

ARKANSAS RIVER DEER HERD MANAGEMENT PLAN

DATA ANALYSIS UNIT D-28, ARKANSAS RIVER

GAME MANAGEMENT UNITS 122, 125, 126, 127, 129, 130, 132, 139, 145, 146



Created for:



COLORADO

Parks and Wildlife

Department of Natural Resources

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Approved XXXXX by the Colorado Parks and Wildlife Commission

EXECUTIVE SUMMARY

<p>Arkansas River Deer Herd (DAU D28) GMUs: 122, 125, 126, 127, 129, 130, 132, 139, 145, 146</p>
<p>Post-Hunt Population: Previous Objective: 3,600; Estimate for 2021: 7,350 deer Recommended Objective: 6,000-8,000 deer</p>
<p>Post-Hunt Sex Ratio (Bucks:100 Does): Previous Objective: 43 Recommended Objective: 30-35</p>

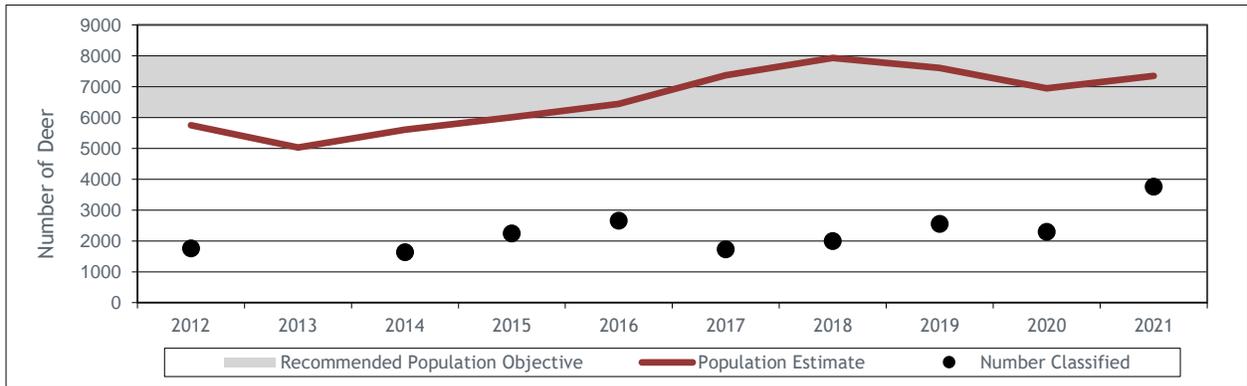


Figure 1. Arkansas River Deer Herd post-hunt population estimates, recommended population objective, and the number of deer classified from 2012 to 2021.

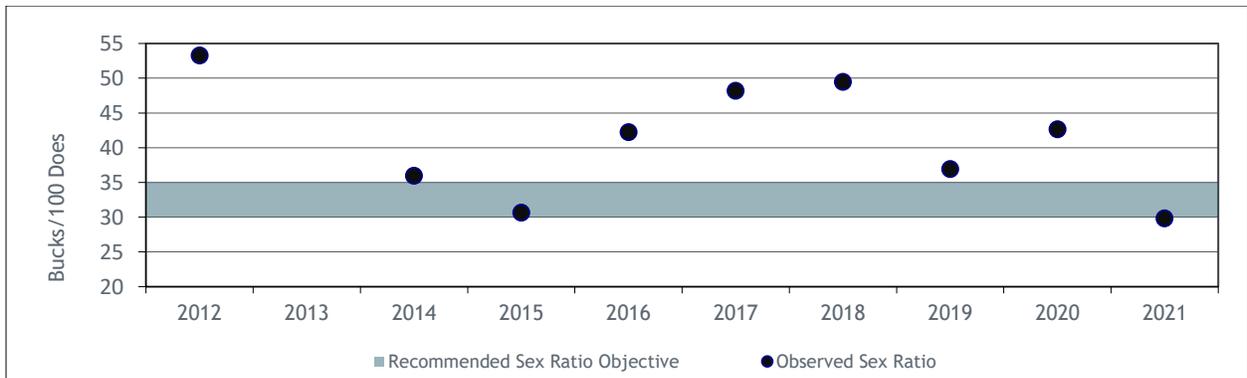


Figure 2. Post-hunt observed sex ratio and recommended sex ratio, 2012-2021.

DAU Amendments

For all previous D-28 herd management plans (HMP), the Arkansas River Deer DAU consisted of GMUs 122, 125, 126, 127, 120, 132, 137, 138, 139, and 146. CPW is adjusting the DAU boundaries for D-28 by making the following changes:

- GMUs 137 and 138 are being removed from D-28.
- GMUs 129 and 145 are being added to D-28.

- The boundary of GMU 129 is being extended, annexing the Arkansas River corridor from Highway 71 to Pueblo. *(This change is pending PWC approval. This plan and the recommended GMU boundary change will simultaneously go through the PWC approval process.)*

This plan is for the amended D-28 that contains GMUs: 122, 125, 126, 127, 129, 130, 132, 139, 145, and 146.

Background Information

The Arkansas River Deer DAU (hereafter referred to as D-28) encompasses GMUs along the Arkansas River from Pueblo to the Kansas/Colorado border (GMUs 125, 126, 127, 129, 130, 146, 132), eastern Baca County (GMUs 139, 145), northeastern Kiowa County (GMU 122), and southeastern Cheyenne County (GMU 122). Approximately 89% of D-28 is in private ownership. Most of the D-28's public access (4.5%) is on CPW State Wildlife Areas.

D-28's deer population consists of nearly equal proportions of white-tailed deer and mule deer. The estimated post-hunt population for 2021 was 7,350 deer. Over the previous ten years, CPW estimates the population ranged from 5,000 to 8,000 deer. The modeled post-hunt buck:doe ratio from 2012-2021 ranged from 31.8 bucks:100 does to 47.5 bucks:100 does (average 40.8 bucks:100 does).

In 2019, CPW conducted a mandatory sampling effort for Chronic Wasting Disease (CWD) in D-28. CWD positivity rates were 9.3% for adult white-tailed bucks and 8.3% for adult mule deer bucks. In an effort to bring D-28's prevalence rate below the 5% prevalence threshold, we recommend a reduction of the sex ratio objective from the current objective of 43 bucks per 100 does to a ratio of 30-35 bucks per 100 does.

Deer commonly cause crop damage throughout D-28, but most damage is relatively minor. Very few landowners experience damage to their crops at significant enough levels to justify filing a damage claim. D-28 averages just 1.9 claims per year, with an average claim amount of \$2,227.

We conducted a mail survey prior to drafting this HMP to better understand landowner opinions regarding deer management in D-28. In June of 2021, surveys were mailed to 775 randomly selected landowners, representing ~33% of the D-28's landowners. When asked to indicate the number of deer they would like to see on their land, relative to the current numbers, the highest percentage of landowners (44%) preferred deer numbers to stay the same. When asked about their preferred buck:doe ratio, the majority of landowners (52%) indicated that they would like to see the buck:doe ratio maintained at its current level.

CPW also conducted a hunter survey for D-28, sending surveys to 550 hunters who had received at least one D-28 rifle, muzzleloader, or archery license for the 2018, 2019, and/or 2020 seasons. When asked about the number of deer they would like to see on the property they hunt, the highest percentage of hunters (45%) indicated that they would like to see an increase in deer numbers. Of those who would like to see a population increase, most would like to see a fifty percent increase in deer numbers. When asked about their preferred buck:doe ratio, the highest percentage of hunters (48%) indicated that they would like to see the buck:doe ratio maintained at its current level.

Population Objective Alternatives

Preferred Alternative: 6,000-8,000 deer: This alternative would maintain the population at the level observed in recent years. Landowner survey results suggest that this is the preferred alternative by the majority of landowners in D-28.

Alternative 2: 9,000-12,000 deer: The hunter survey suggests that the majority of hunters would prefer this alternative. Most hunter survey respondents indicated that they would like to see a 50% increase in the D-28 population. This population increase would likely result in increased levels of game damage and higher CWD prevalence rates. To achieve this objective, doe hunting opportunity must be significantly reduced.

Alternative 3: 3,100-4,100 deer (status quo): This alternative represents a 51% decrease in the current population. This alternative is not supported by landowners or hunters.

Sex Ratio Alternatives

Alternative 1: 30-35 bucks per 100 does (preferred alternative): This alternative represents a decrease from the previous objective. This sex ratio is recommended to try to reduce CWD prevalence rates. In other DAUs in Colorado, a moderate sex ratio range of 30-35 has been shown to offer ample buck hunting opportunity and keep CWD prevalence rates relatively low. This alternative would increase buck hunting opportunity but would reduce the number of mature bucks available to hunters.

Alternative 2: 37-49 bucks per 100 does (status quo). The majority of surveyed landowners and hunters indicated a preference to maintain buck:doe ratios at their current level. This alternative would likely result in a continuation of CWD prevalence rates above the 5% threshold listed in the CWD Response Plan and may cause prevalence rates to continue to increase. Under this alternative, there may be more mature bucks available to hunters, but buck licenses would have to be reduced below their current levels, limiting buck hunting opportunity.

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INTRODUCTION AND PURPOSE

Colorado Parks and Wildlife (CPW) manages big game, including deer, for the use, benefit, and enjoyment of the people of the state in accordance with the CPW's Strategic Plan. Deer management is also determined by mandates from the Colorado Parks and Wildlife Commission (PWC) and the Colorado Legislature. Colorado's wildlife species require careful and increasingly intensive management to accommodate the many and varied public demands and growing human impacts. CPW uses a "Management by Objective" approach to manage the state's big game populations (Figure 3).

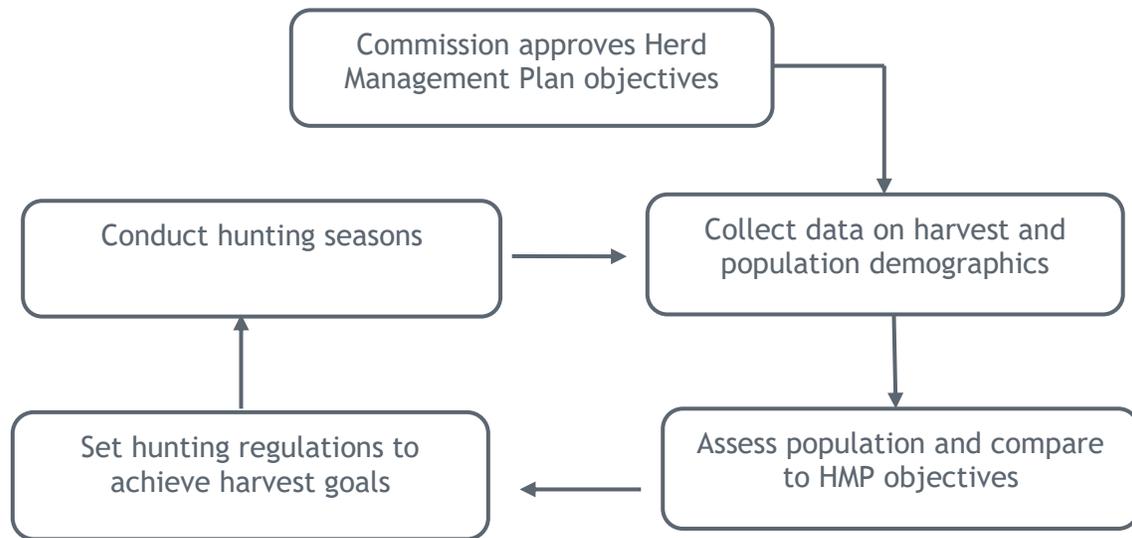


Figure 3. Management by Objective process used by Colorado Parks and Wildlife to manage big game populations by Data Analysis Unit (DAU).

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

Management decisions within a DAU are based on a herd management plan. The primary purpose of a herd management plan is to establish population and sex ratio (i.e., the number of males per 100 females) objectives for the DAU. The herd management plan also describes the strategies and techniques that will be used to reach these objectives. During the herd management planning process, public input is solicited and collected through questionnaires, public meetings, and comments to CPW staff and the PWC. The intentions of CPW are integrated with the concerns and ideas of various stakeholders including the State Land Board (SLB), the Bureau of Land Management (BLM), city and county governments, hunters, guides and outfitters, private landowners, local chambers of commerce, and the public. In preparing a herd management plan, agency personnel attempt to balance the biological capabilities of the herd and its habitat with the public's demand for wildlife recreational opportunities and

public tolerance for game damage. Herd management plans are approved by the PWC and are reviewed and updated approximately every 10 years.

The HMP serves as the basis for the annual herd management cycle. In this cycle, the size and sex ratio composition of the herd is assessed and compared to the objectives defined in the herd management plan. Removal goals are set. Based on these goals, specific removal strategies are made for the coming year to either maintain the population or move it towards the established objectives (e.g., license numbers and allocation are set). Hunting seasons are then conducted and evaluated. The annual management cycle then begins again (Figure 3).

The purpose of this herd management plan is to set population and sex ratio objectives for the Arkansas River Deer Herd (D-28). The herd management plan will be in place from 2022 to 2032 with the expectation that it will be reviewed and updated in 2032.

DATA ANALYSIS UNIT DESCRIPTION

Location

The Arkansas River DAU (D-28) is located in southeastern Colorado (Figure 4). It encompasses the GMUs along the Arkansas River from Pueblo to the Kansas/Colorado border (GMUs 125, 126, 127, 129, 130, 146, 132), eastern Baca County (GMUs 139, 145), northeastern Kiowa County (GMU 122), and southeastern Cheyenne County (GMU 122).

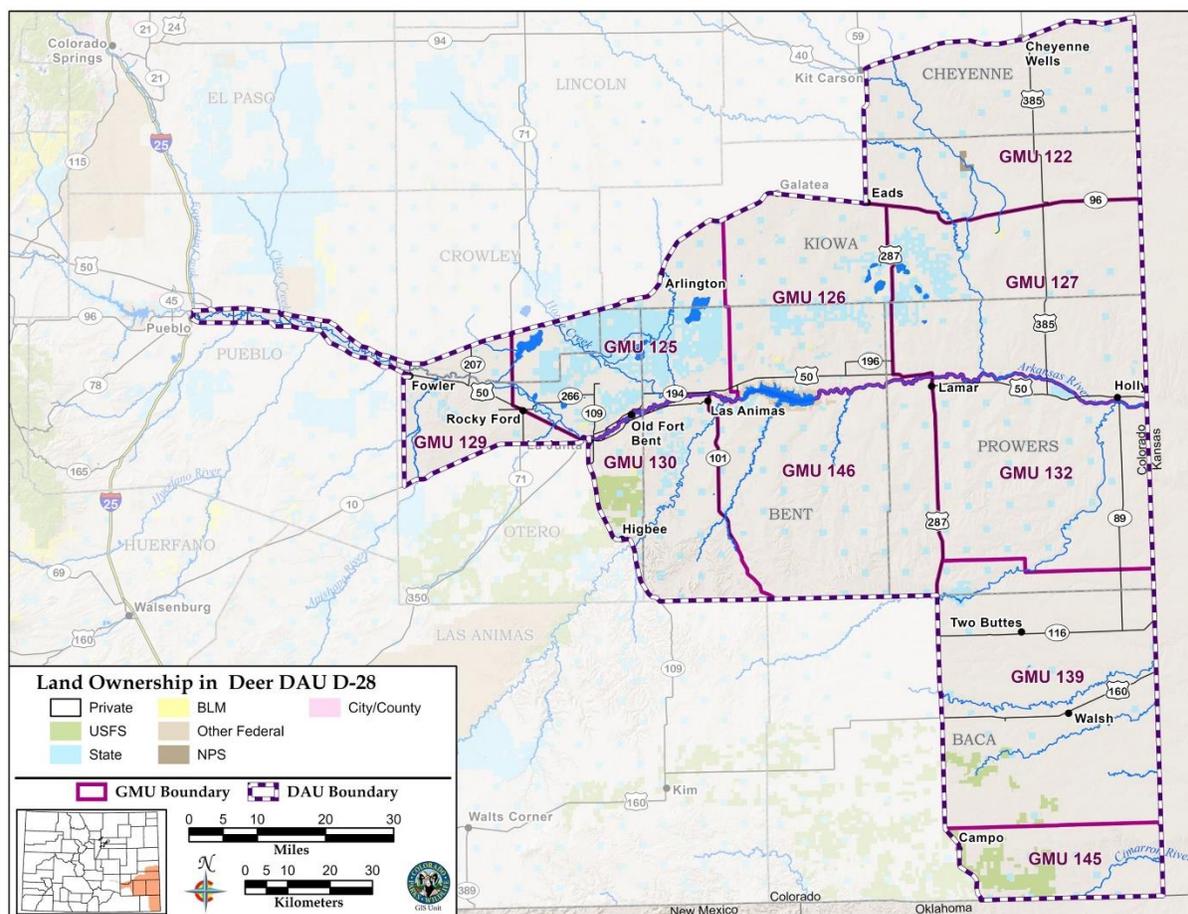


Figure 4. Location and Landownership Map of D-28, Arkansas River, GMUs 122, 125, 126, 127, 129, 130, 132, 139, 145, 146.

DAU Amendments

Prior to the approval of this plan, the Arkansas River Deer D-28 DAU consisted of GMUs 122, 125, 126, 127, 130, 132, 137, 138, 139, and 146. CPW is adjusting the DAU boundaries for D-28 by making the following changes:

- GMUs 137 and 138 are being removed from D-28.
- GMUs 129 and 145 are being added to D-28.
- The boundary of GMU 129 is being extended, annexing the Arkansas River corridor from Highway 71 to Pueblo.

CPW is recommending the realignment of D-28 GMUs' for three primary reasons. The first reason is that CPW would like to establish D-28 as a DAU consisting of GMUs in which annual aerial surveys are conducted in every one of its GMUs. Ideally, models and the resulting management decisions should be based upon data collected from every GMU within a DAU. Aerial survey methods are not suitable for all GMUs. For instance, GMUs 137 and 138 have not been surveyed historically. The deer densities in these GMUs are too low to justify the expense of helicopter flights. In contrast to GMUS 137/138, GMUs 145 and 129 also have not been historically surveyed but are well suited for an aerial survey/modeling approach. Another reason to change D-28 GMUs is the species composition within the DAU. D-28's annual

aerial survey includes all D-28 GMUs except 137 and 138. Of the deer observed on the aerial surveys during the last 10 years, ~75% have been white-tailed deer. In contrast, white-tailed deer are relatively uncommon in GMUs 137 and 138. License setting decisions for GMUs 137/138 have been made, in part, using white-tailed deer-dominated classification data, even though nearly all deer in 137/138 are mule deer. For this reason, GMUs 137/138 aren't a good match for management with other D-28 GMUs. GMUs 145 and 129, in comparison, are composed of more than 50% white-tailed deer, which makes them much better suited for inclusion in D-28.

The third reason is connectivity within the Arkansas River Deer Herd. DAUs are defined as the geographic area that includes the year-round range of a big game herd. A DAU includes the area where most animals in a herd are born, live, and die. The geographic area within the "new" D-28 reflects the year-round range of the Arkansas River Deer Herd. GMUs 137/138 are dominated by mule deer that have more connectivity with the pinion/juniper canyonlands of D-33 than with the cottonwood/tamarisk/sand sagebrush drainages that contain most of the Arkansas River Deer Herd. In contrast, GMU 145 is more connected to D-28 compared to D-33. The deer density in GMU 145 is highest in the eastern half of the GMU, primarily along the Cimarron River. A series of north/south drainages and irrigated farmland ties the Cimarron River deer to the deer found throughout GMU 139. There is likely far more deer movement between GMUs 145/139 than between GMUs 145/144.

CPW is changing GMU 129's boundary to include the Arkansas River corridor from Pueblo to Highway 71. This will establish a GMU that encompasses the whitetail-dominated habitat on both sides of the Arkansas River. By adding the "new" GMU 129 to D-28, the entire population of deer from Pueblo to the KS/CO border will be managed as the Arkansas River Deer Herd. From Pueblo to Kansas, the Arkansas River is an unbroken strip of high-quality habitat with no real impediments to east/west deer movement. Therefore, the deer within the Arkansas River corridor from Pueblo to the Kansas border should be treated as one population.

This plan is for the amended D-28 that contains GMUs: 122, 125, 126, 127, 129, 130, 132, 139, 145, and 146. Over the last few years, CPW has collected age/sex classification data along the Arkansas River from Pueblo to Highway 71 in preparation for this plan and the D-28 boundary change. In 2021, CPW also collected aerial classification data in GMU 145. That data has been incorporated into the population model used for this plan. The model has also been adjusted to include harvest data for GMUs 129/145 and to exclude harvest data for GMUs 137/138. **All of the modeled population estimates, public outreach data, sex/age classification data, and game damage data reported in this plan represent the amended D-28, not the pre-2022 D-28.**

Physiography

The Arkansas River Deer DAU encompasses 7,295 mi². Geography is varied and includes: cedar breaks, canyonlands, short grass prairie, sand sage rangelands, dryland farmlands, irrigated farmlands, ephemeral creeks, arroyos, and the Arkansas River. The DAU's namesake, the Arkansas River, is its primary drainage, but the DAU contains portions of many other drainages that concentrate deer. The DAU's climate is characterized by long, hot summers and mild winters. Temperatures vary from below freezing in winter to well over 100°F in summer. Annual precipitation ranges from 12 to 18 inches, with a high proportion of the precipitation often coming from July-August monsoonal rains.

HABITAT RESOURCES & CAPABILITIES

Land Ownership

The majority of the land in the Arkansas River DAU (89%) is privately owned. The largest public landholder is the State Land Board, owning over 7% of the DAU. Other government agencies manage relatively small proportions of D-28; such as the United States Forest Service (1.6%), the Bureau of Land Management (0.26%), the National Park Service (0.07%), and CPW (0.45%). Between fee title lands, easements, short-term leases, and long-term leases, CPW provides public hunting opportunities on approximately 4.5% of D-28. In total, approximately 6% of the DAU is available for public hunting.

Land Use

Land use (both public and private) is almost exclusively agricultural. Approximately half of the DAU's lands are rangelands used for livestock grazing. Dryland and irrigated farmlands make up the bulk of the other half. Irrigated farmlands are primarily found along the Arkansas River Valley and eastern portions of Baca, Prowers, Kiowa, and Cheyenne Counties. The uplands on the western side of D28 almost exclusively consist of rangelands but are progressively replaced by dryland farmland when going from west to east across the DAU. This results from a precipitation gradient with average annual precipitation increasing from west to east. In most of D28's counties, approximately 25% of the dryland farmland has been enrolled in the Conservation Reserve Program (CRP). CRP is a US Department of Agriculture program that pays farmers to temporarily (10+ year periods) retire their farmland and convert it to mid and tall grass stands.

Land use in the DAU has not changed significantly in recent decades, except for changes due to wind energy development. The DAU currently has four wind farms, and several others planned. Most of the lands within the DAU are currently under some stage of wind energy planning or development.

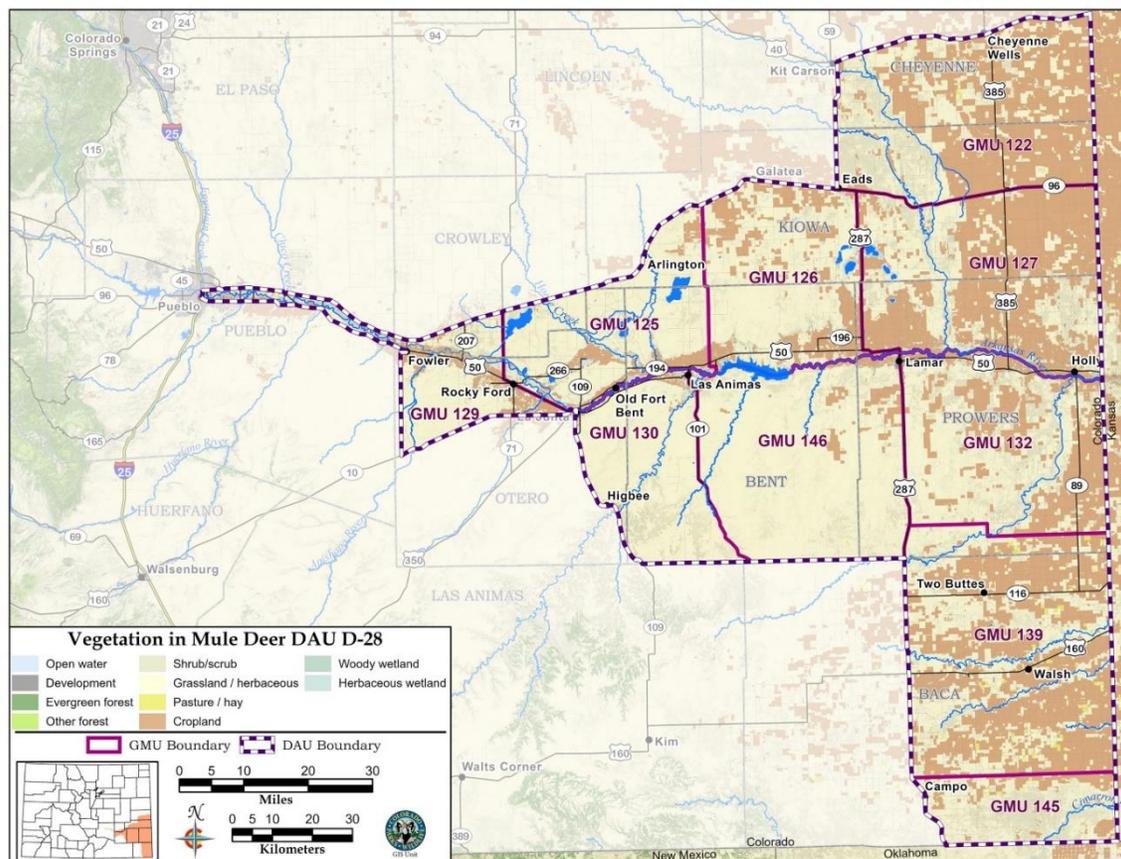


Figure 5. Land cover in the Arkansas River DAU.

Habitat Capability

Most of D-28's deer are found within a relatively small proportion of the DAU's landscape. Shortgrass prairie accounts for approximately 50% of the DAU. Most shortgrass receives relatively little use by deer, especially white-tailed deer. Most white-tailed deer live in drainages that contain tamarisk, cattails, tall weeds, cottonwoods, and/or Russian olive. White-tailed deer densities are especially high in areas where farmland is found in close proximity to such drainages. White-tailed deer can also be found in areas with irrigated farmland, large tracts of CRP, tall or weedy stands of CRP, or tall weed patches around dryland farm ground. As a general rule, the highest densities of white-tailed deer can be found in areas with the highest densities of tamarisk or other tall/dense cover.

Mule deer are found in many of the same areas as white-tailed deer but do not favor areas with thick stands of tamarisk, such as those found along much of the Arkansas River's riparian corridor. Mule deer favor sand sagebrush or CRP uplands that are in close proximity to farmland. Mule deer are also found in pinon/juniper woodlands in GMUs 130 and 146.

Most of the deer in D-28 utilize farmland at least seasonally. With access to crops, food is unlikely to be a limiting factor to 28's population in most years. Drought conditions are common in D-28, limiting food sources in some years and reducing fawn production. In areas with irrigated farmland, deer have access to crops such as corn, alfalfa, milo, and wheat even in the driest years.

The greatest sources of D-28 deer mortality are thought to be human hunters, coyote predation of fawns, and disease. Where deer occur in D-28, they tend to occur in relatively high densities due to limited cover. Cover availability is likely the greatest limiting factor to the D-28 population. The current amount of available cover may be sufficient to support greater densities of deer, but with greater deer densities, the impacts of disease are likely to increase.

Conflicts with Agriculture

Deer commonly cause crop damage throughout D-28, but most damage is relatively minor. Very few landowners experience damage to their crops at levels significant enough to justify filing a damage claim. D-28 averages just 1.9 claims per year, with an average claim amount of \$2,227. Corn and melons are the most common commodities receiving significant damage, with most of the damage occurring in the Rocky Ford and La Junta area (Figure 6). To mitigate damage, CPW issues licenses for dispersal hunts for most damage/claim situations.

Fiscal Year of Claim	Damage	District	Amount
2012/2013	Growing corn (deer)	247- Lamar South	\$2,243.52
2012/2013	Growing corn (deer & elk)	243- Rocky Ford	\$1,524.60
2014/2015	Growing cantaloupe (deer)	243- Rocky Ford	\$2,017.16
2015/2016	Growing watermelon (deer)	242- La Junta	\$708.00
2015/2016	Growing watermelon (deer)	243- Rocky Ford	\$880.24
2015/2016	Growing corn (deer)	243- Rocky Ford	\$889.20
2016/2017	Growing watermelon (deer)	243- Rocky Ford	\$1,279.66
2016/2017	Growing corn (deer)	243- Rocky Ford	\$2,764.80
2016/2017	Growing corn (deer)	242- La Junta	\$1,966.00
2017/2018	Growing watermelon (deer)	243- Rocky Ford	\$956.82
2017/2018	Growing corn (deer)	246- Cheyenne Wells	\$4,653.75
2017/2018	Growing corn (deer & elk)	242- La Junta	\$646.72
2017/2018	Growing corn (deer & elk)	243- Rocky Ford	\$819.72
2018/2019	Growing corn (white-tailed deer)	241- Lamar North	\$14,939.90
2018/2019	Growing watermelon (deer)	243- Rocky Ford	\$1,696.43
2019/2020	Growing corn (deer)	242- La Junta	\$1,126.80
2019/2020	Growing watermelon (deer)	243- Rocky Ford	\$998.46
2019/2020	Growing pumpkins (elk)	243- Rocky Ford	\$226.27
2020/2021	Growing watermelon (deer)	243- Rocky Ford	\$1,980.00
TOTAL			\$36,290.09

Figure 6. Game damage claims from Deer within the Arkansas River Deer DAU (D-28), 2012-2021.

HERD MANAGEMENT HISTORY

Population Inventory Techniques

CPW conducts aerial classification surveys of deer every year in December or January. During the surveys, we classify deer as does, fawns, and bucks, and these data are used to calculate post-hunt age and sex ratios. In D-28, surveys are conducted each year between December 15th and January 1st. The survey is conducted along all of the primary rivers, creeks, and

drainages within D-28.

The most accurate method of estimating population size currently available for this population of deer are computer population models (White and Lubow 2002). The population models incorporate the observed post-hunt age and sex ratios, along with hunter harvest, estimated survival rates of adults and fawns, and wounding loss rates.

Note that the population model used for this plan is specific to the amended D-28. The data used does not include data from GMUs 137/138 and it does include data from GMU 145 and the revised GMU 129. The modeled population estimates, public outreach data, sex/age classification data, harvest/hunter data, and game damage data reported in this plan represent the amended D-28, not the pre-2022 D-28.

Post-Hunt Population Size

The D-28 modeled population estimates for the last 10 years range from 5,000 to 8,000 deer (average of 6,600; Figure 7). The population was at its low of 5,000 deer in 2013, likely due, in part, to an EHD outbreak (see [Disease](#), pg. 14) The population reached its 8,000 deer peak in 2018.

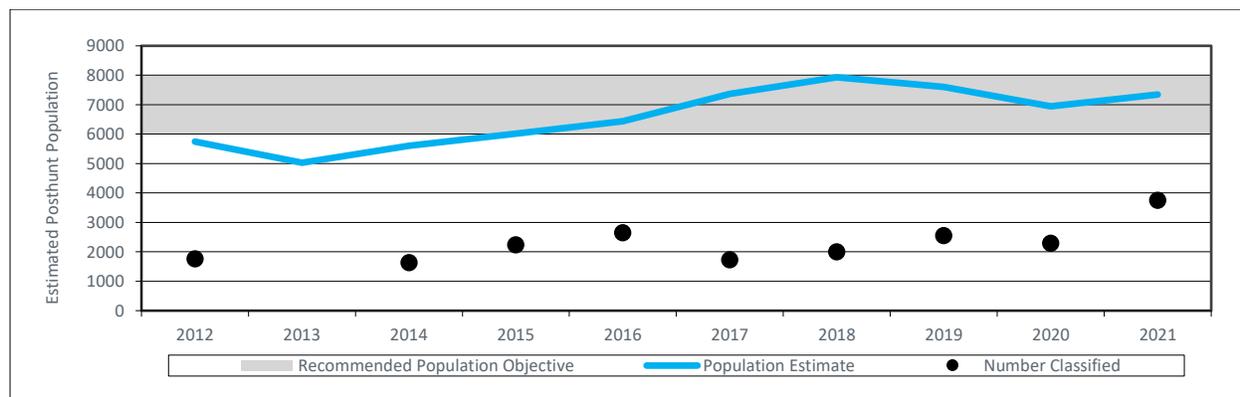


Figure 7. Arkansas River Deer Herd post-hunt population estimates, recommended population objective, and the number of deer classified from 2012-2021.

Post-Hunt Herd Composition

Sex/age classification flights were flown in D-28 each December from 2012 to 2021 with the exception of 2013 (Figures 7, 8). Across those years, post-hunt observed sex ratios have ranged from a low of 29.8 bucks:100 does to a high of 53.3 bucks:100 does (average 41 bucks:100 does). The modeled post-hunt buck:doe ratio from 2012 through 2021 has ranged from 31.8 bucks:100 does to 47.5 bucks:100 does (average 40.8 bucks:100 does). The previous sex ratio objective was 43 bucks:100 does. Due to the results of the 2019 mandatory CWD sampling, in 2020 and 2021 CPW made changes to license quota in order to bring down the buck:doe ratio (see [Disease](#), pg.14). Those changes appear to have worked, bringing the observed 2021 ratio down to 29.8 bucks:100 does.

Across D-28's classification flights, the observed fawn:doe ratios ranged from a low of 18.4 fawns:100 does to a high of 59.5 fawns:100 does. The average across those years was 42.4 fawns:100 does (Figure 8).

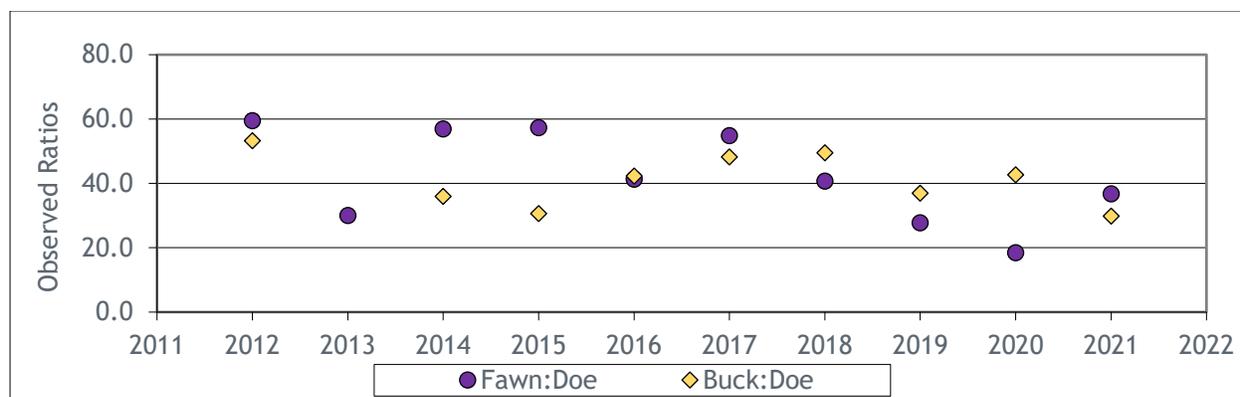


Figure 8. Observed post-hunt sex and age ratios for D-28; 2012 through 2021.

Harvest and Hunters

From 2012 to 2021, license numbers in D-28 have remained relatively stable with around 2,000 deer licenses being issued annually (~1,300 rifle, ~550 archery, ~150 muzzleloader). License quotas were lower in 2014-2016 to manage for the 2012-2013 EHD outbreak (see [Disease](#), pg. 14). From 2012 to 2021 estimated harvest ranged from a low of 637 deer to a high of 971 deer, with an average harvest of 800 deer per year (Figure 9). Most years, the proportion of harvested white-tailed deer vs mule deer is close to 50:50.

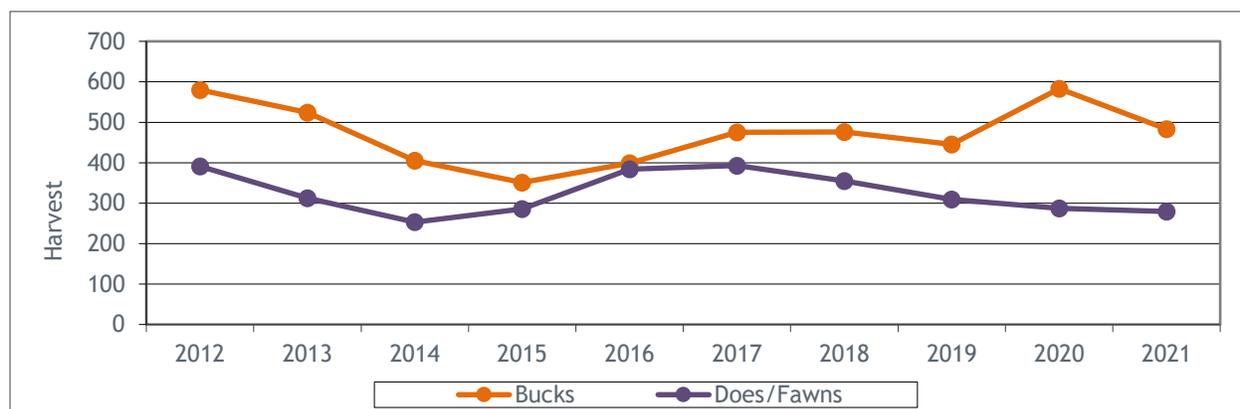


Figure 9. Estimated deer harvest for D-28; 2012 through 2021.

Disease

The two diseases likely having the greatest impact on D-28 deer are Chronic Wasting Disease (CWD) and Epizootic Hemorrhagic Disease (EHD). CWD is an infectious prion disease that affects cervids such as mule deer and white-tailed deer. CWD is always fatal and deer infected with CWD die within 2 years of infection (Miller et al. 2012). D-28's first case of CWD was detected in a white-tailed deer from GMU 127 in 2015. In 2019, a mandatory sampling effort was conducted in D-28. D-28 rifle hunters were asked to submit their deer for testing, and a resulting 500 samples were collected and tested. The results showed CWD positive rates of 9.3% for adult white-tailed bucks and 8.3% for adult mule deer bucks. For both species, D-28's prevalence rate is above the 5% prevalence threshold listed in CPW's Chronic Wasting Disease Response Plan (2018). To bring D-28's prevalence rate below the 5% prevalence threshold, this herd management plan calls for a reduction of the sex ratio objective from the current objective of 43 bucks per 100 does to a ratio of 30-35 bucks per 100 does.

EHD, and to a lesser degree the related Blue Tongue Disease, will cause some level of deer fatalities every year in D-28. In most years, EHD-caused mortality rates are not high enough to have a significant impact on the population. Occasionally though, EHD has greatly affected D-28. In the drought years of 2012 and 2013 for instance, EHD was likely responsible for a sudden and notable decline in D-28's deer population. CPW personnel and landowners documented unusually high numbers of deer carcasses, especially white-tailed deer, near stock tanks, ponds, and creeks during the early falls of 2012 and 2013. Necropsies were conducted on a few of those deer, and EHD was found to be responsible for the deaths. The 2012 and 2014 December aerial survey results showed that EHD likely had had a noticeable impact on the D-28 population. In 2014, due to the evidence of the 2012-2013 EDH outbreak, CPW reduced D-28's license quota to manage the population toward recovery. The population recovered within 3 to 4 years.

PUBLIC INVOLVEMENT

Landowner Solicitation

Landowner input was essential to the drafting of this plan because of the predominance of private lands and the potential for game damage conflicts in D-28. We conducted a mail survey (Appendix A) to understand landowner opinions regarding deer management. In June of 2021, surveys were mailed to 775 randomly selected landowners, which represented ~33% of the DAU's landowners. Only landowners who owned a minimum of a quarter section (160 acres) of land were included in the landowner selection pool. This was done to eliminate owners of smaller residential properties from the list. The questionnaire included eighteen questions and a postage-paid return envelope. CPW received completed surveys from 152 landowners.

Landowners Survey Results

CPW asked landowners eighteen questions covering multiple topics (Appendix A). Of primary concern were landowner opinions regarding how/if they would like to see the population change (question #5), how/if they would like to see sex ratios change (question #6), and concern about game damage (question #11). The survey also included questions concerning other topics: hunter conflict, hunter access on private lands, species composition, species preference, CWD, and the likelihood of deer being found on their land.

When asked to indicate the number of deer they would like to see on their land, relative to the current numbers, the highest percentage of landowners (44%) thought that there should be no change to the current number of deer. A quarter of the landowners responded that they would like to see the population increase. Thirteen percent indicated they would like a decrease in deer numbers. (Question #5, Appendix A).

When asked about their preferred buck:doe ratio (Question #6, Appendix A), the majority of landowners (52%) indicated that they would like to see the buck:doe ratio maintained at its current level. Twelve percent of landowners wanted the buck:doe ratio reduced, and thirty-six percent wanted the ratio increased.

The landowner survey gives some indication of D-28 landowner experience with and sentiment towards deer-caused crop damage. Question #11 (Appendix A) of the landowner survey asked landowners how much deer damage to their crops they had experienced in 2020. Only 4% of respondents had experienced severe deer-caused crop damage, whereas 89% of respondents had experienced little-to-no damage. When asked how they felt about the amount of damage

to their crops, 42% of landowners said they weren't concerned because the level of damage was minor, 45% said the amount of damage was acceptable for having the deer around, and 13% said the amount of damage was too high.

Hunter Solicitation

CPW sought hunter input regarding the Arkansas River population and targeted sex ratio by sending surveys to 550 hunters who had received at least one D-28 rifle, muzzleloader, or archery license for the 2018, 2019, and/or 2020 seasons. We received completed surveys from 153 hunters.

Hunter Survey Results

The hunter survey consisted of twelve questions covering multiple topics (Appendix B). The survey included one question related to population objective and one question related to sex ratio objective. The survey also included questions concerning other topics: perceived changes in deer numbers, concern regarding CWD, species composition and abundance, preferred species, and hunt code groupings.

When asked about the number of deer they would like to see on the land they hunt (Question #4, Appendix B), the highest percentage of hunters (45%) indicated that they wanted an increase in deer numbers, with most of them responding that they wanted deer numbers increased by 50%. Thirty-three percent of hunters wanted deer numbers maintained at their current level, and four percent wanted a reduction in deer numbers.

When asked about their preferred buck:doe ratio (Question #5, Appendix B), the highest percentage of hunters (48%) indicated that they would like to see the buck:doe ratio maintained at its current level. Thirty-one percent of hunters responded that they would like the buck:doe ratio to be increased, eight percent would like to see it decreased, and thirteen percent were unsure whether they would want sex ratios changed.

30-Day Comment Period

In addition to the survey, this draft herd management plan was open for review by the public for a 30-day comment period. It was posted 07/21/2022 on the CPW website at: <http://cpw.state.co.us/hmp> . A press release was issued by CPW on 7/20/2022 (Appendix C). Copies of this plan were sent to the Colorado Cattleman's Association, State Land Board district managers for Districts 6, 15, and 8, the Comanche National Grassland District Ranger and Biologist, and the county commissioners for Baca, Las Animas, Otero, Bent, Prowers, Crowley, Pueblo, Kiowa, and Cheyenne Counties. Comments from the 30-day comment period will be found in Appendix D.

MANAGEMENT ALTERNATIVES

Population Objective

The population objective sets the targeted overall number of deer, regardless of sex or age class. CPW manages population size generally by adjusting the number of doe licenses because long-term trends in population size are largely driven by doe survival rates; however, the amount of buck harvest can still contribute to changes in population size on a shorter timescale.

D-28's estimated 2021 post-hunt population estimate is 7,400 deer. This population estimate is for the "new" D-28 with an adjusted boundary that includes GMUs 129/145 and excludes GMUs 137/138. The previous Arkansas River Deer DAU, which included GMUs 122, 125, 126, 127, 130, 132, 137, 138, 139, and 146, had a population objective of 3,600 deer.

Population Objective Alternatives

Preferred Alternative: 6,000-8,000 deer: This alternative would maintain the population at the level observed in recent years. Landowner survey results suggest that this is the preferred alternative by the majority of landowners in D-28.

Alternative 2: 9,000-12,000 deer: The hunter survey suggests that the majority of hunters would prefer this alternative. Most hunter survey respondents indicated that they would like to see a 50% increase in the D-28 population. This population increase would likely result in increased levels of game damage and higher CWD prevalence rates. To achieve this objective, doe hunting opportunity must be significantly reduced.

Alternative 3: 3,100-4,100 deer (status quo): This alternative represents a 51% decrease to the current population. This alternative is not supported by landowners or hunters.

Sex Ratio Alternatives

Preferred Alternative 1: 30-35 bucks per 100 does: This alternative represents a decrease from the previous objective. We are recommending this objective to try to reduce CWD prevalence rates in accordance with CPW's Chronic Wasting Disease Response Plan. In other DAUs in Colorado, a moderate sex ratio range of 30-35 has been shown to offer ample buck hunting opportunity and keep CWD prevalence rates relatively low. This alternative would increase buck hunting opportunity, but would reduce the numbers of mature bucks available to hunters.

Alternative 2: 37-49 bucks per 100 does (status quo). The majority of surveyed landowners and hunters indicated preference to maintain buck:doe ratios at their current level. This alternative would likely result in CWD prevalence rates being maintained above the 5% threshold listed in the CWD Response Plan and may cause prevalence rates to continue to increase. Under this alternative, there may be more mature bucks available to hunters, but buck licenses would have to be reduced below their current levels, limiting buck hunting opportunity.

Strategies to Achieve Herd Management Objectives

- **Population Objective:** CPW has been managing D-28's population within the recommended population objective for the last eight years. CPW's population management strategy is to maintain license numbers at or near the levels they've been set in recent years.
- **Sex Ratio Objective:** In 2021, CPW was able to bring D-28's sex ratio down to within the preferred objective range of 30-35 bucks per 100 does. CPW achieved this by increasing the buck license quota. CPW's sex ratio management strategy is to maintain buck license numbers at levels high enough to keep the sex ratio within the objective range.

Strategies for Addressing Management Concerns

- **Game Damage:** Deer commonly cause crop damage throughout D-28, but most damage is relatively minor. Very few landowners experience damage to their crops at levels significant enough to justify filing a damage claim. CPW's game damage strategy is to keep damage at its current low levels by maintaining the deer population at its current level. CPW will continue to work with landowners to mitigate damage through the use of dispersal hunts and hazing techniques.
- **Chronic Wasting Disease:** In an attempt to bring D-28's prevalence rate below the 5% prevalence threshold, this herd management plan calls for a reduction of the sex ratio objective from the current objective of 43 bucks per 100 does to a ratio of 30-35 bucks per 100 does.
- **DAU Amendments:** CPW is recommending the realignment of D-28 GMUs' for three primary reasons. #1:CPW would like to establish D-28 as a DAU consisting of GMUs in which annual aerial surveys are conducted in every one of its GMUs. #2: CPW would like to establish D-28 as a DAU with GMUs that consist of similar ratios of white-tailed deer to mule deer. #3: CPW would like to establish a DAU that better defines the year-round range of the Arkansas River Deer Herd. CPW is adjusting the DAU boundaries for D-28 by making the following changes:
 - GMUs 137 and 138 are being removed from D-28.
 - GMUs 129 and 145 are being added to D-28.
 - The boundary of GMU 129 is being extended, annexing the Arkansas River corridor from Highway 71 to Pueblo. *(This change is pending PWC approval. This plan and the recommended GMU boundary change will simultaneously go through the PWC approval process.)*

APPENDIX A: Landowner Survey with Results

Dear Landowner / Operator,

As a landowner and/or agricultural producer, you are important to the conservation of Colorado's deer herds. To better understand opinions of landowners and agricultural producers about deer management in Southeastern Colorado, you have been randomly selected to complete the attached questionnaire. As only a sample of landowners/ operators were selected for this survey, your response is important. Colorado Parks and Wildlife plans to emphasize landowner input in deer management decisions. Please take a few minutes to fill out this short survey and return it in the enclosed postage-paid envelope.

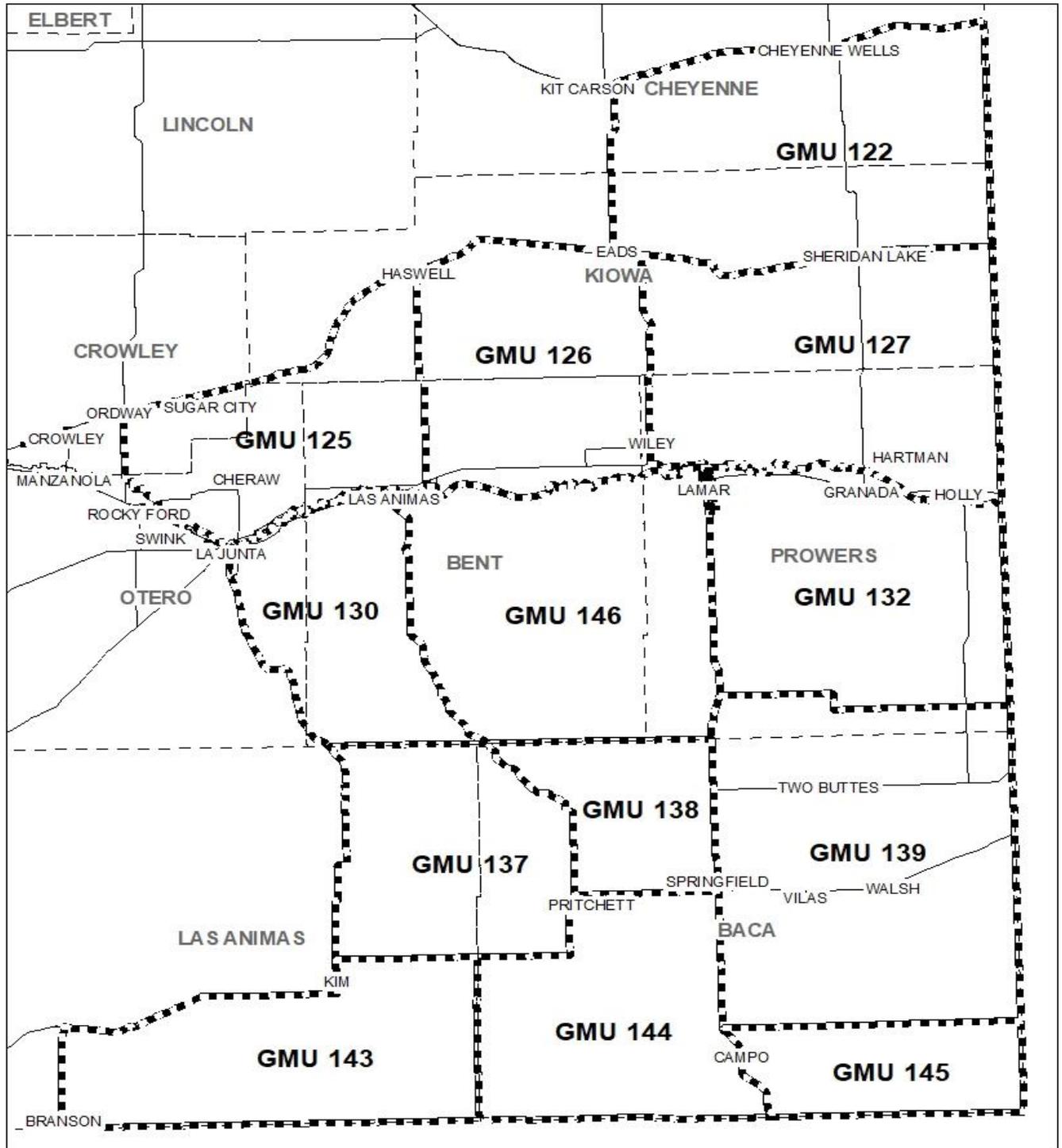
Thank you for your participation. All data gathered will remain confidential and at no time will your name be associated with any of your responses. If you have any questions about this survey, please contact me at 719-691-9130 or jonathan.reitz@state.co.us

Sincerely,

A handwritten signature in black ink, appearing to read "Jonathan Reitz". The signature is stylized with a large, looping flourish at the end.

Jonathan Reitz
Wildlife Biologist
Colorado Parks and Wildlife

Game Management Units

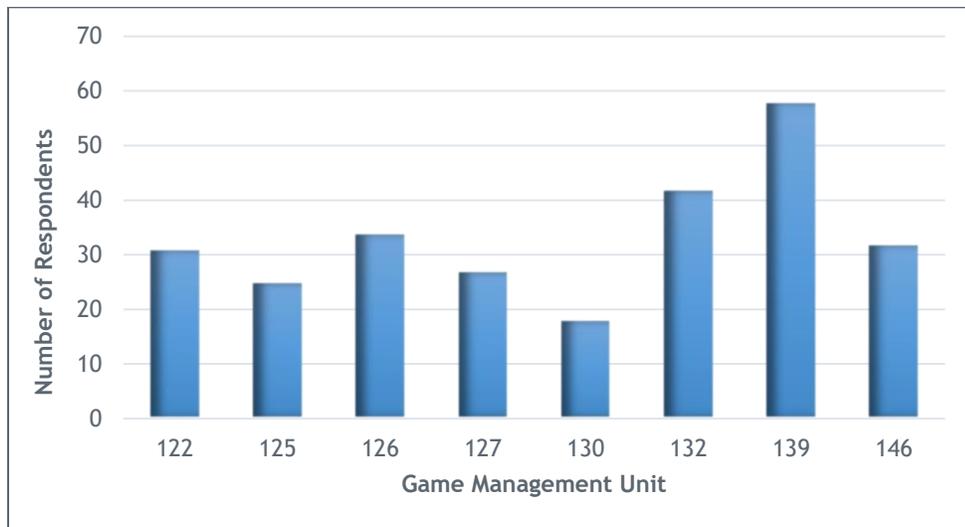


Please complete the following questions regarding your acreage in eastern Colorado.

1. Which of the following Game Management Units do you own at least 80 acres of land within?

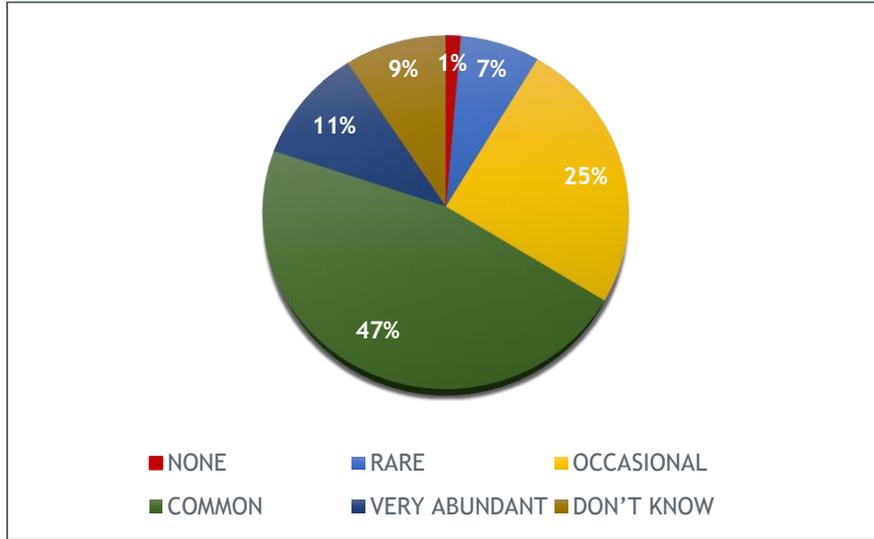
(Check all that apply; refer to the map on pg.2)

- I do not own 80 acres of property in any of the following Game Management Units.
- GMU 122
- GMU 125
- GMU 126
- GMU 127
- GMU 130
- GMU 132
- GMU 137
- GMU 138
- GMU 139
- GMU 143
- GMU 144
- GMU 145
- GMU 146



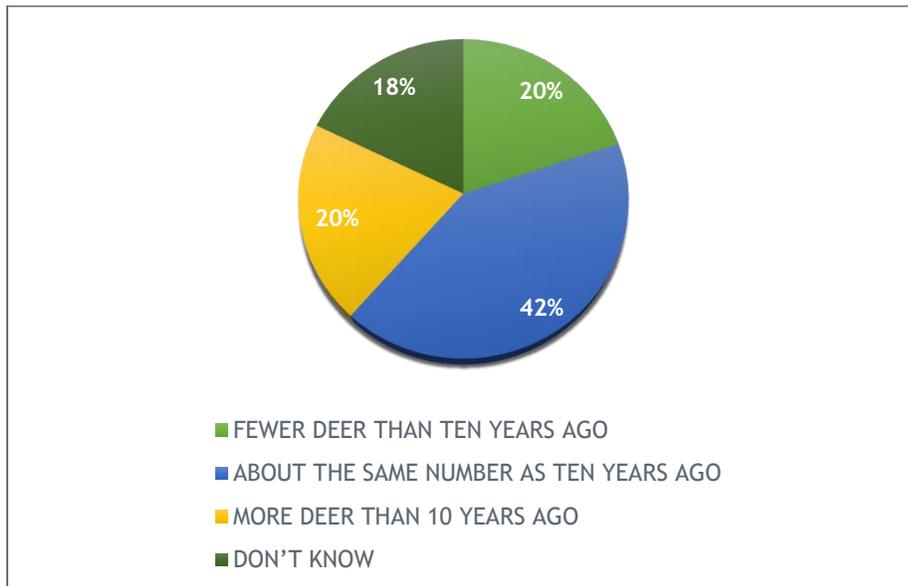
2. How abundant (in an average year) are mule deer and/or white-tailed deer on your land?

- NONE
- RARE
- OCCASIONAL
- COMMON
- VERY ABUNDANT
- DON'T KNOW



3. Over the last 10 years, what trend have you seen in the overall deer population on your land?

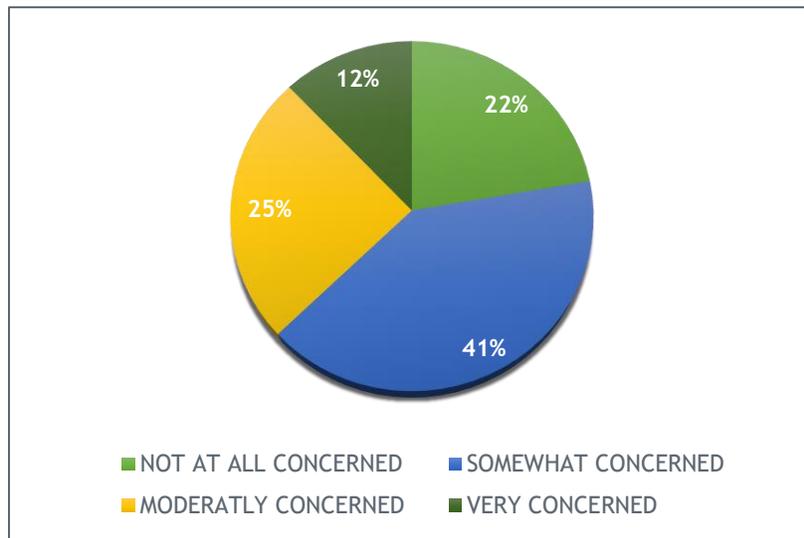
- FEWER DEER THAN TEN YEARS AGO
- ABOUT THE SAME NUMBER AS 10 YEARS AGO
- MORE DEER THAN 10 YEARS AGO
- DON'T KNOW



4. **Chronic Wasting Disease (CWD)** is a disease of deer and elk that causes behavioral changes and progressive loss of body condition, eventually leading to death. There is no known treatment of the disease. In 2019 and/or 2020, mandatory sampling of hunter harvested deer was conducted in all of the Game Management Units shown on pg. 2. In GMUs along the Arkansas River Valley, 9.3% of mature whitetail bucks and 8.3% of mature mule deer bucks tested positive for CWD. No CWD was detected in the GMUs along the CO/New Mexico and CO/Oklahoma border. Evidence shows that high deer densities and a higher proportion of adult males in a population leads to higher disease prevalence rates. Maintaining a low density and younger age herd with fewer mature bucks may result in lower CWD rates in a population.

Please check the box that corresponds with your level of concern regarding impacts that CWD may have on the deer population on your land.

- NOT AT ALL CONCERNED
- SOMEWHAT CONCERNED
- MODERATLEY CONCERNED
- VERY CONCERNED



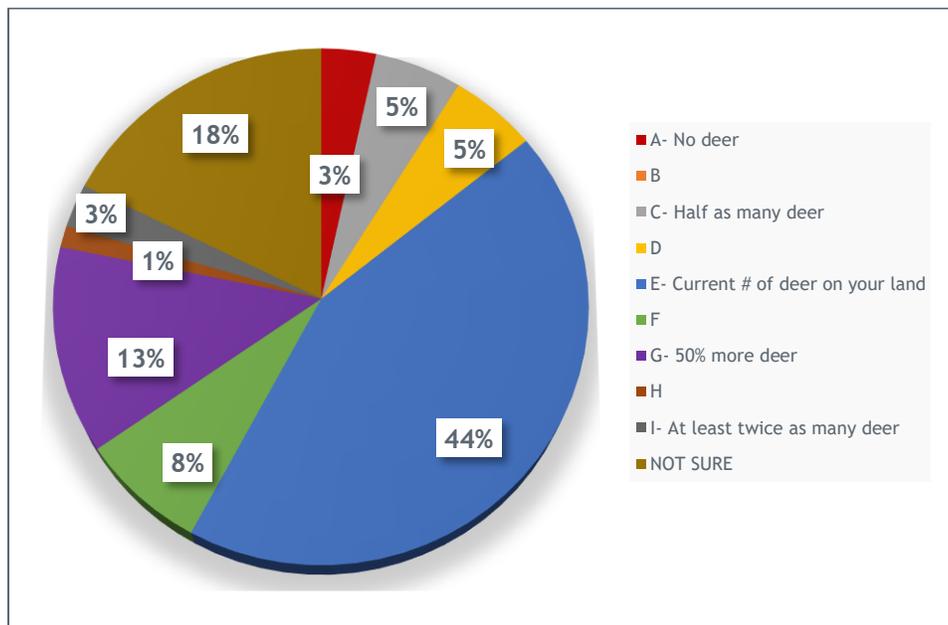
5. **DEER POPULATION:** An increase in deer numbers may result in an increase in damage caused by deer and will mean that more hunting licenses will need to be issued to manage deer numbers. Conversely, a reduction in deer numbers will ultimately result in fewer deer hunting licenses and more difficulty drawing deer hunting licenses. The letter E below represents the number of mule deer and/or white-tailed deer on and nearby your land in 2020. **Select a letter (A through I) to indicate the number of deer you would like to see on your land and in the surrounding area.**

A	B	C	D	E	F	G	H	I
no deer		Half as many deer		Current number of deer on your land		50% more deer		At least twice as many deer
Fewer deer				More deer				

Circle one letter below for your reasonable goal or check the statement below the letters.

A B C D E F G H I

OR I AM NOT SURE HOW MANY DEER WOULD BE A REASONABLE GOAL.



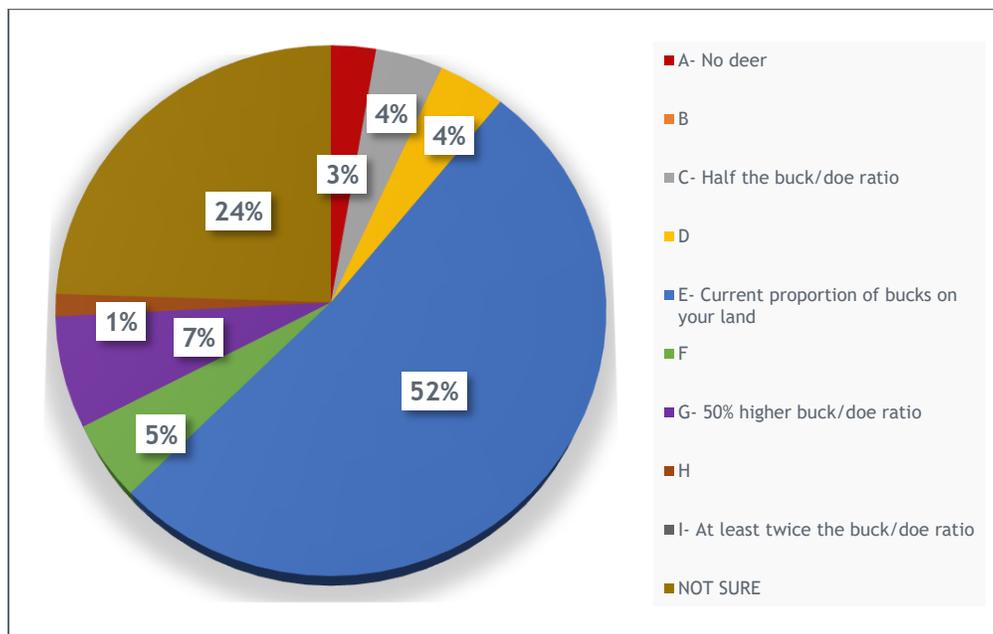
6. BUCK/DOE RATIO: The buck/doe ratio is the proportion of bucks relative to does in the deer population. In general, an increase in the buck/doe ratio may require a decrease in the number of buck hunting licenses, which could make buck licenses more difficult to draw. Conversely, a decrease in the buck/doe ratio may require an increase in buck hunting licenses, which could make buck licenses easier to draw. Also, a decrease in the buck/doe ratio is likely to result in lower CWD prevalence in the population, which would likely result in a healthier and more sustainable deer population. **Select a letter (A through I) to indicate the buck/doe ratio you think would be a reasonable goal to work towards for the deer population on your land.**

A	B	C	D	E	F	G	H	I
no deer		Half the buck/doe ratio		Current proportion of bucks on your land		50% higher buck/doe ratio		At least twice the buck/doe ratio
Fewer bucks				More bucks				

Circle one letter below for your reasonable goal or check the statement below the letters.

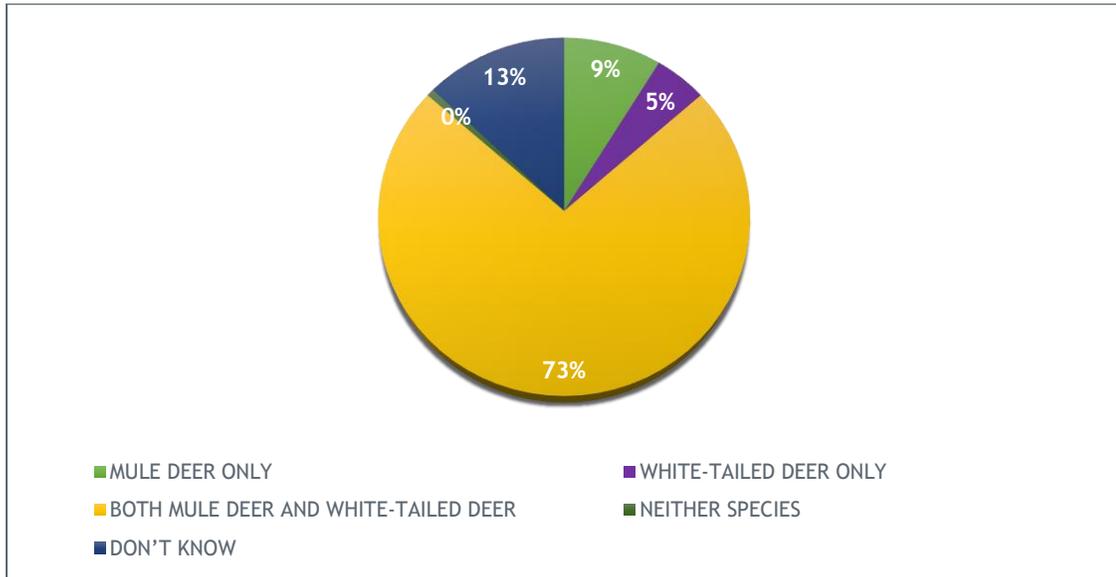
A B C D E F G H I

OR I AM NOT SURE WHAT BUCK/DOE RATIO ON MY LAND WOULD BE A REASONABLE GOAL.



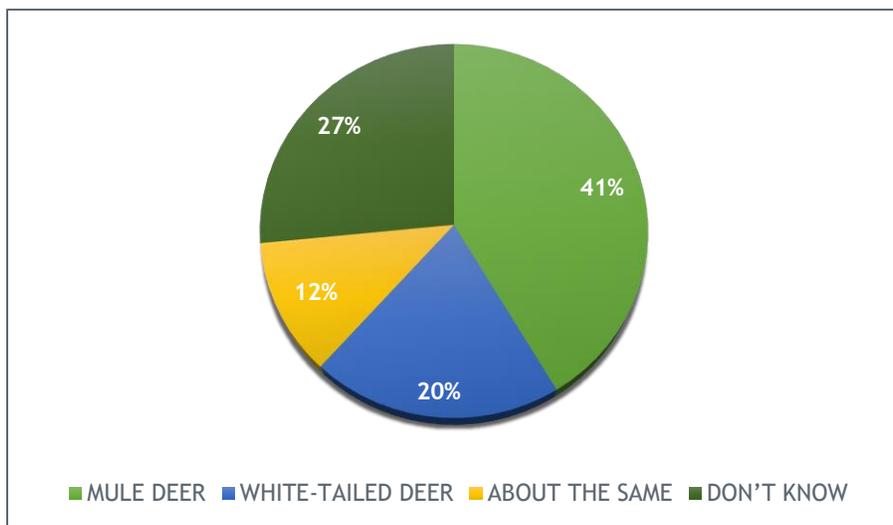
7. Which species of deer use your land?

- MULE DEER ONLY
- WHITE-TAILED DEER ONLY
- BOTH MULE AND WHITE-TAILED DEER
- NEITHER SPECIES
- DON'T KNOW



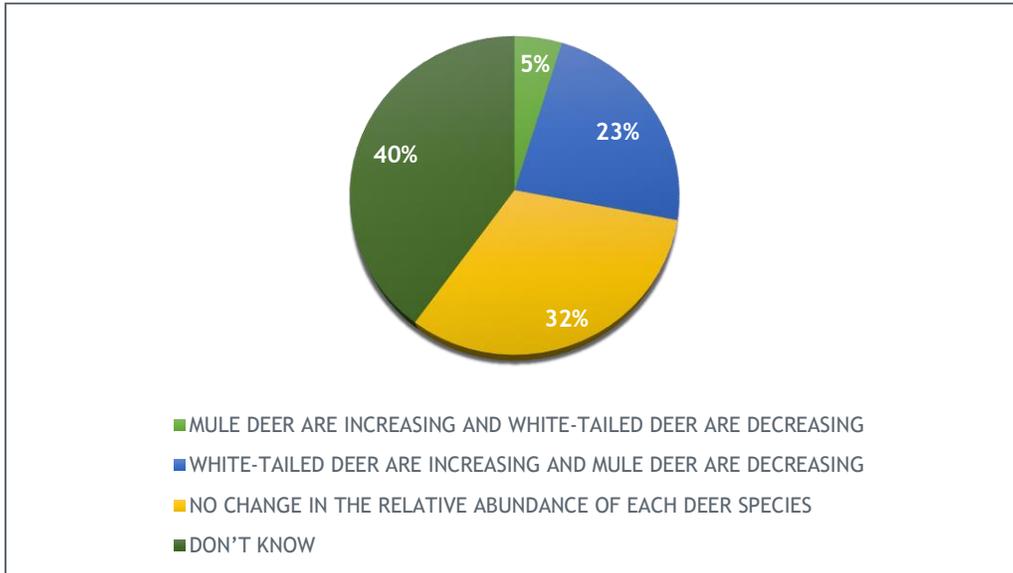
8. If both mule and white-tailed deer use your land, which species is most abundant? (leave blank if only one species is found on your land)

- MULE DEER
- WHITE-TAILED DEER
- ABOUT THE SAME (50:50)
- DON'T KNOW



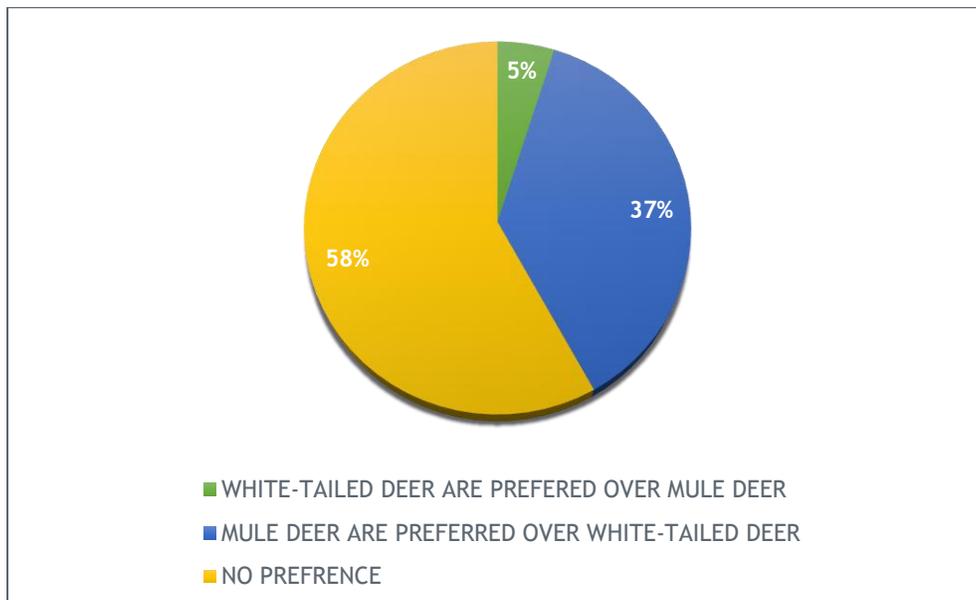
9. If both mule and white-tailed deer use your land, has the relative abundance of each species changed in the last 10 years? (leave blank if only one species is found on your land)

- MULE DEER ARE INCREASING and WHITE-TAILED DEER ARE DECREASING
- WHITE-TAILED DEER ARE INCREASING and MULE DEER ARE DECREASING
- NO CHANGE IN THE RELATIVE ABUNDANCE OF EACH DEER SPECIES
- DON'T KNOW



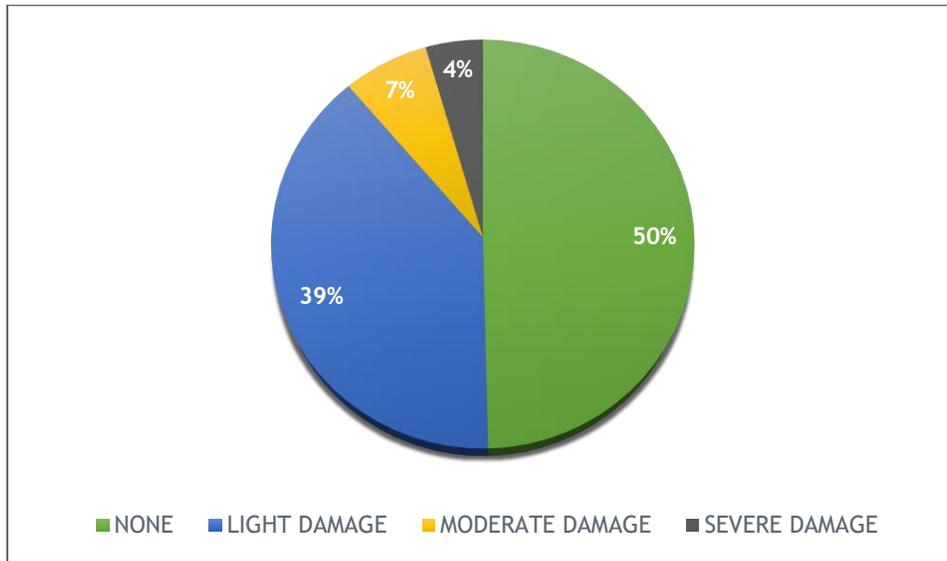
10. Do you have a preference for one deer species over another?

- WHITE-TAILED DEER ARE PREFERRED OVER MULE DEER
- MULE DEER ARE PREFERRED OVER WHITE-TAILED DEER
- NO PREFERENCE



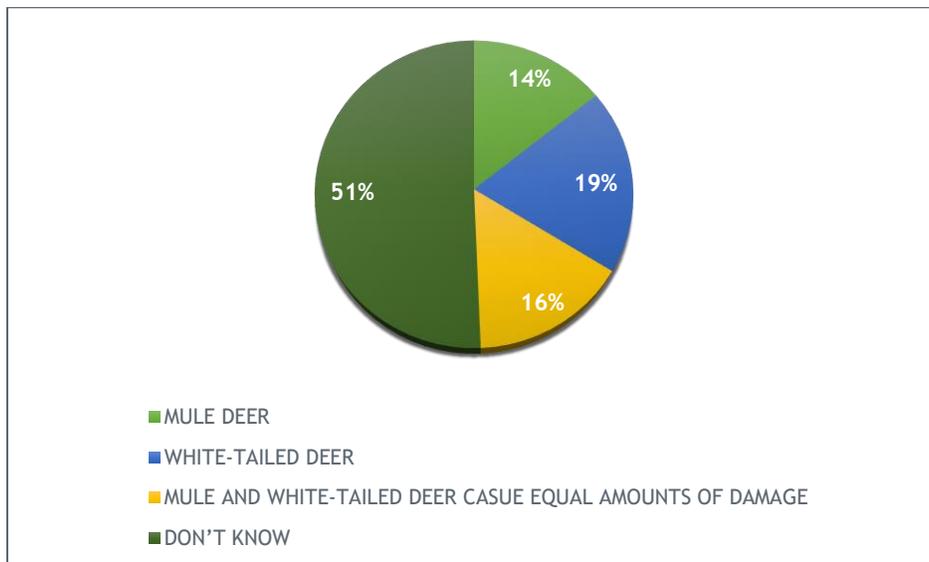
11. How much deer depredation/damage to your crops or other property did you experience in 2020?

- NONE : skip to Question # 14
- LIGHT DAMAGE
- MODERATE DAMAGE
- SEVERE DAMAGE



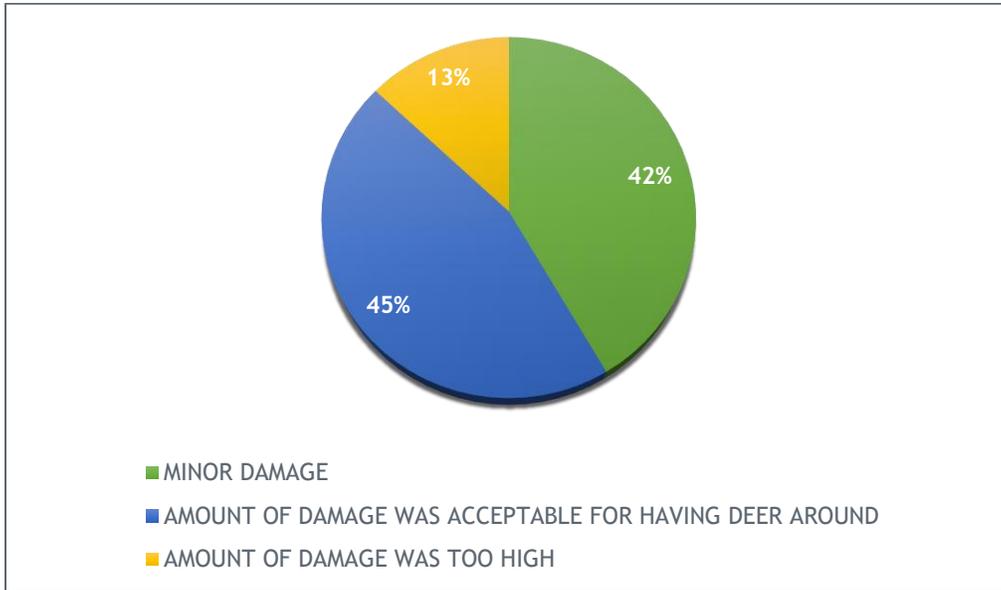
12. Which deer species caused the most damage?

- MULE DEER
- WHITE-TAILED DEER
- MULE AND WHITE-TAILED DEER CAUSE EQUAL AMOUNTS OF DAMAGE
- DON'T KNOW



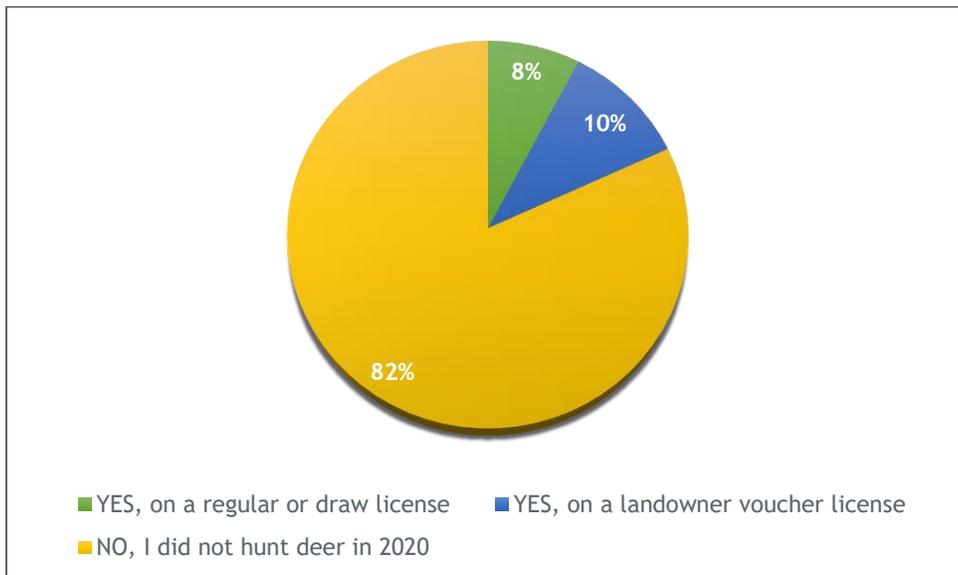
13. How do you feel about the amount of depredation/damage to your crops in 2020?

- MINOR DAMAGE
- AMOUNT OF DAMAGE WAS ACCEPTABLE FOR HAVING DEER AROUND
- AMOUNT OF DAMAGE WAS TOO HIGH



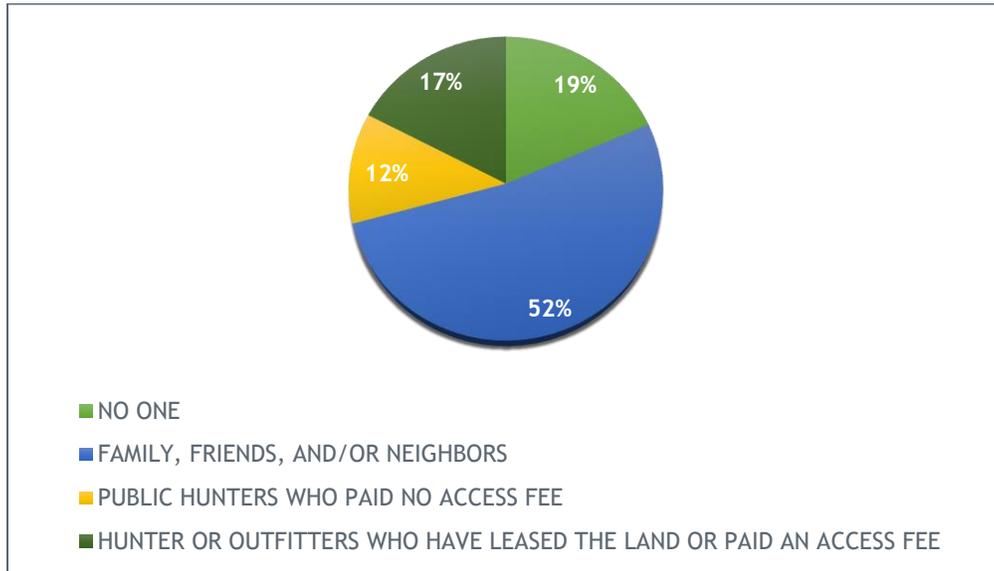
14. Did you hunt for deer during the 2020 season?

- YES, on a regular or draw license
- YES, on a landowner voucher license
- NO, I did not hunt deer in 2020



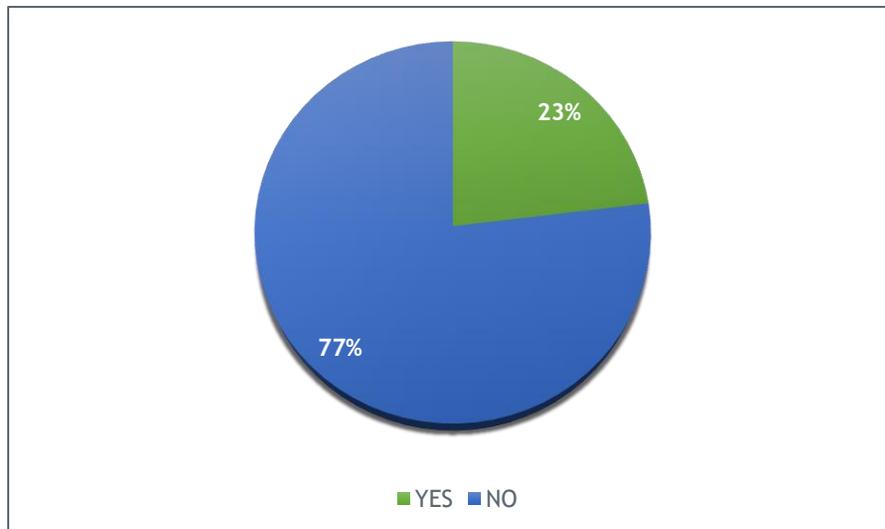
15. Whom did you allow to hunt deer on land you control in 2020? (Check all that apply)

- NO ONE
- FAMILY, FRIENDS, AND/OR NEIGHBORS
- PUBLIC HUNTERS WHO PAID NO ACCESS FEE
- HUNTERS OR OUTFITTERS WHO HAVE LEASED THE LAND OR PAID AN ACCESS FEE



16. During 2020, did you have any problems with deer hunters on your land?

- YES
- NO



17. Rate the level to which you experienced these problems with deer hunters in 2020. (✓one box per row)

	NO PROBLEMS	MINOR PROBLEMS	MODERATE PROBLEMS	MAJOR PROBLEMS	NOT SURE
A. TOO MANY Hunters asking for permission to hunt	<input type="checkbox"/>				
b. TRESPASS by deer hunters on your property	<input type="checkbox"/>				
c. DAMAGE to your property by deer hunters	<input type="checkbox"/>				
d. RUDE CONDUCT by deer hunters on your property	<input type="checkbox"/>				
e. OTHER problems with deer hunters on your property	<input type="checkbox"/>				

SPECIFY: _____

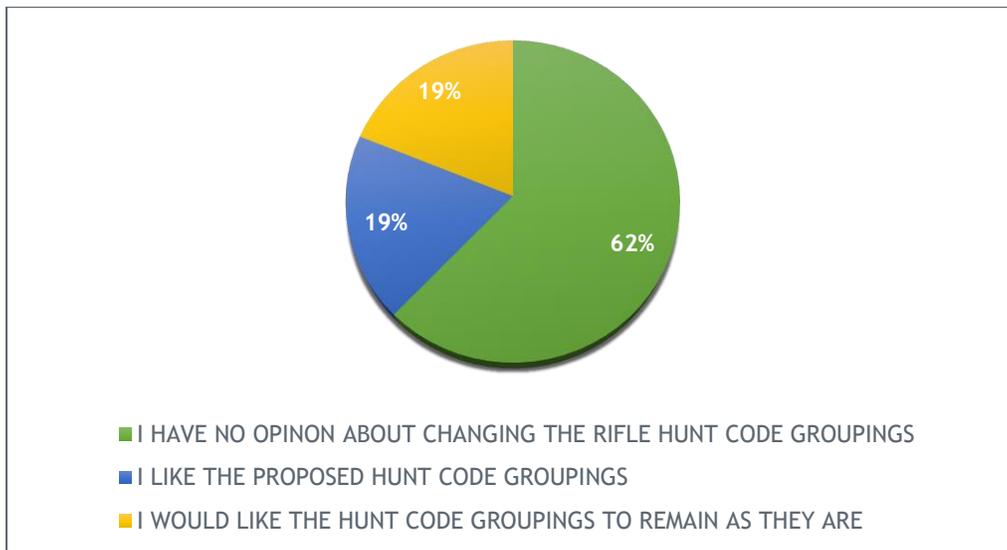


18. CPW often combines Game Management Units into hunt code groupings. This gives a deer hunter the ability to hunt any GMU within the hunt code grouping listed on their license. CPW is considering changing the RIFLE hunt code groupings for the GMUs shown on pg. 2. This would reduce complexity for hunters and CPW staff, offer more opportunity to hunters, and reduce the number of private properties split into more than one hunt code grouping. This would also improve population management by combing GMUs with shared and/or similar habitats. The proposed hunt code groupings would likely result in minor changes to the probability of drawing licenses for specific areas. The proposed hunt code groupings for the RIFLE SEASONS are listed here:

- GMUs 122, 127, and 132
- GMUs 126 and 146
- GMUs 125 and 130
- GMUs 137, 138, 143, and 144
- GMUs 139 and 145

Select the option that best describes your opinion regarding the proposed changes to hunt code groupings.

- I HAVE NO OPINION ABOUT CHANGING THE RIFLE HUNT CODE GROUPINGS
- I LIKE THE PROPOSED HUNT CODE GROUPINGS
- I WOULD LIKE THE HUNT CODE GROUPINGS TO REMAIN AS THEY CURRENTLY ARE



Thank you for completing this survey.

If you have comments about deer hunting in Colorado, please write them on the back of this survey or email them to: jonathan.reitz@state.co.us

Please return your survey in the envelope provided. If you misplaced your envelope, you can return the survey to: Jonathan Reitz, Colorado Parks and Wildlife, 2500 S. Main St., Lamar, CO 81052

APPENDIX B: Hunter Survey with Results

Dear Hunter,

As a hunter, you are important to the conservation of Colorado's deer herds. To better understand opinions of hunters about deer management in Southeastern Colorado, you have been randomly selected to complete the attached questionnaire. As only a sample of hunters were selected for this survey, your response is important. Colorado Parks and Wildlife plans to emphasize hunter input in deer management decisions. Please take a few minutes to fill out this short survey and return it in the enclosed postage-paid envelope. Please note that all of the survey questions are only in regards to deer and deer hunting in the Game Management Units shown on pg. 2.

Thank you for your participation. All data gathered will remain confidential and at no time will your name be associated with any of your responses. If you have any questions about this survey, please contact me at 719-691-9130 or jonathan.reitz@state.co.us

Sincerely,

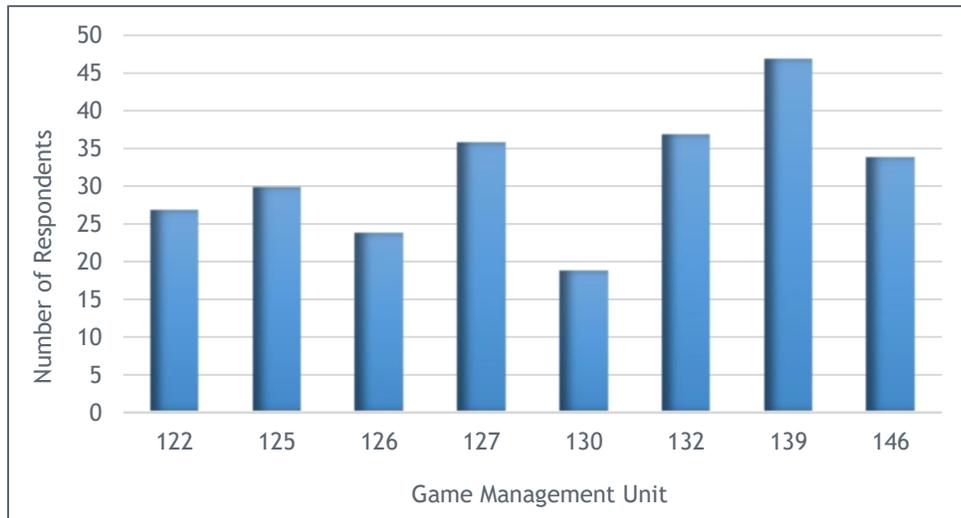
A handwritten signature in black ink, appearing to read "Jonathan Reitz". The signature is fluid and cursive, with a large loop at the end.

Jonathan Reitz
Wildlife Biologist
Colorado Parks and Wildlife

Please complete the following questions regarding the GMU(s) shown on pg. 2 that you hunt.

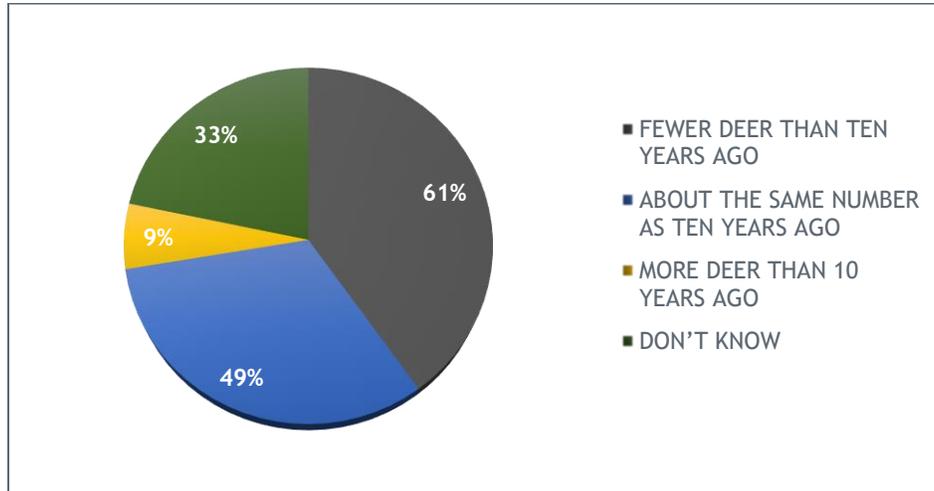
1. Which of the following Game Management Units did you hunt deer in from 2018-2020? (Check all that apply; refer to the map on pg.2)

- I do not hunt in any of the following Game Management Units.
- GMU 122
- GMU 125
- GMU 126
- GMU 127
- GMU 130
- GMU 132
- GMU 137
- GMU 138
- GMU 139
- GMU 143
- GMU 144
- GMU 145
- GMU 146



2. **Over the last 10 years, what trend have you seen in the overall deer population where you hunt?**

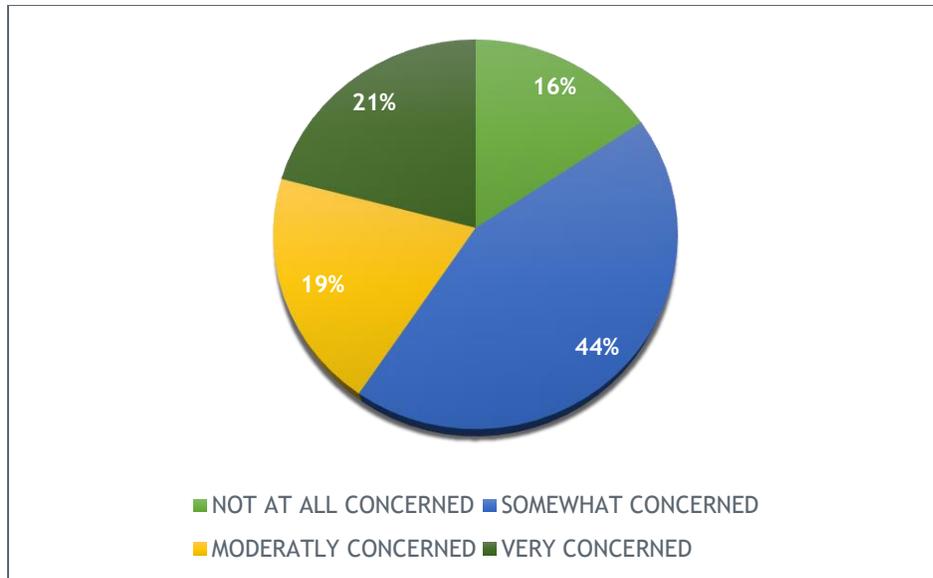
- FEWER DEER THAN TEN YEARS AGO
- ABOUT THE SAME NUMBER AS TEN YEARS AGO
- MORE DEER THAN 10 YEARS AGO
- DON'T KNOW



3. **Chronic Wasting Disease (CWD)** is a disease of deer and elk that causes behavioral changes and progressive loss of body condition, eventually leading to death. There is no known treatment of the disease. In 2019 and/or 2020, mandatory sampling of hunter harvested deer was conducted in all of the Game Management Units shown on pg. 2. In GMUs along the Arkansas River Valley, 9.3% of mature whitetail bucks and 8.3% of mature mule deer bucks tested positive for CWD. No CWD was detected in the GMUs along the CO/New Mexico and CO/Oklahoma border. Evidence shows that high deer densities and a higher proportion of adult males in a population leads to higher disease prevalence rates. Maintaining a low density and younger age herd with fewer mature bucks may result in lower CWD rates in a population.

Please check the box that corresponds with your level of concern regarding impacts that CWD may have on the deer population in the area you hunt.

- NOT AT ALL CONCERNED
- SOMEWHAT CONCERNED
- MODERATLEY CONCERNED
- VERY CONCERNED



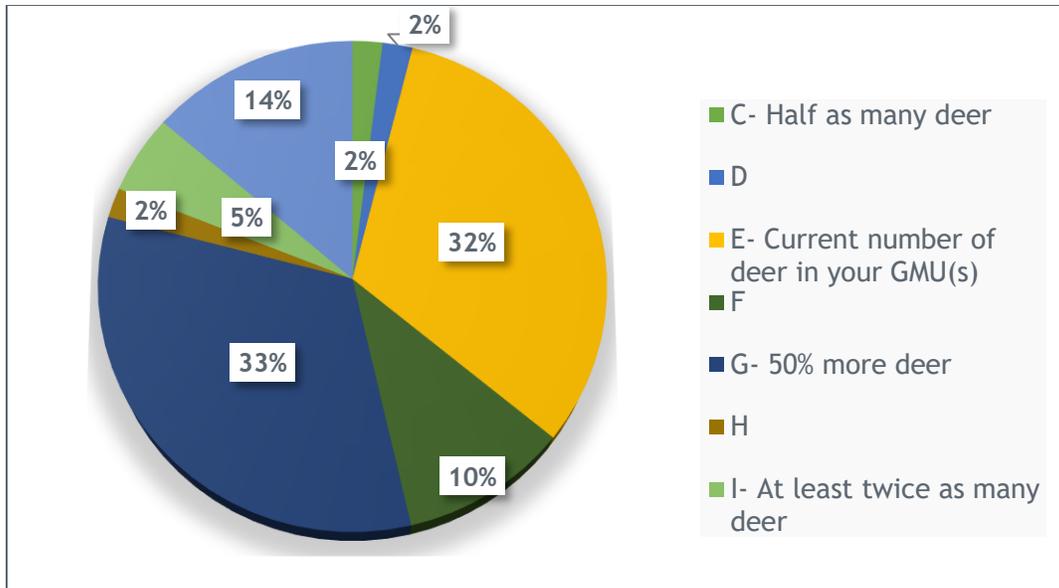
4. **DEER POPULATION:** An increase in deer numbers may result in an increase in damage caused by deer and will mean that more hunting licenses will need to be issued to manage deer numbers. Conversely, a reduction in deer numbers will ultimately result in fewer deer hunting licenses and more difficulty drawing deer hunting licenses. The letter E below represents the number of mule deer and/or white-tailed deer in the area(s) where you hunt. **Select a letter (A through I) to indicate the number of deer you would like to see in the area you hunt.** (only consider GMUs shown on pg. 2)

A	B	C	D	E	F	G	H	I	
no deer		Half as many deer		Current number of deer in your GMU(s)		50% more deer		At least twice as many deer	
Fewer deer						More deer			

Circle one letter below for your reasonable goal or check the statement below the letters.

A B C D E F G H I

OR I AM NOT SURE HOW MANY DEER WOULD BE A REASONABLE GOAL.



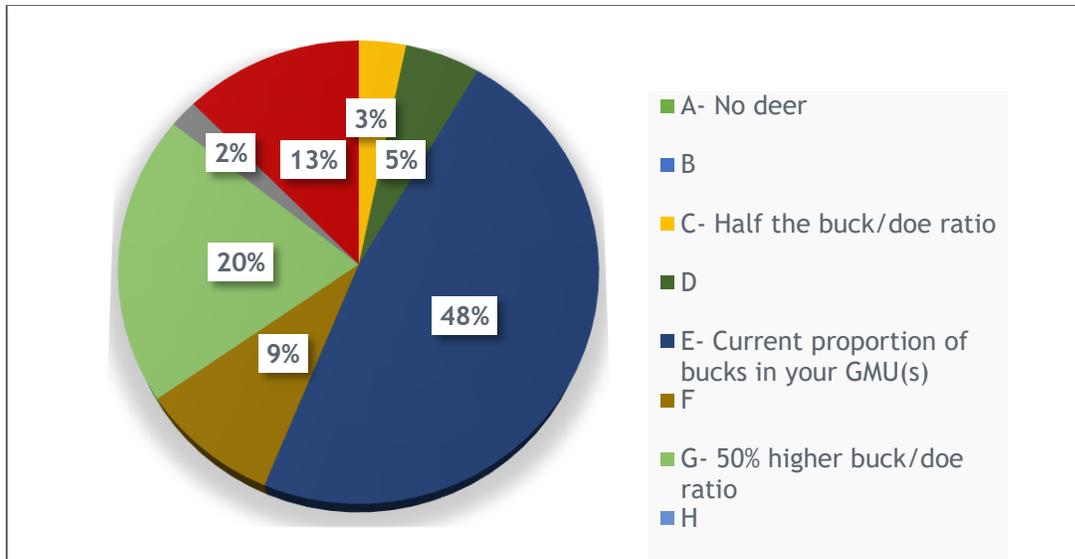
5. BUCK/DOE RATIO: The buck/doe ratio is the proportion of bucks relative to does in the deer population. In general, an increase in the buck/doe ratio may require a decrease in the number of buck hunting licenses, which could make buck licenses more difficult to draw. Conversely, a decrease in the buck/doe ratio may require an increase in buck hunting licenses, which could make buck licenses easier to draw. Also, a decrease in the buck/doe ratio is likely to result in lower CWD prevalence in the population, which would likely result in a healthier and more sustainable deer population. **Select a letter (A through I) to indicate the buck/doe ratio you think would be a reasonable goal to work towards for the deer population in the Southeast Colorado GMU(s) that you hunt.**

A	B	C	D	E	F	G	H	I
no deer		Half the buck/doe ratio		Current proportion of bucks in your GMU(s)		50% higher buck/doe ratio		At least twice the buck/doe ratio
Fewer bucks				More bucks				

Circle one letter below for your reasonable goal or check the statement below the letters.

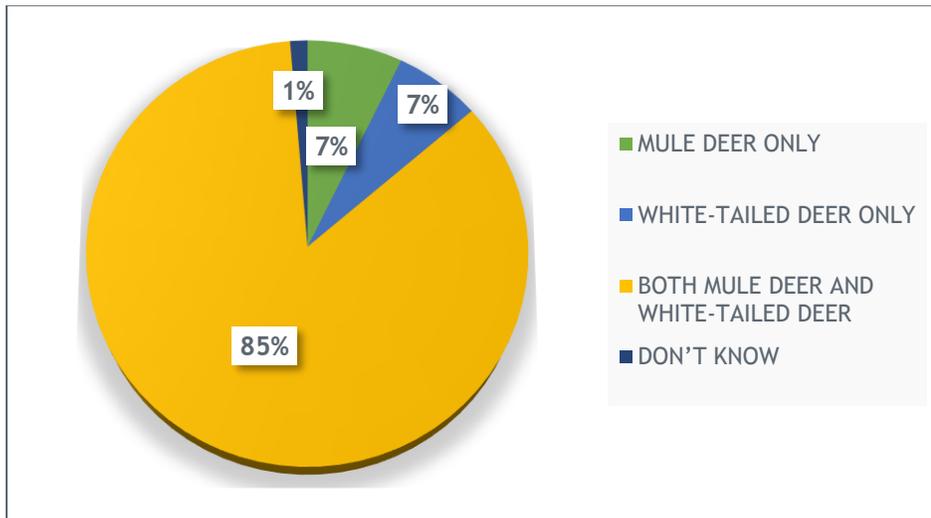
A B C D E F G H I

OR I AM NOT SURE WHAT BUCK/DOE RATIO ON MY LAND WOULD BE A REASONABLE GOAL.



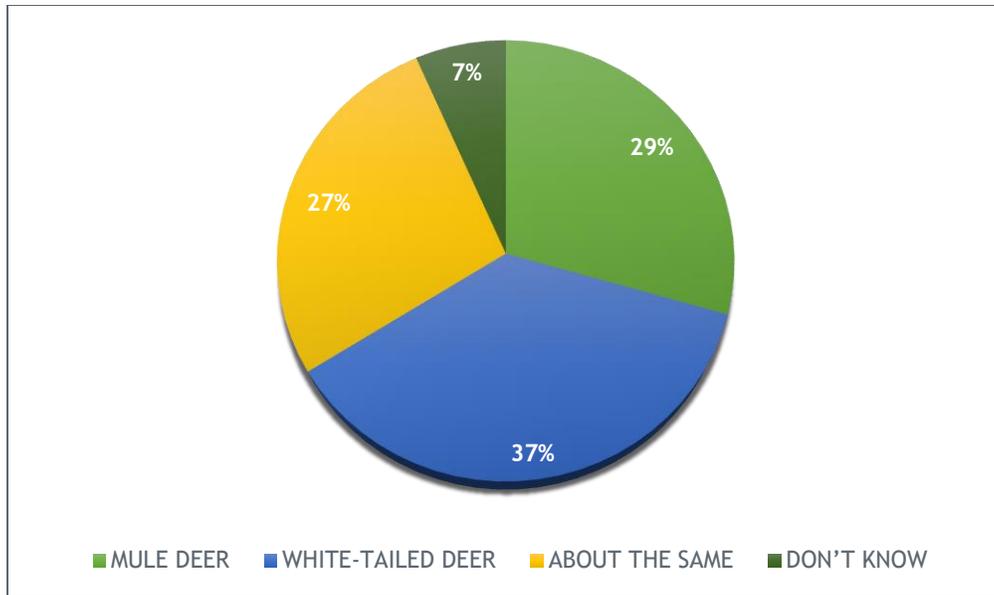
6. Which species of deer use the land where you hunt?

- MULE DEER ONLY
- WHITE-TAILED DEER ONLY
- BOTH MULE AND WHITE-TAILED DEER
- NEITHER SPECIES
- DON'T KNOW



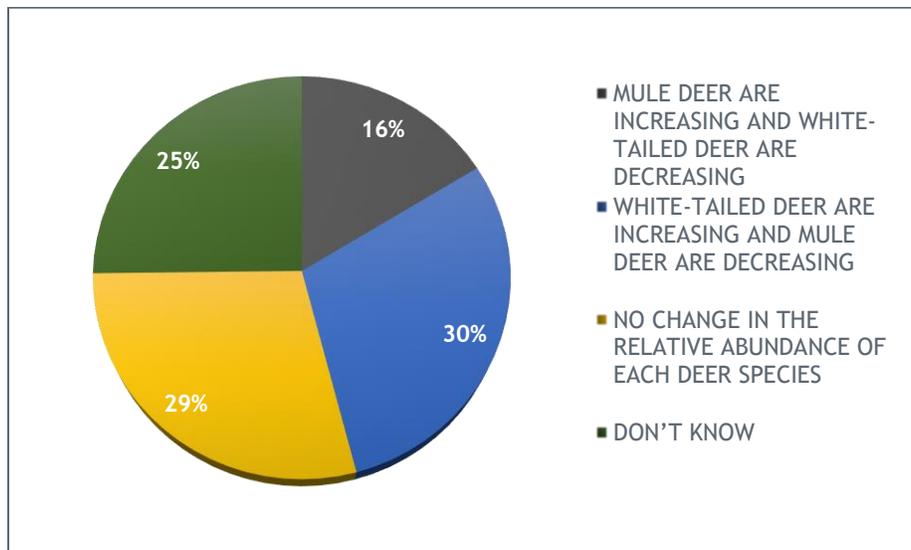
7. If both mule and white-tailed deer use the area, which species is most abundant? (leave blank if only one species is found in your hunting area)

- MULE DEER
- WHITE-TAILED DEER
- ABOUT THE SAME (50:50)
- DON'T KNOW



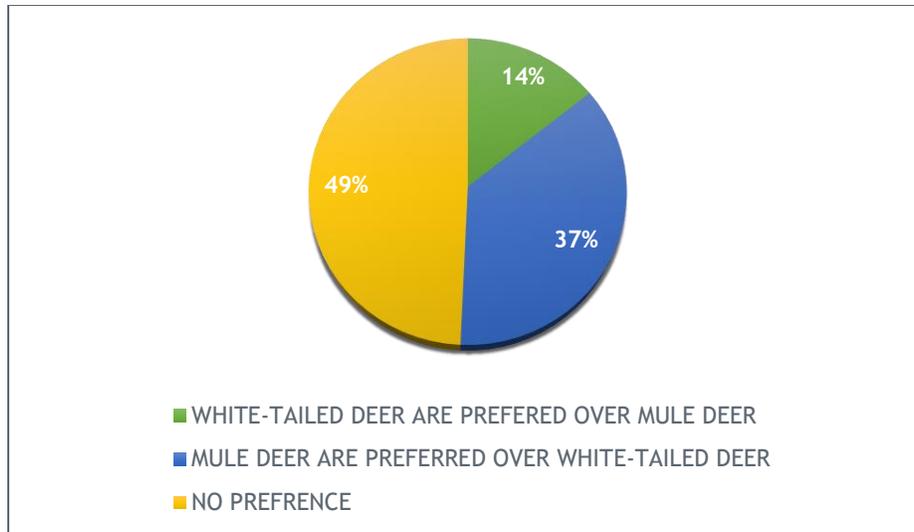
8. **If both mule and white-tailed deer use your hunting area, has the relative abundance of each species changed in the last 10 years?** (leave blank if only one species is found in your hunting area)

- MULE DEER ARE INCREASING and WHITE-TAILED DEER ARE DECREASING
- WHITE-TAILED DEER ARE INCREASING and MULE DEER ARE DECREASING
- NO CHANGE IN THE RELATIVE ABUNDANCE OF EACH DEER SPECIES
- DON'T KNOW



9. **Do you have a preference for one deer species over another?**

- WHITE-TAILED DEER ARE PREFERRED OVER MULE DEER
- MULE DEER ARE PREFERRED OVER WHITE-TAILED DEER
- NO PREFERENCE

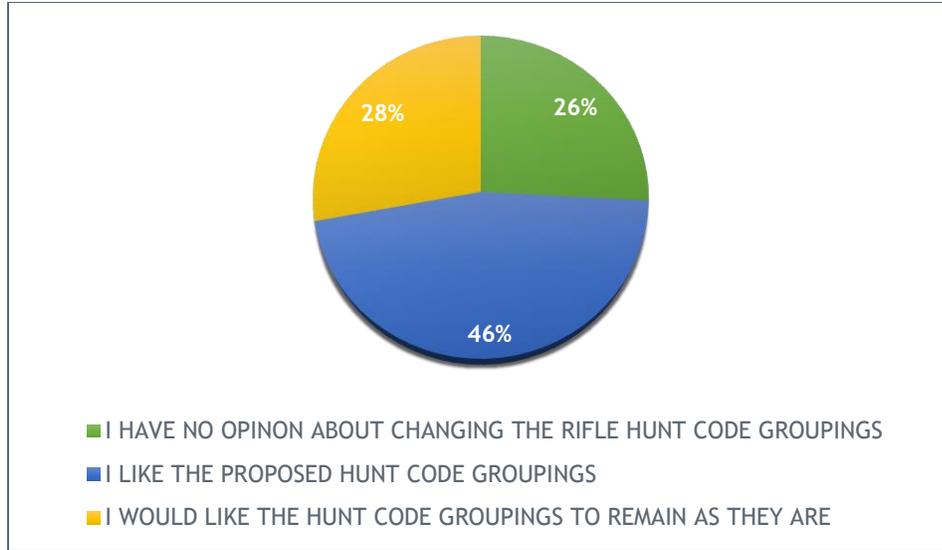


10. CPW often combines Game Management Units into **hunt code groupings**. This gives a deer hunter the ability to hunt any GMU within the hunt code grouping listed on their license. CPW is considering changing the RIFLE hunt code groupings for the GMUs shown on pg. 2. This would reduce complexity for hunters and CPW staff, offer more opportunity to hunters, and reduce the number of private properties split into more than one hunt code grouping. This would also improve population management by combing GMUs with shared and/or similar habitats. The proposed hunt code groupings would likely result in minor changes to the probability of drawing licenses for specific areas. The proposed hunt code groupings for the RIFLE SEASONS are listed here:

- GMUs 122, 127, and 132
- GMUs 126 and 146
- GMUs 125 and 130
- GMUs 137, 138, 143, and 144
- GMUs 139 and 145

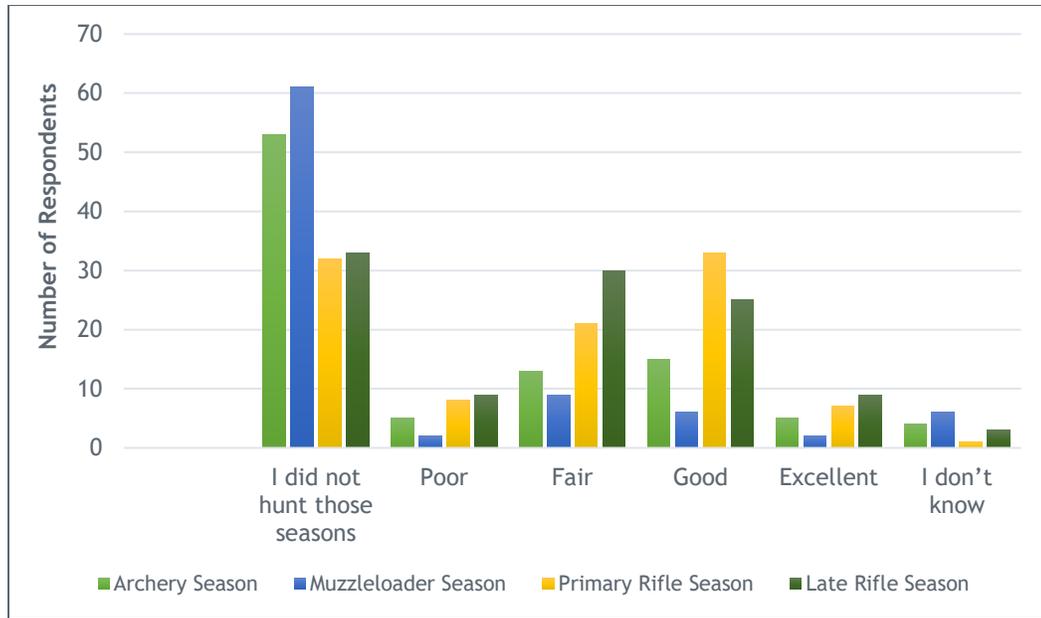
Select the option that best describes your opinion regarding the proposed changes to hunt code groupings.

- I HAVE NO OPINION ABOUT CHANGING THE RIFLE HUNT CODE GROUPINGS
- I LIKE THE PROPOSED HUNT CODE GROUPINGS
- I WOULD LIKE THE HUNT CODE GROUPINGS TO REMAIN AS THEY CURRENTLY ARE



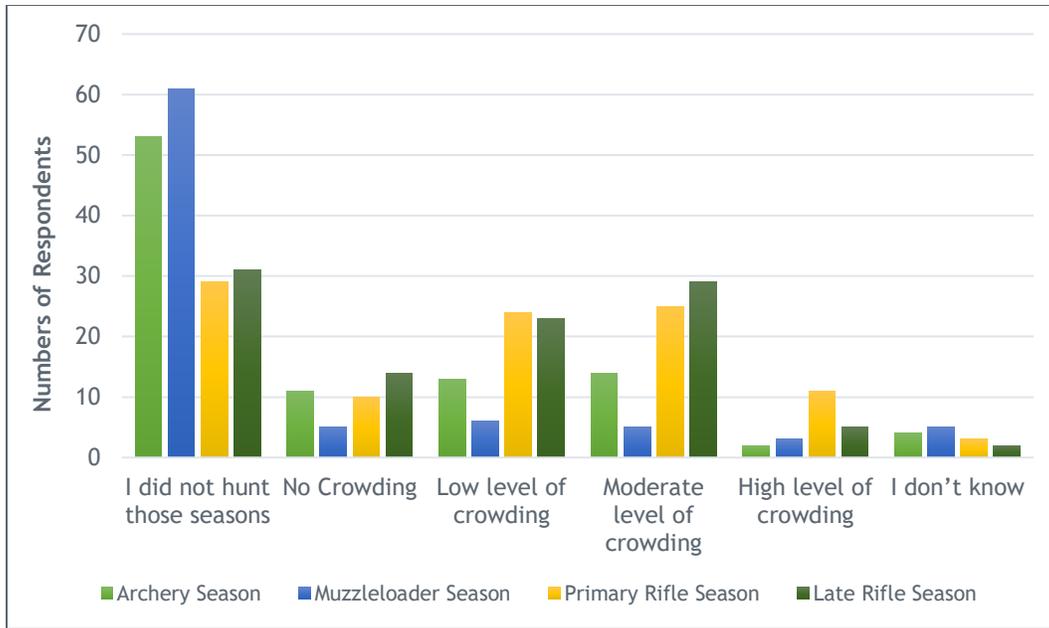
11. How would you rate the quality of deer hunting in the GMU(s) you hunted from 2018-2020? (specific to GMUs on pg. 2; Please check only one response per season.)

	I did not hunt those seasons	Poor	Fair	Good	Excellent	I don't know
Archery Season	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Muzzleloader Season	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Primary Rifle Season (Oct-Nov)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Late Rifle Season (December)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



12. How would you rate the **level of hunter crowding in the GMU(s) you hunted from 2018-2020?** (specific to GMUs on pg. 2; Please check only one response per season.)

	I did not hunt those seasons	No Crowding	Low level of crowding	Moderate level of crowding	High level of Crowding	I don't know
Archery Season	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Muzzleloader Season	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Primary Rifle Season (Oct-Nov)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Late Rifle Season (December)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Thank you for completing this survey.

If you have comments about deer hunting in Colorado, please write them on the back of this survey or email them to: jonathan.reitz@state.co.us

Please return your survey in the envelope provided. If you misplaced your envelope, you can return the survey to: Jonathan Reitz, Colorado Parks and Wildlife, 2500 S. Main St., Lamar, CO 81052

APPENDIX C: Press Release Requesting Input for 30 Day Comment Period

July 20, 2022

Public opinion sought as CPW updates goals for managing Southeast plains deer herds

LAMAR, Colo. - Colorado Parks and Wildlife is seeking public input from area landowners and hunters on its plans for managing two deer herds in Southeast Colorado.

The call for public input comes as CPW is revising deer herd management plans for the Arkansas River and the Mesa de Maya deer herds. These plans will guide CPW's management for these herds over the next 10 years.

In preparation of the plans, CPW conducted extensive hunter and landowner surveys. Now, CPW is inviting input from all stakeholders in hopes of getting a wide sample of opinions to guide wildlife managers writing the plans.

The herd management plans to be revised include 14 Game Management Units, or GMUs, including 122, 125, 126, 127, 129, 130, 132, 137, 138, 139, 143, 144, 145 and 146. These units are located in Cheyenne, Kiowa, Crowley, Otero, Bent, Pueblo, Prowers, Baca and Las Animas counties.

“Landowners, wildlife enthusiasts, and hunters who are interested in deer management in this area are encouraged to review the management plan drafts and let us know what you think,” said Jonathan Reitz, wildlife biologist.

Drafts of the plan can be found on the Colorado Parks and Wildlife website. Just type “herd management plans” in the search box.

There are several options for anyone who would like to provide feedback. They can drop by the CPW Service Center in Lamar or call at 719-336-6600.

Or they can call Wildlife Biologist Jonathan Reitz at 719-691-9130.

The purpose of a herd management plan is to integrate CPW's management strategies with concerns and ideas from interested publics to determine how a big game herd should be managed.

APPENDIX D: Comments From 30 Day Comment PeriodComment #1:

Dear Jonathan,

Thanks for the opportunity to speak with you regarding the HMP for D-28 and D-33 recently. I realize the HMP is not the best avenue to voice my concerns regarding the hunting quality on public lands in eastern Colorado. I attempted to voice these concerns along with a request to pause archery hunting for antelope in unlimited archery areas while the muzzle loader season is taking place, via the CPW Wild life Commission meeting some time ago and got no acknowledgment or response for my efforts. This did not set well with me. I have seen the quality of the deer and antelope hunting on the public land areas I have hunted, as we discussed, diminish since I came to Colorado in 1995. This reduction in quality was particularly accelerated for whitetails when the whitetail only harvest program was initiated with either sex tags and doe "B" tags, but mule deer numbers have fallen also. The quality of the antelope hunting began to decrease steadily when the unlimited over the counter antelope archery tag program began with much of the season being either sex and doe "B" tags were available. Most areas in eastern Colorado that have public land, it is only a very small portion of the hunt area, the rest being private land. Private land is very difficult to get access to and the better quality areas are prohibitively expensive for most hunters to access. Much of this land is controlled by outfitters and what they charge for hunts is out of reach for the average hunter. This causes hunters to flock to the public land for hunting access because there is no separation between public and private tags, they are all the same hunt code, so there is no way to tell which animals are harvested on private and which are harvested on public land. This results in unsustainable hunting pressure on public land and reduction in hunt quality. Statistics from harvest reporting for these areas are biased and misleading because private land reporting and public land reporting are not separated and the statistics for private land, comprising the overwhelming majority of the habitat, "contaminates" the public land statistics. I don't know how tag numbers can be set each year when you don't where animals are harvested. The following are some things I would like to see to help increase hunting quality in the areas I hunt:

1. In areas with small amounts of public land have separate hunt codes for public and private land with tag numbers based on herd numbers in each type so at least the number of animals harvested on public land can be controlled somewhat and the number of people hunting on public land can be controlled.
2. Eliminate either sex whitetail tags and doe "B" tags on public land until whitetail numbers recover.
3. Reduce mule deer buck tags and doe tags on public land until mule deer numbers recover
4. Upgrade harvest reporting to require hunters to indicate whether they harvested animals on public or private land. Then the number of deer harvested on public land can be measured, generating more meaningful statistics. Give hunters more ways to express their opinion of hunt quality. Many, like myself, have a lot of boot time on the ground and have a better feel for the status of the herd than flying the area once a year reveals.

5. Pause archery hunting in unlimited archery hunting areas during muzzle loader season so muzzle loader hunters can hunt in peace without hordes of archery hunters riding the roads and at every water hole.

6. Eliminate unlimited over the counter archery tags and doe “B” tags on public land until the herds recover

7. Be more proactive in addressing issues that reduce heard numbers such as poor fawn recruitment, severe drought, harsh winters, river bottom habitat flooding and destruction, large fires resulting to habitat destruction so as to prevent large swings in population numbers and reductions in hunt quality that take longer to recover from than smaller swings.

I realize you have a hard job and a lot of people to please but ultimately to me protecting the herds and provide quality hunting will make hunting a viable past time for the future.

Comment #2:

Hey Jonathan - (REDACTED)-----

Anyway, I thought I'd check out your recent planning efforts and give you any feedback I could. I think most of ----- Land is in D28 in GMU 146. Though we also have some in GMU 137 which you removed from D28. I'm on board with the change to all the boundaries if those will help you manage and analyze things better. I did have two questions/issues for you though - both of which you can probably predict :)

First, on CWD - the plan focuses on reducing the buck/doe ratio to control CWD - which is fine as far as that goes. However, at least based on the science I've read (and I can send you a spam full if you are interested) - Mountain Lions could also be very useful in controlling the spread and prevalence of CWD. Indeed, most of the science says they would be way more useful than human hunters. As you probably know better than I do - our Eastern Slope Mountain Lion plan is pretty outdated and in my view very lame - if I remember correctly it even calls for "suppression" in the D28 area. I think this is worth at least mentioning in the context of the CWD discussion in the D28 plan. -----

. More importantly, if hunters want mature bucks, our current strategy of controlling CWD by increasing the buck harvest is unlikely to result in a lot of mature bucks. Conversely, if we could reduce the prevalence of CWD, at least in part, with natural predation (lions around here) - hunters could still enjoy going after older bucks. Just a thought - but I think Agency wide CPW should start looking at some of our natural predators as significant allies in the effort to control CWD and of course lions and wolves are always at the forefront of my mind. Alright, I'll quit beating that drum for now :)

The other issue I thought I'd mention is the choice to go with the landowner preference for deer population numbers (about the same as current - 6-8K) versus the hunter preference for a 50% increase (9-12K). Just as a general matter, I'm more concerned about the hunters than the landowners. I know we need both but hunters outnumber the landowners politically - and do pay our bills (at least 70% of our bills). More importantly, as you mentioned, game damage issues are insignificant (and that is what the program is for anyway). Also, wouldn't the discussed reduction in doe tags necessary to build the population only be temporary until the population increased? Finally, I frequently hear complaints about landowners not providing access for hunters - so ...it seems to me that if deer numbers were a bit higher than the landowner survey indicated a chunk of the landowners wanted - wouldn't that increase the likelihood that at least some additional landowners would grant access to their lands - to allow hunters to kill the perceived "excess" deer? Anyway, that was my thinking to argue for the larger population alternative in the plan - but I could just be backfilling to justify my own preferences :).

Cheers,

APPENDIX E: Literature Cited

- Colorado Parks and Wildlife. 2018. Colorado Chronic Wasting Disease Response Plan.
(Available online at
https://cpw.state.co.us/Documents/Commission/2018/Nov/Item_19-Chronic-Wasting-Disease-Response-Plan.pdf)
- Kufeld, R. C., 1991. Development of census methods for deer in plains river bottom habitats. Colo. Div. Wildl Res. Rep. July 1991.
- Miller, M.W., Wolfe, L.L., Sirochman, T.M., Sirochman, M.A., Jewell, J.E., Williams, E.S. 2012. Survival patterns in white-tailed and mule deer after oral inoculation with a standardized, conspecific prion dose. *Journal of Wildlife Diseases* 48: 526-529.
- White, G. C., and B. C. Lubow. 2002. Fitting population models to multiple sources of observed data. *Journal of Wildlife Management* 66:300-309.