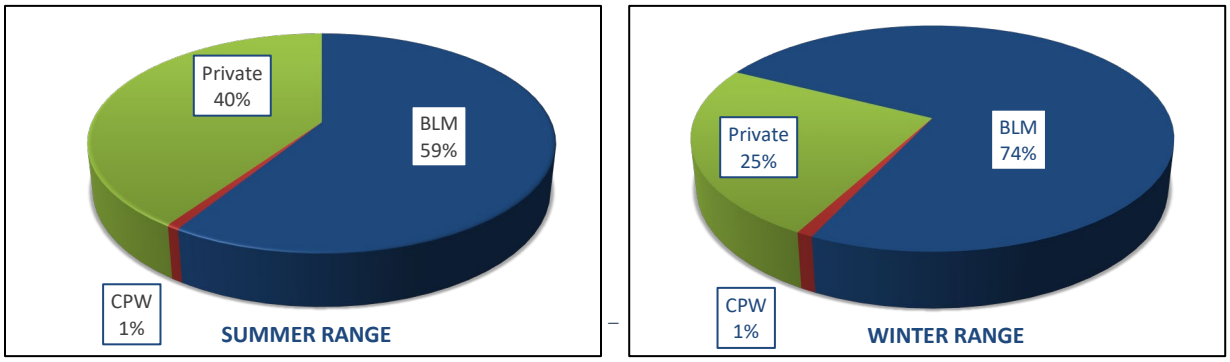

Figure 4. Seasonal rangeland ownership in Data Analysis Unit E-10 in northwestern Colorado.

Land Use

Land use in E-10 varies across the elevation gradient. Population centers are located on the periphery of the DAU at the lowest elevations. The areas immediately surrounding the major cities and towns are generally privately owned and used for agricultural production. The land at higher elevations is predominantly public lands managed by the Bureau of Land Management. These lands provide summer livestock grazing, wildlife habitat, hunting, and, in some areas, energy extraction. Ranching is an important land use on the Roan Plateau, in the Piceance Basin, and on either side of Douglas and Baxter Passes.

▪ Energy Development

E-10 lies atop significant deposits of natural gas and oil shale, much of which is open to mineral extraction. Energy development is concentrated on the Roan Plateau, the Bookcliffs, Parachute Creek, west of Douglas Creek, and the Piceance Basin (Figure 5). In addition to the direct loss of habitat from infrastructure, energy development can cause behavioral and distributional shifts in elk and affect the quantity and quality of available habitat (Hebblewhite 2011, Buchanan et al. 2014). We address impacts to the E-10 elk herd from extensive energy development in the Energy Development section of Current Issues below.

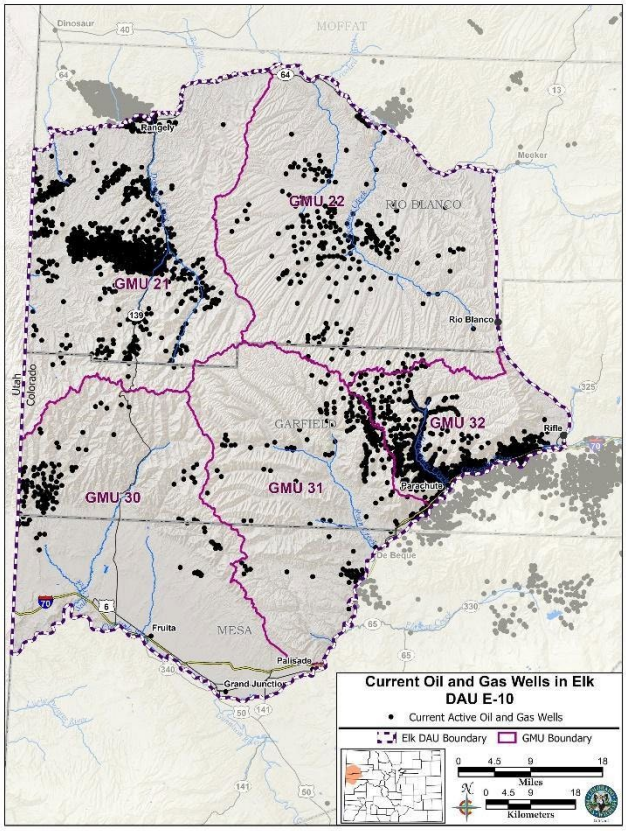

Figure 5. Current oil and gas wells in Data Analysis Unit E-10 in northwestern Colorado.

- Outdoor Recreation

Outdoor recreation is a popular and increasing activity in E-10 on both winter and summer ranges during critical times for elk. Recreational activity, particularly motorized, negatively impacts elk by increasing activity levels and decreasing resting and feeding times (Naylor et al. 2009). Significant recreational centers include the North Fruita Desert and face of the Bookcliffs in GMU 30, the area around Fravert Reservoir in GMU 32, and the top of the Roan Plateau. Common activities include mountain biking, feral horse viewing, motorized touring (snowmobile, ATVs, and 4WD vehicles), dispersed camping, shooting, hiking, and horseback riding. There are increasing conflicts between user groups and also with wildlife. CPW seeks to minimize and mitigate these conflicts during land use and herd management planning.

Hunting is a popular activity in E-10. Hunters pursue big game, small game, and waterfowl across much of the DAU. Waterfowl hunting is popular in small lakes and sloughs during early seasons and on the Colorado and White Rivers during the later seasons. The elk herd is managed to provide substantial hunting opportunity; bull licenses in 2nd and 3rd rifle seasons, and either-sex archery licenses are unlimited in number and available over-the-counter. On average, 8,600 hunters spend nearly 43,000 recreation days annually in E-10 pursuing elk. Of these days, approximately 3,100 hunters focus on GMUs 21 or 30.

- Agricultural Production

Farming and ranching are traditional activities in E-10 that still contribute significantly to the economies of the area. Row crops, particularly corn, are produced in the Grand Valley around Grand Junction and Fruita. This portion of the DAU is not within elk range despite occurring in the DAU and thus does not impact elk habitat. Hay and alfalfa are produced at middle elevations on private lands as cut forage for livestock.

Cattle and sheep graze much of the elk habitat on public and private land in the DAU throughout the year. Livestock generally graze high elevation BLM and private lands during the summer and are moved to lower elevation BLM lands and home ranches for winter. Livestock grazing can have negative, positive, and neutral impacts to wildlife (Schieltz 2017). These impacts and the degree at which they effect elk, is determined by a suite of factors, including timing, seasonality, intensity, duration, and location of the activity. Generally, lighter intensity grazing, rotational systems, seasonal rest, and deference during drought are less associated with negative impacts.

Sympatric Big Game Populations

The geographic area used by E-10 overlaps all or portions of DAU boundaries for three mule deer herds, one pronghorn herd, one black bear and one mountain lion population (Table 1). Just as with elk DAUs, the geographic boundaries of these other big game DAUs represent the year-round range of the population and delineate the seasonal ranges of that specific population that naturally experiences little interchange with adjacent populations.

Population	Species	GMUs	2020 Post-hunt Population Estimate
A-21	Pronghorn	10, 21	288
A-22	Pronghorn	30	not modeled
B-01	Black bear	21, 22, 30, 31, 32	not modeled
D-07	Mule deer	11, 12, 13, 22, 23, 24, 131, 211, 231	36,336
D-11	Mule deer	21, 30	7,175
D-41	Mule deer	31, 32	4,939

Table 1. Sympatric big game populations in Data Analysis Unit E-10 in northwestern Colorado.

Three mule deer herds overlap with E-10 (Figure 6). The entirety of both D-11 and D-41 are included in E-10's geographic extent. A portion of D-07, GMU 22, is included in E-10. Due to similarities in management, disease, and popularity as a hunting resource, elk, and mule deer populations as well as their management, influence one another. Consequently, the herd management plan for the D-11 mule deer herd is being revised concurrently with that of E-10.

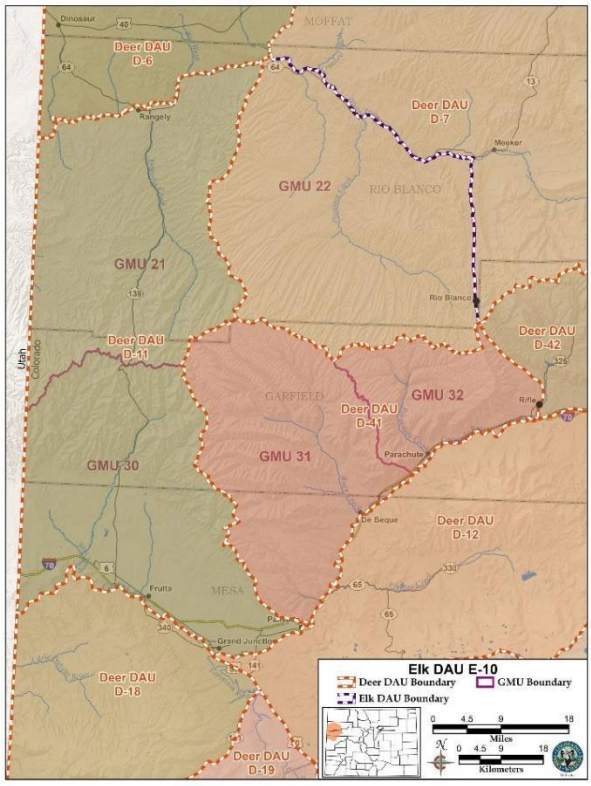

Figure 6. Sympatric mule deer populations in Data Analysis Unit E-10 in northwestern Colorado.

The Douglas Pass (DAU B-01) bear population overlaps with E-10 and includes GMUs 21, 22, 30, 31, and 32. This bear population is above the socio-political carrying capacity and management efforts are concentrated on suppressing its population (Colorado Parks & Wildlife unpublished draft). Since 2012, license numbers and harvest have increased significantly and, beginning in 2020, all hunters can obtain licenses to harvest two bears annually. Despite increased license availability, harvest in B-1 will likely be limited both by hunter demand and private land access.

The mountain lion population within E-10 was historically managed as a single population known as L-07. Since the approval of the West Slope Lion Management Plan in September 2020 (Colorado Parks & Wildlife 2020), mountain lions in E-10 are managed at the regional level, and grouped with much of the Northwest Region for harvest limit goals. This much larger geographic scale is more relevant to mountain lion biology and spatial use. The broad goal laid out by the Plan is for relatively stable mountain lion population, while allowing for management flexibility where appropriate. The Plan sets forth broad composition mortality thresholds to guide regional harvest objectives. All management actions are intended to be implemented and evaluated at 3-year intervals to account for single-year stochastic events. At a smaller scale within the over-arching regional framework, harvest limits for the mountain lions within E-10 are grouped with much of the western portion of the Northwest Region (Figure 7).

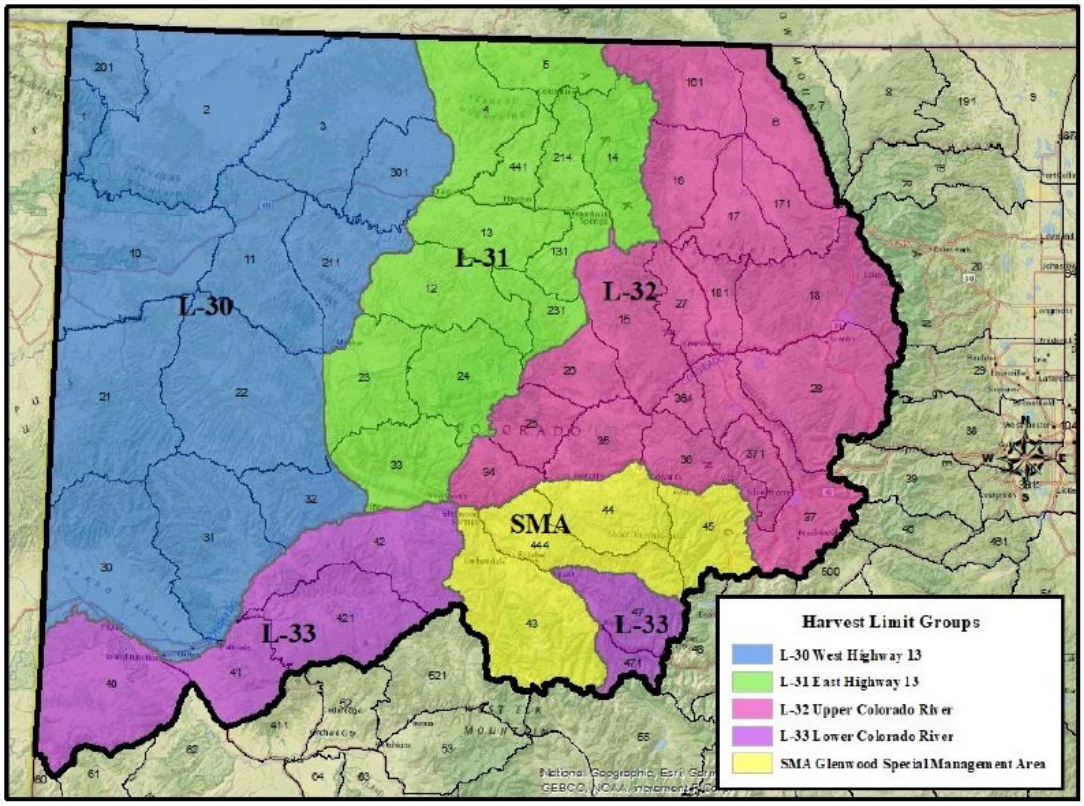

Figure 7. CPW Proposed NW Region Mountain Lion Harvest Limit Groups (Colorado Parks & Wildlife 2020).

HABITAT RESOURCE

The habitat resource in E-10 varies widely across the 9,000 km^2 geographic area that this elk herd inhabits. A gradient from low to high elevations of salt desert shrub, pinyon-juniper woodlands, Gambel oak, aspen, and finally spruce-fir woodlands is typical in this DAU. The rugged topography in E-10 generates highly variable aspects that create unique microclimates, which support variations in vegetation and habitat. The broad diversity of habitats in close proximity provides a highly desirable mosaic and beneficial edge effect that is valuable for many wildlife species, including elk (Figure 8).

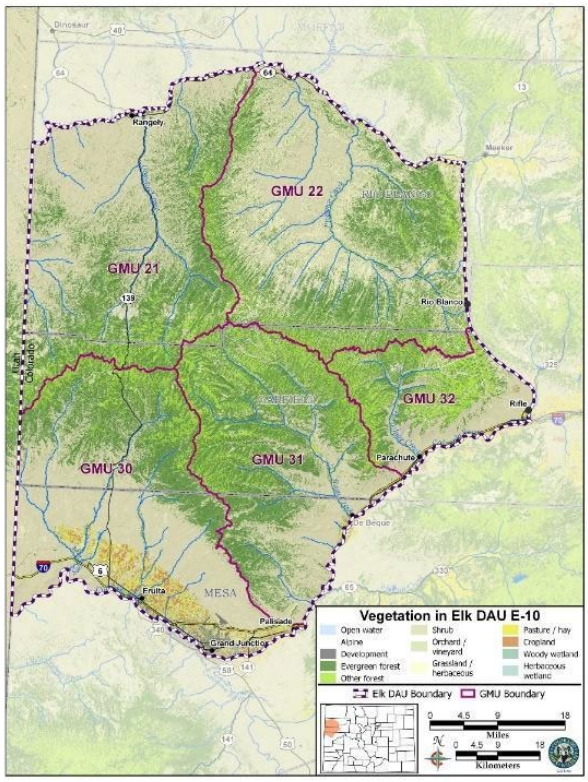

Figure 8. Vegetation distribution in Data Analysis Unit E-10 in northwestern Colorado.

Diverse shrublands and evergreen woodlands cover much of E-10 (Figure 9). Evergreen woodlands make up approximately 36% of the vegetation in E-10 and provide winter habitat in pinyon-juniper woodlands as well as summer habitat in spruce-fir forests. Shrub habitats include both high elevation summer sagebrush and lower elevation sage and shrub winter habitats and make up approximately 47% of the vegetation. Aspen comprises approximately 10% of the vegetation in E-10 and provides critical forage during summer and calving habitat. Approximately 2% of the DAU is mapped as grasslands, residential developments, and croplands.

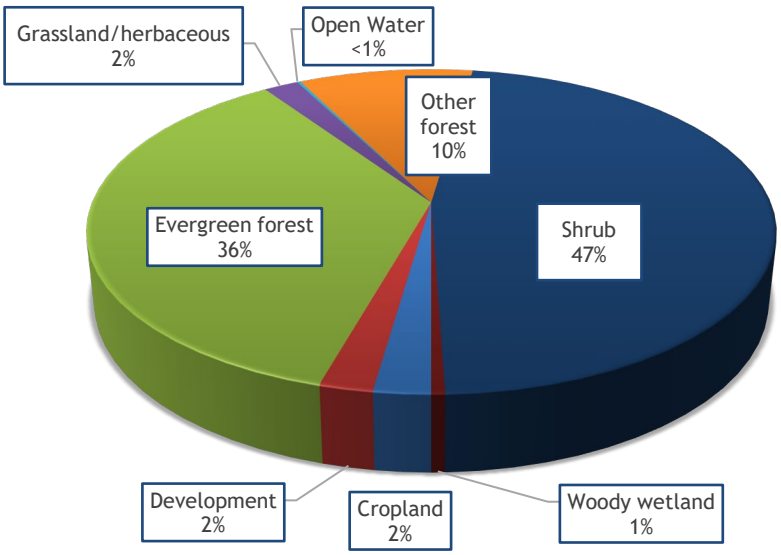

Figure 1. Vegetation composition of Data Analysis Unit E-10 in northwestern Colorado.

Habitat Distribution

Elk Overall Range

Elk live throughout E-10 with the general exceptions of the largest human population areas and the desert lowlands of the Grand Valley (Figure 10). Of the 9,700 km^2 in E-10, 9,100 km^2 are considered elk range. Elk herds move across the available habitat throughout the DAU over the course of the year, utilizing different ranges during different seasons.

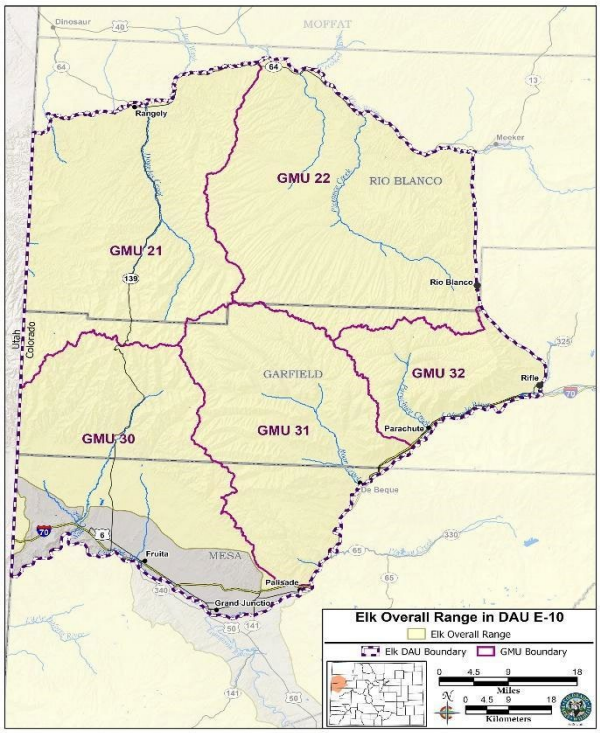

Figure 10. Elk overall range in Data Analysis Unit E-10 in northwestern Colorado.

Elk Summer Range

CPW defines summer range as "*that part of the range of a species where 90% of the individuals are located between spring green-up and the first heavy snowfall.*" E-10 encompasses over 3,400 km^2 of summer range typically situated at the highest elevations along the drainage divides that make up the boundaries of the individual GMUs (Figure 11). High elevation Douglas fir, aspen, and aspen/conifer mixed stands, interspersed with sagebrush mixed grasslands provide excellent forage and cover during summer and fall. The quality of summer range is important for elk to ensure they recover from winter weight loss, that cows can support late fetal development and lactation, and allows all animals in the population to go into winter in good body condition. Production areas are included in this area and are critical calving and calf-rearing areas for young of the year for the same reasons.

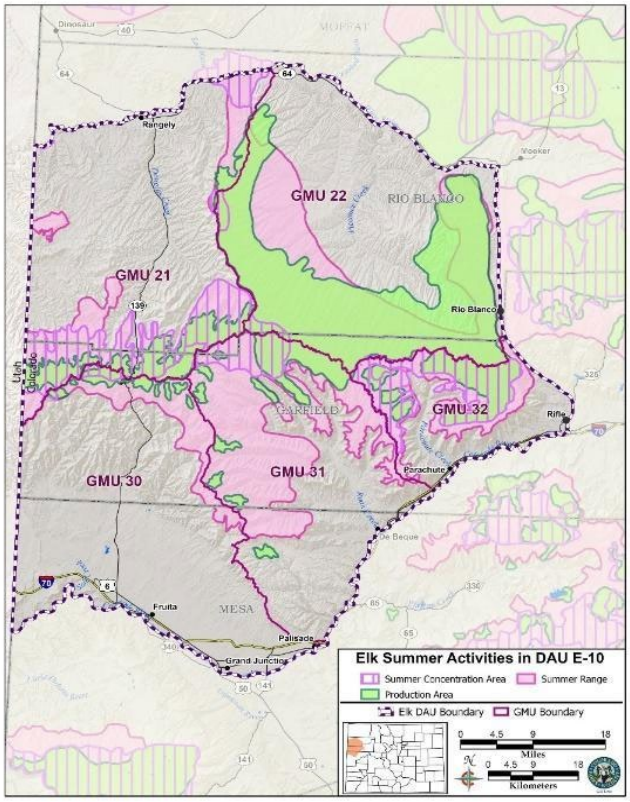

Figure 11. Elk summer activities in Data Analysis Unit E-10 in northwestern Colorado.

Elk Winter Range

CPW defines winter range as "*that part of the overall range of where 90 percent of the individuals are located during the average five winters out of ten from the first heavy snowfall to spring green-up*". Usable winter range is more limited than summer range due to deep snow and inaccessible forage at higher elevations. CPW further differentiates winter range into winter concentration areas and severe winter range. These areas are defined as:

Winter Concentration Area: *the part of the range where densities are at least 200% greater than the surrounding winter range in average winters.*

Severe Winter Range: *that part of the range where 90% of the elk are located during the two worst winters in 10 years as determined by the maximum annual snowpack and minimum temperatures.*

DAU E-10 has approximately 7100 km^2 of elk winter range (Figure 12). Favorable snow depths, slope, aspect, and winter temperatures create accessible forage and make these areas suitable for wintering elk. Important winter ranges include the Piceance Basin, Douglas Creek, Roan Creek and Parachute Creek. During light winters, elk often remain on relatively open windswept ridges at higher elevations including Skinner Ridge, Long Ridge, and Cow Ridge.

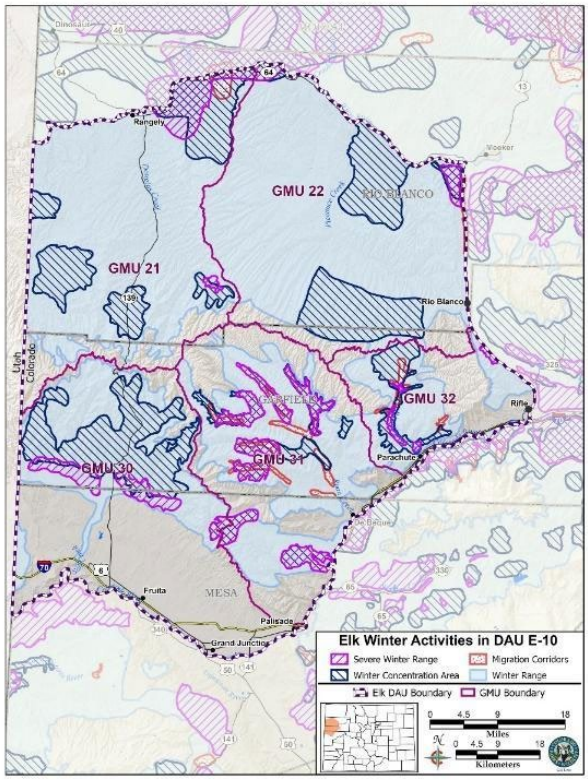

Figure 12. Elk winter activities in Data Analysis Unit E-10 in northwestern Colorado.

Habitat Condition and Capability

Due to the varied landownership and the wide range of elevations, land use, and vegetation, it is difficult to generalize about the habitat condition in E-10. Land uses vary widely, and energy development, cattle grazing, and farming all have unique impacts on the habitat condition. However, some habitat concerns are common across much of E-10, including drought, wildfire, overgrazing, energy development, and conversion from native to invasive plants.

The Bureau of Land Management manages the majority of habitat in E-10 (~ 70%). The BLM monitors its rangelands using an Assessment, Inventory, and Monitoring (AIM) Strategy and the Land Monitoring Framework. Both methods include the collection of over 100 different

measurements of standardized quantitative soil and vegetation data relevant to livestock and wildlife habitat management, and soil and water conservation (Pellant et al. 2018). In E-10, the BLM monitors 526 sites, most of which have some degree of departure from reference condition in key indicators including biotic integrity, noxious weed cover, and functional/structural condition. Additionally, most sites have one or more species of noxious weed and at least 10% noxious weed cover (USDI Bureau of Land Management 2019). These indicators all suggest that the habitat in E-10 is over-utilized and unable to support additional animals on the landscape.

The degraded habitat quality may be mirrored by the ungulate reproduction measured in E-10. Calf:cow ratios have declined from 61.5 calves:100 cows in 1983 to 35.7 calves:100 cows in 2020. Similarly, fawn: doe ratios in D-11, along the western edge of E-10, have declined from 70 fawns:100 does in 1981 to 51.6 fawns:100 does in 2020. To address these issues, private landowners, CPW, and land management agencies collaborate on multiple habitat improvement projects in E-10 annually to benefit elk habitat. These projects seek to reduce the distribution and abundance of noxious weeds, increase native grasses, create diversity in older age-class pinon-juniper woodlands, and set back succession in all habitat types to improve the nutritive capability and palatability of elk forage. CPW staff also leads and collaborates on significant empirical research into habitat condition and improvement.

Drought

A critical contributor to the poor habitat quality in E-10 is long-term drought. Long-term drought and the impacts to the forage and wildlife in E-10 are severe, cumulative, and long-lasting. Drought can impact foraging opportunities for ungulates (Aikens et al. 2020), negatively impact fawn survival (Tosa et al. 2017) and alter the timing of annual elk migration (Rickbeil et al. 2019).

The US Drought Monitor (USDM) is a partnership between the National Drought Administration Center, the US Department of Agriculture (USDA), the National Oceanic and Atmospheric Administration (NOAA) that compiles and publishes drought conditions nationwide on a weekly basis since January 6, 2000. These conditions are categorized into five levels of drought that provide information about potential consequences to rangelands and agriculture (National Integrated Drought Information System NIDIS - Drought.gov 2021):

- D0: Abnormally Dry
    - Precursor to drought.
    - Hay production decreases.
    - Rangeland is dry.
    - Irrigation begins sooner.
- D1: Moderate Drought
    - Rangeland growth is stunted.
    - Very little hay is available.
    - Dryland crops suffer.
    - Wildfires increase.
- D2: Severe Drought
    - CRP lands suffer.
    - Farmers reduce planting.
    - Producers sell cattle.

    - Fire season is extended.
- D3: Extreme Drought
    - Pasture conditions worsen.
    - City landscapes die.
    - Large fires develop.
- D4: Exceptional Drought
    - Dust storms and topsoil removal are widespread.
    - Agricultural and recreational economic losses are large.

It is critical to point out that even at D1 levels, rangeland growth is stunted, and wildfires increase. From these data, it is clear that drought has adversely affected the vegetation and wildlife long-term. In E-10, an average of 40% of the landmass in Mesa, Garfield, and Rio Blanco on a weekly basis is impacted by some level of drought. The longest duration of drought (D1–D4) in E-10 lasted 204 weeks beginning on February 12, 2002 and ending on January 9, 2006. During July of 2002, an average of 90% of E-10 was affected by D4 Exceptional Drought. The most intense drought in E-10 began on October 6, 2020 and continues to the date of this report (February 23, 2021) a period of more than 20 weeks. More than 50% of the land area in Mesa, Garfield, and Rio Blanco counties is experiencing D4 Exceptional Drought (National Integrated Drought Information System NIDIS - Drought.gov 2021).

Pine Gulch Fire

The Pine Gulch Fire, the third largest wildfire in state history, was sparked by lightning on July 31, 2020. The fire burned more than 567 km^2 before it was fully contained in late September. The entirety of the fire burned in E-10 and affected approximately 6% of the total elk range in the DAU (Figure 13). The fire affected approximately 437 km2 of winter range and approximately 387 km2 of summer range in E-10. More importantly, 27 km^2 of winter concentration areas and 11 km^2 of calving range burned.

The intensity of the Pine Gulch fire was highly variable across the landscape, with large expanses of both high and low intensity interspersed with a matrix of varying severity (Figure 14). Areas of lower intensity and patchy fire distribution will likely encourage a flush of regrowth in the vegetation, particularly in mountain shrub species, which elk rely for winter forage and grasses, which are critical for summer forage. This regeneration will be beneficial to elk both long and short term. Areas of higher intensity fire, especially large areas, will take longer (>20 years) to regenerate to the point where it provides winter forage for elk. Revegetation by invasive plants and other plants with limited value to elk may also become established. It is critical that the BLM and private landowners collaborate to reclaim the areas affected by the Pine Gulch fire aggressively and with the intention of long-term habitat management to benefit wildlife. Without significant reclamation efforts, it is likely that the Pine Gulch fire may adversely affect wintering elk and deer in the long-term.

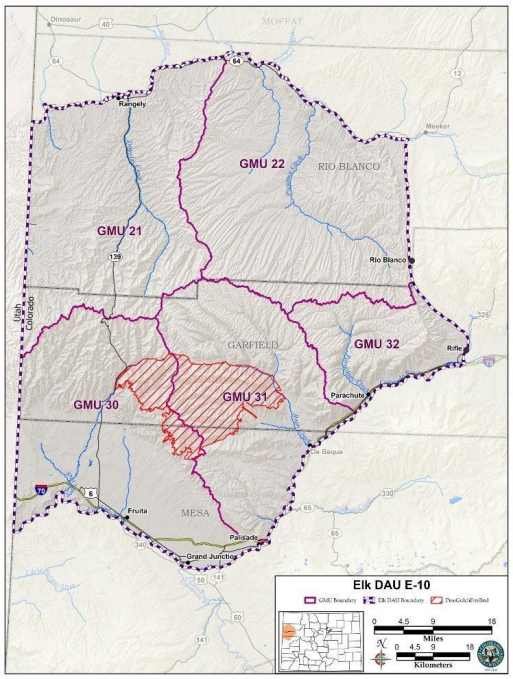

Figure 13. Pine Gulch Fire burn location and extent in Data Analysis Unit E-10 in northwestern Colorado.

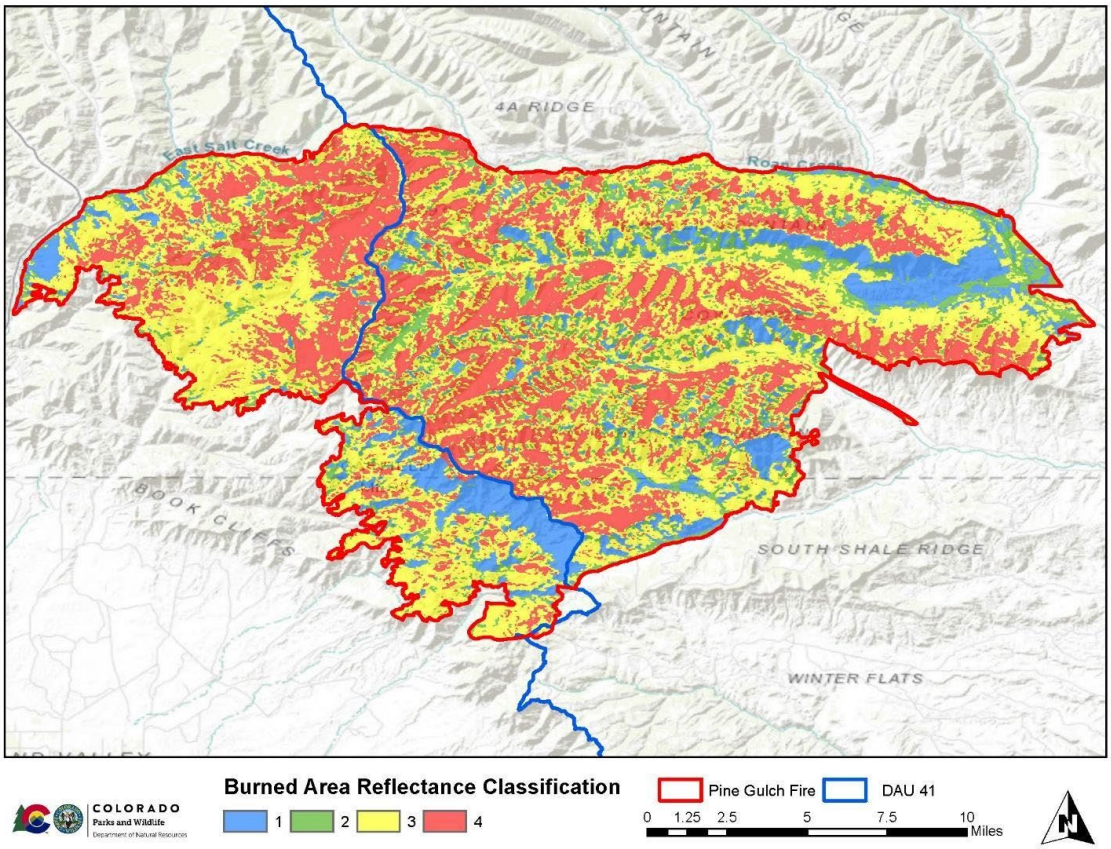

Figure 14. Pine Gulch Fire severity by Burned Area Reflectance Classification within Data Analysis Unit E-10 in northwestern Colorado.

Secretarial Order 3362 and State of Colorado Response

On February 9, 2019, the US Department of Interior issued Secretarial Order 3362 to encourage partnerships between federal and state agencies to improve big game winter range and migration corridors (APPENDIX II: US DEPARTMENT OF INTERIOR SECRETARIAL ORDER 3362). The order directs appropriate US agencies including the US Fish and Wildlife Service (USFWS), National Park Service (NPS), and Bureau of Land Management (BLM) to work in close partnership with the State of Colorado, among others, to enhance and improve the quality of big-game winter range and migration corridor habitat on federal lands. The directive encourages scientific endeavors and land management actions to benefit wildlife such as elk, mule deer, and pronghorn.

In response to the Secretarial Order, CPW designated five priority landscapes, including portions of E-10, to guide habitat management and conservation efforts for the agency and conservation partners (APPENDIX III: CPW ACTION PLAN FOR SO3362). Two of these priority landscapes, the Bookcliffs and the Bear's Ears/White River landscapes, include portions of E-10. The Bookcliffs landscape is comprised entirely of GMUs 21 and 30, which are the two westernmost GMUs in E-10. The Bear's Ears/White River landscape is very large and includes 16 GMUs in northwestern Colorado, one of which is GMU 22 that falls within E-10.

Game Damage

Elk conflicts with agriculture are rare in E-10. From 2009 to 2020, there were only four game damage claims submitted to CPW by agricultural producers (Table 2**Error! Reference source not found.**). The total value of damage claimed during that time was $6,679.24 and the average claim was $1,669.81. All claims were related either to growing or stacked hay.

Claim Date	Damage	GMU	Amount
1 /4 /2010	Growing Hay	21	$ 228.60
12/15/2011	Growing Hay	10, 21	$ 2,986.75
3 /22/2012	Growing Hay	10, 21	$ 2,473.89
2 /18/2017	Stacked hay	31	$ 990.00

Table 2. Elk damage claims in Data Analysis Unit E-10 in northwestern Colorado, 2009-2020.

Generally, elk conflict with agriculture is associated with both the herd population size and with animal distribution across suitable habitat. It is likely that a larger elk population would result in an increase in agricultural conflict and game damage claims.

HERD MANAGEMENT HISTORY, ISSUES AND STRATEGIES

Overview of Procedures to Estimate Population Size

Estimating population size of wild animals over large geographic areas is a difficult and inexact exercise. A complete count of each individual animal in a population, a census, is prohibitively expensive and inherently inaccurate. Multiple research projects have attempted to count a known number of animals in large, fenced areas. All these efforts have failed to accurately count all the animals. In most cases, fewer than 30% of the animals are observed and counted.

The most accurate method of estimating population size available at this time is through computer modeling using known biological parameters and the most accurate biological and harvest data for a given population. CPW conducts aerial classification surveys of deer and elk herds every year in December or January. These aerial surveys document post-hunt age and sex ratios. These surveys are not a census of the population but rather a coarse index of population trend. The surveys are simply a snapshot of the composition of the herd immediately following hunting seasons. CPW then incorporates the observed post-hunt age and sex ratios, along with hunter harvest, estimated survival rates of adults and juveniles, and wounding loss rates into population models developed by White and Lubow (2002). These population modeling methods represent CPW's current best estimate of population sizes.

It is important to note that these models are subject to revision and improvement as further wildlife management research develops more accurate modeling techniques. As better information becomes available, such as new estimates of age-specific or sex-specific survival rates, wounding loss, sex ratio at birth, density estimates, or new statistical modeling techniques, better population estimates may be derived in the future.

Post-hunt Population Size

The elk population in E-10 was low through much of the 20th century before growing steadily through the 1980's and early 1990's. Since the early 1990's, the growth rate has slowed, and the population has stabilized at this higher level (Figure 15).

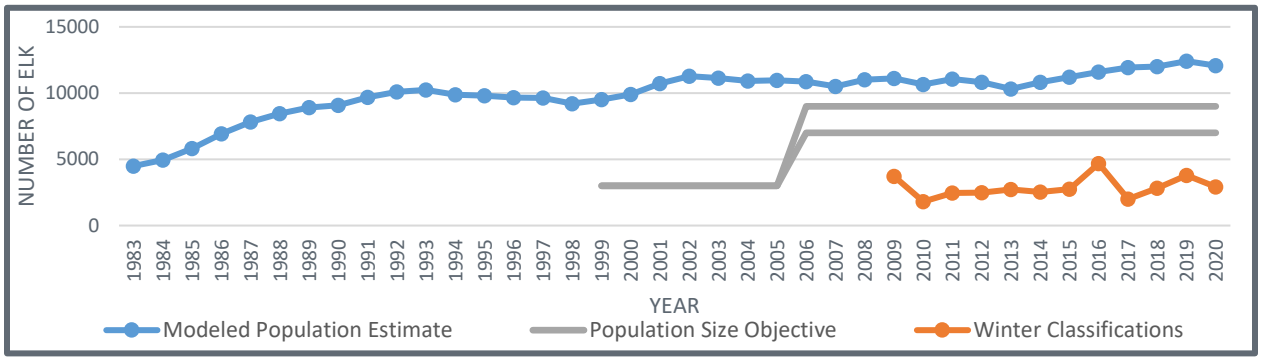

Figure 15. Modeled post-hunt population size and winter elk classified in Data Analysis Unit E-10 in northwestern Colorado, 1983 - 2020.

Modeled estimates of the number of elk in E-10 have changed over time with the type and complexity of the models used. Until 1995, CPW estimated the population size at approximately 3,000 elk. This estimate was the basis for the provisional population size objective in place from 1999–2006. New models were introduced in the early 2000s that

increased the estimate of elk populations statewide. In 2005, models at that time estimated the population at approximately 8,700 elk. There was general agreement among CPW staff and interested stakeholders that the population was at the high end of an acceptable range. Following a full Herd Management Planning process and incorporation of public input, an objective range of 7,000–9,000 elk was selected and has guided elk management in E-10 since.

Further advancements in CPW models currently estimate the 2020 post-hunt elk population in E-10 to be approximately 12,067 elk. This does not reflect an actual population size increase, simply a further refinement provided by improved modeling techniques. Although the current models estimate that the E-10 population size is above the objective selected in 2005, the disparity is due to a change in modeling techniques, not because the population is too high. The population size objective should be updated to align with the most current modeling results. For a more in-depth explanation of population modeling and population size estimates, see Overview of Procedures to Estimate Population Size.

Post-hunt Herd Composition

The composition of the elk population in E-10 is monitored annually with helicopter surveys on winter range. Observed elk are classified as cows, calves, yearling bulls, two-year-old bulls, and mature bulls and provide a snapshot of the current condition of the population.

Calf:cow ratios

Calf:cow ratios have been declining steadily since 1983, from 61.5 calves:100 cows in 1983 to 35.7 calves:100 cows in 2020 (Figure 16). This decline mirrors calf:cow ratio declines across much of western Colorado.

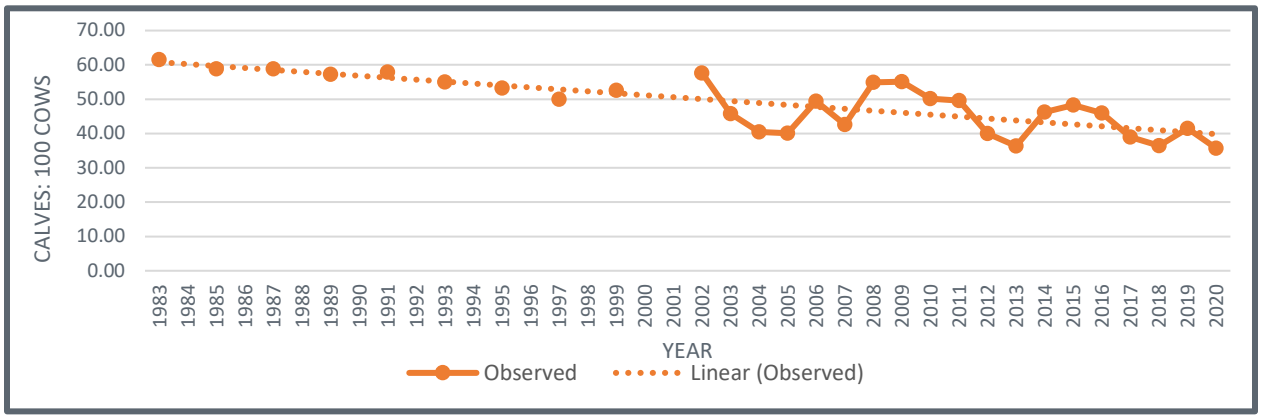

Figure 16. Observed calf:cow ratios in Data Analysis Unit E-10 in northwestern Colorado, 1983 - 2020.

Bull:cow ratios

Bull:cow ratios in E-10 are generally within or near the sex ratio objective range of 18-22 bulls: 100 cows (Figure 17), which reflects the over-the-counter management strategy employed in E-10. Bull:cow ratios have been increasing slowly since 1983 due to the shift from unlimited bull hunting to a 4-point restriction instituted in 1986. The largest portion of the bull population in E-10 is yearling bulls, due to most being harvested as soon as they have either 4 points on antler or 5” brow tines.

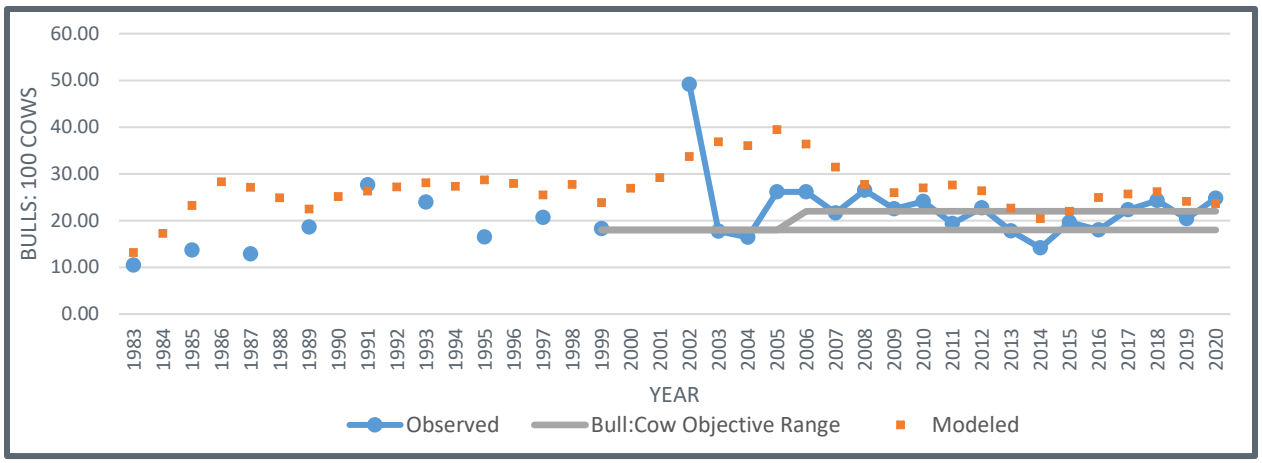

Figure 17. Observed bull:cow ratios in Data Analysis Unit E-10 in northwestern Colorado, 1983 - 2020.

Harvest and Hunters

License Allocation

CPW specifies hunting licenses in E-10 by sex, season, GMU, and method-of-take to manage the elk herd. Currently, licenses are unlimited in number and sold over the counter for bulls during the second and third rifle seasons and for either sex during the archery season. Antlerless archery licenses are also unlimited, but all other licenses for antlerless animals are limited in number and modified annually.

Harvest

Elk harvest in E-10 has been generally stable since the early 1990's, with an average of 800 antlered and 800 antlerless animals harvested annually (Figure 18). Much of this harvest comes during the regular rifle seasons, but archery and muzzleloader season harvest have increased in the last 10 years.

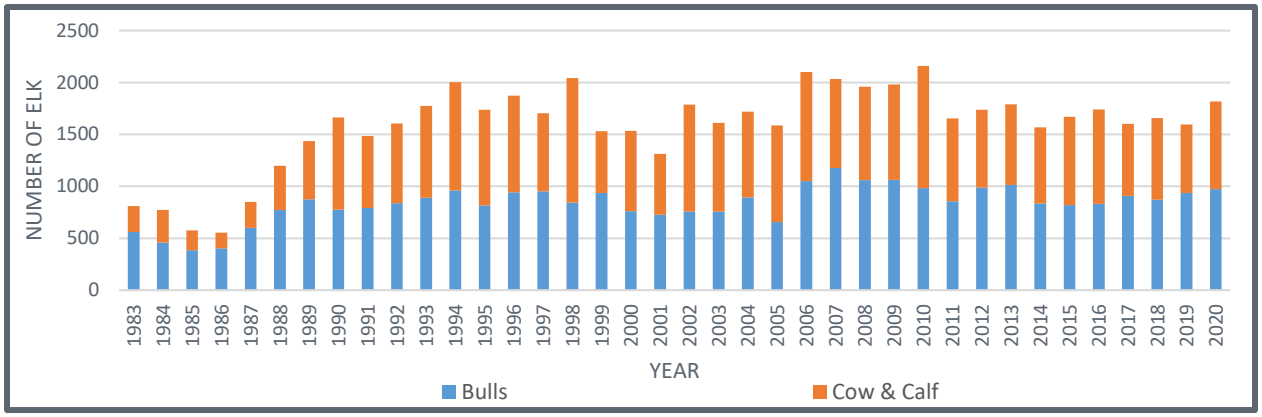

Figure 18. Estimated annual elk harvest in Data Analysis Unit E-10 in northwestern Colorado, 1983 - 2020.

Hunters

On average, 8,600 hunters spend nearly 43,000 recreation days annually in E-10 pursuing elk (Figure 19). For the last 10 years, the number of hunters, the number of hunting days and success rates have been very consistent.

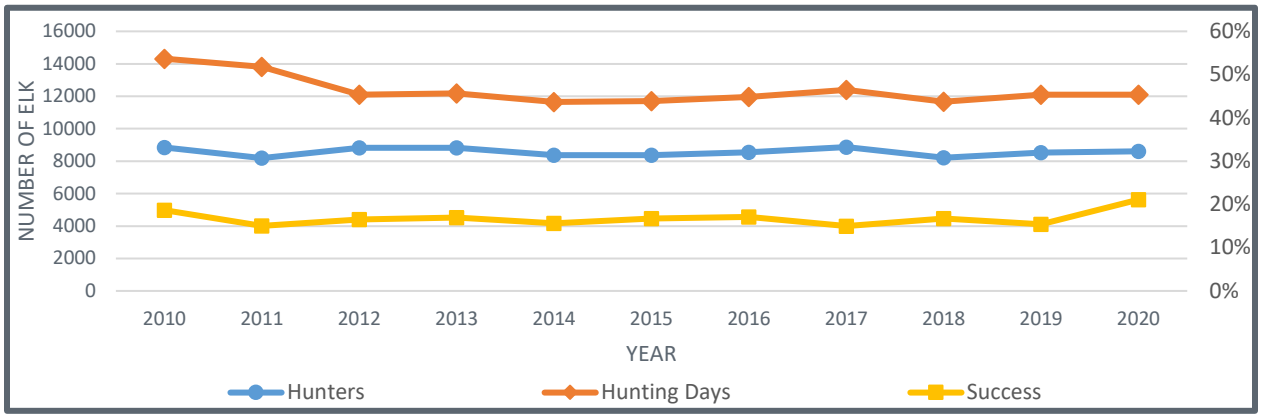

Figure 19. Hunters, hunting days, and success rates in Data Analysis Unit E-10 in northwestern Colorado, 2000-2020.

Economic Benefits of Hunting

Hunting provides a significant economic contribution to Colorado and DAU E-10. Economic data are available at the county level but not analyzed in alignment with DAU boundaries. However, the three counties that overlap with E-10 rely on substantial economic benefits from hunting related expenditures (Table 3). Expenditures include lodging, equipment sales, meals, and supply purchases. These economic contributions consider on all types of hunting, including small game, big game, and waterfowl (Southwick Associates 2018).

County	GDP Contribution	State & Local Taxes	Jobs
Mesa	$ 13,483,000.00	$ 1,712,000.00	392
Rio Blanco	$ 5,086,000.00	$ 1,229,000.00	172
Garfield	$ 8,961,000.00	$ 1,369,000.00	217

Table 3. Economic contributions hunting in Data Analysis Unit E-10 for three counties in northwestern Colorado.

Past Management Strategies

Past management strategies in E-10 are substantively similar to those in place today, low bull trophy quality and maximum hunter opportunity. The outstanding wildlife resource, proximity to the population center in the Grand Valley, and accessible public lands are an ideal combination for providing maximum harvest and recreation opportunity. Most public stakeholders consistently support opportunity over trophy management for this DAU.

Like all big game DAUs in Colorado, E-10 is managed under general guidelines set out every five years in the statewide Big Game Season Structure. For a further explanation of BGSS, see INTRODUCTION AND PURPOSE. Under the BGSS, the complexity of license structure in E-10 has increased over the years in response to the progressively more complex management issues facing this herd and elk across the state of Colorado.

Since 1984, the E-10 herd has largely been managed with limited antlerless licenses, a four-point antler restriction, and primarily unlimited antlered harvest. Antlered harvest has been constrained incrementally over the years, moving from entirely unlimited in number, to limitations during the 4th season and introduction of a severely limited 1st season, to limitations in muzzleloader season. These limitations serve to restrict harvest somewhat, but

also to disperse hunters over time and place. Antlerless licenses have always been limited in number.

Current Issues

Changes in Elk Distribution within E-10

Distribution of elk across E-10 has evolved over time as the elk herd has increased in size and the habitat conditions have changed, but changes have accelerated in recent years. There has been significant and increasing dispersal of elk from GMUs 21 and 22 into GMUs 30, 31, and 32. The elk distribution issue will likely be exacerbated by the Pine Gulch fire. Elk may first move away from burned and barren areas followed by a return to those areas as they revegetate and provide high quality forage. Although these distributional shifts occur naturally and are not necessarily detrimental to overall herd health, they likely contribute to and exacerbate the public perception in the northern GMUs that the overall elk herd is declining.

Elk Immigration to & Emigration from DAU E-10

DAU boundaries are, from a management perspective, intended to be finite geographic areas between which there is no movement of animals between herds. Due to the realities of wildlife movement, interchange is inevitable and most DAUs, including E-10, have interchange with other herds. The majority of inter-DAU movement in E-10 occurs to the west across the CO-UT state line and to the north across the White River into DAU E-21. There is also some migration of elk from DAU E-6 across the northern portion of E-10 as animals move from the high elevation summer ranges in the Flattops to their lower elevation winter ranges. The movements are likely not additive long-term and have minimal impacts to overall management. In an effort to minimize vehicle collisions, highway fencing along I-70 from Glenwood Canyon to DeBeque impedes virtually all elk movement to the south.

Energy Development

Much of E-10 lies atop significant deposits of natural gas and oil shale and much of that is open to mineral extraction. Energy development is concentrated on the Roan Plateau, the Bookcliffs, Parachute Creek, near the town of Rangely, and in the Piceance Basin. In addition to the direct loss of habitat from infrastructure, energy development can cause behavioral and distributional shifts in elk and affect the quantity and quality of available habitat (Hebblewhite 2011, Buchanan et al. 2014). Elk in Jack Marrow Hills, Wyoming, avoided areas within 2 km of major roads and active oil & gas wells during the summer and 1 km during the winter (Powell 2003). Energy development has been associated with reduced survival in a population of elk, as well as shifts in habitat usage (Dzialak et al. 2011). In addition, cow elk have been shown to change home range usage to minimize interaction with energy development (Webb et al. 2011).

Although inherent fluctuations in commodity prices as well as political considerations affect the demand for oil & gas and resulting development intensity, oil and gas wells and the associated infrastructure have increased dramatically across E-10 since 1970 (Figure 20). The footprint of just oil & gas wells in E-10 is significant; 50% of the elk summer range in E-10 is within 2 km of active oil & gas wells and 32% of summer range is within 1 km of active oil & gas wells. These calculations do not account for the impact of major roads but solely for the oil & gas wells themselves. The underlying infrastructure, including roads and human activity, are also negatively associated with elk herd performance (Webb et al. 2011).

The sheer number of wells drilled in E-10 (Figure 20) is a strong indicator that the elk herd is impacted by energy development. Distributional changes, decreasing calf:cow ratios, and the degraded habitat in E-10 are likely associated with the development of energy extraction infrastructure.

Much of the development to extract the energy resources in E-10 has been completed and energy extraction has entered the production phase. This production phase is generally associated with less overall disturbance and fewer impacts to wildlife.

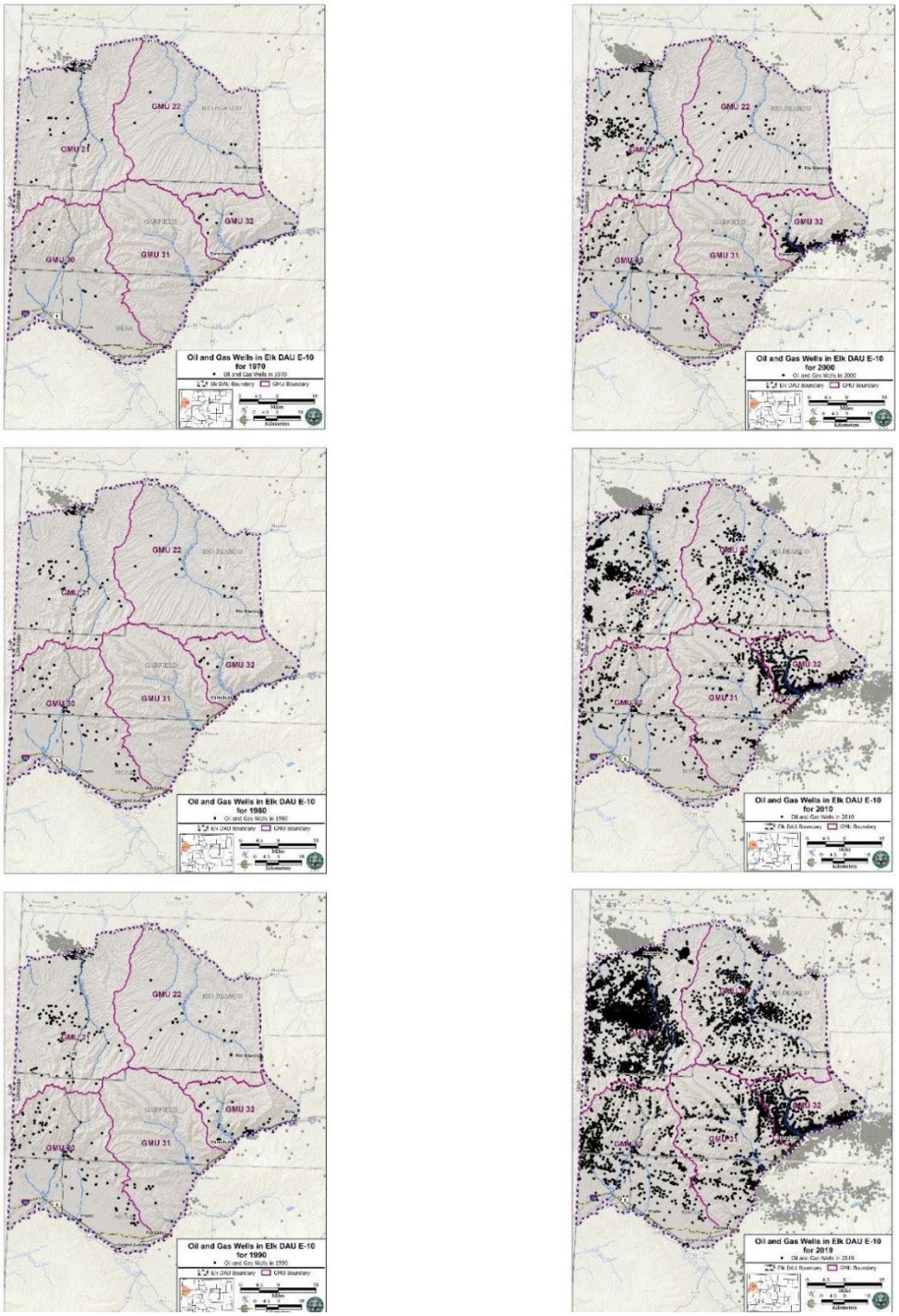

Figure 20. Oil and gas wells in Data Analysis Unit E-10 in northwestern Colorado, 1970-2018. Locations compiled from (Johnson et al. 2017) and the CPW GIS unit.

Outdoor Recreation

Recreational activity, both motorized and non-motorized, negatively impacts elk by increasing their activity levels and decreasing resting and feeding times (Larson et al. 2016). The North Fruita Desert portion of GMU 30 is managed specifically for high intensity mountain bike recreation. Although winter closures are in place for some areas, there is significant temporal overlap in elk use and mountain biking. CPW works collaboratively with BLM's Grand Junction, Lower Colorado River Valley, and White River Field Offices to mitigate and minimize the impacts of mountain biking and other forms of recreation on the elk in E-10.

Habitat Quality Decline

As referenced in Habitat Condition and Capability, much of the habitat in E-10 is degraded and in poor condition. CPW staff work closely with landowners and land management agencies to enhance wildlife habitat. Ongoing partnerships result in habitat improvement projects, conservation easements and other methods of enhancing the wildlife habitat in E-10.

Public Hunting Access

Although nearly 70% of E-10 is managed by the BLM, public hunting access can be challenging due to large tracts of privately held, unhunted properties that act as sanctuaries, disjunct public lands interspersed with private lands, prohibitively steep or impassable topography, and variations in seasonal elk use. For example, energy companies own significant portions of the DAU and control public access of these large tracts of elk habitat. Nearly 65 km^2 in GMU 22 and 32, collectively referred to as the 'Girls Claims', were previously available to public hunters with no access restrictions. An average of 1,100 hunters harvested roughly 200 elk off this property annually. In 2018, new ownership discontinued the former practice of allowing unrestricted public access. These large tracts of unhunted lands act as sanctuaries and impact the ability of CPW to effectively manage this herd through sport harvest. Consequently, CPW actively works with such landowners to develop public hunting opportunities on these private lands.

Disease

- Chronic Wasting Disease

Chronic wasting disease (CWD) is a fatal, infectious disease that affects deer, elk, and moose in Colorado. The disease is characterized by progressively declining body condition and mental responsiveness due to deterioration of the brain and nervous system. CWD can have significant negative impacts to the health and sustainability of free-ranging herds (Miller et al. 2008). It is likely unfeasible to eliminate CWD from free-ranging cervids in Colorado (Miller and Fischer 2016). For this reason, CPW has focused on developing and sustaining practicable management actions of CWD surveillance, monitoring, and control based on the prevalence of the disease in a given herd. Because CWD appears to affect deer at higher rates than elk, CPW's management actions focus on deer and opportunistically monitor prevalence trends for all overlapping elk and moose herds.

In 2018, CPW published Colorado Chronic Wasting Disease Response Plan (2018) to manage CWD in Colorado. The plan generally follows the Western Association of Fish and Wildlife Agencies' plan Recommendations for Adaptive Management of Chronic Wasting Disease in the West (Western Association of Fish and Wildlife Agencies 2017). CPW's a response plan outlines actions to assess and control CWD prevalence at the herd level (Colorado Parks &

Wildlife 2020). The management recommendations include a 5% prevalence threshold in adult male animals for compulsory intervention in management. This compulsory intervention mandates the implementation of strategies intended to reduce the prevalence to below 5%.

The intent of CPW is to incorporate the recommendations from the CWD Response Plan as much as possible to retain healthy herds. Specifically, if prevalence in adult males in E-10 reaches the 5% prevalence threshold, the following management actions to control CWD prevalence will be implemented as feasible and appropriate:

A. Reduce Population or Density
B. Reduce Male/Female Ratio
C. Change Age Structure
D. Maximize Ability to Remove Diseased Animals at the Smallest Scales Possible (hot spots)
E. Remove Motivations that Cause Animals to Congregate
F. Minimize Prion Point Sources
G. Incorporation of CWD Management Actions and Prevalence Threshold into Herd Management Plans

To accurately estimate the prevalence of CWD in a herd, sufficient samples must be submitted for testing over a 1-3-year period. Since 2003, 962 elk have been submitted for CWD testing in E-10 and three animals tested positive, one in 2005, 2009, and 2015. From 2015-2019, submissions have averaged only 13 elk annually. In 2020, only 16 animals were tested, and all were negative. The 95% confidence interval of the prevalence of CWD in elk in E-10 is 0% because there are too few submissions to accurately estimate the prevalence.

As described in Sympatric Big Game Populations, there are three overlapping deer herds in E-10: D-11, D-07, and D-41. The prevalence in both D-07 and D-41 are above the management threshold of 5% (Table 4). Submissions in D-11 were mandatory during the 2020 hunting seasons and yielded a prevalence estimate of 2.6%. Due to some of these overlapping deer herds having exceeded their threshold, concern for increased levels of CWD arising in elk within E-10 is warranted. Consequently, CPW plans to utilize mandatory CWD testing in 2021 to attain a robust sample for determining prevalence levels for E-10 elk.

GMU	GMU Elk Prevalence	DAU Elk Prevalence	Elk DAU	GMU Deer Prevalence	DAU Deer Prevalence	Deer DAU
21	not available	<5%	E-10	3%	2.6%	D-11
22	not available	<5%	E-10	not available	15.0%	D-07
30	not available	<5%	E-10	0%	2.6%	D-11
31	not available	<5%	E-10	not available	8.2%	D-41
32	not available	<5%	E-10	not available	8.2%	D-41
not available means results are still pending or insufficient samples have been tested						

Table 4. Chronic wasting disease prevalence in elk and deer in Data Analysis Unit E-10 and adjacent herds in northwestern Colorado. Disease prevalence for deer and elk was extracted from CPW unpublished data.

- Hemorrhagic Disease

Hemorrhagic diseases are caused by multiple viruses and can cause death by damaging blood vessels in lungs, intestines, and other organs. Epizootic hemorrhagic disease virus (EHDV) and bluetongue virus (BTV) are transmitted by biting midges in the late summer and early fall when hot weather conditions support vector abundance and disease transmission (Stallknecht and Howerth 2004). These diseases also demonstrate annual variation, with periodic

outbreaks of severe disease followed by periods with lower mortality. The variability in EHDV and BTV from year-to-year is not completely understood but may involve herd immunity and weather patterns (Stallknecht and Howerth 2004). In mule deer, populations typically do not experience widespread die-offs during an outbreak of either BTV or EHDV. However, EHDV was attributed to a notable decline of 10-25% in the Mesa Verde mule deer population in southwest Colorado during the mid-1990s (Colorado Parks & Wildlife 2014). EHD also appears to damage the testes of mule deer bucks. Affected bucks retain antler velvet and fail to cast antlers (also known as "cactus bucks") due to testicular damage and subsequent decreases in testosterone production (Fox et al. 2017). Both CPW staff and landowners in D-11 have observed concentrations of "cactus bucks" along the state line, especially in GMU 30. How this disease will present itself in E-10's overlapping elk herds remains unknown and is being monitored.

In winter 2015–2016, a new hemorrhagic disease, deer adenovirus hemorrhagic disease was detected in Colorado and has been detected in E-10 and overlapping deer DAUs. Deer adenovirus is different from other hemorrhagic diseases in that it does not require an intermediate insect host. Since deer adenovirus spreads animal-to-animal, it can spread in all seasons. This virus has been involved in significant die-offs of both elk (Fox et al. 2017) and deer fawns (Woods et al. 1996). Deer adenovirus hemorrhagic disease has the potential to impact elk in E-10 and adjacent deer DAUs in the future. Ongoing surveillance efforts by CPW include the testing of all suspect animals and carcasses in Colorado.

Competition with Feral Horses

The Bureau of Land Management manages over 95,000 feral horses and burros on 217,774 km^2 across 10 Western states, including Colorado. The Wild Horse and Burro Program's goal is to manage healthy feral horses and burros on healthy public rangelands. Areas that are managed for feral horses are designated as Horse Management Areas (HMAs). Areas with free-roaming horses and burros but not managed for them are designated as Horse Areas (HAs). The BLM determines the Appropriate Management Level (AML), or the number of feral horses the habitat can support on a given HMA. Since HAs are not managed for feral horses and burros, AMLs are not designated for these areas.

Feral horses degrade sagebrush habitats and riparian areas. Negative impacts from feral horses to wildlife and wildlife habitat include spatial, water source, and forage competition, and habitat degradation (Hall et al. 2016, Boyd et al. 2017, Danvir 2018). Feral horses roam throughout much of the elk range in E-10 in two HMAs (managed for horses) and two HAs (not managed for horses) (Figure 21). These areas overlap with elk summer and winter ranges as well as winter concentration areas and production areas that are critical for robust elk populations.

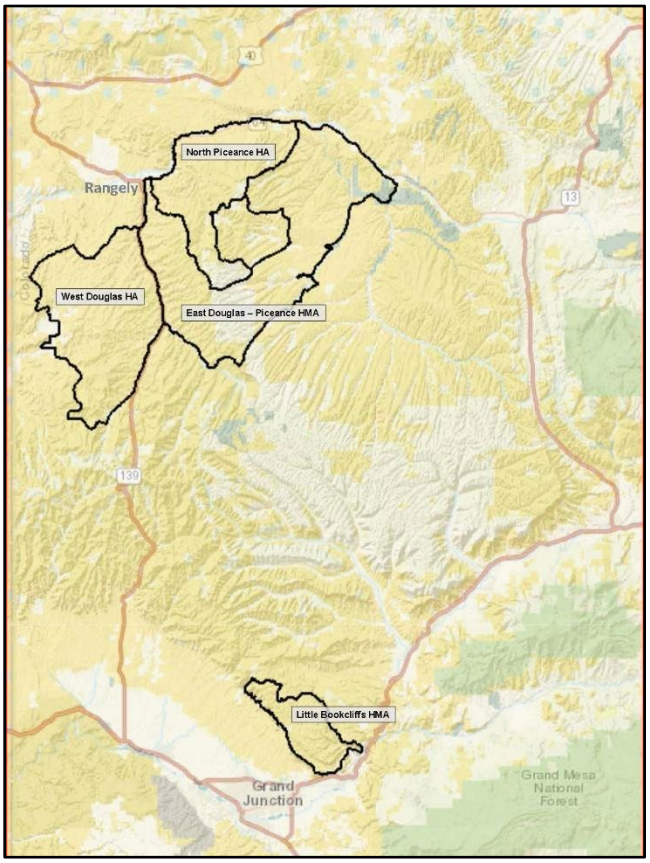

Figure 21. Feral Horse Management Areas (HMAs) and Horse Areas (HAs) in Data Analysis Unit E-10 in northwestern Colorado. Sourced from https://www.blm.gov/programs/wild-horse-and-burro/about-the-program/program-programs/interactive-web-maps

Although only 915 km^2 is designated by the BLM as Horse Management Areas, horses use over double the allotted range, or 1,860 km^2 in E-10 (USDI Bureau of Land Management 2020). The combined AML for the designated HMA's is 225–385. As of March 2020, the BLM estimated that there are 849 horses in HMA's and another 415 horses in HA's, totaling approximately 1,264 horses in E-10. This is more than triple the high end of the acceptable AML (Table 5). Habitat damage resulting from feral horses in E-10 is readily observable. Twenty-five written comments submitted through the E-10 public survey specifically identified feral horses as adversely affecting the elk herd and habitat in E-10 (APPENDIX V: PUBLIC SURVEY RESPONSES). During the summer of 2021, the BLM implemented a round up and removal of feral horses in the West Douglas HA. A total of 417 horses were gathered out of a newly estimated 450 individuals.

		Estimated Horse Population	Appropriate Management Level Range	Designated Herd Management Area (sq. km)	Actual Herd Area (sq. km)
Areas Managed for Feral Horses (HMAs)	Little Bookcliffs Wild Horse Range	151	90 - 150	146	213
	Piceance - East Douglas Creek Wild Horse Range	698	135 - 235	769	651
	TOTAL HMAs	849	225 - 385	915	864
Areas NOT Managed for Feral Horses (HAs)	North Piceance	50	0	0	479
	West Douglas Creek	365	0	0	517
	TOTAL HAs	415	0	0	996
Total E-10		1264	225 - 385	915	1860

Table 5. Feral horse population statistics for Data Analysis Unit E-10 in northwestern Colorado (USDI Bureau of Land Management 2020).

PUBLIC INVOLVEMENT

Public involvement is a critical component of herd management planning, ensuring that hunters, landowners, and other interested stakeholders can participate in the development of management objectives for each herd.

Public Survey

The public outreach process for the E-10 HMP revision was extensive and yielded significant public input. During summer 2020, a random subsample of 3000 successful elk applicants were contacted to solicit their input and participate in a virtual meeting held in August 2020. This same group then received the link to submit feedback on the draft plan through a 30-day online survey. Key individual stakeholders including private landowners, outfitters, and other members of the public were also encouraged to participate in the survey, which was open to anyone interested in providing input. The full survey can be found in APPENDIX IV PUBLIC SURVEY and the complete text and analysis of all responses can be found in APPENDIX V: PUBLIC SURVEY RESPONSES. Public input into the draft plan will be solicited for a 30-day period in October 2021. Local officials and land management agencies will be contacted directly to request their feedback about the plan.

Significant public feedback was received during the E-10 public scoping process in October 2020. Over 400 individuals responded to the online survey. Of the 397 respondents who answered the question "Which population size objective do you prefer?" the majority (71%) supported a slight or moderate decrease. The greatest support (39%) was for a moderate decrease and only 29% of respondents supported maintaining the objective as status quo. Of the 391 respondents who answered the question "Which management approach to the bull:cow ratio objective and hunting frequency do you prefer?" nearly equal numbers chose each of the three alternatives.

Respondents were concerned about access to large tracts of private land, declining elk populations, and the resiliency of the sympatric deer populations. Many respondents identified habitat quality as a direct contributor to the declining elk herd and singled out feral horses as the reason.

Public Comments on the Draft Plan

CPW posted the draft plan with identified preferred alternatives online and accepted comments for 30 days between January 21 to February 21, 2022. The full comments submitted are available in *Appendix VI*. CPW also sent a draft to the Bureau of Land Management, and presented it to the Mesa, Garfield, and Rio Blanco County Commissioners, and the White River Habitat Partnership Program Committee.

Public comments on the draft plan addressed a number of concerns about the management of the E-10 population. There was some support for the preferred alternatives as well as concerns about reducing and attaining the objectives for this herd based on skepticism regarding current population estimates. Concerns included poor habitat conditions, highway crossings, predation impacts, and feral horses.

Management Alternatives

During the initial public scoping period, the virtual public meeting, and the online survey, three alternatives were proposed for the population size in E-10 for the next ten years (Table 6). Stakeholders were educated about the three alternatives, how they may address current

issues, and the likely consequences of each alternative. The three options were framed as changes from the 2019 population size estimate of 12,411: a) to remain at status quo, b) a slight decrease from the current population size estimate and c) a moderate decrease from the current population size estimate.

POPULATION SIZE ALTERNATIVES				
ALTERNATIVE	**POPULATION MANAGEMENT**	**ANTLERLESS LICENSES**	**CWD PREVALENCE**	**POPULATION RESILIENCE**
1	**Status quo**	**Long-term decrease**	**Increase**	**Decrease**
2	**Slight decrease**	**No change**	**No change**	**Slight increase**
3	**Moderate decrease**	**Moderate increase**	**May decrease**	**Moderate increase**

Table 6. Proposed population size objective alternatives and likely outcomes for Data Analysis Unit E-10 in northwestern Colorado.

It is important to note that although the current post-hunt elk population in E-10 of 12,067 elk is above the objective range of 7,000–9,000, this is due to improved modeling techniques implemented after the objective range was selected in the previous revision of the E-10 DAU Plan. There is no public sentiment that the population is above a desired objective. For this reason, the alternatives were framed in relation to the current population size, rather than in reference to the current objective range. For a more in-depth explanation of population modeling and population size estimates, see Overview of Procedures to Estimate Population Size.

Population Objective Alternatives

Alternative 1: 10,000 – 12,000 (Status quo; population estimate 12,067)

The current population size objective range for E-10 was set at 7,000 – 9,000 prior to modeling improvements that suggested populations were higher than previously estimated. Newer models suggested a range of 10,000 – 12,000 would be more appropriate for maintaining the current herd size. Alternative 1 reflects this range if status quo is selected as the desired herd size for E-10.

Alternative 2: 8,500 – 10,500 (Slight decrease)

Alternative 2 seeks to decrease the current elk herd in E-10 slightly to address issues related to habitat quality tied to feral horses, drought, fire, and fragmentation from energy development. A herd reduction would alleviate elk pressure on the habitat until fire scars recover and/or drought abates. This alternative would also decrease resource competition with mule deer. Improved public access across private lands would facilitate attaining this management alternative.

Alternative 3: 6,500 – 8,500 (Moderate decrease)

The E-10 population is currently stable or slightly increasing (Figure 15). This alternative would lower the E-10 herd numbers more aggressively in an attempt to improve population resilience by reducing stress on habitat resources. Feral horses, long-term drought, fire, and

habitat fragmentation tied to energy development have compromised current habitat conditions. A smaller elk population would also decrease resource competition with mule deer and proactively lower the potential for population-level impacts from CWD in the future. Attaining a moderate decrease would require significant improvements in hunter access to areas currently blocked by private lands.

Sex Ratio Objective Alternatives

Although bull: cow ratios in E-10 have gone as high as 25 bulls:100 cows, they are generally within or near the existing sex ratio objective range of 18-22 bulls:100 cows (Figure 17), which reflects the over-the-counter management strategy employed in E-10. Changing the license allocation from "over-the-counter" (OTC) to "limited" requires a public petition to the Parks and Wildlife Commission. Since licenses are still available over-the-counter, the bull:cow ratio is expected to stay within the same objective range, and will be kept as status quo.

Preferred Alternatives and New Objectives

After reviewing public input and considering the potential and present conditions, CPW staff recommended a slight decrease in the population objective range from the current population estimate of 12,067 down to 8,500-10,500 elk. A slight decrease in the population will decrease demands on strained habitat resources in E-10 and give the Pine Ridge fire scar time to recover. The decreased objective range will provide more hunting opportunity while taking proactive steps towards CWD management as well. Managing for specific bull:cow ratios requires the ability to adjust antlered license numbers from year-to-year. Changing the license allocation from over-the-counter to "limited" requires a public petition to the Parks and Wildlife Commission. In addition, public sentiment to change this ratio was not strong. Based on observed bull:cow ratios over the last ten years, staff chose to manage for an objective of 18-25 bulls:100 cows.

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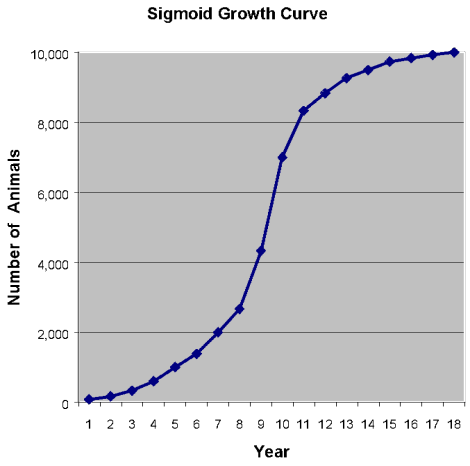
APPENDIX I: POPULATION DYNAMICS, MAXIMUM SUSTAINED YIELD, AND DENSITY DEPENDENCE

Numerous studies of animal populations, including 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 22). There are three distinct phases to this cycle. The first phase occurs while the population level is still very low and is characterized by a slow growth rate and a high mortality rate. This occurs because the populations may have too few animals and the loss of even a few of them to predation or accidents can significantly affect population growth.



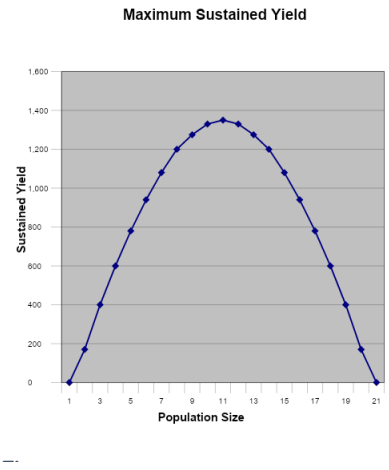
The second phase occurs when the population number is at a moderate level. This phase is characterized by high reproductive and survival rates. During this phase, food, cover, water, and space are not a limiting factor. During this phase, for example, animals such as white-tailed deer have been known 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 stocking rate increases causing the habitat to become crowded or habitat conditions become less favorable. During this phase, the quantity and quality of food, water, cover, and space become scarce due to the competition with other members of the population. These types of factors that increasingly limit productivity and survival at higher population densities are known as density-dependent effects. During this phase, for example, white-tailed deer fawns can no longer find enough food to grow to achieve a critical minimum weight that allows them to reproduce; adult does will usually only produce 1-3 fawns; and survival of all deer (bucks, does and fawns) will decrease. During severe winters, large die-offs can occur due to the crowding and lack of food. The first to die during these situations are fawns, then bucks, followed by adult does. Severe winters affect the future buck to doe ratios by favoring more does and fewer bucks in the population. Also, because the quality of a buck's antlers is somewhat dependent upon the quantity and quality of his diet, antlers development is diminished. If the population continues to grow it will eventually reach a point called "K" or the maximum carrying capacity. At this point, the population reaches an "equilibrium" with the habitat. The number of births each year equal the number of deaths, therefore, to maintain the population at this level would not allow for any "huntable 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 big game herds that are at high stocking rates they are being limited by density-dependent effects; we should attempt to hold the populations more towards the middle of the "sigmoid growth curve." Biologists call this point of inflection of the sigmoid growth curve the point of "MSY" or "maximum sustained yield." In the example below, MSY, which is approximately half the maximum population size or "K", 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 deer population showing sustained yield (harvest) potential vs. population size is shown (Figure 23). Notice that as the population increases from 0 to 5,000 deer, the harvest also increases. However, when the population reaches 5,000 or "MSY", food, water and cover become scarce and the harvest potential decreases. Finally, when the population reaches the maximum carrying capacity or "K" (10,000 deer in this example), the harvest potential will be reduced to zero. Also, notice that it is possible to harvest the same number of deer each year with 3,000 or 7,000 deer in the population. This phenomenon occurs because the population of 3,000 deer has a much higher survival and reproductive rate compared to the population of 7,000 deer. However, at the 3,000 deer level, there will be less game damage and resource degradation but lower watchable wildlife values.



Managing deer and elk populations for MSY on a DAU basis 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, annually, and trend over time. In most cases we would not desire true MSY management even if possible, because of the potential for overharvest and the number of mature of bulls and bucks is minimized because harvest reduces recruitment to older age classes. However, the concept of MSY is useful for understanding how reducing densities and pushing asymptotic populations towards the inflection point can stimulate productivity and increase harvest yields. Knowing the exact point of MSY is not necessary if the goal is to conservatively reduce population size to increase yield. Long-term harvest data is a gauge of the effectiveness of reduced population size on harvest yield.

Several studies in Colorado have shown that density-dependent winter fawn survival is the mechanism that limits mule deer population size because winter forage is limiting (Bartmann et al. 1992, Bishop et al. 2010). Adult doe survival and reproduction remain high, but winter fawn survival is lower at higher population sizes relative to what the winter habitat can support. The intuition to restrict, or even eliminate, female harvest in populations where productivity is low and when populations are below HMP objectives is counterproductive and creates a management paradox. In that, for populations limited by density dependent processes, this “hands-off” type of management simply exacerbates and perpetuates the problem of the population being resource limited and countermands the goals and objectives of the HMP. As (Bartmann et al. 1992), suggest, because of density-dependent processes, it would be counterproductive to reduce female harvest when juvenile survival is low and increase harvest when survival is high. Instead, a moderate level of female harvest helps to maintain the population below habitat carrying capacity and results in improved survival and recruitment of fawns. Increased fawn recruitment allows for more buck hunting opportunity and a more resilient population as half of fawns recruited to adults are bucks.

Thus, the key for Herd Management Planning and management by objective is to set population objectives in line with what the limiting habitat attributes can support. A suitable population objective range must be below carrying capacity.

APPENDIX II: US DEPARTMENT OF INTERIOR SECRETARIAL ORDER 3362

ORDER NO. 3362

Subject: Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors

Sec. 1 **Purpose**. This Order directs appropriate bureaus within the Department of the Interior (Department) to work in close partnership with the states of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming to enhance and improve the quality of big-game winter range and migration corridor habitat on Federal lands under the management jurisdiction of this Department in a way that recognizes state authority to conserve and manage big-game species and respects private property rights. Through scientific endeavors and land management actions, wildlife such as Rocky Mountain Elk (elk), Mule Deer (deer), Pronghorn Antelope (pronghorn), and a host of other species will benefit. Additionally, this Order seeks to expand opportunities for big-game hunting by improving priority habitats to assist states in their efforts to increase and maintain sustainable big game populations across western states.

Sec. 2 **Authorities**. This Order is issued under the authority of section 2 of Reorganization Plan No. 3 of 1950 (64 Stat. 1262), as amended, as well as the Department's land and resource management authorities, including the following:

a. Federal Land Policy and Management Act of 1976, as amended, 43 U.S.C. 1701, *et seq.*;

b. U.S. Geological Survey Organic Act, as amended, 43 U.S.C. 31, *et seq.*;

c. National Wildlife Refuge System Improvement Act of 1997, as amended, 16 U.S.C. 668dd *et seq.*; and

d. National Park Service Organic Act of 1916, as amended, 54 U.S.C. 100101, *et seq.*

Sec. 3 **Background**. The West was officially "settled" long ago, but land use changes continue to occur throughout the western landscape today. Human populations grow at increasing rates with population movements from east and west coast states into the interior West. In many areas, development to accommodate the expanding population has occurred in important winter habitat and migration corridors for elk, deer, and pronghorn. Additionally, changes have occurred across large swaths of land not impacted by residential development. The habitat quality and value of these areas crucial to western big-game populations are often degraded or declining.

The Bureau of Land Management (BLM) is the largest land manager in the United States (U.S.) with more than 245 million acres of public land under its purview, much of which is found in Western States. The U.S. Fish and Wildlife Service (FWS) and National Park Service (NPS) also manage a considerable amount of public land on behalf of the American people in the West. Beyond land management responsibilities, the Department has strong scientific capabilities in the U.S. Geological Survey (USGS) that can be deployed to assist State wildlife agencies and Federal land managers. Collectively, the appropriate bureaus within the Department have an opportunity to serve in a leadership role and take the initiative to work closely with Western States on their priorities and objectives as they relate to big-game winter range and migration corridors on lands managed by the Department.

Consistent with the American conservation ethic, ultimately it is crucial that the Department take action to harmonize State fish and game management and Federal land management of big-game winter range and corridors. On lands within these important areas, if landowners are interested and willing, conservation may occur through voluntary agreements.

Robust and sustainable elk, deer, and pronghorn populations contribute greatly to the economy and well-being of communities across the West. In fact, hunters and tourists travel to Western States from across our Nation and beyond to pursue and enjoy this wildlife. In doing so, they spend billions of dollars at large and small businesses that are crucial to State and local economies. We have a responsibility as a Department with large landholdings to be a collaborative neighbor and steward of the resources held in trust.

Accordingly, the Department will work with our State partners and others to conserve and/or improve priority western big-game winter range and migration corridors in sagebrush ecosystems and in other ecotypes as necessary. This Order focuses on the Western States of: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. These States generally have expansive public lands with established sagebrush landscapes along with robust big-game herds that are highly valued by hunters and tourists throughout the Nation.

The Department has broad responsibilities to manage Federal lands, waters, and resources for public benefit, including managing habitat to support fish, wildlife, and other resources. Secretary's Order 3356, "Hunting, Fishing, Recreational Shooting, and Wildlife Conservation Opportunities and Coordination with States, Tribes, and Territories," (SO 3356) was issued on September 15, 2017. SO 3356 primarily focused on physical access to lands for recreational activities, particularly hunting and fishing. This Order is focused on providing access to big game animals by providing direction regarding land management actions to improve habitat quality for big-game populations that could help ensure robust big-game populations continue to exist. Further, SO 3356 includes a number of directives related to working with States and using the best available science to inform development of guidelines, including directing relevant bureaus to:

a. Collaborate with State, tribal, and territorial fish and wildlife agencies to attain or sustain State, tribal, and territorial wildlife population goals during the Department's land management planning and implementation, including prioritizing active habitat management

projects and funding that contributes to achieving wildlife population objectives, particularly for wildlife that is hunted or fished, and identifying additional ways to include or delegate to States habitat management work on Federal lands;

b. Work cooperatively with State, tribal, and territorial wildlife agencies to enhance State, tribe, and territorial access to the Department's lands for wildlife management actions;

c. Within 180 days, develop a proposed categorical exclusion for proposed projects that utilize common practices solely intended to enhance or restore habitat for species such as sage grouse and/or mule deer; and

d. Review and use the best available science to inform development of specific guidelines for the Department's lands and waters related to planning and developing energy, transmission, or other relevant projects to avoid or minimize potential negative impacts on wildlife.

This Order follows the intent and purpose of SO 3356 and expands and enhances the specific directives therein.

Sec. 4 **Implementation**. Consistent with governing laws, regulations, and principles of responsible public stewardship, I direct the following actions:

a. With respect to activities at the national level, I hereby direct the BLM, FWS, and NPS to:

(1) Within 30 days, identify an individual to serve as the "Coordinator" for the Department. The Coordinator will work closely with appropriate States, Federal agencies, nongovernmental organizations, and/or associations to identify active programs focused on big-game winter range and/or migration corridors. The programs are to be organized and cataloged by region and other geographic features (such as watersheds and principles of wildlife management) as determined by the Deputy Secretary, including those principles identified in the Department's reorganization plan.

(2) Within 45 days, provide the Coordinator information regarding:

(i) Past and current bureau conservation/restoration efforts on winter range and migration corridors;

(ii) Whether consideration of winter range and corridors is included in appropriate bureau land (or site) management plans;

(iii) Bureau management actions used to accomplish habitat objectives in these areas;

(iv) The location of areas that have been identified as a priority for conservation and habitat treatments; and

(v) Funding sources previously used and/or currently available to the bureau for winter range and migration corridor conservation/restoration efforts.

(3) Within 60 days, if sufficient land use plans are already established that are consistent with this Order, work with the Coordinator and each regional Liaison (see section 4b) to discuss implementation of the plans. If land use plans are not already established, work with the Coordinator and each regional Liaison to develop an Action Plan that summarizes information collected in section 4 (a) (1) and (2), establishes a clear direction forward with each State, and includes:

(i) Habitat management goals and associated actions as they are associated with big game winter range and migration corridors;

(ii) Measurable outcomes; and

(iii) Budgets necessary to complete respective action(s).

b. With respect to activities at the State level, I hereby direct the BLM, FWS, and NPS to:

(1) Within 60 days, identify one person in each appropriate unified region (see section 4a) to serve as the Liaison for the Department for that unified region. The Liaison will coordinate at the State level with each State in their region, as well as with the Liaison for any other regions within the State. The Liaison will schedule a meeting with the respective State fish and wildlife agency to assess where and how the Department can work in close partnership with the State on priority winter range and migration corridor conservation.

(2) Within 60 days, if this focus is not already included in respective land management plans, evaluate how land under each bureau's management responsibility can contribute to State or other efforts to improve the quality and condition of priority big-game winter and migration corridor habitat.

(3) Provide a report on October 1, 2018, and at the end of each fiscal year thereafter, that details how respective bureau field offices, refuges, or parks cooperated and collaborated with the appropriate State wildlife agencies to further winter range and migration corridor habitat conservation.

(4) Assess State wildlife agency data regarding wildlife migrations early in the planning process for land use plans and significant project-level actions that bureaus develop; and

(5) Evaluate and appropriately apply site-specific management activities, as identified in State land use plans, site-specific plans, or the Action Plan (described above), that conserve or restore habitat necessary to sustain local and regional big-game populations through measures that may include one or more of the following:

(i) restoring degraded winter range and migration corridors by removing encroaching trees from sagebrush ecosystems, rehabilitating areas damaged by fire, or treating exotic/invasive vegetation to improve the quality and value of these areas to big game and other wildlife;

(ii) revising wild horse and burro-appropriate management levels (AML) or removing horses and burros exceeding established AML from winter range or migration corridors if habitat is degraded as a result of their presence;

(iii) working cooperatively with private landowners and State highway departments to achieve permissive fencing measures, including potentially modifying (via smooth wire), removing (if no longer necessary), or seasonally adapting (seasonal lay down) fencing if proven to impede movement of big game through migration corridors;

(iv) avoiding development in the most crucial winter range or migration corridors during sensitive seasons;

(v) minimizing development that would fragment winter range and primary migration corridors;

(vi) limiting disturbance of big game on winter range; and

(vii) utilizing other proven actions necessary to conserve and/or restore the vital big-game winter range and migration corridors across the West.

c. With respect to science, I hereby direct the USGS to:

(1) Proceed in close cooperation with the States, in particular the Western Association of Fish and Wildlife Agencies and its program manager for the Crucial Habitat Assessment Tool, prior to developing maps or mapping tools related to elk, deer, or pronghorn movement or land use; and

(2) Prioritize evaluations of the effectiveness of habitat treatments in sagebrush communities, as requested by States or land management bureaus, and identified needs related to developing a greater understanding of locations used as winter range or migration corridors.

d. I further hereby direct the responsible bureaus and offices within the Department to:

(1) Within 180 days, to update all existing regulations, orders, guidance documents, policies, instructions, manuals, directives, notices, implementing actions, and any other similar actions to be consistent with the requirements in this Order;

(2) Within 30 days, provide direction at the state or other appropriate level to revise existing Federal-State memorandums of agreement to incorporate consultation with State agencies on the location and conservation needs of winter range and migration routes; and

(3) Consult with State wildlife agencies and bureaus to ensure land use plans are consistent and complementary to one another along the entire wildlife corridor in common instances where winter range or migration corridors span jurisdictional boundaries.

e. Heads of relevant bureaus will ensure that appropriate members of the Senior Executive Service under their purview include a performance standard in their respective current or future performance plan that specifically implements the applicable actions identified in this Order.

Sec. 5 **Management**. I hereby direct the Deputy Secretary to take is responsible for taking all reasonably necessary steps to implement this Order.

Sec. 6 **Effect of Order**. This Order is intended to improve the internal management of the Department. This Order and any resulting reports or recommendations are not intended to, and do not create any right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States, its departments, agencies, instrumentalities or entities, its officers or employees, or any other person. To the extent there is any inconsistency between the provision of this Order and any Federal laws or regulations, the laws or regulations will control.

Sec. 7 **Expiration Date**. This Order is effective immediately. It will remain in effect until its provisions are implemented and completed, or until it is amended, superseded, or revoked.

Secretary of the Interior

Date:

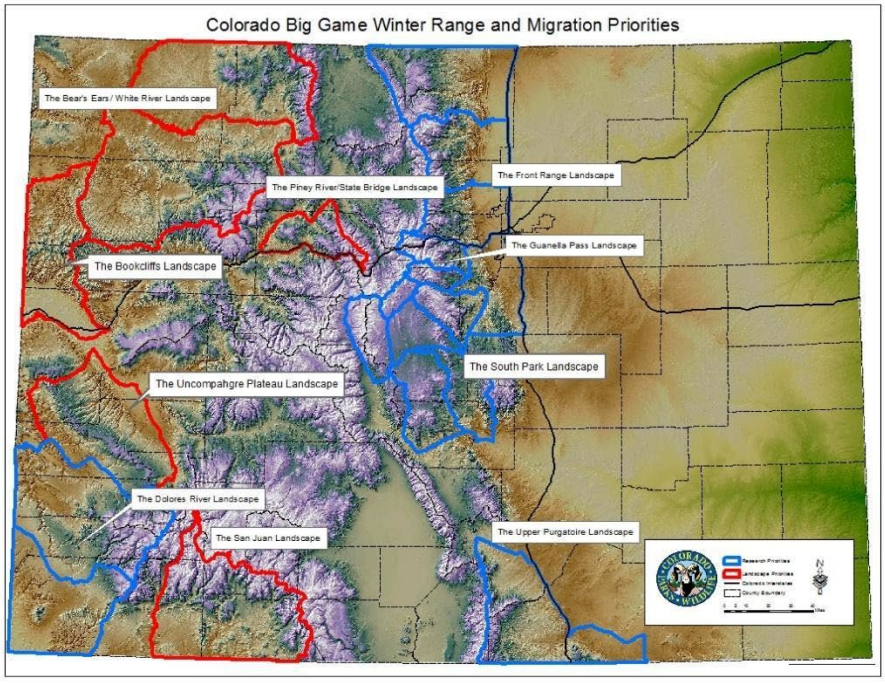
APPENDIX III: CPW ACTION PLAN FOR SO3362

C O L O R A D O P A R K S & W I L D L I F E

Conserving Colorado's Big Game Winter Ranges and Migration Corridors

Background and Purpose

Pursuant to the Department of Interior's Secretarial Order 3362: Improving Habitat Quality in Western Big-game Winter Ranges and Migration Corridors Colorado Parks and Wildlife (CPW) has identified five priority landscapes that will guide habitat management and conservation efforts for the agency and our conservation partners. In addition, CPW has developed five research landscapes that we will be collecting big game animal movement information to better understand big game migration.



Priority Landscapes

Priority landscapes either have been monitored, or are currently being monitored, to document big game movement and migration patterns. Strategically placed habitat treatments, conservation easements, and highway crossing structures will help to conserve the migration corridors and winter range used by these important herds. The five priority landscapes designated in Colorado's Action Plan for SO3362 are:

COLORADO PARKS & WILDLIFE • 1313 Sherman St., Denver, CO 80203 • (303) 297-1192 • cpw.state.co.us

The Bear's Ears/White River Landscape-Located in NW Colorado, this areas mule deer and elk herds are among the largest herds in Colorado. These herds contain about 80,000 deer and 70,000 elk. Although the elk herds are robust, the mule deer herds in the region have been in decline in recent years.

The San Juan Landscape- Located in SW Colorado, the area is home to about 27,000 mule deer and 19,000 elk, which use several migration routes as they travel across a patchwork of federal, tribal, state and privately held lands. Some of these animals migrate south across the state boundary into New Mexico. The Colorado Department of Transportation has identified this corridor as a focus area for wildlife crossing structures.

The Uncompahgre Plateau Landscape- Located in SW Colorado, this area supports about 15,000 mule deer and 9,000 elk. Both species have declined in recent years, primarily from recurring drought, poor livestock management, disease, and development (both residential and commercial), along with increasing recreational activity within big game habitat.

The Piney River/State Bridge Landscape-Located in NW Colorado, this areas big game habitat for the 14,000 deer and 3,700 elk within the Piney River/State Bridge area has declined in quantity and quality due to land development, fragmentation by roads and trails, increased human activity on public lands, and suppression of large-scale wildfires.

The Bookcliffs Landscape-Located in NW Colorado, this area supports about 7,500 mule deer and 5,000 elk. Both deer and elk migrate elevationally with the seasons. Portions of each herd migrate relatively long distances west, crossing state lines to spend the winter months in Utah.

Research Landscapes

CPW has identified five new research needs to better understand movement and migration patterns of big game. These areas will be priority for future documentation of seasonal movement patterns to drive future habitat conservation actions.

The Upper Purgatoire Landscape- The migration corridors used by the Upper Purgatoire mule deer and elk herds in southeast Colorado need to be better understood. This area borders New Mexico and Interstate 25 bisects a portion of this area. New Mexico's Department of Transportation is in the process of installing exclusionary fencing along this highway; we expect the incidence of highway crossings to increase in Colorado as a result. Additionally, CPW has collaborated with The Nature Conservancy and Trust for Public Lands to purchase a 19,000-acre ranch that abuts Interstate 25.

The South Park Landscape- The South Park area in central Colorado contains critical winter range for several local elk herds. Better understanding of elk movements, migration corridors, and distribution of winter range use is needed to inform future management of these habitats.

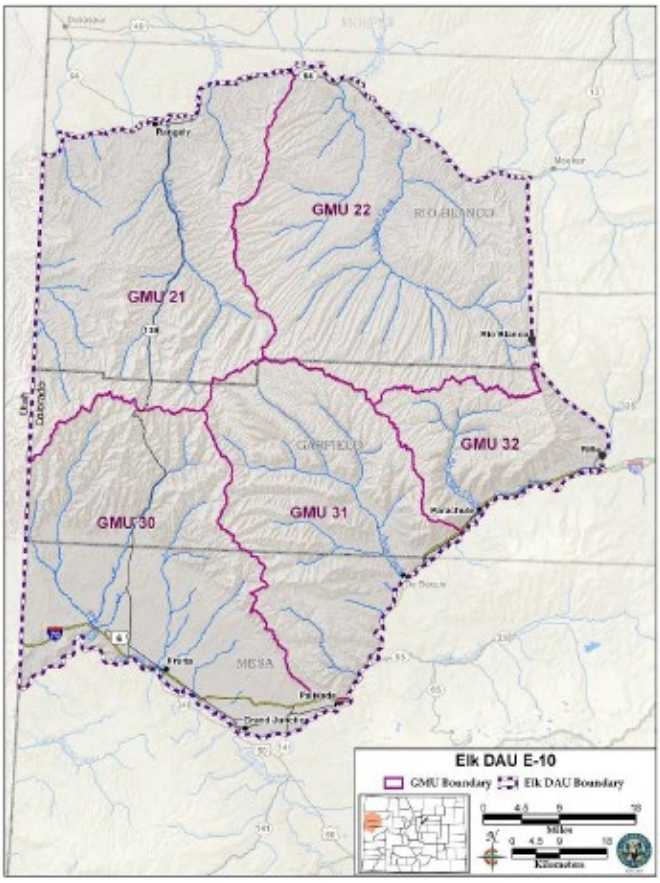
The Front Range Landscape-The Front Range in northeast Colorado is considered an area where additional knowledge of mule deer movements is needed to identify migration corridors and better understand their patterns of use within a rapidly developing landscape. This knowledge will inform future efforts to manage mule deer where hunting is restricted.

The Guanella Pass Landscape- Guanella Pass in northeast Colorado is an area that contains important habitat and migration corridors for elk, mule deer, and moose. This area is undergoing rapid increases in recreational activities. Detailed understanding of big game movements and habitat use patterns will help to inform future land use plans.

The Dolores River Landscape- Mule deer and elk herds in the Dolores area near Disappointment Creek are performing poorly. Data describing specific migration corridors, stopovers, and summer and winter ranges is needed to inform plans and conservation actions to maintain habitat connectivity and protect important habitats.

APPENDIX IV PUBLIC SURVEY

Yellow Creek Elk Herd (E-10)



About This Questionnaire

Colorado Parks and Wildlife (CPW) is currently re-evaluating the Herd Management Plan that guides the agency's management of the Yellow Creek Elk Herd (E-10).

The Yellow Creek Elk Herd includes Game Management Units (GMUs): 21, 22, 30, 31, and 32

The purpose of this survey is to better understand the perspectives of hunters' like yourself, who hunt in these GMUs. Learning from you will help CPW effectively manage this herd. Thank you for your participation in this process!

Surveys must be complete by October 15, 2020

Did you attend the online public meeting for the E-10 Yellow Creek elk herd management plan held on August 25, 2020?

- Yes
- No

Background Information

Q1. Are you a resident of Colorado? (Please choose one)

- Yes
- No

Q2 2. Do you currently live in E-10? (Please choose one)

- Yes
- No

Q3 3. Do you own property in E-10? (Please choose one)

- Yes (1)
- No (2)

Skip To: Q4 If 3. Do you own property in E-10? (Please choose one) = Yes
Skip To: Q6 If 3. Do you own property in E-10? (Please choose one) = No

Q4 4. How many acres is your property? (Please choose one)

- a. Less than 40 acres (1)
- b. 40 – 159 acres (2)
- c. 160 – 999 acres (3)
- d. 1000 – 4999 acres (4)
- e. Greater than 5,000 (5)

Q5 5. What is the primary land use of your property? (Please choose one)

- a. Primary residence (1)
- b. Ranching (2)
- c. Farming (3)
- d. Seasonal home (4)
- e. Energy/mineral extraction (5)
- f. Recreational (6)
- g. Other (please explain) (7)

YOUR INTEREST IN HUNTING

Q6 6. Which of the following outdoor activities do you enjoy in E-10? (Please choose all that apply)

- ○ a. Hunting (1)
- ○ b. Fishing (2)
- ○ c. Wildlife watching (3)
- ○ d. Hiking (4)
- ○ e. Horseback riding (5)
- ○ f. Mountain biking (6)
- ○ g. ATV, UTV, or other 4WD motorized travel (7)
- ○ h. Snowmobiling (8)
- ○ i. Livestock grazing (9)
- ○ j. Outfitting (11)
- ○ k. Other (Please specify): (10)

_____

Q7 7. Did you hunt elk in E-10 during the previous three years? (Please choose one)

- ○ Yes (1)
- ○ No (2)

Skip To: Q8 If 7. Did you hunt elk in E-10 during the previous three years? (Please choose one) = Yes
Skip To: Q10 If 7. Did you hunt elk in E-10 during the previous three years? (Please choose one) = No

Q8 8. During which of the following seasons have you hunted elk in E-10 in the past three years? (Please choose all that apply)

- ○ Archery (8)
- ○ Muzzleloader (3)
- ○ 1st Season (7)
- ○ 2nd Season (4)
- ○ 3rd Season (5)
- ○ 4th Season (6)
- ○ Late Season (1)

Q9 9. Overall, how satisfied were you with your elk hunting experience(s) in E-10 during the previous three years? (Please choose one)

- ○ Dissatisfied (1)
- ○ Neither satisfied nor dissatisfied (2)
- ○ Satisfied (3)

Potential Concerns About the Yellow Creek Elk Herd

Q10 10. Which of the following are concerns you have about your future deer hunting experiences in E-10? (Please choose all that apply)

- ○ a. Overcrowding (1)
- ○ b. Population size (2)
- ○ c. Male antler size (3)
- ○ d. The amount of public lands available to hunters (4)
- ○ e. Private lands access creating sanctuaries during hunting seasons (5)
- ○ f. Motorized access for hunting (6)
- ○ g. Non-motorized areas for solitude and backcountry hunting opportunities (7)
- ○ h. Other (please specify): (8) _____

Q11 11. How important to you is each of the following reasons to hunt elk in E-10? (Please choose one response for each statement)

	Not important (1)	Somewhat important (2)	Very important (3)
a. To spend time in nature (1)	○	○	○
b. To harvest a more mature bull (2)	○	○	○
c. To spend time with family/friends (3)	○	○	○
d. To obtain wild game meat (4)	○	○	○
e. To contribute to wildlife management (5)	○	○	○
f. To contribute to the local community (e.g., financial benefits from hunters) (6)	○	○	○
g. To test/improve my skills (7)	○	○	○
h. For physical exercise (8)	○	○	○
i. Other (please specify): (9)	○	○	○

Q12 12. How concerned are you about the following potential issues between elk and human activities/property in E-10? (Please choose one response for each potential issue)

	Not concerned (1)	Somewhat concerned (2)	Very concerned (3)
a. Vehicle collisions with elk (1)	○	○	○
b. Loss of elk habitat due to human population growth and land development (2)	○	○	○
c. Loss of elk habitat due to energy development (3)	○	○	○
d. Decline in quality of elk habitat due to energy development (4)	○	○	○
e. Disturbance to elk from human outdoor recreation activities (5)	○	○	○
f. Economic losses to residents due to elk damaging gardens, trees, shrubs (6)	○	○	○
g. The potential for elk to spread disease to humans, pets, or livestock (7)	○	○	○
h. Impacts to elk habitat and populations from the recent Pine Gulch fire (8)	○	○	○
i. Other (please specify): (9)	○	○	○

Potential Concerns About Chronic Wasting Disease (CWD)

In E-10, the prevalence of chronic wasting disease (CWD) in elk is currently unknown primarily due to a low number of voluntary submissions. Additional testing and mandatory submissions for deer are planned for the 2020 season, whose trends are generally reflected in elk populations, but at lower levels.

Q13 14. How concerned are you about each of the following potential issues involving chronic wasting disease (CWD) in the E-10 elk herd? (Please choose *one* response for *each* potential issue)

	Not concerned (1)	Somewhat concerned (2)	Very concerned (3)
a. Eating meat from an elk harvested in an area of high (>10%) CWD prevalence? (2)	○	○	○
b. The health or disease status of the E-10 elk herd? (4)	○	○	○
c. The potential for CWD to reduce elk hunting opportunity in E-10? (5)	○	○	○
d. Future generations' ability to enjoy hunting elk because of CWD in E-10? (6)	○	○	○

Herd Management

**Please read the following brief description about managing the E-10 elk herd's population objective before answering Question #15. The current population objective for the E-10 elk herd, which was established in the 2006 Herd Management Plan, is 7,000 - 9,000 elk. The population is currently estimated to have ~11,000 elk. Due to ongoing declines in calf-to-cow ratios, significant habitat loss across the DAU, and poor forage availability, CPW is proposing three alternatives for this herd: status quo and two population size decreases. The three proposed alternatives for population objective and the expected relative consequences of each alternative, are shown in the table below:

POPULATION SIZE ALTERNATIVES				
ALTERNATIVE	MANAGEMENT	ANTLERLESS LICENSES	CWD PREVALENCE	POPULATION RESILIENCE
1	Status quo	Long-term decrease	Increase	Decrease
2	Slight decrease	No change	No change	Slight increase
3	Moderate decrease	Moderate increase	May decrease	Moderate increase

Q14 14. Late season antlerless elk licenses are an important tool for managing elk herds. With the herd management information above taken into consideration, do you support late season hunts?

Q15 15. Currently, antlerless rifle licenses are valid in GMU's 21 and 30. Due to changes in elk distribution and challenges in appropriately managing harvest in this portion of DAU E-10, it may be necessary to designate these licences as valid only in GMU 21 or only in GMU 30. Do you support a more complex licensing system to more effectively manage the E-10 elk herd?

- ○ Yes (1)
- ○ No (2)

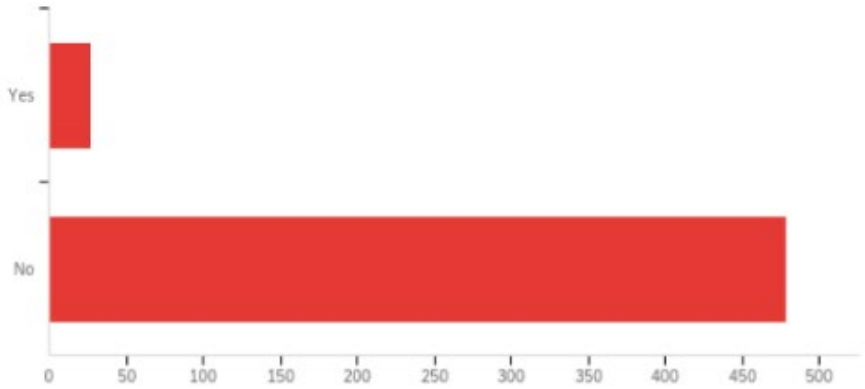
Comments Please provide any additional feedback related to E-10 elk herd issues that you feel are important.

_____
_____
_____
_____
_____

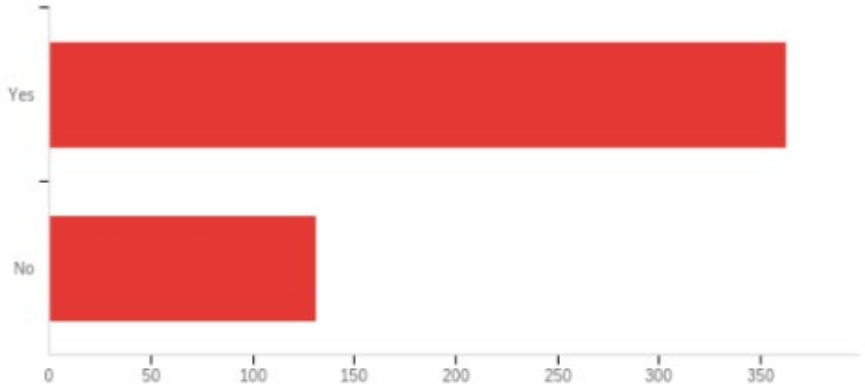
Thanks Thank you for participating in this survey!

APPENDIX V: PUBLIC SURVEY RESPONSES

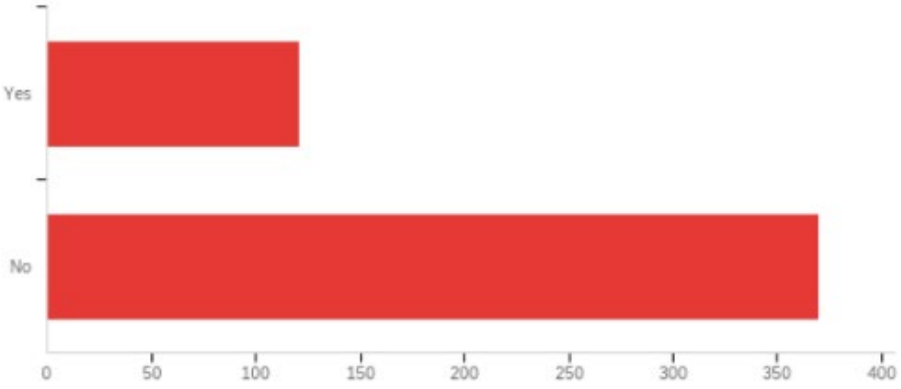
Did you attend the online public meeting for the E-10 Yellow Creek elk herd management plan held on August 25, 2020?



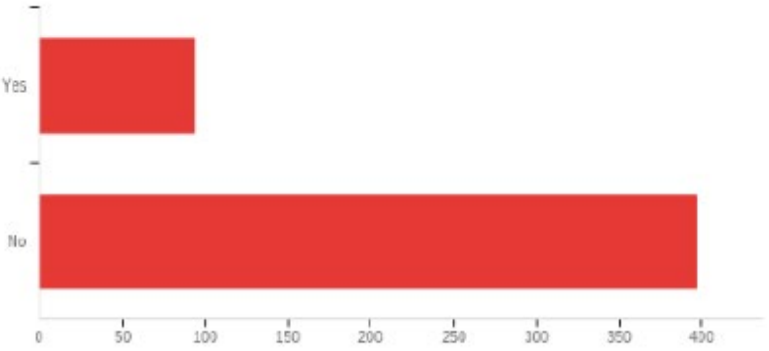
Q1 - 1. Are you a resident of Colorado? (Please choose one)



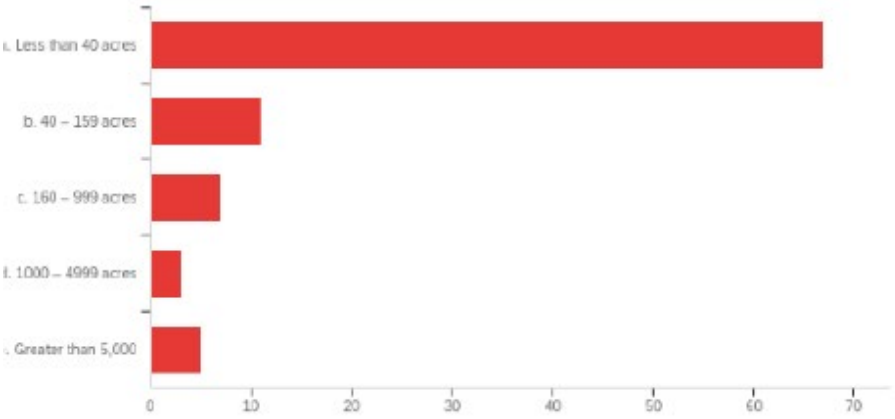
Q2 - 2. Do you currently live in E-10? (Please choose one)



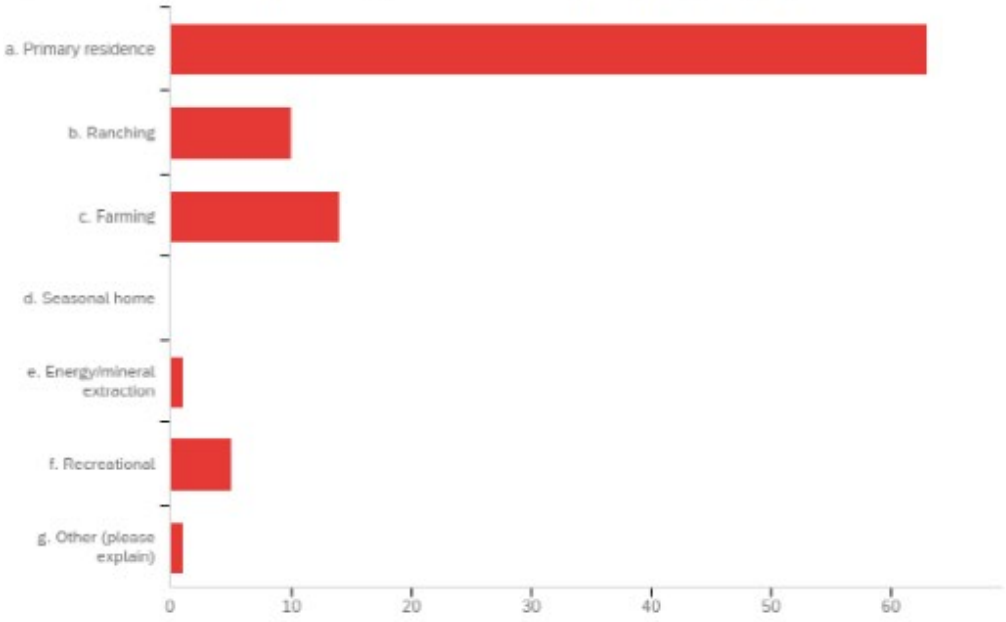
Q3 - 3. Do you own property in E-10? (Please choose one)



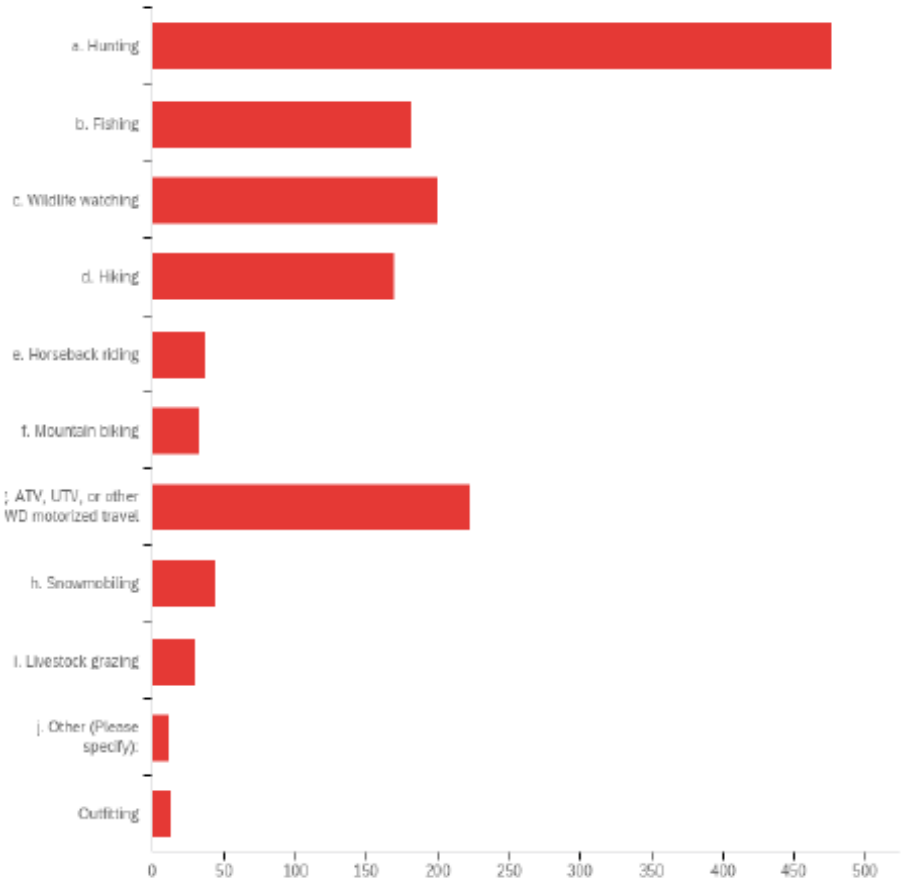
Q4 - 4. How many acres is your property? (Please choose one)



Q5 - 5. What is the primary land use of your property? (Please choose one)



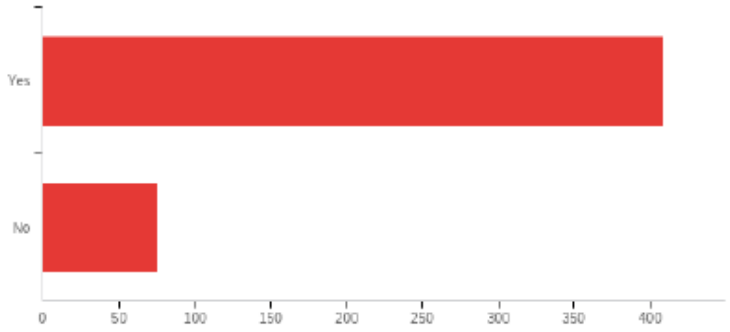
Q6 - 6. Which of the following outdoor activities do you enjoy in E-10? (Please choose all that apply)



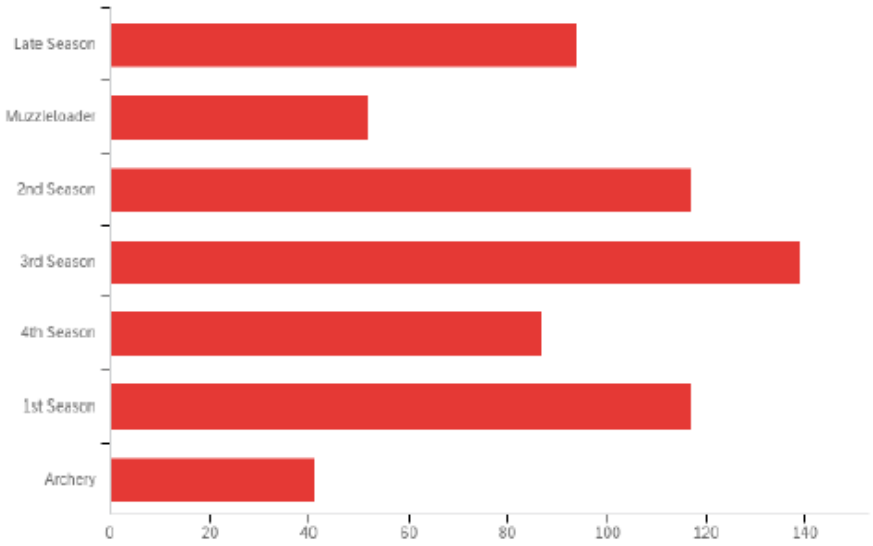
Q6_10_TEXT - j. Other (Please specify):

j. Other (Please specify): - Text
Sledding
Never hunted their
Cross country skiing
photo taking
Boating
Shooting
Target shooting
kayaking
Camping
Paragliding

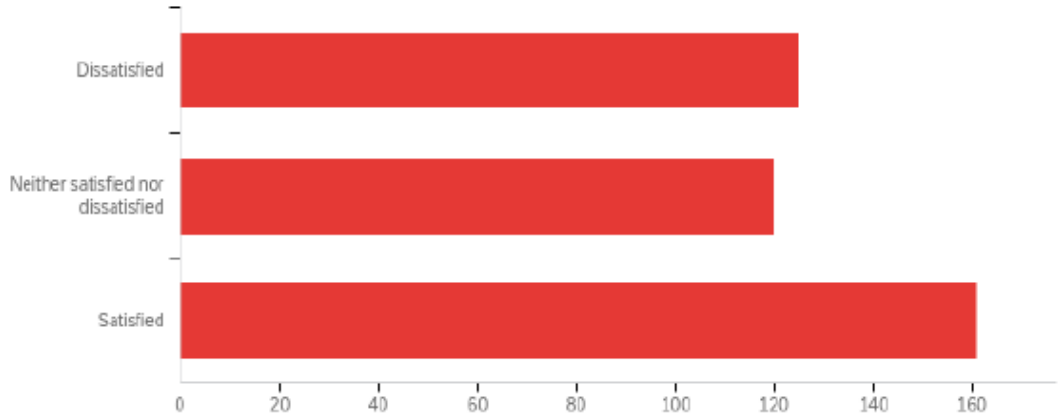
Q7 - 7. Did you hunt elk in E-10 during the previous three years? (Please choose one)



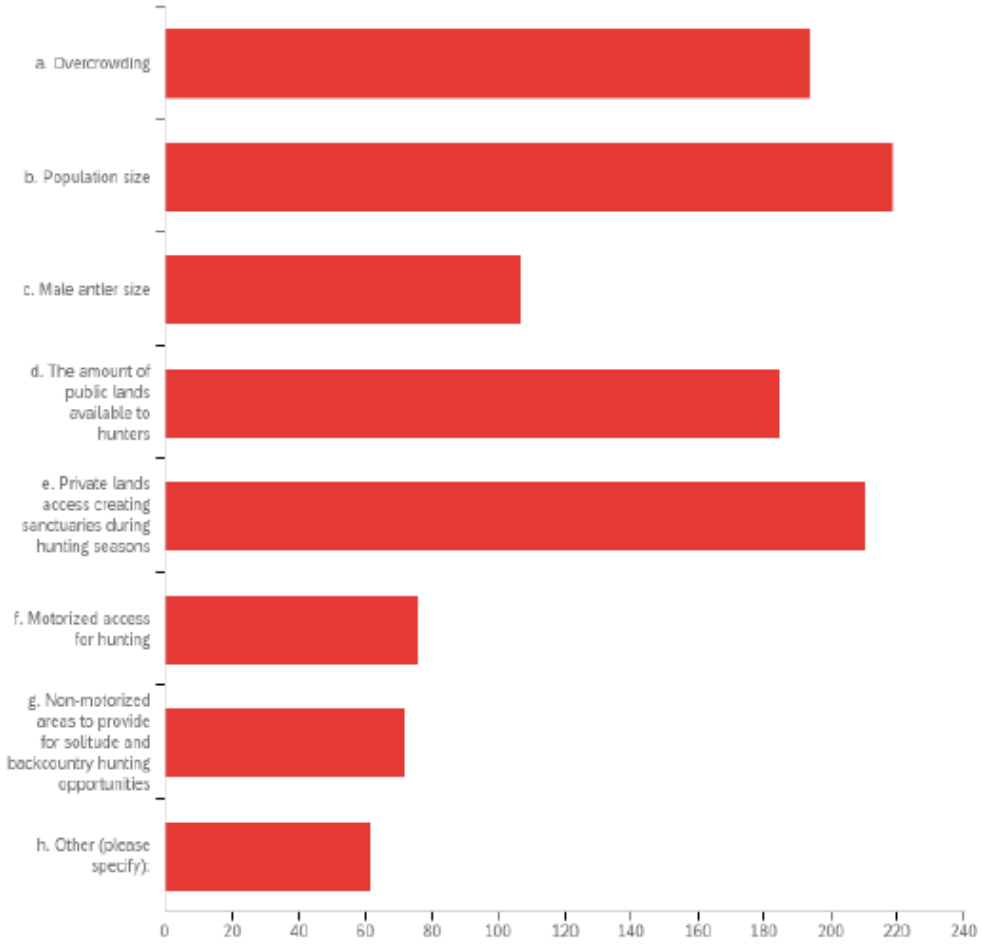
Q8 - 8. During which of the following seasons have you hunted elk in E-10 in the past three years? (Please choose all that apply)



Q9 - 9. Overall, how satisfied were you with your elk hunting experience(s) in E-10 during the previous three years? (Please choose one)



Q10 - 10. Which of the following are concerns you have about your future deer hunting experiences in E-10? (Please choose all that apply)

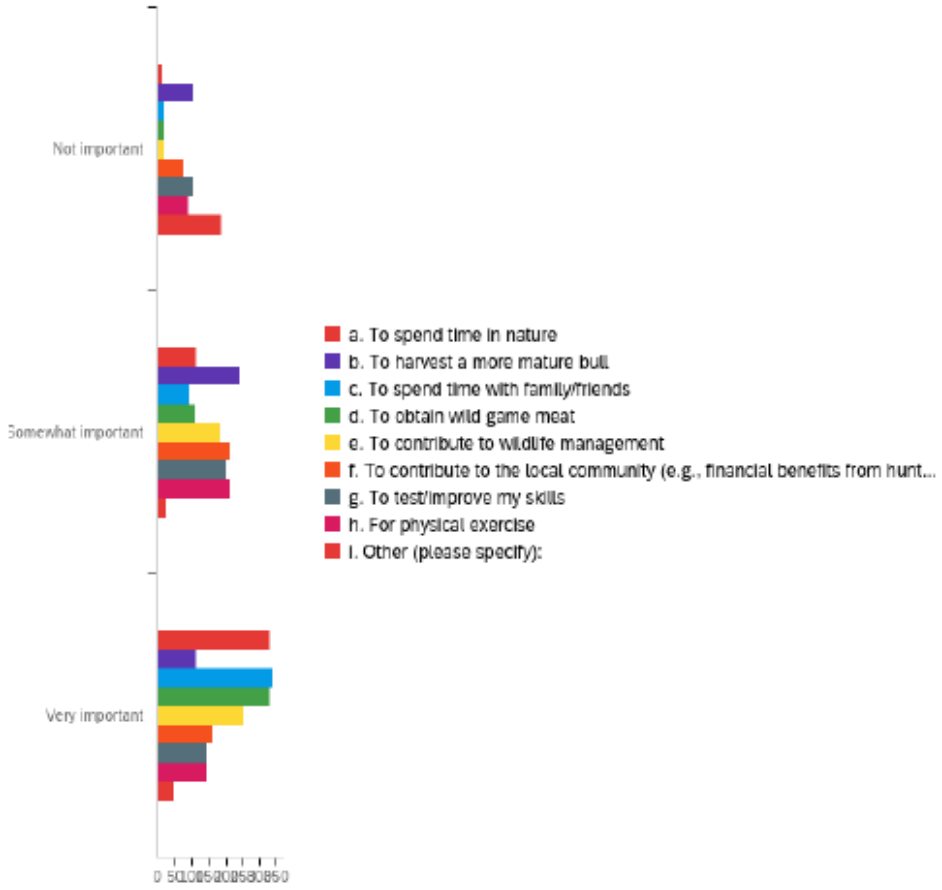


Q10_8_TEXT - h. Other (please specify):

Disease, Predators
Lack of available Licenses for 22
The requirements of the draw for tags
Season dates
oil and gas leases controlling access by closing roads. with unauthorized access sighns.
Only hunted elk
The agency needs to control the bear / cats and coyotes in these units i spend alot of time in these units and have
Feed for the animals, we have had significant drought years.
Private lands in the wintering grounds should not have unlimited tags
Why private land shut off all public land rights
The deer are dissapearing fast. You better get very serious about figuring out why the deer and elk are vanishing
Outfitters/Land owners
Wild horses have ruined GMU 21!
overgrazing, county roads locked to public, outfitters pushing us from public lands claiming they are private
Preference Points needed to hunt deer too high.
I have found the grazing permits run to long up there. Not leaving enough feed for wildlife.
Seemingly limited number of animals
oil and gas leases controlling access by closing roads. with unauthorized access sighns.
Predators. I've seen so many cats, bears and coyotes and 2 wolves. I know the difference between coyotes and wolves
Wolves
Either Or licenses should be made available for all seasons on Private Land
CPW employee drive 10 mph up all the way up Baxter pass with me behind them to delay my evening hunt if you want to drive that slow pull off and let me pass. Common courtesy.
introduction of wolves is number one concern, lack of management input by biologist (game warden). unit 30 especially.
I'm a backbacker, I like gettting deep and carrying them out. I like the work to get into elk and I'd like to see more opportunities like that.
Wild horses.
You need to make unit 22 available to hunt where Caerus is.
I don't hunt for deer in this area
could not access public land since private land is along the road and could not cross it. Terrible access and so dissatisfied I have told many people about this poor management of land access
over harvesting and predation
oil and gas encroachment
More concerned about elk population going down
No concerns. Maybe more doe hunting opportunities
Oil and gas impact on winter range. Wolves.
Land owner selling land vouchers to public, and land vouchers not bing land specific these vouchers should only be allowed to be used on the land that they where purchased for.
The wild Horses population is really starting to climb
Over harvest of young deer , there needs to be a 4 point restriction once again
Being a lifetime resident and not being able to draw a deer tag but every fourth year we drew every year for years and it keeps getting harder to get a tag and I see plenty of deer every time I go but I can buy a elk tag and see nothing I have a youth son who is on second preference point has never even went on his first deer hunt lifetime residents should be priority!!

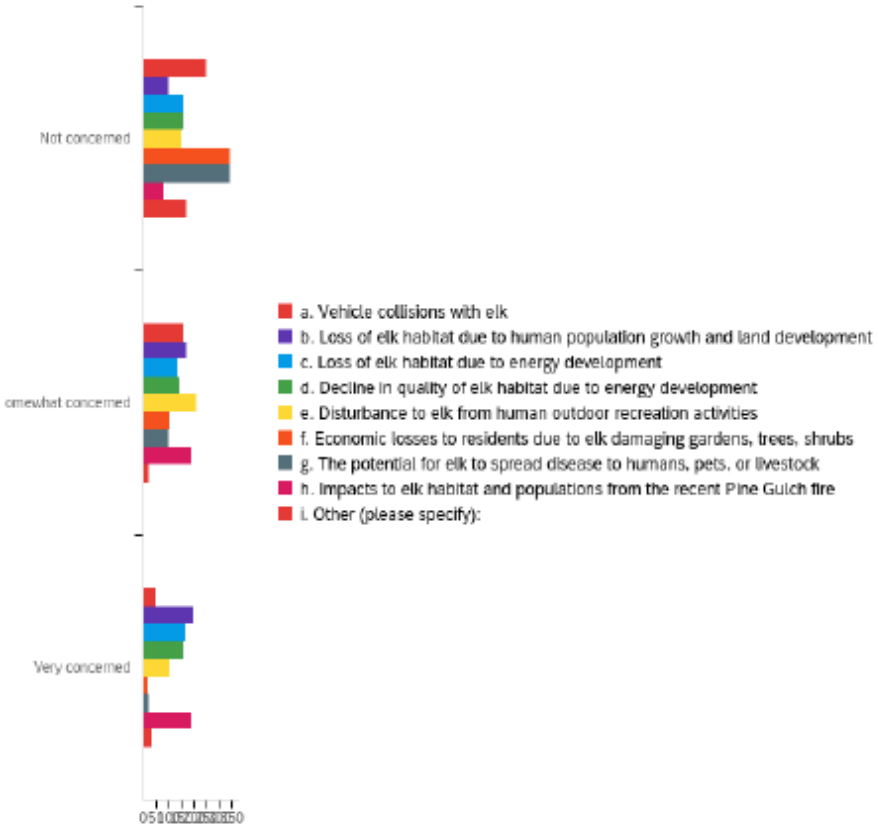
Ranchers blocking off public land access. Ranchers herding elk on horse back off public land to private land for there hunters. Harassment of ranchers deep in public land telling us they own this land.
Hunting boundaries of the units
public land hunters encroaching on private land
Their are a lot of deer in the area we hunt but we can only draw once every 5+ years. At the current rate, the residents we hunt with are looking to go out of CO to hunt.
Too many side by sides access to easy
To many out of state people
Getting a non-resident tag
I believe the wild horse population is out of control, and they run the elk of the are.
Not as much deer and elk populations
Wolfe's
Unhappy with the very limited Buck Deer licenses.
oil & gas rigs
The limited edition amount of deer tags (limited in our drawing) versus the number of deer we see
My family has hunted elk every year for the past 50 years in this area, and last year, my wife and i bagged the only 2 elk we even saw in the country. The population is so small now due to the ease and ability for out of state hunters to turn the state a profit, that residents cannot even find enough to provide food for our families. We left with three unfilled tags due to there not being any other sign even of elk.
Shutting down off road 4wheeler, side by side, and dirt biking during the hunting seasons in unit 31. Especially southwest of DeBeque. There is always a lot of traffic and riders going off the road into hunting areas where there are no roads
Increased wild horse population
I Don't hunt deer. My concern with deer is lack of public support to find a way for the game management people to research, isolate and find a way to stop chronic wasting disease.
applied 4 years in a row for mule deer buck and haven't been drawn
none
out of staters

Q11 - 11. How important to you is each of the following reasons to hunt elk in E-10? (Please choose one response for each statement)



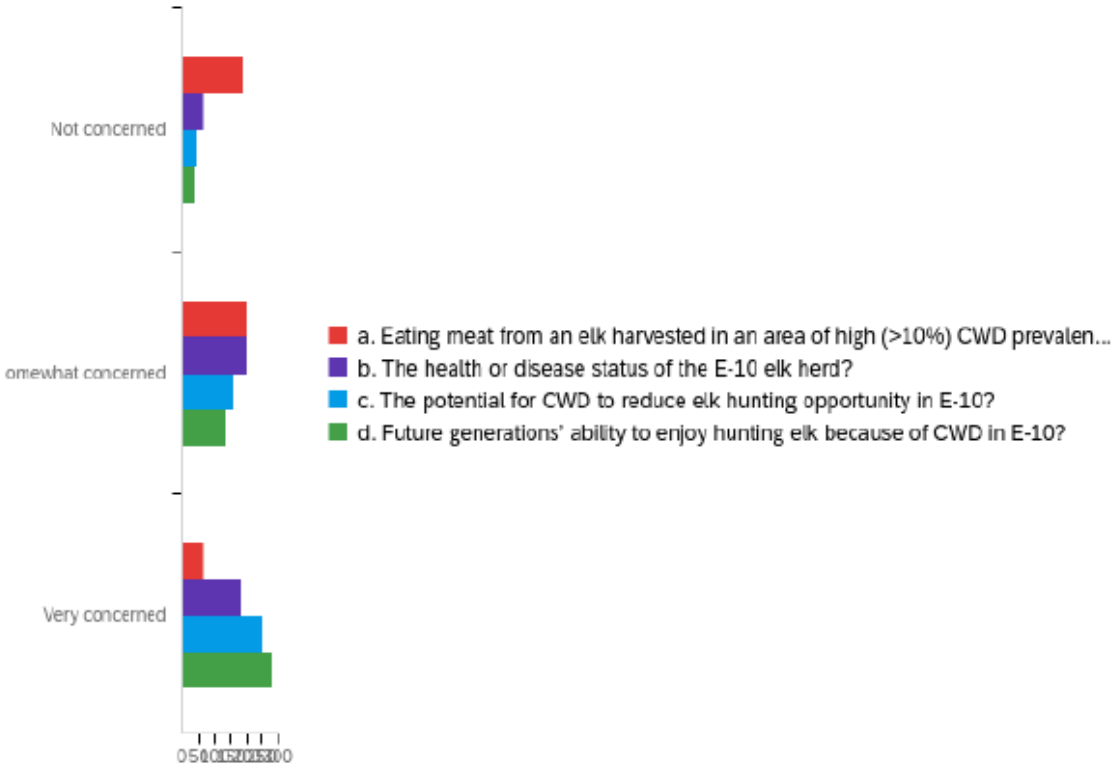
#	Question	Not important		Somewhat important		Very important		Total
1	a. To spend time in nature	3.51%	16	24.34%	111	72.15%	329	456
2	b. To harvest a more mature bull	22.42%	102	52.97%	241	24.62%	112	455
3	c. To spend time with family/friends	4.84%	22	20.66%	94	74.51%	339	455
4	d. To obtain wild game meat	3.92%	18	23.75%	109	72.33%	332	459
5	e. To contribute to wildlife management	4.38%	20	40.04%	183	55.58%	254	457
6	f. To contribute to the local community (e.g., financial benefits from hunters)	17.36%	79	47.03%	214	35.60%	162	455
7	g. To test/improve my skills	23.01%	104	44.91%	203	32.08%	145	452
8	h. For physical exercise	20.13%	91	48.01%	217	31.86%	144	452
9	i. Other (please specify):	72.48%	187	10.08%	26	17.44%	45	258

Q12 - 12. How concerned are you about the following potential issues between elk and human activities/property in E-10? (Please choose one response for each potential issue)



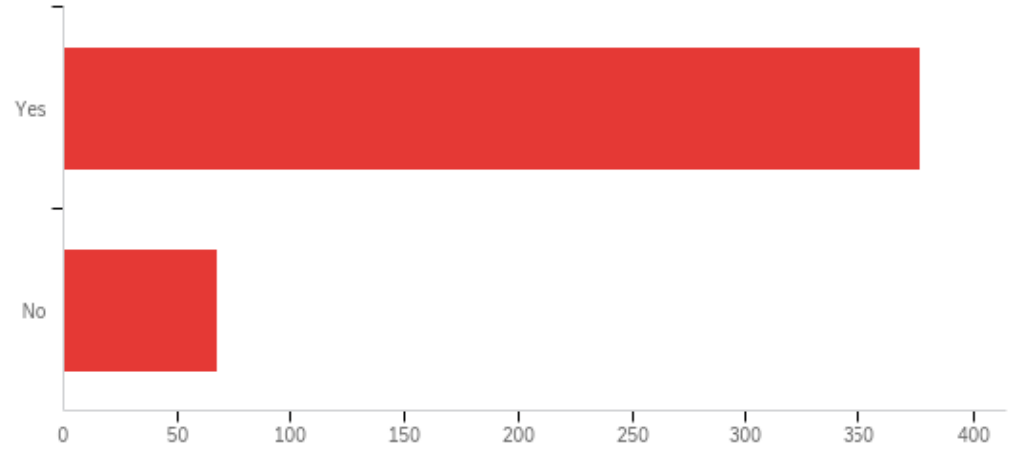
#	Question	Not concerned		Somewhat concerned		Very concerned		Total
1	a. Vehicle collisions with elk	54.27%	248	35.01%	160	10.72%	49	457
2	b. Loss of elk habitat due to human population growth and land development	21.09%	97	36.30%	167	42.61%	196	460
3	c. Loss of elk habitat due to energy development	34.86%	160	29.85%	137	35.29%	162	459
4	d. Decline in quality of elk habitat due to energy development	34.57%	158	30.85%	141	34.57%	158	457
5	e. Disturbance to elk from human outdoor recreation activities	32.03%	147	45.75%	210	22.22%	102	459
6	f. Economic losses to residents due to elk damaging gardens, trees, shrubs	74.67%	342	22.27%	102	3.06%	14	458
7	g. The potential for elk to spread disease to humans, pets, or livestock	75.11%	344	20.74%	95	4.15%	19	458
8	h. Impacts to elk habitat and populations from the recent Pine Gulch fire	18.16%	83	40.92%	187	40.92%	187	457
9	i. Other (please specify):	77.38%	171	9.05%	20	13.57%	30	221

Q13 - 14. How concerned are you about each of the following potential issues involving chronic wasting disease (CWD) in the E-10 elk herd? (Please choose one response for each potential issue)

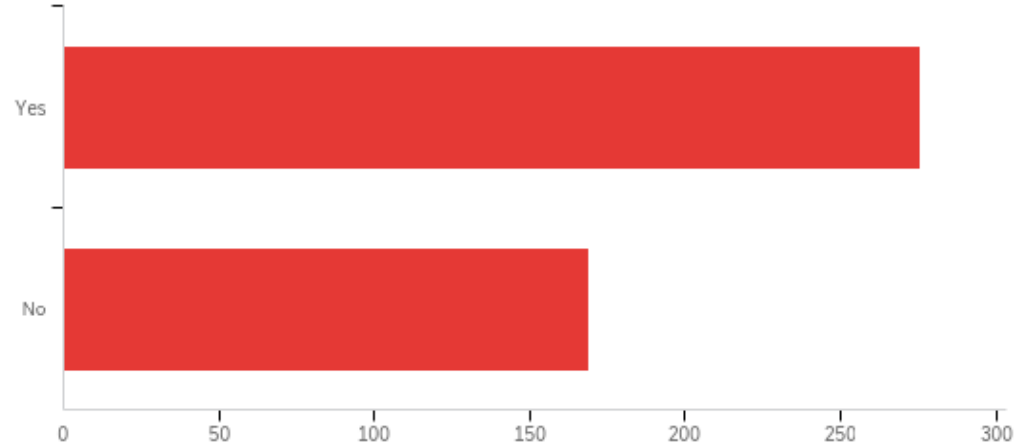


#	Question	Not concerned		Somewhat concerned		Very concerned		Total
1	a. Eating meat from an elk harvested in an area of high (>10%) CWD prevalence?	41.54%	189	44.40%	202	14.07%	64	455
2	b. The health or disease status of the E-10 elk herd?	14.54%	66	44.27%	201	41.19%	187	454
3	c. The potential for CWD to reduce elk hunting opportunity in E-10?	9.65%	44	35.31%	161	55.04%	251	456
4	d. Future generations' ability to enjoy hunting elk because of CWD in E-10?	8.15%	37	29.74%	135	62.11%	282	454

Q14 - 14. Late season antlerless elk licenses are an important tool for managing elk herds. With the herd management information above taken into consideration, do you support late season hunts?



Q15 - 15. Currently, antlerless rifle licenses are valid in GMU's 21 and 30. Due to changes in elk distribution and challenges in appropriately managing harvest in this portion of DAU E-10, it may be necessary to designate these licences as valid only in GMU 21 or only in GMU 30. Do you support a more complex licensing system to more effectively manage the E-10 elk herd?



Comments - Please provide any additional feedback related to E-10 elk herd issues that you feel are important.

I think a lot of your elk herd gets pushed on to the private and the regular Joe can't get to them to help thin them down. Unit 31 late season tags dec and January all you see is horse on the blm. You give out all these tag. I don't see enough tracks to support it on the public lands. Maybe I'm looking in the wrong place???
Having lived here my entire life I have watched elk numbers rise while deer numbers decline. The current elk population being way above management objectives while cow licenses are hard to get is something I don't understand. If I was running twice as many cattle as I was supposed to on CPW land they would hammer me but CPW thinks it is ok to run twice as many elk as there is supposed to be is poor management. Cow numbers need to be reduced and bull tags limited to decrease population and create higher quality animals.
In reference to the Chronic Wasting Disease Section, Question 14 C and D - we are not concerned about the Chronic Wasting Disease itself, but we are concerned about future possible control efforts implemented by CPW.
The questions directed at energy development considerations were obviously very biased and were objectionable. My view is that residential encroachment into winter range and game fencing are equally damaging.
The agricultural private forage producers get no restitution for their forage losses if the animals are not located in the loss affected area during a HUNTING season, landowners/forage producers should be offered area wide vouchers to compensate for losses. Reason being- the animals are not standing in forage damaged areas at hunting seasons
Remove the Horses
I have hunted unit 22 for more than twenty years and at times became friends with various ranch hands associated with 4m Ranch LLC. About 12 years ago herd numbers were around 1000 for unit 22. Then out of nowhere numbers completely disappeared. The next three years we all went unsuccessful and no trace of elk could be found. During that time we had become friends with a ranch hand named Manuel. Manuel told us on several occasions how certain ranch hands would poach elk all year long. Elk numbers have never returned. Subsequently an outfitting company suddenly appeared on Google maps right in the unit and on 4m Ranch LLC property about 5 years later. Around that same time is when I started to be denied tags for the late season. After that we hit tags about 2 out of 4 years. As of right now the best I have seen elk numbers is in the 20-30 range on private property right at the river. Most of the time I can only find a herd of about 7-12 in the late season. Based on what I have seen and heard there has to be some truth this story as to why elk numbers are so low. I hope this helps, and if you have any questions please feel free to contact me.
Season dates and durations to much pressure crammed into a short time
the off season noise, pollution and activity of the oil and gas companies should be moniitored and they should be responible for some of the decline. if they want to use the land they should need to landscape and return the land to usable wild game havitat.
Yes
I have hunted in GMU22 for about 5 seasons now. This archery season (2020) was horrible with a huge influx of out of state hunters coming in and screwing things up. They were driving closed roads, calling out their windows, and in general showing zero respect for other hunters. The other frustrating part of hunting there is the private land everywhere. There used to be several areas that were walk in access that this year were not. It's tiresome that BLM/Forest Service continues to sell public lands to oil/gas and thus take away hunting access. I will continue to hunt the late season cow season when I can draw a tag but as far as archery I won't be returning to that area to deal with the nonsense I dealt with this year.
I think the elk are Hunted too hard and too long and the horse problem in the area needs needs needs to be addressed and somebody take responsibility to do something about them
The private property issue is the biggest problem in that area. I no longer hunt in E10 because of this issue.
Limit the out of state hunters and have the outfitters hunt their own land not public
Too much private land not being hunted
put a bounty on coyotes and poachers. well coyotes anyway.
seems like overgrazing our public lands isnt helping elk foraging. lets manage livestock so we can help our

Unlimited either sex private land tags need to be done away with when I go hunting in that area I see outfitters having clients with private land either sex tags hunting on our public lands and I see the outfitters employees hurting elk off of public land towards their clients If private landers are having trouble with elk on their property they should allow hunters on their property not just charging them $10,000 to come harvest one and then complain about elk on their property and get extra money for crop damage most of the private land is in elk wintering groundsAnd we should not be hunting while the elk or wintering

I truly believe that these large gas holdings need to at minimum allow a quota of Archery hunters on their properties. NO OUTFITTERS! Public DIY hunters. These animals need to be hunted for heard health and they have created large sanctuaries that are not being broken up. These animals are not their animals and in a lot of cases the Gas companies have acquired public land then turned it into private over the years and that is wrong!

I have hunted this area for 15 years, and have watched the deer and elk numbers steadily fall. I used to get an elk every year, and I haven't got one in the last 5 years. My son and I hunted 5 days last week for the muzzleloader hunt. We hiked over 20 miles (gps verified) and spent over 40 hours hiking. We saw a total of 4 elk, 2 cows and 2 calves. We heard no bugles and we only saw a dozen or so deer. We hunted the same areas I've always hunted, were I used to be able to see elk all the time and the deer used to literally be everywhere. This is very very frustrating to me. I, along with everyone I've talked to, am sick of all the B.S. we keep hearing about how numbers are above objective. Are you freaking kidding me, what are you guys counting? Horses, cows, trees, its definitely not deer and elk. I'm also tired of the blame being pushed off on winters, drought, us sportsman. It would be nice if you guys would do YOUR jobs and quit blaming everyone and everything for what is going on. I personally think that CWD and other diseases are a lot bigger factor on numbers plummeting than you guys are letting on. I hike miles every week in this area and it is scary how many skeletons I come across. If you can't tell I'm extremely frustrated. I told my boy that I will not hunt this area again, there is nothing here, and I have talked with alot of others who feel the same way. We are tired of lies and excuses, we all believe that you are more worried about money and selling more tags than you are about our deer and elk herds. I hope we are wrong, but I haven't seen anything going on that would suggest otherwise. You guys have your work cut out for you, I just hope you haven't waited to long. Good Luck, I really mean it.

ATVs are everywhere and disturb / stress the elk more than energy development. CPW has used energy development as a crutch for long enough. Get over it. The impacts are short term and the energy companies do more to promote good habitat than anyone. Quit playing God with the animals and let Mother Nature do her own thing. Don't introduce wolves. Quit having special hunts for lions and bears. Focus on controlling irresponsible humans and let nature do its thing. Also - I am a lifelong resident of Colorado and big game hunter but I'm so disgusted with the complexity of regulations in the State of Colorado that it is no longer enjoyable to even go hunting here anymore. I'm going to burn up the rest of my preference points and start looking for a some other state to go hunting in, or just quit hunting altogether.

I feel the elk herd is doing well but the deer herd has suffered greatly since the issuing of doe tags. I would say the deer hunting should go back to buck only no doe tags. I have hunted in unit 30 for 20 years and that is the biggest issue for the unit.

The late season antlerless tags should be for youth only to give them more opportunity to harvest.

The wildfire that has moved the entire herd of elk and over hunting since elk might be concentrated in one area.

Give landowners private property preference licenses

Private property owners have a very good way of land locking thousands of acres of public hunting land. As a non resident my hunting are currently looking at other states for elk hunting

Significant overcrowding for archery in 2020 season. Need to look hard at two archery seasons versus one. Private land late season tags are a good management tool, but late season public land tags are not a good tool. Too much stress on the herd going into winter.

In the survey it states there isn't as many cows to calfs due to lack of food for them. Cut the leases short for the grazing permits. So the cows are not up there during hunting. I raise cows and also hunt.

Large elk herds staying on private property on the river.

we need more deer!

energy traffic, construction to their facilities and heavy activity at their land leases should be restricted and monatored during hunting seasons, in all of these game units

Predators MUST be managed more effectively. I've personally witnessed many kills by lions and bears. We need to be able to hunt them with effective measures. More lions need harvested, a lot more bears need harvested. Coyotes are rampant. Dogs and bait, that's the only way to help the deer herd. Elk too. Wolves are already there, DO NOT INTRODUCE MORE. CANADIAN WOLVES ARE INVASIVE AND SHOULD BE TREATED AS SUCH. Just like Eurasian doves, they should not be here. The deer hunting has declined drastically in the past 3 years, elk hunting has too. I've hunted there for 23 years and it's worse now than ever. MANAGE PREDATORS or both deer and elk

Yes, we need to manage predators better. IE, spring bear hinting with baiting allowed in both fall and spring. As well as management of mountain lions management.

Hunted unit 22 late season cow for many years until the oil and gas companies shut it down. Very unfortunate, since then I've only filled one cow tag. Hard to fill the freezer now.

please no wolves

The elk and deer numbers for these units are dropping exponentially from my point of view, so do whatever it takes to get them back.

There's not any elk left here.

I hunted in area 32. What I don't like is how people can put their sheep out there to graze. It screwed up alot of hunting in my area. They would spook out the elk. If O would of known, I would of went somewhere else.

Some questions asked were very biased

Wild horses & over selling of tags have DESTROYED the local population (been here 36 years). I have no idea where you're getting your numbers, but they are bulls%+t!! Maybe in an area of private land, but definitely not public land! The numbers are terrifyingly low!! My kids won't ever have a chance to hunt the way things are

CPW needs to continue to find was to be a partner and leader on habitat improvement projects. Another huge threat to your elk herd and all of our public land is noxious weeds. You elaborate colorful big game brochurehour hurts could educate on noxious weed prevention(wash your truck, don't drive off road, etc) CPW should also be more of a vocal advocate for increased public land access.

Access to public lands is getting horrible. I have been hunting Colorado for over 30 years our group is now talking about hunting Utah

My main concern will be water supply. In the areas I hunt most if not all the water are on private land. Which mean the elk herd stay on private land which mean it's difficult to get an accurate count. There are a few windmill tanks but they are always turned off by 1st rifle season. I know I'm probably preaching to the choir but that's my two cents. I hunt with disable vets a lot, their concern(s) is the water also.

Les out-of-state Hunters they can get hunting tags with no points and I can't get deer with four points not fair I know you just doing it for the money I've been paying for 40 years I think I deserve a deer tag

If you are wanting to do a late season cow hunt in unit 30, you are going to have to open up the closed road areas. Too many people are hunting on top of each other with little to no luck, because the elk are not coming down. Limit the number of cow hunter in late season.draw only. If youth want to hunt they should apply for that season. Increase the lion tag numbers. Bear tags are plentiful, but make it worthwhile to buy a tag. Half price?? Two for one? The pine gultch fire is the best thing that could have happened to this area. The game warden in unit 30 is of no or little help to hunters. Not willing to give any information, or suggestions. Hopefully the next one will be better. Thought about doing a limited number of either sex 4th season tags? Help get rid of the preference point

I would like to have the opportunity to hunt deer and elk in the same season. Totally agree area 21 and 30 be managed separately! And all 5 areas managed individually!

I like late season hunts, but limiting a license to one area or another is almost a mute point becuase of the difficulty of access by private property. Both 30 and 21 already have difficult access due to private property and an abundance of hunting pressure. Objectives may not be reached because additional pressure may just push herds onto private preserves. I'm sorry I missed the meeting in August. Didn't realize it was happening. I think greater access to remote public blocked by private would be nice. Utopia perhaps...

I feel climate change will continue to make this area difficult to hunt. Drought and wild fires will be more common year after year.

I would like to see more access to public land behind private. Open roads that pass through private land so that

The wild horses are completely unmanaged. They disrupt and harass native game populations. This situation is much worse than anyone is giving credit to. We have hunted the oil spring area for the past ten years, and the deer/elk population seems to have been replaced by horses. Please address this

Because of caerus, the blm and cpw have allowed a sanctuary to take place. Also have created a ton of pressure in unit 32 because of this as well. The blm did no justice when they sold that land to encana and now we are seeing the results of this.

As far as energy development, I don't see an issue, People were convinced there would never be elk again when they built snowmass chairlifts and they came right back. As far as late season go the harvest number is usually small so I personally don't see an issue. CWD is a big concern not only in the unit but the whole state with deer and elk. I would really like to see a program that will give hunters a incentive to have harvested animals tested. have it be bonus points or monetary.

If you allow the liberal front rangers to introduce any wolves you won't be making millions from elk licences anymore. Step up and do your job and protect Colorados wildlife

I feel some kind of liability release should be furnished to oil and gas companies so they can open there lands for access to public lands they have locked up behind them

Past helicopter trapping for deer research during ongoing elk seasons have been extremely frustrating and detrimental to the quality of the hunting experience. The helicopter trapping should not occur during a hunting season. DOW office staff employees have always been very helpful; however, the DOW office staff in Meeker (not the field officers) have provided very poor customer service over the years. As an example, we pulled into the parking lot a couple of years ago at mid-day, during business hours and a staff member came and locked the door. She told us they were too busy with deadlines to help us and to come back in a couple hours (I think they were having their Christmas party). I have been hunting the late rifle season in the Little Hills area for approximately 30 years. For whatever reason, the elk population in that area seems to be reduced and the deer population during the third rifle season drastically reduced.

Open the gates and let us hunt again to manage the elk herd!

Elk populations go down every year do to cow licenses in 21,30 They say there is too many elk in units 30,31,32 so why are the cow licenses hunted in 21,22 where elk populations are very low.

Would like to see it managed as a quality hunting unit similar to unit 61 or Utah's bookcliff hunts

if wolves are reintroduced in area Elk and deer will be wiped out.

U hunt elk from September to January Really!!!

2 points: wolves and access. WOLVES. How do wolves in northwest Colorado most likely in one or more of these units work into this management plan? If the answer is "we don't know"- you need to know. WOLVES. How do wolves in northwest Colorado most likely in one or more of these units work into this management plan? If the answer is "we don't know"- you need to know. ACCESS. I feel like a lot of the elk in the late season are hanging out on inassecible private lands. If CPW wants to manage herd objectives, there needs to be better access.

Energy Development in the general area has seen a significant increase and infiltrates habitation zones for elk for a few years now. Also due to the mass amount of energy development and drilling has created access to literally every aspect of BLM and cutting off areas of solitude for migrating and local elk populations. Just food for thought but as animals are disturbed the less unlikely they are to stay in a particular area and remain stress free.

It would be very difficult to manage the elk population with hunter harvest. The reason is because the majority of elk go immediately to private property and are not available to hunt.

You really need to look into a spike bull hunt to help with numbers for control especially in your big units that are know for trophies the bull to cow ratio is ridiculous, Utah dose a spike hunt and they seem to be able to control there population just fine

Attempt to get Cerus to open the land they own to late cow hunting.

To much closed private land....

This year will be my 47th year of hunting CO. I am a resident of CA. CO herd management has been outstanding throughout the years...please continue

Fire is an important habitat management tool. Hopefully the Pine Gulch fire and surrounding wildfires open up an

I support management proposal 3 to improve herd health and bring closer to carrying capaciy

Since the area is so dry with lack of forage and water maybe attempt to build more water basins to collect rain water in an attempt to keep the herd in that area.
the amount of bow and muxxle pressure pushes the elk into private's sanctuaries. Great for population growth, but hard for hunter that are there to simply meat hunt. I would personally like to see archery tags become limited licenses, to avoid groups fo 10-12 guys, usually nonresidents coming and pushing elk around before the rifle seasons can get to them. I will add, I am a bow hunter who hunts there and am. happy to frequent the area less for bow if this is the case. I have seen this become and issue over the last 3-5 years thanks
The elk heard in unit 32 has seen a steady decrease in population. Overgrazing of sheep is a huge concern. Also cut down on number of antlerless licenses. Why are sheep on public lands well before May?
I believe energy expansion has impacted both the wildlife and habitat in the area.
I disagree with the 7000-9000 herd limit. It should be much high. The elk are healthly leave time alone Stop the ranchers from ruining public land hunters hunts!!!
Tough aera to hunt but so far you've done gtreat job
Loss of habitat
Change boundary line for unit 22 & 31 to the ridge line above Clear Creek to avoid confusion and to gather better data as Clear Creek canyon is a significant natural boundary.
Love hunting these units because of the unique terrain and scenery. But the amount of private ranches and energy company land makes these very challenging units to hunt. I've hunted for three years, and won't go back.
Access to public lands and too many animals on and little access to private land is an increasing problem
I've been hunting area 22 for 35 years. The last 5 years the Elk have disappeared in prance creek. The Elk seem to stay in the private land area along hwy 64. I have noticed an increase of the wild horse population. Do they compete with the Elk for the land area? We love hunting this area, but it's harder to keep justifying the trip without results in camp.
Too many oil refineries and platforms and disrespectful out of state hunters
You folks are absolute idiots.
I have hunted E-10 for over a decade. The elk herds do seem to congregate on private due to hunters chasing them there and the mostly private water and food sources. Most of my experience is with unit 31 hunting on both private and public lands. The actions of the CPW advertising 31 as a great place to hunt and sharing elk migration paths with out of state hunters is why I no longer hunt there. Please do not do this to the game units around Paradox. Hunter interference from unskilled hunters is very frustrating and has led many times to unsuccessful hunts. Side note: anything to keep the wolves out would be great. If we can issue more in state rags for elk over population that would be great.
I don't see very mini hurter in 22 season 3 rifle season but to drawl it takes 3 to 4years to get a buck license why the deer are everywhere elk are little hard to find but my see them thank you
I believe CDW should consider allowing an area 22 late season cow hunt for all GMU 21 cow license holders
Trespassing
The elk in unit 31 have been concentrated in the Roan Creek for many years now. The harder to access west side of the unit does not hold much game. But due to traffic on Roan Creek it makes it appear the population to be higher than what it really is in my opinion. Please take this into account when doing surveying. Also Cow mountain is one of the worse affected areas from the pine gulch fire.
If elk numbers are above the management that is desired in this area then why don't you issue more 1st season cow elk tags. My party has never drawn a 1st season cow tag yet we always get a 1st season bull tag
When you see more wild horses than ELK there must something that can be wrong. Do they not compete for the same food source?
!st season rifle is the most effective way to harvest elk due to first introduced rifle hunting pressure . If you really want to manage the herd more effectively how about you issue more cow elk tags for 1st rifle???
The Pine Gulch fire played a part in my answers to this survey.
As out of state resident I support CO in their efforts on herd management. I would hope changes to not follow suit of other states that are locking out more out of state residents from providing economic value to CO.

The amount of anterless tags have had more of an impact than any habitat loss. I've found more elk on and around natural gas pipelines than other places. The reseeded right of way makes for great forage for elk. I question the methods that were used to estimate the elk herd size. Unless there are considerably ore elk on private property than I think, you're estimate is too high for herd numbers.
None of this is relevant with introduction of wolves. And none of it matters with the amount of private lands held by private ranches and larger oil companies that are poorly managed
Please don't mess up the elk hunting in these units
In 2019 and this year 2020 my son are hunting elk in the late season. I our licenses cover several DOW areas? We are not interested hunting more than one area. How can anyone know where hunters are choosing to hunt and harvest deer and elk. We really like to harvest a deer or elk during the same season!
Limited entry for mature bulls.
Increasing access to public land is a major concern for us in this DAU. Between the loss of critical access in 32, and the ongoing issues with access in 31 we'd like CPW to do more to increase access to public land in this DAU.
We have hunted unit 22 for over 20 years. There is a good manageable population here. I would suggest leaving things as be at least for sometime.
I've hunted elk in the E-10 herd area for the last 24 years. I believe the state biologists, better than anyone else, have the resources, knowledge and know-how to make the right decisions about managing the heard. My main issue is with the private land owners and their increasing efforts to restrict access to public land and hunting areas. While I believe in their rights to manage the property they own, I also believe as a law abiding, rule following, everything by the book hunter I also have rights to hunt in public areas designated as public hunting.
over the past 5 years it seems there are a lot more people in the area I hunt. Prior to this it seemed like the Elk hunting was good, if you worked to get into those areas where others won't go due to the terrain. Now it seems like there is a higher concentration of hunters riding 4-wheelers in. There is land lock areas in Salt Creek that I disagree with and the only way to access is going through private land, which they won't allow or going in on 16 road over the top and down through SC if you have a 4 wheeler. Shooting at long distances (over 600 yards) is becoming a real issue, people shoot scare the elk off not going to see if they have hit one and the elk leave the area and more elk are wounded and usually die due to the wound.
More and more out of state hunters are drawing licenses, especially in primary draw, over residents more and more each year. To the point that a resident with multiple preference points does not even draw, yet numerous out of state hunters are drawing because their tags pay more into the salaries of those in charge. It is ridiculous, and is causing a huge decline in meat for resident families to provide, causing them to go with alternative sources.
I think to improve calf recruitment we need to be killing more bears.
Increase resident elk tag fees There is a huge difference in fees for nonresident vs resident fees Residents need to contribute more money for natural resources.
The wild horses in these GMU's need to be addressed, their increasing numbers is taking away the feed for the game animals.
3 years ago, the hunting was amazing. There were herds everywhere. It has definitely declined in the past 2 years. We haven't seen hardly any
Game management should be about sustaining the game. Doing what it takes to continue survival, health and a healthy population should be the priority. Land management is not being successful by the BLM. The land is overgrazed, the elk are being blamed. This needs resolved with the wild horses and the ranchers. Game management should be done by the managers not the politicians or big rack hunters. How's that for a curve ball? Mandate the use of wildlife friendly fences, end sheep fences where there are no sheep, no more 6 strand barb wire fences. You and your abilities need to be supported and be the priority. Opinions are like butts, we all have one. Just get support and do what is right. Thanks for the opportunity to respond.
Would be nice to get access to the large herds on private land!
CPW should work with private land owners to provide more public access. One locked gate (and there are many) in a valley bottom can severely restrict access to thousands of acres of our public lands and hunting opportunities.

Overall in Colorado the elk herds have dwindled over the years. There are a lot of hunters in most units, understanding there is a balance between license income and managing the elk herd, i hope to see the priority be on the elk herd. I would fully support less tags across the board if it increases populations and successful hunts in the future.

Make it more affordable for out of state hunters, we fuel the local economy's during hunting season but increased prices for licenses and tags may price us out of the market

Thank you for all of the hard work that you do to continue making Colorado a great place to hunt.

I have only recently been able to figure out the complexities of the draw and OTC system, I would prefer that system not to change. Contrary to most wildlife officials belief that the system is relatively easy to navigate, I find it cumbersome and would like that system to remain consistent. I have lost out on hunting opportunities simply because I didn't understand the system. Please do not change the current qualifying GMU's in regards to antlerless licenses

APPENDIX VI: PUBLIC COMMENTS OF THE DRAFT PLAN

The following comments were received from the public during our 30-day public comment period (January 21 – February 21, 2022) for the draft plan. Note that some of these comments were submitted as feedback for the E-10 Herd Management Plan (HMP) as well as two other HMPs that were posted for comment simultaneously (D-11 and D-42).

All Draft Plans

Thank you for your team's research and effort regarding this matter.
I have lived in Colorado since 1964 and have hunted for over 30 years in this state. The current habitat for our wildlife continues to degrade, and putting the massive wildfires on top of that is not good. Then the animals get crowded out due to the massive population growth in Colorado. Not to mention CWD. Tough conditions for our wildlife. Thanks for doing this and I support the these plans.

I don't agree with your proposal to reduce the herd population of elk and deer. With the reintroduction of wolf's, CWD and all the other negatives these animals are facing including roadways and human interactions. It's a wonder they still exist.

How does one expect a uneducated, unknowing public to understand herd management, let alone make decisions on the health and well-being of the animals? People barely pick up their dog waste on a trail. Why are we not asking experts?

Where do you get your population estimates? After spending many days afield and speaking to many hunters, I certainly do not agree with your premise. Deer and elk populations are a tiny fraction of the numbers you estimate. Please use realistic numbers!!

The current draft herd management plans for the Yellow Creek Elk, Bookcliffs Deer and Rifle Creek Deer herds are unacceptable because not even the current target herd levels were able to be maintained and there is no evidence the new targets can be maintained.

The constant drop in herd numbers should be alarming to everyone in Colorado, especially long-term residents that have watched herd numbers plummet across the board over the last 35 years. The data actually supports doing the opposite of the draft plan and raising management target numbers to help support long-term recovery. The draft plan continues mismanagement of Colorado’s natural resources through consumptive approaches that never allows growth in herd sizes. You will continue to lower the herd numbers each plan period until there are no herds left with this approach.

This is a easy situation to solve. The herds are large or smaller than expected. All units in Colo (not just a few BUT ALL) that if any money a land owner receives either from the state or federal then all of their property is open to public hunting no matter what . This includes outfitters going in and leasing all of a landowners property exclusively to stop it also. The money the landowner receives include for farming aid , crp , animals killed by

bears mountain lion wolves…. , crops destroyed by deer elk …. The landowners complain about all this and they get subsidized by the state or federal government, but who is paying the bills to them the tax payers. Also take all away the landowners tags.

I have lived in Colorado all my life, my comments are for Big game species as a whole. what i see are adjustments made to herd size lowering there populations because previous goals
can't be met. Those plans were put in place with confidence of obtaining them. Previous plans have higher population goals so why do they get lowered? Why lower the population goal instead of improving
them to meet previous objectives and populations that once existed. could there be a predator influence here, Bears, Cats, Coyotes, over hunting pressure, and soon wolves.
I believe the ways of managing have changed.
I see funding a problem that the wildlife itself is burdened for.
I have seen many changes good and bad for all species, I believe in balancing the populations but thru true game managing (what is best for the animals) not business managing or political managing
You first represent the animals please do that

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what I see is you guys are seeing dollar signs yet again. The numbers are already low and you wanna cut them even lower. Why are you trying your best to get rid of them???. Breading predators, introducing more of them on top of that, trying to cut the cat hunting.. I know it's tree huggers that push this shit through but they aren't even part of having anything to do with the wildlife, they don't pay a dime into any of it, only stopping it .Hunting the elk six months out of the year.. Doesn't make much sense.. Here is an idea, cut out all the late season hunts, you're destroying the elk herds,, and as for the deer, they're just trying to make a little bit of a comeback, stop killing all the damn does... I myself am about tired of giving my money that supports this kinda bullshit. Why should I keep buying tags over and over when nothing is done to improve the herds.?

Leave them alone

My input is to NOT decrease populations, and NOT decrease buck/doe ratios. I would like to see CPW make efforts to increase populations and buck/doe ratios for a change.

The solution is simple. The state needs to move the deer crossing signs away from I-70 so the deer know that they can't cross there and instead put the deer crossing signs where deer hunters hunt. This keeps them off the interstate and keeps hunters happy.

E-10 (Yellow Creek) and D-11 (Bookcliffs)

I have spent a significant amount of time in units 30, 21, and 22 over the past two years. Winter range (sagebrush and mountain shrub) communities are in very poor condition due to lack of fire and domestic cattle/feral horse overgrazing. Commerical cattle grazing on these public lands should be greatly reduced or eliminated in order to restore habitat for native wildlife. Feral horse activity is completely out of control as well and it is extremely frustrating to see the damage these animals are having on the landscape and the impact they have on native animals. In units 21 and 22 feral horses are congregating at water sources and denying access to deer and elk. They erode the sides of water sources which cause them to become shallowed and evaporate more quickly. During times of drought must be causing many hundreds of

native animals to die. Feral horses also have no predators and are multiplying at unsustainable levels. The number of horses should be greatly reduced or the entire population eliminated. If these feral animals are to be given status similar to native wildlife we need to manage them with a feral horse hunting season similar to the way all other species are managed. I love these desert units and it is extremely sad to see the destruction that feral horses are causing.

I currently live in Mesa county, De Beque, Colorado and I have a serious proposal for you about the I-70 area just west of the De Beque exit. This area is where the river comes close to I-70 going east bound and west bound where I-70 goes over the Colorado river. I would like to propose a natural cross over for the deer herds on the east bound side of I-70. I see deer being killed and struck by traffic here ALL the time, due to the fact of herd migration to and from their water source in the area. They have a path they travel across I-70 which we as humans put right in the path of their natural migration. I do understand that this is not the proposal that was technically asked about, but this is a very important issue that is responsible for numbers and counts of the deer herds. Please consider my proposal seriously, because not only are deer being affected but people's lives are as well. Thank you so much for your consideration and time to read this. I would love and appreciate a response in return to the regards of this proposal.
Local awareness will save lives both in animals and humans, thank you,

E-10 (Bookcliffs)

No comments were submitted solely for the E-10 Herd Management Draft Plan.

February 25, 2022

Darby Finley
Colorado Parks and Wildlife
73485 Highway 64
Meeker, CO 81641

RE: White River Habitat Partnership Program Comments - HMP E-10

Dear Mr. Finley:

One of the initial reasons for creating the Habitat Partnership Program was to provide local landowners and other interests an opportunity for input into big game management in their areas. The diverse makeup of local HPP committees (3 livestock growers, sportsperson, Forest Service, BLM, and CPW) provide a good cross section of local interests to review Herd Management Plan (HMP) proposals and respond accordingly for CPW consideration.

HPP has two purposes; to resolve big game wildlife (deer, elk, pronghorn, moose) conflicts with agricultural landowners and to assist CPW to meet game management objectives for those same species. From those perspectives, the White River HPP committee has discussed your presentation, reviewed the draft alternatives, and offer these comments for consideration.

The White River HPP committee supports the draft alternative to adjust the population objective to 8,500-10,500 elk within this DAU. The committee also discussed the proposed sex ratio alternative and is in support of the expected ratio of 18-25 bull per 100 cows. The committee has heard from landowners and land managers about poor range conditions due to factors such as feral horses, drought, and habitat fragmentation due to energy development.

As stated above, HPP is also directed by statute to assist the Division to meet game management objectives. The committee has worked with both public land managers and private landowners to improve the quality and quantity of the habitat in E-10. Adequate habitat is critical to meeting game management objectives and we remain committed to maintaining and improving habitat in this area.

Our committee is confident about CPW being able to achieve the proposed objectives through the proposed strategies. The White River HPP committee will support this management effort in partnership with the numerous local landowners and federal land management agencies that place a high priority on implementing valuable habitat improvement projects, and have expressed the desire to continue this work. Thank you for the presentation and the opportunity to provide these comments.

Sincerely,

Bailey Franklin

Bailey Franklin, CPW Representative
White River HPP Committee