Colorado Parks and Wildlife

FY22 GAME DAMAGE ANNUAL REPORT

Prepared for the Colorado General Assembly pursuant to C.R.S. 33-3-111

January 2023

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Contents

GAME DAMAGE PROGRAM

Section A: Game Damage Compensation

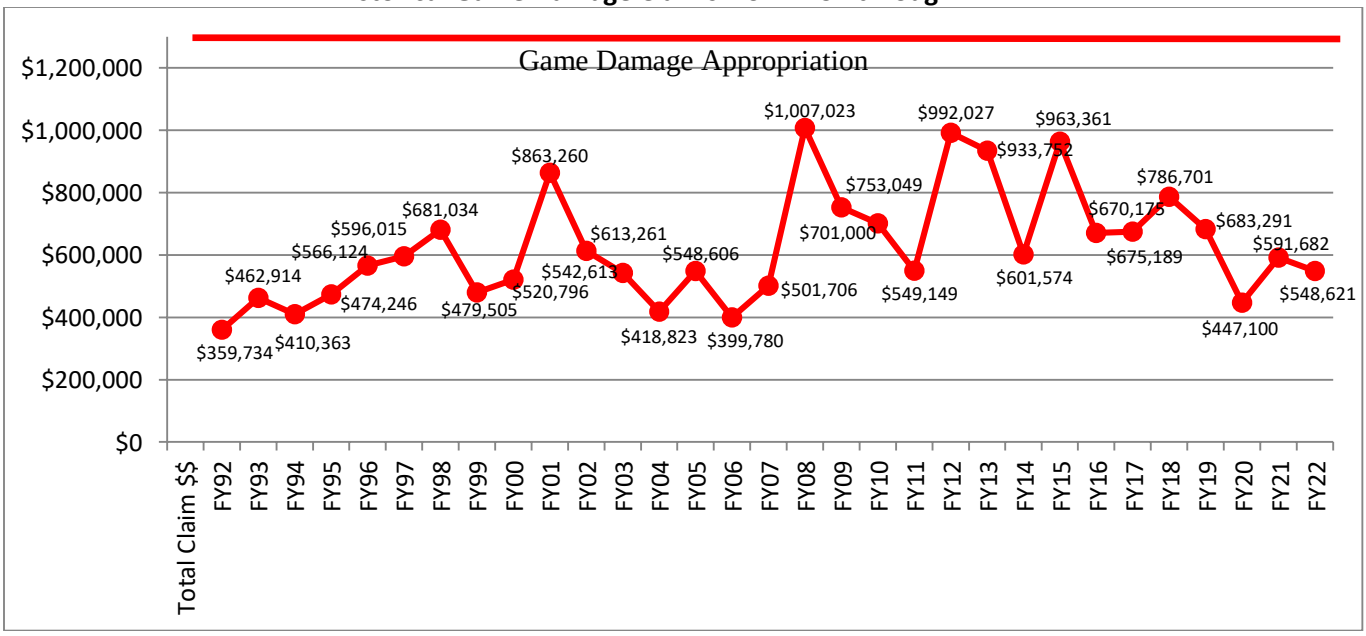
Annual Allocation for Claims & Prevention	**$1,282,500**
FY22 Expenditures for Claims	**$ 548,621**

Colorado's big game damage program is authorized in Article 3 of Title 33 Colorado Revised Statutes. Since its original inception over 90 years ago, the program's goal of mitigating and compensating agricultural producers for damage suffered by big game wildlife has changed very little. Over the years, the program has been refined most notably through the integration of a prevention materials program. The Game Damage program is entirely funded by license revenues through an annual appropriation from the Game Cash fund. The FY22 line item appropriation was $1,282,500. This appropriation funds the two key program components; damage compensation and damage prevention materials. Resources are utilized among each program component based on annual needs.

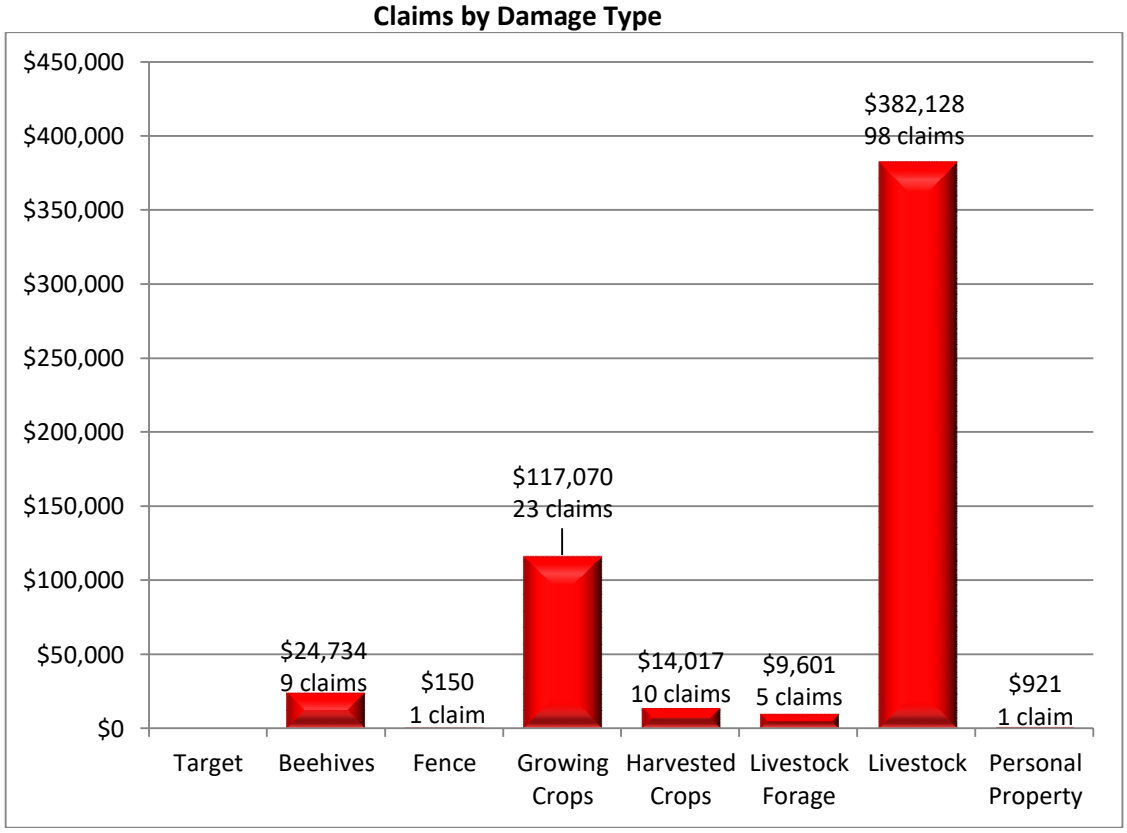
FY22 Game Damage Compensation – Overview

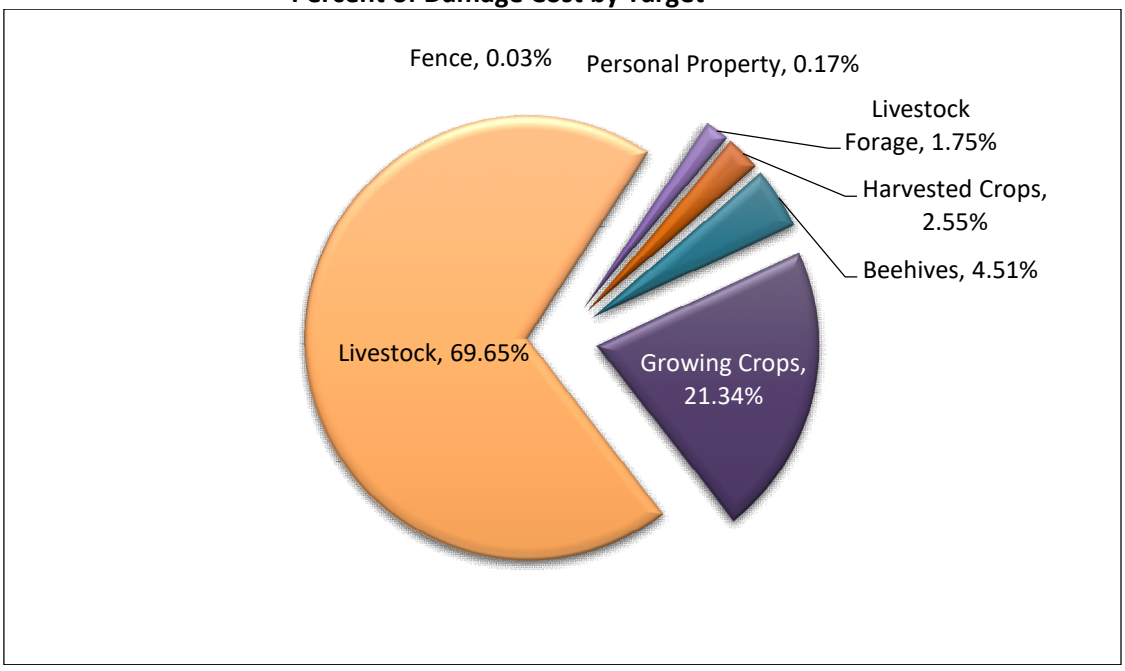
The compensation component of the game damage program provides reimbursement for qualifying agricultural claimants suffering eligible losses caused by big game wildlife. In FY22, compensation costs amounted to $548,621 in settlement of 147 claims. These costs are $88,172 below the past 5-year average of $636,793 (FY17-FY21), 7.08% lower than the average. This decrease is attributed to fewer and lower costs of claims this year compared to FY17 through FY21**.** The total number of claims paid (n=147) in FY22 was below the past 5-year average of 219. CPW denied two claims (1.4% of all claims filed).

Historical Game Damage Claims from FY92 through FY22

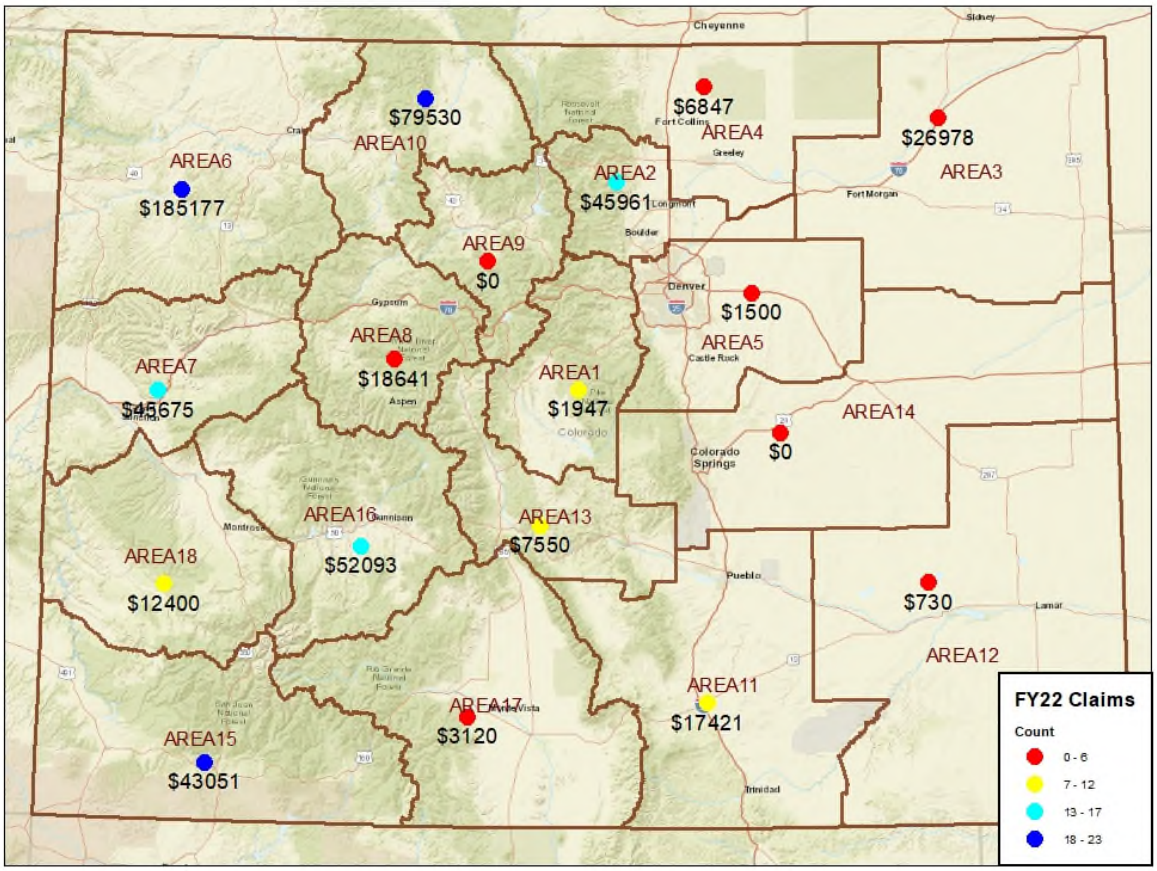


FY22 Game Damage Compensation

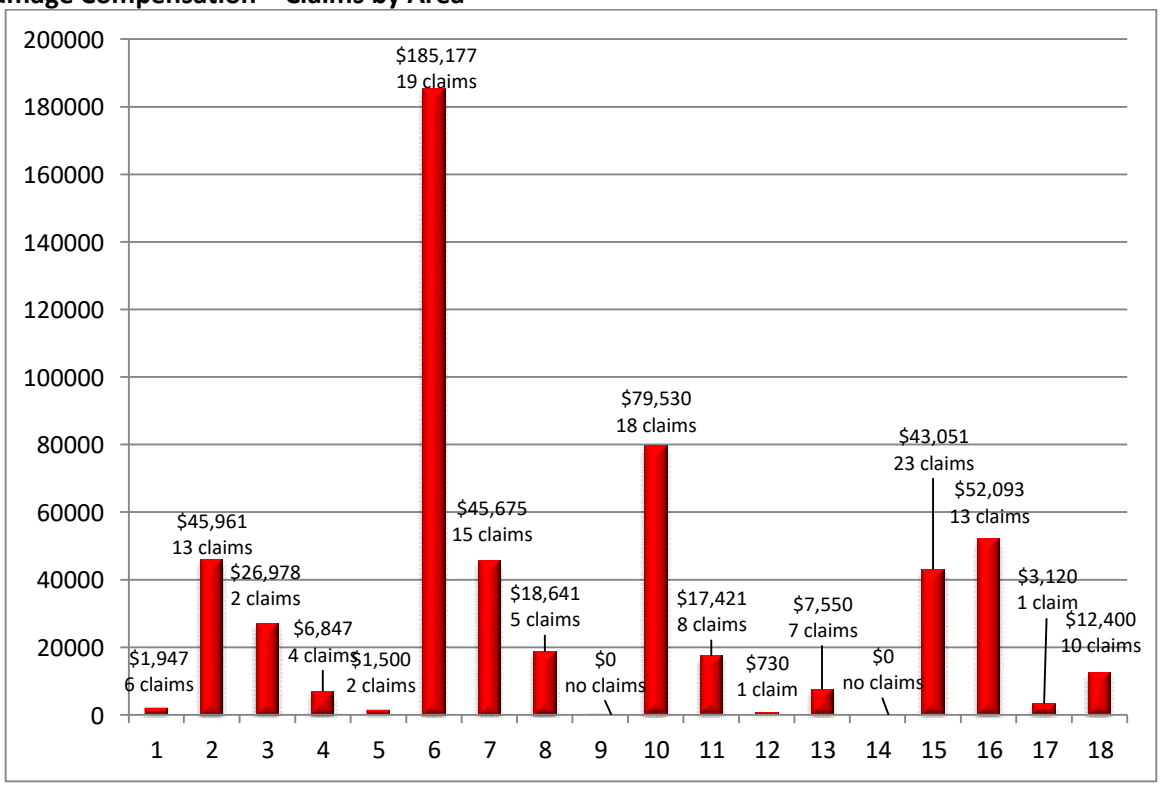




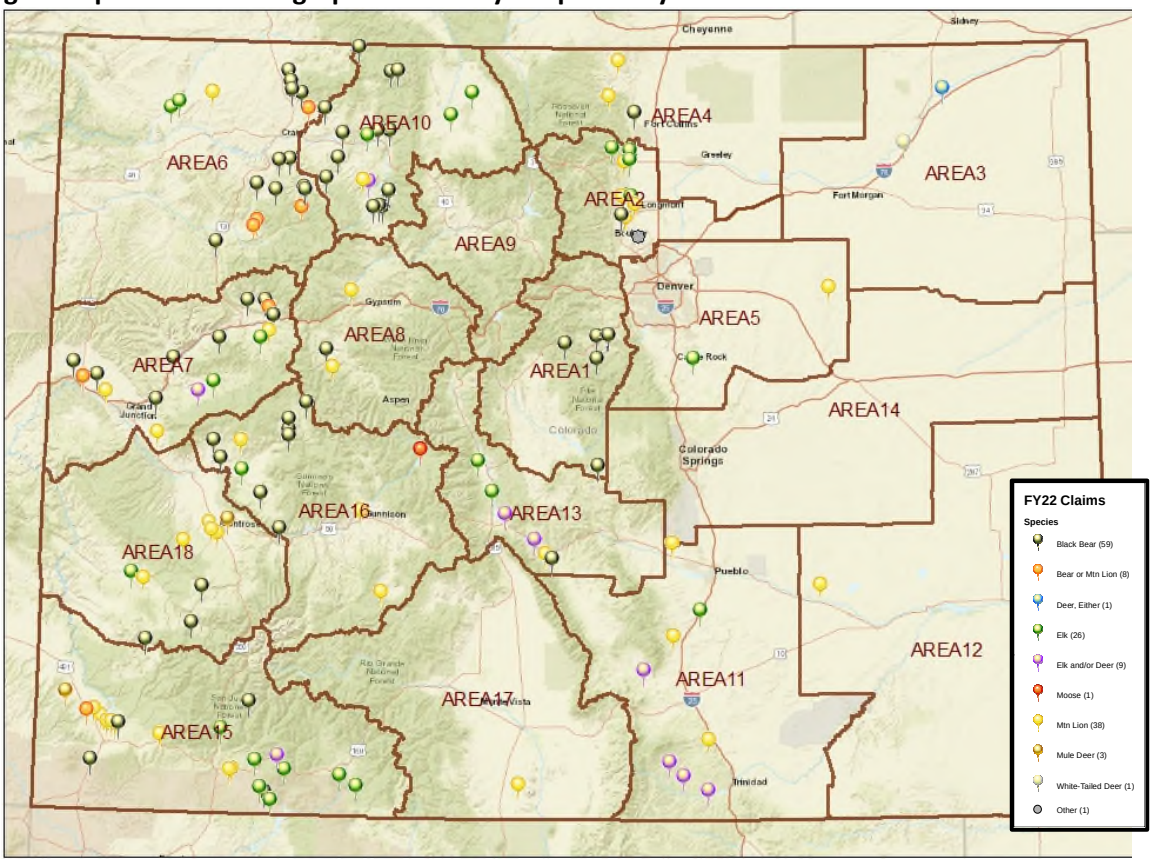
FY22 Game Damage Compensation – Geographic Summary by Area



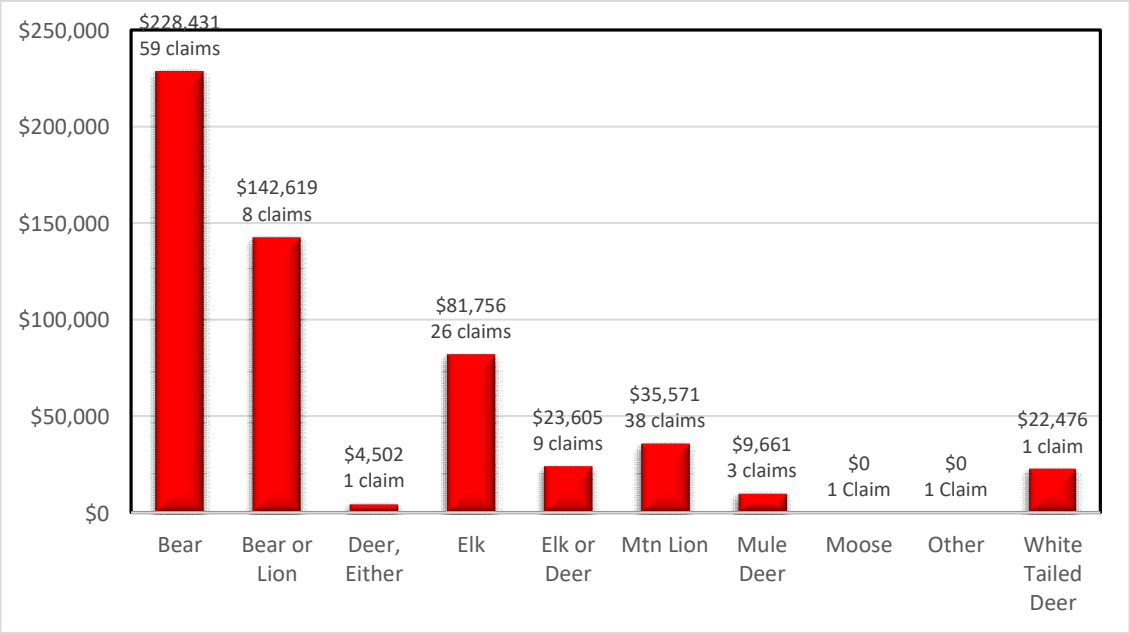
FY22 Game Damage Compensation – Claims by Area



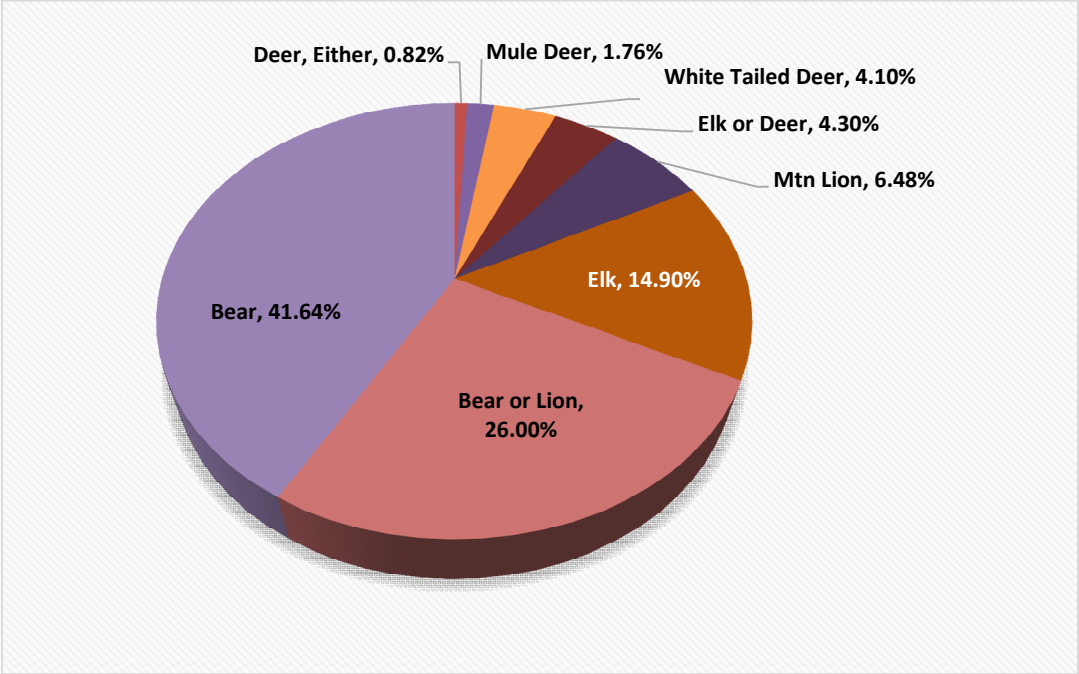
FY22 Game Damage Compensation – Geographic Summary of Species by Area



FY22 Game Damage Compensation – Claims by Species



FY22 Game Damage Compensation – Percent of Damage Cost by Species



FY22 Game Damage Compensation – Summary by Species by Target

Target	Claim Paid	Count	No. Claims
Black Bear			
APIARIES			
Beehives	$24,734	84	9
FENCE			
Fence	$150	5000'	1
LIVESTOCK			
Alpaca	$532	2	1
Cattle	$10,052	12	10
Elk	$2,900	2	1
Goats	$1,576	9	4
Horse	$3,000	1	1
Pigs	$1,350	14	3
Poultry	$63	1	1
Sheep	$184,074	688	28
Bear and/or Mountain Lion			
LIVESTOCK			
Sheep	$142,619	531	8
Deer, Either			
GROWING CROPS			
Corn	$4,502	760.43	1
Elk			
GROWING CROPS			
Corn	$25,960	4965 bu	1
Hay	$31,831	134 ton	9
HARVESTED CROPS			
Hay	$14,017		10
LIVESTOCK FORAGE			
Hay Meadow	$8,637		4
LIVESTOCK			
Cattle	$390	3	1
PERSONAL PROPERTY			
Tarps	$921	3000'	1

Target	Claim Paid	Count	No. Claims
Elk and/or Deer			
GROWING CROPS			
Hay	$22,641	77.52 ton	8
LIVESTOCK FORAGE			
Forage	$964	49 AUM	1
Mountain Lion			
LIVESTOCK			
Cattle	$8,726	15	7
Goats	$14,386	57	11
Poultry	$2,972	45	2
Rabbit	$359	8	1
Sheep	$9,128	36	17
Moose			
Horse	$0	1	1
Other			
Sheep	$0	2	1
Mule Deer			
GROWING CROPS			
Corn	$4,527	748 bu	1
Hay	$553	1.8 ton	1
Sorghum	$4,581	564 bu	1
White-Tailed Deer			
GROWING CROPS			
Corn	$22,476	3442 bu	1

FY22 Game Damage Compensation – Denials

Area	Damage Type	Claim Request	Basis for Denial
2	Sheep by Other	$200.00	**#1741(A) (1)** – Tangible evidence that big game was present in the area. Evidence may include, but is not necessarily limited to photographs or records of torn logs, scat, tracks or direct observation. **#1741(A)(2) -** Claimant shall demonstrate that such animals were responsible for the damage, and in the case of livestock, the actual cause of injury or death.
16	Horse by Moose	$25,000.00	**#1740(A)** – Claimant shall prove by preponderance of evidence that damage was caused by big game to the extent claimed. **#1741(A)** – Claimant shall demonstrate that big game was responsible for the damage. **33-3-104(1)** – Damages to livestock shall be no more than five thousand dollars per head of livestock and the actual cause of injury or death.

Section B: Game Damage Prevention Materials

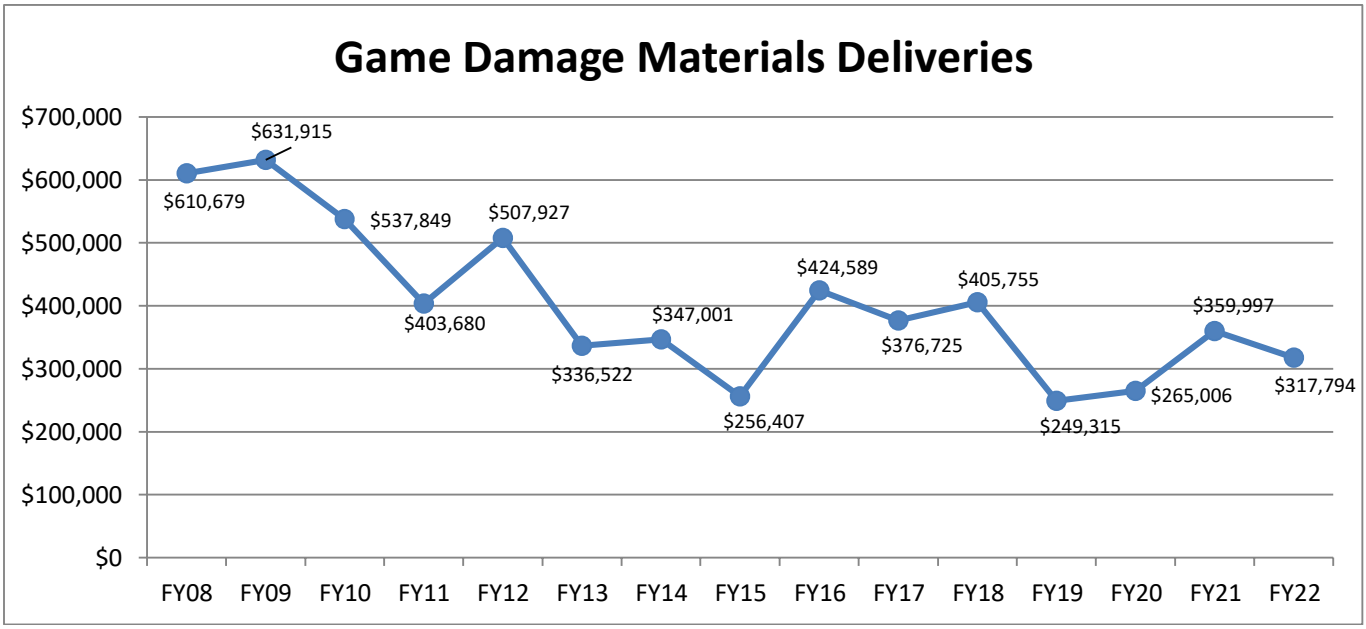
Annual Allocation for Claims & Prevention	**$1,282,500**
FY22 Expenditures for Permanent Prevention Materials	**$ 225,969**
(includes Apiary Fencing Materials)	
FY22 Expenditures for All Other Temporary Prevention Materials	**$ 91,825**
TOTAL FY22 Expenditures for Permanent and Temporary Prevention Materials	**$ 317,794**

The damage prevention materials program became an integrated component of the Game Damage Program in 1996, over a quarter century ago. The prevention materials component provides both permanent and temporary materials to landowners in order to eliminate or minimize damage caused by big game wildlife. The largest expenditure for material requests consist of stackyards, nurseries, orchards and apiary fencing.

FY22 Game Damage Materials – Overview

Total expenditures for damage prevention materials ($317,794) in FY22 decreased by 3.59% compared to the past 5-year average ($331,360), and the number of deliveries (n=209) decreased by 3.51% from the past 5-year average (n=216.6). Stackyard requests (n=24) were below the past 5-year average by 46.43% (n=44.8). Orchard requests have fallen off and decreased by 43.82% (n=10) compared to the past 5-year average of 17.8. Apiary fence requests (n=117) were again slightly below the past 5-year average by 1.35% (n=118.6).

FY22 Game Damage Materials – Multi-Year Overview



FY22 Game Damage Materials – Summary

The Game Damage Program filled 209 requests for Prevention Materials throughout the state.

Over 31.81 miles of permanent fencing were delivered. Game Damage delivered 33 apiary fences, while an additional 84 requests were filled from caches located at Area offices. Deliveries required traveling more than 55,273 miles. The mileage increased over 2,600 miles this year, even though the delivery requests decreased 7.11%.

Game Damage delivered to Area offices a supply of pyrotechnics and 8' x 8' wood elk panels in order to provide landowners with temporary prevention materials more efficiently.

The Habitat Partnership Program (HPP) requested materials for cooperative habitat or fencing projects with landowners. Game Damage delivered **$86,837** worth of materials for 17 **HPP** projects, which was reimbursed to the Game Damage Program.

Area offices requested nuisance bear deterrent materials. Game Damage provided the deterrents, worth **$4,859** in FY22, which were reimbursed by the Areas. Fencing materials were also provided to State Wildlife Areas at a cost of **$29,778** for 9 projects, which were reimbursed to Game Damage.

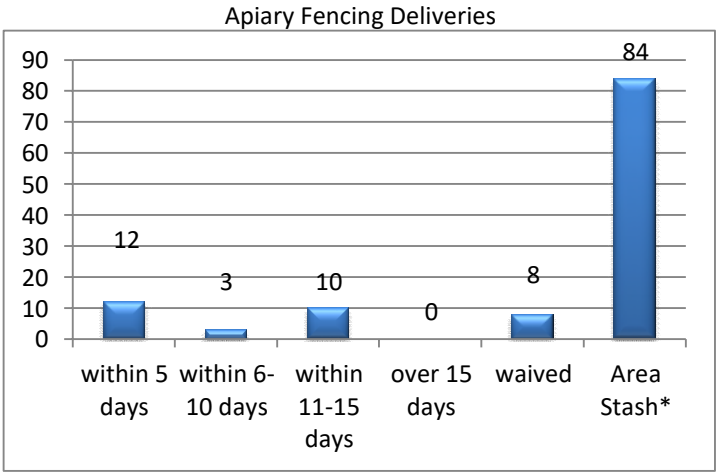
Facility Type	Number of Deliveries	FY22
Apiary	*117*	*$38,643*
Commercial Garden	*7*	*$24,251*
Nursery	*4*	*$31,849*
Orchard	*10*	*$63,653*
Stackyard	*24*	*$45,007*
Vineyard	*2*	*$16,835*
Unique Fencing	*1*	*$5,732*
PERMANENT MATERIALS & APIARY FENCES Total	165 deliveries	**$225,969**
TEMPORARY MATERIALS for distribution by area offices		
Pyrotechnics	25	**$40,291**
Wood Elk Panels (1,714 Panels)	19	**$51,534**
	209	**$317,794**

DELIVERY TIME SPANS

Effective July 1, 2009: Senate Bill 09-024 required delivery within 15 business days for temporary materials or 45 days for permanent materials from initial request.

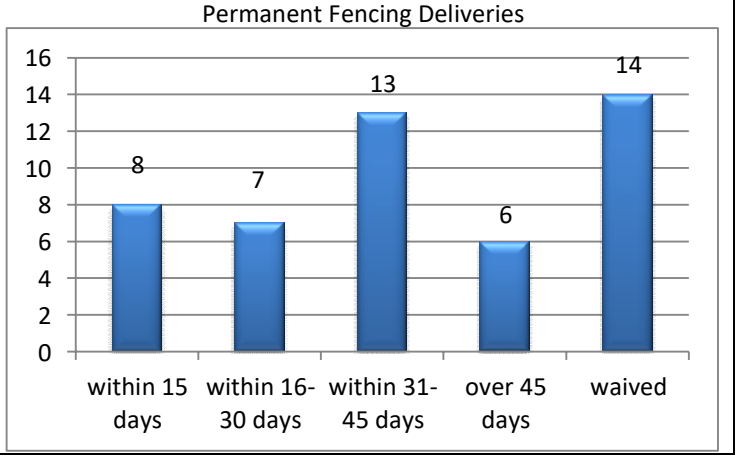
Apiary fencing requests were delivered on time, as mandated in statute (n=117). Eight (8) apiarists requested delivery on a date later than 15 business days, using the Delivery Deadline Waiver form. The Area Stashes deliver the majority of the temporary electric fences (n=84), 72% of all apiary fences.

* - Deliveries from Apiary Stashes were filled on the same day as the landowner requests.

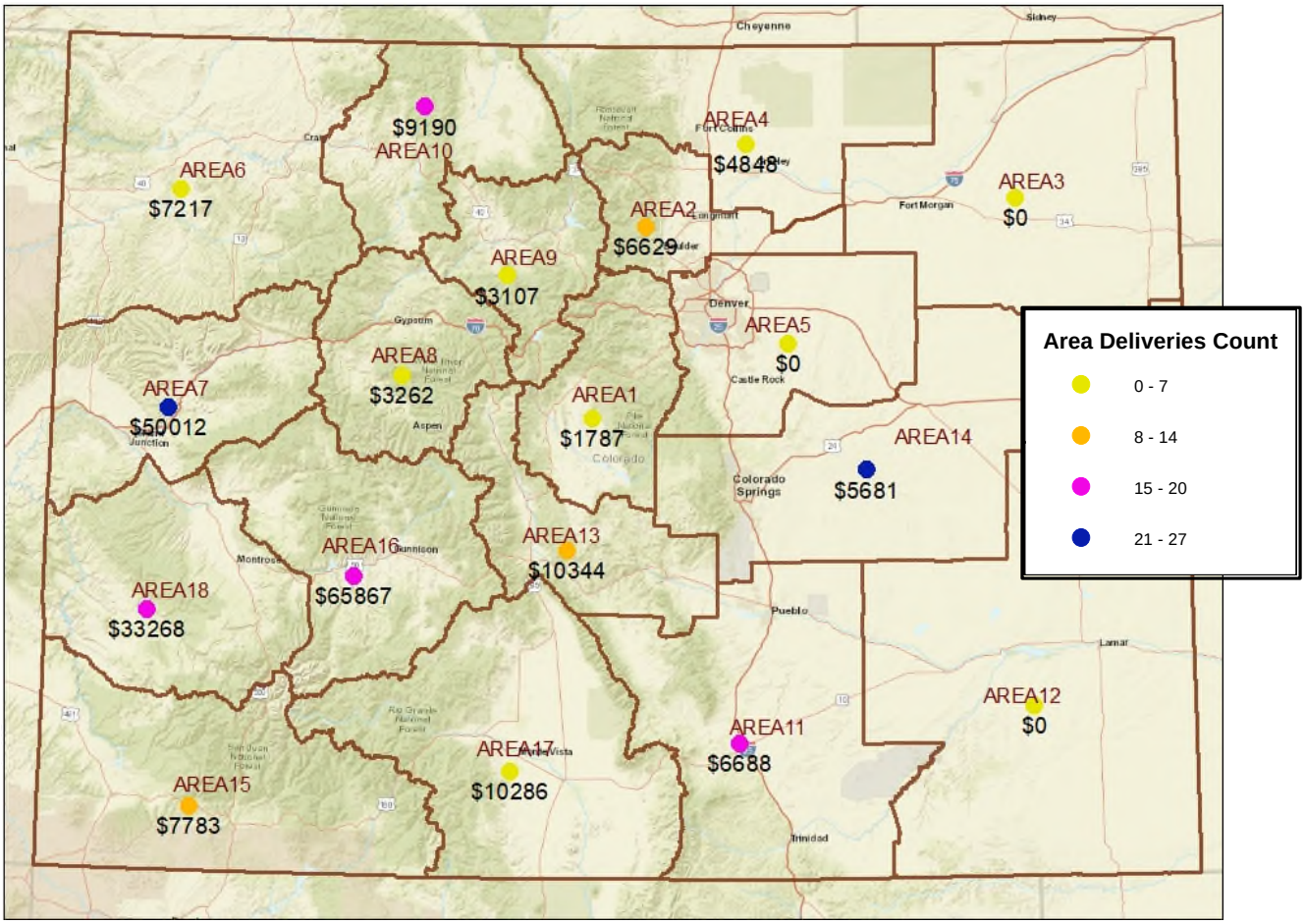


Most deliveries for permanent game damage materials (n=48) were made within the 45 day limit or the deadline date was waived by the landowner.

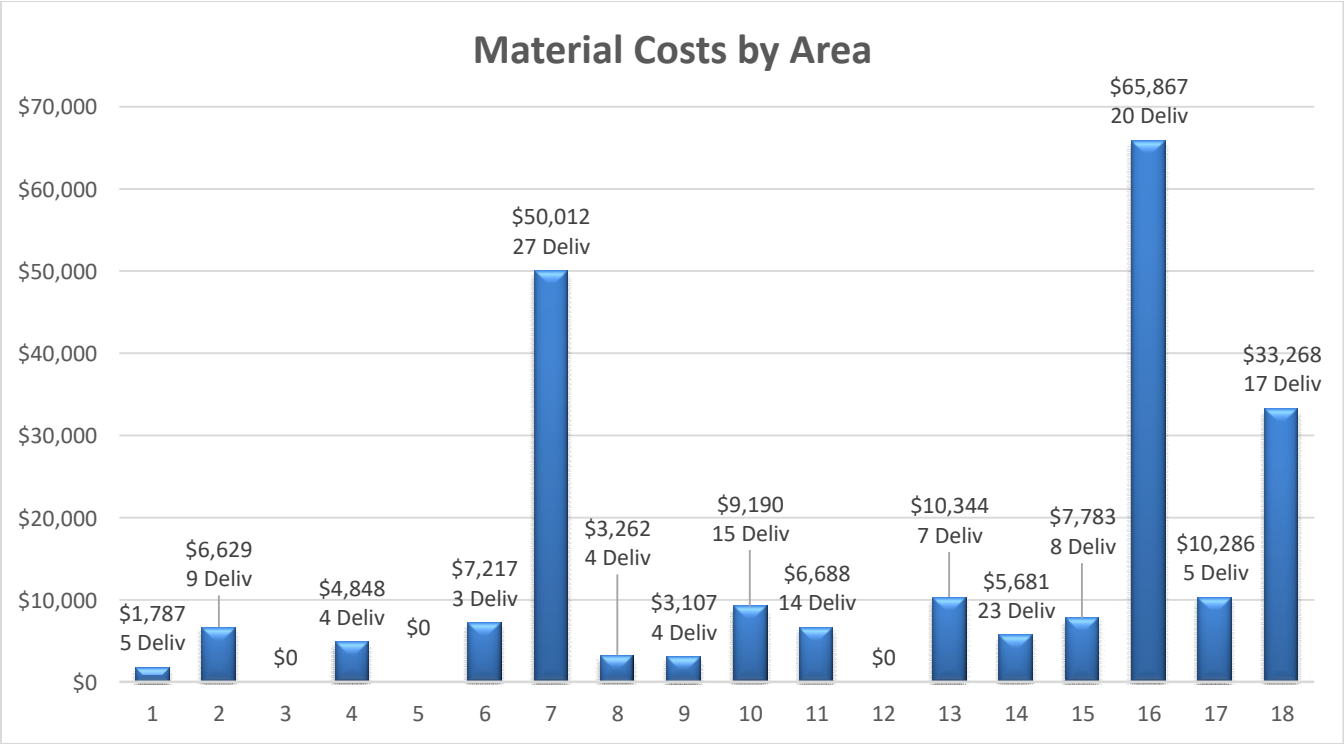
- Six (6) requests were delivered after the 45-day deadline, due to changes in staff during busy delivery season.
- Fourteen (14) landowners requested the delivery date past 45 days via waiver.



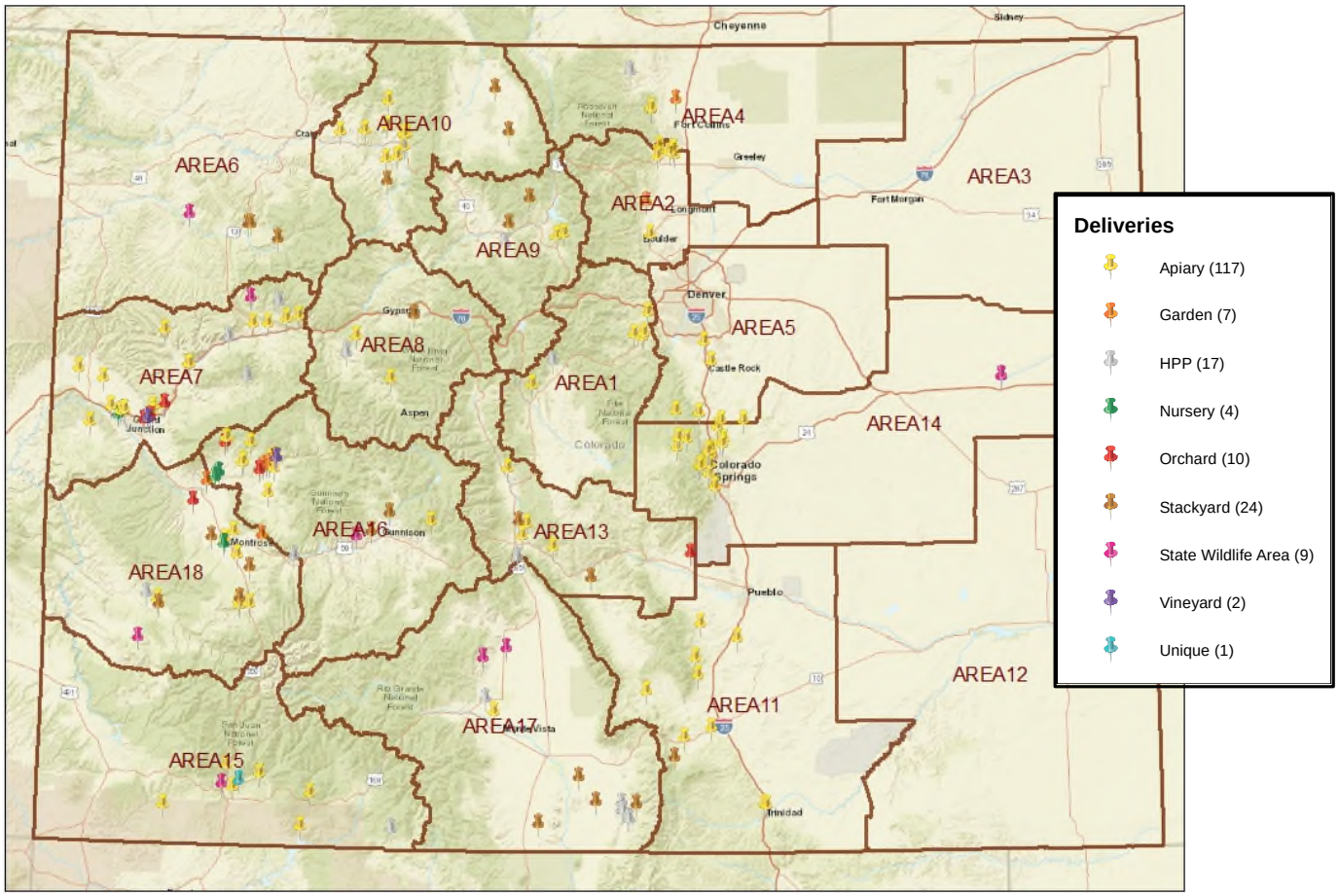
FY22 Game Damage Permanent Fencing and Apiary Fencing – Geographic Distribution ($225,969)



FY22 Game Damage Permanent Fencing and Apiary Fencing Expenditure – Deliveries by Area



FY22 Game Damage Permanent Fencing and Apiary Fencing Expenditure – Deliveries by Type



Section C: Permits Issued to Take Wildlife Pursuant to C.R.S. 33-3-106:

CPW issued 29 permits during Fiscal Year 2022 to kill specified numbers of wildlife causing excessive damage to property by request of the property owner. Seven animals were harvested: one elk and six white-tailed deer.

Area	No. Permits	Number and species
1	0	
3	0	
5	0	
6	0	
7	0	
8	0	
10	3	1 elk
11	5	
12	0	
13	0	
14	21	6 whitetail deer
15	0	
16	0	
17	0	
18	0	
TOTAL	**29**	**7**

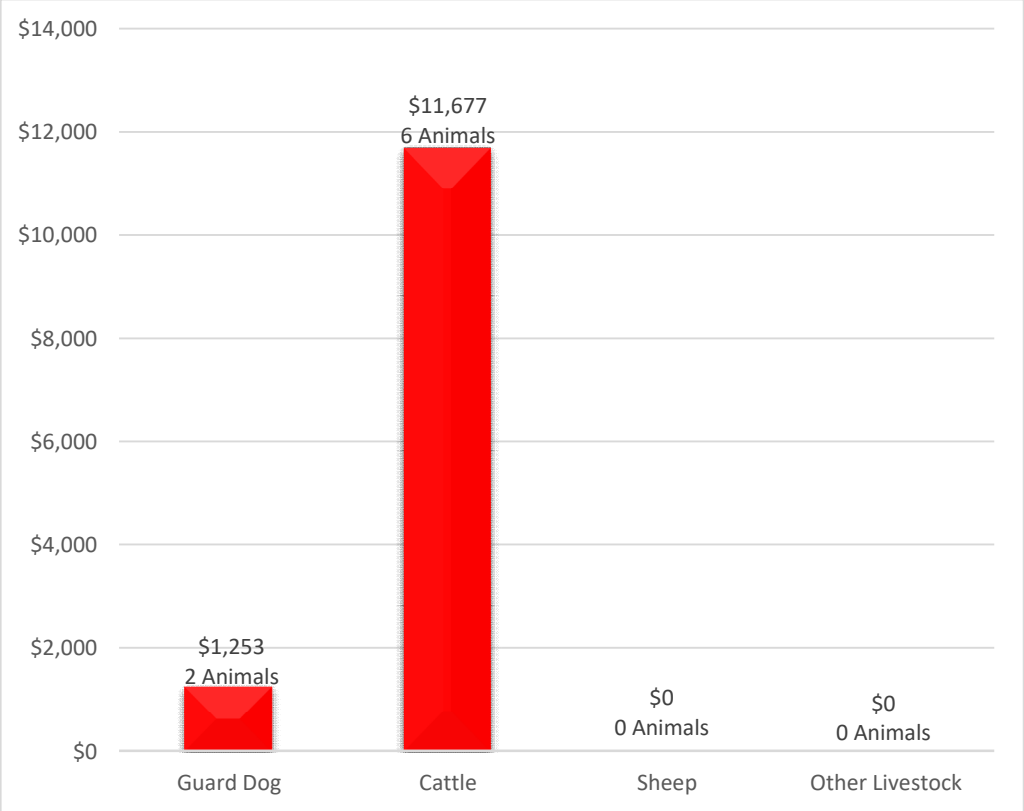
WOLF DAMAGE COMPENSATION AND CONFLICT MINIMIZATION

Wolf damage compensation and conflict minimization expenditures are not a requirement of C.R.S. 33-3-111 or C.R.S. 33-2-105.8, however, this data is being provided for informational purposes.

Section A: Wolf Compensation

Annual Allocation for Claims & Conflict Minimization	**$50,000**
FY22 Expenditures for Claims	**$12,929.75**

Compensation to livestock owners for losses caused by gray wolves is authorized in C.R.S. 33-2-105.8(2)(e)(II). Funding for wolf-livestock damage compensation is appropriated from the general assembly from sources other than the sales of hunting or fishing license revenues. The FY22 line item appropriation was $50,000. This appropriation funds wolf-livestock damage compensation and wolf-livestock conflict minimization materials. In FY22, compensation costs amounted to $12,929.75 in settlement of four wolf damage claims.



Section B: Wolf Conflict Minimization

Annual Allocation for Claims & Conflict Minimization	**$50,000**
FY22 Expenditures for Conflict Minimization Materials	**$24,361.52**

Assisting livestock owners in preventing and resolving wolf-livestock conflicts is authorized in C.R.S. 33-2-105.8(2)(e)(I). Funding to minimize wolf-livestock conflicts is appropriated from the general assembly from sources other than the sales of hunting or fishing license revenues. Conflict minimization materials provided to livestock owners include turbo fladry, shell-crackers and fox lights. Conflict minimization materials purchased to reduce wolf-livestock conflicts in FY22 totaled $24,361.52. This included 5 miles of turbo fladry (electrified poly-wire with flagging), turbo fladry components (posts, ground rods, and solar chargers), 60 fox lights, and pyrotechnics (shell-crackers).

Material Type	FY22
Turbo Fladry	*$15,631.00*
Fox Lights	*$4,217.00*
Fladry Components	*$3,773.52*
Shellcrackers	*$740.00*
Total	*$24,361.52*

Part 3 - STATUS OF BIG GAME POPULATIONS

A. Background

Several processes guide big game management in Colorado, all of which are approved by the Colorado Parks and Wildlife Commission. Herd Management Plans (HMPs) establish 10-year objectives for each big game species and herd. This is accomplished through a public process, using the best available scientific information on populations, habitat conditions, and game damage. Big Game Season Structure (BGSS) policies define a 5-year framework for achieving HMP objectives through a variety of hunting opportunities and seasons. Finally, license recommendations are set annually via regulation and are based on HMP objectives.

Population Estimation Timeline

Population estimates for deer, elk, and pronghorn are determined annually in March after winter aerial herd composition inventory and post-hunt harvest surveys have been completed. Because of the statutory requirement to provide population estimates in January, population estimates from the previous year are used in this legislative report.

Herd Management Plans and Objectives

Big game populations in Colorado are managed on the basis of HMPs for specific herds in defined areas called Data Analysis Units (DAUs) that represent the annual seasonal habitat ranges of relatively discrete populations. These DAUs are divided into Game Management Units (GMUs) to better manage harvest and hunter numbers within each herd. Maps showing individual DAU locations and the GMUs they encompass are provided for each big game species (Figs. 4, 6, and 8).

Herd Management Plans establish objectives for post-hunt population size and sex ratios, and are locally developed with public input. Draft plans are presented to the Parks and Wildlife Commission, with opportunities for public comment, revised if necessary, and then approved by the Commission the following meeting. License quotas approved by the Commission each year are used to move populations toward herd management plan objectives using hunter harvest. Population objectives for each herd are expressed as a range of values to provide greater management flexibility, for example in drought years, and more realistically reflect confidence in the population estimates. Annual target population objectives indicate the desired population size within the objective range for a given year.

Approximately 92% (115) of the 125 elk, deer, and pronghorn herds have approved management plans. Herds that do not have approved management plans use provisional objectives that are established internally. Many of the herds with provisional objectives have relatively small numbers of animals and/or few conflicts making approval of other HMPs and/or existing plan updates a higher priority. CPW is continually working on completing new plans, updating existing plans, and seeking approval to implement these plans from the Parks and Wildlife Commission. In 2023, CPW is taking a new Regional approach and completing all the HMP's for a particular species by Region. All HMPs will be updated and approved for elk in the Southwest Region, all mule deer plans in the Northwest Region, and all pronghorn plans in the Northeast and Southeast Regions in 2023.

In 2018, CPW implemented a stakeholder process to develop the Chronic Wasting Disease (CWD) Response Plan; which was approved by the Commission in January 2018. The CWD Response Plan outlines management strategies for reducing CWD prevalence in some herds and preventing CWD prevalence from increasing in others. At least 40 of Colorado's 54 deer herds (74%) are known to be infected with CWD; at least 17 of 42 elk herds (40%) and 2 of 9 moose herds (22%) also are infected.

5-Year Big Game Hunting Season Structure

CPW uses a 5-year Big Game Season Structure (BGSS) as a framework to guide annual big game hunting regulations, primarily through setting the timing, length, and number of seasons for hunting big game in the state. In November 2019, the Colorado Parks and Wildlife Commission (PWC) approved the Big Game hunting Season Structure (BGSS) for the years 2020 through 2024, after a 16-month long public and stakeholder process. The Big Game Season Structure is intended to guide Colorado Parks and Wildlife (CPW) management activities to keep big game populations at population objective and provide a broad range of hunting experiences to fit the varied preferences of different hunters.

Input on the 2020-2024 BGSS was collected from the public in several different ways. The primary method was through an online public comment form, which was available on the CPW webpage from late December 2018 through early February 2019. A hard copy of the comment form was also available at CPW offices, online as well as at BGSS public meetings. Fifteen BGSS public meetings were held throughout the state during the public comment period. Additionally, there were two telephone town halls (one for residents and one for nonresidents) and two focus group meetings (one on the eastern slope and one on the western slope) where CPW staff engaged with hunters about season structure topics. Through these avenues the agency interacted with 458 in-person public meeting attendees, 6,800 social media public meeting viewers, 4,749 people over teleconference, received public comment feedback from over 3,000 respondents, and spoke extensively with 18 focus group participants.

A major consideration in this process was the efficacy of the 5-year season structure to achieve big game population objectives through harvest management. For example, the four regular rifle seasons were retained and the breaks between seasons were extended to allow animals to redistribute and become more available for harvest on public land during the next season. Late seasons will continue to be used to control big game populations to minimize game damage. The youth allocation of licenses and the opportunities for youth to hunt have been expanded. Expanded youth opportunities offer increased female licenses that will improve our ability to manage to population objectives. At the request of archers, archery season dates were fixed to September 2-30 west of I-25 to allow for better annual consistency and elk hunting during the peak of the elk rut. Unlimited either-sex, antlered, and antlerless archery elk licenses are still available in certain units. New for this 2020-2024 season structure, either-sex and sex-specified archery elk licenses can be limited geographically to meet biological and/or social management objectives. This will allow CPW's to reduce female elk harvest in herds that are below population objective ranges and reduce hunter crowding. Over-the-Counter (OTC) List B archery elk antlerless licenses are only valid in units that also have List B rifle elk antlerless licenses. Pronghorn rifle season was increased from 7 to 9 days; this adds a second weekend that will increase hunting opportunity and harvest. Hunters drawing a bull moose license will now be able to hunt all moose seasons including; archery, muzzleloader, and rifle, with the same license. Finally, changes to the bear seasons and participation rules have been adopted to provide more opportunity for harvest of bears.

In 2021 and 2022, CPW surveyed staff and the public and conducted focus groups regarding resident and nonresident license allocation percentages, over-the-counter licenses, further limiting archery elk licenses, preference points, and draw systems. The 2022 Big Game Attitude Survey is the cornerstone of this effort, this stratified random survey will help guide alternative formations for the next BGSS. These efforts will help CPW and the PWC prioritize amending these policies and regulations. The new 2025 BGSS setting process starts formally in January 2023.

B. Summary of Elk, Deer, and Pronghorn Hunters, Harvest, and Population Size

Hunters and Harvest Summary for Elk, Deer, and Pronghorn

Elk hunters and elk harvest peaked in 2004 and then declined for several years. Hunter numbers have since stabilized and slightly increased while harvest has generally continued on a downward trend (Figs. 1 and 2). The overall decline is primarily the result of reductions in limited cow licenses as herds achieve or approach population objectives. Numbers of hunters purchasing over-the-counter (OTC) licenses have been increasing slightly over the past several years following CPW marketing efforts. Demand for hunting opportunity, like other forms of outdoor recreation, has been very strong and increasing. CPW's aggressive cow elk harvest over the past years has reduced elk populations in many herds, which has resulted in fewer cow licenses in recent years. For example, large herds such as E-6 (White River), E-14 (Grand Mesa), E-16 (Frying Pan), E-20 (Uncompahgre), E-24 (Disappointment), E-25 (Lake Fork Gunnison R), E-30 (Hermosa), E-32 (Lower Rio Grande) and E-31 (San Juan) are at or approaching objectives and have had considerable reductions in cow licenses (Table 1). CPW has increased hunter recruitment and retention through marketing, increased education efforts, improved customer service, online hunt planning, and other strategies. It is anticipated that the number of elk hunters and the elk harvest will continue to decline slowly over the next few decades as a result of reduced elk population sizes requiring fewer cow elk licenses and a continued reduction in the number of OTC hunting opportunities to reduce crowding.

Modern deer hunter numbers and deer harvest peaked in 1990. Hunter numbers and deer harvest then declined steadily until deer licenses became totally limited in 1999, ending OTC deer licenses. The Wildlife Commission limited deer licenses in response to hunter concerns about population sizes and the number of mature bucks in the herds. Since 1999, deer harvest and deer hunters increased slightly, then declined because of the mortality that occurred in many of the largest deer herds on the west slope during the severe winter of 2007-2008 and the subsequent reductions in limited licenses. Some of those herds have not yet recovered. However, we are encouraged by improved herd performance in many herds. Even though deer populations in central and eastern parts of the state are stable or increasing, many of the largest herds in the western portions of the state have declined and are well below the levels of the late 1980's and early 1990's.

In December 2014, the PWC approved CPW's West Slope Mule Deer Strategy. This two-year effort engaged stakeholders and publics who were concerned about declining mule deer populations and interested in mule deer management. The West Slope Mule Deer Strategy includes seven strategic priorities that are designed to guide management in achieving the goal of working together with the public and stakeholders to stabilize, sustain and increase mule deer populations in western Colorado and, in turn, increase hunting and wildlife-related recreational opportunities.

Numbers of pronghorn hunters and pronghorn harvests have set records during recent years. This success is due to the fact that pronghorn and pronghorn licenses are abundant in the eastern portion of the state and demand for them is fairly high. This is particularly true of buck licenses. In 2010, pronghorn harvest set a record of 12,300. Harvest then declined for a time as the total pronghorn population was successfully reduced by high female license quotas, additional licenses, and late season hunting. The 2013 season resulted in the lowest success rate (46%) ever observed for pronghorn hunting in Colorado, demonstrating that beyond a license threshold hunter success and harvest actually decline with more licenses. CPW staff, hunters, and landowners in the Southeast Region all expressed concern about the hunter density in many areas. Pronghorn license quotas were designed to move populations towards objectives while addressing these challenges. When the eastern plains receive excellent spring and summer moisture, such as in 2015 and 2016, higher fawn production and recruitment is often the result. Conversely, in drought years such as 2021 fawn production is significantly reduced. Pronghorn populations and license quotas remain relatively high in over-objective herds (Figures 1 and 2).

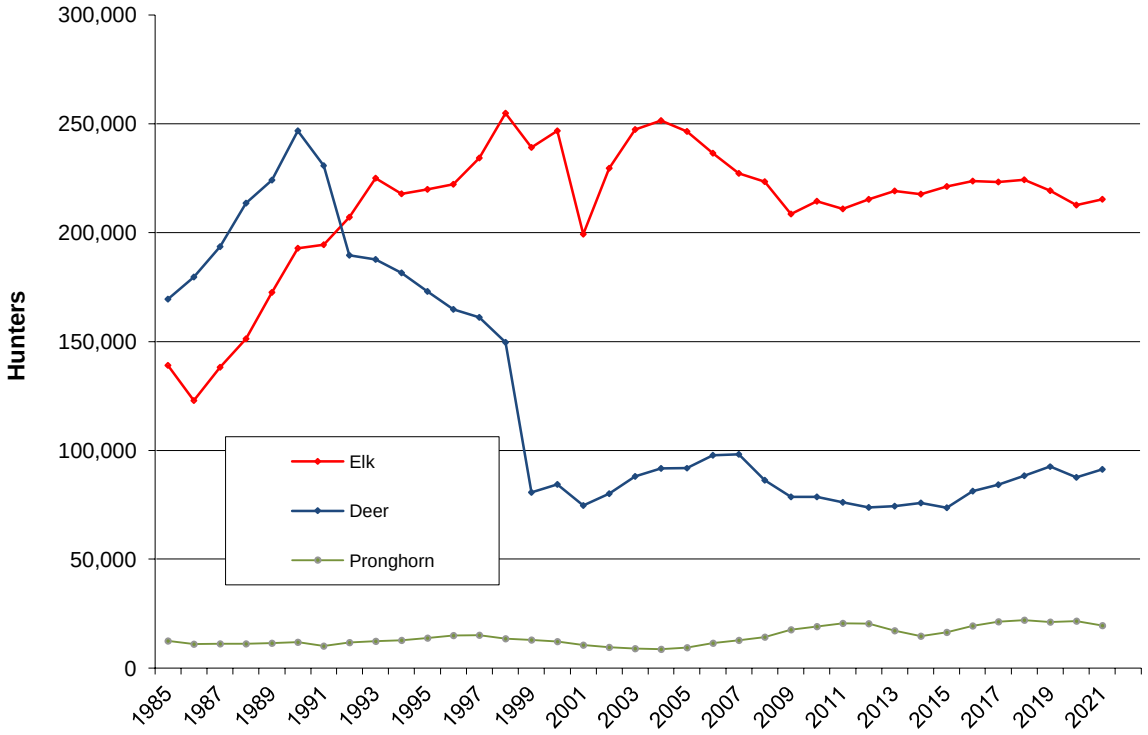


Figure 1. Number of elk, deer, and pronghorn hunters from 1985 to 2021.

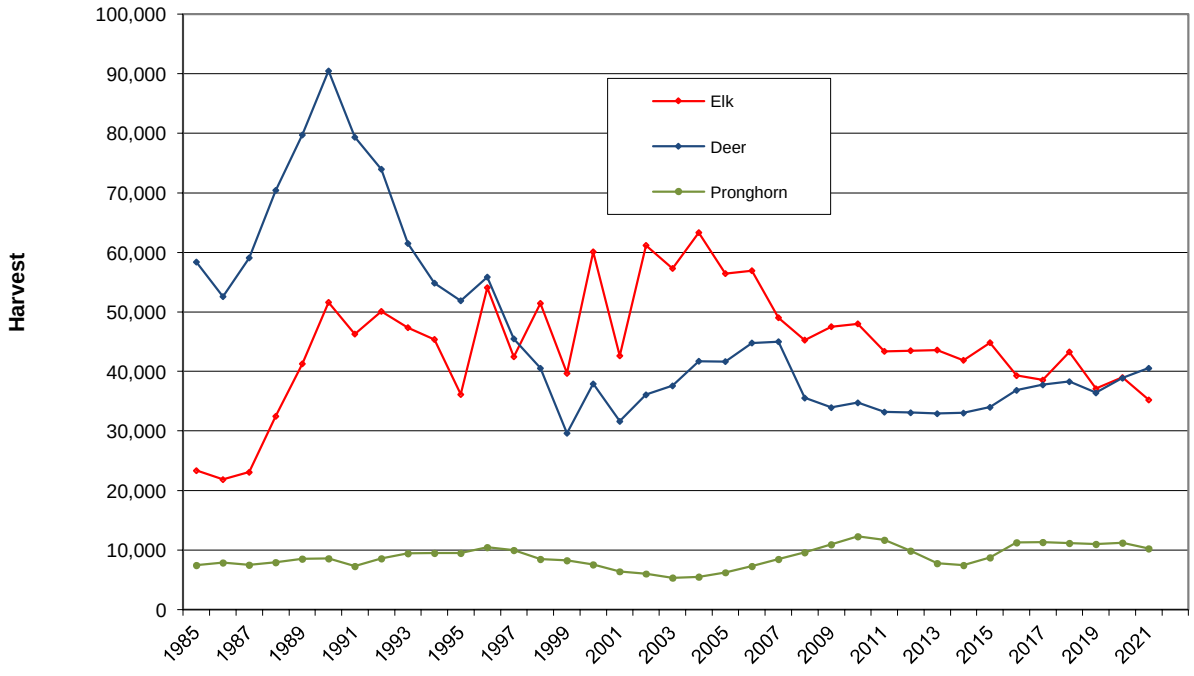


Figure 2. Elk, deer, and pronghorn harvest from 1985 to 2021.

Summary of Big Game Population Estimates Compared to Herd Management Plan Objectives

Individual HMP population objective ranges, targets, and 2021 post-hunt population estimates are reported in Tables 1-3. Statewide, the estimated 2021 post-hunt elk population estimate was 308,900 (Figure 3 and Table 1). Fourteen (33%) of the state's 42 elk herds are within their HMP population objective ranges (Table 1).

The statewide deer population estimate was 416,400 (Figure 5 and Table 2). Twenty-eight (52%) of the state's 54 deer herds are within their population objective ranges (Table 2).

The pronghorn population estimate was 78,180 (Figure 7 and Table 3). Seven (24%) of the state's 29 pronghorn herds are within their population objective ranges (Table 3).

C. Elk Herd (DAU) Over Objective

Twenty out of 42 elk herds (48%) exceeded their population objective ranges (Table 1). The sum of the elk population targets from Herd Management Plans for all herds is 285,700 in 2021 (Table 1). In several of Colorado's largest herds, such as E-6 (White River), E-14 (Grand Mesa), E-20 (Uncompahgre), E-24 (Disappointment), E-31 (San Juan), and E-33 (Trinchera), CPW intentionally reduced elk populations toward objectives. Several other large herds, such as E-2, are moving towards objective and are expected to be at or very close to objective with current management strategies. Based on modeled population estimates, statewide elk numbers were intentionally reduced with antlerless harvest from 2004-2015 (Figure 3). As a result, we increasingly hear from hunters, outfitters, and some landowners that there are fewer elk than they would prefer. DAUs E-6 (White River), E-14 (Grand Mesa), E-16 (Frying Pan), E-20 (Uncompahgre), E-24 (Disappointment), E-31 (San Juan), E-32 (Lower Rio Grande), and E-33 (Trinchera) are examples of large herds where hunters have expressed dissatisfaction in the reduced elk population sizes. License revenue also drops because hunting opportunity is reduced. As we reduce elk populations the number of cow licenses necessary to maintain these populations is also reduced. When populations reach population objectives or those HMP population objective ranges are increased, CPW reduces antlerless license quotas. Elk populations are responding to lower cow harvest and are increasing (Figure 3)

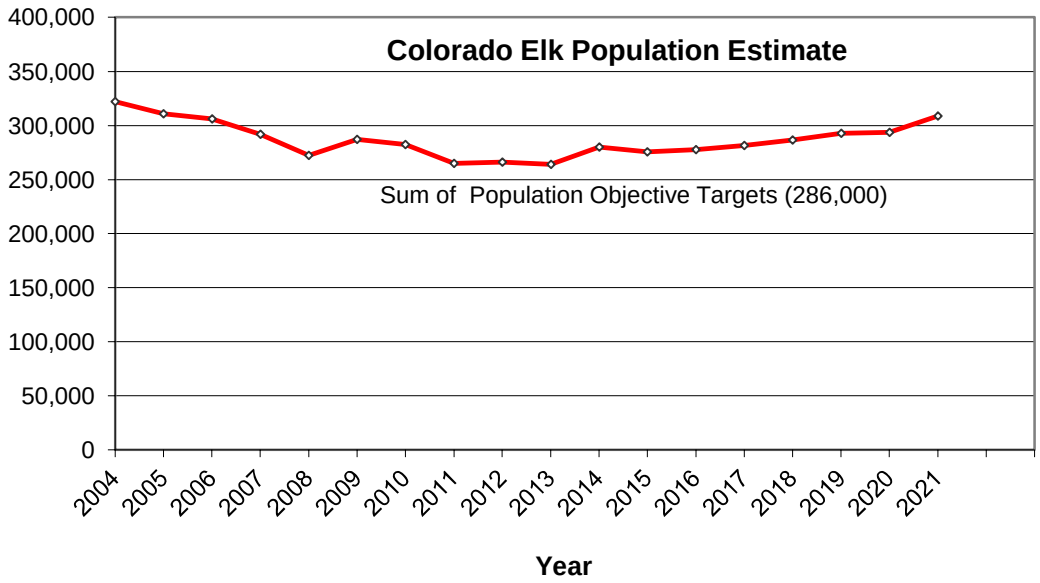


Figure 3. Estimated statewide post-hunt elk population. Current estimates based on 2021 models.

Approximately 12 elk herds, representing about 30% of the statewide elk population are considered problematic for achieving population objectives. In these herds it is not possible to reduce elk numbers simply by increasing the number of licenses available due to access limitations associated with private land ownership and public land refuges. License increases to the degree necessary to reduce population size can drive more elk onto private property and have the confounding effect of lowering success rates and harvest. There is also a saturation point for limited licenses above which demand drops off and licenses go unsold, this is because elk refuge on private land and hunters feel crowded on public land.

Unsold Quotas

As CPW reduces license quotas, the number of unsold limited elk licenses has been declining, now only approximately 5%. Cow licenses are the primary tool for population management. Unsold cow licenses are typically private-land-only (PLO) licenses, in units with access issues, or in hunts with lower success rates. Because demand is high for limited bull licenses and the majority of rifle bull licenses and archery either-sex licenses are sold OTC, limited license availability, or lack thereof, is related to the number antlerless elk (a.k.a. cow) rifle licenses.

Examples: E-3(North Park), E-10(Yellow creek), E-11(Sand Dunes), E-33(Trinchera)

Effects of Access on Elk Harvest

Private Land

Lack of private land access is the primary factor preventing elk herds from being reduced to objective in many DAUs. Achieving elk population objectives in DAUs with large amounts of private land can be difficult because harvest in these units is largely determined by the extent landowners will provide access to hunters. Some landowners provide little if any public hunting access whereas others only allow access to bull hunters for a substantial fee. Cow hunters are seldom willing to pay the same access fees as bull hunters so cow harvest on private land can be disproportionately low. Hunting pressure on public land is often much greater than on private land, which can quickly push elk to private land greatly reducing elk harvest. Elk can also occur in more developed areas such as residential subdivisions where hunting can be controversial or prohibited.

Examples: E-9(Saint Vrain), E-33(Trinchera), E-51(Castle Rock)

Even in DAUs with a majority of public land, a high percentage of elk can avoid hunting pressure by congregating on private properties. In some cases, it only takes a few key landowners to restrict hunting to substantially reduce harvest. Elk movement from public to private land is hastened by a high degree of motorized vehicle access on public land.

Examples: E-55(Northern San Luis Valley floor), E-2(Bears Ears), E-6 (White River)

In some DAUs the majority of elk winter on public land. Although late seasons can be effective in these DAUs, holding late seasons is sometimes resisted because they can force large numbers of elk onto adjacent private land where they are more likely to cause agricultural damage.

Examples: E-20 (Uncompahgre), E-55(Northern San Luis Valley floor), E-5 (West Elk Mountains)

Government Refuges

Large refuge areas where hunting is prohibited exist in some DAUs. These areas include National Parks and Monuments, military installations, and county parks and open space. Elk quickly learn where hunting is allowed and where it is not. In some cases, deep snow can force elk out of refuge areas where they can be hunted and seasons can be structured to take full advantage of such movements when they occur. In other cases, such as E-9 (Saint Vrain) and E-11 (Sand Dunes), the refuge area is in winter range and elk can stay protected. CPW works with federal and local governments to try and coordinate harvest efforts as much as possible but the state has no authority to require hunting in these areas.

Examples: E-9 (Saint Vrain), E-11(Sand Dunes), E-5 (West Elk Mountains)

Public Land Access

Even on public land, access can be an issue in some DAUs. Cow harvest can be low in DAUs with large federal wilderness areas or rough, roadless terrain where cow hunters are less likely to go into remote areas where the

elk are. In some DAUs, snow will force elk to move into more accessible areas and harvest objectives can be achieved during late seasons. However, in other DAUs elk quickly make the transition from remote wilderness to private land, making harvest problematic during regular and late seasons.

Examples: E-35(Cimarron)

Interstate Movements

Elk in state line DAUs frequently move into Wyoming, Utah, and New Mexico making management of these units uniquely challenging. Coordination with adjacent states and understanding movement patterns are necessary for effective management.

Examples: E-3(North Park), E-32(Lower Rio Grande)

Population Estimates and Population Objectives

CPW has worked consistently over the years to improve our inventory and modeling efforts for big game populations. CPW has investigated the ability to estimate elk abundance, in different habitats, from a helicopter during several projects. These trials are intended to improve the efficiency, accuracy, and precision of our elk inventory. Elk abundance estimates continually prove challenging to obtain with acceptable precision because elk distribution is clumped rather than even on the landscape due to large wintering herds. The big game population models used by CPW continue to evolve as better information and methods become available. For example, research has shown that elk exhibit higher survival and reproduce at older ages than previously thought. These data are now incorporated into population models. In 2022, CPW established 3 new elk monitoring areas to complement the existing 3 elk research study areas. In combination, these efforts will continue to improve our adult and calf survival information allowing better estimates of elk population sizes.

The net effect of improved modeling has been an increase in elk population estimates. As a result, some elk herds that were considered to be near objective are now estimated to be above objective. The herd management planning process is also used to better align existing objectives with the newer population estimates when publics are generally satisfied with current population levels.

Strategies to Reduce Elk Populations to Objective

CPW will employ and evaluate a variety of strategies to reduce elk populations to objective. These strategies can be grouped into 6 categories.

1. Liberal regulations that apply to many elk units in the state
   - *Over- the- counter (OTC) archery either-sex licenses.*
   - *List B cow licenses. List B licenses can be purchased in addition to a primary, List A license allowing a hunter to harvest two elk. CPW designates licenses as List B to incentivize their purchase as an "additional" license when herds are above population objectives and/or the quota typically doesn't sell out. All private-land-only antlerless license are List B.*
   - *List B archery cow licenses in DAUs that have List B rifle cow licenses. .*
   - *List C cow and either-sex licenses that allow hunters to harvest an unlimited number of elk. Antlerless private- land-only in certain units and either-sex licenses for plains only units are List C.*
   - *OTC rifle bull licenses during 2nd and 3rd seasons.*
   - *Youth hunters with unfilled cow or either-sex licenses can hunt cows during all remaining antlerless elk seasons in the DAUs where their original license was valid.*

- *Multiple seasons.* Holding 4 rifle seasons with breaks in-between allows time for elk to redistribute during the break periods. Each season brings in a new wave of hunters and success rates are consistently highest at the beginning of each season. The 2020-2024 Big Game Season Structure retained these 4 rifle seasons and increased the length of the breaks between them to encourage movement off private land refuges to increase harvest.

2. Regulations commonly used to increase antlerless elk harvest.
   - *Increased rifle cow licenses during the regular seasons.* The most straightforward way to increase cow harvest is to increase the number of cow licenses during the regular seasons. Although this approach can be very effective in some DAUs, it can have little benefit or prove detrimental to harvest in others, particularly when hunter access is the primary issue limiting harvest. Offering too many licenses can result in unsold licenses, hunter crowding, reduced success rates, and more hunters that are dissatisfied.
   - *Change limited bull licenses to either-sex licenses.* Replacing limited bull licenses with either-sex licenses has proven to be an effective way to increase cow harvest in some DAUs because experience has shown that cows make up approximately 35% of the harvest on either-sex licenses.
   - *List B or List C regular and private land only (PLO) cow licenses.* A hunter can purchase a List B license in addition to a List A license (e.g., most bull and either-sex licenses are List A licenses) or another List B license. Hunters can purchase any number of List C licenses. Cow licenses in DAUs that are over objective are List B to encourage harvest. All PLO cow licenses statewide are List B or List C.
   - *Extended PLO cow seasons.* Keeping pressure on elk on private land even when regular hunting seasons are closed can be an effective way to keep more elk on public land and increase harvest. Extended PLO seasons can run from August 15th until the end of February and do not need to conform to regular season dates. Hunting cow elk is generally not allowed outside of this period because of concerns about dependent young and late gestation.
   - *Late cow elk seasons.* Late cow seasons that occur between the end of the 4th regular rifle season and the end of February can be very useful for achieving harvest objectives in many DAUs. Use of non-PLO late seasons must weigh the potential for increased harvest against the potential for pushing more elk to private land.

3. Regulations used to reduce agricultural damage and conflicts
   - *Special Game Damage Seasons and Habitat Partnership Program (HPP) Distribution Hunts for cow elk.* Special Game Damage Seasons are widely used to address elk damage issues on specific private properties. Game damage licenses for private land are approved by the local Area Wildlife Manager and are limited in number by CPW regulation. When game damage is occurring at larger scales, a distribution management plan may be developed. HPP distribution hunts are used to redistribute elk to address elk damage on multiple properties and can include public land.
   - *Kill permits for bulls and cows.* In some cases, CPW has issued kill permits to allow sharpshooters to kill elk outside of seasons and/or after legal hours. Kill permits are used to address special game damage situations where regular hunters would be ineffective.
   - *Summer bull seasons.* This strategy has been used in E-55 to keep pressure on elk damaging irrigated croplands during the summer.

4. Landowner incentive programs
   - *Ranching for Wildlife (RFW).* The RFW program offers transferable bull licenses to enrolled landowners with large properties (>12,000 acres) in return for allowing some public hunting. Most public licenses are for cow hunting. RFW provides valuable opportunity for increasing cow harvest on large properties where little opportunity would otherwise exist. RFW has been very successful at increasing cow harvest in many DAUs with large private ranches (for example E-2 (Bears Ears).
   - *Landowner Preference Program.* SB13-188 enacted changes to the existing Landowner preference program in three main areas: information collection, enforcement, and program changes. The new

program was implemented in July 2014 and was applied to the limited license draw for the first year in the 2015/2016 hunting season. Colorado's wildlife depends on private land for habitat. Even in a state with 23 million acres of public land, some of the most valuable wildlife habitat in the state is on private land. Many of Colorado's hunters, resident and non-resident alike hunt on private land. As an incentive, the Landowner Preference Program dedicates an allocation of limited licenses to qualified landowners. In general, landowners who see wildlife as a benefit accept larger populations of wildlife on their farms and ranches and are more willing to improve habitat for wildlife.

- *Private land hunt coordinators.* In some cases, the CPW via the Habitat Partnership Program (HPP) has provided hunt coordinators to schedule hunts and accompany hunters on private property. Hunt coordinators help minimize landowner-hunter interaction and provide increased assurance that rules specified by landowners are obeyed. Although this program can be expensive, it can be useful in certain situations such as in E-11 (Sand Dunes).

5. Regulations occasionally used.

- *Limited archery hunting.* Studies with radio-collared elk in some DAUs have shown substantial movements of elk from public to private land during the early archery and muzzleloader seasons. OTC archery either-sex licenses are available in most DAUs, and OTC List B archery cow license are available in some DAUs, but archery harvest usually makes up only a small portion of the overall cow harvest. Rifle hunters are much more efficient at harvesting cows than archery hunters. Whereas the number of rifle elk hunters has steadily declined, the number of archery elk hunters has steadily increased. Limiting archery hunting pressure can potentially result in more elk being available to rifle hunters on public land and thereby increase cow harvest. However, limited archery hunting is strongly opposed by many archery hunters including the Colorado Bowhunters Association.
  In 2010, Gunnison (DAU E-43) archery licenses were limited in an attempt to keep elk on public land to achieve population objectives. In 2020, all archery elk licenses were limited in E-24 (Disappointment), E-30 (Hermosa), and E-31 (San Juan), E-32 (Lower Rio Grande).
- *Open state wildlife areas (SWAs) to late season hunting.* Some SWAs are closed to late season hunting to help keep elk off of private land. Allowing hunting on these SWAs can increase harvest but it can also push elk to private land where they are more likely to cause damage. The efficacy of opening SWAs to late season hunting often depends on sufficient counter hunting pressure on surrounding private lands.
- *OTC rifle cow licenses*. OTC rifle cow licenses have been issued in some DAUs in the past. In many DAUs that are over objective, leftover cow licenses are often easy to obtain (indicating an excessive supply); in this situation, OTC licenses (which are unlimited) would be of little value for increasing harvest.
- *Totally limited elk licenses.* Proponents of totally limited elk licenses often claim that harvest can be increased by making all elk licenses limited and reducing the number of hunters. CPW has found little evidence to support this claim. Although most limited elk DAUs on the east slope are at or close to objective, these DAUs have relatively small numbers of elk and do not have a history of exceeding objectives. No public nominations for totally limited elk hunting (all hunts and seasons) were made during the 2015-2019 or 2020-2024 Big Game Season Structure processes. Historic attempts to create more totally limited elk units have been met with considerable and often times overwhelming opposition from the public.

6. Potential new strategies

CPW considers new management strategies or ideas through the BGSS, annual regulatory process, and public petition process. Several previously considered or attempted ideas for reducing elk numbers are listed below. Some of these options have received consideration by the PWC and CPW in the past but were not implemented for a variety of reasons. Some of the options would be strongly opposed by certain segments of the public even though they might be effective at reducing elk numbers. Other options are presented because they are commonly suggested by the public.

- *Access Programs*. In 2017, CPW created a big game access component within the existing Walk-In Access Program. Walk-in access for big game could increase harvest in DAUs that are above population objective. This option will provide deer, pronghorn, and elk hunting access to private land enrolled in the highly successful small game Walk-In Access program (i.e., landowners are paid a per acre fee by CPW to allow public hunters on their property).
- *Early rifle cow seasons.* In DAUs where elk make early movements to private land, early rifle cow seasons could potentially increase harvest. Early rifle seasons are opposed by many archers and muzzleloader hunters.
- *Culling.* Culling involves using agency personnel or contractors to shoot elk to reduce the population. Culling is occasionally used by the National Park Service to reduce elk numbers because sport harvest is prohibited in most national parks and monuments. CPW has done some elk culling to address concerns related to chronic wasting disease. Culling is seldom acceptable to the public unless there is a clear need and there is no other option. The need is usually either that habitat degradation due to overpopulation is obvious (such as the recent culling operation in Rocky Mountain National Park) or reducing animal numbers could alleviate a major threat to animal or human welfare. Culling hundreds of elk to get a DAU down to objective would be strongly opposed by the public and is not considered realistic by CPW.
- *Translocation.* Capturing and moving elk from high density units to low density units or out of state is commonly suggested by the public. On a DAU scale, translocation would be cost prohibitive and would be a short-term solution at best. Furthermore, by Commission policy, CPW cannot move elk from CWD positive units to areas where the disease has not been detected. CWD has been detected in approximately 1/3 of Colorado elk herds . Most of the northern part of the state is positive for CWD and CWD has not been detected in much of southern Colorado. Additionally, there is little if any demand for Colorado elk from other states, particularly given concerns regarding CWD.
- *Increase recreational leases on State Land Board lands making them State Trust Lands open to public hunting*.

D. Elk Herds (DAU) Below Objective

Eight out of 42 elk herds (19%) were below population objective ranges (Table 1).

Strategies to Increase Elk Populations to Objective

- *Decrease limited antlerless and either-sex license numbers.* Many of Colorado's elk herds are very productive, particularly in the northern tier of the state. Typically, when elk populations are lower than they historically have been, it is a direct result of liberal cow licenses designed to reduce herd size to meet population objectives. The southern tier of the state has had lower, and declining, calf ratios for over a decade so antlerless licenses have been reduced even more dramatically there when herds are below population objective. Examples: E-30 (Hermosa), E-31 (San Juan), and E-34 (Upper Rio Grande).
- *Research low elk recruitment.* In 2017, CPW initiated a new research project to investigate causes of low calf ratios in the southern tier of the state.
- *Limit cow and either-sex archery licenses. The 2020-2024 BGSS provides the opportunity to limit archery hunting by DAU. In 2020, several DAUs were changed from OTC to limited archery elk, Examples:* E-16(Frying Pan), E-24(Dissappointment), E-30 (Hermosa), and E-31 (San Juan).
- *Reduce wildlife-vehicle collisions with highway crossing structures for wildlife. Wildlife crossing structures have been completed recently in E-13(Williams Fork) and E-31(San Juan). Wildlife-vehicle mitigation projects are underway in numerous other DAUs such as E-51(Castlerock) and E-2(Bears Ears).*

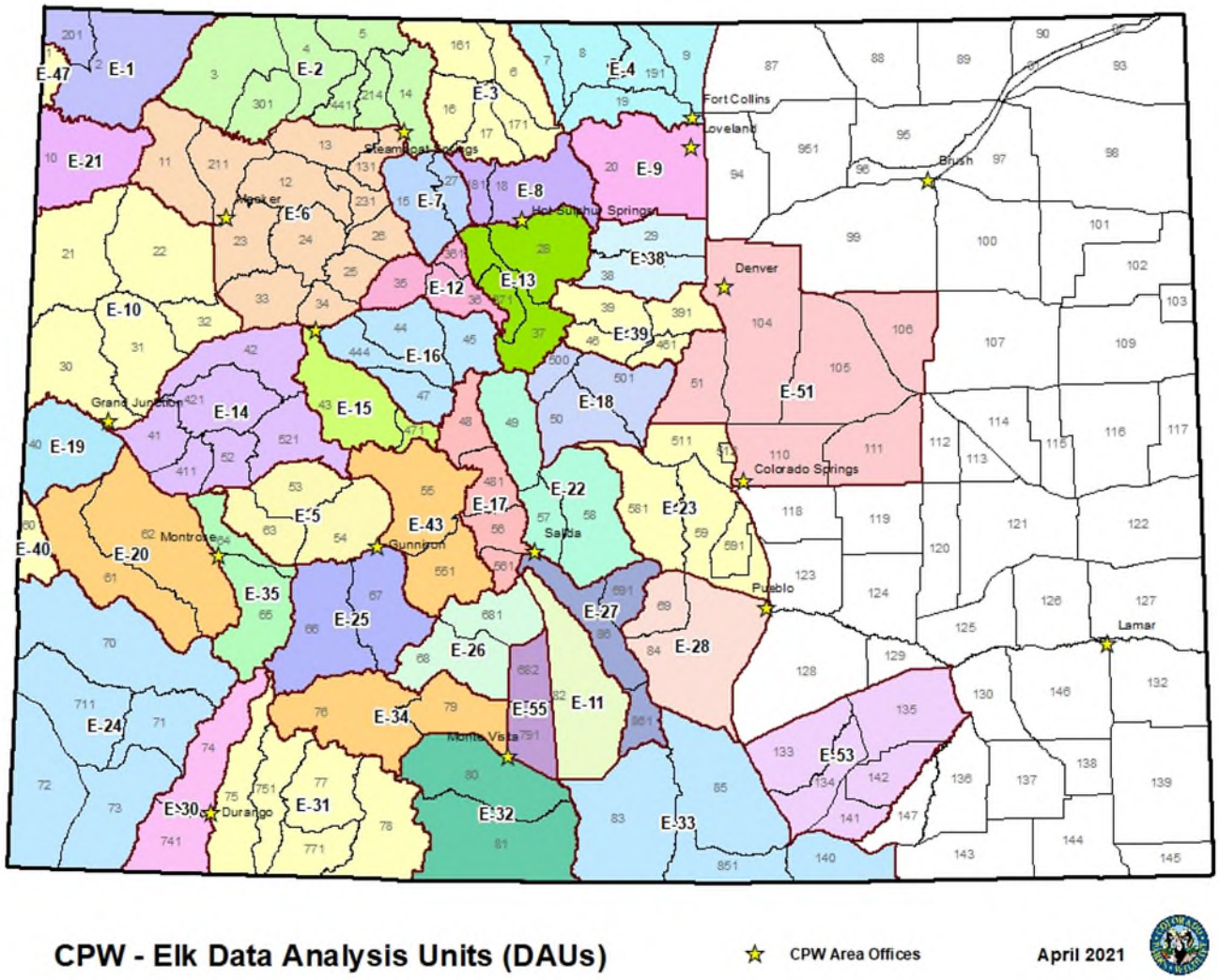


Figure 4. Elk Data Analysis Units and their associated Game Management Units.

Table 1. 2021 Winter Elk Population Estimates and Population Objective Ranges

DAU								POPULATION				
DAU	Name	GMUs	CPW Region	CPW Area	HMP Year	Mgmt Type-Obj	APR	Population Objective Min	Population Objective Max	Population Target within Objective Range	2021 Population Estimate	2021 Population Estimate Relative to Population Objective Range
E-4	Poudre River	7, 8, 9, 19, 191	NE	4	2009	Lim-CWD	4 pt	3,600	4,200	4,200	**6,440**	Above Objective
E-9	St. Vrain	20	NE	2	2007	Lim-Crowding	Spike	2,200	2,600	2,400	**2,110**	Below Objective
E-18	Kenosha Pass	50, 500, 501	NE	1,13	2018	Lim-Crowding	Spike	2,000	2,400	2,200	**2,260**	Within Objective
E-38	Clear Creek	29, 38	NE	2	2006	Mix	P Spike	1,000	1,400	1,200	**1,550**	Above Objective
E-39	Mt Evans	39, 46, 391, 461	NE	1	2016	Lim-Crowding	Spike	2,200	2,600	2,400	**2,420**	Within Objective
E-51	Castle Rock	51, 104, 105, 106, 110, 111	NE	5,14	None	Mix	Spike	1,200	1,200	1,200	**2,520**	Above Objective
		NE Subtotal or Weighted Average						12,200	14,400	13,600	**17,300**	
E-1	Cold Springs	2, 201	NW	6	2013	Lim-Quality	Spike	700	1,700	1,200	**1,500**	Within Objective
E-2	Bear's Ears	3, 4, 5, 14, 214, 301, 441	NW	6, 10	2008	OTC	4 pt	15,000	18,000	15,000	**24,060**	Above Objective
E-3	North Park	6, 16, 17, 161, 171	NW	10	2008	OTC	4 pt	4,000	4,500	4,500	**4,720**	Above Objective
E-6	White River	11, 12, 13, 23, 24, 25, 26, 33, 34, 131, 211, 2	NW	, 8, 9, 1	2005	OTC	4 pt	32,000	39,000	39,000	**40,580**	Above Objective
E-7	Gore Pass	15, 27	NW	9	2020	OTC	4 pt	4,000	5,000	5,000	**4,870**	Within Objective
E-8	Troublesome Creek	18, 181	NW	9	2010	OTC	4 pt	3,600	4,300	4,000	**4,150**	Within Objective
E-10	Yellow Creek	21, 22, 30, 31, 32	NW	6,7	2022	OTC	4 pt	8,500	10,500	9,500	**14,930**	Above Objective
E-12	Piney River	35, 36	NW	8	2013	OTC	4 pt	3,000	4,600	3,800	**4,090**	Within Objective
E-13	Williams Fork River	28, 37, 371	NW	9	2010	OTC	4 pt	4,700	5,500	5,000	**4,120**	Below Objective
E-14	Grand Mesa	41, 42, 52, 411, 421, 521	NW/SW	7,16	2010	OTC	4 pt	15,000	19,000	15,000	**14,340**	Below Objective
E-15	Avalanche Creek	43, 471	NW	8	2013	OTC	4 pt	3,600	5,400	4,500	**4,440**	Within Objective
E-16	Frying Pan River	44, 45, 47, 444	NW	8	2013	OTC	4 pt	5,500	8,500	7,000	**7,600**	Within Objective
E-19	Glade Park	40	NW	7	2010	Lim-Quality	P Spike	2,800	3,800	3,300	**3,910**	Above Objective
E-21	Rangely - Blue Mountain	10	NW	6	None	Lim-Quality	Spike	1,200	1,200	1,200	**1,480**	Above Objective
E-47	Green River	1	NW	6	None	Lim-Quality	Spike	170	170	170	**200**	Above Objective
		NW Subtotal or Weighted Average						103,770	131,170	118,170	**134,980**	
E-17	Collegiate Range	48, 56, 481, 561	SE	13	2011	Lim-Crowding	Spike	3,150	3,850	3,500	**3,070**	Below Objective
E-22	Buffalo Peaks	49, 57, 58	SE	13	2018	Lim-Crowding	Spike	3,150	3,500	3,300	**3,850**	Above Objective
E-23	Eleven Mile	59, 511, 512, 581, 591	SE	13,14	2012	OTC	P Spike	2,700	3,300	3,000	**4,510**	Above Objective
E-27	Sangre de Cristo	86, 691, 861	SE	11	2020	OTC	4 pt	1,800	2,200	2,100	**2,340**	Above Objective
E-28	Grape Creek	69, 84	SE	11	2020	Lim-Crowding	Spike	2,400	2,800	2,600	**2,290**	Below Objective
E-33	Trinchera	83, 85, 140, 851	SE	11,17	2007	OTC	4 pt	14,000	16,000	16,000	**14,890**	Within Objective
E-53	Apishipa	133, 134, 135, 141, 142	SE	11,12	None	OTC	Spike	250	250	250	**1,270**	Above Objective
		SE Subtotal or Weighted Average						27,450	31,900	30,750	**32,220**	
E-5	West Elk Mountains	53, 54, 63	SW	16	2018	OTC	4 pt	7,800	8,800	8,800	**8,480**	Within Objective
E-11	Sand Dunes	82	SW	17	2021	OTC	4 pt	3,000	4,000	3,500	**5,780**	Above Objective
E-20	Uncompahgre	61, 62	SW	18	2006	Mix-Quality	P Spike	8,500	9,500	9,500	**12,540**	Above Objective
E-24	Disappointment Creek	70, 71, 72, 73, 711	SW	15,18	2020	OTC	4 pt	21,000	24,000	22,500	**19,550**	Below Objective
E-25	Lake Fork	66, 67	SW	16	2017	Lim-Crowding	4 pt	6,000	7,000	7,000	**6,570**	Within Objective
E-26	Saquache	68, 681	SW	17	2019	OTC	4 pt	4,000	4,800	4,500	**4,810**	Above Objective
E-30	Hermosa	74, 741	SW	15	2020	OTC	4 pt	7,500	9,000	8,300	**6,140**	Below Objective
E-31	San Juan	75, 77, 78, 751, 771	SW	15	2020	OTC	4 pt	25,000	28,000	26,500	**23,670**	Below Objective
E-32	Lower Rio Grande	80, 81	SW	15	2018	OTC	4 pt	11,500	13,000	12,000	**12,860**	Within Objective
E-34	Upper Rio Grande	76, 79	SW	17	2022	Mix-Quality	P Spike	6,000	8,000	7,000	**7,330**	Within Objective
E-35	Cimarron	64, 65	SW	18	2022	OTC	4 pt	6,000	9,000	9,000	**7,400**	Within Objective
E-40	Paradox	60	SW	18	2008	OTC	4 pt	900	1,100	1,100	**2,580**	Above Objective
E-43	Fossil Ridge	55, 551	SW	16	2001	OTC	4 pt	3,000	3,500	3,500	**6,550**	Above Objective
E-55	Northern San Luis Valley Floo	682, 791	SW	17	2006	Lim-Damage	4 pt	0	0	0	**150**	Above Objective
		SW Subtotal or Weighted Average						110,200	129,700	123,200	**124,410**	
STATEWIDE TOTAL								**253,620**	**307,170**	**285,720**	**308,900**	

4 Pt = 4 point antler restiction on bulls
Spike = No antler point restriction on bulls
P Spike = Some GMUs in the DAU are 4 Pt and some are Spike
Lim = All elk licenses are limited in the DAU
OTC = Over the counter licenses
Mix = Some GMUs in the DAU are Lim and some are OTC.

E. Deer Herds (DAUs) Over Objective

Ten out of 54 deer herds (19%) exceeded their population objective ranges (Table 2). Several of these herds are on the eastern plains of Colorado, which consist almost entirely of private land.

Strategies to Reduce Deer Populations to Objective

- *Increase PLO and regular doe licenses.*
- *List B regular season doe licenses.*
- *White-tailed deer only doe licenses.*
- *PLO season-choice doe licenses.*
- *Landowner Preference Program*
- *Late doe seasons.*
- *SE Region GMUs west of I-25 have over-the-counter, either-sex white-tailed deer only licenses to increase hunting opportunity and reduce white-tailed deer populations. These licenses were initiated in 2014.*
- *Access Programs*. In 2017, CPW created a big game access component within the existing Walk-In Access Program. Walk-in access for big game could increase harvest in DAUs that are above population objective. This option will provide deer, pronghorn, and elk hunting access to private land enrolled in the highly successful small game Walk-In Access program (i.e., landowners are paid a per acre fee by the CPW to allow public hunters on their property).
- *Increase recreational leases on State Land Board lands making them State Trust Lands open to public hunting*.

F. Deer Herds (DAUs) Below Objective

The sum of the deer population targets from Herd Management Plans for all herds is 490,300 in 2021 (Table 2). Although some herds have increased in recent years and are moving toward objectives, 16 of 54 herds (29%) are still below objective range. Many of the large herds in western Colorado have declined resulting in the statewide total deer population decline (Figure 5).

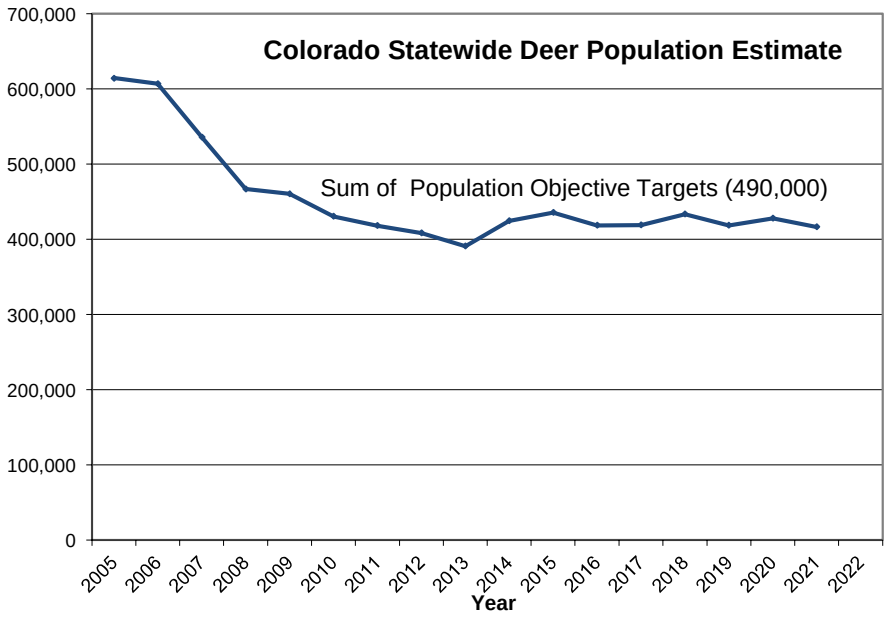


Figure 5. Estimated, statewide post-hunt deer population. Current estimates based on 2021 models.

Population Estimates and Population Objectives

Severe winters negatively affect mule deer herd performance by lowering survival. High deer mortality occurred in most of the West Slope during the 2007-2008 winter and populations in a few of those DAUs have not fully recovered. Portions of northwest Colorado also experienced difficult winters in 2010-2011 and 2015-2016. The Gunnison Basin and herds north of Craig to the Wyoming line experienced an extremely severe winter in 2016-2017.

Strategies to Increase Deer Populations to Objective

- *Reduce or eliminate regular season doe licenses*
- *Modify hunt codes to remove list "B" and list "C" designations to allow more than one deer in the annual bag limit.*
- *Reduce PLO doe licenses to the extent practicable to still address game damage concerns.*
- *Landowner Preference Program*
- *Habitat improvement projects.*
- *Reduce wildlife-vehicle collisions with highway crossing structures for wildlife. On the Western Slope, more adult does mule deer are killed by vehicle collision than hunters. Annually 2% of does CPW radio-collars are killed by vehicles.*
- *Reduce elk numbers to objective to reduce inter-specific competition on shared winter range.*

DAUs WITH URBAN DEER CONFLICTS

Strategy to Reduce Urban Deer Conflicts

Year-round, non-migratory deer densities have increased in many communities. This is often independent of the population trend for the herd. CPW is attempting to minimize urban deer conflicts with early seasons that are set prior to the arrival of migratory deer. The first of such seasons started in 2011 around the communities of Craig and Buena Vista. These efforts were expanded to include the Salida area in 2012.

In 2017, CPW created a new program to use special seasons and licenses to hunt urban and suburban deer and elk within participating cities, towns, or municipalities using Director-approved species management plans.

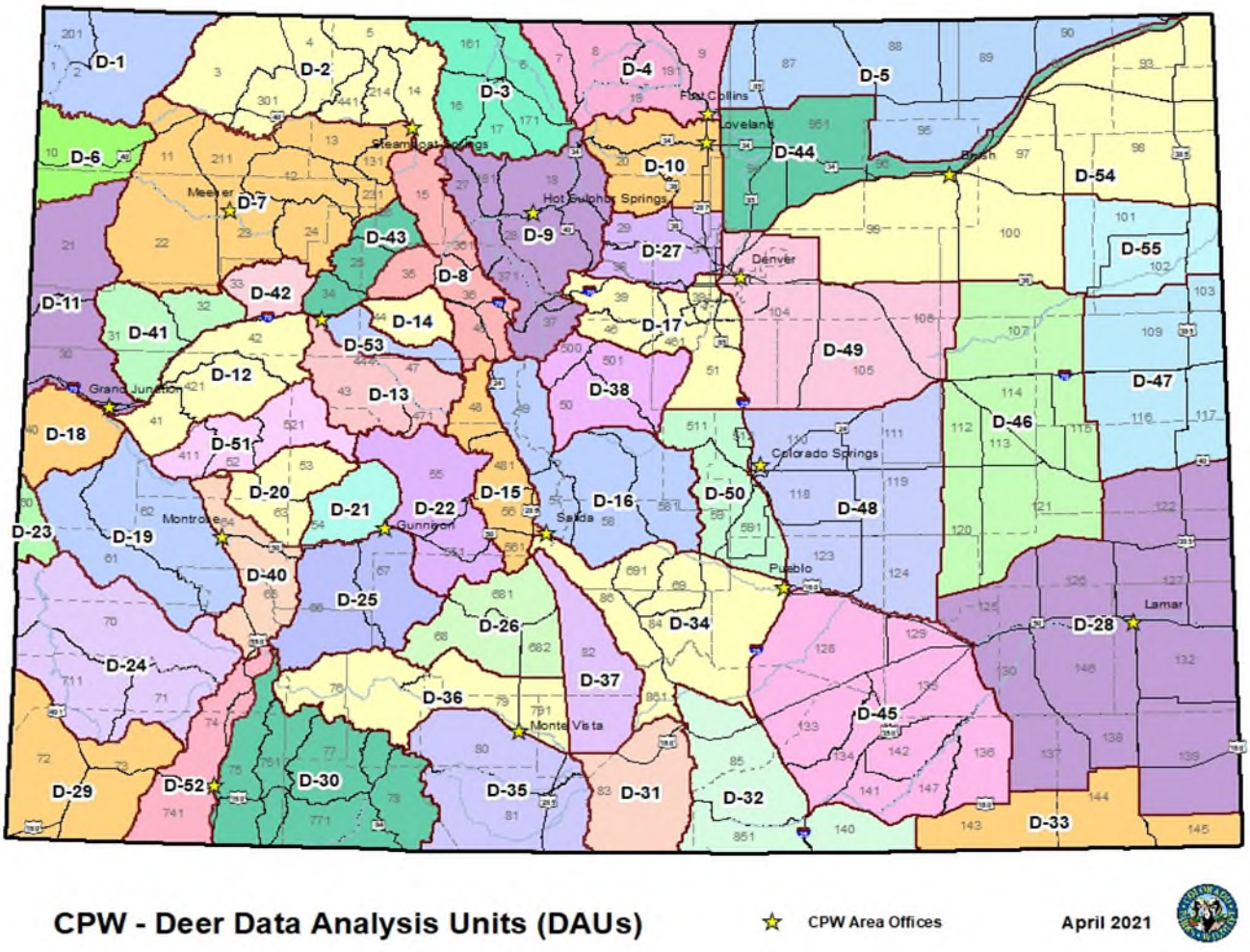


Figure 6. Deer Data Analysis Units and their associated Game Management Units.

Table 2. 2021 Winter Deer Population Estimates and Population Objective Ranges

DAU								POPULATION				
DAU	Name	GMUs	CPW Region	West of I-25	CPW Area	HMP Year	Mgmt Type	Population Objective Min	Population Objective Max	Population Target within Objective Range	2021 Winter Population Estimate	2021 Population Estimate Relative to Population Objective Range
D-4	Red Feather	7, 8, 9, 19, 191	NE	Yes	4	2018	4th	13,000	15,000	14,000	**13,970**	Within Objective
D-5	Table Lands North	87, 88, 89, 90, 95	NE	No	3,4	2021	Plains	2,500	3,000	2,700	**2,980**	Within Objective
D-10	Big Thompson	20	NE	Yes	2	2018	4th	8,000	10,000	9,000	**8,410**	Within Objective
D-17	Bailey	39, 46, 51, 391, 461	NE	Yes	1	2006	4th	7,500	8,300	7,900	**7,640**	Within Objective
D-27	Boulder	29, 38	NE	Yes	2	2012	4th	6,000	7,500	7,000	**7,150**	Within Objective
D-38	South Park	50, 500, 501	NE	Yes	1,13	2015	4th	2,500	3,100	2,800	**3,590**	Above Objective
D-44	South Platte River	91, 92, 94, 96, 951	NE	No	2,4	2021	Plains	3,500	4,000	3,700	**3,840**	Within Objective
D-49	Bijou Creek	104, 105, 106	NE	No	5,14	2009	Plains	5,500	6,500	6,000	**5,780**	Within Objective
D-54	South Tablelands	93, 97, 98, 99, 100	NE	No	3	2021	Plains	3,500	4,000	3,700	**3,900**	Within Objective
D-55	Arickaree	101, 102	NE	No	3	2018	Plains	2,300	2,700	2,500	**2,390**	Within Objective
		NE Subtotal or Weighted Average						54,300	64,100	59,300	**59,630**	
D-1	Little Snake	1, 2,201	NW	Yes	6	None		13,500	13,500	13,500	**1,380**	Below Objective
D-2	Bear's Ears	3, 4, 5, 14, 214, 301, 441	NW	Yes	6,10	1992	4th	37,800	37,800	37,800	**38,860**	Above Objective
D-3	North Park	6, 16, 17, 161, 171	NW	Yes	10	2002	4th	5,400	6,600	5,400	**5,750**	Within Objective
D-6	Rangely	10	NW	Yes	6	None	4th	7,000	7,000	7,000	**960**	Below Objective
D-7	White River	11, 12, 13, 22, 23, 24, 131, 211, 231	NW	Yes	6,8	2020	4th	25,000	35,000	35,000	**32,280**	Within Objective
D-8	State Bridge	15, 35, 36, 45	NW	Yes	8,9	2020	4th	10,000	14,000	13,000	**14,460**	Above Objective
D-9	Middle Park	18, 27, 28, 37, 181, 371	NW	Yes	9	2020	4th	10,500	14,000	14,000	**13,990**	Within Objective
D-11	Bookcliffs	21, 30	NW	Yes	6,7	2022		5,000	8,000	8,000	**8,660**	Above Objective
D-12	North Grand Mesa	41, 42, 421	NW	Yes	7	2010	4th	17,000	23,000	20,000	**16,550**	Below Objective
D-13	Maroon Bells	43, 47, 471	NW	Yes	8	2011	4th	7,500	8,500	8,000	**5,930**	Below Objective
D-14	Brush Creek	44	NW	Yes	8	2020	4th	1,500	3,500	2,500	**2,190**	Within Objective
D-18	Glade Park	40	NW	Yes	7	2010	4th	6,500	8,500	7,500	**3,900**	Below Objective
D-41	Logan Mountain	31, 32	NW	Yes	7	2012		6,500	8,500	7,500	**4,480**	Below Objective
D-42	Rifle Creek	33	NW	Yes	7	2022	4th	6,200	8,200	8,200	**6,390**	Within Objective
D-43	Sweetwater Creek	25, 26, 34	NW	Yes	8	2011	4th	5,000	6,000	5,500	**5,460**	Within Objective
D-53	Basalt	444	NW	Yes	8	2020	4th	4,000	6,000	5,000	**4,260**	Within Objective
		NW Subtotal or Weighted Average						168,400	208,100	197,900	**165,510**	
D-15	Cottonwood Creek	48, 56, 481, 561	SE	Yes	13	2011		6,300	7,700	7,000	**3,600**	Below Objective
D-16	Cripple Creek	49, 57, 58, 581	SE	Yes	13	2020		16,000	20,000	18,000	**13,540**	Below Objective
D-28	Arkansas River	122, 125, 126, 127, 130, 132, 137, 138, 139, 1	SE	No	12	2022	Plains	6,000	8,000	7,000	**6,310**	Within Objective
D-32	Trinidad	85, 140, 851	SE	Yes	11	2020		9,800	10,800	10,000	**10,420**	Within Objective
D-33	Mesa de Maya	143, 144, 145	SE	No	12	2022	Plains	2,000	3,500	2,500	**1,780**	Below Objective
D-34	Wet Mountain	69, 84, 86, 691, 861	SE	Yes	11	2020		16,500	17,500	17,000	**13,080**	Below Objective
D-45	Las Animas	128, 129, 133, 134, 135, 136, 141, 142, 147	SE	No	11,12	None	Plains	3,400	3,400	3,400	**3,140**	Below Objective
D-46	Big Sandy	107, 112, 113, 114, 115, 120, 121	SE	No	14	1999	Plains	2,500	2,500	2,500	**5,010**	Above Objective
D-47	South Republican	103, 109, 116, 117	SE	No	14	1999	Plains	2,000	2,000	2,000	**3,350**	Above Objective
D-48	Chico Basin	110, 111, 118, 119, 123, 124	SE	No	11,14	1999	Plains	1,800	1,800	1,800	**2,590**	Above Objective
D-50	Rampart	59, 511, 512, 591	SE	Yes	14	2008	4th	4,000	5,000	4,500	**4,580**	Within Objective
		SE Subtotal or Weighted Average						70,300	82,200	75,700	**67,370**	
D-19	Uncompahgre	61, 62	SW	Yes	18	2006		36,000	38,000	36,000	**10,520**	Below Objective
D-20	North Fork Gunnison R	53,63	SW		18	2018	4th	7,500	9,500	9,500	**7,850**	Within Objective
D-21	West Elk	54	SW	Yes	16	2013	4th	5,000	5,500	5,500	**5,260**	Within Objective
D-22	Taylor River	55, 551	SW	Yes	16	2013	4th	5,000	5,500	5,500	**6,220**	Above Objective
D-23	La Sal	60	SW	Yes	18	2008	4th	2,500	3,000	2,500	**1,440**	Below Objective
D-24	Groundhog	70, 71, 711	SW	Yes	15,18	2014	4th	15,000	19,000	17,000	**14,950**	Below Objective
D-25	Powderhorn Creek	66, 67	SW	Yes	16	2013	4th	5,400	5,900	5,900	**6,210**	Above Objective
D-26	Saquache	68, 681, 682	SW	Yes	17	2019	4th	5,500	6,500	6,000	**5,430**	Below Objective
D-29	Mesa Verde	72, 73	SW	Yes	15	2014	4th	5,500	7,000	7,000	**8,500**	Above Objective
D-30	San Juan	75, 77, 78, 751, 771	SW	Yes	15	2020	4th	23,000	27,000	25,000	**24,350**	Within Objective
D-31	Trinchera	83	SW	Yes	17	2010	4th	2,000	2,500	2,000	**2,220**	Within Objective
D-35	Lower Rio Grande	80, 81	SW	Yes	17	2018	4th	5,500	6,500	6,000	**6,340**	Within Objective
D-36	Upper Rio Grande	76, 79, 791	SW	Yes	17	2022	4th	2,200	2,800	2,500	**2,570**	Within Objective
D-37	Sand Dunes	82	SW	Yes	17	2021	4th	2,300	3,000	2,500	**2,530**	Within Objective
D-40	Cimarron	64, 65	SW	Yes	18	2022	4th	6,500	8,500	8,500	**6,170**	Below Objective
D-51	South Grand Mesa	52, 411, 521	SW	Yes	16	2018	4th	8,000	10,000	10,000	**9,110**	Within Objective
D-52	Hermosa	74, 741	SW	Yes	15	2010	4th	4,000	6,000	6,000	**4,260**	Within Objective
		SW Subtotal or Weighted Average						140,900	166,200	157,400	**123,920**	
STATEWIDE TOTAL								**433,900**	**520,600**	**490,300**	**416,430**	

G. Pronghorn Herds (DAUs) Over Objective

Eleven out of 29 pronghorn herds (38%) exceeded their population objective ranges (Table 3) while 10 of 29 (34%) are within population objective ranges. The sum of the pronghorn population targets from Herd Management Plans for all herds is 74,200 in 2021 (Table 3).

Effects of Access on Harvest

Most pronghorn in Colorado occur on private land. Harvest is often dependent on landowners providing hunting access, which historically has not been a major issue in most DAUs. Some landowners have requested relatively short pronghorn seasons, particularly late seasons, to minimize the amount of time hunters are on, or requesting permission to hunt on their property. An increasing number of landowners are charging hunters for access to hunt pronghorn. If pronghorn hunting continues to become more of a commercial asset for landowners, similar to deer and elk hunting, it may will increasingly difficult to achieve harvest objectives because buck hunters are willing to pay higher fees than doe hunters.

Population Estimates and Population Objectives

In 2008, CPW implemented an improved method for estimating pronghorn numbers on the eastern plains. This method, known as distance sampling, provides a sample-based population estimate that can be incorporated into population models. The net effect of this change has been an increase in estimated pronghorn numbers particularly in the southeastern part of the state. As a result of the higher numbers, CPW undertook measures to aggressively increase pronghorn harvest from 2009 to 2013 by issuing more doe licenses, making doe licenses List B, creating late doe seasons, and allowing youth hunters with unfilled licenses to continue hunting during late seasons. As license numbers have increased, hunters and landowners have become less satisfied with the hunting seasons and experience. Additionally, some doe licenses never sell in these areas.

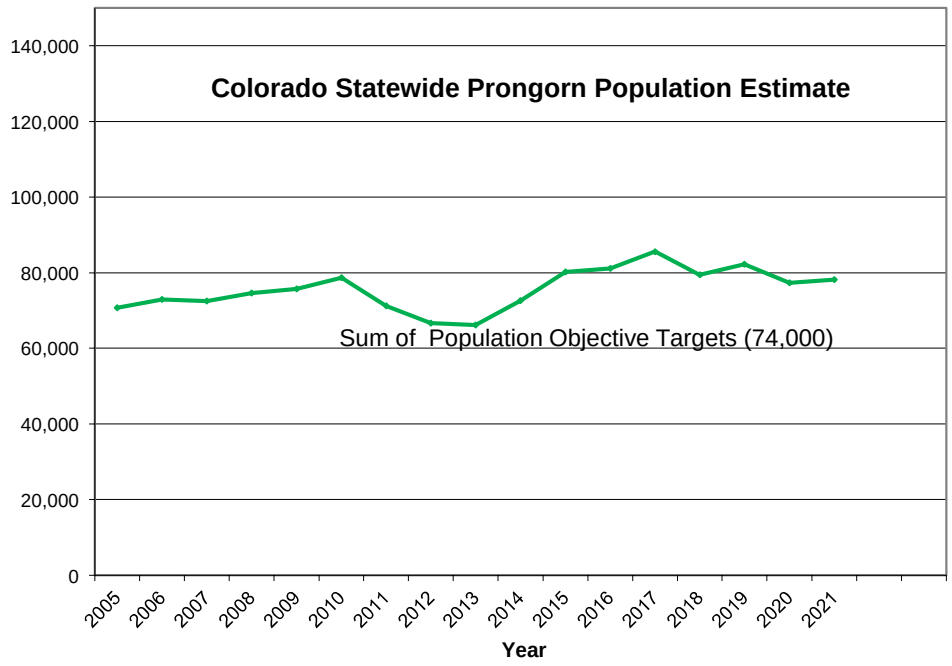


Figure 7. Estimated, statewide post-hunt pronghorn population. Current estimates based on 2020 models.

Strategies to Reduce Pronghorn Populations to Objective

- *Increased doe licenses during regular seasons.*
- *Classify regular doe licenses as List B so hunters can obtain two.*
- *Youth hunters with unfilled doe or either-sex pronghorn licenses can hunt does during some late pronghorn seasons.*
- *Create late doe seasons. Late doe seasons were added in pronghorn DAUs A-5 (Haswell), A-6 (Hugo), A-7 (Thatcher), and A-8 (Yoder) in 2010. In 2011, CPW lengthened those seasons and added a late season in A-12(Cheyenne) and A-18 (Two Buttes). In 2019, CPW lengthened the late doe season in PH-33 (Cherokee). Where appropriate, most pronghorn herds that are above objective currently have late doe seasons.*
- *In 2020, CPW extended the late hunt in PH-33 (Cherokee) until January 31st as allowed by the new BGSS.*
- *Combine several GMUs into a single hunt code to increase the area a license is valid.*
- *Separate buck and doe seasons to allow for more doe licenses without impacting hunt quality for buck hunters; this was initiated in DAU A-10 (Maybell) in 2011 and A-37(Middle Park) in 2018.*
- *Landowner Preference Program.*
- *Access Programs*. In 2017, CPW created a pilot big game access component within the existing Walk-In Access Program. Walk-in access for big game could increase harvest in DAUs that are above population objective. This option will provide deer, pronghorn, and elk hunting access to private land enrolled in the highly successful small game Walk-In Access program (i.e., landowners are paid a per acre fee by the CPW to allow public hunters on their property).
- *Increase recreational leases on State Land Board lands making them State Trust Lands open to public hunting*.

H. Pronghorn Herds (DAUs) Below Objective

Thirteen out of 29 pronghorn herds (45%) were below their population objective ranges (Table 3). Most of these herds are on the western slope and have been impacted by many years of drought and several severe winters. A-21 (Dinosaur) and A-27 (Delta) have small pronghorn populations that have shown long, steady declines that cannot be reversed by harvest management alone. In 2012, A-27 was closed to hunting until the population of pronghorn increases to the point that it can be sustainably hunted. The provisional population objective for A-11 (Sand Wash) is now considered unrealistically high and will be adjusted lower until the population demonstrates a significant increase.

Strategies to Increase Pronghorn Populations to Objective

- *Reduce or eliminate regular doe licenses.*
- *Reduce PLO doe licenses to the extent practicable to still address game damage concerns.*
- *Close units to hunting.*
- *Reduce wildlife-vehicle collisions with highway crossing structures for wildlife.*
- *Translocation.* Capture pronghorn in areas over objective and relocate them in areas such as the Gunnison Basin where populations have been greatly reduced by unusually high winter mortality. Three transplants into the Gunnison basin were completed in 2010, 2011, and 2012. Since 1970, CPW has translocated 434 pronghorn into the Gunnison Basin over 5 major trap and transplant efforts. A transplant of pronghorn to augment the A-27 (Delta) population occurred in 2012.

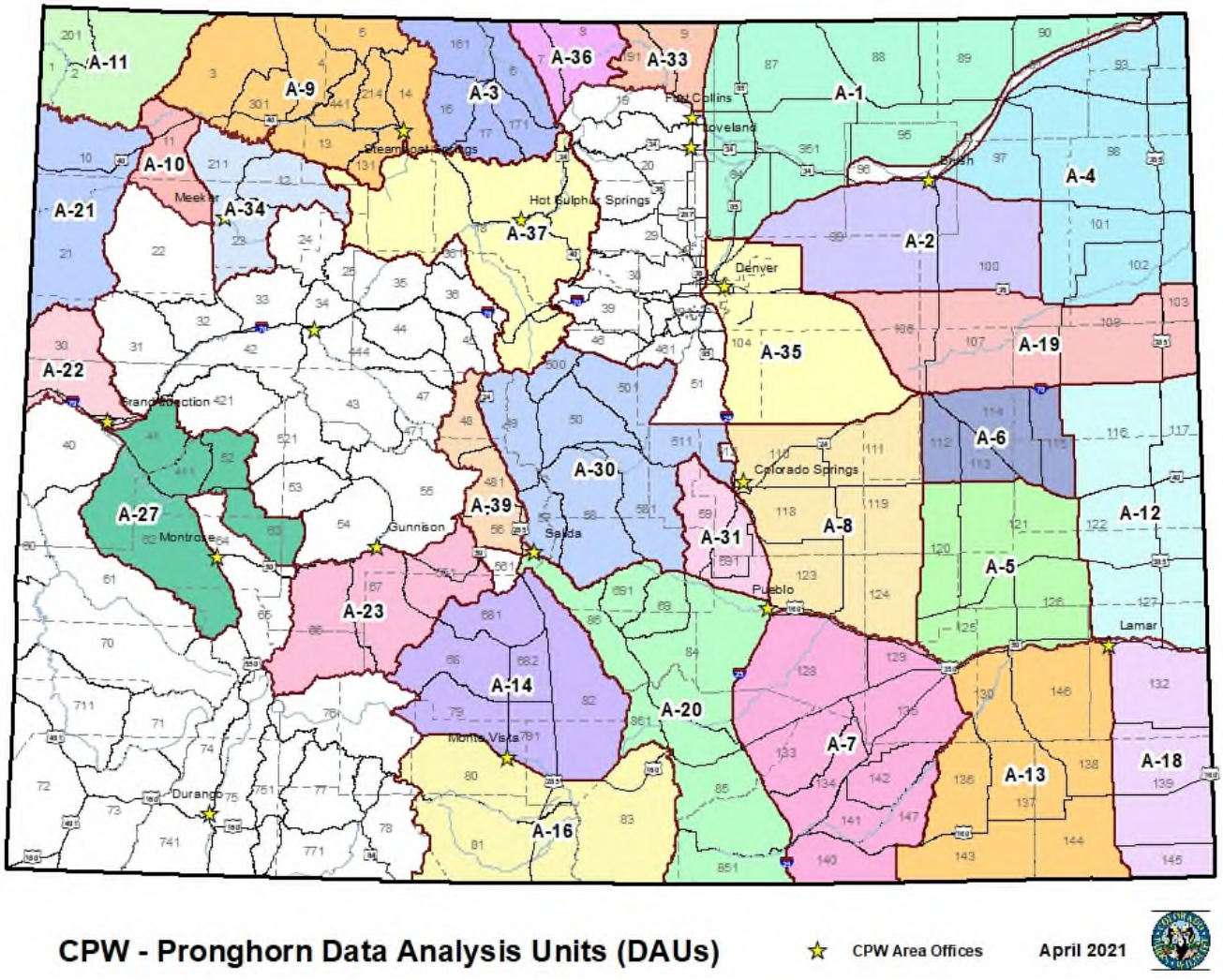


Figure 8. Pronghorn Data Analysis Units and their associated Game Management Units.

Table 3. 2021 Winter Pronghorn Population Estimates and Population Objective Ranges

DAU						POPULATION				
DAU	Name	GMUs	CPW Region	CPW Area	HMP Year	Population Objective Min	Population Objective Max	Population Target within Objective Range	2021 Winter Population Estimate	2021 Population Estimate Relative to Population Objective Range
PH-1	Escarpment	87,88,89,90,94,95,951	NE	4	2011	6,500	7,500	7,000	**6,630**	Within Objective
PH-2	Hardpan	99,100	NE	2,3,5	2018	1,400	1,700	1,500	**1,320**	Below Objective
PH-4	Sandhills	93,97,98,101,102	NE	3	2006	550	650	650	**670**	Above Objective
PH-30	South Park	49,50,57,58,500,501,511,581	NE/SE	1,13	2012	1,000	1,250	1,100	**1,330**	Above Objective
PH-33	Cherokee	9,19,191	NE	4	2020	1,000	1,200	1,100	**1,210**	Above Objective
PH-35	Kiowa Creek	51,104,105	NE	5	2012	4,000	5,000	4,500	**5,490**	Above Objective
PH-36	Laramie River	7,8	NE	4	2020	550	650	600	**580**	Within Objective
			NE Subtotal or Weigh			**15,000**	**17,950**	**16,450**	**17,230**	
PH-3	North Park	6,16,17,161,171	NW	10	2020	1,400	1,600	1,500	**1,760**	Above Objective
PH-9	Great Divide	3,4,5,13,14,214,301,441	NW	6,10	1995	15,800	15,800	15,800	**20,530**	Above Objective
PH-10	Maybell	11	NW	6	None	1,400	1,400	1,400	**780**	Below Objective
PH-11	Sand Wash	1,2,201	NW	6	None	3,200	3,200	3,200	**840**	Below Objective
PH-21	Dinosaur	10,21	NW	6	None	300	300	300	**250**	Below Objective
PH-34	Axial Basin	12,23,211	NW	6	None	300	300	300	**190**	Below Objective
PH-37	Middle Park	15, 8,26, 27,28,37,181,371	NW	9	2020	600	800	800	**700**	Within Objective
			NW Subtotal or Weigl			**23,000**	**23,400**	**23,300**	**25,050**	
PH-5	Haswell	120,121,125,126	SE	12	2019	3,000	4,000	3,500	**3,090**	Within Objective
PH-6	Hugo	112,113,114,115	SE	14	2012	2,250	2,750	2,500	**2,900**	Above Objective
PH-7	Thatcher	128,129,133,134,135,140,141,142,147	SE	11	2012	7,800	8,800	8,000	**8,690**	Within Objective
PH-8	Yoder	110,111,118,119,123,124	SE	11,14	2012	5,400	6,600	6,000	**8,240**	Above Objective
PH-12	Cheyenne	116,117,122,127	SE	12,14	2020	1,500	2,000	1,700	**1,360**	Below Objective
PH-13	Tobe	130,136,137,138,143,144,146	SE	12	2019	3,000	4,000	3,500	**2,710**	Below Objective
PH-18	Two Buttes	132,139,145	SE	12	2020	300	1,500	400	**1,000**	Within Objective
PH-19	Last Chance	103,106,107,109	SE	5,14	2016	1,800	2,200	2,000	**2,420**	Above Objective
PH-20	Wet Mountain	69,84,85,86,691,851,861	SE	11	2013	2,200	2,600	2,400	**2,250**	Within Objective
PH-31	Ft Carson	59,591	SE	14	2000	200	200	200	**270**	Above Objective
PH-39	Collegiate	48,56,481	SE	13	2020	150	200	200	**230**	Above Objective
			SE Subtotal or Weigh			**27,600**	**34,850**	**30,400**	**33,160**	
PH-14	San Luis Valley -	68,79,82,681,682,791	SW	17	2020	2,000	2,500	2,000	**1,490**	Below Objective
PH-16	San Luis Valley -	80,81,83	SW	17	2020	1,000	1,500	1,250	**850**	Below Objective
PH-23	Gunnison Basin	66,67,551	SW	16	2001	450	450	450	**410**	Below Objective
			SW Subtotal or Weigl			**3,800**	**4,800**	**4,050**	**2,750**	
STATEWIDE TOTAL						**69,400**	**81,000**	**74,200**	**78,180**	