Colorado Parks and Wildlife

FY18 GAME DAMAGE ANNUAL REPORT

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

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GAME DAMAGE PROGRAM

Section A: Game Damage Compensation:

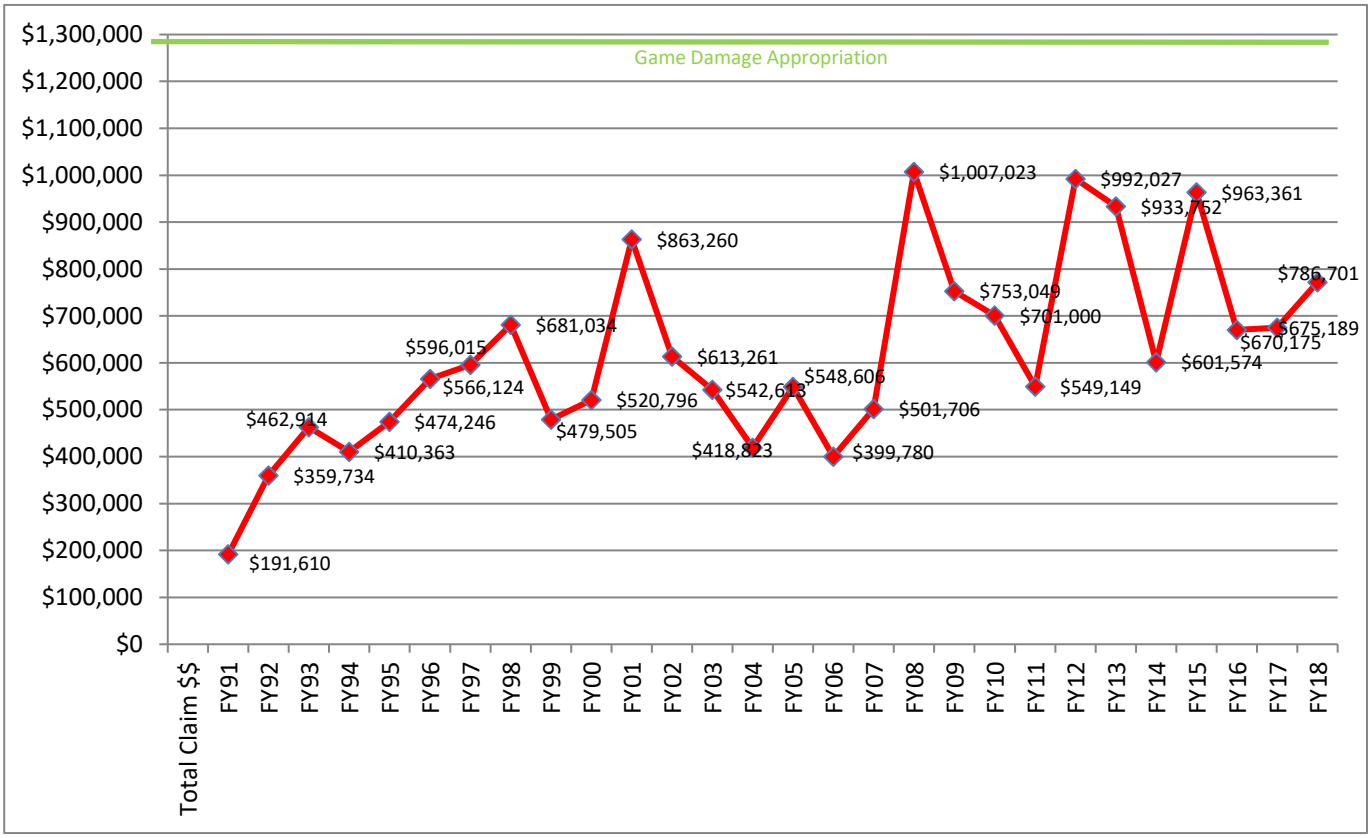
Annual Allocation for Claims & Prevention	**$1,282,500**
FY18 Expenditures for Claims	**$ 786,701**

Colorado's game damage program is authorized in Article 3 of Title 33 Colorado Revised Statutes. Since its original inception over 80 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 thru 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 FY18 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.

FY18 Game Damage Compensation – Overview

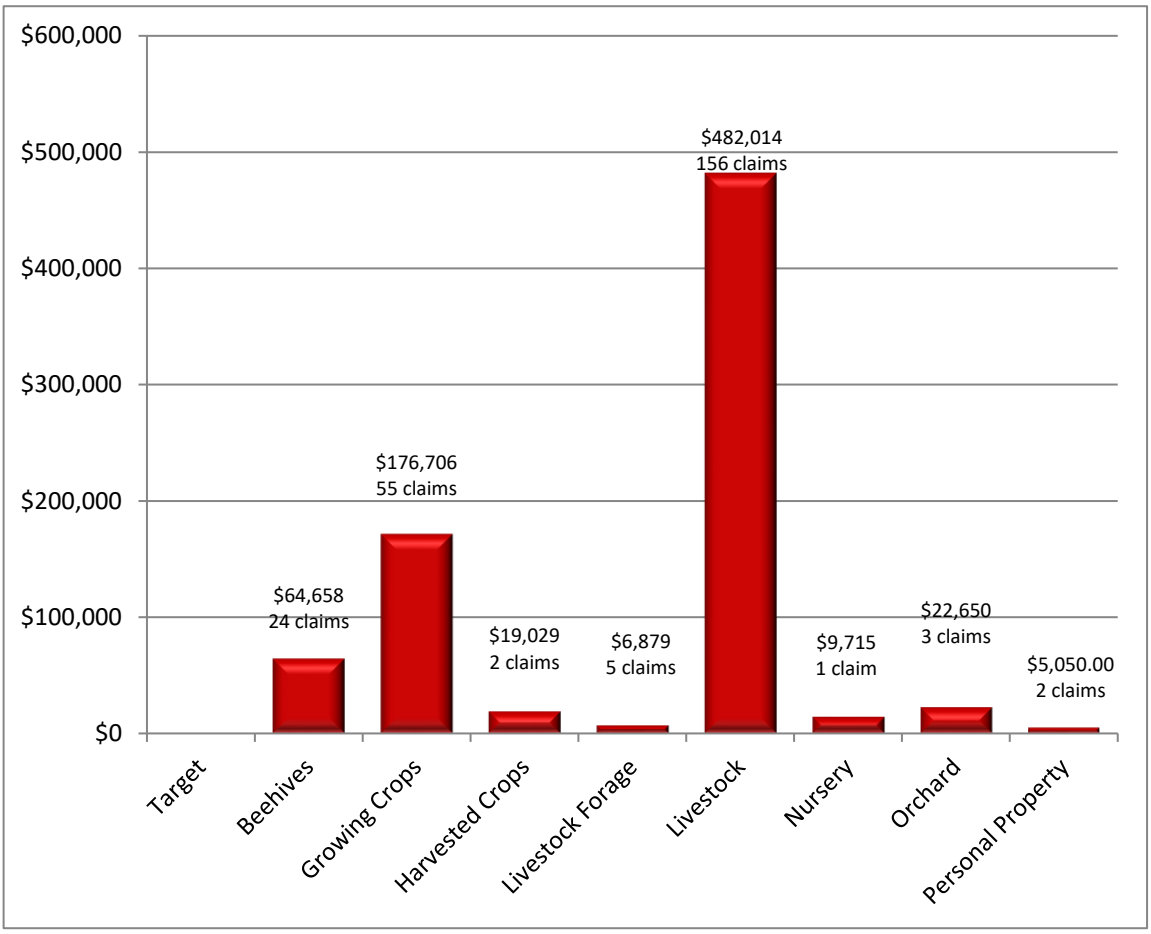
The compensation component of the game damage program provides reimbursement for qualifying agricultural claimants suffering eligible losses caused by big game wildlife. In FY18, compensation costs amounted to $786,701 in settlement of 248 claims. These costs are ~$17,891 above the previous 5-year average of $768,810 (FY13-FY17), a 2.33% increase. This increase is partially attributed to an increase in bear predation on livestock compared with last year. The total number of claims paid (n=248) in FY18 was below the previous 5-year average of 251. CPW denied 9 claims (3.6% of all claims filed).

Historical Game Damage Claims from FY91 through FY18

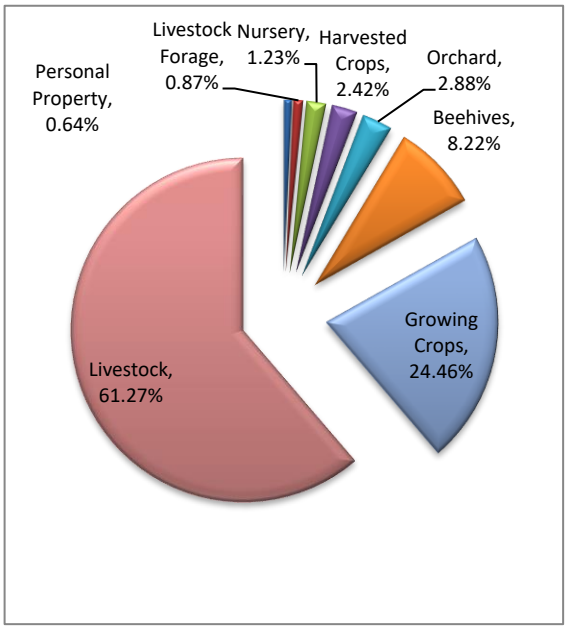


FY18 Game Damage Compensation

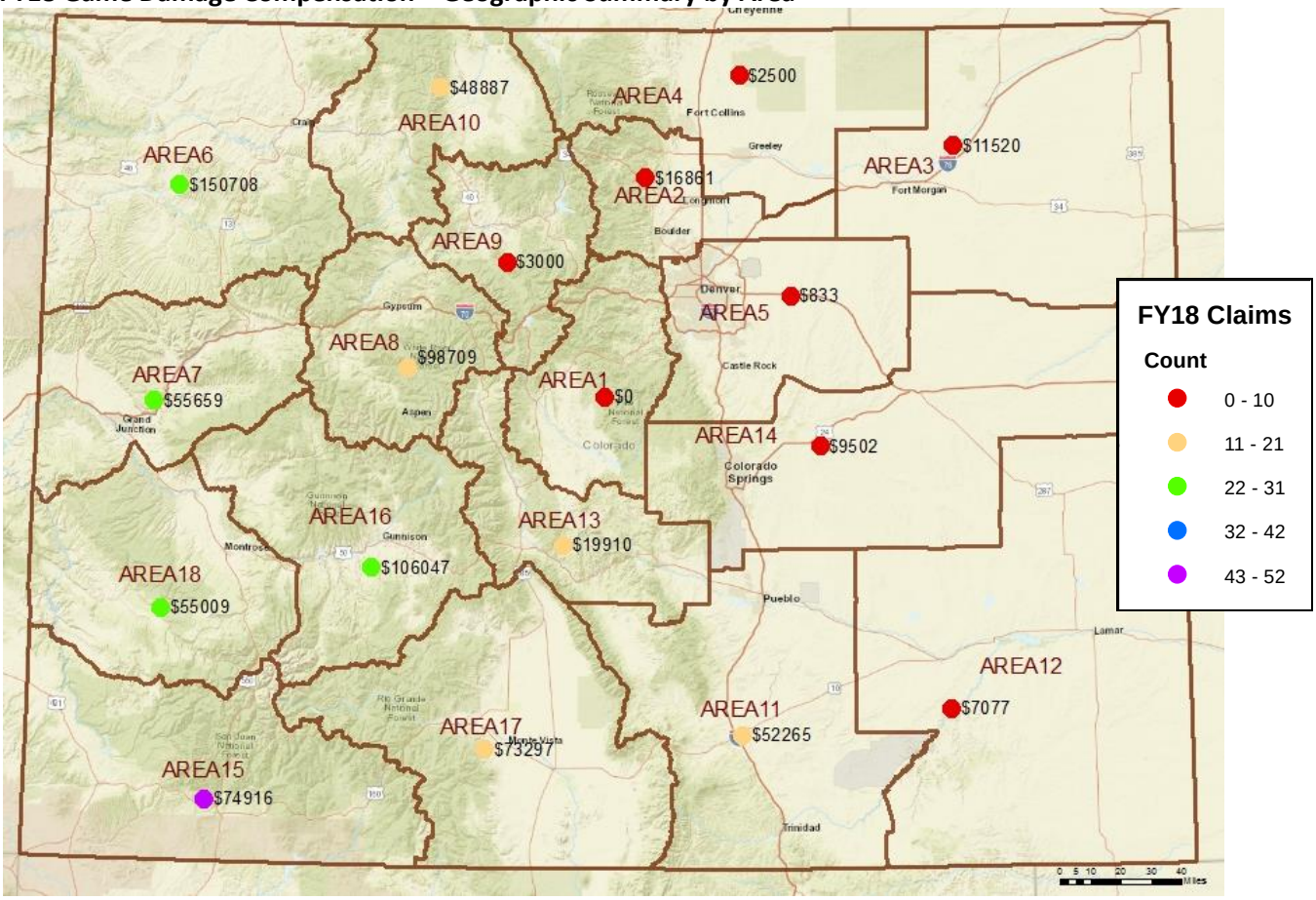
Claims by Damage Target



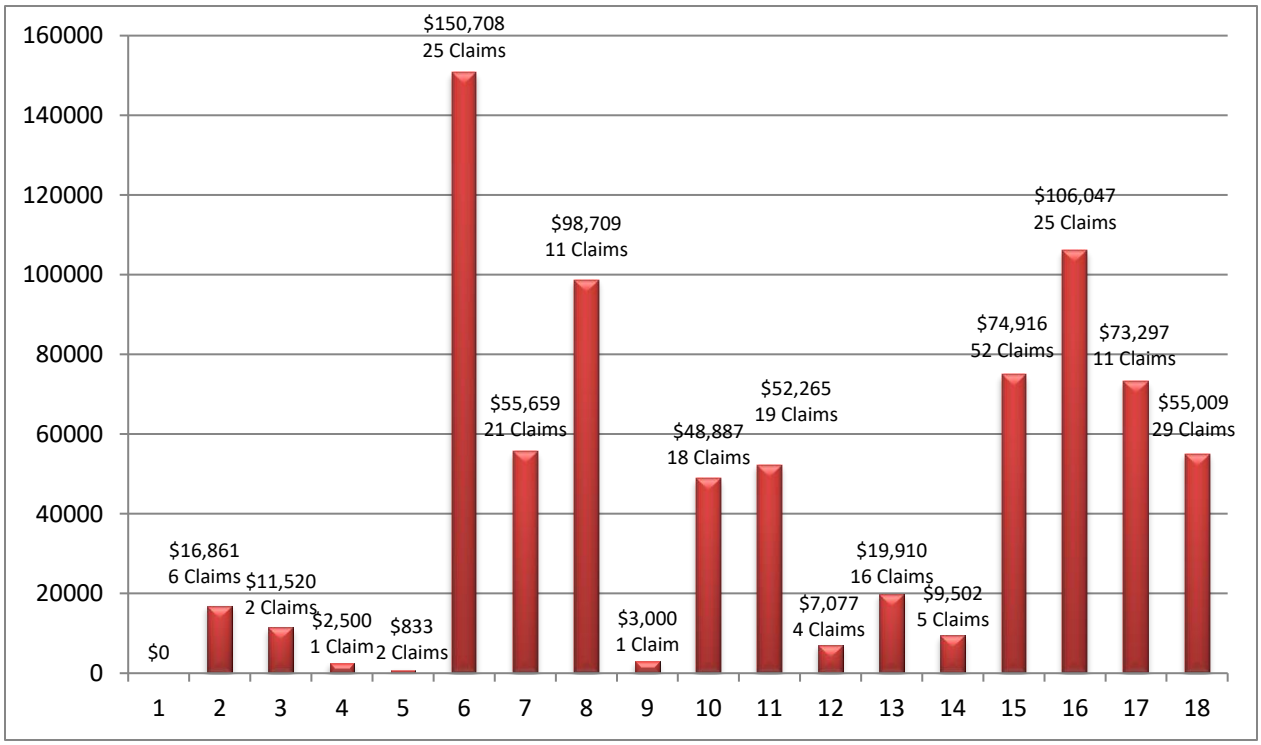
Percent of Damage Cost by Target



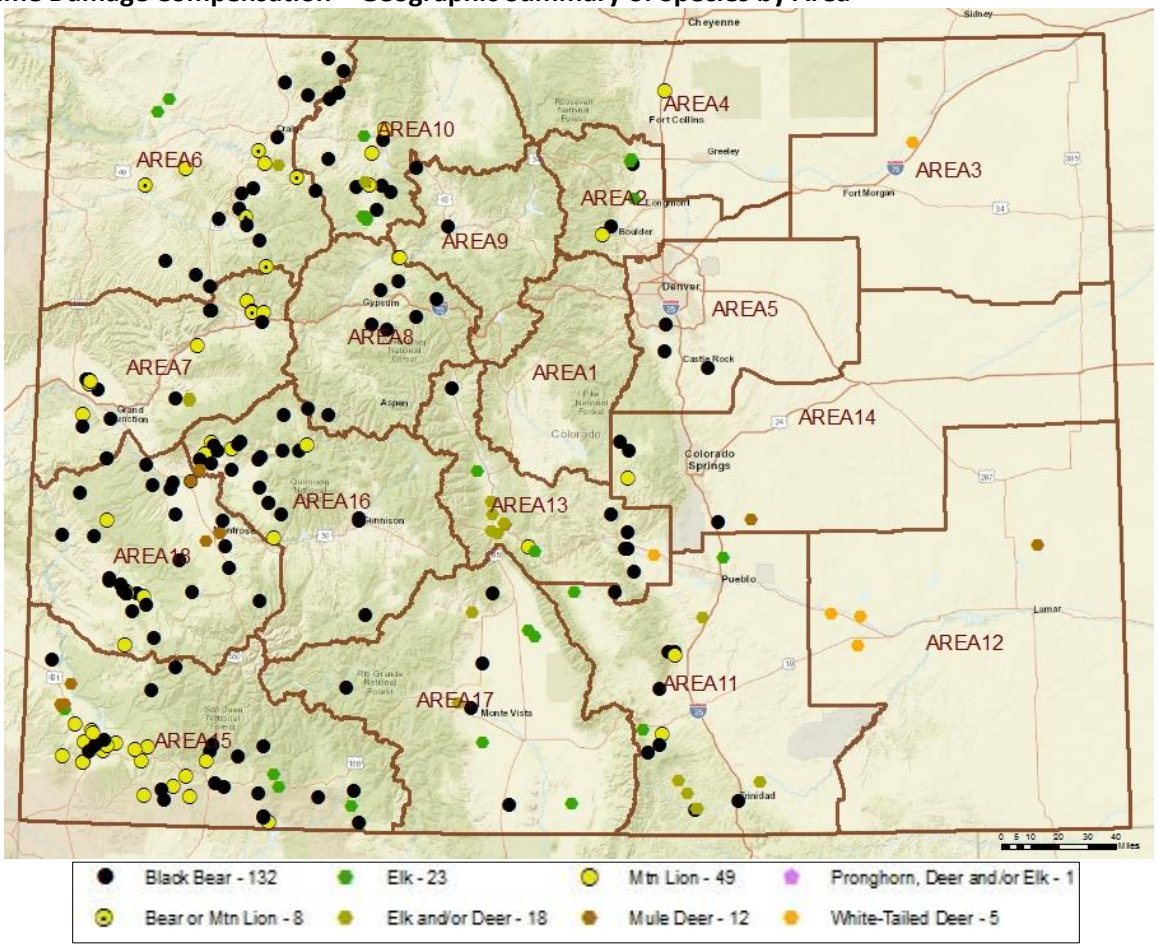
FY18 Game Damage Compensation – Geographic Summary by Area



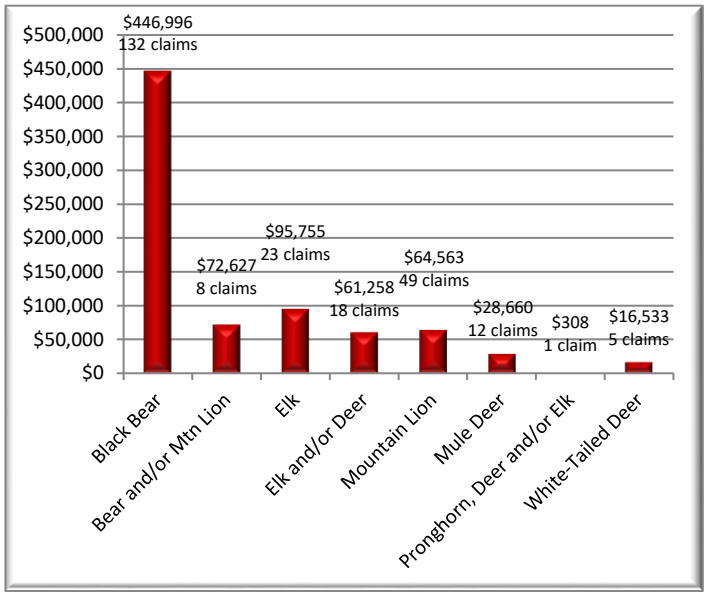
FY18 Game Damage Compensation – Claims by Area



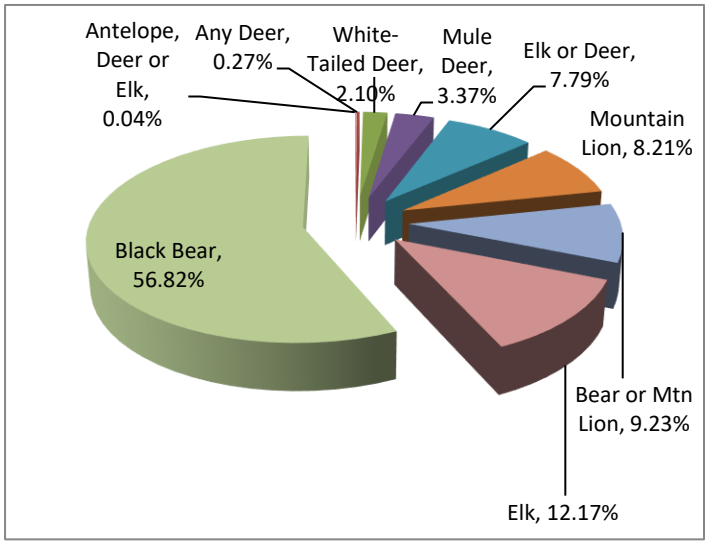
FY18 Game Damage Compensation – Geographic Summary of Species by Area



FY18 Game Damage Compensation – Claims by Species



Percent of Damage Cost by Species



FY18 Game Damage Compensation – Summary by Species by Target

Target	Claim Paid	Count	No. Claims
Antelope, Deer and/or Elk			
Growing Hay	$308	8	1
Black Bear			
APIARIES			
Beehives	$63,105	287	24
GROWING CROPS			
Corn	$9,814	546.64	4
LIVESTOCK			
Captive Wildlife	$9,300	3	1
Cattle	$25,590	28	21
Goats	$2,991	17	9
Horses	$5,166	3	2
Llama	$1,000	1	1
Pigs	$2,830	11	8
Poultry	$6,529	210	11
Sheep	$291,419	1111	46
ORCHARDS			
Apple/Peach Trees	$9,000	46.25	1
Peach Trees	$13,650	64	2
PERSONAL PROPERTY			
Fence	$2,050	1	1
Sheep Camp Trailer	$3,000	1	1
Bear and/or Mountain Lion			
LIVESTOCK			
Cattle	$400	1	1
Goats	$245	1	1
Sheep	$71,982	259	6
Elk and/or Deer			
GROWING CROPS			
Corn	$4,264	360	1
Hay	$53,527	1068	15
LIVESTOCK FORAGE			
Hay Meadow	$3,467	71.98	2

Target	Claim Paid	Count	No. Claims
Elk			
GROWING CROPS			
Corn	$17,850	3051	2
Hay	$52,823	422.566	17
Pinto Beans	$2,940	140	1
HARVESTED CROPS			
Hay	$18,894	134	1
LIVESTOCK FORAGE			
Hay Meadow	$3,249	1012	2
Mule Deer			
GROWING CROPS			
Corn	$10,979	4.98	6
Hay	$6,668	162	2
Pinto Beans	$1,000	38.46	1
HARVESTED CROPS			
Hay	$135	1500	1
LIVESTOCK FORAGE			
Hay Meadow	$163	8.81	1
NURSERY			
Pine Trees	$9,715	68	1
Mountain Lion			
LIVESTOCK			
Alpacas	$25,500	23	5
Captive Wildlife	$5,000	1	1
Cattle	$5,642	6	6
Goats	$4,992	27	10
Horse	$2,000	1	1
Poultry	$2,128	107	3
Sheep	$19,301	71	23
White-Tailed Deer			
GROWING CROPS			
Corn	$10,872	3013.98	3
Hemp	$4,704	467	1
Watermelons	$957	222	1

FY18 Game Damage Compensation – Denials

Area	Damage Type	Claim Request	Basis for Denial
1	Beehives by Bear	$802.00	Regulation #1710 - Duty to Mitigate Damage
7	Beehives by Bear	$1,500.00	Regulation #1730.A – Initial Notification of Damage Regulation #1731 - 10-Day Notification Requirements
9	Cattle by Bear	$1,200.00	Regulation #1740 - Proof of Loss Requirements
16	Beehives by Bear	$4,261.00	Regulation #1740 - Proof of Loss Requirements Regulation #1731 - 10-Day Notification Requirements
16	Hay by Elk	$3,448.80	Regulation #1710 - Duty to Mitigate Damage Regulation #1730.A – Initial Notification of Damage
18	Beehives by Bear	$8,988.10	Regulation #1710 - Duty to Mitigate Damage Regulation #1730.A – Initial Notification of Damage
18	Beehives by Bear	$7,669.80	Regulation #1731 – Proof of Loss Requirements
18	Beehives by Bear	$600.00	Regulation #1710 - Duty to Mitigate Damage

Section B: Game Damage Prevention Materials

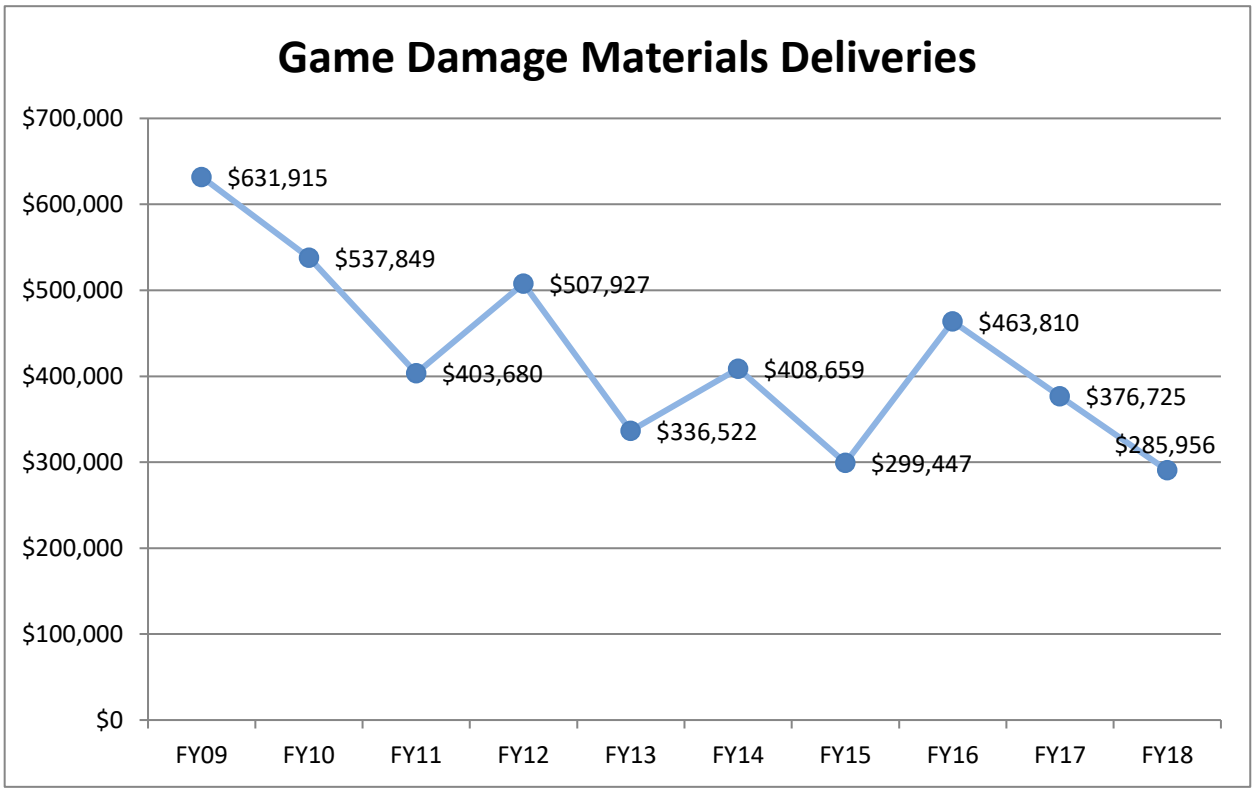
Annual Allocation for Claims & Prevention	**$1,282,500**
FY18 Expenditures for Prevention Materials	**$ 285,956**

The damage prevention materials program became an integrated component of the Game Damage Program over twenty years 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. Apiary fencing and stackyards comprise the majority of the requests for materials.

FY18 Game Damage Materials – Overview

Total expenditures for damage prevention materials in FY18 decreased by 24.16% compared to the previous 5-year average ($377,033), while the number of deliveries (n=224) increased by 12.68% from the previous 5-year average (n=199). Stackyard requests (n=41) decreased from FY17 by 45.33% (n=75); the cost of materials per stackyard also saw a reduction of 22.7%, even though the cost for stackyard gates has increased nearly 95%. Demand for apiary protection has finally started to level off, with a minor increase in the number of fences requested (n=144), compared to last year (n=133).

FY18 Game Damage Materials – Multi-Year Overview



FY18 Game Damage Materials – Summary

The Game Damage Program filled **224** requests for Prevention Materials throughout the state.

Approximately 17.4 miles of fencing were delivered. Deliveries required traveling more than **46,500** miles. More efficient planning allowed the reduction of mileage wear and tear on the vehicles by 13%, as well as fewer deliveries.

Area offices received stockpiles of pyrotechnics & 8 x 8 wood panels to provide landowners with temporary prevention materials.

Habitat Partnership Program (HPP) requested materials for cooperative habitat projects with landowners who did not meet the qualifications for game damage permanent materials. Game Damage Program also delivered **$58,359** worth of materials for **18** projects.

Area offices requested bear deterrent materials. Game Damage Program provided these at cost, worth **$2,980** in FY18. It also provided fencing materials to State Wildlife Areas at a cost of **$32,845** for **7** projects.

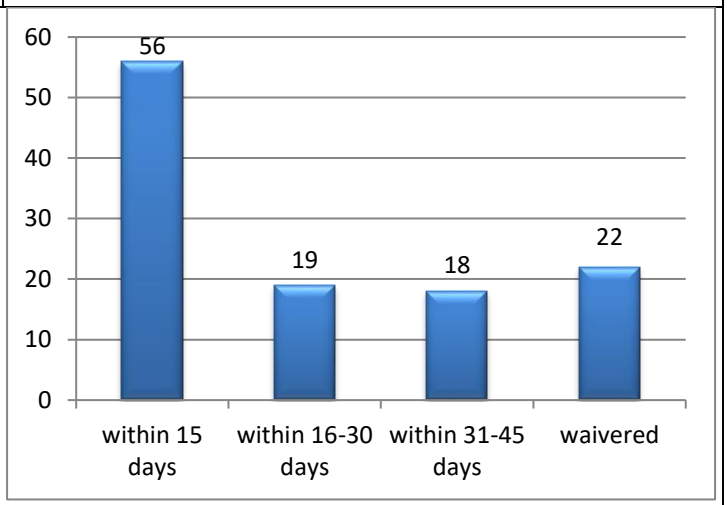
Facility Type	Number of Deliveries	**FY18**
Apiary	*144*	*$61,627*
Commercial Garden	*7*	*$36,322*
Field Crop	*2*	*$16,277*
Nursery	*3*	*$22,075*
Orchard	*21*	*$64,136*
Stackyard	*41*	*$58,874*
Unique Fencing	*6*	*$26,645*
PERMANENT MATERIALS Total	224 deliveries	**$285,956**
TEMPORARY MATERIALS for distribution by area offices	Pyrotechnic stockpiles	**$51,300**
	Wood Elk Panel stockpiles	**$68,499**
		$405,755

DELIVERY TIME SPANS

Effective July 1, 2009: Senate Bill 09-024 required delivery within 45 days of notification.

Requests for apiary fencing were facilitated by availability of materials in stockpiles located near area offices statewide (15-day deadline).

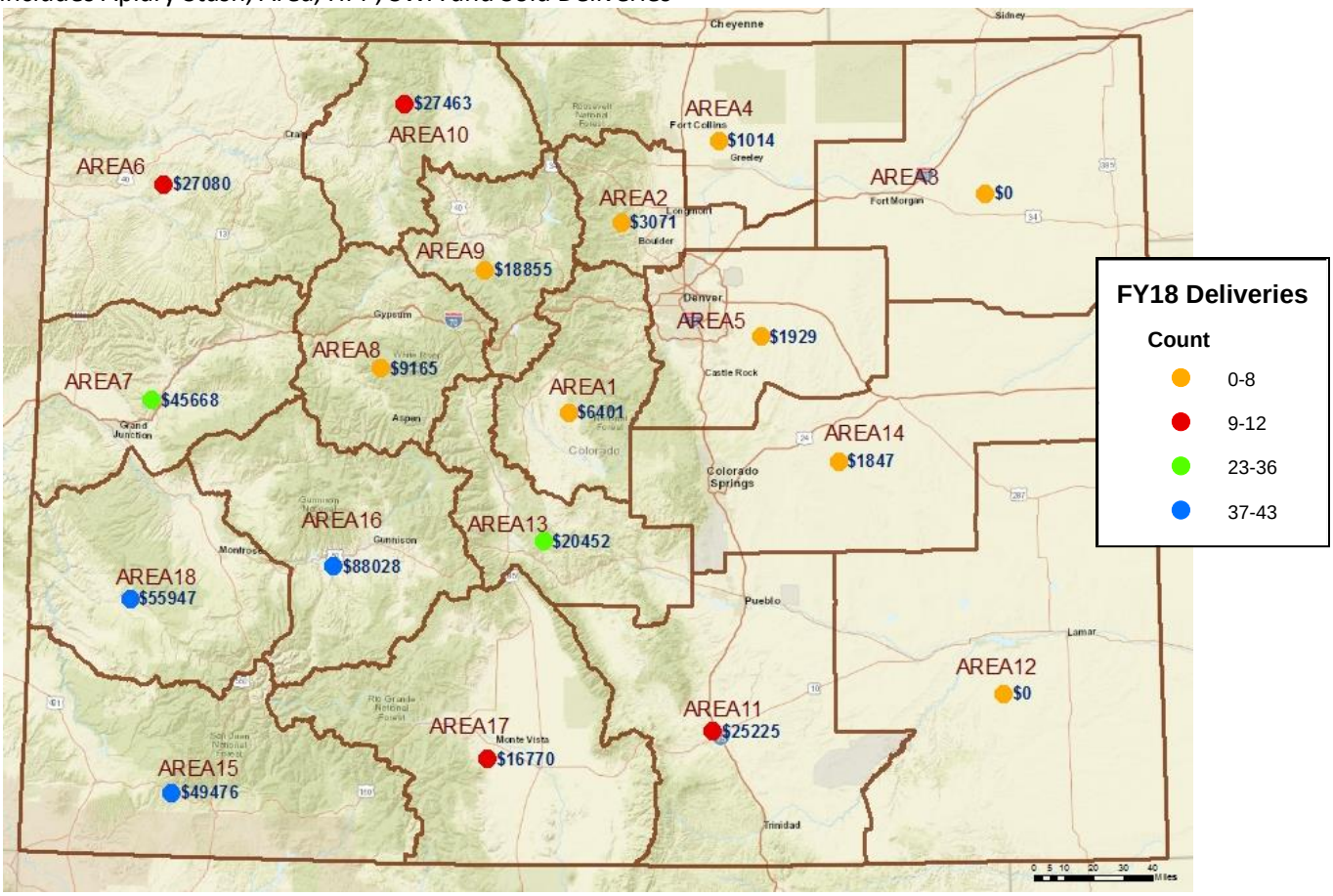
All deliveries for permanent game damage materials were made within the 45 day limit except for twenty-two (22) deliveries. The landowners requested the delivery date past 45 days so the deadline was waived by the landowner. None of the late deliveries required CPW to erect fencing.



* - The total deliveries above do not account for materials coming out of Apiary Stashes and/or requested repair/replacement items.

FY18 Game Damage Materials – Geographic Distribution ($506,511)

includes Apiary Stash, Area, HPP, SWA and Sold Deliveries



Part 2 - STATUS OF BIG GAME POPULATIONS

A. Background

5-Year Big Game Hunting Season Structure

In September 2014, the Colorado Parks and Wildlife Commission (PWC) approved the Big Game hunting Season Structure (BGSS) for the years 2015 through 2019. This finalized an 18-month long public and stakeholder process. The Big Game Season Structure is intended to guide Colorado Parks and Wildlife (CPW's) 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. Three information gathering processes were used; 1) an internal scoping process to identify and define the major issues to inform public engagement; 2) a quantitative survey sent to approximately 7,000 resident and non-resident big game hunters to capture information related to big game hunting activities and attitudes; and 3) extensive outreach to stakeholders and interested members of the public. The outreach included media/social media, the CPW website, direct contact with over 200 stakeholders/organizations, 16 local public meetings held across the state in each region, two statewide telephone town hall meetings (approximately 4,000 participants), focus group meetings were held in Denver, Pueblo, and Delta and over 3,000 written comments were reviewed. 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 and the breaks between seasons were retained to allow animals to redistribute and become more available for harvest on public land. 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. Finally, changes to the bear and mountain lion seasons and participation rules have been adopted to provide more opportunity for harvest of these big game species. In 2018 CPW initiated the BGSS setting process for 2020-2024 hunting seasons with a primary focus on early season hunting seasons.

Population Estimation Timeline

Population estimates for deer, elk, and pronghorn are determined in March after post-hunt aerial herd composition inventory and 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 Herd Management Plans (HMPs) for specific areas called Data Analysis Units (DAUs) that represent the annual 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, 7).

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 and more realistically reflect confidence in the population estimates.

Target population objectives are used to indicate the desired population within the objective range for a given year.

Approximately 88% (110) 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 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 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. CWD has been detected in approximately 1/2 of Colorado's deer herds and 1/3 of Colorado's elk herds.

Hunters and Harvest

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 campaigns and as concerns over the economy, fuel prices, fewer elk, and other factors have lessened. 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). 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 an aging hunter population, low hunter recruitment, and reduced elk populations. CPW is attempting to increase hunter recruitment and retention through marketing, increased education efforts, improved customer service, online hunt planning, and other strategies.

Recent 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 the size and quality (number of mature bucks) of deer populations. 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 hunter success declines beyond a threshold for 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 higher. Pronghorn populations and license quotas are once again on the increase. The 2017 population estimate of 85,600 pronghorn and the 21,313 pronghorn hunters are both the highest in modern times.

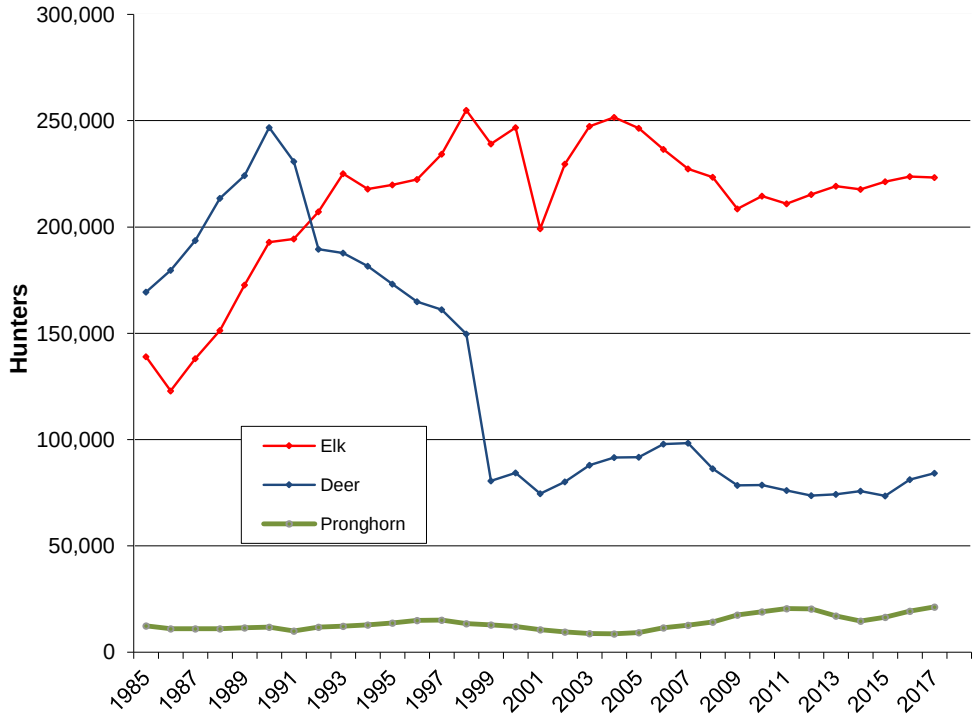


Figure 1. Number of elk, deer, and pronghorn hunters from 1985 to 2017.

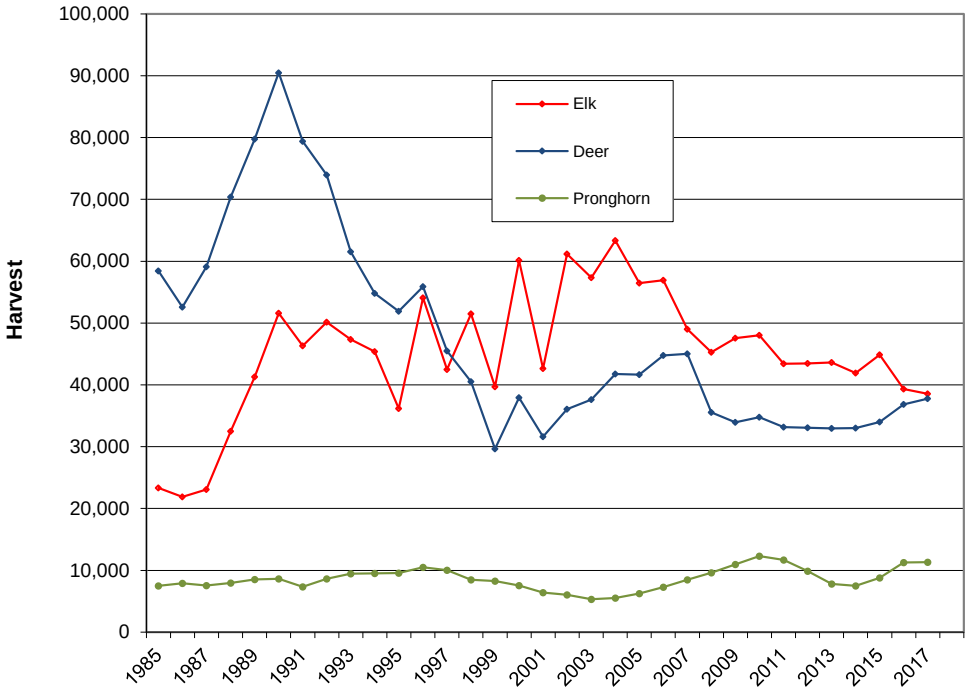


Figure 2. Elk, deer, and pronghorn harvest from 1985 to 2017.

Big Game Population Estimates in Relation to HMP Objectives

Individual HMP population objective ranges, targets, and 2017 post-hunt population estimates are reported in Tables 1-3.

Statewide, the estimated 2017 post-hunt elk population estimate was 282,000, which was 109% of the sum of population objective targets (Table 1). Eighteen (43%) of the state's 42 elk herds are within 10% of their target population objective (Table 1).

The statewide deer population estimate of 419,000 was 80% of the sum of population objective targets (Table 2). Nineteen (35%) of the state's 54 deer herds are within 10% of their target population objective (Table 2).

The pronghorn population estimate of 86,000 was 124% of the sum of population objective targets (Table 3). Six (21%) of the state's 29 pronghorn herds are within 10% of their target population objective (Table 3).

B. Elk Herds (DAUs) Over Objective

Nineteen out of 42 elk herds (45%) exceeded their population objective targets by more than 10% (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 steadily moving towards objective and are expected to be at or very close to objective with current harvest management strategies. Based on modeled population estimates, statewide elk numbers were reduced by from 2004-2017 (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-2 (Bears Ears), E-6 (White River), E-14 (Grand Mesa), E-16 (Frying Pan), E-20 (Uncompahgre), E-24 (Disappointment), E-31 (San Juan), and E-32 (Lower Rio Grande) 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.

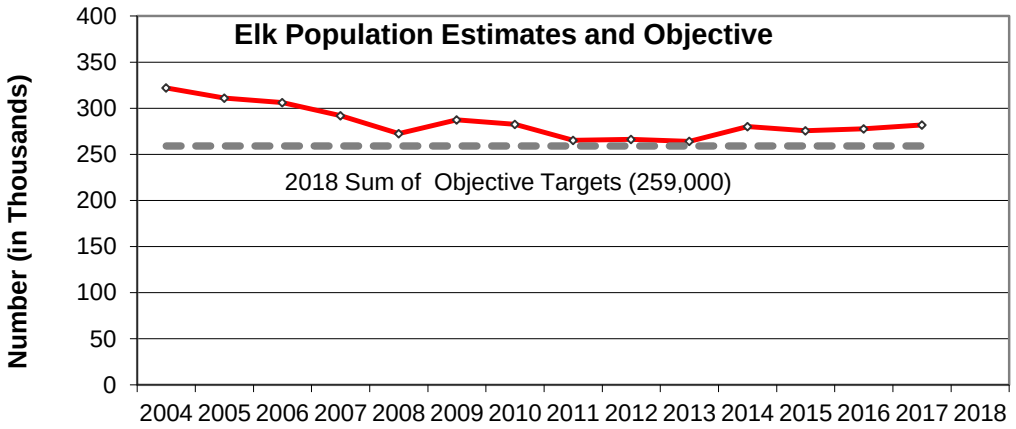


Figure 3. Estimated statewide post-hunt elk population versus total Herd Management Plan population objectives for 2018. Current estimates based on 2017 models.

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 sharply and licenses go unsold.

Greater than 90% of limited elk licenses are sold. As CPW reduces license quotas, the number of unsold limited elk licenses has been declining, now only approximately 7%. 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. 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.

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 where harvest is greatly reduced. Elk can also occur in more developed areas such as residential subdivisions where hunting can be controversial or prohibited.

Examples: 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 such as E-9 (Saint Vrain), 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-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 diligently 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 the 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. 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 archery cow licenses in DAUs that have List B rifle cow licenses. (A List B license can be purchased in addition to a primary, list A license allowing a hunter to harvest two elk).*
   - *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.*
   - *Cow license fees for nonresidents are discounted relative to bull license fees.*
   - *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.

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.
    - *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.

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.

- *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 nominations for limited elk hunting were made during the 2015-2019 Big Game Season Structure process. 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*. For 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 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 elk from other states.

C. Elk Herds (DAUs) Below Objective

Four out of 42 elk herds (10%) were more than 10% below objective targets (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.

Table 1. 2017 Post-Hunt Elk DAU Population Estimates Compared to Objectives and Targets.

ELK

Colorado Parks and Wildlife
Draft 12/27/2018

DAUs > 10% Below Population Target
DAUs > 10% Above Population Target

DAU								POPULATION				
DAU	Name	GMUs	Region	Area	HMP Year	Mgmt Type	APR	Obj Min (Provisional)	Obj Max (Provisional)	Target	2017 Post Est. (2017 Model)	2017 Post % of Target
E4	Poudre River	7, 8, 9, 19, 191	NE	4	2009	Lim-CV	4 pt	3600	4200	4200	4424	105%
E9	St. Vrain	20	NE	2	2007	Lim-Cr	Spike	2200	2600	2400	2315	96%
E18	Kenosha Pass	50, 500, 501	NE	1,13	2007	Lim-Cr	Spike	1800	2200	2000	2001	100%
E38	Clear Creek	29, 38	NE	2	2006	Mix	P Spike	1000	1400	1200	1193	99%
E39	Mt Evans	39, 46, 391, 461	NE	1	2016	Lim-Cr	Spike	2200	2600	2400	2243	93%
E51	Castle Rock	51, 104, 105, 106, 110, 111	NE	5,14	None	Mix	Spike	1200	1200	1200	1441	120%
			NE Subtotal					**12000**	**14200**	**13400**	**13617**	**102%**
E1	Cold Springs	2, 201	NW	6	2013	Lim-Qu	Spike	700	1700	1200	863	72%
E2	Bear's Ears	3, 4, 5, 14, 214, 301, 441	NW	6, 10	2008	OTC	4 pt	15000	18000	15000	24253	162%
E3	North Park	6, 16, 17, 161, 171	NW	10	2008	OTC	4 pt	4000	4500	4500	4153	92%
E6	White River	11, 12, 13, 23, 24, 25, 26, 33, 34, 131, 211, 23	NW	8, 9, 1	2005	OTC	4 pt	32000	39000	39000	42597	109%
E7	Gore Pass	15, 27	NW	9	2004	OTC	4 pt	3500	4500	4500	6202	138%
E8	Troublesome Creek	18, 181	NW	9	2010	OTC	4 pt	3600	4300	4000	5235	131%
E10	Yellow Creek	21, 22, 30, 31, 32	NW	6,7	2006	OTC	4 pt	7000	9000	8000	11419	143%
E12	Piney River	35, 36	NW	8	2013	OTC	4 pt	3000	4600	3800	3120	82%
E13	Williams Fork River	28, 37, 371	NW	9	2010	OTC	4 pt	4700	5500	5000	6443	129%
E14	Grand Mesa	41, 42, 52, 411, 421, 521	NW	7,16	2010	OTC	4 pt	15000	19000	15000	14038	94%
E15	Avalanche Creek	43, 471	NW	8	2013	OTC	4 pt	3600	5400	4600	4331	94%
E16	Frying Pan River	44, 45, 47, 444	NW	8	2013	OTC	4 pt	5500	8500	7000	4612	66%
E19	Glade Park	40	NW	7	2010	Lim-Qu	P Spike	2800	3800	2800	3096	111%
E21	Rangely - Blue Mountain	10	NW	6	None	Lim-Qu	Spike	1200	1200	1200	3876	323%
E47	Green River	1	NW	6	None	Lim-Qu	Spike	170	170	170	202	119%
			NW Subtotal					**101770**	**129170**	**115770**	**134440**	**116%**
E17	Collegiate Range	48, 56, 481, 561	SE	13	2011	Lim-Cr	Spike	3150	3850	3500	3559	102%
E22	Buffalo Peaks	49, 57, 58	SE	13	2018	Lim-Cr	Spike	3150	3500	3300	3913	119%
E23	Eleven Mile	59, 511, 512, 581, 591	SE	13,14	2012	OTC	P Spike	2700	3300	3000	3590	120%
E27	Sangre de Cristo	86, 691, 861	SE	11	2005	OTC	4 pt	1450	1650	1550	2023	131%
E28	Grape Creek	69, 84	SE	11	2005	Lim-Cr	Spike	1400	1600	1500	2191	146%
E33	Trinchera	83, 85, 140, 851	SE	11,17	None	OTC	4 pt	14000	16000	15000	16509	110%
E53	Apishipa	133, 134, 135, 141, 142	SE	11,12	None	OTC	Spike	250	250	250	944	378%
			SE Subtotal					**26100**	**30150**	**28100**	**32729**	**116%**
E5	West Elk Mountains	53, 54, 63	SW	16	2018	OTC	4 pt	7800	8800	8300	6851	83%
E11	Sand Dunes	82	SW	17	2010	OTC	4 pt	3000	4000	3500	4529	129%
E20	Uncompahgre	61, 62	SW	18	2006	Mix-Qu	P Spike	8500	9500	9000	8747	97%
E24	Disappointment Creek	70, 71, 72, 73, 711	SW	15,18	2006	OTC	4 pt	17000	19000	19000	17953	94%
E25	Lake Fork	66, 67	SW	16	2017	Lim-Cr	4 pt	6000	7000	6500	6033	93%
E26	Saquache	68, 681	SW	17	2008	OTC	4 pt	3500	4500	3500	3350	96%
E30	Hermosa	74, 741	SW	15	2010	OTC	4 pt	5000	6000	5000	4812	96%
E31	San Juan	75, 77, 78, 751, 771	SW	15	2007	OTC	4 pt	17000	21000	21000	19261	92%
E32	Lower Rio Grande	80, 81	SW	15	2018	OTC	4 pt	11500	13000	12000	10814	90%
E34	Upper Rio Grande	76, 79	SW	17	2010	Mix-Qu	P Spike	4000	5500	4250	5111	120%
E35	Cimarron	64, 65	SW	18	2007	OTC	4 pt	5000	5500	5500	6089	111%
E40	Paradox	60	SW	18	2008	OTC	4 pt	900	1100	1100	2523	229%
E43	Fossil Ridge	55, 551	SW	16	2001	OTC	4 pt	3000	3500	3500	4706	134%
E55	Northern San Luis Valley Floor	682, 791	SW	17	2006	Lim-De	4 pt	0	0	0	150	
			SW Subtotal					**92200**	**108400**	**102150**	**100929**	**104%**
STATEWIDE TOTAL								**232070**	**281920**	**259420**	**281715**	**109%**

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.

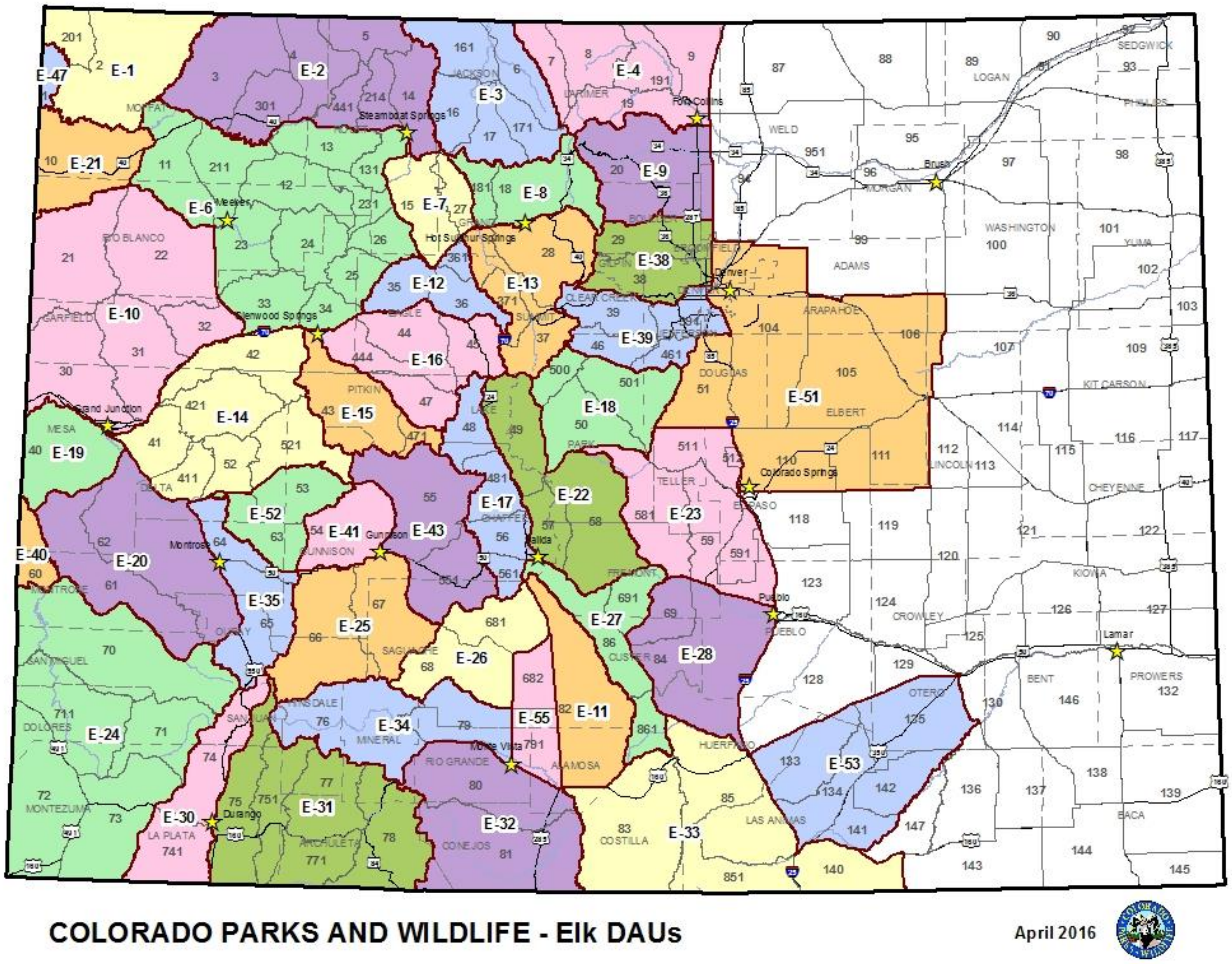


Figure 4. Elk Data Analysis Units and their associated Game Management Units.

D. Deer Herds (DAUs) Over Objective

Ten out of 54 deer herds (19%) exceeded their population objective by more than 10% (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 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).

E. Deer Herds (DAUs) Below Objective

Twenty-five out of 54 deer herds (46%) were more than 10% below their population objective targets (Table 2). Although several herds have increased in recent years and others are steadily moving toward objective, approximately half of the deer herds are still below objective. Many of the large herds in western Colorado have declined resulting in the statewide total deer population decline (Figure 5).

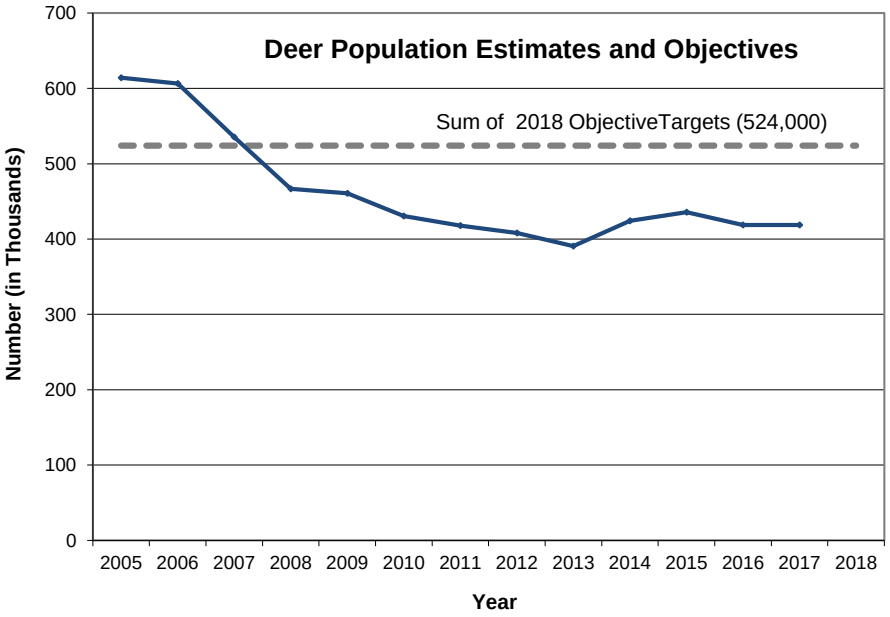


Figure 5. Estimated, statewide post-hunt deer population versus 2018 total of DAU population objectives. Current estimates based on 2017 models.

Population Estimates and Population Objectives

Declines in population estimates in many deer herds are related to modeling improvements that were made in 2007. The net effect of the modeling changes has been a decrease in deer population estimates. In these cases, updating the herd management plan objectives will be considered to adjust current objectives with the new deer population estimates.

Another reason for some of the lower deer populations in 2007 and 2008 was the severe winter of 2007-2008. High deer mortality occurred in parts of the West Slope during that 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. Severe winters negatively affect mule deer herd performance by lowering survival.

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 elk numbers to objective to reduce inter-specific competition on shared winter range.*
- *Research: In December 2016, the Colorado Parks and Wildlife Commission approved two predator management plans that will guide research projects in the Piceance Basin and in the Upper Arkansas River to research the influence of predator removal on mule deer survival.*

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.

Table 2. 2017 Post-Hunt Deer DAU Population Estimates Compared to Objectives and Targets.

DEER

Colorado Parks and Wildlife

Draft 12/27/2018

DAUs > 10% Below Population Target

DAUs > 10% Above Population Target

DAU							POPULATION				
DAU	Name	GMUs	Region	Area	HMP Year	Mgmt Type	Obj Min (Provisional)	Obj Max (Provisional)	Target	2017 Post Est. (2017 Model)	2017 Post % of Target
D4	Red Feather	7, 8, 9, 19, 191	NE	4	2018	4th	13000	15000	14000	14974	107%
D5	Table Lands North	87, 88, 89, 90, 95	NE	3,4	2007	P	2400	2700	2700	2797	104%
D10	Big Thompson	20	NE	2	2018	4th	8000	10000	9000	7807	87%
D17	Bailey	39, 46, 51, 391, 461	NE	1	2006	4th	7500	8300	7900	8263	105%
D27	Boulder	29, 38	NE	2	2012	4th	6000	7500	7000	7686	110%
D38	South Park	50, 500, 501	NE	1,13	2015	4th	2500	3100	2800	3023	108%
D44	South Platte River	91, 92, 94, 96, 951	NE	2,4	2009	P	3500	3800	3500	3560	102%
D49	Bijou Creek	104, 105, 106	NE	5,14	2009	P	5500	6500	6000	6775	113%
D54	South Tablelands	93, 97, 98, 99, 100	NE	3	2007	P	2900	3100	3000	3629	121%
D55	Arickaree	101, 102	NE	3	2018	P	2300	2700	2500	2278	91%
			NE Subtotal				**53600**	**62700**	**58400**	**60792**	**104%**
D1	Little Snake	1, 2	NW	6	None		13500	13500	13500	2063	15%
D2	Bear's Ears	3, 4, 5, 14, 214, 301, 441	NW	6,10	1992	4th	37800	37800	37800	40406	107%
D3	North Park	6, 16, 17, 161, 171	NW	10	2002	4th	5400	6600	5400	6556	121%
D6	Rangely	10	NW	6	None	4th	7000	7000	7000	953	14%
D7	White River	11, 12, 13, 22, 23, 24, 131, 211, 231	NW	6,8	1992	4th	67500	67500	67500	32501	48%
D8	State Bridge	15, 35, 36, 45	NW	8,9	2009	4th	13500	16500	15000	13734	92%
D9	Middle Park	18, 27, 28, 37, 181, 371	NW	9	2009	4th	10500	12500	11500	15414	134%
D11	Bookcliffs	21, 30	NW	6,7	2005		10000	12000	11000	6,723	61%
D12	North Grand Mesa	41, 42, 421	NW	7	2010	4th	17000	23000	20000	16,449	82%
D13	Maroon Bells	43, 47, 471	NW	8	2011	4th	7500	8500	8000	6133	77%
D14	Red Table Mountain	44	NW	8	1995	4th	7000	7000	7000	2323	33%
D18	Glade Park	40	NW	7	2010		6500	8500	7500	4416	59%
D41	Logan Mountain	31, 32	NW	7	2012		6500	8500	7500	5950	79%
D42	Rifle Creek	33	NW	7	2007	4th	7700	9400	8400	7730	92%
D43	Sweetwater Creek	25, 26, 34	NW	8	2011	4th	5000	6000	5500	5836	106%
D53	Basalt	444	NW	8	1995	4th	5300	5300	5300	4367	82%
			NW Subtotal				**227700**	**249600**	**237900**	**171554**	**72%**
D15	Cottonwood Creek	48, 56, 481, 561	SE	13	2011		6300	7700	7000	3616	52%
D16	Cripple Creek	49, 57, 58, 581	SE	13	2007		16000	20000	16000	13425	84%
D28	Arkansas River	122, 125, 126, 127, 130, 132, 137, 138, 139, 14	SE	12	1999	P	3600	3600	3600	5903	164%
D32	Trinidad	85, 140, 851	SE	11	2008		9800	10800	9800	6298	64%
D33	Mesa de Maya	143, 144, 145	SE	12	1999	P	2350	2350	2350	1789	76%
D34	Wet Mountain	69, 84, 86, 691, 861	SE	11	2005		16500	17500	17000	12386	73%
D45	Las Animas	128, 129, 133, 134, 135, 136, 141, 142, 147	SE	11,12	None	P	3400	3400	3400	3628	107%
D46	Big Sandy	107, 112, 113, 114, 115, 120, 121	SE	14	1999	P	2500	2500	2500	2104	84%
D47	South Republican	103, 109, 116, 117	SE	14	1999	P	2000	2000	2000	3043	152%
D48	Chico Basin	110, 111, 118, 119, 123, 124	SE	11,14	1999	P	1800	1800	1800	2423	135%
D50	Rampart	59, 511, 512, 591	SE	14	2008	4th	4000	5000	4500	4118	92%
			SE Subtotal				**68250**	**76650**	**69950**	**58733**	**84%**
D19	Uncompahgre	61, 62	SW	18	2006	4th	36000	38000	36000	16438	46%
D20	North Fork Gunnison Riv	53, 63	SW	16	2018	4th	7500	9500	8500	7152	84%
D21	West Elk	54	SW	16	2013		5000	5500	5000	3950	79%
D22	Taylor River	55, 551	SW	16	2013		5000	5500	5500	5014	91%
D23	La Sal	60	SW	18	2008	4th	2500	3000	2500	1440	58%
D24	Groundhog	70, 71, 711	SW	15,18	2014	4th	15000	19000	17000	15080	89%
D25	Powderhorn Creek	66, 67	SW	16	2013		5400	5900	5400	5777	107%
D26	Saquache	68, 681, 682	SW	17	2008	4th	4000	5000	4000	5684	142%
D29	Mesa Verde	72, 73	SW	15	2014	4th	5500	7000	7000	6293	90%
D30	San Juan	75, 77, 78, 751, 771	SW	15	2001	4th	27000	27000	27000	27057	100%
D31	Trinchera	83	SW	17	2010	4th	2000	2500	2000	1119	56%
D35	Lower Rio Grande	80, 81	SW	17	2018	4th	5500	6500	6000	6370	106%
D36	Upper Rio Grande	76, 79, 791	SW	17	2010	4th	2000	2500	2000	2599	130%
D37	Sand Dunes	82	SW	17	2010	4th	1500	2000	1700	2477	146%
D40	Cimarron	64, 65	SW	18	2007	4th	13500	15000	13500	7784	58%
D51	South Grand Mesa	52, 411, 521	SW	16	2018	4th	8000	10000	10000	8300	83%
D52	Hermosa	74, 741	SW	15	2010	4th	4000	6000	5000	5078	102%
			SW Subtotal				**149400**	**169900**	**158100**	**127612**	**81%**
STATEWIDE TOTAL							**498950**	**558850**	**524350**	**418691**	**80%**

P = Plains Unit

4th = has a 4th rifle deer season

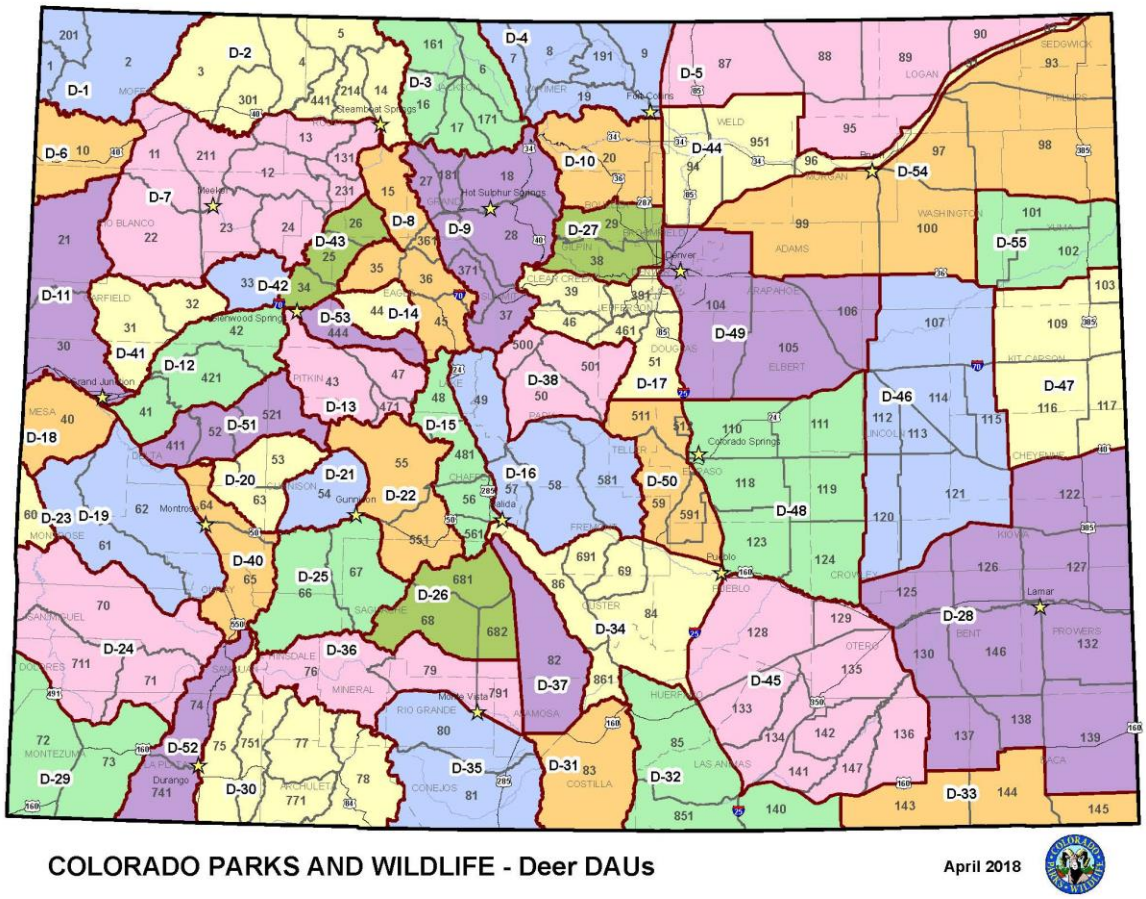


Figure 6. Deer Data Analysis Units and their associated Game Management Units.

F. Pronghorn Herds (DAUs) Over Objective

Seventeen out of 29 pronghorn herds (59%) exceeded their population objective by more than 10% (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 become 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.

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.*
- *Combine several GMUs into a single hunt code to increase the area a license is valid for.*
- *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).

G. Pronghorn Herds (DAUs) Below Objective

Six out of 29 pronghorn herds (21%) were more than 10% below their population objective (Table 3). Most of these herds are on the western slope and have been impacted by several years of drought and 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.*
- *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. A transplant of pronghorn to augment the A-27 population occurred in 2012.

Table 3. 2017 Post-Hunt Pronghorn DAU Population Estimates Compared to Objectives and Targets.

PRONGHORN

Colorado Parks and Wildlife

Draft 12/28/2017

DAUs > 10% Below Population Target

DAUs > 10% Above Population Target

DAU						POPULATION				
DAU	Name	GMUs	Region	Area	HMP Year	Obj Min (Provisional)	Obj Max (Provisional)	Target	2017 Post Est.(2017 Model)	2017 Post % of Target
PH1	Escarpment	87,88,89,90,94,95,951	NE	4	2011	6500	7500	7000	7221	103%
PH2	Hardpan	99,100	NE	2,3,5	2018	1400	1700	1500	1551	103%
PH4	Sandhills	93,97,98,101,102	NE	3	2006	550	650	650	656	101%
PH30	South Park	49,50,57,58,501,511,581	NE	1,13	2012	1000	1250	1000	1257	126%
PH33	Cherokee	9,19,191	NE	4	2009	1000	1200	1100	1562	142%
PH35	Kiowa Creek	51,104,105	NE	5	2012	4000	5000	3200	4814	150%
PH36	Laramie River	7,8	NE	4	2009	550	650	600	660	110%
			NE Subtotal			15000	17950	15050	17721	118%
PH3	North Park	6,16,17,161,171	NW	10	2004	1500	1600	1500	1844	123%
PH9	Great Divide	3,4,5,13,14,214,301,441	NW	6,10	1995	15800	15800	15800	21263	135%
PH10	Maybell	11	NW	6	None	1400	1400	1400	495	35%
PH11	Sand Wash	1,2,201	NW	6	None	3200	3200	3200	1200	38%
PH21	Dinosaur	10,21	NW	6	None	300	300	300	130	43%
PH34	Axial Basin	12,23,211	NW	6	None	300	300	300	349	116%
PH37	Middle Park	18,27,28,37,181,371	NW	9	1999	630	630	630	885	140%
			NW Subtotal			23130	23230	22830	26166	115%
PH5	Haswell	120,121,125,126	SE	12	2006	2400	3000	2700	3595	133%
PH6	Hugo	112,113,114,115	SE	14	2012	2250	2750	2500	3132	125%
PH7	Thatcher	128,129,133,134,135,140,141,142,147	SE	11	2012	7800	8800	8000	9565	120%
PH8	Yoder	110,111,118,119,123,124	SE	11,14	2012	5400	6600	6000	12064	201%
PH12	Cheyenne	116,117,122,127	SE	12,14	2006	1100	1350	1200	1363	114%
PH13	Tobe	130,136,137,138,143,144,146	SE	12	2006	1400	1700	1550	3421	221%
PH18	Two Buttes	132,139,145	SE	12	2006	300	500	400	693	173%
PH19	Last Chance	103,106,107,109	SE	5,14	2016	1800	2200	2000	2118	106%
PH20	Wet Mountain	69,84,85,86,691,851,861	SE	11	2013	2200	2600	2400	2697	112%
PH31	Ft Carson	59,591	SE	14	2000	200	200	200	287	144%
PH39	Collegiate	48,56,481	SE	13	None	150	150	150	170	113%
			SE Subtotal			25000	29850	27100	39105	144%
PH14	San Luis Valley - N	68,79,82,681,682,791	SW	17	2008	2000	2500	2000	1337	67%
PH16	San Luis Valley - S	80,81,83	SW	17	2008	1000	1500	1000	621	62%
PH23	Gunnison Basin	66,67,551	SW	16	2001	450	450	450	450	100%
PH27	Delta	41,52,62,63,411	SW	7,18	None	350	350	350	100	29%
			SW Subtotal			3800	4800	3800	2508	66%
PH99	Misc GMUs								100	
STATEWIDE TOTAL						66930	75830	68780	85600	124%

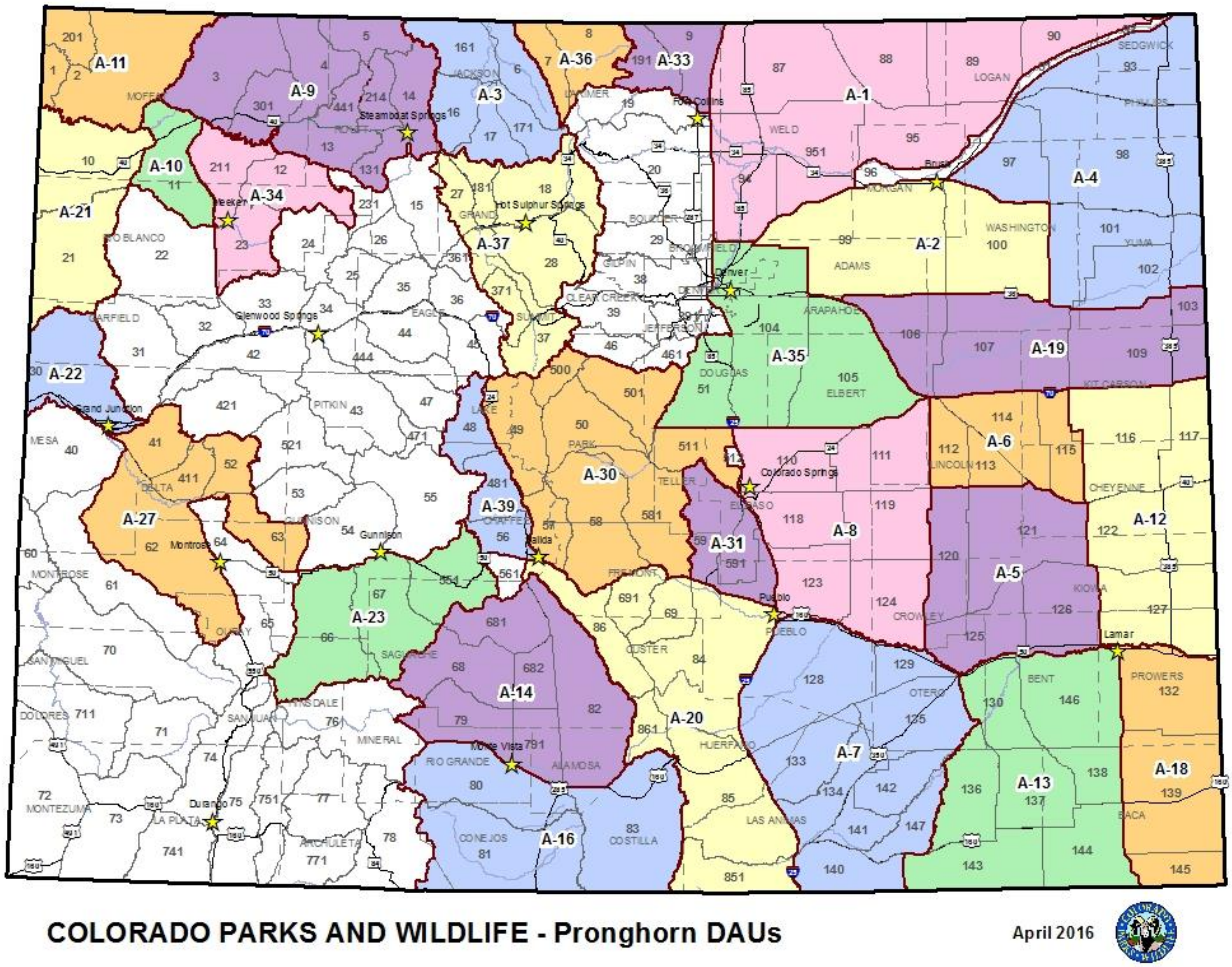


Figure 7. Pronghorn Data Analysis Units and their associated Game Management Units.