

# RIFLE CREEK DEER HERD MANAGEMENT PLAN

## DATA ANALYSIS UNIT D - 42

GAME MANAGEMENT UNIT 33

PREPARED FOR  
COLORADO PARKS AND WILDLIFE



BY

GENEVIEVE FULLER  
STEPHANIE DURNO KARNIS  
BRIAN GRAY  
BRAD BANULIS  
KIRK OLDHAM

THIS PLAN WAS APPROVED BY THE COLORADO PARKS AND WILDLIFE COMMISSION ON  
5/5/2022

EXECUTIVE SUMMARY

<b>Rifle Creek Deer Herd (DAU D-42)</b>	<b>GMU: 33</b>
<b>Posthunt Population:</b> Previous Objective: 7,700 - 9,400 deer; Estimate for 2020: 6,200	
<b>Preferred Alternative Objective: 6,200 - 8,200</b>	
<b>Posthunt Sex Ratio (Bucks:100 Does):</b> Previous Objective: 30 - 35; Posthunt 2020 observed: 21.5 modeled: 26.6.	
<b>Preferred Alternative Objective: 25 - 32 Bucks:100 Does</b>	

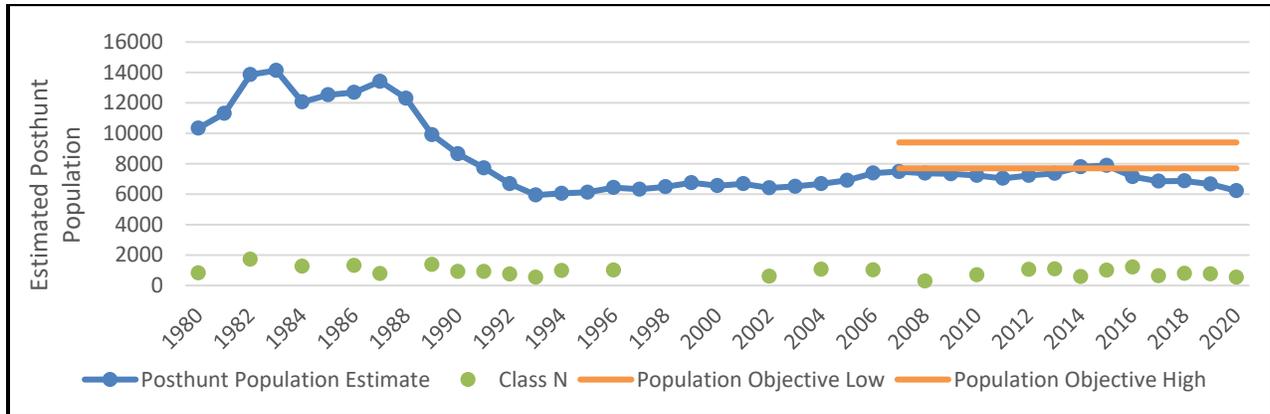


Figure 1. D-42 modeled post hunt population and objective range, 1980 - 2020.

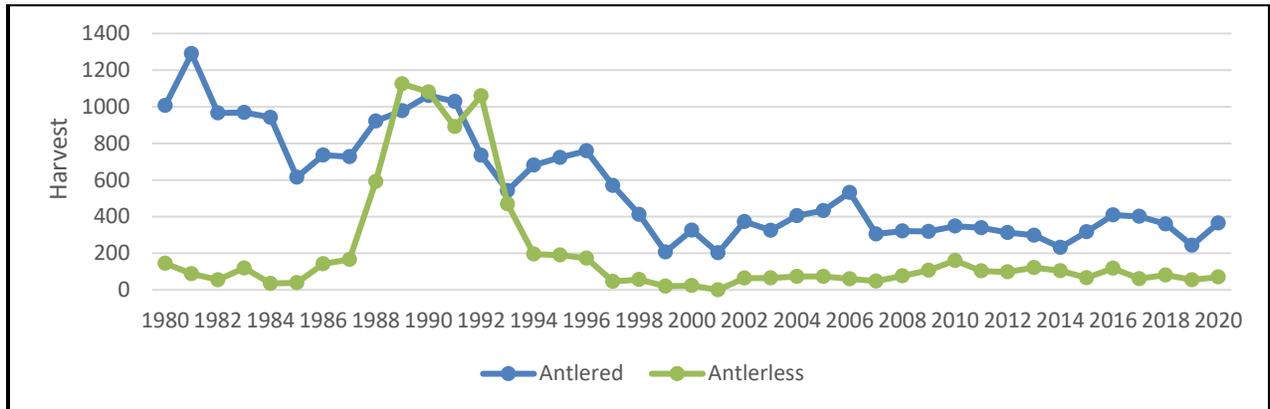


Figure 2. D-42 harvest estimates, 1980 - 2020.

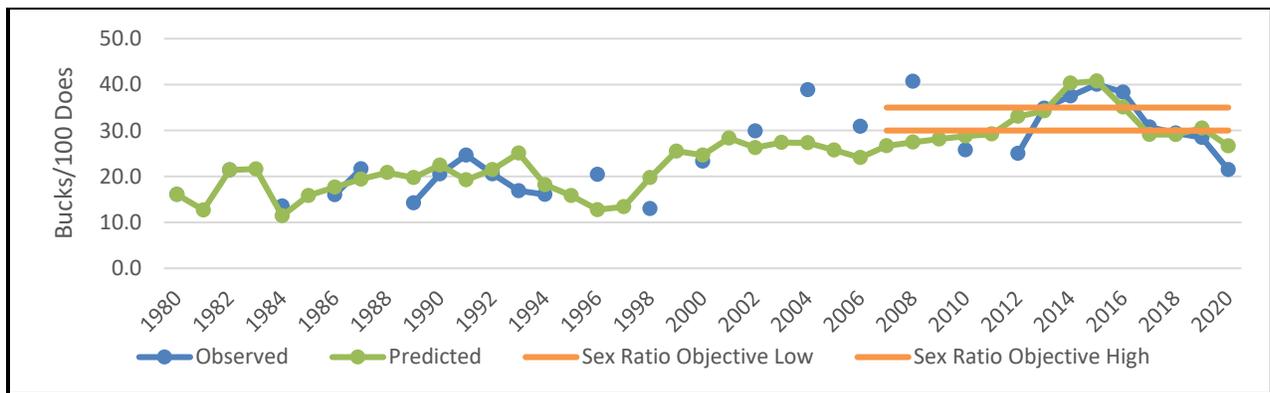


Figure 3. D-42 Observed and Modeled Bucks: 100 Does, 1980 - 2020.

## Background Information

The Rifle Creek deer DAU is located in west central Colorado and falls almost entirely within Garfield County except for a very small area within Rio Blanco County. D-42 consists entirely of Game Management Unit (GMU) 33. Approximately 74% of D-42 is public; 29% is managed by the Bureau of Land Management (BLM), and 45% is managed by the US Forest Service. State and federal agencies each own around 1% of D-42. Approximately 25% of the DAU is privately owned. Livestock grazing is an important land use on public and private lands, while hay and alfalfa are grown on private lands at lower elevations.

Mule deer occupy the entire DAU, migrating from low-elevation winter ranges to high-elevation summer ranges in response to available forage and snow conditions. Small resident herds live year-round at low elevations south of the hogback, relying on agricultural and low-density residential developments for forage.

Low fawn:doe ratios, high game damage claims, and poor forage conditions in the late 1980's led to intensive efforts to decrease the population size. The population size reduction was successful, but fawn: doe ratios are still low and forage conditions are not substantively better. The deer population in D-42 has been stagnant for nearly two decades.

## Significant Issues

Significant issues facing this deer herd include, disease, degraded habitats due to drought and over-utilization, recreational disturbance, residential development, long-term low fawn:doe ratios, and population stagnation. The habitat is fragmented and degraded throughout much of the herd's important ranges. Increases in residential development and recreational activities in the area leaves few areas free from human disturbance.

Mandatory testing in 2017 estimated the chronic wasting disease (CWD) prevalence at 10% in adult male deer, which is above the threshold to trigger management actions to reduce the prevalence. Stakeholders are concerned about the long-term effects of the disease on this herd.

## Management Objective Alternatives

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. An initial survey of hunters, landowners and the general public was conducted to help identify issues and population and sex ratios objectives to be considered. In consideration of public interests and staff knowledge of the mule deer herd and management issues, a preferred alternative was identified and a draft plan was posted for public comment for 30 days. In addition, the plan was submitted to local BLM and USFS offices, as well as being presented to Garfield County Commissioners and local Habitat Partnership Program (HPP) committee.

In D-42, three alternatives were considered for the population objective range and two alternatives were considered for the sex ratio objective range. Colorado Parks and Wildlife (CPW) preferred alternatives are in **bold**.

## Population Objective Alternatives

*Alternative 1: 7,700 - 9,400 (Status quo)*

*Alternative 2: 6,200 - 8,200 deer (Manage to population average)*

*Alternative 3: 6,000 - 7,200 deer (Decrease, broader range)*

### Sex Ratio Alternatives

*Alternative 1: 30 - 35 bucks: 100 does (Status quo)*

*Alternative 2: 25 - 32 bucks: 100 does (Slight decrease, broader range)*

### Preferred Alternatives

Based on herd productivity, issues affecting the deer population, and public input, CPW staff recommend the alternatives below.

***Population Objective Alternative 2: 6,200 - 8,200 deer (Manage to population average)***

The population for the D-42 herd has been largely stable since 2006 at an average population estimate of 7,194 deer. With the current amount of usable deer habitat throughout the DAU, the high prevalence of chronic wasting disease, and the pressures of recreation and other land uses, this alternative population objective range is more indicative of the amount of deer the land can currently sustain. This objective range is not a reduction of the deer population, but rather a management of the population at the level it has been stable at for the last 20 or so years. The current population estimate is at the lower end of this range.

***Sex Ratio Alternative 2: 25 - 32 bucks: 100 does (Slight decrease, broader range)***

As of 2020, the post-hunt observed 3-year average sex ratio was 26.5 bucks per 100 does. Most stakeholders would like to see CPW strike a balance between reducing CWD prevalence and maintaining mature buck harvest in this DAU. The sex ratio objective range of 25 - 32 bucks: 100 does attempts widens the sex ratio for CPW to make adjustments as prevalence of the disease fluctuates over time. This objective range gives CPW the flexibility to manage at the lower end of the range when CWD prevalence is high and manage at the higher end of the range when CWD prevalence is low.

### **Strategies for Addressing Management Issues and Achieving Objectives**

Although some of the issues facing the D-42 herd are beyond the scope of this HMP, CPW staff and interested stakeholders are committed to managing this herd with strategies that promote a robust, healthy, and resilient population. CPW will continue collaborating with land management agencies and private landowners to identify and implement opportunities for habitat improvements. CPW staff will participate fully in land management processes that affect D-42, including USFS Forest Plans and BLM Resource Management Plans. Ongoing disease surveillance and targeted management response will focus on reducing prevalence and mitigating the effects of chronic wasting disease.

## CONTENTS

EXECUTIVE SUMMARY .....	1
INTRODUCTION AND PURPOSE.....	1
RIFLE CREEK DEER DATA ANALYSIS UNIT.....	3
Location.....	3
Physiography .....	3
Land Status.....	4
Sympatric Big Game Populations .....	6
HABITAT RESOURCE.....	7
Habitat Distribution.....	8
Habitat Condition and Capability .....	10
Game Damage .....	10
HERD MANAGEMENT HISTORY, ISSUES AND STRATEGIES .....	12
Overview of Procedures to Estimate Population Size .....	12
Post-hunt Population Size.....	12
Post-hunt Herd Composition.....	13
Harvest and Hunters .....	14
Past Management Strategies .....	15
Current Issues.....	16
PUBLIC INVOLVEMENT .....	21
Public Survey.....	21
Public Feedback .....	22
MANAGEMENT ALTERNATIVES .....	22
Population Objective Alternatives.....	22
Sex Ratio Objective Alternatives .....	23
PREFERRED ALTERNATIVES .....	23
LITERATURE CITED .....	25
APPENDIX I: POPULATION DYNAMICS, MAXIMUM SUSTAINED YIELD, AND DENSITY DEPENDENCE .....	I
APPENDIX II: US DEPARTMENT OF INTERIOR SECRETARIAL ORDER 3362 .....	IV
APPENDIX III: CPW ACTION PLAN FOR SO3362 .....	X
APPENDIX IV PUBLIC INVOLVEMENT SURVEYS.....	XII
APPENDIX V: PUBLIC COMMENTS.....	XLI
APPENDIX VI: HABITAT PARTNERSHIP PROGRAM COMMENT LETTER .....	XLIV

## FIGURES

FIGURE 1. CPW'S MANAGEMENT BY OBJECTIVE PROCESS TO MANAGE BIG GAME POPULATIONS BY DATA ANALYSIS UNIT. ....	1
FIGURE 2. LOCATION OF DAU D-42. ....	3
FIGURE 3. LAND OWNERSHIP IN D-42. ....	4
FIGURE 4. LAND OWNERSHIP IN D-42. ....	5
FIGURE 5. VEGETATION DISTRIBUTION IN D-42. ....	7
FIGURE 6. VEGETATION COMPOSITION OF D-42. ....	8
FIGURE 7. MULE DEER SUMMER ACTIVITIES IN D-42. ....	9
FIGURE 8. MULE DEER WINTER ACTIVITIES IN D-42. ....	10
FIGURE 9. CRUCIAL HABITAT IN D-42. ....	ERROR! BOOKMARK NOT DEFINED.
FIGURE 10. D-42 MODELED POST HUNT POPULATION SIZE AND OBJECTIVE RANGE. ....	12
FIGURE 11. D-42 OBSERVED FAWN:DOE RATIOS 1981 - 2020. ....	13
FIGURE 12. D-42 OBSERVED BUCK:DOE RATIOS, 1981 - 2020. ....	14
FIGURE 13. D-42 HARVEST 1981-2020. ....	14
FIGURE 14. D-42 HUNTERS AND HUNTING DAYS 2001-2020. ....	15
FIGURE 15. MOTORIZED AND NON-MOTORIZED RECREATIONAL TRAILS WITH A 200M BUFFER IN D-42. ....	16
FIGURE 16. PERCENT AREA OF GARFIELD COUNTY IN DROUGHT 2000 - 2021. ....	17
FIGURE 17. RESIDENTIAL DEVELOPMENT IN D-42, 1970-2020. FROM (JOHNSON, ET AL., 2016) ....	18
FIGURE 18. SIGMOID GROWTH CURVE. ....	I
FIGURE 19. MAXIMUM SUSTAINED YIELD. ....	II

## TABLES

TABLE 1. SYMPATRIC BIG GAME POPULATIONS IN D-42. ....	6
TABLE 2. GAME DAMAGE CLAIMS FROM DEER IN D-42, 2009 - 2020. ....	11
TABLE 3. ECONOMIC BENEFITS OF HUNTING IN D-42. ....	15
TABLE 4. CHRONIC WASTING DISEASE SURVEILLANCE RESULTS IN ADJACENT DEER HERDS. ....	20

## 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 CPW's Strategic Plan and mandates from the Parks and Wildlife Commission and the Colorado Legislature. Colorado's wildlife resources require careful and increasingly intensive management to accommodate the many and varied public demands and growing human impacts.

CPW establishes general season structure guidelines statewide, known as Big Game Season Structure (BGSS). CPW uses 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-around 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) which are 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 a 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.

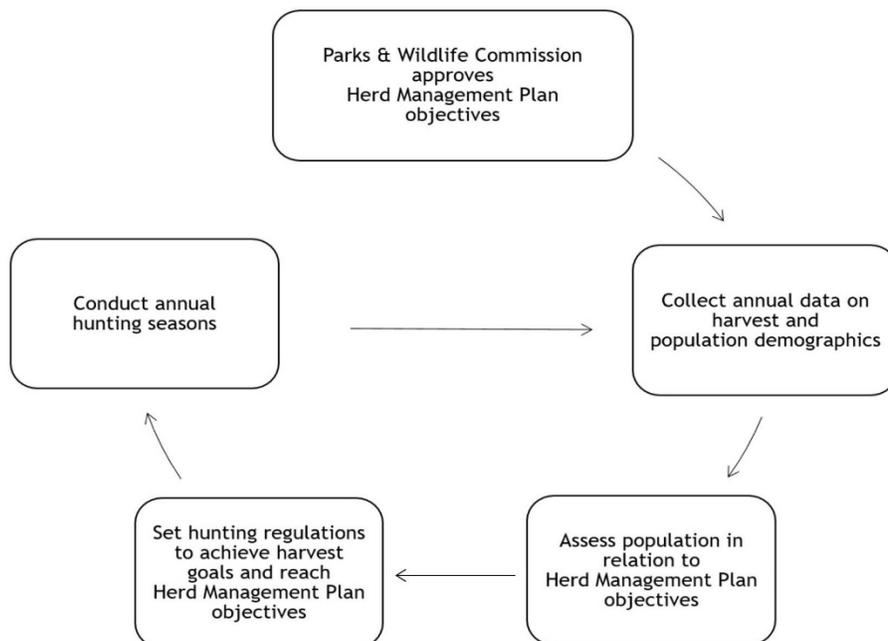


Figure 1. CPW's Management by Objective Process to manage big game populations by Data Analysis Unit.

In preparing a HMP, CPW personnel strive 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 publics and 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 Rifle Creek deer herd (D-42; GMU 33). The herd management plan will be in place from 2022-2032 with the expectation that it will be reviewed and updated in 2032.

## RIFLE CREEK DEER DATA ANALYSIS UNIT

### Location

The Rifle Creek deer herd, DAU D-42, is located in west-central Colorado and includes portions of Garfield and Rio Blanco counties (*Figure 2*). On the north, it is bounded by the Colorado - White River divide, on the east by Canyon Creek, on the south by the Colorado River, and on the west by CO Hwy 13. D-42 is composed entirely of Game Management Units (GMU) 33. The entire DAU is approximately 1078 km<sup>2</sup>. Human population centers occur on the periphery of the DAU in the cities and towns of Rifle, Silt, and New Castle.

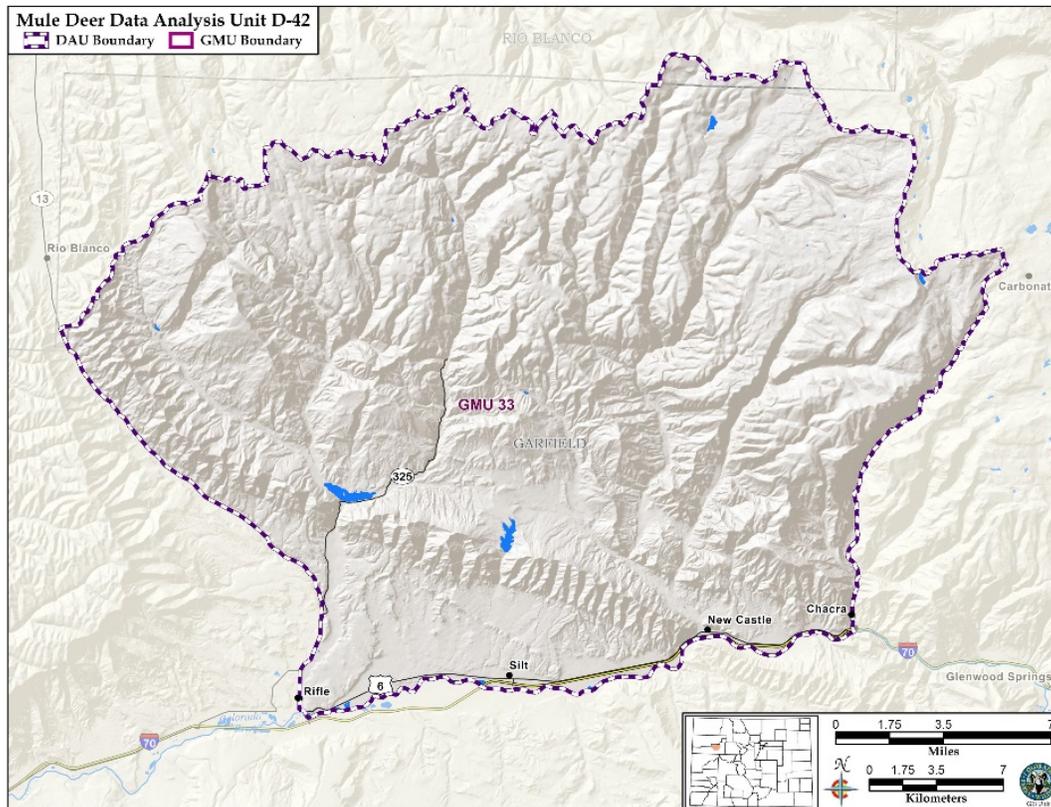


Figure 2. Location of DAU D-42.

### Physiography

#### Topography

The topography in DAU D-42 is highly varied. Elevations range from approximately 5,200 ft. near the Colorado River to over 9,500 ft. near the boundary with GMUs 23 and 24. Topography includes flat, lower elevation sagebrush and agricultural areas, steep foothills, and narrow ridges bisected by nearly vertical canyon walls. This diversity of topography results in a wide variation in available wildlife habitats. Major drainages in the DAU include the Colorado River, and Rifle Creeks, Elk Creeks, and Canyon Creek.

#### Climate

The climate varies with the elevation gradient of the DAU. Lower elevations are characterized by cold winters and hot summers with low 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. Valley temperatures generally average between 10°F and 90°F.

The higher elevations are characterized by long, cold winters and short mild summers with relatively higher precipitation of 8 - 10 feet per year. Temperatures generally average between 0°F and 80°F. Heavy snowfall accumulates at the top of the DAU, including Coulter and Clinetop Mesas. Deep snow generally forces deer to lower elevations and south-facing, wind-blown slopes for the winter. This seasonal migration is typical of deer herds in western Colorado.

### Land Status

#### Land Ownership

There is a matrix of public and private ownership of land in D-42. Generally, the private lands are found at lower elevations, while the mid-elevation public lands are managed by the Bureau of Land Management (BLM) and higher elevation public lands are managed by the US Forest Service (USFS) (*Figure 3*).

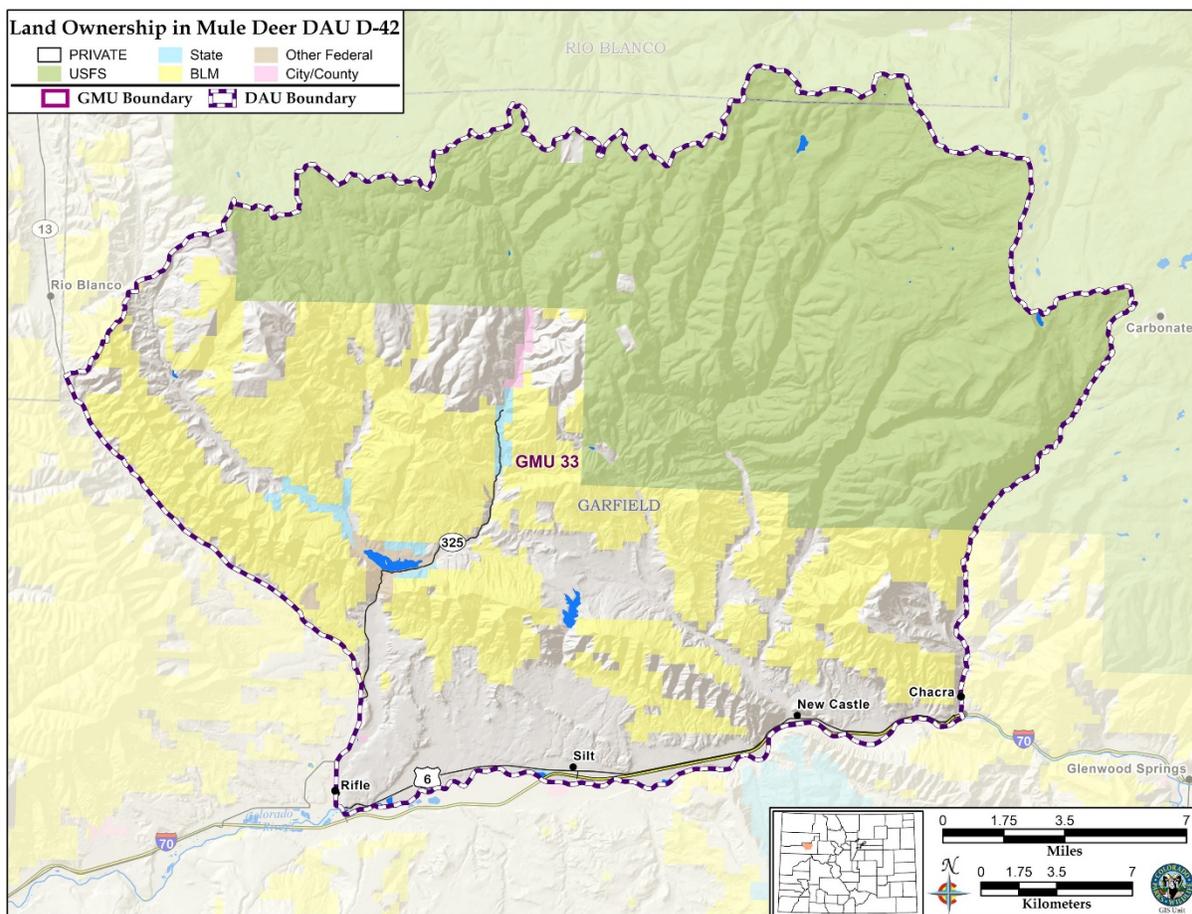


Figure 3. Land Ownership in D-42.

The US Forest Service (USFS) manages approximately 487 km<sup>2</sup> in D-42, while the Bureau of Land Management (BLM) manages approximately 308 km<sup>2</sup>. Roughly 267 km<sup>2</sup> land is privately owned. The State of Colorado and smaller federal agencies manage the remaining land (*Figure 4*).

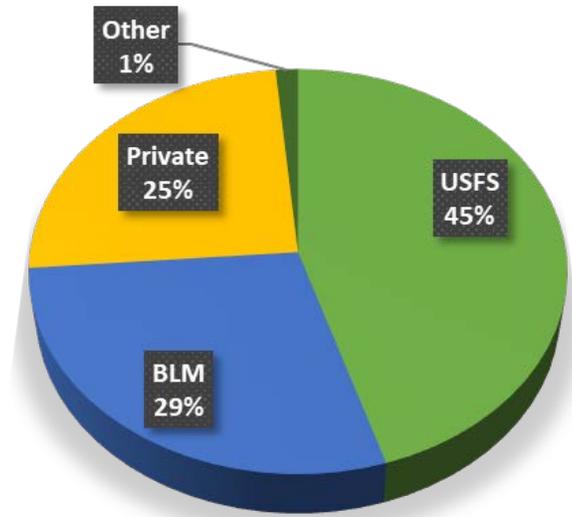


Figure 4. Land Ownership in D-42.

#### Land Use

Land use in D-42 varies across the elevation gradient. Population centers are located on the southern boundary of the DAU along the Colorado River. The areas immediately surrounding Rifle, Silt, and New Castle are generally privately owned and used for agricultural production. The land at higher elevations are generally publicly owned and managed by USFS and BLM. These lands provide summer livestock grazing, wildlife habitat, hunting, and outdoor recreation. Ranching is an important land use across the DAU.

- **Outdoor Recreation**

Beyond hunting and fishing, other outdoor recreation is increasingly popular in D-42 on both winter and summer ranges, including the Cedar Mountain and on Clinetop and Coulter Mesas. Common activities include mountain biking, motorized touring (snowmobile, ATVs, and 4WD vehicles), dispersed camping, shooting, hiking, rock climbing and horseback riding. Outdoor recreation is associated with flight behavior and decreased foraging in ungulates (Larson, et al., 2016), so it is possible that the increasing outdoor recreation in D-42 is affecting the performance of this herd.

- **Agricultural Production**

Farming and ranching are traditional activities in D-42 that still contribute significantly to the economies of the area. Hay and alfalfa production is important on private lands near Rifle, Silt, and New Castle. These crops, along with small orchards and low-density residential developments attract deer. A non-migratory population of deer remain in areas north of Rifle, and in Peach Valley and on Silt Mesa.

Cattle and sheep graze much of the deer habitat on public and private land in the DAU throughout the year. Livestock generally graze high elevations on USFS and private lands during the summer and then moved to lower elevation BLM lands and home ranches for the winter.

Livestock grazing can have negative, positive, and neutral impacts to wildlife (Schieltz, 2017). These impacts and the degree at which they effect deer, is determined by a suite of factors, including timing, seasonality, intensity, duration, and location. Generally, lighter intensity of grazing, rotational systems, seasonal rest, and deference during drought are less associated with negative impacts.

- **Hunting and Trapping**

Hunting is a very popular activity in D-42. 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 River during the later seasons. The Rifle Creek deer herd overlaps portions of the White River (E-6) elk herd, which provides substantial hunting opportunity. Bull elk licenses in 2<sup>nd</sup> and 3<sup>rd</sup> rifle seasons are available over-the-counter and unlimited in number. On average, over 35,000 hunters spend nearly 160,000 recreation days annually in DAU E-6 pursuing elk. Of these, over 3,000 hunters focus on GMU 33. Other big game and small game harvest opportunities, including live trapping, abound and provide a great deal of opportunity throughout the DAU.

### Sympatric Big Game Populations

The geographic area used by D-42 overlaps portions of the DAU boundaries of one elk herd, one black bear and one mountain lion population (*Table 1*). Just as with deer DAUs, the geographic boundaries of these other big game DAUs represent the year-around range of the population and delineates the seasonal ranges of that specific population that naturally experiences little interchange with adjacent populations. A DAU includes the area where the majority of the animals in a population are born, live, and die.

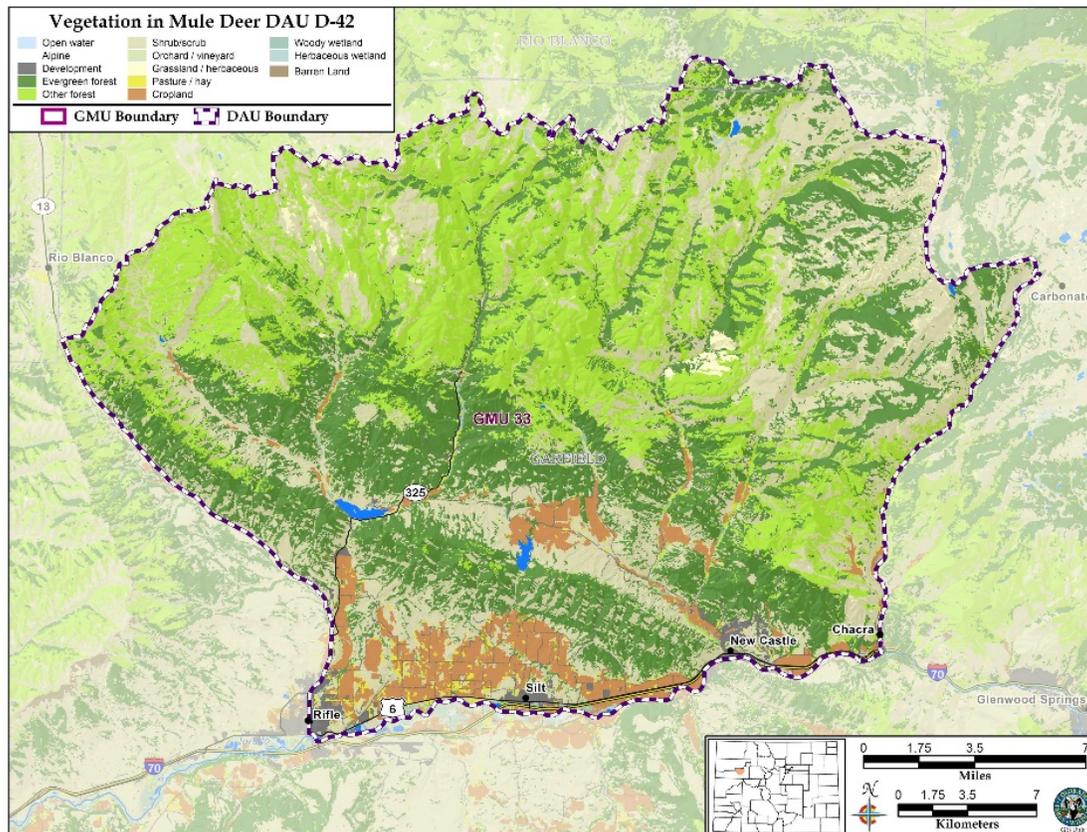
Like most areas where elk and deer co-exist on a landscape, there is some competition for resources such as water and habitat between the two species.

DAU	SPECIES	GMUs	2020 POSTHUNT POPULATION ESTIMATE
E-06	Elk	11, 12, 13, 23, 24, 25, 26, 33, 34, 131, 211, 231	40,882
B-10	Black Bear	12, 13, 23, 24, 25, 26, 33, 34, 131, 231	Not Modelled
NW Region	Mountain Lion	All GMUs in the NW	Not Modelled

*Table 1. Sympatric Big Game Populations in D-42.*

## HABITAT RESOURCE

The habitat resource in D-42 varies widely across the 1078 km<sup>2</sup> that this deer herd inhabits. Generally, there is a gradient from low to high elevations of sagebrush, pinyon-juniper woodlands, Gambel oak, aspen, and finally spruce-fir woodlands. The rugged topography in D-42 generates highly variable aspects that create unique microclimates that support variations in vegetation and habitat. The broad diversity of habitats in close proximity provide a highly desirable mosaic and beneficial edge effect that is very valuable for many wildlife species, including deer (*Figure 5*).



*Figure 5. Vegetation Distribution in D-42.*

Diverse shrublands and deciduous and evergreen woodlands cover much of D-42 (*Figure 6*). Shrub habitats include both high elevation summer sagebrush and lower elevation sage and shrub winter habitats and make up approximately 31% of the vegetation. Evergreen forest make up approximately 30% of the vegetation in D-42 and provide winter habitat in pinyon-juniper woodlands as well as summer habitat in spruce-fir forests. Deciduous forests, including both aspen and Gambel's oak, comprise approximately 29% of the vegetation in D-42. Aspen woodlands provide critical forage and summer and fawning habitats. Less than 5% of the DAU is mapped as grasslands, residential developments and croplands.

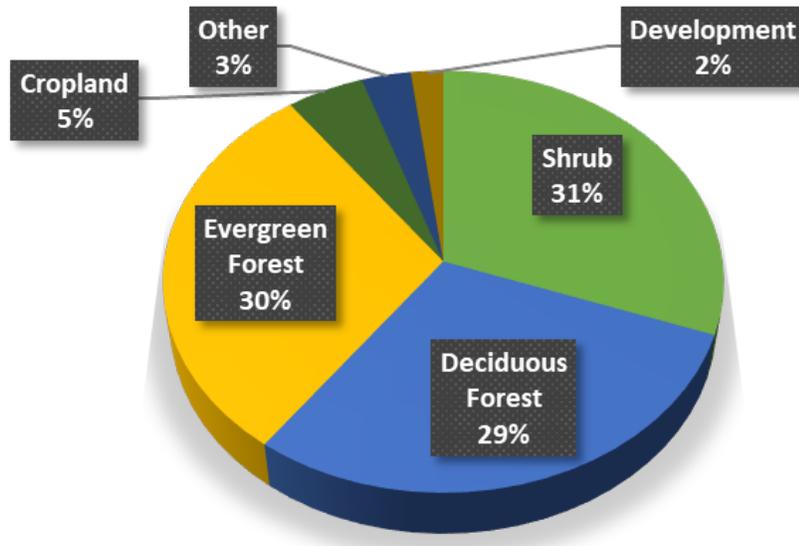


Figure 6. Vegetation Composition of D-42.

### Habitat Distribution

#### *Mule Deer Overall Range*

Deer live throughout D-42, moving across the available habitat throughout of the DAU during the year, utilizing different ranges during different seasons.

#### *Mule Deer 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." Summer range in D-42 generally falls in the highest elevations, along the drainage divide that makes up the northern boundary of the DAU (Figure 7). There are approximately 486 km<sup>2</sup> of summer range. High elevation Douglas fir, aspen, and aspen/conifer stands, interspersed with sagebrush mixed grasslands provide excellent forage and cover during summer and fall. The quality of summer range is important for deer to ensure they recover from winter weight loss, does can support late fetal development and lactation, and all animals in the population go into winter in good body condition.

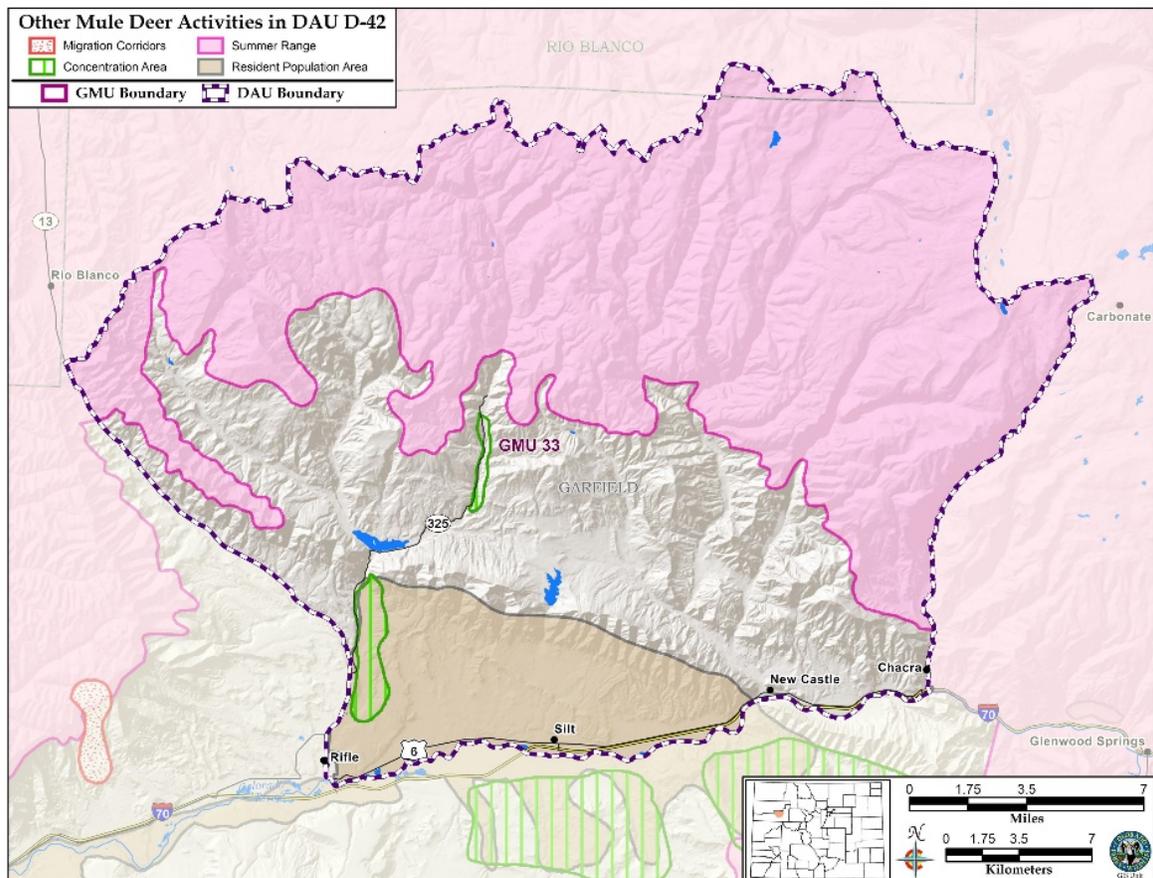


Figure 7. Mule Deer Summer Activities in D-42.

#### Mule Deer 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 snow pack and minimum temperatures.

DAU D-42 has approximately 670 km<sup>2</sup> of deer winter range (Figure 8). Favorable snow depths, slope, aspect, and temperatures create accessible forage and make these areas suitable for wintering deer. Important winter ranges include the Cedar Mountain, the Grand Hogback, West Rifle Creek, Silt Mesa, Peach Valley, and the lower extents of all the major drainages. During light winters, deer often remain on relatively open windswept ridges at higher elevations including Hadley Point and Coulter Mesa.

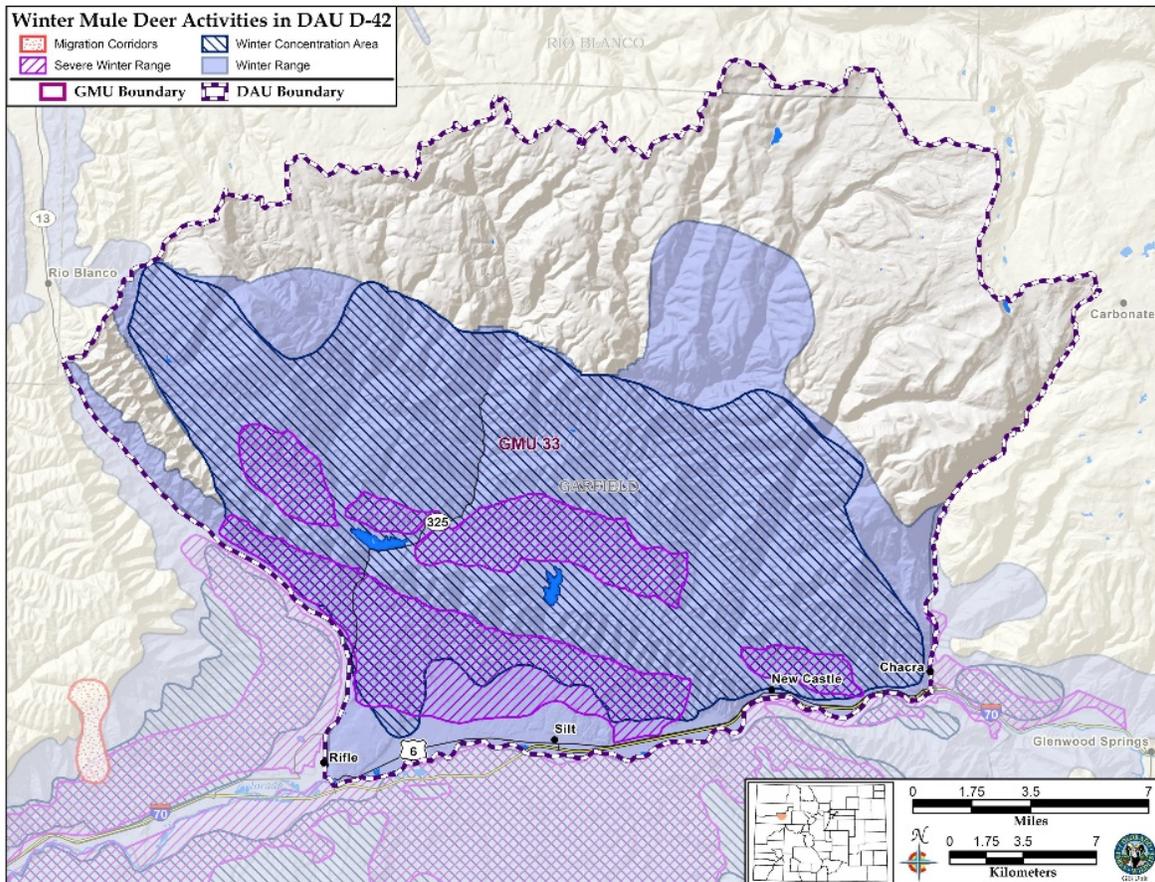


Figure 8. Mule Deer Winter Activities in D-42.

### Habitat Condition and Capability

Although there are variations across the landscape, the habitat, overall, in D-42 is poor in quality due to overgrazing, fire suppression, and conversion from native to invasive plants. Where elk and deer ranges overlap, these two species compete for limited habitat. Deer and Elk have been observed to partition resources, particularly vegetation communities (Kelley M. Stewart, 2002).

The majority of D-42 (~74%) is managed by either the BLM or USFS. The BLM monitors BLM rangelands using their Assessment, Inventory, and Monitoring (AIM) Strategy and the Land Monitoring Framework. Both methods include the collection of over 100 different measurements of standard, quantitative soil and vegetation data relevant to livestock and wildlife habitat management, and soil and water conservation (Pellant, et al., 2018). In D-42, the BLM monitors 206 sites. Most of these sites have some degree of departure from reference condition in key indicators including biotic integrity, noxious weed cover, and functional/structural condition. Additionally, the majority of sites have one or more species of noxious weed and at least 10% noxious weed cover (USDI Bureau of Land Management (BLM), 2019)).

### Game Damage

Mule deer conflicts with agriculture are uncommon in D-42. From 2009 to 2020, there were only three game damage claims to CPW made by agricultural producers (*Table 2*). The total

value of damage claimed during that time was \$10,174.05 and the average claim was \$3,391.35. All claims were to a single individual for growing squash, pumpkins, and gourds.

CLAIM DATE	DAMAGE	AMOUNT
11/19/2009	Pumpkins/squash	\$5,910.00
12/23/2010	Pumpkin/squash	\$2,445.30
12/14/2011	Pumpkin/squash/gourds	\$1,818.75
TOTAL		\$10,174.05

*Table 2. Game Damage Claims from Deer in D-42, 2009 - 2020.*

The Habitat Partnership Program (HPP) mitigates and resolves wildlife conflict in the state of Colorado. The program is administered by Colorado Parks and Wildlife, and regulated by a state-wide council. Local committees are responsible for the majority of implementation of the varied projects created to handle wildlife conflict. The Lower Colorado River Valley HPP Committee assists with game damage conflict mitigation and prevention in D-42. They have a plan (Lower Colorado River HPP Distribution Management Plan) that guides their efforts and identifies potential conflict in the region.

## 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 is prohibitively expensive and inherently inaccurate. Multiple research projects have attempted to count a known number of animals in large fenced areas. All of these efforts have failed to accurately count all of the animals. In most cases, fewer than 30% of the animals can be 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 nearly 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 and the total numbers observed are at best a very coarse index of population trend. The age and sex ratios provide 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 & 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 provides 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 deer population in D-42 has dropped precipitously since the early 1980's. The population was quite large throughout the middle of the 20<sup>th</sup> century. Like most mule deer herds in the western US and, in part due to management action by CPW, the Rifle Creek deer population has dropped in number since then and remained at a much smaller size. Since the mid-90s, the D-42 herd has plateaued at around 6,000 - 8,000 deer (*Figure 10*).

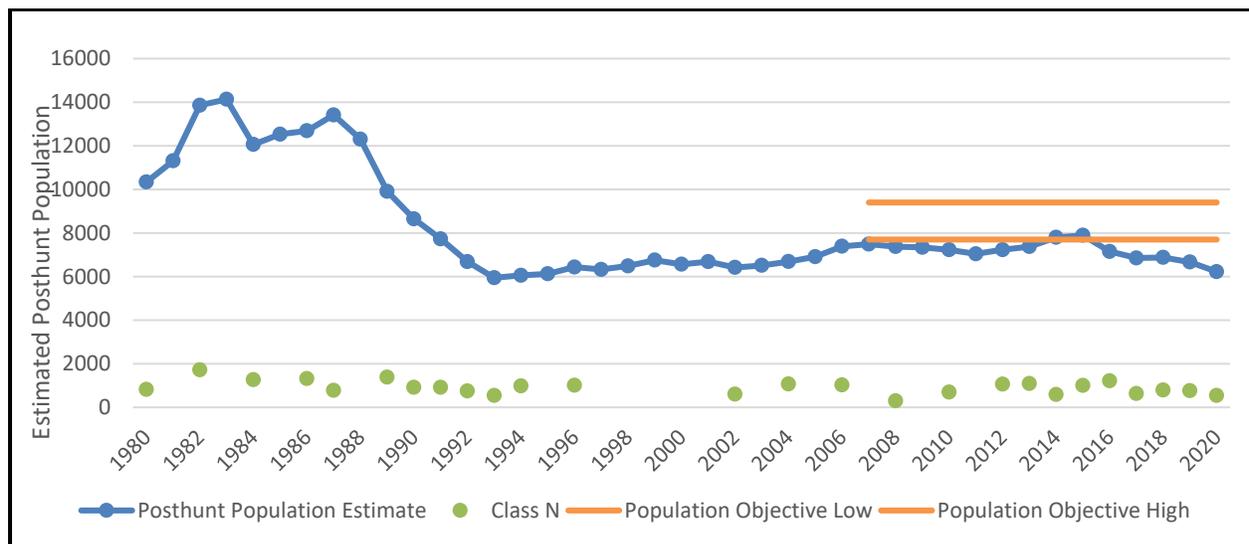


Figure 9. D-42 Modeled Post Hunt Population Size and Objective Range.

Modeled estimates of the number of deer in D-42 have changed over time with the type and complexity of the models used. Until 1995, CPW estimated the population size at approximately 20,000 deer. This estimate was the basis for the provisional population size objective in place 1995 - 2006. In 2005, models estimated the population at approximately 8,600 deer. There was general agreement among CPW staff and interested stakeholders that the population was too low and there was strong demand to set an attainable population objective to grow the herd. Following a full Herd Management Planning process and incorporation of public input, an objective range of 10,000 - 12,000 deer was selected. In 2007, the Herd Management Plan was revised and a new objective of 7,700 - 9,400 was established. This has guided deer management in D-42 since.

Further advancements in CPW models currently estimate the 2020 posthunt deer population in D-42 to be approximately 6,200 deer. This does not reflect an actual population size decrease, simply a further refinement provided by improved modeling techniques. 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 deer population in D-42 is monitored annually with helicopter surveys on winter range. Observed deer are classified as does, fawns, yearling bucks, two-year-old bucks, and mature bucks and provide a snapshot of the current condition of the population.

*Fawn: doe ratios*

Fawn: doe ratios have been declining steadily since 1981, from 70 fawns: 100 does in 1981 to 52.9 fawns: 100 does in 2020 (Figure 11). This decline mirrors fawn: doe ratio declines across much of western Colorado. This issue is addressed more fully in *Population Decline and Stagnation*. There has been a slight recovery of the fawn:doe ratio in the last decade.

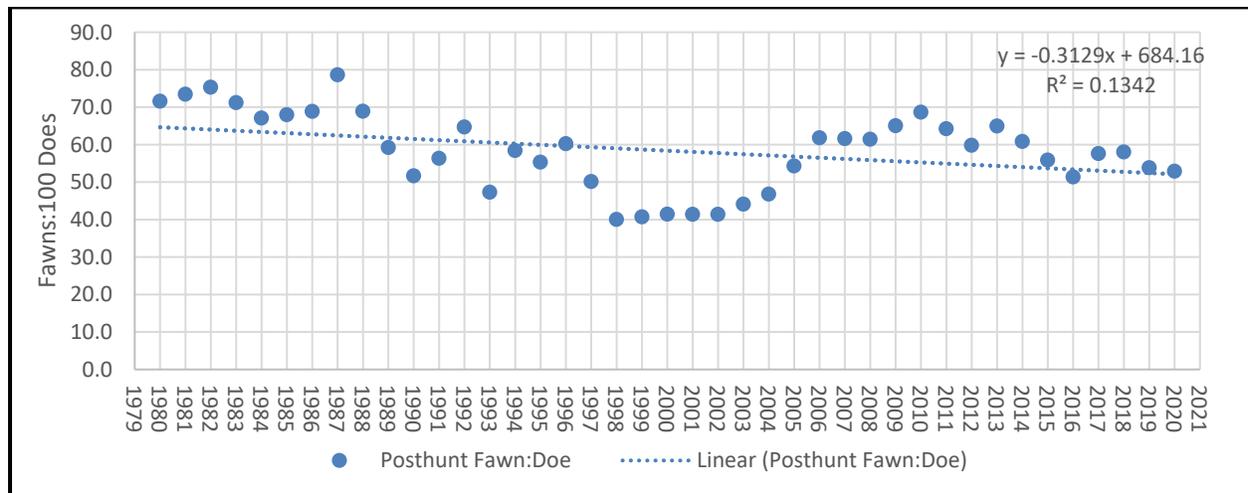


Figure 10. D-42 Observed Fawn:Doe Ratios 1981 - 2020.

*Buck: doe ratios*

Buck: doe ratios in D-42 increased slowly between 1981 and 2015, and were generally within or near the sex ratio objective range of 30 - 35 bucks: 100 does until the last two years (Figure 12). This unit has been managed for older age-class and quality buck harvest since 1999.

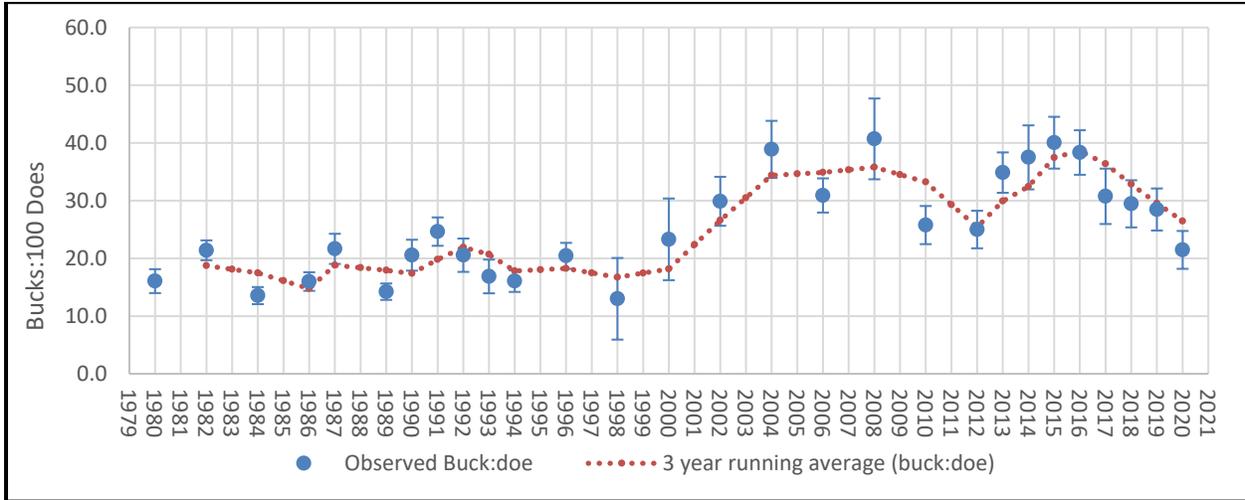


Figure 11. D-42 Observed Buck:Doe Ratios, 1981 - 2020.

### Harvest and Hunters

#### License Allocation

CPW specifies hunting licenses in D-42 by sex, season, GMU, and method of take to most effectively manage the deer herd. Currently, licenses are limited in number for all seasons, sexes, and method of take. Antlerless licenses are extremely limited in number and primarily issued to target areas thought to have high transmission rates of chronic wasting disease.

#### Harvest

Deer harvest in D-42 has been generally stable since the 1999, when antlered licenses were completely limited to increase the age of harvested bucks (Figure 13). Doe harvest has been primarily determined by damage prevention and has fluctuated accordingly.

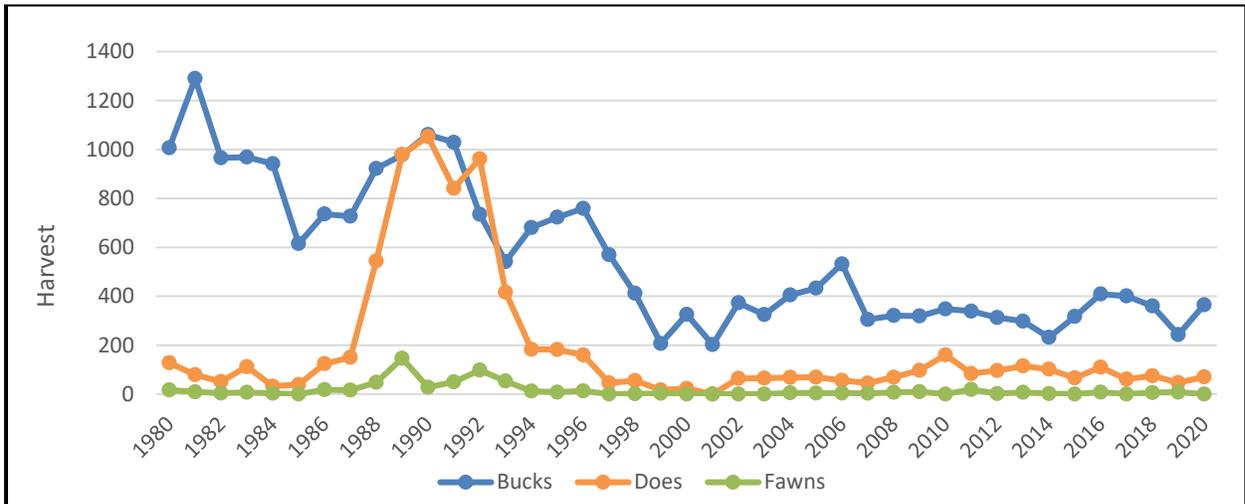


Figure 12. D-42 Harvest 1981-2020.

#### Hunters

On average, 1,333 hunters spend over 7,455 recreation days annually in D-42 pursuing deer (Figure 14).

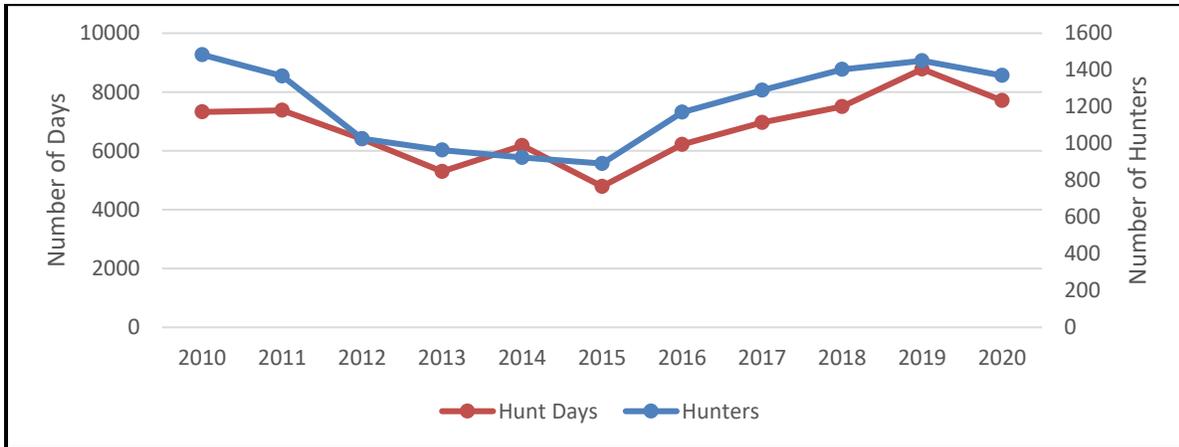


Figure 13. D-42 Hunters and Hunting Days 2010-2020.

Hunting provides a significant economic contribution to Colorado and DAU D-42. Economic data are available at the county level, but are not analyzed in alignment with DAU boundaries. However, the three counties that overlap with D-42 rely on substantial economic benefits from hunting expenditures (Table 3). Expenditures include lodging, equipment sales, meals, and supply purchases. These economic contributions are based 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 Benefits of Hunting in D-42.

### Past Management Strategies

Like all big game DAUs in Colorado, D-42 is managed under general guidelines set out every five years in statewide Big Game Season Structure (BGSS). For a further explanation of BGSS, see *INTRODUCTION AND PURPOSE*. Under the BGSS, the complexity of license structure in D-42 has increased over the years in response to the progressively more complex management issues facing this herd and elk across the state of Colorado.

Management strategies in D-42 have been substantively similar for over two decades with quality buck management and little to no doe harvest. Prior to 1999, buck licenses were unlimited in number and buck ratios were low, but stable during the 1980’s and 1990’s. In 1999, all buck licenses in D-42 were limited in an effort to improve the quality of harvested bucks. In 2000, all deer hunting statewide became limited due to west-wide mule deer population declines. These management changes steadily increased buck: doe ratios and the size and quality of bucks harvested through the mid-2010’s. Since that time, buck: doe ratios and harvest quality have plateaued, likely due to competition with elk and habitat loss and degradation.

Antlerless licenses have been severely limited due to the ongoing decline then stagnation of the population. Minimal doe harvest occurs from private land damage seasons and archery and muzzleloader seasons.

**Current Issues**

*Outdoor Recreation*

Recreational activity, both motorized and non-motorized, negatively impacts deer by increasing activity levels and decreasing resting and feeding times (Larson, et al., 2016). The entirety of D-42 receives some form of recreation pressure at some point during the year. Over the last two decades, the use of this area for recreational purposes has increased. Main and East Elk Creek as well as Rifle Mountain Park have become popular rock-climbing destinations. They have attracted a higher number of recreationalists that are hiking further into the non-motorized areas to access climbing routes and enjoy the scenery of these canyons. The area is attracting more and more users to the hiking, mountain biking and camping opportunities in D-42, causing more disturbance to wildlife.

The high-elevation mule deer habitat in the center of the DAU along the Buford-New Castle Road provides important summer range to the deer in D-42. This area is incredibly popular for motorized recreation throughout the year, but is particularly inundated during the spring, summer, and fall. From June through November, this area is heavily used by ATVs, Side-by-sides and other 4x4 and off-road motorists in high densities.

When deer are 200 meter from a trail, there is an estimated 50% chance that the deer will flee if they encounter a hiker or biker (Taylor, 2003). There is a high density of both motorized and non-motorized trails in D-42 (Figure 15).

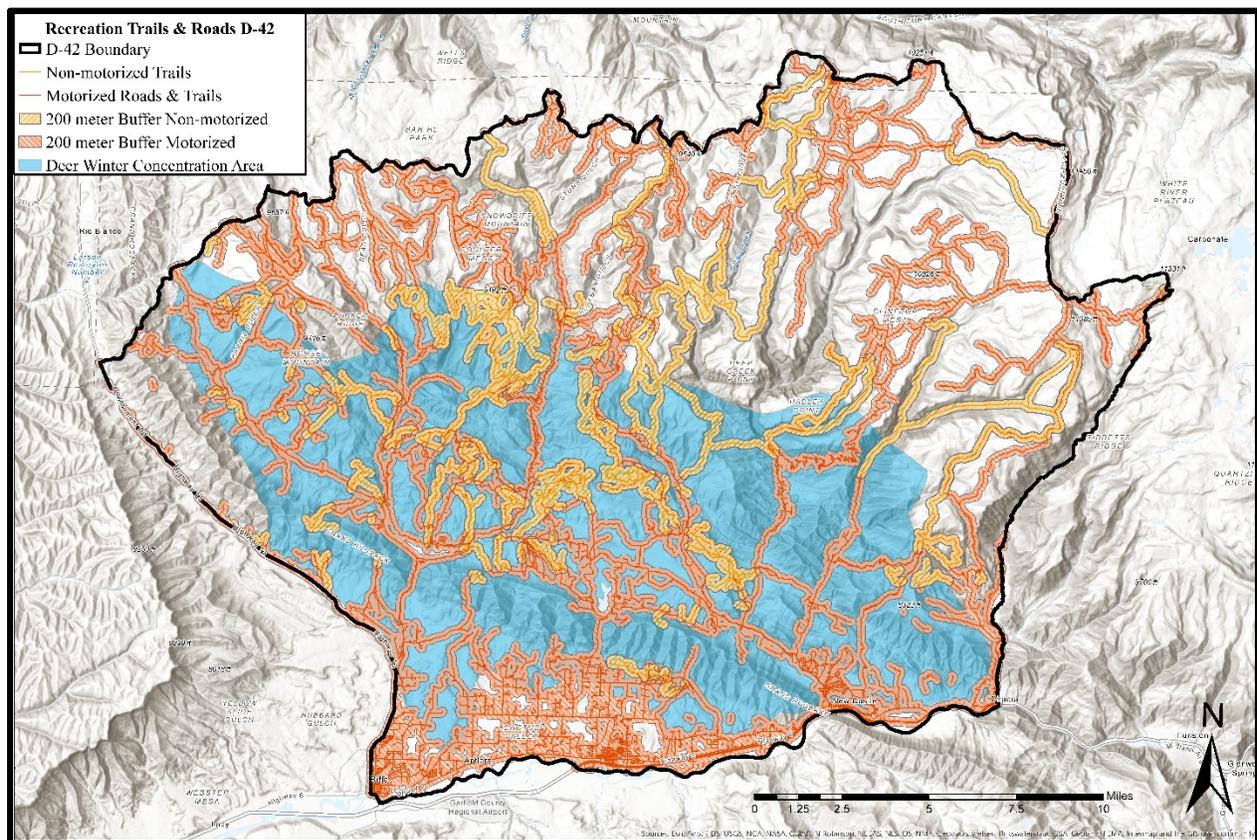


Figure 14. Motorized and Non-motorized recreational trails with a 200m buffer in D-42.

**Population Decline and Stagnation**

Since the early 1980's, the population of D-42 has declined dramatically from historic levels and has stabilized at roughly half the size of previous estimates. This decline and stagnation is consistent with many mule deer populations across the West. Mule deer population decline is likely attributable to a suite of factors, but it is likely that habitat plays a critical role (Bishop, et al., 2010). Johnson, et al. demonstrated that mule deer reduce their selection of habitat near residential and energy development, effectively decreasing the area that is functionally available (Johnson, et al., 2016). In addition, deer populations managed for high buck ratios have been correlated with lower fawn ratios (Bergman, et al., 2011).

In D-42 specifically, probable factors for population decline include long-term habitat degradation, habitat loss and fragmentation associated with development and sub-division of private lands, and management strategies that favor high buck: doe ratios.

**Habitat Quality Decline**

As referenced in *Habitat Condition and Capability*, much of the habitat in D-42 is degraded and in poor condition. This has not improved in the last two decades.

- Drought

Drought plays a role in the amount quality habitat and water available to mule deer in D-42. While this area has regularly seen periods of drought, in recent years, the area has seen more severe drought conditions (Figure 16) (Center, 2021).

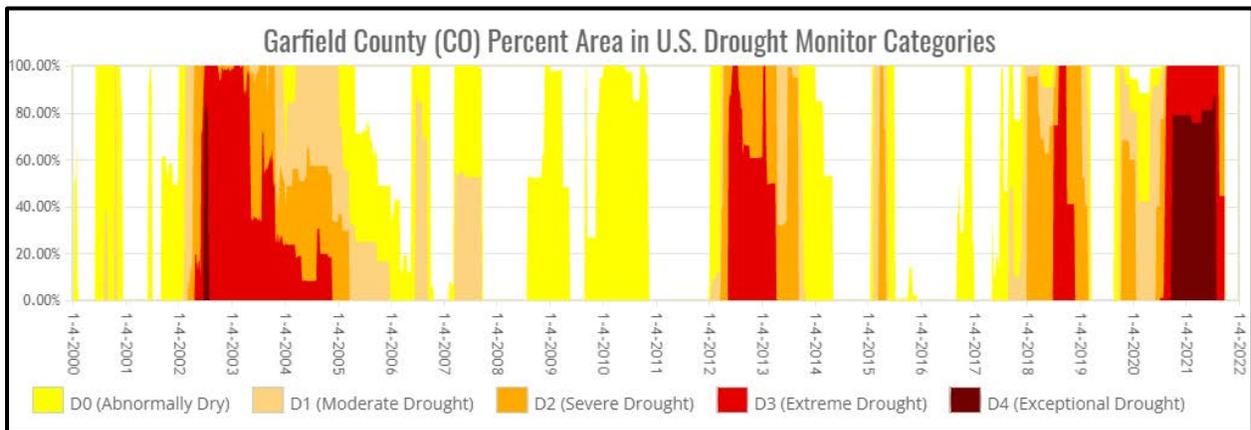


Figure 15. Percent Area of Garfield County in drought 2000 - 2021

**Residential Development**

Much of the winter range on private lands in D-42 has been converted from agriculture to increasingly dense residential developments (Figure 15). Since only 29% of the DAU is privately owned, the actual footprint of the residential development is relatively small. However, much of that area is in traditionally important winter ranges and the loss is both direct and cumulative in its impacts. This scale of residential development is simply not compatible with productive mule deer populations (Johnson, et al., 2016).

Residential development is associated with poor population performance in mule deer (Johnson, et al., 2016). Only 29% of D-42 is privately owned, which effectively caps the total lands available for residential development (Figure 3). Since 1970, the density of development on those private lands has increased dramatically (Figure 16), but the total footprint has changed little. The increased densities and conversion of agricultural lands to housing have created some non-migratory populations that depend on anthropogenic food

sources and protection from predation. It is likely that conflict between homeowners and mule deer will increase in coming years.

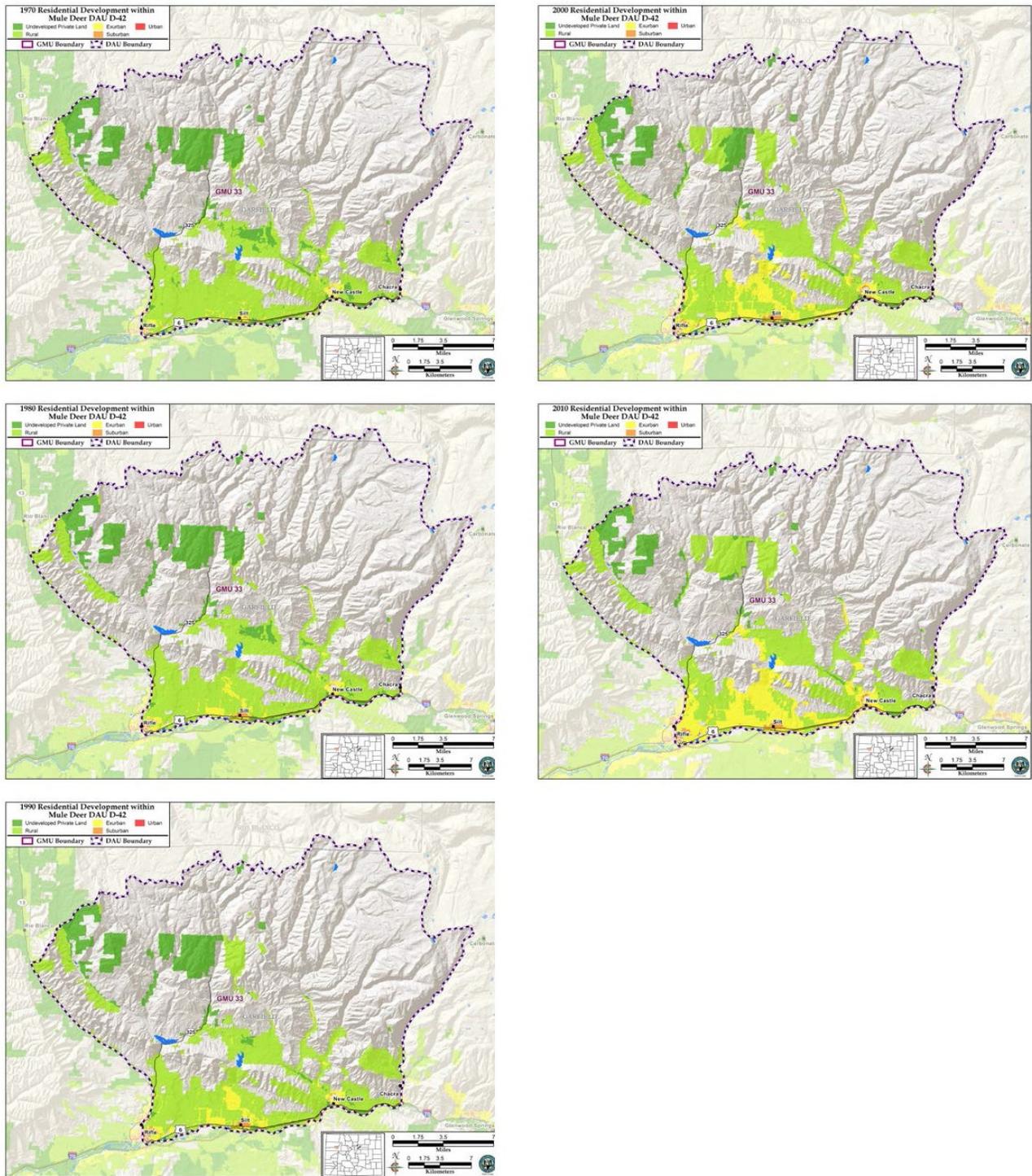


Figure 16. Residential Development in D-42, 1970-2020. From (Johnson, et al., 2016)

## Disease

### ▪ Chronic Wasting Disease

Chronic wasting disease (CWD) is a fatal, infectious disease that affects deer, elk, and moose in Colorado. It 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 & 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 CWD in a given herd. Because CWD appears to affect deer at higher rates than elk, CPW's management actions focus on deer and concurrently monitor prevalence trends for all deer, elk, and moose in a given area.

In 2018, CPW published a response plan 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 & Wildlife Agencies, 2017). CPW's Colorado Chronic Wasting Disease Response Plan outlines actions to assess and control CWD prevalence at the herd level (Colorado Parks & Wildlife, 2018). The management recommendations include a 5% prevalence threshold in adult male animals for compulsory intervention in management. This compulsory intervention mandates the implementation of the following strategies, as appropriate, to reduce the prevalence and minimize population-level impacts of the disease:

- 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 estimate the prevalence of CWD in a herd, sufficient samples must be submitted for testing over a 1-3 year period. Between 2003 and 2016, 237 deer have been submitted for CWD testing in D-42 and one animal tested positive in 2007 and two in 2015. In 2017, submission of hunter-harvested heads was mandatory to ensure that sufficient samples were received to estimate the prevalence in D-42 and with 253 deer submitted for testing came back with a prevalence of 10%, which triggered implementation of management actions to reduce prevalence of CWD in the Rifle Creek deer herd.

CPW staff first implemented changes to management practices during the 2018 season. These changes included an increase in buck licenses. In 2019, buck licenses were increased slightly again. Additionally, special antlerless licenses were issued below the hogback. The resident deer there exist at higher densities and often congregate at more centralized resources between human developments. These factors create a higher likelihood of CWD transmission between the deer in this area. The antlerless licenses were aimed at reducing the resident deer population in order to curb the transmission of CWD. A little over half of these tags have sold each year since they have been introduced.

Additionally, some of the adjacent deer herds also have prevalence rates above the 5% threshold (Table 4, Figure 17). There appears to be some geographic concentration of CWD in this area.

DAU	MANDATORY CHECK YEAR	CWD PREVALENCE	# SAMPLED DEER
D-7	2017	15%	927
D-12	2018	<5%	489
D-41	2020	9%	79
D-43	2020	14%	154

Table 4. Chronic Wasting Disease Surveillance Results in adjacent deer herds.

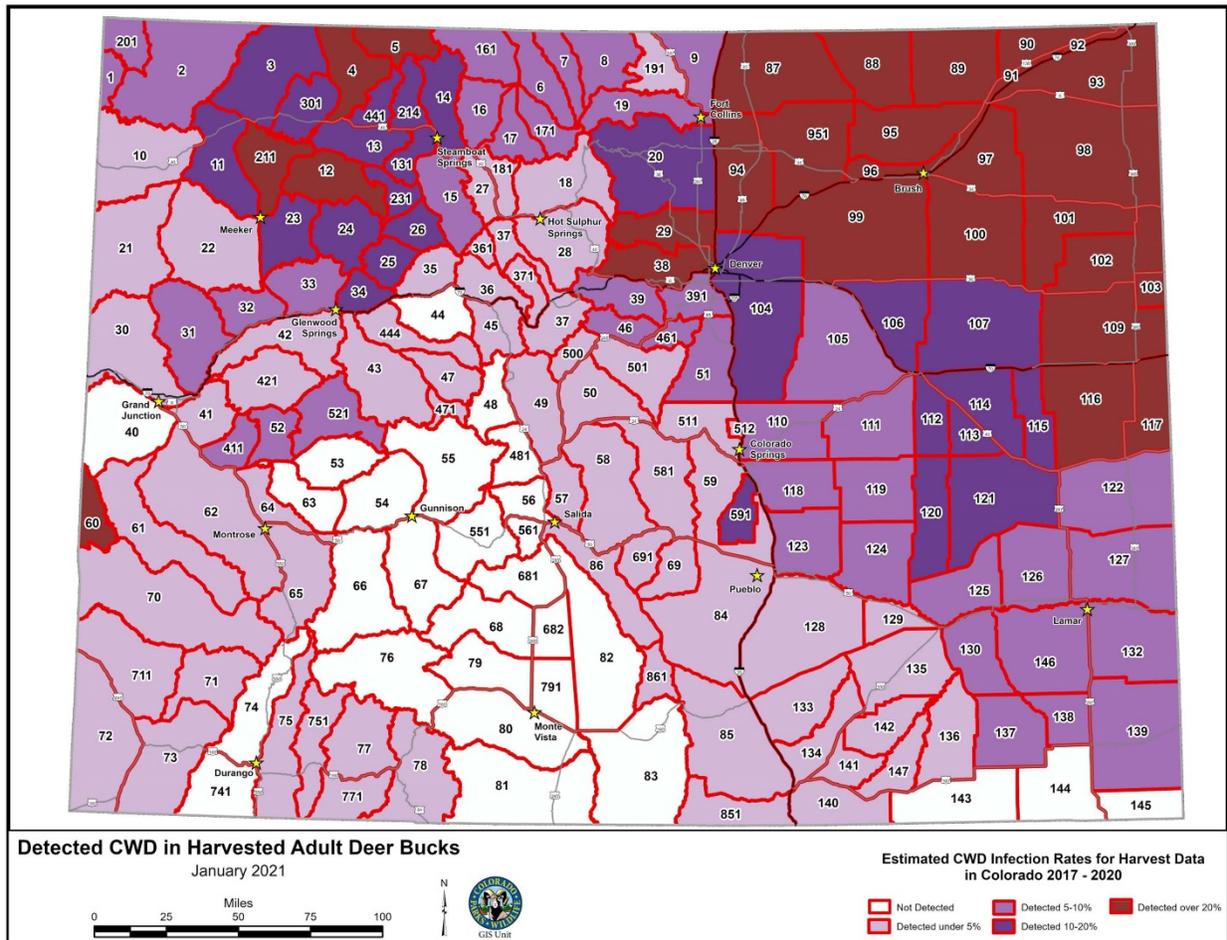


Figure 17. Detected CWD in Harvested Adult Deer in Colorado

■ Hemorrhagic Disease

Multiple viruses cause hemorrhagic diseases 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 & Howerth, 2004). These diseases also demonstrate annual variation, with periodic outbreaks of severe disease followed by periods with lower mortality. The effects of these diseases on

deer varies from year to year and is not completely understood, but may be affected by herd immunity and weather patterns (Stallknecht & Howerth, 2004). Generally, mule deer populations do not experience widespread die-offs during an outbreak of either BTV or EHDV. However, EHDV is attributed to a 10-25% decline in the mule deer population in the Mesa Verde deer population in southwest Colorado during the mid-1990s (Weinmeister, 2014). EHDV also appears to cause high fawn mortality and effects on the testes of mule deer bucks.

In winter 2015 - 2016, a new hemorrhagic disease, deer adenovirus hemorrhagic disease, was detected in Colorado and has been detected in deer and elk DAUs adjacent to D-42. Deer adenovirus is different from other hemorrhagic diseases in that it does not require an intermediate insect host. Since deer adenovirus is spread animal to animal, it can be spread in all seasons. This virus has been involved in significant die-offs of both elk calves (Fox, et al., 2017) and deer fawns (Woods, et al., 1996). Deer adenovirus hemorrhagic disease has the potential to affect D-42 and overlapping elk and adjacent deer DAUs in the future.

Ongoing surveillance efforts include the testing of all suspect animals and carcasses in Colorado.

## **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**

From August 6 to September 5, 2021 over 2,000 resident and non-resident hunters from the last three years in D-41 and landowners in this area were invited through email to provide perspectives on hunting, disease and management of the Rifle Creek deer herd through an online public survey. The survey was also announced and posted on the CPW website for anyone to participate in. 316 individuals responded to the survey. The full results are available in [Appendix IV](#).

Key feedback from this survey:

#### *Background Information*

Out of the 316 individuals that responded to our survey, 63.67% were residents of Colorado and 36.33% were non-residents. Only 18.27 % lived in the Rifle Creek herd area. While respondents used the area for a variety of activities, 96.31% had hunted in D-42.

#### *Experiences Hunting Deer in D-42*

Of those who had hunted deer in the Rifle Creek deer herd, 49.51% were either very satisfied or somewhat satisfied in their hunting experiences. 10.16% were neither satisfied nor dissatisfied and 37.7% were either somewhat dissatisfied or very dissatisfied.

Hunters in this unit felt slightly crowded (30.03%), moderately crowded (27.65%) or very crowded (29.01%). Additionally, respondents felt it was important to be able to hunt deer most years and hunt mature bucks in the Rifle Creek herd. Hunters reported that the most important reasons for hunting deer in Colorado were to spend time in nature, to spend time with family and friends and to contribute to wildlife management.

#### *Deer Management in D-42*

Most respondents felt that the number of deer in the Rifle Creek deer herd has decreased over the last 10 years (58.76%). They felt most concerned about the loss of deer habitat due to development, predation on deer, and diseases.

### *Chronic Wasting Disease*

Respondents' biggest concerns about CWD were the future generation's ability to enjoy hunting deer in the Rifle Creek GMU, the potential reduction of hunting opportunity due to the disease and the health impacts it may have to the deer herd. Respondents felt that it was important for CPW to strike a balance between controlling CWD and preserving hunting opportunity in D-42.

### *Comments Summary*

The following are common themes in the additional comments received:

- Crowding due to overlapping elk hunt
- Crowding from other recreational users, recent increases in non-hunting users on public land
- Concerns about habitat quality and declining deer population
- Would like to see fewer motorized road closures, crowding at access points
- Would like to see more motorized road closures, limiting motorized activity
- Would like to see cut backs on non-resident tags

### **Public Feedback**

CPW posted the draft plan with identified preferred alternatives online and accepted comments for 30 days. The full comments submitted are available in [Appendix V](#). CPW also sent a draft to the Bureau of Land Management and the US Forest Service. CPW presented the draft plan to the Garfield County Commissioners and the Lower Colorado Habitat Partnership Program (HPP) committee for comments and feedback. A letter from the HPP is included in [Appendix VI](#).

The comments addressed a number of concerns about the management of D-42, the management of deer in Colorado and other issues facing deer across the state. There was some support for the preferred alternatives as well as some concern about reducing the objectives for this herd and other deer herds across the state. These stakeholders would like to see status quo maintained. The issues that were mentioned in these comments as concerns include migration corridor loss to development, reintroduction of wolves to the state, other predation impacts, current habitat conditions, chronic wasting disease, and increasing human disturbance.

## **MANAGEMENT ALTERNATIVES**

Colorado Parks and Wildlife uses input from the public, state and federal land management agencies, and local county commissioners in addition to data collected on the deer population, disease, habitat and issues to assess biological and social carrying capacity for deer herds. We use this to select management alternatives that attempt to address all of these factors and guide management for the next 10 years. CPW preferred alternatives are in **bold**.

### **Population Objective Alternatives**

In D-42, three alternatives are being considered for the population objective range.

#### *Alternative 1: 7,700 - 9,400 (Status quo)*

The post-hunt 2020 D-42 population estimate was approximately 6,200 deer. After years of attempting to achieve the objective of 7,700 - 9,400 population, the deer population in D-42 has remained, on average, below the range. Due to the current quality and quantity of deer habitat and the high prevalence of CWD, it is unlikely that the current conditions in D-42 could support a population of deer that could be reasonably managed within the current objective range. To achieve a deer population within this range, there would need to be

drastic improvements to habitat conditions, a reduction in CWD prevalence and additional management of human development and disturbance.

***Alternative 2: 6,200 - 8,200 deer (Manage to population average)***

The population for the D-42 herd has been largely stable since 2006 at an average population estimate of 7,194 deer. With the current amount of usable deer habitat throughout the DAU, the high prevalence of chronic wasting disease, and the pressures of recreation and other land uses, this alternative population objective range is more indicative of the amount of deer the land can currently sustain. This objective range is not a reduction in the deer population, but rather a management of the population at the level it has been stable at for the last 20 or so years. While the 2020 population estimate is at the lower end this range, the 5-year average of 6,753 deer suggests that this objective range is obtainable. This range also allows for a maintenance of the population at the lower end of the range in order to curb CWD prevalence, but allows a future increase of the population, should the prevalence of CWD decline.

***Alternative 3: 6,000 - 7,200 deer (Decrease, broader range)***

After the effort to reduce the deer population in the late 1980s, the population had a reasonably stable trend. The average population size over that stable period (the last 28 years) is 6,850. Under this alternative, the deer population in D-42 would be managed around that long-term average at a lower population size than in previous years. This objective range is also wider in order to give managers the broadest possible options and flexibility to respond to disease, drought and other environmental effects.

**Sex Ratio Objective Alternatives**

In D-42, two alternatives are being considered for the sex ratio objective range.

***Alternative 1: 30 - 35 bucks: 100 does (Status quo)***

Since the 1990's, this DAU has been managed to maximize the number of mature bucks in the area and provide a quality buck hunt. The sex ratio objective for this herd from 2007 to 2020 has been 30 - 35 bucks per 100 does in order to accomplish this. D-42 has a recorded 10% prevalence of CWD, which triggered management actions. Buck licenses were increased to reduce the prevalence of CWD. Maintaining the status quo for sex ratio would require a reduction of buck licenses and would limit the management strategies available to reduce CWD.

***Alternative 2: 25 - 32 bucks: 100 does (Slight decrease, broader range)***

As of 2020, the post-hunt observed 3-year average sex ratio was 26.5 bucks per 100 does. Most stakeholders would like to see CPW strike a balance between reducing CWD prevalence and maintaining mature buck harvest in this DAU. This alternative widens the range and allows for greater flexibility in management as prevalence of the disease fluctuates over time. This objective range gives CPW the ability to manage at the lower end of the range when CWD prevalence is high and manage at the higher end of the range when CWD prevalence is low. Management for a high (>5%) CWD prevalence would include increasing buck licenses and/or shifting buck licenses to later seasons.

**PREFERRED ALTERNATIVES**

Population Objective: Alternative 2

CPW proposes reducing the population objective to 6,200 - 8,200 (Alternative 2). Objectives above this range are not realistic and obtainable with the conditions present in D-42. This alternative does not call for a reduction of the population, but for management to maintain the current long-term average.

**Sex Ratio Objective: Alternative 2**

CPW proposes the broadening and slight reduction of sex ratio to 25 - 32 bucks: 100 does (Alternative 2). As addressed above, a wide sex ratio range allows for more flexibility in harvest management to address concerns with CWD prevalence, low habitat quality and other stressors while maintaining a quality buck hunt.

## LITERATURE CITED

- Bartmann, R., White, G. & Carpenter, L., 1992. Compensatory Mortality in a Colorado Mule Deer Population. *Wildlife Monographs*, Volume 121.
- Bergman, E. et al., 2011. Biological and Socio-Economic Effects of Statewide Limitation of Deer Licenses in Colorado. *Journal of Wildlife Management*, 75(6), pp. 1443 - 1452.
- Bishop, C., White, G. & DJ Freddy BE Watkins, T. S., 2010. Effect of Enhanced Nutrition on Mule Deer Population Rate of Change. *Wildlife Monographs*, Volume 172, pp. 1 - 29.
- Boyd, C., Davies, K. & Collins, G., 2017. Impacts of Feral Horse Use on Herbaceous Riparian Vegetation Within a Sagebrush-Steppe Ecosystem. *Rangeland Ecology and Management*, 70(4), pp. 411 - 417.
- Buchanan, C., Beck, J., Bills, T. & Miller, S., 2014. Seasonal Resource Selection and Distributional Response by Elk to Development of a Natural Gas Field.. *Rangeland Ecology and Management*, 67(4), p. 369 379.
- Center, N. D. M., 2021. *U.S. Drought Monitor: Data*. [Online] Available at: <https://droughtmonitor.unl.edu/Data.aspx> [Accessed 25 09 2021].
- Colorado Parks & Wildlife, 2018. *Colorado Chronic Wasting Disease Response Plan*, Denver: Colorado Parks & Wildlife.
- Colorado Parks & Wildlife, 2019. *CWD in Deer Prevalence Rates*. [Online] Available at: [https://cpw.state.co.us/Documents/Research/CWD/2019\\_CWDprevalence\\_GMU-DAU\\_deer.pdf](https://cpw.state.co.us/Documents/Research/CWD/2019_CWDprevalence_GMU-DAU_deer.pdf) [Accessed 18 October 2019].
- Colorado Parks and Wildlife, 2019. *CWD in Elk Prevalence Rates*. [Online] Available at: [https://cpw.state.co.us/Documents/Research/CWD/2019\\_CWDprevalence\\_GMU-DAU\\_elk.pdf](https://cpw.state.co.us/Documents/Research/CWD/2019_CWDprevalence_GMU-DAU_elk.pdf) [Accessed 18 October 2019].
- Danvir, R., 2018. Multiple-use management of western U.S. rangelands: Wild horses, wildlife, and livestock. *Human-Wildlife Interactions*, 12(1), pp. 5 - 17.
- Fox, K., Atwater, L., Hoon-Hanks, L. & Miller, M., 2017. A Mortality Event in Elk (*Cervus elaphus nelsoni*) Calves Associated with Malnutrition, Pasteurellosis, and Deer Adenovirus in Colorado, US. *Journal of Wildlife Disease*, 53(3), pp. 674 - 676.
- Hall, L. et al., 2016. Influence of exotic horses on the use of water by communities of native wildlife in a semi-arid environment.. *Journal of Arid Environments*, Volume 127, pp. 100 - 105.
- Hebblewhite, M., 2011. Effects of Energy Development on Ungulates. In: D. Naugle, ed. *Energy Development and Wildlife Conservation in Western North America*. Washington DC: Island Press.
- Johnson, H. et al., 2016. Increases in Residential and Energy Development Are Associated with Reductions in Recruitment for a Large Ungulate. *Global Change Biology*, Volume 23, pp. 578 - 591.
- Kelley M. Stewart, R. T. B. J. G. K. N. J. C. B. K. J., 2002. Temporospacial Distributions of Elk, Mule Deer, and Cattle: Resource Partitioning and Competitive Displacement. *Journal of Mammology*, 83(1), pp. 229 - 244.

- Larson, C., Reed, S., Merenlender, A. & Crooks, K., 2016. Effects of Recreation on Animals Revealed as Widespread though a Global Systematic Review. *PLoS ONE*, 11(12), p. e0167259. doi:10.1371/journal.pone.0167259.
- Miller, M. & Fischer, J., 2016. *The First Five (or More) Decades of Chronic Wasting Disease: Lessons for the Five Decades to Come.*, Transactions of the 81st North American Wildlife and Natural Resources Conference.
- Miller, M. et al., 2008. Lions and Prions an Deer Demise. *PLoS ONE*, 3(12), p. e4019. doi:10.1371/journal.pone.0004019.
- Naylor, L., Wisdom, M. & Robert, G., 2009. Behavioral Responses of North American Elk to Recreational Activity. *Journal of Wildlife Management*, 73(3), pp. 328 - 338.
- Northrup, J., Anderson, C. & Wittemyer, G., 2015. Quantifying spatial habitat loss from hydrocarbon development through assessing habitat selection patterns of mule deer. *Global Change Biology*, 21(11), pp. 3961 - 3970.
- Pellant, M. et al., 2018. *Interpreting Indicators of Rangeland Health, Version 5.* Denver: US Department of the Interior, Bureau of Land Management, National Operations Center.
- Powell, J., 2003. *Distribution, Habitat Use Patterns, and Elk Response to Human Disturbance in the Jack Morrow Hills, Wyoming.* Master's Thesis, s.l.: University of Wyoming, Proquest Dissertations Publishing. EP21957.
- Sawyer, H., Kauffman, M. & Nielson, R., 2009. Influence of Well Pad Activity on Winter Habitat Selection Patterns of Mule Deer. *Journal of Wildlife Management*, 73(7), pp. 1052 - 1061.
- Schieltz, J., 2017. *Effects of Livestock on Wildlife on Shared Rangelands.* Ann Arbor: Princeton University.
- Southwick Associates, 2018. *The 2017 Economic Contributions of Outdoor Recreation in Colorado: A Regional and County-Level Analysis*, Denver: Colorado Parks & Wildlife.
- Stallknecht, D. & Howerth, E., 2004. Epidemiology of bluetongue and epizootic haemorrhagic disease in wildlife: surveillance methods. *Veterinaria Italiana*, 40(3), pp. 203 - 207.
- Taylor, A. K. R., 2003. Wildlife Responses to Recreation and Associated Visitor Perceptions. *Ecological Applications*, 13(4), pp. 951 - 963.
- USDI Bureau of Land Management (BLM), 2019. *AIM Terrestrial Monitoring Data (including LMF).* [Online]  
Available at:  
[https://blmspace.blm.doi.net/oc/intra/drs/SitePages/BLM%20Terrestrial%20AIM%20Data%20\(TerrADat%20and%20LMF\).aspx](https://blmspace.blm.doi.net/oc/intra/drs/SitePages/BLM%20Terrestrial%20AIM%20Data%20(TerrADat%20and%20LMF).aspx)  
[Accessed 08 November 2019].
- USDI Bureau of Land Management (BLM), 2019. *Colorado Wild Horse and Burro Areas Administered by the Bureau of Land Management.* [Online]  
Available at:  
[https://www.blm.gov/sites/blm.gov/files/2019\\_Final\\_HAHMA\\_Stats\\_05022019\\_final\\_508.pdf](https://www.blm.gov/sites/blm.gov/files/2019_Final_HAHMA_Stats_05022019_final_508.pdf)  
[Accessed 30 October 2019].
- USDI, Bureau of Land Management (BLM), 2015. *Colorado River Valley Field Office Approved Resource Management Plan.* [Online]  
Available at: <https://eplanning.blm.gov/epl-front->

[office/eplanning/docset\\_view.do?projectId=68506&currentPagelId=99968&documentId=90704](https://eplanning.blm.gov/docset_view.do?projectId=68506&currentPagelId=99968&documentId=90704)  
[Accessed 05 September 2019].

USDI, Bureau of Land Management (BLM), 2015. *Grand Junction Field Office Approved Resource Management Plan*. [Online]  
Available at: [https://eplanning.blm.gov/epl-front-office/eplanning/docset\\_view.do?projectId=55944&currentPagelId=74173&documentId=67731](https://eplanning.blm.gov/epl-front-office/eplanning/docset_view.do?projectId=55944&currentPagelId=74173&documentId=67731)  
[Accessed 05 September 2019].

Weinmeister, B., 2014. *Colorado Parks & Wildlife Herd Management Plans*. [Online]  
Available at:  
[https://cpw.state.co.us/Documents/Hunting/BigGame/DAU/Deer/D29DAUPLAN\\_MesaVerde.pdf](https://cpw.state.co.us/Documents/Hunting/BigGame/DAU/Deer/D29DAUPLAN_MesaVerde.pdf)  
[Accessed 08 November 2019].

Western Association of Fish & Wildlife Agencies, 2017. *Recommendations for the Adaptive Management of Chronic Wasting Disease*. Edmonton, Alberta, Canada and Ft. Collins, Colorado, USA: WAFWA Wildlife Health Committee and Mule Deer Working Group.

White, G. & Lubow, B., 2002. Fitting Population Models to Multiple Sources of Observed Data. *Journal of Wildlife Management*, 66(2), pp. 300 - 309.

Woods, L. et al., 1996. Systemic Adenovirus Infection Associated with High Mortality in Mule Deer (*Odocoileus hemionus*) in California. *Veterinary Pathology*, Volume 33, pp. 125 - 132.

## 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 18). 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 "hunnable surplus." The animals in the population would be in relatively poor body condition, habitat condition would be degraded from over-use, and when a severe winter or other catastrophic event occurs, a large die-off is inevitable.

What does all this mean to the management of Colorado's big game herds? It means that if we attempt to manage for 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

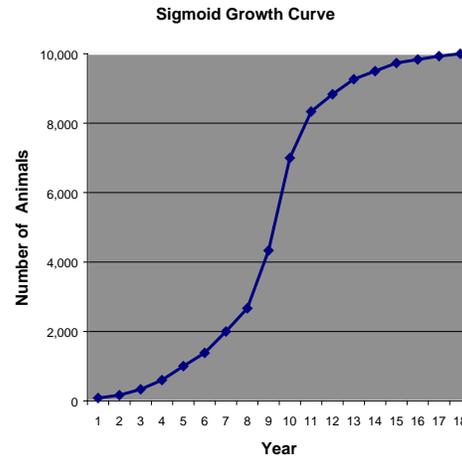


Figure 18. Sigmoid Growth Curve.

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 19). 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 becomes scarce and the harvest potential decreases. Finally, when the population reaches the maximum carrying capacity or "K" (10,000 deer in this example), the harvest potential will be reduced to zero. Also, notice that it is possible to harvest exactly the same number of deer each year with 3,000 or 7,000 deer in the population. This phenomenon occurs 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.

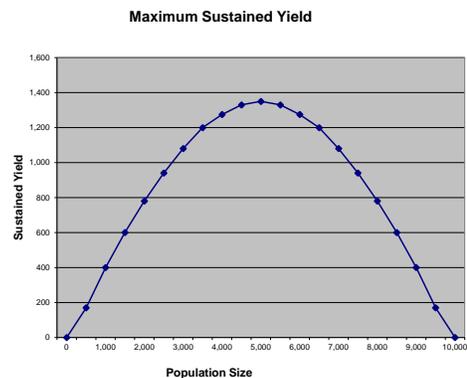


Figure 19. Maximum Sustained Yield.

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:

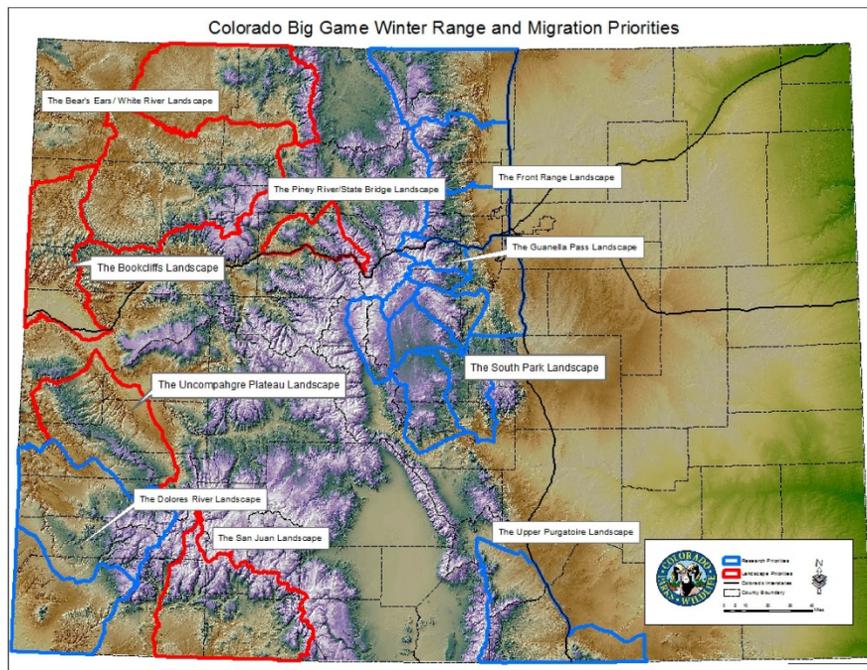
APPENDIX III: CPW ACTION PLAN FOR SO3362

COLORADO PARKS & WILDLIFE  
**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:

**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 INVOLVEMENT SURVEYS

## 1. - Are you currently a resident of Colorado? (Please check one.)

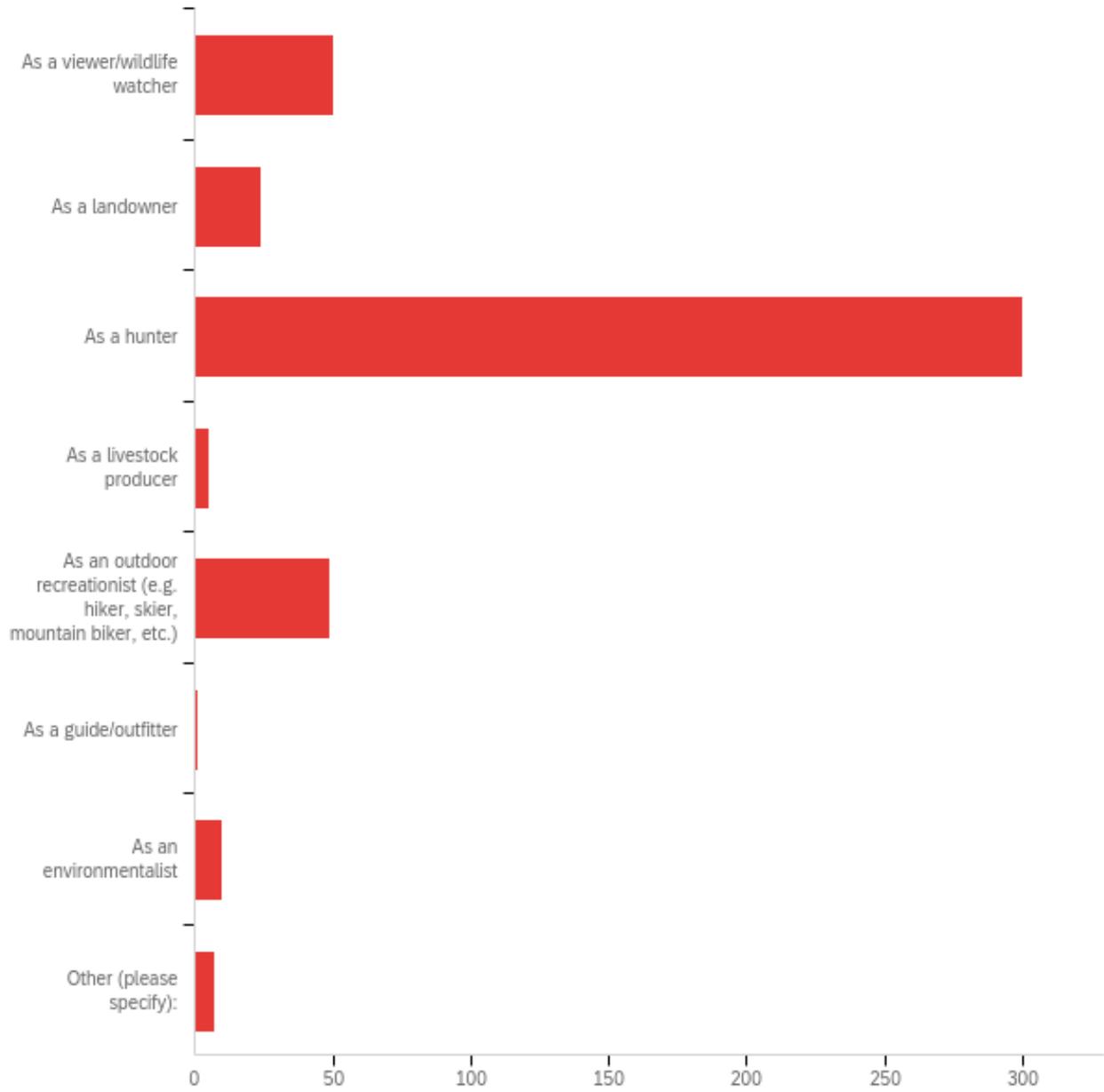
#	Answer	%	Count
1	Yes	63.67%	184
2	No	36.33%	105
	Total	100%	289

2. - Do you currently live within the Rifle Creek deer herd GMU? (see map below)

#	Answer	%	Count
1	Yes	18.27%	55
2	No	81.73%	246
	Total	100%	301

3. - Which of the following best describes how you interact with deer in the Rifle Creek deer herd? (Please check all that apply.)

#	Answer	%	Count
1	As a viewer/wildlife watcher	11.21%	50
2	As a landowner	5.38%	24
3	As a hunter	67.26%	300
4	As a livestock producer	1.12%	5
5	As an outdoor recreationist (e.g. hiker, skier, mountain biker, etc.)	10.99%	49
6	As a guide/outfitter	0.22%	1
7	As an environmentalist	2.24%	10
8	Other (please specify):	1.57%	7
	Total	100%	446



## 4. - Have you ever hunted deer in Colorado? (Please check one.)

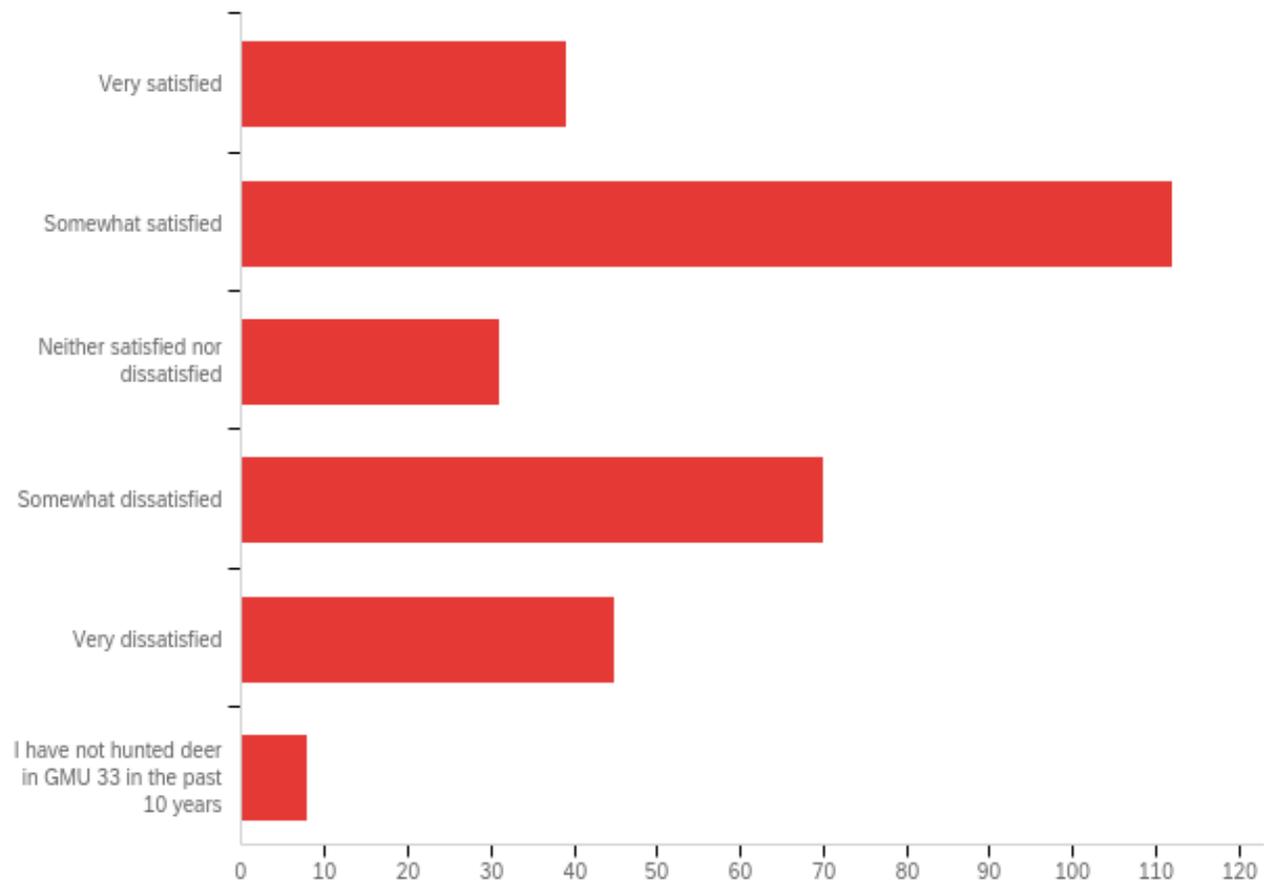
#	Answer	%	Count
1	Yes	99.36%	310
2	No	0.64%	2
3	I cannot recall	0.00%	0
	Total	100%	312

5. - Have you ever hunted deer in the Rifle Creek deer herd? (Please check one.)

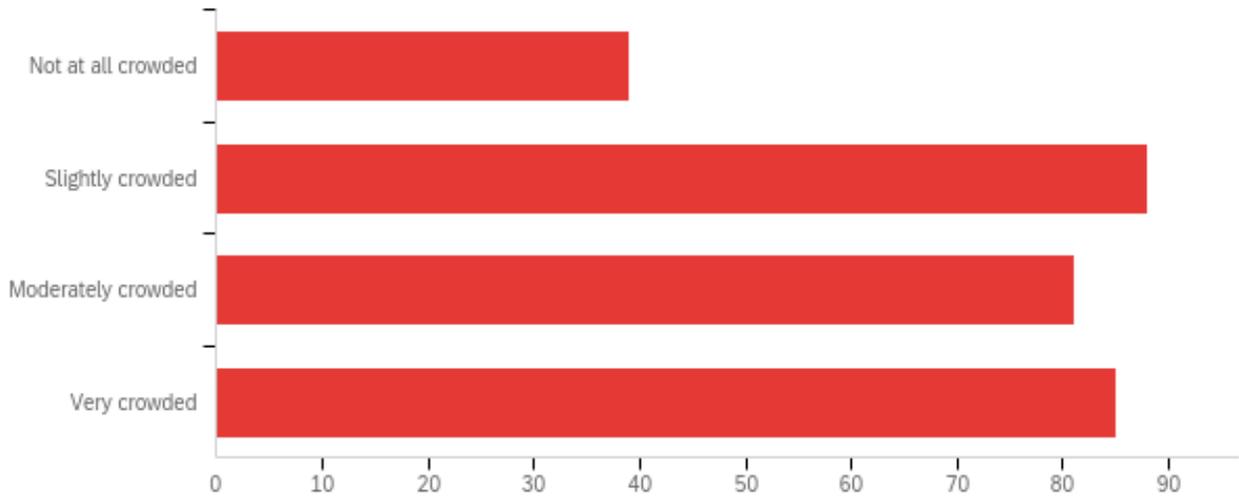
#	Answer	%	Count
1	Yes	96.31%	287
2	No	3.02%	9
3	I cannot recall	0.67%	2
	Total	100%	298

6. - Overall, how satisfied were you with your deer hunting experiences in the Rifle Creek deer herd during the previous 10 years? (Please check one.)

#	Answer	%	Count
1	Very satisfied	12.79%	39
2	Somewhat satisfied	36.72%	112
3	Neither satisfied nor dissatisfied	10.16%	31
4	Somewhat dissatisfied	22.95%	70
5	Very dissatisfied	14.75%	45
6	I have not hunted deer in GMU 33 in the past 10 years	2.62%	8
	Total	100%	305



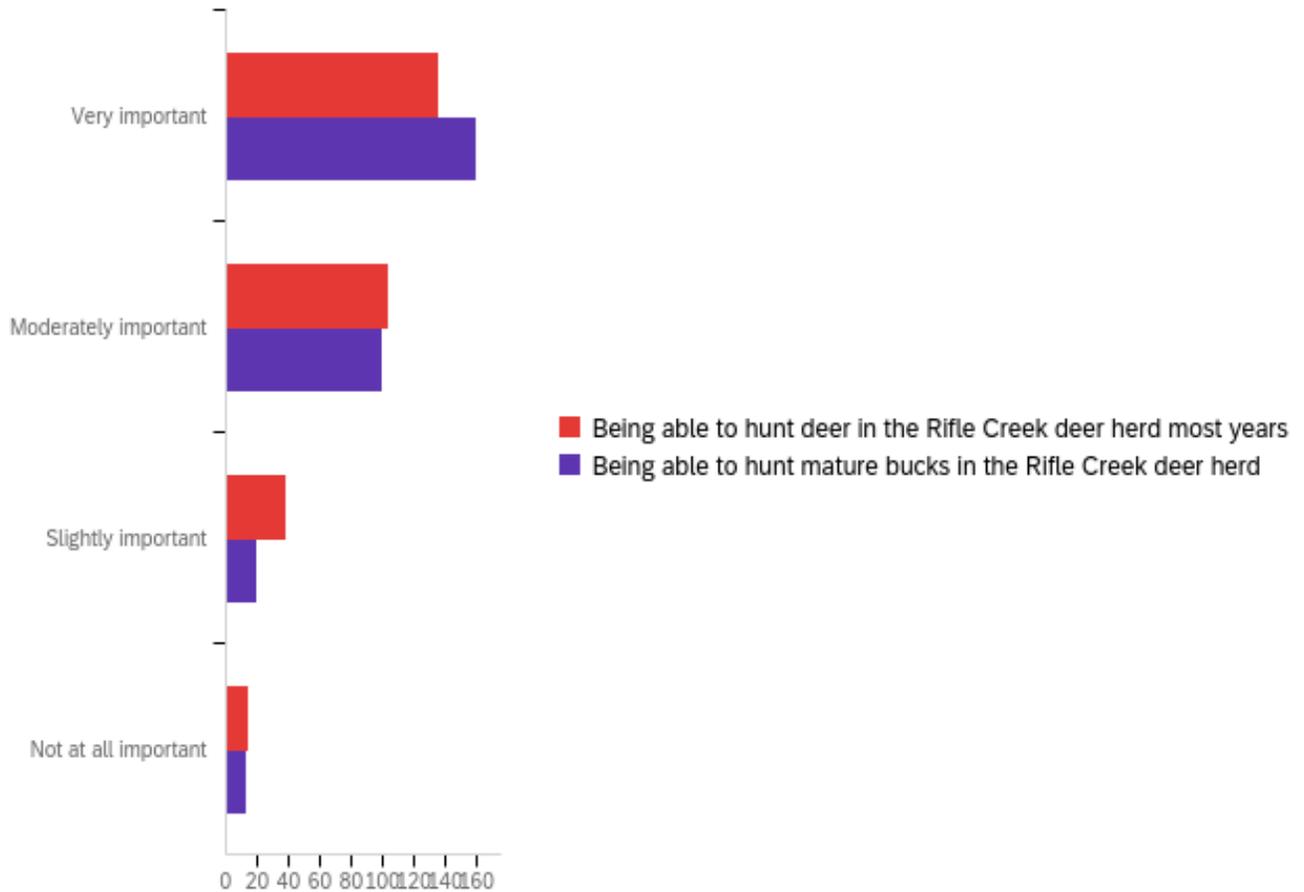
7. - To what extent have you felt crowded by other hunters while deer hunting in the Rifle Creek deer herd? (Please check one.)



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	To what extent have you felt crowded by other hunters while deer hunting in the Rifle Creek deer herd? (Please check one.)	1.00	4.00	2.72	1.02	1.05	293

#	Answer	%	Count
1	Not at all crowded	13.31%	39
2	Slightly crowded	30.03%	88
3	Moderately crowded	27.65%	81
4	Very crowded	29.01%	85
	Total	100%	293

8. - How important to you are the following: (Please check one response for each item.)



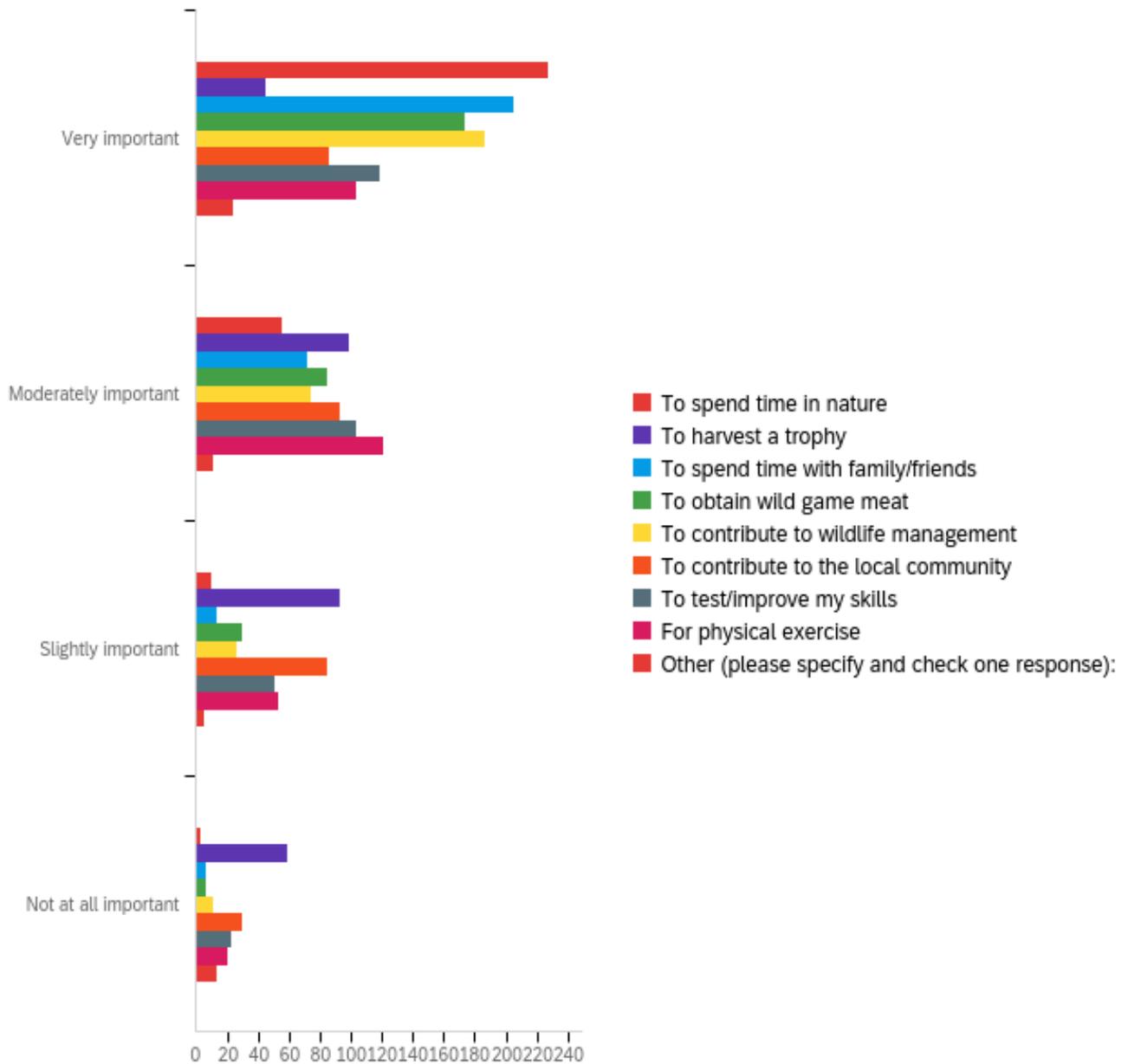
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Being able to hunt deer in the Rifle Creek deer herd most years	1.00	4.00	1.76	0.86	0.73	291
2	Being able to hunt mature bucks in the Rifle Creek deer herd	1.00	4.00	1.61	0.80	0.64	292

#	Question	Very important	Moderately important	Slightly important	Not at all important	Total
1	Being able to hunt deer in	46.74% 136	35.40% 103	13.06% 38	4.81% 14	291

D-42 HERD MANAGEMENT PLAN

	the Rifle Creek deer herd most years									
2	Being able to hunt mature bucks in the Rifle Creek deer herd	54.79%	160	33.90%	99	6.85%	20	4.45%	13	292

9. - How important to you is each of the following reasons to hunt deer in Colorado? (Please check one response for each statement.)



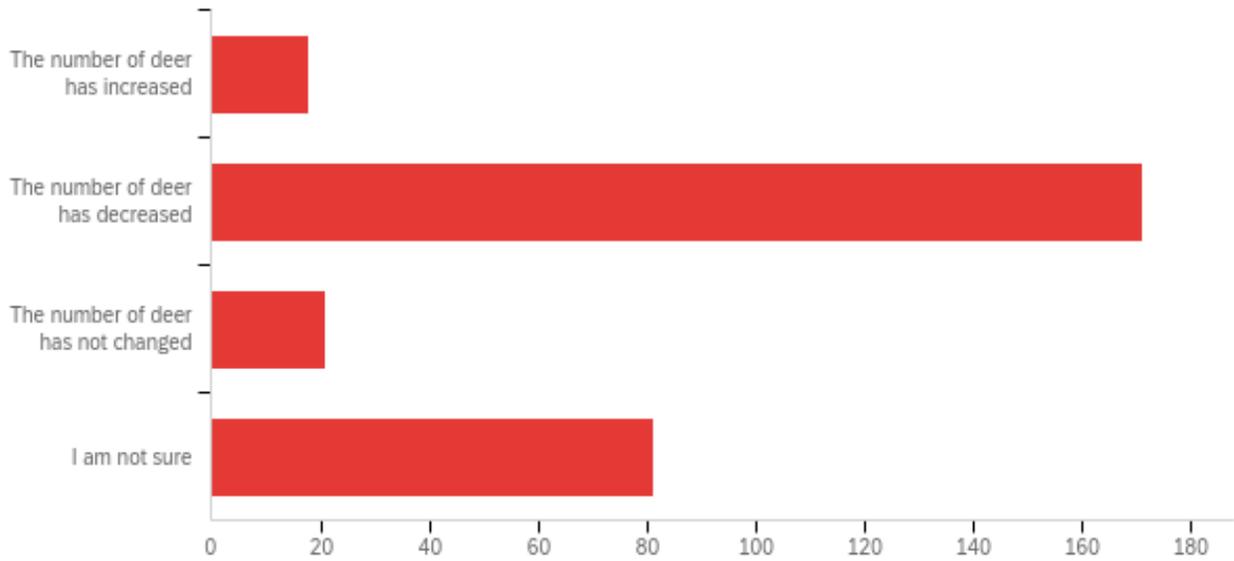
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	To spend time in nature	1.00	4.00	1.29	0.58	0.33	296
2	To harvest a trophy	1.00	4.00	2.56	0.97	0.95	296
3	To spend time with family/friends	1.00	4.00	1.40	0.67	0.45	297

D-42 HERD MANAGEMENT PLAN

4	To obtain wild game meat	1.00	4.00	1.56	0.77	0.59	296
5	To contribute to wildlife management	1.00	4.00	1.53	0.80	0.64	298
6	To contribute to the local community	1.00	4.00	2.20	0.97	0.95	294
7	To test/improve my skills	1.00	4.00	1.93	0.94	0.88	297
8	For physical exercise	1.00	4.00	1.97	0.89	0.79	297
9	Other (please specify and check one response):	1.00	4.00	2.13	1.23	1.51	53

#	Question	Very important		Moderately important		Slightly important		Not at all important		Total
1	To spend time in nature	76.69%	227	18.92%	56	3.38%	10	1.01%	3	296
2	To harvest a trophy	15.20%	45	33.45%	99	31.42%	93	19.93%	59	296
3	To spend time with family/friends	69.02%	205	24.24%	72	4.71%	14	2.02%	6	297
4	To obtain wild game meat	58.78%	174	28.72%	85	10.14%	30	2.36%	7	296
5	To contribute to wildlife management	62.75%	187	24.83%	74	8.72%	26	3.69%	11	298
6	To contribute to the local community	29.25%	86	31.63%	93	28.91%	85	10.20%	30	294
7	To test/improve my skills	40.07%	119	35.02%	104	17.17%	51	7.74%	23	297
8	For physical exercise	34.68%	103	40.74%	121	17.85%	53	6.73%	20	297
9	Other (please specify and check one response):	45.28%	24	20.75%	11	9.43%	5	24.53%	13	53

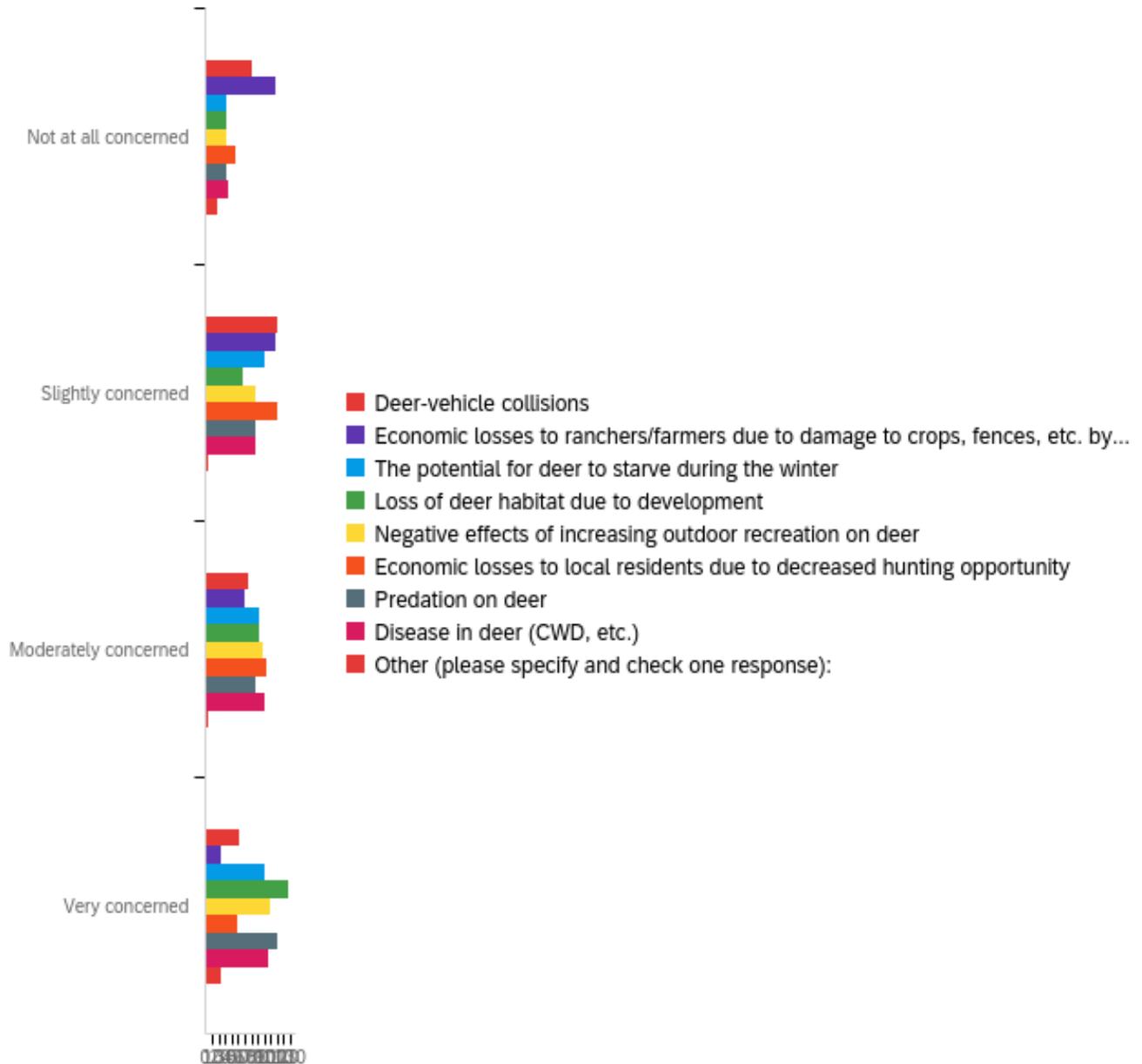
10. - How, if at all, has the Rifle Creek deer herd changed during the previous 10 years? (Please check one)



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	How, if at all, has the Rifle Creek deer herd changed during the previous 10 years? (Please check one)	1.00	4.00	2.57	0.96	0.93	291

#	Answer	%	Count
1	The number of deer has increased	6.19%	18
2	The number of deer has decreased	58.76%	171
3	The number of deer has not changed	7.22%	21
4	I am not sure	27.84%	81
	Total	100%	291

11. - Please indicate how concerned you are about each of the following in the Rifle Creek deer herd (Please check one response for each item.) How concerned are you about...



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Deer-vehicle collisions	1.00	4.00	2.34	1.03	1.06	298
2	Economic losses to ranchers/farmers due to	1.00	4.00	2.00	0.93	0.87	299

D-42 HERD MANAGEMENT PLAN

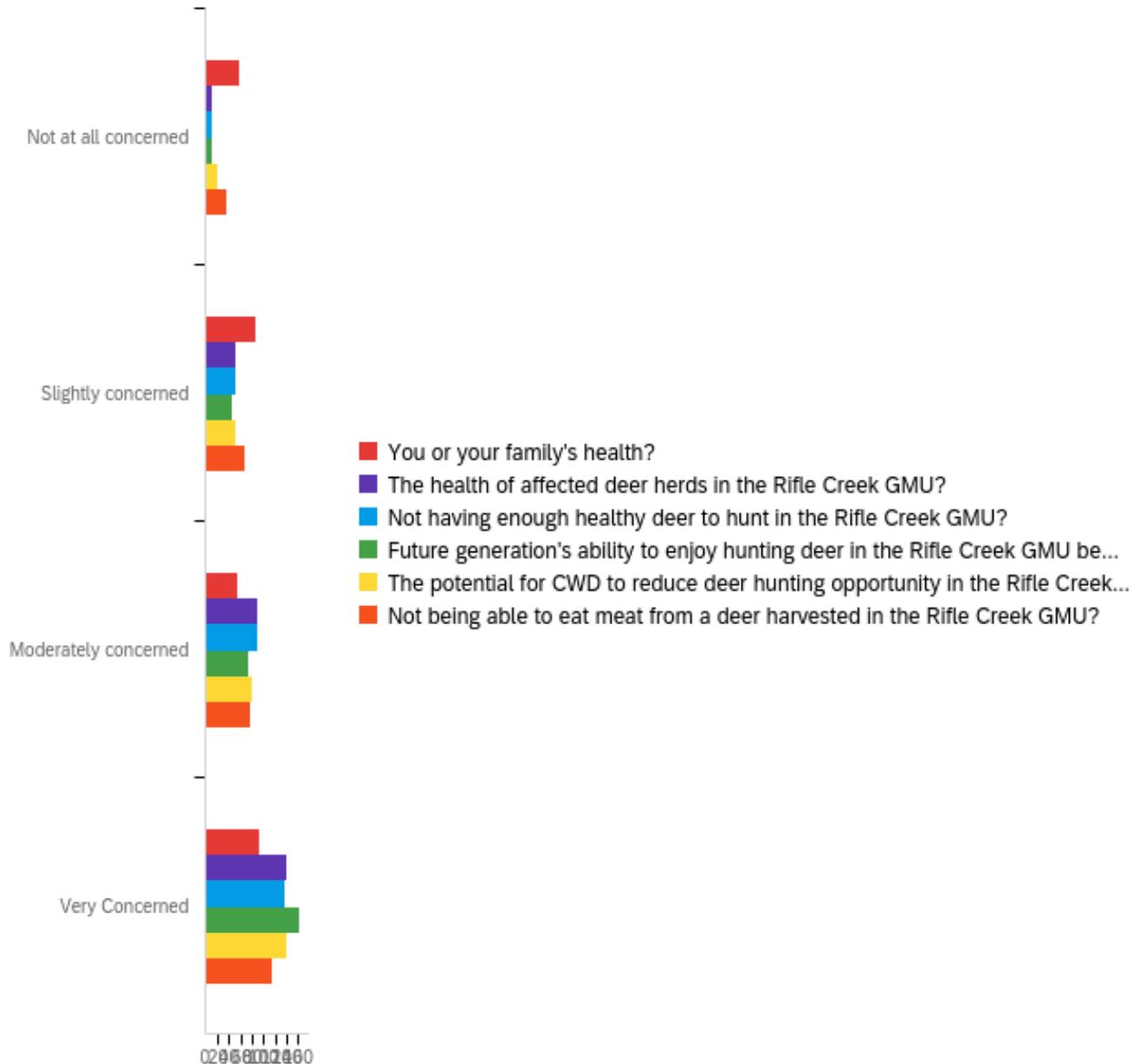
	damage to crops, fences, etc. by deer							
3	The potential for deer to starve during the winter	1.00	4.00	2.78	1.00	1.01	298	
4	Loss of deer habitat due to development	1.00	4.00	3.01	1.02	1.05	298	
5	Negative effects of increasing outdoor recreation on deer	1.00	4.00	2.86	1.00	1.00	298	
6	Economic losses to local residents due to decreased hunting opportunity	1.00	4.00	2.48	0.94	0.88	297	
7	Predation on deer	1.00	4.00	2.90	1.02	1.05	299	
8	Disease in deer (CWD, etc.)	1.00	4.00	2.84	1.01	1.02	298	
9	Other (please specify and check one response):	1.00	4.00	2.67	1.37	1.87	51	

#	Question	Not at all concerned		Slightly concerned		Moderately concerned		Very concerned		Total
1	Deer-vehicle collisions	23.83%	71	36.58%	109	21.81%	65	17.79%	53	298
2	Economic losses to ranchers/farmers due to damage to crops, fences, etc. by deer	36.12%	108	35.79%	107	20.40%	61	7.69%	23	299
3	The potential for deer to starve during the winter	11.07%	33	30.54%	91	27.52%	82	30.87%	92	298
4	Loss of deer habitat due to development	10.74%	32	19.46%	58	27.52%	82	42.28%	126	298
5	Negative effects of increasing outdoor recreation on deer	10.74%	32	26.17%	78	29.87%	89	33.22%	99	298

D-42 HERD MANAGEMENT PLAN

6	Economic losses to local residents due to decreased hunting opportunity	15.49%	46	37.04%	110	31.31%	93	16.16%	48	297
7	Predation on deer	10.70%	32	26.09%	78	26.09%	78	37.12%	111	299
8	Disease in deer (CWD, etc.)	11.74%	35	25.50%	76	30.20%	90	32.55%	97	298
9	Other (please specify and check one response):	35.29%	18	9.80%	5	7.84%	4	47.06%	24	51

12. - Because of CWD in deer, how concerned are you about each of the following in the Rifle Creek deer herd? (Please check one response for each statement.) How concerned are you about...



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	You or your family's health?	1.00	4.00	2.63	1.13	1.28	290
2	The health of affected deer herds in the Rifle Creek GMU?	1.00	4.00	3.23	0.88	0.77	292

D-42 HERD MANAGEMENT PLAN

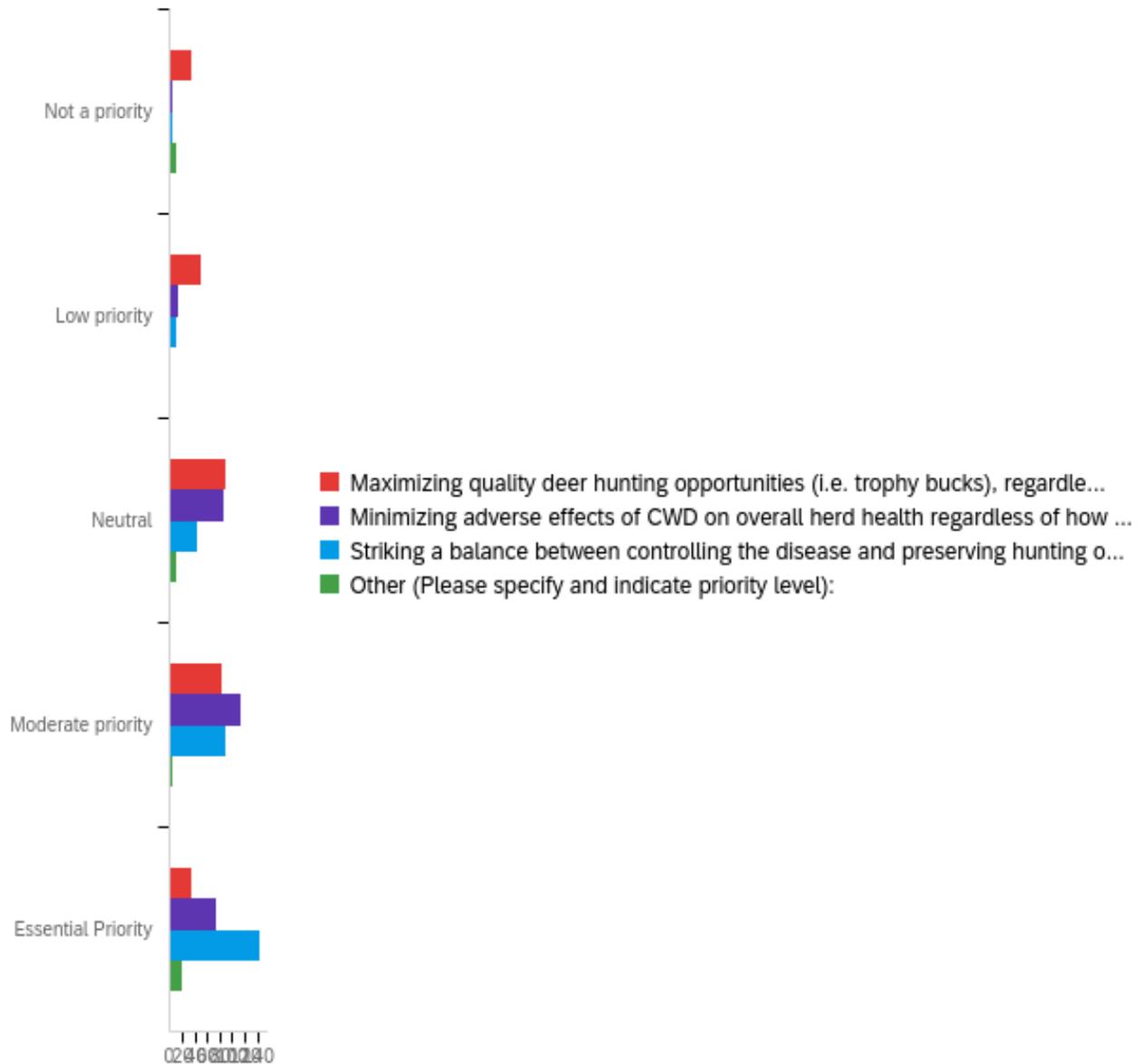
3	Not having enough healthy deer to hunt in the Rifle Creek GMU?	1.00	4.00	3.21	0.88	0.77	292
4	Future generation's ability to enjoy hunting deer in the Rifle Creek GMU because of CWD?	1.00	4.00	3.33	0.86	0.75	292
5	The potential for CWD to reduce deer hunting opportunity in the Rifle Creek GMU?	1.00	4.00	3.17	0.94	0.89	291
6	Not being able to eat meat from a deer harvested in the Rifle Creek GMU?	1.00	4.00	2.91	1.05	1.10	292

#	Question	Not at all concerned		Slightly concerned		Moderately concerned		Very Concerned		Total
1	You or your family's health?	20.00%	58	29.31%	85	18.62%	54	32.07%	93	290
2	The health of affected deer herds in the Rifle Creek GMU?	4.11%	12	17.47%	51	30.14%	88	48.29%	141	292
3	Not having enough healthy deer to hunt in the Rifle Creek GMU?	4.11%	12	17.81%	52	30.82%	90	47.26%	138	292
4	Future generation's ability to enjoy hunting deer in the Rifle Creek GMU because of CWD?	3.42%	10	16.10%	47	25.00%	73	55.48%	162	292
5	The potential for CWD to	6.53%	19	17.87%	52	27.49%	80	48.11%	140	291

D-42 HERD MANAGEMENT PLAN

	reduce deer hunting opportunity in the Rifle Creek GMU?									
6	Not being able to eat meat from a deer harvested in the Rifle Creek GMU?	12.33%	3 6	22.95%	6 7	26.03%	7 6	38.70%	11 3	292

13. - How much of a priority should Colorado Parks and Wildlife place on the following herd and harvest management decisions in light of CWD detection in the Rifle Creek deer herd? (Please check one response for each statement)



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Maximizing quality deer hunting opportunities (i.e. trophy bucks), regardless of how they affect CWD	1.00	5.00	3.13	1.18	1.40	292

D-42 HERD MANAGEMENT PLAN

	prevalence or overall herd health						
2	Minimizing adverse effects of CWD on overall herd health regardless of how they affect the quality of deer hunting opportunities.	1.00	5.00	3.83	0.91	0.83	293
3	Striking a balance between controlling the disease and preserving hunting opportunity	1.00	5.00	4.22	0.94	0.88	293
4	Other (Please specify and indicate priority level):	1.00	5.00	3.51	1.53	2.33	47

#	Question	Not a priority		Low priority		Neutral		Moderate priority		Essential Priority		Total
1	Maximizing quality deer hunting opportunities (i.e. trophy bucks), regardless of how they affect CWD prevalence or overall herd health	11.64%	34	16.78%	49	30.48%	89	28.77%	84	12.33%	36	292
2	Minimizing adverse effects of CWD on overall herd health regardless of how they affect the quality of deer hunting opportunities.	1.37%	4	4.78%	14	29.01%	85	39.25%	115	25.60%	75	293
3	Striking a balance between	1.37%	4	4.10%	12	15.02%	44	30.72%	90	48.81%	143	293

	controlling the disease and preserving hunting opportunity											
4	Other (Please specify and indicate priority level):	21.28 %	1 0	0.00%	0	25.53 %	1 2	12.77%	6	40.43%	19	47

**18. - Please share any additional opinions or comments you have about the Rifle Creek deer herd (GMU 33).**

Please share any additional opinions or comments you have about the Rifle Creek deer herd (GMU 33).

I have hunted this unit for 20 years and have watched go from great to poor. There have been some positive changes like closing areas to ATVs which has helped. There are just too many tags for this unit and when you are lucky enough to draw a late season buck tag then you have to compete with all the elk hunters, I too am an elk hunter. It seems to me that when it takes 3-8 yrs to draw a late season tag that the area would be just for deer hunters?? Within our group we are discussing choosing another unit since this one has gone down hill over the past 10 years.

The deer seem to have become habituated to living in more urban portions of GMU 33, rather than the public land in the GMU. I guess there is less predation concern for them and more prevalent food sources

private land hold most of the animals, where public lands have a small percentage of the animals, due to more people using the area

I have lived in this unit my entire life and have seen a direct correlation between lower number of deer and higher number of predators, especially bears

What do the questions above have to do with GMU 33 deer hunting? Don't make GMU 33 another trophy unit. Turn the wolves loose in areas where the people that voted them in can enjoy them, such as in Boulder county. Not on the western slope, you will further destroy the hunting and wildlife opportunities. The mule deer are already stressed out in a lot of areas.

The overlapping of elk hunts and deer hunts, have a combo tag for hunters wanting elk, if not have elk hunts earlier, the mountains have constant pressure from hunts starting in august and not ending until late November, you can hunt a cow elk anytime and need to have a break for deer seasons, the recreation of human has increased hugely in the past few years, the mountains just don't get a break or wildlife to relax and b normal, deer could b 4point and better or 3 point or smaller meat tag, to many people just shoot any size last day bucks, make them pick and hunt different times, trophy hunters can hunt late and alone,

In my life time the deer numbers have been got down by large numbers.

I have been going to this area with my husband for the past 41 years ( he has for 66 years). There used to be flowers all over, we saw deer and elk along with other animals when we

come on vacation. Now the flowers are replaced with thistles and other weeds but most of the time the ground has been mowed over with grazing sheep and it stinks. By hunting season the ground is bare, last year there were added cows 1000 or more in this area, we did not see any wild animals and there was nothing for them to eat anyway. I hope they survive somewhere else. By the way the wilderness area is no better, the cows and sheep are there also, I though the plan was to protect this area?

Too many elk hunters creating too much pressure, driving deer to private property.

For the amount of area this units covers, there aren't as many deer as I believe there should be. I think we should remove a few of the elk and see if this will create a more positive deer situation.

Reduce hunter numbers

far too many predators

Should have a Senior License fee opposed to regular license fee.

The first question should always be "Do you hunt primarily public or private lands?" I don't believe simply increasing the number of buck tags will help control the CWD problem we have. The number of breeding aged deer harvested is not in my opinion proportionate to tag numbers. Far too many 2 and 3 year old deer are actually harvested. I do understand that we have to start somewhere and that something is better than nothing. We need to keep looking for ways to combat this disease.

The herd seems to be getting smaller and smaller and hunting pressure is getting bigger.

I have hunted Elk and Deer in unit 33 for years and have had to look for a new place to hunt due to the amount of hunters I see in that area. It is really bad.

Forest Service is closing down too many roads and crowding outdoorsman by limiting areas to access.

I find it interesting that I can get a deer tag most years for Muzzle loading but not an Elk tag?

None

lion predation has caused more harm to this deer herd than anything else!

Need to keep tag numbers low

For the 2021 season I did not fill my unit 33 deer tag due to the sheer volume of people, I was witness to several unethical land use/hunting behaviors that played into this decision.

I hunted it second season in 2019. We hunted sunup to sundown all 9 days. I saw 6 deer, only because my hunting partner pushed them to me. \$ hunters with 4 deer tags and 2 cow tags and one bull tag. We killed nothing. First time I hunted that GMU. VERY DISAPPOINTED..

Haven't seen the really big bucks in 10-12 years. Would like to see that area recover that.

Wolves would affect the health of the herd significantly

Less does tags issued north of the hogback. There seems to be piles of tags but we don't seem to have the numbers to support the tags

Lessen the tag allocation in unit 33 (and the whole state) for non residents. We are way to generous to non residents compared to surrounding western states. Also, please try to increase officer presence in the unit. Two years in a row I have seen people shooting from

the roadway. I wasn't able to get plate numbers in either case, but it ticks me off. I really enjoy being able to get unit 33 buck tags as a second choice. Draw odds on second choice were significantly lower for 2021 compared to years prior which is a bummer. However, I have seen a decreased amount of deer over the past couple years so maybe the decreased amount of tags isn't a terrible idea.

Certainly the threat of development and over-development is always a concern. However, I think the large volume of ATV activity in the area does hamper what could otherwise be a less skidish herd of deer. We did see a few good size deer - roughly 10-12 on our trip in 2019 - but from a couple of long sits in times in the back country - the number of deer were definitely too low IMO. We also came across one carcass that was mostly unidentifiable apart from a rack. One morning while hunting deer, we broke into 2x2 groups. My group had zero contact. However the other group did see a good sized adolescent black bear back near the ranch & Aspen crossing. My team member & I had been through that same exact area at sunset roughly 12 hours prior. There we found bear markings but never saw the black bear. We also came across a large number of cattle who were grazing from the local ranch in the Aspen grove in that area. It's a challenge to find the right balance but for sure the deer population was low. We also spotted about 20+ Elk on an opposite mountain top in a fairly social environment - which was great to see. I think part of the challenge of the area is the terrain being especially challenging in spots - we noticed a number of larger downed trees in multiple sections. Whatever can be done to help the populations now - more than likely should be done now in order to stop an even worse situation.

The herd in this unit has drastically declined to a very concerning number. I appreciate that you are trying to get on top of it's management. We enjoy seeing the deer for recreation as well as harvestung.

Landowner blockage of access to deer & elk herds after 1st heavy snowfall is a real problem.

Insert a 3 point or better requirement. Too many hunters are taking smaller animals. It should be a trophy area.

Way to many does

If CWD is problematic in this herd, why are there no public land rifle doe hunts?

Stop letting all the motor vehicles in that unit

saw very limited mule deer and no elk in an entire week hunting the unit last time we went.

I really love having the opportunity to hunt in unit 33 it is one of my favorite spots on this earth thank you for you're concern with my opinions

20 years ago I would see groups of 15 to 25 deer on my property in the Spring. Now I'm lucky if I see 5 to 10 in the spring. Be more proactive at clearing of non hutable oakbrush covered hillsides.

I think there should be an antler restriction on deer harvest. I've seen too many small bucks being shot and it seems the population has decreased in the last 10-15 years

We have hunted 33 for the last 10-11 years. We do not hunt like 99% of the other hunters we see up there. We have several key spots we set up in and glass using super high end optics. Talking to a lot of people we encounter from camp or during our travels we see a massive amount of deer compared to them. I would say we see just as many mature bucks as we did 10 years ago. We did see a decline in the younger bucks when the tag numbers

were increased from 450-650. And I was also told that several years ago there were a pretty good amount of doe tags given out and that would explain the decrease in does we have seen as well. Well at least in my head. The one thing I have seen a major decline in is the elk. We don't care to hunt them but do keep really exceptional tabs on what we see and where and their numbers I believe have suffered the most. I believe it should be a draw for bulls and not otc bull tags. I can also tell you I have never seen a deer that looked sick in the unit where we hunt. I'm down there from my home state of WA quite a bit scouting out more of the unit. I was there for three days just last week and saw several very mature bucks and all appeared to be healthy. The unit has very good genetics in it for very large mature bucks and I would like to see the unit continue to produce/provide hunters with the opportunity to harvest a deer of a lifetime. I have a 10 year old who has accompanied us on several of the hunts down there and he is itching to turn 12 so he too can have the opportunity to harvest some exceptional bucks as we have.

To many hunters. Especially out of state hunters. I also have seen a lot of lion tracks in the last few years during the 1st rifle season.

Possibly limiting more travel routes during hunting seasons and throughout winter like some of the other areas around Rifle and Harvey gap.

The CPW need to control predator population. Bring back the mule deer population. Bring back spring bear and trapping.

I spent about 20 days hunting in GMU 33 last year and only saw a dozen deer.

I see many people when I'm in GMU 33 not all are hunters, at times it seems overcrowded. I enjoy the taste and healthy aspects of venison and the natural wonders surrounding hunting.

Keep the opportunities & tag #s up for 33

We have not observed high buck to doe ratios in the past 5 years of hunting this unit. It is tough to find a buck on public land. My family has harvested 4 bucks in this unit over the past 5 years, but have not seen very many bucks.

I feel like there are too many roads. I think you can minimalist hunting pressure on deer just by making it a little less 'accessible'. My opinion though.

They closed the ATV roads, so it is impossible to hunt deer or elk. They will not be able to manage the herds. What a shame, because it is a great hunting area. The bear hunting is also effected because you can't get to bear springs, Long draw, Hadley, Cotton Wood, and many other great areas. They will be competing for food, so the possibility for disease will be great.

I look forward each year to my hunting time in Colorado.

like other GMU,s I have hunted over the years there is a definite increase of people over recreating these areas that stresses out the deer & elk herd's. Area 33 also has too many cattle in areas around the Cline Tops

We need to limit development and mostly non hunting recreation to give the animals a break. Too many 4x4s, mountain bikes, and hikers. They also should pay an access fee to be in the woods

Every years i have seen less and less deer and its not like 10 plus years ago when you see deer everywhere.

Hunter numbers should be reduced and we need to go back to 3 points on one side for 4 years

Less tqgs given out for early rifle and muzzle loader seasons

Poaching is also a problem that should be addressed

In my 41 years in the same rural home, the deer herd around my house has decreased dramatically.

hope it isn't to late but due to over hunting, lions, bears, road kills, and now bring back the wolfs, and CWD it seems to be a lot of hard work for you for many years to come. I have hunted every year since 1961 only missing 2 years while I was in VN. even if it means closing deer season bring back baited spring bear hunting, put out more loin permits, and start a season on wolfs right now year round

I have been an avid archery hunter in area 33 for over 20 years. Through the years I have witnessed the decline in the deer and elk populations in area 33. It seems that there is an outrageous number of rifle hunters and rifle seasons to support healthy animal numbers.

too many buck tags and not doe tags at all

Need to bring the point restriction back

N/A

Minimal access points for public.

I hunted gmu in 2020 during the muzzle loader season and had one of the best hunts of my life. Please maintain or increase the deer herd and opportunities in unit 30.

I think it would help if it was 3 points or better.

Still can't quite connect the dots on how killing more bucks helps with cwd? Yes they travel more during the rut & interact with does but seems counterintuitive to kill more. maybe a paired unit research project with focus on killing bucks and the other unit less focus & compare (units with similar cwd prevalence) just a thought

I feel Colorado's Mature Bucks all units are at an all time low.

It's only going to get worse when more wolves are introduced in Colorado. You all should transplant the wolves to the city limits of Denver and Boulder and let the liberals deal with them since they are the ones who voted for them.

Keep domestic grazing off the Bookcliffs

N/A

Have seen deer in the above GUM for many years during hunting ,scout and recreation in the area.

I have been hunting in Colorado since 1972 and only missed one year. It means a lot to me to be able to make that trek each you.

Too much Hunters for a small zone?

Too many people, not a healthy deer herd due to too many small immature bucks being slaughtered every year.

Much of the left over tags for this unit are for Private Land. This tells me that hunting on private land is difficult to obtain. Also, after archery/muzzle loading seasons a substantial number of deer are found on private property.

Too many permits being issued while the herd continues to decrease over the last 15 years

Too many hunters crowded onto public areas. I used to enjoy hunting CO, but there are too many tags offered per season now.

appreciate all the work you guys do

Mandatory cwd testing

Over hunted and poor deer quality

Concerned about the dropping number of deer in the area

I do not get around on foot like I used to yet areas that I could take an ATV into in the past are being closed. It is my understanding that most of the out of state hunters are guys that are my age with the discretionary income to be able to afford to buy an out of state tag. Access is a problem for older guys with the money. I expect it will cause you folks to lose more customers like me in the future. Not much for driving around in a truck road hunting. May come a day that I soon quit hunting and just enjoy the outdoors in other ways. Did not draw a unit 33 deer tag this year so I bought a cow elk B tag to take my friend's kid hunting. That is one of the few things that keeps me hunting at this point. Taking kids into the outdoors but I can do that without a hunting license. I can hunt with a camera. Probably should hunt more now before wolves ruin it but whatever. That said, you ask my opinion but The CDOW will do whatever the politicians tell them to do, so I am pretty bland on my opinion with something that my voice as a sportsman is not heard. Or maybe you hear but you do not listen. There is a difference. Whatever. Thanks.

A lot less deer that see from past years.

I hunt all of GMU 33, top to bottom, side to side. I take pride in my hunting ethics and fair chase. As i hide in the shadows watching EVERYTHING unfold i find most people from california out here hunting don't give 2 shits about Colorado or our animals. Most of the time its obvious they have no idea how to hunt or much less get out of their vehicle except to pee. With this being said can you PULEEZE make out of state hunters take a COLORADO hunting and conservation class before issuing a licence of any type.

I had a non resident license for elk and mule deer but never saw one. Very crowded with hunters and vehicle traffic. Would never go back to the ranch where we hunted at end of road in Rifle gap. Would never return to that area.

With the drought in the pass few years the sheep have over grazed area 33 there has been a major reduction in food sources for all animals

access to good areas increasingly prevented ; excess of antlerless to antlered game increasing; all roads poorly mintained

The last two questions of the survey indicate that this survey is not considered seriously by colorado, as both are irrelevant to the health of the dear heard.

Too many out of state hunters attempting to trespass on or through private property.

Thanks for doing what you do! It seems the CPW is developing a strategy to target older age class deer in order to limit the spread of cwd for the future of our deer. I'm not sure if I agree that that is the best strategy, but if you guys have the evidence to back it up, I support you in that effort, although it is sad to see at times. But the future of deer in Colorado is what's most important. Thanks!

Sucks, the feds have taken the acess away from the people in colo. At the age of 69 hunters cant walk miles a day to axcess the land. Unit 33 sucks and no help from the DOW.

Offering at least a youth tag for does would be beneficial as there are a lot of does.

Quit closing the trails down to motorized vehicles during deer season!! My father in law has hunted this unit his whole life but now can't because there is no vehicles allowed!!!

Lots of healthy deer, lots of hunting pressure focused on the limited number of access points.

Too many does - open season for does please

I've hunted 33 for several years now with people and for tags myself. I can't on one hand the number of bucks over two points on a side on one hand. I hunted almost every day during our seasons. I think it's being over hunted for deer and elk. It's an absolute joke up there on public land during the rifle seasons. We hike 2-4 miles into areas. We are some deer, but nothing like it was 10-15 years ago.

I feel like some of these questions were leading and cast guilt upon the person answering them. To say that I am not at all concerned about the health of my family makes me look like a jerk, especially when there is no link to CWD and human health. Likewise having to answer that I'm not at all concerned about the health of deer herd. I think the problem is that there has not been any control methods that have been demonstrated as effective against the spread and prevalence, so why drag a population down and kill all the older bucks when you cannot erase the fact that they have been traipsing around the country shedding prions for much of their life. My belief that there is little that can be done to change the trajectory of CWD prevalence and there is little risk to human health colors my answers to these questions.

I have seen a big decrease in the private land areas I have access to hunt in the southern part of the unit. I typically get a late season doe tag, they used to be very easy to fill and was a great way to put meat in the freezer. In the past few years (5ish) the number of deer I see during this late hunt is drastically lower. It is not an easy tag to fill anymore. I have been lucky enough to draw a 2nd or 3rd rifle Buck tag for the unit also several times. I usually hunt the northern part of the unit for this. I have not seen a decrease in the deer numbers up in the higher elevations.

Long-term health of the herd is most important. I think cattle grazing on USFS land has a big impact on deer and elk habitat availability in the unit as well. It's remarkable how clear the delineation is between where the cattle sign ends and the elk and deer sign re-appear.

Having hunted GMU many years it's been a long time since I've seen a true trophy buck.

I have hunted in unit 33 for 20 years, early on we saw and harvested mature deer. Then there was a period of time where we saw nothing but spikes and forked horns. I forget the exact year doe tags were no longer given out but we have started to see quite a few very mature bucks in recent years. We are not road hunters and we put on a lot of miles hiking, in recent years I would say I have seen 15-30 Does/Fawn a day in the area that we hunt.

I have hunted this unit several times. There's always opportunities to harvest mature bucks if you get away from the roads and other hunters. There seems to be more hunting pressure in the last few years, however many people do venture far from the roads.

The area is rich in wildlife and has a great balance of access and roadless terrain. I really do believe if deer tag numbers would be backed off a bit the hunter experience would be better. The main negative to this hunt is amount of hunters on the landscape. There is not very many places where hunters can get away from each other.

Please don't let voters decide what's best for our natural resources. CO has many qualified wildlife biologists and CPW officers that are MUCH more knowledgeable and qualified to make decisions than city people who live 200 miles away and have never walked off a paved path.

Love the unit and the opportunity CPW gives to dweebs like me

---

most deer hanging around town very few on public land

---

We reduced the number of hunters on our 900 acres for the past 3 years and have now seen a huge increase in the deer population.

---

Keep the wolves out. The quality of deer has improved. Keep up the work

---

less landowner tags; more public opportunities

---

disappointed i have not gotten my archery tag the last two seasons

---

I've been hunting GMU 33 for 40+ years. I have not seen any CWD on any game. Does this game unit have CWD and should I be worried???

---

Love to hunt that area. Moved to another unit to try and get more deer population

---

Too many non resident hunters.

## APPENDIX V: PUBLIC COMMENTS

The following are comments received from the public during our 30-day public comment period. Note that some of these comments were submitted as feedback for this Herd Management Plan (HMP) as well as two other HMPs that were posted for comment simultaneously (D11 and E10).

---

I would like to comment on your proposed plan management for the Rifle area. First your new objectives make it sound like you could not achieve your old objectives so you changed them to fit? It really sounds like you are not managing them at all and just monitoring.

I would like to suggest a somewhat different approach to deer management. It is kind of unusual, but a similar tactic has worked well on elk in Oregon in the blue mountains. I'm sure you are painfully aware that antler point restrictions have not worked on deer. I know it is because the current thought places all the hunting pressure on mature bucks before the breeding season reaches its peak. In Oregon they do the opposite of what you expect. They allow a general antlered tag to only harvest spike bulls. This allows for lots of tags to be sold but limits the harvest. Then they issue a limited number of any antlered elk tags. This allows for hunters to hunt any bull. I believe this would work well on deer, limiting the harvest to spikes and fork horns but genetically superior bucks and a few lucky ones to grow older. It would produce a better trophy potential and increase license sales. I believe it would be a win win for CPW.

---

Do not lower the buck:doe ratio of these units. This recent trend of lowering the buck:doe ratio as a means of "combating CWD" needs to stop. CPW needs to devise a different way to address CWD other than harvesting more mature bucks, which will devastate the quality of these hunts. There are significantly more 5+ year old does walking around than 5+ year old bucks; figure out a way to harvest them instead of killing all the quality bucks in the unit. As stated in the proposed plans, increasing the buck:doe ratio will "...significantly reduce the number of high quality individuals harvested." This is unacceptable. Figure out another way to address CWD.

---

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 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

---

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???. Breeding 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.

APPENDIX VI: HABITAT PARTNERSHIP PROGRAM COMMENT LETTER



February 7, 2022

Genevieve Fuller  
Colorado Parks and Wildlife  
711 Independent Ave.  
Grand Junction, CO 81505

**RE: Lower Colorado River Habitat Partnership Program Comments - D-42 HMP**

Dear Ms. Fuller:

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 representatives) 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 Lower Colorado River HPP committee has discussed your presentation, reviewed the draft alternatives, and offers these comments for consideration.

The Lower Colorado River HPP committee discussed the HMP and shared a variety of thoughts and opinions on the proposed plan. After further discussion, the committee came to an agreement with the following comments pertaining to the proposals for the population range and sex ratio objectives. The committee supports the draft alternative to keep the current population objective. We believe this alternative responsibly balances local range and habitat conditions with sportsmen desires and landowner concerns. The committee area does not experience many deer conflicts and we believe we have the resources necessary to address conflicts should they occur. Additionally, we believe the current sex ratio is a good balance and provides ample hunting opportunity while also providing for a reasonable number of mature animals for hunters.

As stated above, HPP is also directed by statute to assist CPW to meet game management objectives. The Lower Colorado River HPP committee has worked with both public land managers and private landowners to improve the quality and quantity of the habitat throughout the committee area. Adequate habitat is critical to meeting game management objectives and we remain committed to maintaining and improving habitat in this area. The committee expressed concern with the continued residential growth and increased year-round recreation that occurs, resulting in a loss of critical habitat, habitat fragmentation, and increased disturbances. With these ongoing issues, the committee is concerned with meeting future population objectives.

On behalf of the Lower Colorado River HPP Committee, thank you for the presentation and the opportunity to provide these comments.

Sincerely,

  
Scot Dodero, Chair  
Lower Colorado River HPP Committee