PRONGHORN HERD MANAGEMENT PLANS

COLORADO PARKS AND WILDLIFE

SOUTHEAST REGION

Pronghorn buck with Pikes Peak in the background. Photo by Wayne Lewis, CPW.

PREPARED FOR
COLORADO PARKS AND WILDLIFE

BY
Southeast Terrestrial Staff
The Colorado Parks & Wildlife Commission approved these plans on 21 July 2023

Executive Summary

The pronghorn is unique amongst Colorado's large mammals. It is the lone surviving member of the family Antilocapridae, a once diverse group of species only found in North America (O'Gara and Yoakum 2004). All other members of the family went extinct by the end of the Pleistocene Era. Pronghorn are the fastest land mammal in North America, capable of sustaining speeds of over 50 mph. Males and some females grow a black "horn" sheath which is made of keratin and forms over a bony core. Pronghorn shed their sheaths annually, while the bony core remains throughout the animal's life. Pronghorn females, or does, have a gestation period of approximately nine months, almost always giving birth to twins, which together weigh around 20% of their mother's body weight. The nine-month gestation of a pronghorn doe, weighing about 90-100 lb, rivals that of cow elk, a 400-600 lb animal.

Pronghorn are a conservation success story. In the early 1800s, pronghorn were abundant and widely distributed throughout western North America, but were almost extirpated by 1900 due to unregulated exploitation for their hides and meat. However, starting in the early 1900s, successful conservation efforts, including transplants, regulation and enforcement of hunting laws, and the establishment of wildlife refuges, brought the species back from the brink of extinction. Pronghorn now occur in grasslands and shrublands throughout south-central Canada, the Great Basin, Intermountain West, and Great Plains in the United States, and parts of northwestern Mexico (O'Gara and Yoakum 2004; Yoakum et al. 2014).

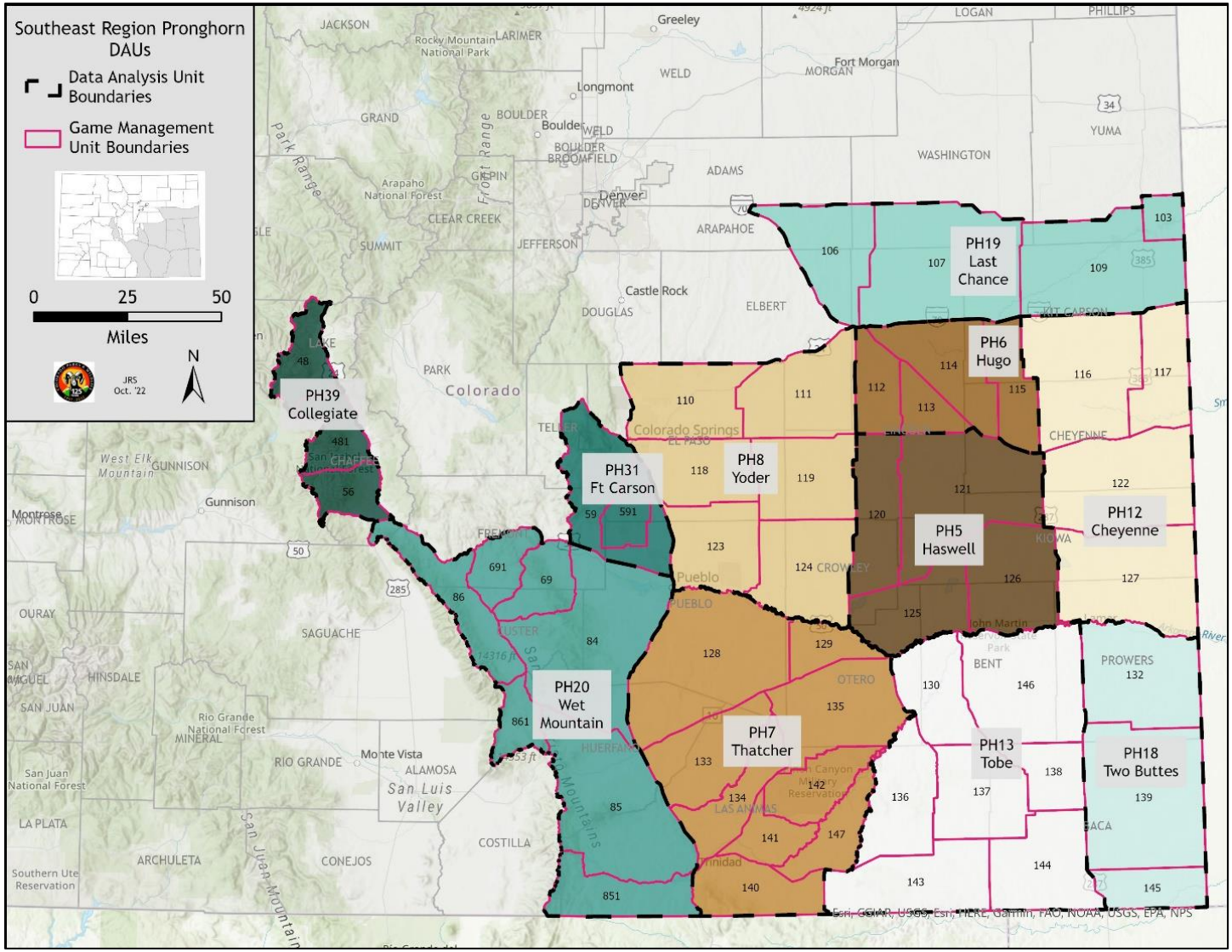
In Colorado, pronghorn inhabit most of their historic range and are widely distributed throughout the eastern plains (Armstrong et al. 2010). They are also found in several mountain valleys and sagebrush rangelands in northwestern Colorado. In 2022, Colorado Parks and Wildlife (CPW) estimated the total statewide population to be 73,000 pronghorn, with over 42% (31,000 pronghorn) occurring in southeastern Colorado. In 2022, CPW offered 22,000 limited pronghorn licenses statewide, of which 15,158 licenses were for game management units (GMU) in the Southeast Region.

The pronghorn population in southeastern Colorado is currently robust. However, CPW faces several challenges for the future of pronghorn management in the region. Challenges include but are not limited to drought, management on private lands, energy and housing development, along with loss of connectivity across the landscape. This document contains the herd management plans (HMP) for the 11 pronghorn herds in Colorado's Southeast Region (Map 1) and will guide pronghorn management in the region from 2023-2033.

Table 1. Population and management status of 11 pronghorn herds occurring in SE Colorado. The first six plans in the table (blue shading) have new population and sex ratio objectives. Objectives from the last five plans in the table completed since 2019 (grey shading) have been extended.

DAU	Pronghorn Herd	Prior HMP Approval Year	Prior Population Objective	Post-hunt Population Estimate*	Prior Post-hunt Buck Ratio Objective	Post-hunt Buck Ratio Estimate*	Approved Population Objective	Approved Post-hunt Buck Ratio Objective
PH-6	**Hugo**	2012	2,250-2,750	1,800	20-30	24	2,100-2,900	20-30
PH-7	**Thatcher**	2012	7,800-8,800	8,200	30-40	31	9,300-12,700	30-40
PH-8	**Yoder**	2012	5,400-6,600	7,600	25-35	23	6,800-9,200	25-35
PH-19	**Last Chance**	2017	1,800-2,200	2,500	30-40	34	1,700-2,300	30-40
PH-20	**Wet Mountain**	2014	2,200-2,600	2,500	30-40	35	2,000-2,800	30-40
PH-31	**Ft. Carson**	None	N/A	200-400	N/A	N/A	100-500	25-75
PH-5	**Haswell**	2019	3,000-4,000	3,200	35-45	28	Extension	Extension
PH-12	**Cheyenne**	2020	1,500-2,000	1,500	35-45	27	Extension	Extension
PH-13	**Tobe**	2019	3,000-4,000	2,750	23-31	20	Extension	Extension
PH-18	**Two Buttes**	2020	300-1,500	1,000	40-100	N/A	Extension	Extension
PH-39	**Collegiate**	2020	150-200	225	20-25	19	Extension	Extension

**2022 Modeled Estimates for all DAUs except PH-18 & PH-31*



Map 1. Location, name, and number of the 11 pronghorn herds in southeastern Colorado.

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Introduction and Purpose

Colorado Parks and Wildlife (CPW) manages big game, including pronghorn, for the use, benefit, and enjoyment of the people of the state in accordance with the CPW's Strategic Plan (2015). Pronghorn management is also determined by mandates from the Colorado Parks and Wildlife Commission (PWC) and the Colorado Legislature. Colorado's wildlife species require careful and increasingly intensive management to accommodate the many stakeholders demands and growing human impacts. CPW uses a "Management by Objective" approach to manage the state's big game populations (Figure 1).

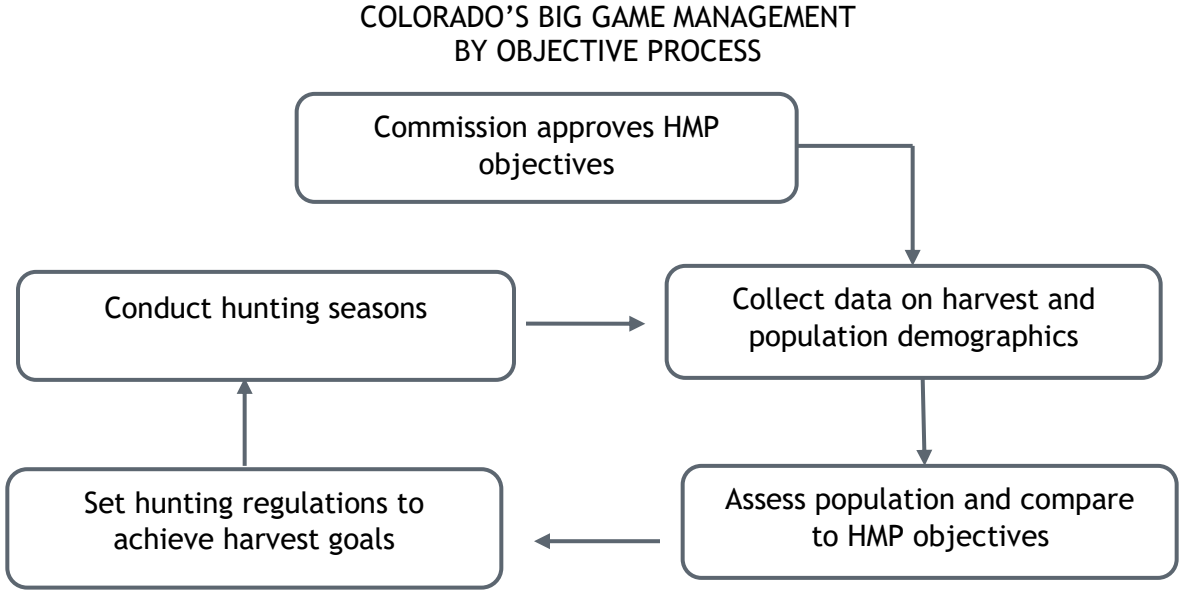


Figure 1. Management by Objective process used by CPW to manage big game populations by Data Analysis Unit (DAU). Objectives are set in a herd management plan (HMP).

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

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

public's demand for wildlife recreational opportunities and landowner tolerance for game damage. Herd management plans are approved by the PWC and are reviewed and updated approximately every 10 years.

The HMP serves as the basis for the annual herd management cycle. In this cycle, the population size and sex ratio of the herd are assessed and compared to the objectives defined in the HMP and removal goals are set. Based on these goals, specific removal strategies are made for the coming year to either maintain the population or move it towards the established objectives (e.g., license numbers and allocations are set). Hunting seasons are then conducted and evaluated. The annual management cycle then begins again (Figure 1).

The purpose of this document is to set population and sex ratio objectives for six of the 11 Southeast (SE) Region pronghorn herds needing new or updated HMPs. These will be full HMP revisions. Additionally, we propose extensions of population and sex ratio objectives for the other five pronghorn DAUs with current HMPs. The expectation is that these HMPs will guide pronghorn management in southeastern Colorado from 2023-2033.

Types of Herd Management Plans Updates

When drafting HMPs, CPW may consider different types of updates, including full revisions and extensions. We use several factors to determine whether to revise or extend HMPs. These factors include the profile of the plan, the length of time since the last HMP was approved, and the level of contention we expect during the planning process. The update categories require different levels of public involvement, which allows CPW flexibility to undertake a full planning process for HMPs warranting a high level of public involvement while streamlining the process for HMPs that do not require the same level of input.

Revisions

We recommended full HMP revisions to five southeastern pronghorn DAUs: PH-6, PH-7, PH-8, PH-19, and PH-20 (Table 1). We undertook a full planning process, including public surveys, for these DAUs because the HMPs for these units were all more than five years old. Survey results for the five DAUs are found in Appendix A (Landowner Survey) and Appendix B (Big Game Opt-In Survey). Additionally, we drafted the first HMP for the PH-31 DAU, which previously had provisional population and sex ratio objectives.

Extensions

We recommended extensions to the PH-5, PH-12, PH-13, PH-18, and PH-39 HMPs. The HMPs for these units were current, having been passed in 2019 and 2020. These extensions are continuations of the same objectives, course of management actions, and strategies. Therefore, we did not propose any changes to the objectives or management approaches.

DAU Descriptions

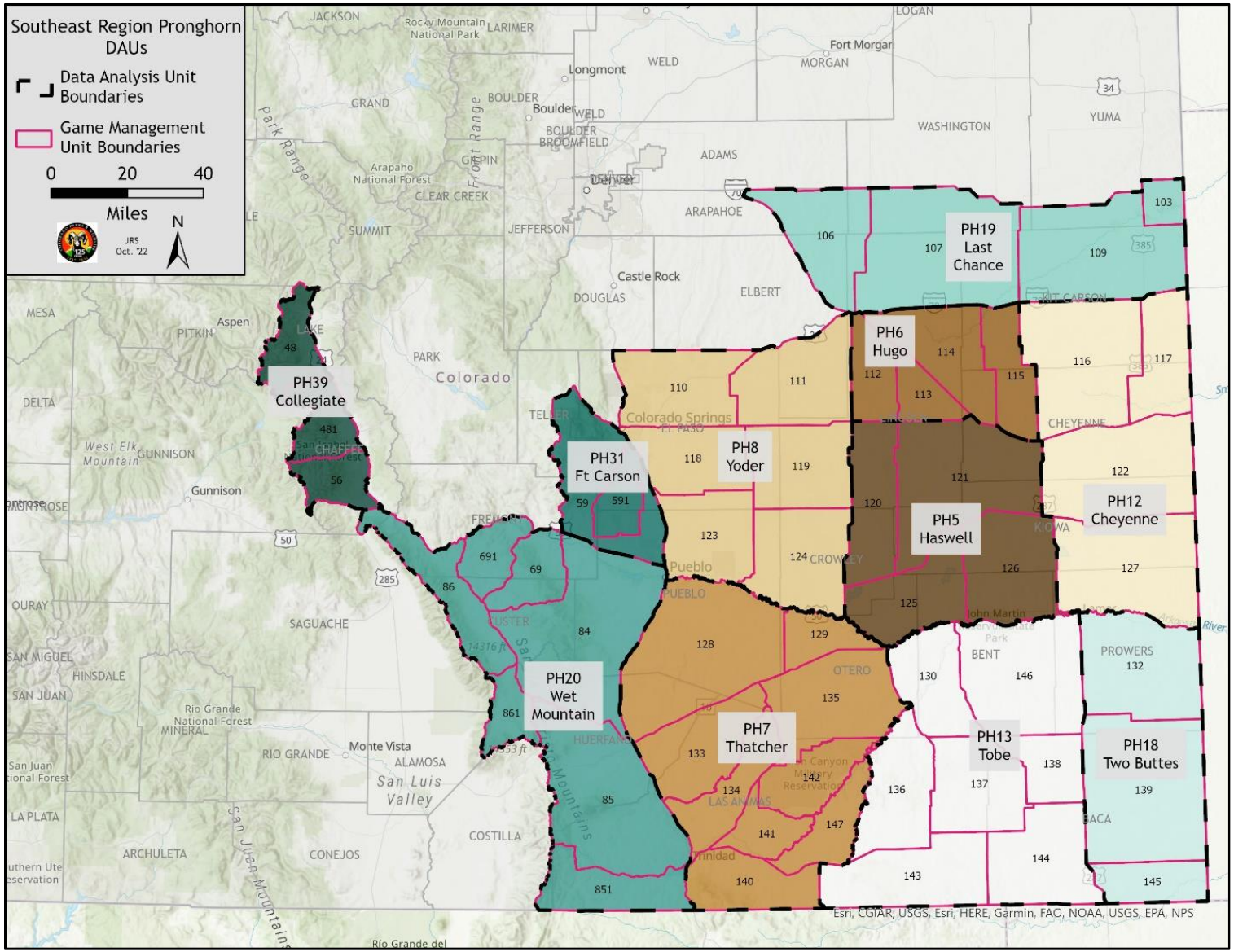
CPW manages 11 pronghorn DAUs, totaling 31,150 mi^2, within the boundary of CPW's SE Region (Map 1). The DAUs extend from the Continental Divide in the Upper Arkansas Valley south through the Sangre de Cristo Divide to the New Mexico state line. The southern and eastern boundaries are the state lines with New Mexico, Oklahoma, and Kansas. The northern boundary of the DAUs includes US Highway 36 from the Kansas-Colorado state line to Byers on I-70. The portion of I-70 from Byers to Limon forms the western boundary of the northern most DAU (PH-19 Last Chance) in the SE Region. From Limon, the northern boundary of PH-8 follows US Highway 24 to where it crosses into El Paso County near Ramah and then follows the Elbert-El Paso County boundary to I-25, which forms the western boundary of PH-8. The DAUs also include Ft. Carson (PH-31).

Pronghorn range within the SE Region DAUs makes up approximately 80% (25,100 mi^2) of total area (Map 2). West of I-25, pronghorn distribution is limited due to lack of suitable habitat in the higher elevation and forested portions of the DAUs. In the PH-39 Collegiate and PH-20 Wet Mountain DAUs, pronghorn are generally found in the valley bottoms in low elevation grasslands, shrublands, and ranchlands. Also west of I-25, the Ft. Carson pronghorn herd inhabits the grasslands in the southeastern corner of the DAU. In contrast, pronghorn are widely distributed throughout the shortgrass prairies, shrublands, and croplands east of I-25.

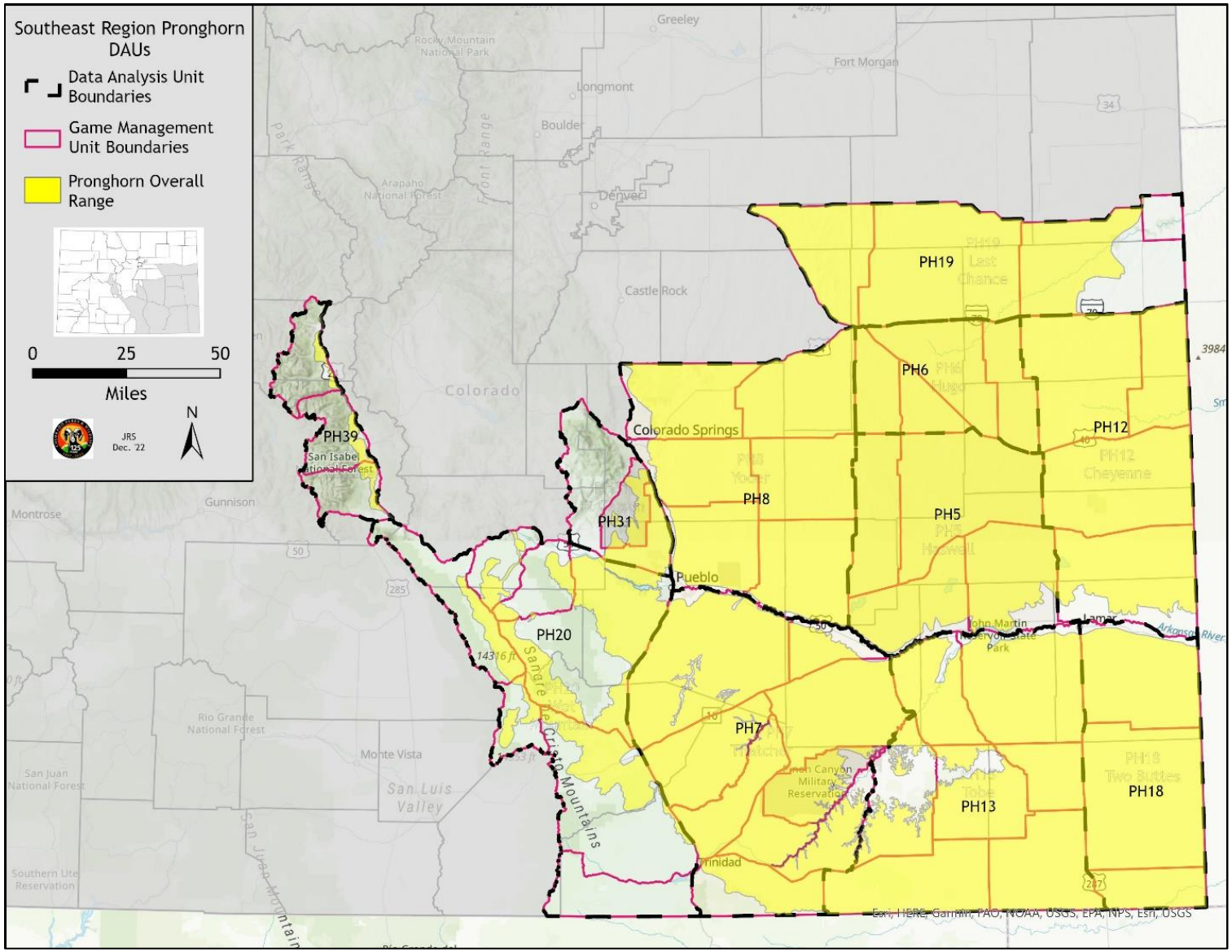
The 2022 post-hunt population estimate for the SE Region pronghorn DAUs was 33,000 animals which equates to 42% of the statewide total. The second and third largest herds in the state, PH-7 Thatcher and PH-8 Yoder, with 8,000-9,000 pronghorn each, are found in the SE Region. The PH-39 Collegiate and PH-31 Ft. Carson herds have the smallest populations in the Region with approximately 200-400 animals.

Most of the land in SE Region pronghorn DAUs is privately owned (81% or 25,157 mi^2). The State Land Board (SLB) manages 6% (1,976 mi^2) of the land. CPW-managed State Parks and State Wildlife Areas comprise 2% (690 mi^2). The remaining area consists of lands managed by the US Forest Service (USFS), including the San Isabel and Pikes Peak National Forests (5% or 1,428 mi^2) and the Comanche National Grasslands (2% or 693 mi^2). The Bureau of Land Management (BLM) manages 1% or 445 mi^2. Military installations, including Ft. Carson and the Pinon Canyon Maneuver Site, make up 2% (636 mi^2).

Pronghorn hunting opportunities on publicly accessible lands are very limited, and include the federally managed Comanche National Grasslands, Bureau of Land Management lands, Ft. Carson, and Pinon Canyon Maneuver Site. CPW also leases several SLB parcels for hunting recreation (totaling 326 mi^2 in the SE pronghorn range in 2022). Starting in 2019, CPW started leasing several new SLB parcels through the Public Access Program, expanding public pronghorn hunting opportunities in several SE Region Pronghorn DAUs.



Map 1. Location and name of the 11 pronghorn DAUs managed by CPW's SE Region.



Map 2. Mapped range of pronghorn in CPW's SE Region.

Common Management Issues & Strategies

Pronghorn Population Management

Population Monitoring

For most SE Region pronghorn DAUs, CPW estimates population sizes and sex ratios using field-based surveys and computer models. An intensive monitoring program that consists of annual pre-hunt sex/age classification flights, aerial line intersect distance sampling (Buckland et al. 2001; Guenzel 2007), and annual hunter harvest data collected from the Big Game Harvest Survey informs the model estimates. The annual classification flights began in the mid-2000's in the SE Region. CPW staff collect the aerial survey data from fixed-winged airplanes by flying low-level transects (<350 ft. above the ground) across the DAUs. During classification flights, we count the number of does, fawns, and bucks seen in each group. From these data, we calculate the ratio of bucks per 100 does (sex ratio) and fawns per 100 does (age ratios or production). Pronghorn classification flights are conducted annually between mid-July and early September (pre-hunt classifications). We time these flights to occur when fawns are visible and can be distinguished from their mothers. In southeastern Colorado, from birth until mid-July, pronghorn fawns generally remain bedded throughout the day, making them impossible to spot during aerial surveys. After about mid-September, fawns have grown enough that they are hard to distinguish from their mothers. This is the standard timing for pronghorn surveys throughout North American (Yoakum et al. 2014)

The aerial line transect distance samples are conducted in mid-May to mid-June when pronghorn are most widely distributed throughout the landscape (Yoakum et al. 2014). This timing increases the encounter rate throughout the entire DAU, and higher encounter rates equate to increased precision for the estimate of population size. Estimates produced through distance samples include both adult and yearling animals. Only some of the DAUs in the region are suitable for distance estimates due to the density of pronghorn in the unit and ability to fly random transects.

Pre-hunt observed sex ratio vs Post-hunt modeled sex ratio

CPW staff use similar intensive monitoring to collect data for deer and elk models, but we classify deer and elk in the winter from helicopters after hunting seasons have concluded (post-hunt classifications). The timing difference for data collection (pre-hunt vs post-hunt) between deer & elk and pronghorn creates important considerations when evaluating observed sex ratio data versus the HMP objectives for these three species. For all three species, we set objectives for post-hunt sex ratios since that approach aligns with our Management by Objective cycle (Figure 1) for evaluating population sizes and sex ratios relative to HMP objectives. Since we collect data pre-hunt for pronghorn but set post-hunt objectives, we use modeled post-hunt sex ratios to evaluate the pronghorn buck to doe ratio relative to the sex ratio objective. Pre-hunt observed ratios are more variable and dependent on the number of pronghorn groups observed during classification flights. Therefore, post-hunt modeled sex ratios are more consistent and preferred for comparing to sex ratio objective ranges. In the model, the post-hunt numbers account for the animals that are harvested during the hunting season. Depending on the portion of bucks and does that are harvested in each DAU, the post-hunt modeled sex ratio is often lower than what we observe during summer classification flights. In the following SE pronghorn HMPs, we specify the data as either observed pre-hunt or modeled post-hunt to clarify the metric under consideration.

Variation in fawn to doe ratios

Pronghorn fawn to doe ratios can vary considerably from year to year in southeastern Colorado. Similar variation has been reported for pronghorn throughout North America and has been attributed to both biotic factors such as density-dependence and abiotic factors like annual precipitation (Kohlmann 2004). Since we began summer classification surveys in most SE Region pronghorn DAUs in 2006, the fawn to doe ratio for the entire region has averaged 45 fawns per 100 does with a low of 34 fawns per 100 does recorded in 2011 and a high of 59 fawn per 100 does in 2014.

Within individual DAUs, we can see dramatic annual changes in fawn to doe ratios. For example, in 2013, the fawn to doe ratios in PH-5 and PH-12 were 23 fawns per 100 does and 34 fawns per 100 does, respectively. The following year, the ratios were 65 fawns per 100 does in PH-5 and 79 fawns per 100 does in PH-12. As with other pronghorn herds in North America, we think precipitation might be one of the drivers of annual fawn production in the SE Region (Figure 2). Annual precipitation rates in SE Colorado can also vary dramatically. Since 2006, annual precipitation rates across the region have averaged 16.2 in, with a low of 10.1 in falling in 2012 and a high of 21.9 in falling in 2017.

Annual variation in both precipitation and pronghorn production creates both management opportunities and challenges for CPW. Pronghorn populations can grow quickly following years of high precipitation, which allows increased hunting opportunity. However, the likelihood for damage caused by pronghorn also rises as populations increase. Following drought years and subsequent low fawn recruitment, we often recommend substantial reductions in doe license numbers to manage herds to the population objective. This creates a challenge for hunters looking for predictable odds of drawing licenses. Additionally, we set fall hunting license numbers in the spring, well before we know how precipitation and summer age ratios might impact the trajectory of the population.

One option CPW can use to manage high annual variation in precipitation and pronghorn fawn recruitment is to set population objective ranges that align with the expected changes anticipated for pronghorn numbers within each DAU. For SE Region pronghorn HMPs passed prior to 2019, we set a population objective ranges that were +/-10% of a population target. With the additional experience of managing pronghorn populations in the region through periods of with both high and low annual precipitation (Figure 2), we now recommend population objective ranges that are +/-15% of a midpoint of the population. These wider objective ranges better align with pronghorn population demographics and will provide CPW with more management flexibility going forward.

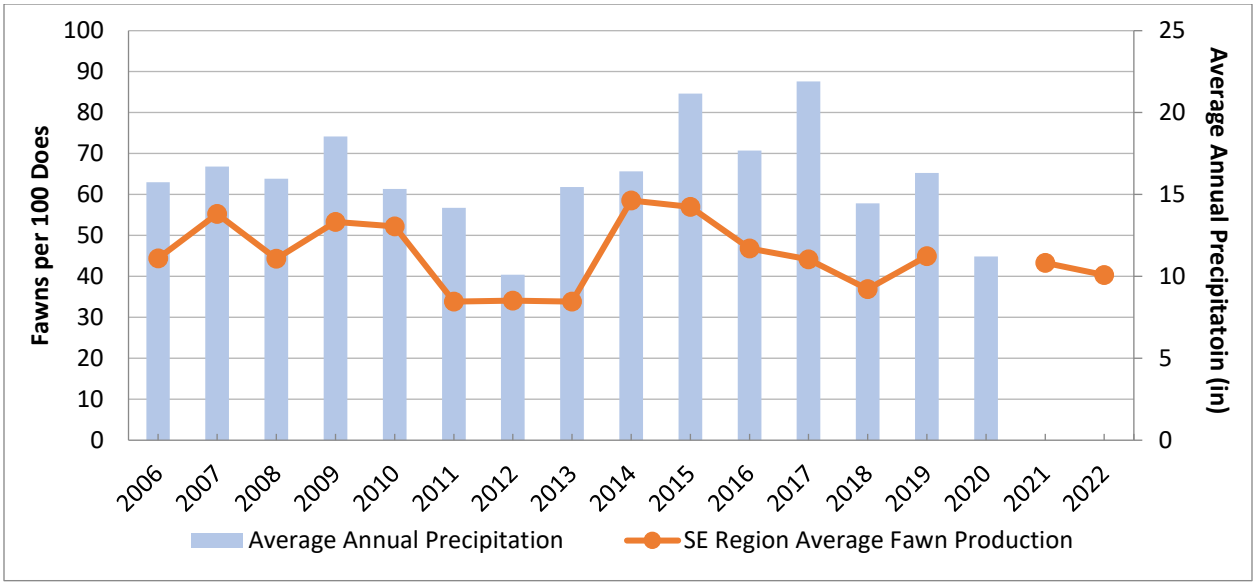


Figure 2. Average annual pronghorn fawn production (expressed as fawns per 100 does) and average annual precipitation across the SE Region pronghorn DAUs from 2006-2022. Fawn ratios were calculated from summer surveys conducted by CPW biologists. Annual precipitation data was calculated from PRISM data through a GIS analysis of average precipitation by DAU in SE Colorado. The PRISM dataset used in the analysis contained data from 2006-2020.

Survival, predation, and disease

From 2016-2022, CPW monitored radio-collared pronghorn in PH-6, PH-8, and PH-35 (in the northeast Region) as part of a study of pronghorn survival and movement (Appendix C). During this study, adult annual survival rates were high and ranged from 0.85-0.95, which was comparable to those reported in other pronghorn herds (Appendix C). Known or suspected causes of mortality during the study included hunting, disease, vehicle collisions, predation, and accidents.

Generally, predation on adult pronghorn is not thought to be a factor regulating pronghorn populations (O'Gara and Shaw 2004; Yoakum et al. 2014). The impact of predation on fawn production in southeastern Colorado is currently unknown. However, several predator species are known to prey on both fawns and adults. Pronghorn are vulnerable to a different suite of predators depending on the type of landscapes they inhabit. West of I-25, the primary predators of pronghorn, including both adults and fawns, are likely coyotes, golden eagles, bobcats, mountain lions, and black bears. East of I-25, coyotes and golden eagles are likely the primary predators. Mountain lions and bobcats will prey on pronghorn in some places east of I-25 where their ranges overlap. Domestic dogs are also known to kill pronghorn, especially newborn fawns who are too slow to outrun the dogs.

Pronghorn are susceptible to many of the same diseases that affect cattle, sheep, deer, and other ungulates. However, the diseases most frequently encountered specifically in Colorado pronghorn include viral hemorrhagic diseases (bluetongue and epizootic hemorrhagic disease), and diseases caused by diet (tooth root abscesses, polioencepalomalacia, and rumen granulomas). However, unlike deer, elk, and moose, pronghorn are not known to be susceptible to chronic wasting disease (CWD).

Bluetongue (BT) and epizootic hemorrhagic disease (EHD) are closely related hemorrhagic diseases caused by viruses and spread by biting midges (gnats). We observe mortality from these diseases more frequently in late summer and early fall when vectors are active. Pronghorn appear to be frequently exposed to these viruses, but mortality is not commonly reported. In 2018 and 2019, 22 live (apparently healthy) pronghorn captured in the southwestern portion of PH-8 were tested for previous exposure to BT and EHD viruses. All 22 pronghorn tested positive for exposure to EHDV and 20 of 22 tested positive for exposure to BTV, suggesting that exposure without significant disease is occurring. Likewise, lesions of nonfatal hemorrhagic diseases are frequently observed in (apparently healthy) hunted pronghorn, including edema under the skin and yellow pigmentation of tissue. Occasional mortality does occur in pronghorn due to EHD and BT, especially when new serotypes are introduced to a population.

Tooth root abscesses typically arise in pronghorn when plant material (thorns, spines, grass awns) becomes lodged in the spaces around the teeth and allow bacteria to invade the jaw around the tooth roots. The jaw often becomes swollen around the infected tooth, leading some to refer to this as “lumpy jaw”. However, the disease in pronghorn is more accurately defined as a type of necrotic stomatitis, caused by *Fusobacterium necrophorum* and other opportunistic bacteria of the mouth that become a problem when the lining of the mouth is damaged. These bacteria can eventually spread to tissues like the lung and liver where abscesses can develop.

Polioencepalomalacia (PEM) is a neurologic disease and can cause wandering, incoordination, blindness, and seizures. In Colorado pronghorn, PEM is most frequently caused by rumen acidosis. Rumen acidosis occurs when pronghorn consume an excess of high-carbohydrate feed (usually corn or bird seed) which produces too much acid in the pronghorn’s rumen (or stomach). The acid in the rumen kills the normal bacteria that the pronghorn rely on to produce thiamine, a vitamin required for proper brain function. The loss of adequate thiamine is ultimately what causes PEM-type brain damage in most pronghorn cases.

Rumen granulomas are caused by plant material (thorns, spines, grass awns) burrowing into the lining of the pronghorn rumen (or stomach). The plant material causes a reaction in the rumen lining that can cause it to become thickened and, in very severe cases, unable to function. It is common to encounter a few rumen granulomas in otherwise healthy pronghorn, but in very severe cases this can cause death from the inability to digest food.

Currently, disease is not thought to be a factor regulating pronghorn populations in southeastern Colorado. However, CPW routinely tests sick or dead animals, including pronghorn, for disease and we closely monitor disease outbreaks when they occur. We often learn about pronghorn mortalities from landowners who observe sick or dying animals on their property, and these reports provide us with valuable information on diseases.

Private Land

In all 11 SE Region DAUs, pronghorn primarily inhabit private lands. This creates three key management challenges or issues related to their distribution. The first is conflict between pronghorn and agricultural producers. Pronghorn can damage fences and crops, especially winter wheat. Some private landowners are also concerned with competition for forage or pronghorn use of feed, minerals, and water intended for their livestock. This concern is exacerbated during droughts when livestock producers might consider reducing stocking rates

on their property. The second concern is conflict between landowners and hunters. Conflicts caused by hunters include trespass, damage to private property, rude or dangerous behavior, or too many hunters asking permission to hunt. The third management issue is hunting opportunities on private lands. Pronghorn seek refuge on private lands near the few places where public land hunting opportunities are available in the region. Many landowners do not allow hunting on their property or lease their property to outfitters or guides, whose clients are primarily interested in hunting bucks. Therefore, many leased properties may not be available to doe hunters. Doe harvest is CPW's primary tool for pronghorn population management so managing herds to objectives can be challenging when hunters are unable to access pronghorn on private lands.

In addition to appropriate HMP population objectives, CPW uses several management tools to mitigate concerns related to pronghorn management on private lands in the SE Region. For crop damage, wildlife officers provide landowners with hazing tools or damage and dispersal hunting licenses to target the specific groups of pronghorn found on crops. If these techniques are ineffective, landowners can apply for game damage payments to compensate for crop losses, but we attempt to mitigate issues before game damage payments are needed. This strategy appears successful in the SE Region pronghorn DAUs as we have not paid any formal pronghorn game damage claims since 2007.

Fence damage from pronghorn can be mitigated by following wildlife-friendly fencing designs (see Fencing With Wildlife in Mind). Pronghorn tend to go under fences, so designs that recognize their natural behavior are advantageous to both landowners and pronghorn. The recommendation for pronghorn is to have a smooth wire bottom strand raised at least 18" from the ground to reduce damage and facilitate fence crossing by pronghorn. CPW acknowledges that these tools are expensive and can be time-consuming to implement.

Mitigating conflicts between hunters and landowners can be extremely challenging for CPW. During pronghorn hunting seasons, wildlife officers contact hunters and patrol areas with the potential for conflicts. During contacts, officers can educate hunters about legal and ethical hunting. They can also write citations for violations. However, the private landowner must be willing to press charges in some of these cases. Additionally, there are very few wildlife officers in the region relative to the total area, restricting their ability to patrol areas. CPW also attempts to balance hunting license numbers with landowner tolerance for hunting on private lands to reduce conflicts. This is partly accomplished by setting appropriate population objective ranges and being responsive to concerns raised by landowners. We can change hunting regulations to distribute hunting pressure on private lands. For example, we added doe-only December seasons to several DAUs in the region to reduce hunting pressure during the regular rifle season. Finally, we can engage hunters through educational campaigns to help them recognize conflicts with landowners. This includes instructions they receive in hunter safety courses.

To increase public hunting opportunities, CPW and the SLB have been directed to identify State Trust Land properties for hunting recreation leases though the Public Access Program (PAP). Through the PAP, public hunting access in the SE Region has increased considerably in the last several years. This has benefited hunters in the region but also created crowding issues on these properties. CPW can mitigate this concern through the creation of private land-only licenses or redistributing GMUs groupings that are valid for various tags. Additionally, CPW seeks opportunities to provide private-land hunting opportunities for some hunters through outreach licenses.

Development

Energy Development

Renewable energy projects, including solar and wind, cover a substantial portion of pronghorn habitat in the SE Region, with additional build out planned in the coming decade. As of January 2023, initial consultation with CPW has taken place during the last two years for more than 20 proposed solar projects impacting more than 720,000 acres in the SE Region (K. Voltura, pers. communication). Due to security requirements, large scale solar developments are entirely enclosed within a high fence, eliminating pronghorn habitat within their footprint. As of 2021, 1,725 wind turbines have been built within the boundaries of SE Region pronghorn DAUs, an increase of over 1,000 since 2012. Current proposed wind projects could add 4,000 new turbines, over an area of two million acres, in the coming decade.

Limited research exists on the long-term impacts of solar and wind development on pronghorn populations. Pronghorn have shown some avoidance of wind turbines on home and winter ranges and wind energy impacts have been suggested to be influenced by the layout of the turbines. Well-spaced turbine layouts may result in increased movement through the facilities. However most research supports some level of behavioral shifts in the presence of turbines. Dense turbine layouts for wind facilities and large-scale solar, that almost always includes exclusionary fencing, are more likely to result in impacts. Those impacts include loss of habitat, alteration of migratory patterns and increased energy expenditure as individuals and herds move around facilities, and increased potential for wildlife-vehicle collisions due to the shifts in movement patterns as well as the increase in roads and traffic necessary to support construction efforts (Seidler et al. 2015; Taylor et al. 2016; Smith et al. 2020; Milligan et al. 2021; Sawyer et al. 2022; Milligan et al. 2023).

Wind energy development impacts CPW's pronghorn population management program. Our ability to fly in or around wind farms is severely restricted due to the hazards created by the vertical structures and turbulence created by the blades. As such, our ability to survey pronghorn from fixed-winged airplanes has decreased in the last decade. In several units, we can no longer conduct aerial line transect distance estimates due to the number of wind farms in the DAU. We are actively pursuing alternative methods to survey pronghorn, including aerial imaging and drones, but as of 2023, have not found a suitable replacement for traditional survey methods. In addition to survey limitations caused by wind farms, property owners with wind farms may decide to not allow hunting access on their property.

Residential Development

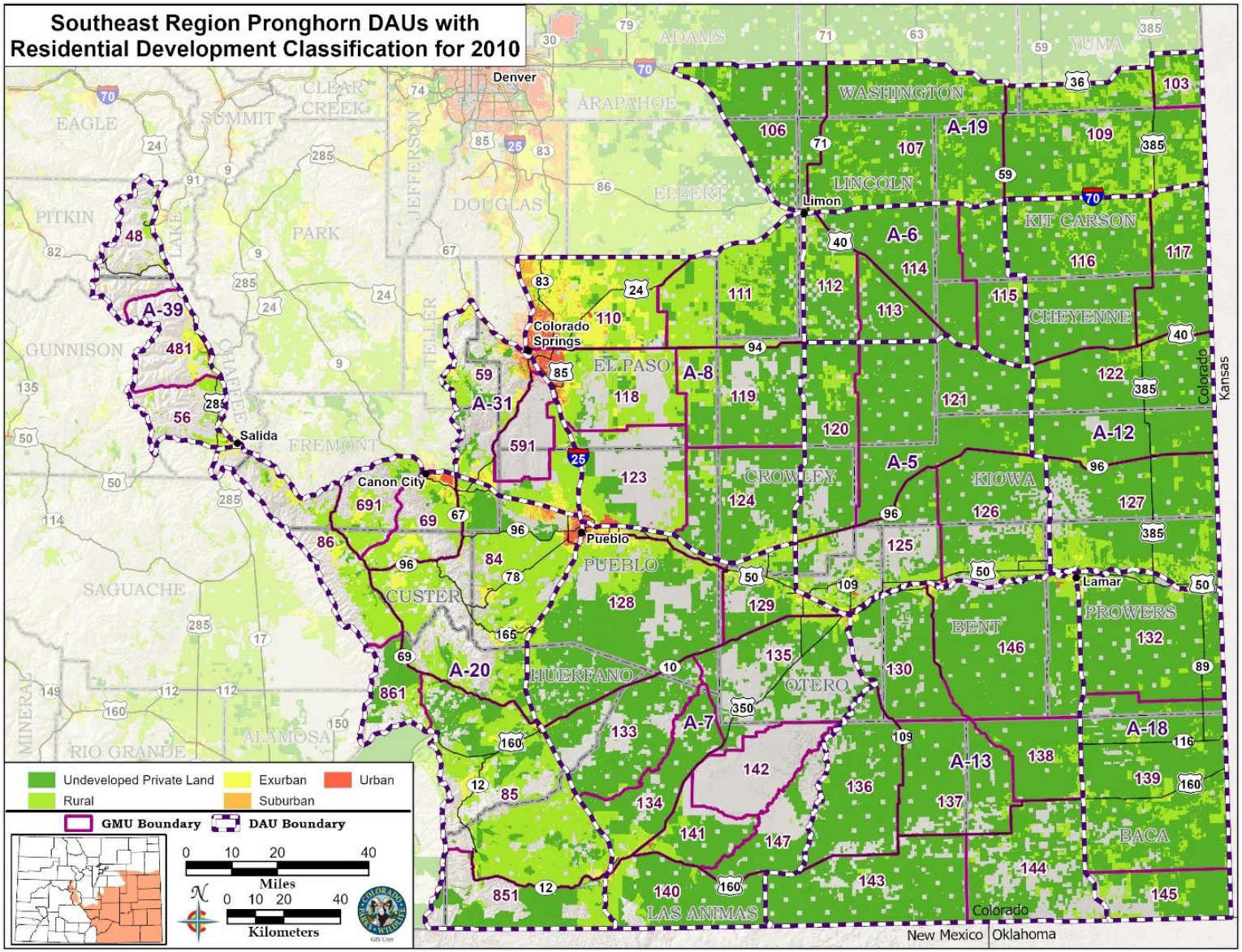
Colorado's population has increased from 4.3 million people in 2000 to 5.8 million people in 2021 (US Census Bureau 2021), presenting increasing pressures on wildlife and the habitats they rely on. With Colorado's human population expected to increase from 5.8 million to 8.1 million by 2050 (https://demography.dola.colorado.gov/), we are concerned about continued residential development, and the roads, increased traffic volume, fences, and recreation activities that accompany the development (Polfus and Krausman 2012; Johnson et al. 2017).

The residential development footprint in pronghorn habitat varies across the SE Region, with the highest potential impact occurring in PH-39 and the DAUs bordering I-25 (Maps 3 and 4). For example, 57% of private lands in PH-8 are classified into a residential development category that is currently or has potential to be developed. By contrast, only 13% of private

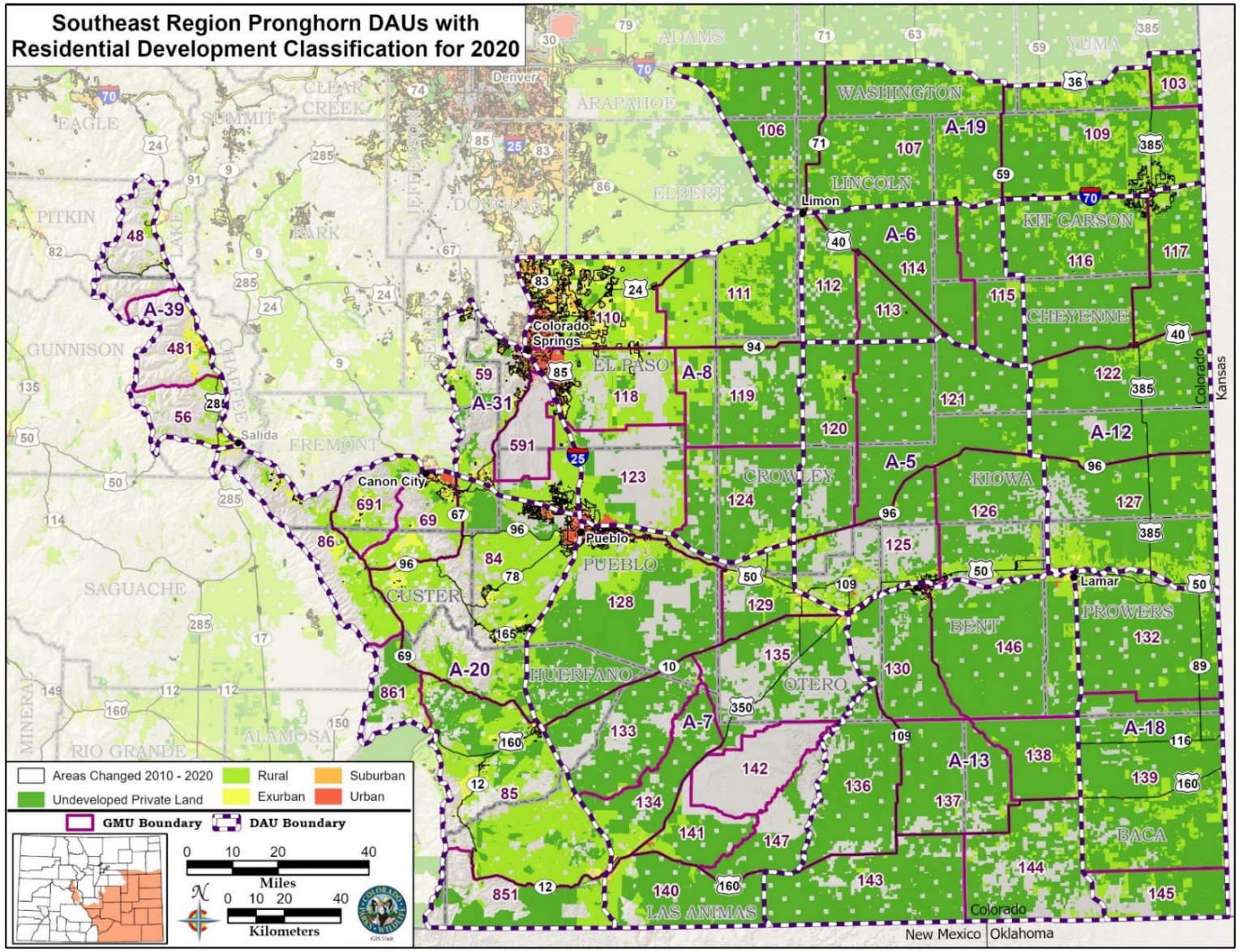
lands in PH-5 and 8% of private lands in PH-6 are classified into a development category, with 87% of PH-5 and 92% of PH-6 classified as undevelopable private lands.

Residential development also impacts our ability to survey pronghorn from airplanes. For safety reasons, we are restricted by FAA regulations from flying too closely to man-made structures. Low-flying aircraft are also very disruptive to both people and their pets or hobby animals, so we try to avoid flying in places where we cause concern for residents.

Since most of the SE Region is privately owned, CPW has limited ability to mitigate the impacts of energy or residential development on wildlife species or their habitats. We are not a regulatory agency over development. However, we are actively working with both residential developers and energy companies to identify and recommend actions that can mitigate or minimize impacts of development. During these consultations, we consider all wildlife species that might be affected by development, including pronghorn. Some of these recommendations are targeted at a landscape-scale, such as the routing of transmission lines in several counties in southeastern Colorado. Other recommendations might be more site-specific, such as constructing wildlife-friendly fences in a residential development.



Map 3. Residential Development Classifications in SE Region Pronghorn DAUs for 2010.



Map 4. Residential Development Classifications for Pronghorn DAUs in the SE Region, 2020.

Movement Patterns and Connectivity

Pronghorn in southeastern Colorado show individual variation in their annual movement patterns (Appendix C). Some pronghorn will remain in the same general location year-round, unless pressured by an extreme weather event like a blizzard or major drought. Other pronghorn make a single long distance dispersal from the place they were born to a small area where they live the rest of their lives. Others are seasonal migrants who follow the same route annually between their summer and winter ranges. Finally, some pronghorn move through a large home range without any discernible seasonal pattern. This mixed-movement strategy has been found in other pronghorn populations (Yoakum et al. 2014).

One question we had during the study conducted from 2016-2022 (Appendix C) was whether highways were barriers to movement for pronghorn. We found that ~35% of radio-collared pronghorn crossed at least one highway during the study. Highways appeared to be barriers for ~10% of radio-collared pronghorn. Highways were not within the home range of the remaining radio-collared pronghorn so they did not have the opportunity to encounter highways. For animals with highways in their home range, we observed two patterns of behavior as animals approached the highway. The first pattern was for pronghorn to cross the highway without any noticeable alteration of their movement path. The second pattern was for the pronghorn to parallel the highway for some period, which was months in some cases, and then eventually crossing the highway.

From our understanding of pronghorn movement in southeastern Colorado, we have several concerns related to human disturbance to their movement patterns (Polfus and Kausman 2012; Seidler et al. 2015; Johnson et al. 2017). The first concern is direct mortality caused by sources such as entanglement with fences or collisions with vehicles. The second concern is increased energetic expenditures or other stressors associated with man-made structures on the landscape. Energy expenditures or physiological stressors could reduce individual fitness through either an increased chance of dying from another cause or decreased reproductive rates. Another concern is the inability of pronghorn to escape extreme weather events. Colorado's Eastern Plains are subject to infrequent, but potentially severe blizzards. During blizzard events, we see pronghorn in large herds amassed against fences, highways, or railroad tracks trying to escape deep snow. Given the sporadic timing and location of these blizzard events, CPW has difficulty predicting when and how current barriers to movement could impact a pronghorn herd during future events.

Facilitating movement and maintaining connectivity for big game herds, including pronghorn, is a priority for CPW and our partners. These efforts have recently been supported through several programs at both the federal and state level. Of particular importance for pronghorn management in southeastern Colorado is the partnership between the Colorado Department of Transportation (CDOT) and CPW aimed at mitigating wildlife-vehicle collisions and allowing safe passage for wildlife across highways (see the Colorado Wildlife Transportation Alliance). One product of this partnership was the East Slope and Plains Wildlife Prioritization Study, completed in 2022 (Kintsch et al. 2022). The study authors mapped priority segments of highways in the region to target efforts for wildlife-vehicle collision mitigation. Additionally, they recommended types of mitigation (like underpass vs overpass or fencing) that would be appropriate for each segment, accounting for multiple factors including topography, existing infrastructure, and land ownership. Pronghorn, along with deer, elk, bighorn sheep and lynx, were the target species identified in this study, which was the first time pronghorn had been considered in similar studies in Colorado.

Stakeholder Engagement and Input Process

Landowner Outreach

Landowner input was essential to this herd management planning process because of the predominance of private lands in southeastern Colorado. To better understand landowner opinions regarding pronghorn management, we conducted a mail survey because this form of outreach results in the highest response rate from landowners (Table 1). In September-November 2022, we mailed surveys to randomly selected landowners in the DAUs under consideration for revision and included a business reply envelope with the survey. We modified the questions in each survey to address issues specific to management concerns in each DAU. Only landowners who owned a minimum of a quarter section (160 acres) of land were included in the landowner selection pool. This was done to eliminate owners of smaller residential properties from the list. Survey results for each DAU are summarized at the end individual HMPs and the text and complete results for all surveys can be found in Appendix A.

Table 1. Summary of the surveyed DAUs, number of questions asked, and response rates from the 2022 landowner mail survey used to inform the recommended objectives for SE Region pronghorn herds.

Data Analysis Unit	Number of Questions	Number of Surveys Mailed	Number of Surveys Returned	Response Rate
PH-6	9	98	35	35%
PH-7	9	181	54	30%
PH-8	9	125	63	50%
PH-19	7	150	81	54%
PH-20	10	196	68	34%

Hunter Outreach

Each year CPW contracts with an outside firm to collect hunt and harvest information from deer, elk, and pronghorn hunters. Hunters are asked various questions that relate to where and when they hunted, did they harvest, what they harvested, and whether they were satisfied with the total number of animals and the total number of males they saw during their hunt. Each year Colorado has around 350,000 deer, elk, and pronghorn hunters. Approximately 190,000 of these hunters are randomly selected to participate in the annual harvest survey, which is designed to estimate harvest and participation for all seasons and manners of take at the herd level. This information is then used with data collected by CPW biologists to estimate deer, elk, and pronghorn population numbers.

Beginning in 2021, five opt-in questions were added to the Big Game Harvest Survey. These questions were optional and presented at the end of the survey. They were designed to collect feedback from hunters to inform HMPs. CPW was interested in hearing hunter preferences on herd populations and hunting opportunities, how satisfied hunters were with their hunt, and how crowded they felt. Together, these five opt-in questions, combined with the questions about satisfaction with the observed number of animals and males, is referred to as the Big Game Opt-In Harvest Survey.

The response rate was high for the 2021 Big Game Opt-In Harvest Survey in the 11 southeast Colorado pronghorn DAUs. Of the 2,474 pronghorn hunters who completed the general big game harvest survey for southeastern GMUs, 85% (2,106 hunters) finished all five opt-in questions. As with the landowner surveys, results from the Big Game Opt-in Survey are summarized within the individual HMPs, and results for the survey are found in Appendix B.

30-Day Public Comment Period

After compiling data from the landowner and hunter outreach surveys, CPW staff wrote a draft HMPs. In the draft plans, we presented proposed population and sex ratio objectives that balanced the biological capabilities of the herds and desires expressed by landowners and hunters from the outreach surveys.

The draft plan was posted for 30-day comment period on CPW's webpage Herd Management Plans (HMP) in January-February 2023. To inform interested stakeholders about the comment period, CPW posted a news release on January 24, 2023. Additionally, we emailed the plan directly to the Colorado Farm Bureau, the Colorado Cattlemen's Association, the Colorado Cattlemen's Agricultural Land Trust, the Nature Conservancy, the Colorado State Land Board, county commissioners, the Transportation Technology Center, Inc., Ft. Carson Army Installation & Pinon Canyon Maneuver Site, and the Bureau of Land Management. The State Land Board Recreation Program also assisted us by publicizing the comment period in their February 2023 newsletter to individuals with private recreation leases on State Trust Lands.

We received written comments from eight members of the public, the Bureau of Land Management, the Transportation Technology Center, and the Pinon Canyon Maneuver site (Appendix D). Several individuals also provided us with verbal feedback during the comment period (including two individuals who submitted written comments). We received general support for our proposed objectives. However, several individuals wanted to see higher pronghorn populations in some DAUs.

Commenters provided suggestions and expressed concerns about current pronghorn management strategies in the DAUs. These concerns included the distribution of licenses and hunting pressure on properties open to public hunting, the types of questions asked during the big game harvest survey, conflicts between hunters and landowners, potential for game damage and the general application of the game damage program, season dates, and ability of landowners to obtain landowner vouchers. We were also asked about our inventory techniques, predation rates, water sources, and the impact of wildlife-vehicle collisions on pronghorn. We addressed concerns and incorporated several of the suggestions provided by stakeholders into the final draft document that was presented to the Parks and Wildlife Commission in June 2023.

Pronghorn Herd Management Strategies

CPW will follow the Management by Objective approach (Figure 1) to manage pronghorn herds to the objectives approved in this plan. This approach will include yearly evaluation of hunting license quotas to move populations towards objectives. Additionally, we will ask the Parks and Wildlife Commission to consider changes in hunting regulations to address management issues in specific DAUs. Examples of changes we could bring forward include the addition of private-land only licenses to distribute hunting pressure, changes in GMU groupings for specific licenses, and addition of late season hunting opportunities.

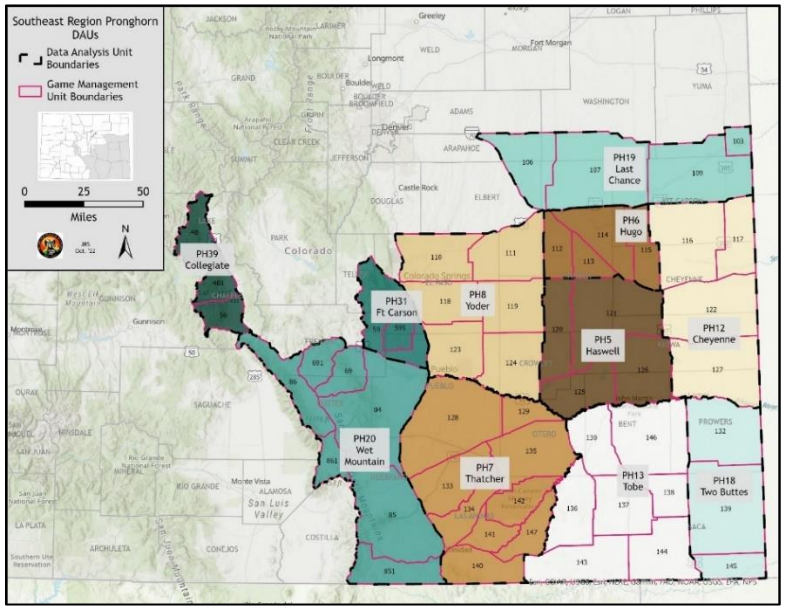
Document Organization

Following this introduction, we have organized the 11 SE HMPs according to the type of management plan update we are recommending (Table 1). Full updates are presented first. We then present HMPs with extensions. Finally, we have included several appendices to support our management recommendations or provide additional information about pronghorn in SE Colorado.

FULL HERD MANAGEMENT PLAN UPDATES

DAU	Pronghorn Herd	Prior HMP Approval Year	Prior Population Objective	2022 Post-hunt Population Estimate*	Prior Post-hunt Buck Ratio Objective	2022 Post-Hunt Buck Ratio Estimate*	Approved Population Objective	Approved Post-hunt Buck Ratio Objective
PH-6	**Hugo**	2012	2,250-2,750	1,800	20-30	24	2,100-2,900	20-30
PH-7	**Thatcher**	2012	7,800-8,800	8,200	30-40	31	9,300-12,700	30-40
PH-8	**Yoder**	2012	5,400-6,600	7,600	25-35	23	6,800-9,200	25-35
PH-19	**Last Chance**	2017	1,800-2,200	2,500	30-40	34	1,700-2,300	30-40
PH-20	**Wet Mountain**	2014	2,200-2,600	2,500	30-40	35	2,000-2,800	30-40
PH-31	**Ft. Carson**	None	N/A	200-400	N/A	N/A	100-500	25-75

**2022 Modeled Estimates for all DAUs except PH-31*



Hugo Pronghorn Herd Management Plan

Data Analysis Unit PH-6

Tyrel Woodward, Wildlife Biologist, Colorado Springs

GMUs: 112, 113, 114, & 115	Approval Year for last HMP: 2012
Post-hunt Population (Modeled)	
• Prior Population Objective:	2,500 (2,250-2,750) pronghorn
• 2022 Post-hunt Population Estimate:	1,800 pronghorn
• **Approved Population Objective Range:**	**Expand to 2,100-2,900 pronghorn**
Post-hunt Sex Ratio (Modeled)	
• Prior Sex Ratio Objective:	25 (20-30) bucks per 100 does
• 2022 Post-hunt Sex Ratio Estimate:	24 bucks per 100 does
• **Approved Sex Ratio Objective Range:**	**Status Quo 20-30 bucks per 100 does**

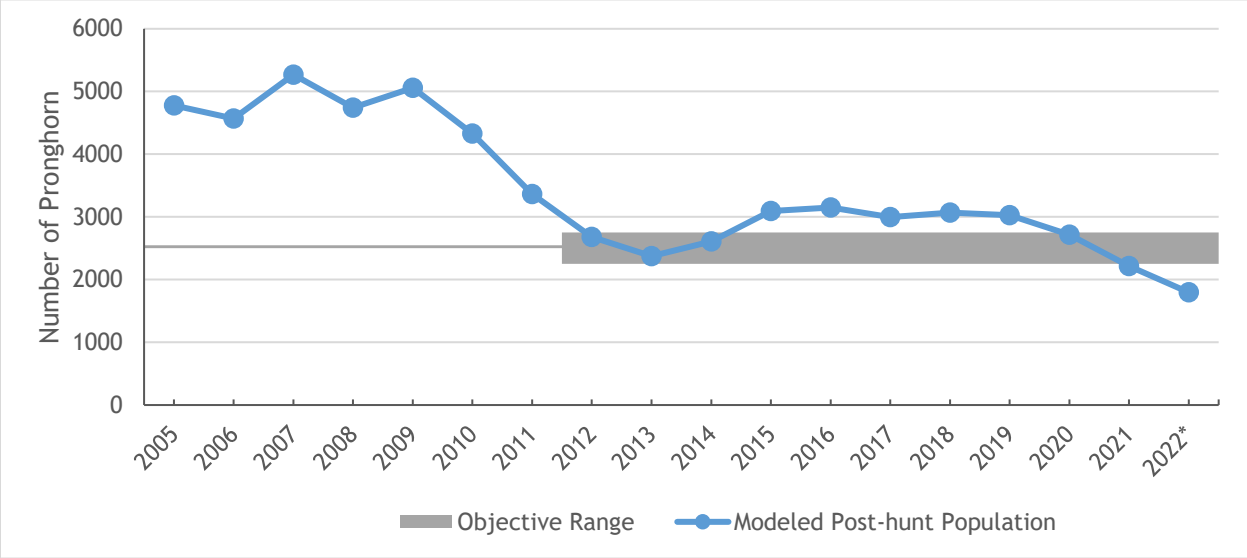


Figure PH6-1. Pronghorn DAU PH-6 modeled post-hunt population and objective range, 2005-2022.

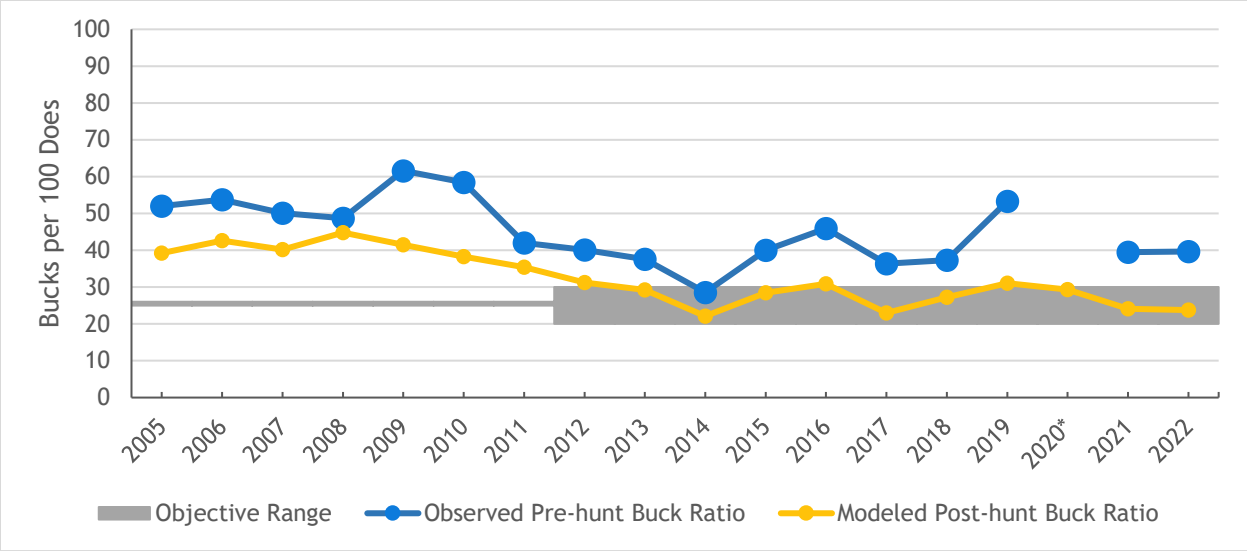


Figure PH6-2. Pronghorn DAU PH-6 observed and modeled post-hunt sex ratio (bucks:100 does), 2005-2022. *No classification data collected due to COVID restrictions.

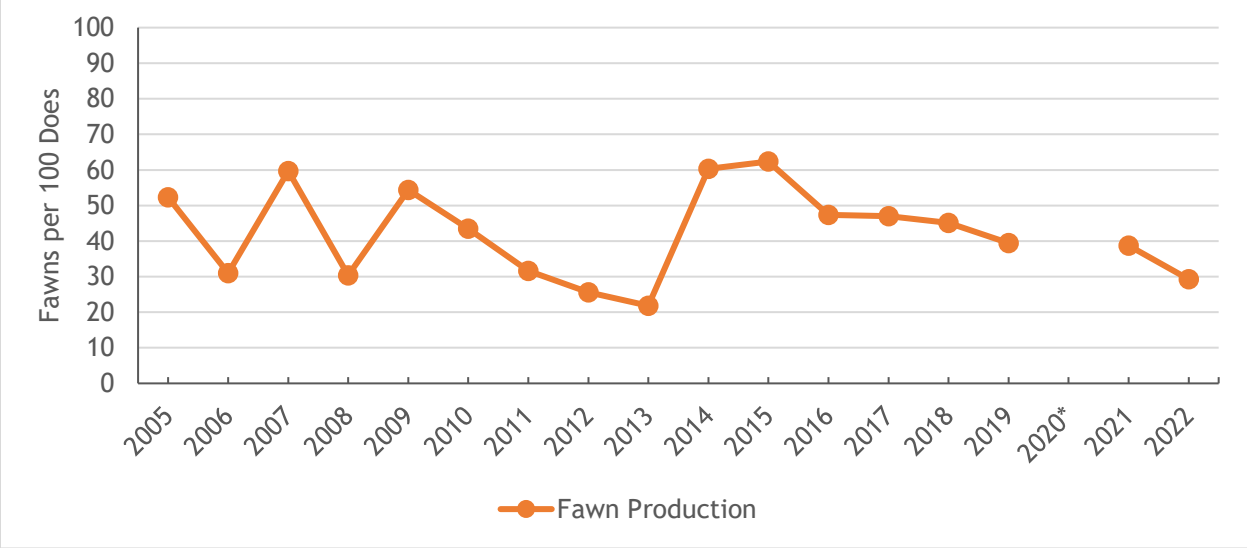


Figure PH6-3. Pronghorn DAU PH-6 fawn production (observed pre-hunt fawn:100 does ratio), 2005-2022. *No classification data collected due to COVID restrictions.

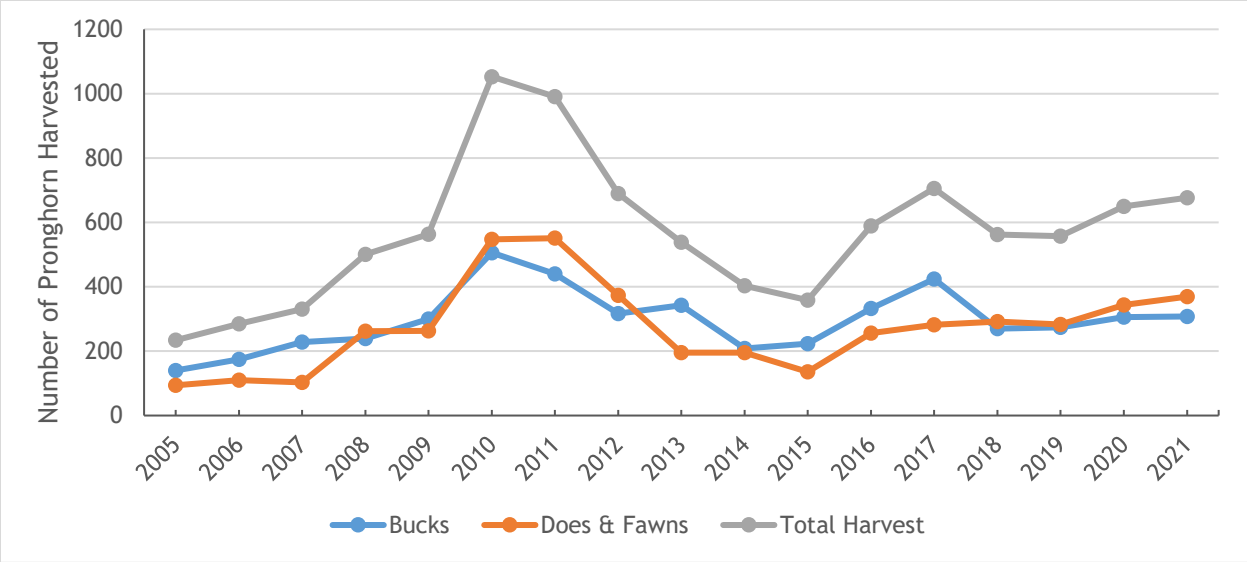


Figure PH6-4. Pronghorn harvest estimates in PH-6, 2005-2021.

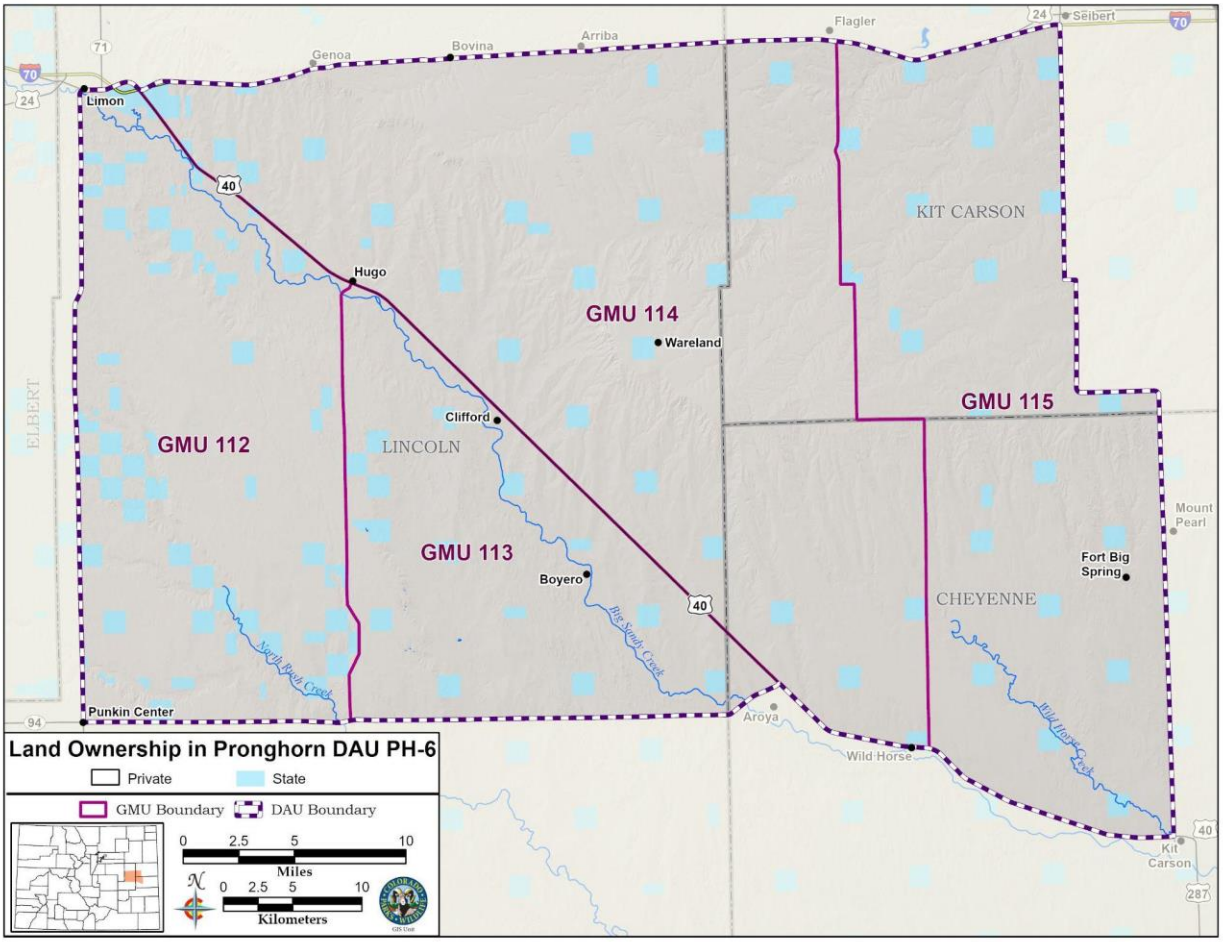


Figure PH6-5. PH-6 Land Ownership.

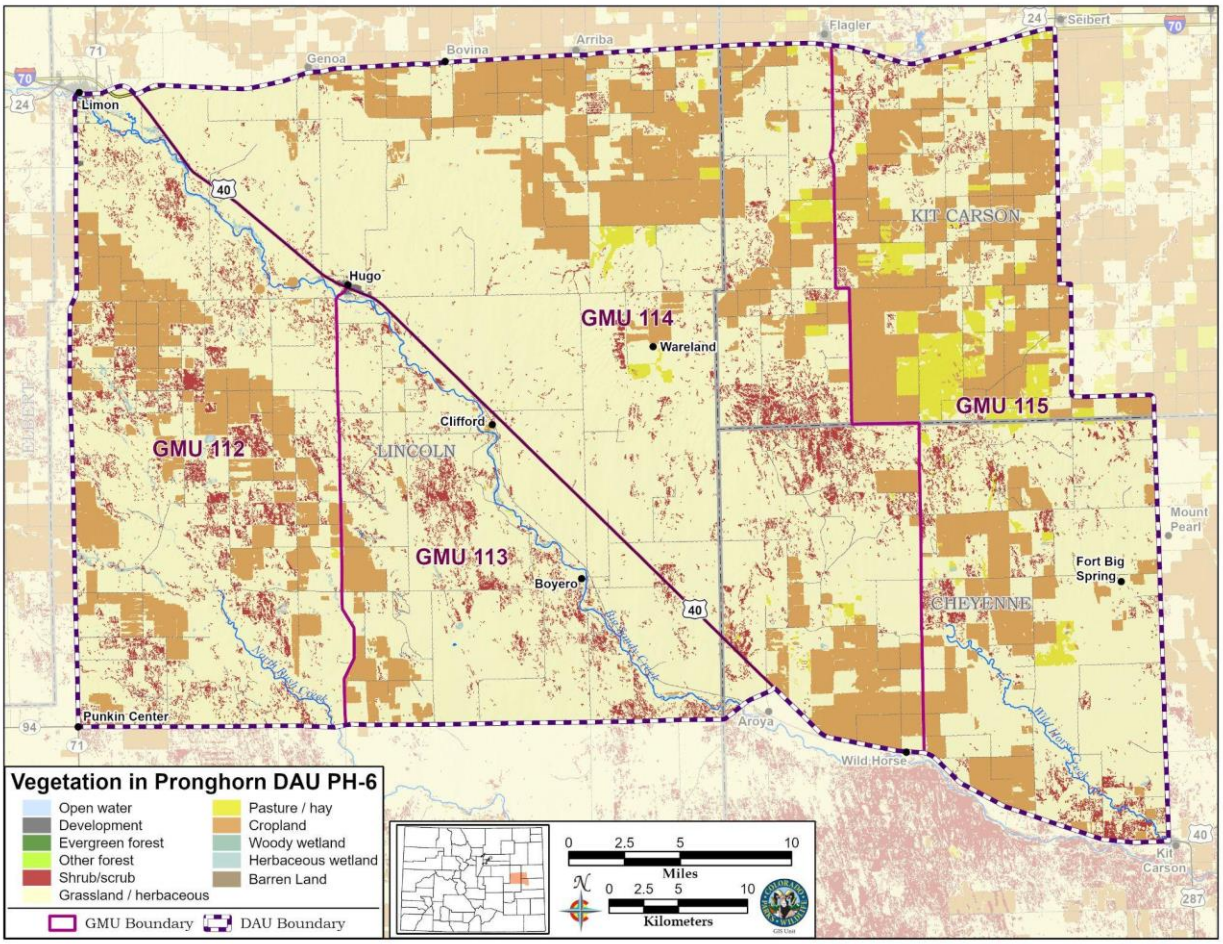


Figure PH6-6. PH-6 Land Cover.

GEOGRAPHIC LOCATION, GMUs, LAND OWNERSHIP, LAND USE DESCRIPTION

The Hugo Data Analysis Unit (DAU) is in southeastern Colorado (Figure PH6-5) and includes Game Management Units (GMU) 112, 113, 114, and 115. This DAU encompasses portions of Lincoln, Kit Carson, and Cheyenne counties and is bounded on the north by Interstate 70; on the west by Colorado Highway 71; on the south by Colorado Highway 94 & US Highway 40 and on the east by Colorado Highway 59. The entire 1,437 mi² DAU is considered pronghorn habitat (Map 2). Elevations range from about 5,750 ft at Genoa, CO to about 4,300 ft at Kit Carson, CO. Topography varies from steep-sided bluffs to rolling hills and almost flat plains. Major stream drainages include Big Sandy Creek, Rush Creek, Long Branch Creek, Horse Creek, Big Spring Creek, and Sand Creek.

Precipitation averages 13.5-16.5 in. per year and falls primarily in the form of thunderstorms from May through September. Winters are typically mild with snowfall amounts averaging 2 to 3.5 in. per month. However, the DAU experiences severe blizzards during some winters with localized snow drifts reaching 8 ft. Winter and spring are characterized by the potential for high winds.

Most of the DAU is owned by private entities (92.9% or 1,335 mi²) or by the State Land Board (SLB: 6.8% or 98 mi²). It is important to note that while the SLB owns 98 mi² of land in PH-6,

this is not publicly accessible land, and is closed to hunting unless permission is granted by the lessee. The 1,941 acre Hugo State Wildlife Area is the only piece of public land open to big game hunting in this DAU. Land ownership is mapped in Figure PH6-5.

Shortgrass prairie (749 mi^2 or 52.2%) and agriculture (524 mi^2 or 36.4%) are the primary land cover types in PH-6 (Figure PH6-6). These cover types are found throughout the DAU. Approximately 10% (139 mi^2) of the DAU is classified as sand hill shrubland. The sand hill shrubland runs along the southwest side of Big Sandy Creek. Other vegetation types in the DAU (24.5 mi^2 or 1.7%) include wetlands and invasive weeds. Agriculture is the predominant land use in the DAU, mainly as livestock grazing and dryland winter wheat farming.

The Hugo DAU has not been significantly affected by urban development. However, eastern portions of the DAU have been identified as suitable for wind energy production. Wind farms have been and will continue to be developed in the DAU. As of 2021 there were a total of 254 turbines constructed in PH-6. That is an increase of 230 since this plan was last revised in 2012. The cumulative effect that wind farms have on pronghorn distribution is unknown.

PRONGHORN HERD INFORMATION

Pronghorn are found throughout the DAU. Given that land ownership in the DAU is almost exclusively private, the potential for game damage is high. Wildlife conflicts in this heavily agricultural area include damage to winter wheat, fences, and pasture land. Pronghorn disperse across the DAU in the summer months. Group sizes greatly increase in the winter months when herds are concentrated near agricultural fields that provide winter forage.

In 2022, CPW concluded a study looking at the home ranges, movement patterns, and survival rates of adult pronghorn in southeastern Colorado (Appendix C). We found that pronghorn in the SE Region have a mixed-movement pattern with some remaining in a relatively small area throughout the year, while others make seasonal movements. Five pronghorn were radio-collared in PH-6 during the study. Their home range sizes were comparable to individuals in other DAUs. None of the five made seasonal movements. However, since the sample size was small for this DAU, it is not fully understood what portion of animals in the herd make seasonal movements.

PRONGHORN HERD CURRENT STATUS AND/OR POPULATION TREND

The current modeled estimates for Hugo are based on an intensive monitoring program that consists of annual preseason sex/age classification flights and aerial line intersect distance sampling (Buckland et al. 2001; Guenzel 2007). Sex/age classification flights are conducted by flying North/South transects, generally spaced three miles apart, across the entire DAU. Pronghorn classification flights are conducted between mid-July and mid-August. Since 2004, classification flights have been conducted annually (except 2020 due to COVID-19 restrictions), where observers classify groups of pronghorn into bucks, does and fawns. Distance estimates have been calculated in PH-6 for four separate years.

Table PH6-1. Aerial line intersect distance sampling estimates conducted in PH-6. Distance estimates are conducted in May and June & include adult and yearling animals.

Year	Estimate	95% Confidence Interval
2009	4,603 pronghorn	3,855-5,496
2011	3,659 pronghorn	2,886-4,641
2015	2,854 pronghorn	2,032-4,008
2022	1,483 pronghorn	1,069-2,058

At the time objectives for PH-6 were last revised in 2012, the population was decreasing from a peak of approximately 5,000 pronghorn. Through public outreach it was determined that CPW would manage for a lower population. We increased hunting licenses and initiated a December doe-only hunting season. These actions, combined with low fawn:doe ratios during drought years, have significantly the reduced pronghorn herd in PH-6.

The 2022 post-hunt modeled population estimate for PH-6 is 1,800 individuals (Figure PH6-1). This estimate incorporates the 2022 distance estimate, summer fawn classification data, and predicted harvest estimates for the 2022 season. The current estimated population size is 61% of the 2012 estimated population. The current population is ~450 individuals below the current population objective low end which was established when the PWC approved the current management plan in 2012.

The post-hunt sex ratio objective for PH-6 is 25 (range: 20-30) bucks per 100 does (Figure PH6-2). The post-hunt sex ratio is currently modeling at 24 bucks per 100 does, which is within the current objective range. It is important to note that since we generate pre-hunt sex ratio estimate from classification flight conducted prior to the hunting season, the modeled post-hunt sex ratio is below the pre-hunt observed sex ratio.

In 2022, we estimated there were 29 fawns per 100 does. This was lower compared both to the three-year average of 39 and to the overall average of 43. Current drought conditions are the likely explanation for the low numbers.

STAKEHOLDER OUTREACH AND INPUT

Prior to drafting objectives for this HMP revision, CPW surveyed both landowners and hunters. To gather initial landowner input, we mailed surveys to 98 randomly selected landowners who owned 160 acres or more in PH-6. The surveys included a postage-paid business reply envelope. Landowners were asked to provide feedback on both impacts of pronghorn and pronghorn hunters on their property and operations. Additionally, landowners were asked about their preferences for pronghorn management in the DAU. We received 35 landowner surveys, a response rate of ~35%. This was an increase from the number of responses (n=9) received during the last HMP revision process. Complete results from the survey can be found in Appendix A.

Landowners did not indicate significant issues with either pronghorn damage or hunter related concerns in PH-6 relative to surrounding DAU's and historic perspectives (Figures PH6-7, PH6-8, and PH6-9). Many landowners (54%, n=19) indicated they found the current number of

pronghorn and hunters to be acceptable. This contrasts with the 2012 survey when over 77% (n=7) of landowners indicated a desire for a decrease in the population. In comparison to surrounding DAUs, damage to crops and fences by pronghorn is also relatively low. Six percent (n=2) of landowners indicated that crop damage to wheat and non-wheat crops was a major problem. In neighboring DAU PH-19 that number was 20% for wheat crops and 12% for other crops. Of those surveyed, 82% (n=29) stated they had minor to no problems with pronghorn damaging fences.

Landowners in PH-6 did not indicate major issues related to pronghorn hunters. In 2012, 5 of the 9 (56%) respondents indicated a moderate to major issue with trespassing. In our current survey that number was 10 of 34 (29%). This figure is comparable to surrounding DAUs PH-8 (30%, n=19) and PH-19 (29%, n=24). We also found that landowners support maintaining the late doe-only December season (55%, n=19) at the current season length (60%, n=21).

In assessing landowner input on herd management over the next 10 years it appears landowners are in favor of maintaining or slightly increasing the population. Of the 35 responses received for PH-6, 77% (n=27) respondents indicated they would like to see the population remain the same or increase. Additionally, damage and negative interactions with pronghorn and hunters were relatively low across the DAU.

CPW gathered hunter input through the 2021 Big Game Opt-In Survey (Appendix B). Hunters were asked a series of questions related to their hunting experience as well as herd management objectives. More than 190 hunters responded to questions related to PH-6. Of those surveyed, 58% (n=113) reported being satisfied with the total number of pronghorn encountered during the season. Twenty-nine percent (n=57) reported being somewhat or very dissatisfied. Similarly, 55% (n=107) of hunters were satisfied with the number of bucks they saw. Hunters were evenly split when indicating whether they preferred to hunt more often or to hunt more mature bucks. A small majority (54%, n=103) of hunters would like to see the herd size increased. Of those who responded, 77% (n=123) reported not feeling crowded by other hunters. In total 72% of hunters were satisfied with their hunting experience in PH-6.

SIGNIFICANT MANAGEMENT ISSUES

Management issues in PH-6 primarily revolve around habitat and limited management capabilities.

1. **Land Ownership:** The DAU is largely private property. Therefore, hunting access and the ability to manage the herd through hunting is dependent on landowner permission.
2. **Development:** Pressure on habitat quality and quantity is being applied by an increase in energy development across the landscape. Given the proximity to Colorado's Front Range and the increase in human populations, there is an increasing demand for green energy projects located within the boundaries of the DAU. These projects can reduce habitat availability, increase fragmentation and provide issues related to hunting access.
3. **Climate:** These factors are compounded by ongoing drought in the area. Drought conditions are highly influential on the number of fawns recruited into the population on an annual basis. Additionally, extreme weather events across the landscape cause production fluctuations within the herd.

OBJECTIVES

Post-hunt Population Objective Alternatives

- Alternative 1 — 2,100-2,900 pronghorn
  - The midpoint of this range, 2,500 pronghorn, is the current population objective target for the DAU (2012 PH-6 HMP). The herd would have to increase by 18% to meet the lower end of the objective range and ~40% to meet the midpoint.
- Alternative 2 – 1,700-2,300 pronghorn
  - The herd is currently modeling at the lower end of this objective range. The herd would have to increase by ~11% to meet the midpoint.
- Status Quo Alternative – 2,250-2,750 pronghorn
  - This is the current population objective range for the herd. The herd is currently 25% below the lower end of the objective and 40% below the midpoint of this alternative.

Post-hunt Sex Ratio Objective Alternative

- Status Quo Alternative — 20-30 bucks per 100 does
  - This is the current sex ratio objective for the DAU. Currently, the herd is modeling at objective.

Approved Alternatives

- ***Population objective range:*** **Widen the post-hunt population range to 2,100-2,900 pronghorn**

The DAU is primarily private land, so we attempted to balance the needs of landowners when choosing a preferred alternative. Since most landowners indicated the current management strategy in Hugo is acceptable, our preferred alternative is the current population objective, with an increase in the range to +/- 15% of the range midpoint of 2,500. Since hunters were generally satisfied with the current number of pronghorn, we chose an alternative that would see a slight increase in the overall population (while maintaining target levels which were held for the last 10 years). At the 2022 population size, management actions will be implemented to increase herd toward the preferred objective. This will include a reduction in doe license numbers. We will evaluate the population trend using our current survey and modeling practices on an annual basis. License numbers will be adjusted to achieve the desired population objective.

- ***Post-hunt sex ratio:*** **Status Quo of 20-30 bucks per 100 does**

This alternative maintains the current sex ratio objective for the population. It is favored by most landowners in the DAU. We will work to maintain high hunting opportunities while also trying to balance buck to doe ratios. Since the population is at objective, we will continue to monitor buck to doe ratios and harvest will be adjusted accordingly. This strategy will continue to provide buck hunting opportunities.

STRATEGIES FOR ADDRESSING MANAGEMENT ISSUES AND ACHIEVING OBJECTIVES

CPW's most effective tool for managing ungulate populations is through hunter harvest and habitat management. Both strategies are hampered in PH-6 based on the minimal amount of publicly managed lands.

1. CPW will continue to foster relationships and work with private landowners to improve habitat and promote hunting opportunities. This includes providing professional insights on habitat enhancements. Connecting landowners to resources to improve habitat and hunting access will help achieve the goals identified in this plan. CPW will continue to look for opportunities to increase and preserve pronghorn habitat.
2. To address development concerns CPW employ the best available science and herd activity monitoring to inform responsible development decisions. CPW will work with partners to address concerns while advocating on behalf of pronghorn in PH-6.
3. Working with landowners to improve habitat can help mitigate the effects of drought and extreme weather events. Harvest rates will be adjusted to work in conjunction with habitat enhancement to reduce attrition rates.

RESULTS FROM THE 2022 LANDOWNER OUTREACH SURVEY

Figure PH6-7. Results from Question 4 of the 2022 PH-6 landowner survey relating to their experiences with pronghorn hunters on their property. Complete survey results are found in Appendix A

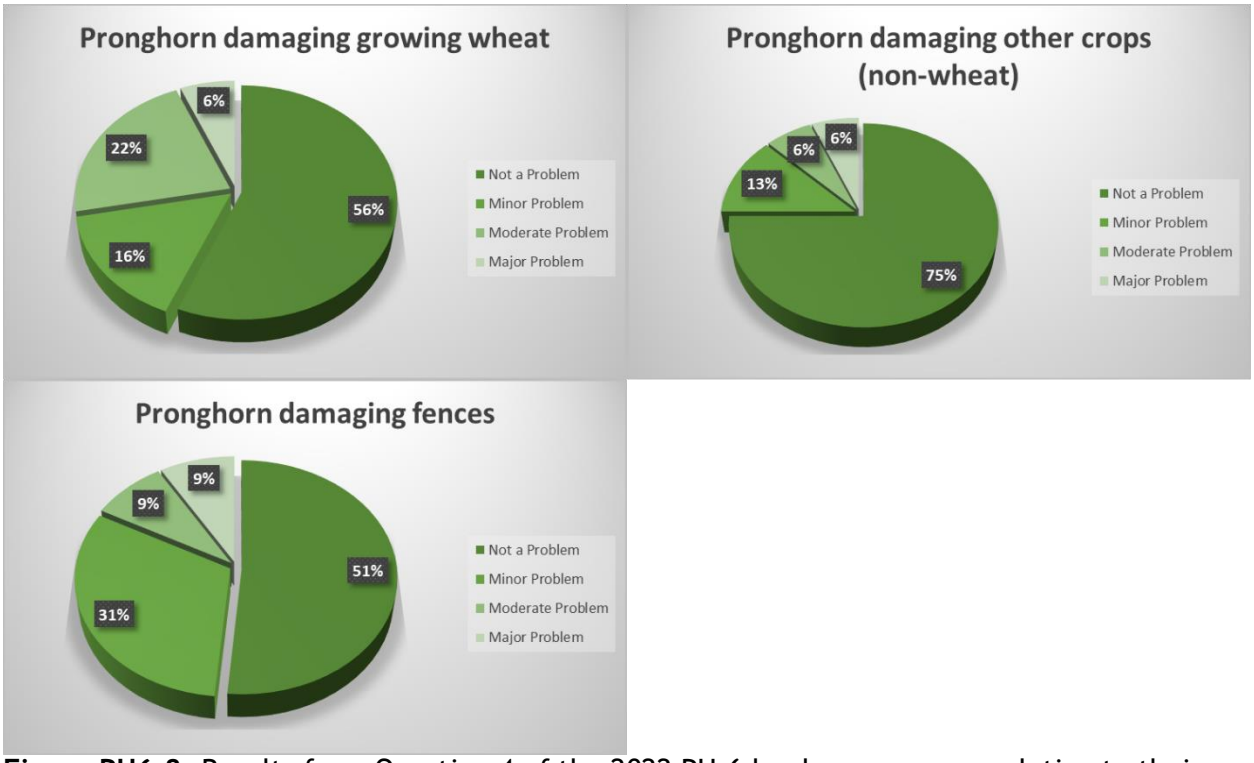


Figure PH6-8. Results from Question 4 of the 2022 PH-6 landowner survey relating to their experiences with damage caused by pronghorn. Complete survey results can be found in Appendix A.

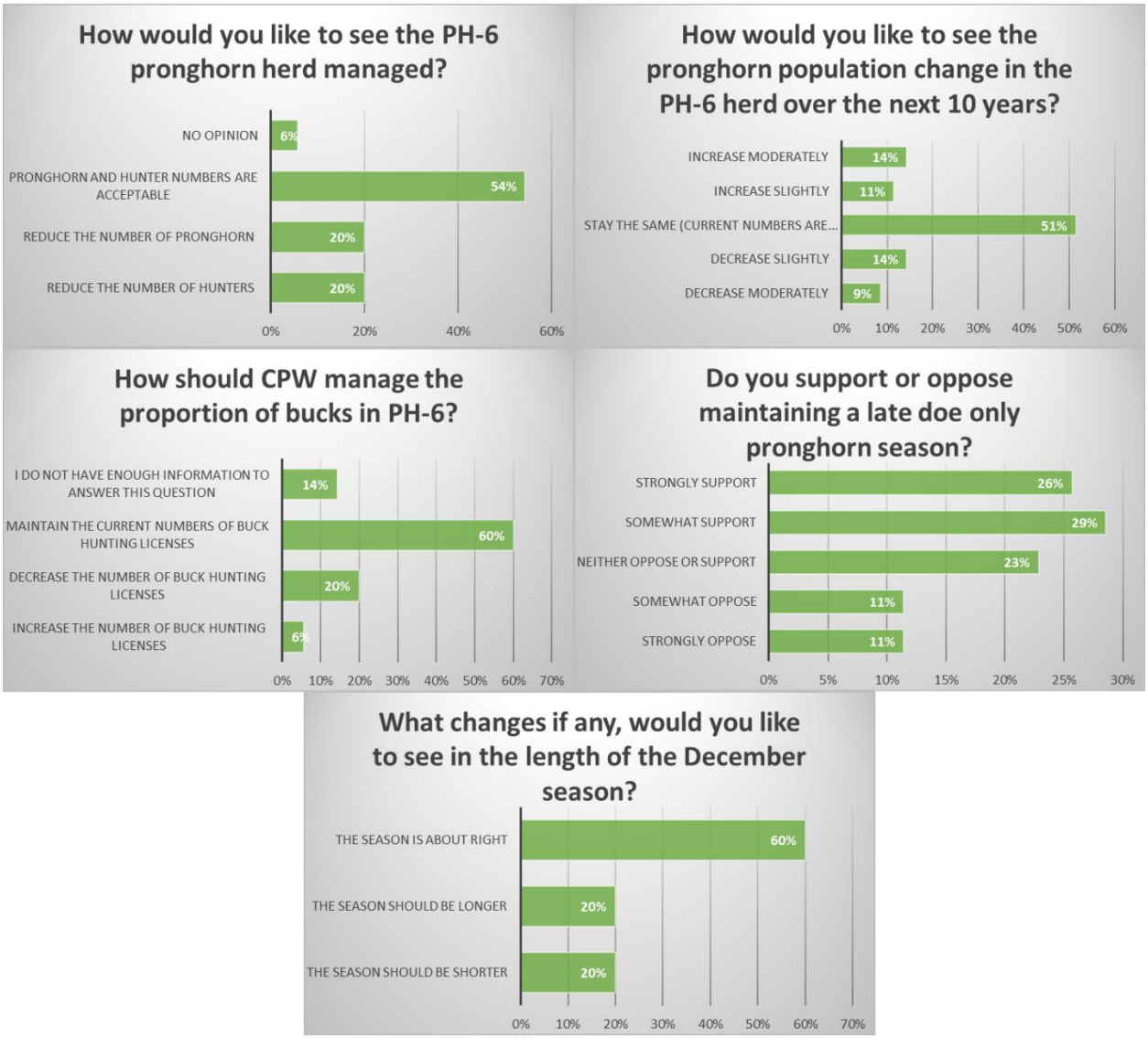


Figure PH6-9. Results from Questions 5-9 from the 2022 PH-6 landowner survey regarding management of hunter numbers, pronghorn population size, and the December doe season in PH6. Complete results are found in Appendix A.

Thatcher Pronghorn Herd Management Plan

Data Analysis Unit PH-7
Allen Vitt, Wildlife Biologist, Pueblo

GMUs: 128, 129, 133, 134, 135, 140, 141, 142 & 147	Approval Year for last HMP: 2012
Post-hunt Population (Modeled)	
• Prior Population Objective:	8,000 (7,200-8,800) pronghorn
• 2022 Post-hunt Population Estimate:	8,200 pronghorn
• **Approved Population Objective Range:**	**Increase to 9,400-12,700 pronghorn**
Post-hunt Sex Ratio (Modeled)	
• Prior Sex Ratio Objective:	35 (30-40) bucks per 100 does
• 2022 Post-hunt Sex Ratio Estimate:	31 bucks per 100 does
• **Approved Sex Ratio Objective Range:**	**Status Quo 30-40 bucks per 100 does**

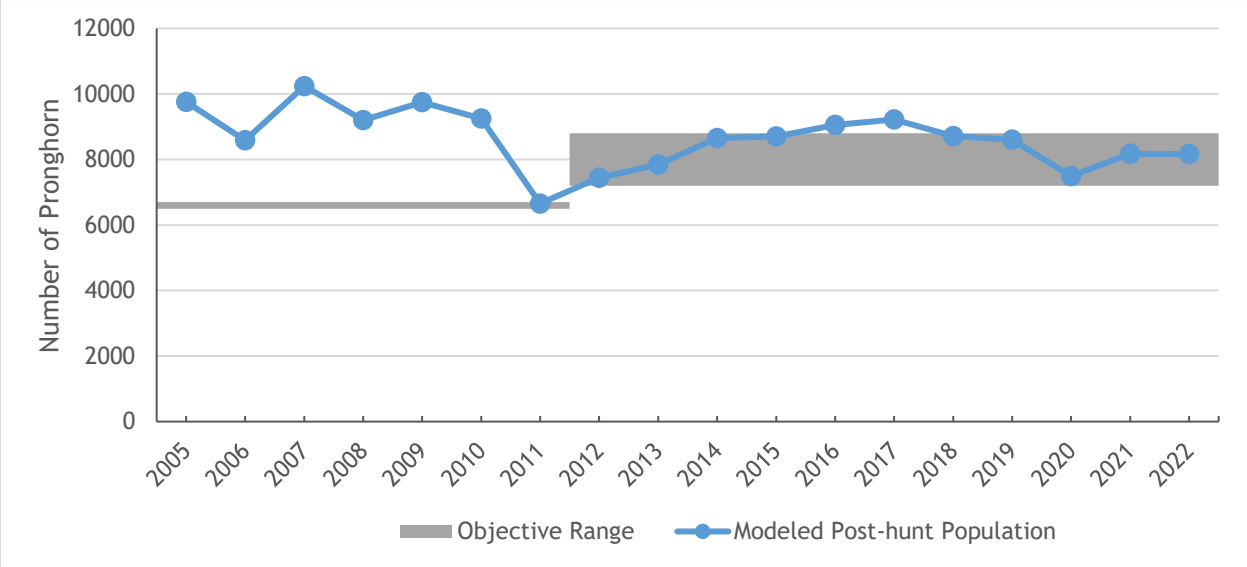


Figure PH7-1. Pronghorn DAU PH-7 modeled post-hunt population and objective range, 2005-2022.

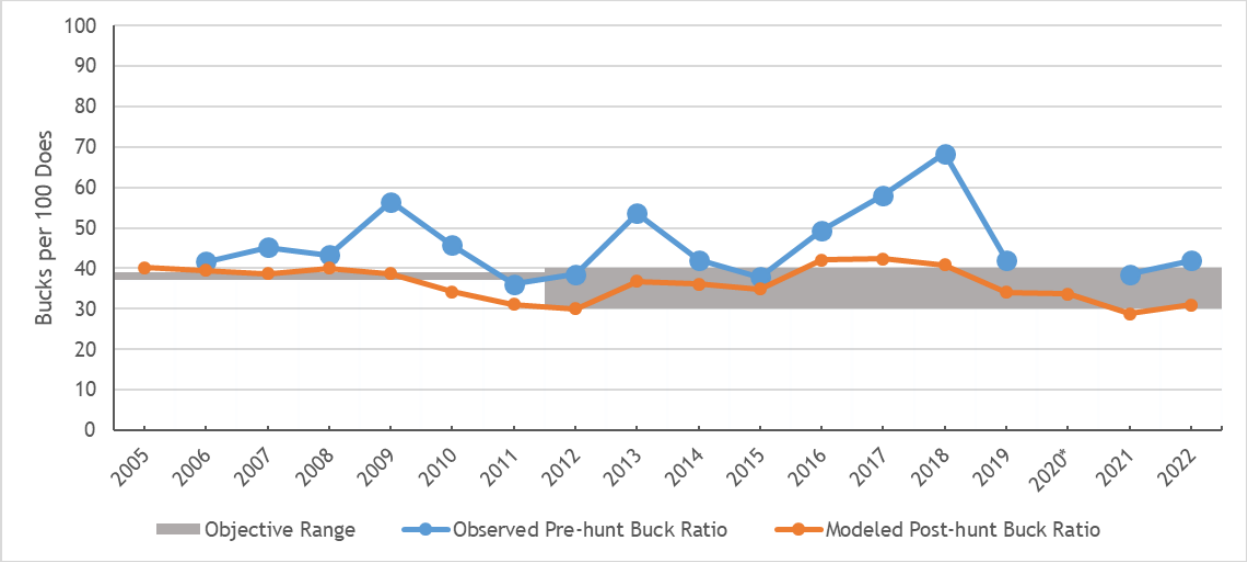


Figure PH7-2. Pronghorn DAU PH-7 observed and modeled post-hunt sex ratio (bucks:100 does), 2005-2022. *No classification data collected due to COVID restrictions.

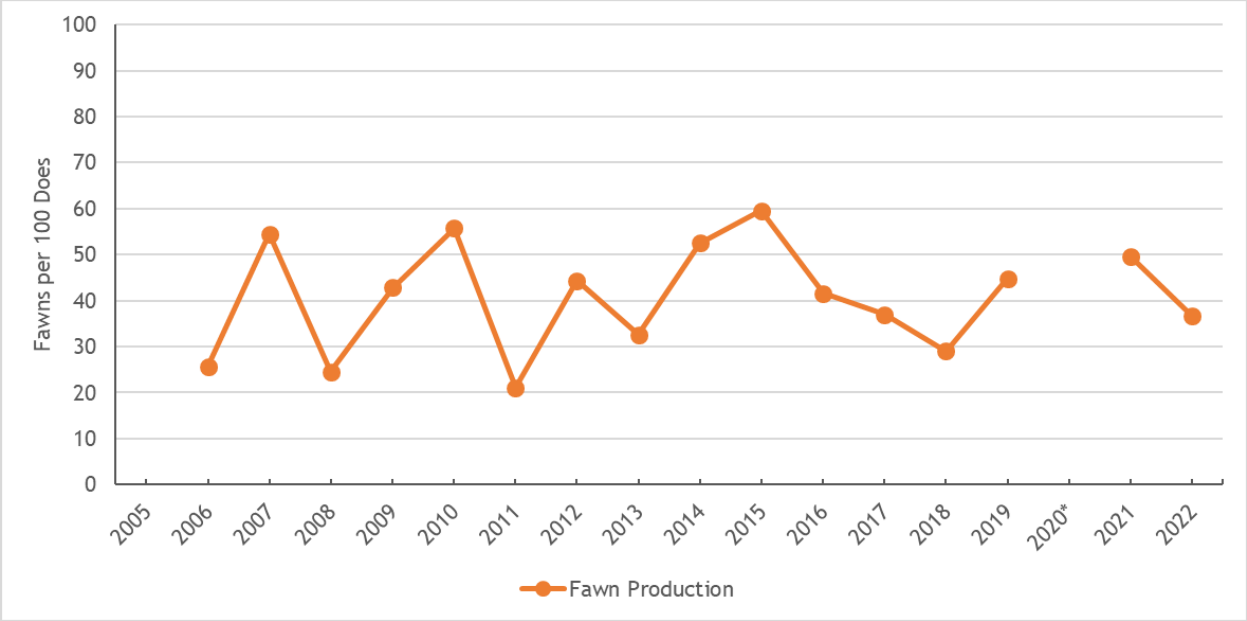


Figure PH7-3. Pronghorn DAU PH-7 fawn production (observed pre-hunt fawn:100 does ratio), 2005-2022. *No classification data collected due to COVID restrictions.

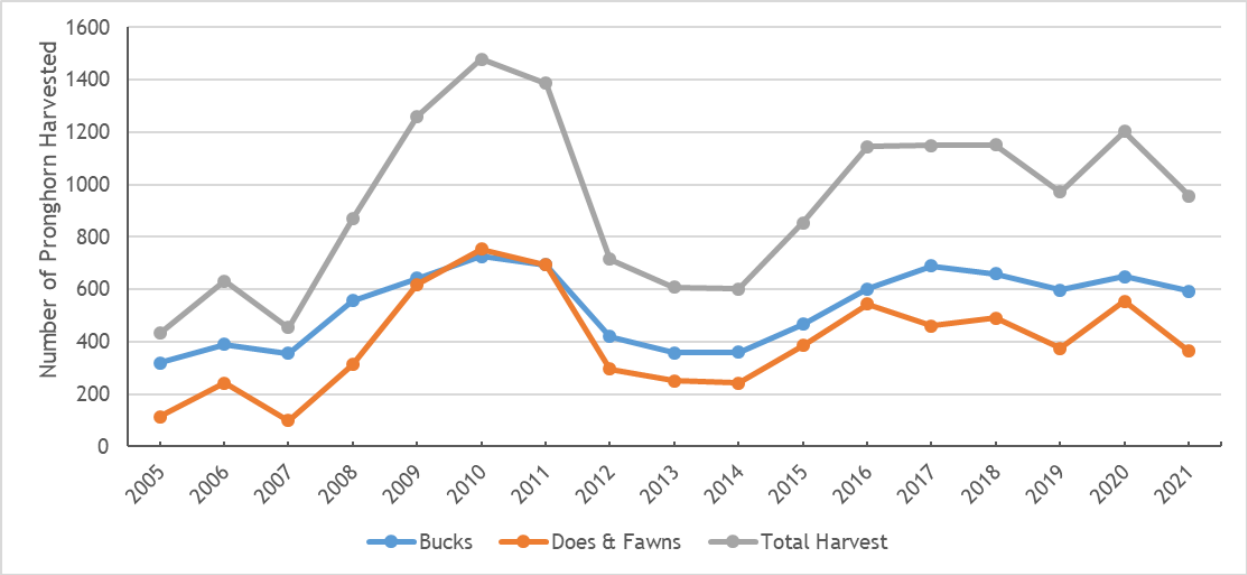


Figure PH7-4. Pronghorn harvest estimates in PH-7, 2005-2022.

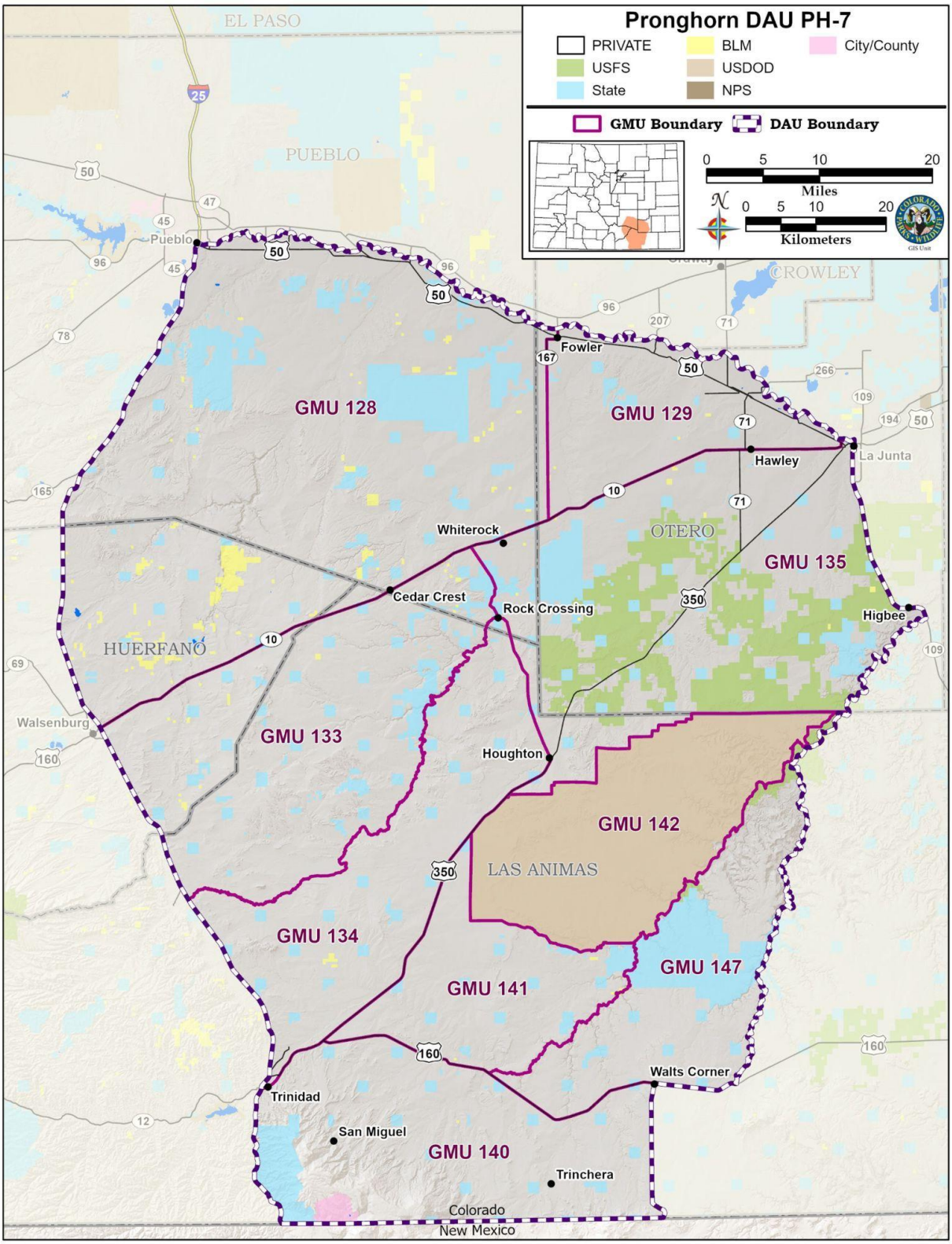


Figure PH7-5. PH-7 Land Ownership.

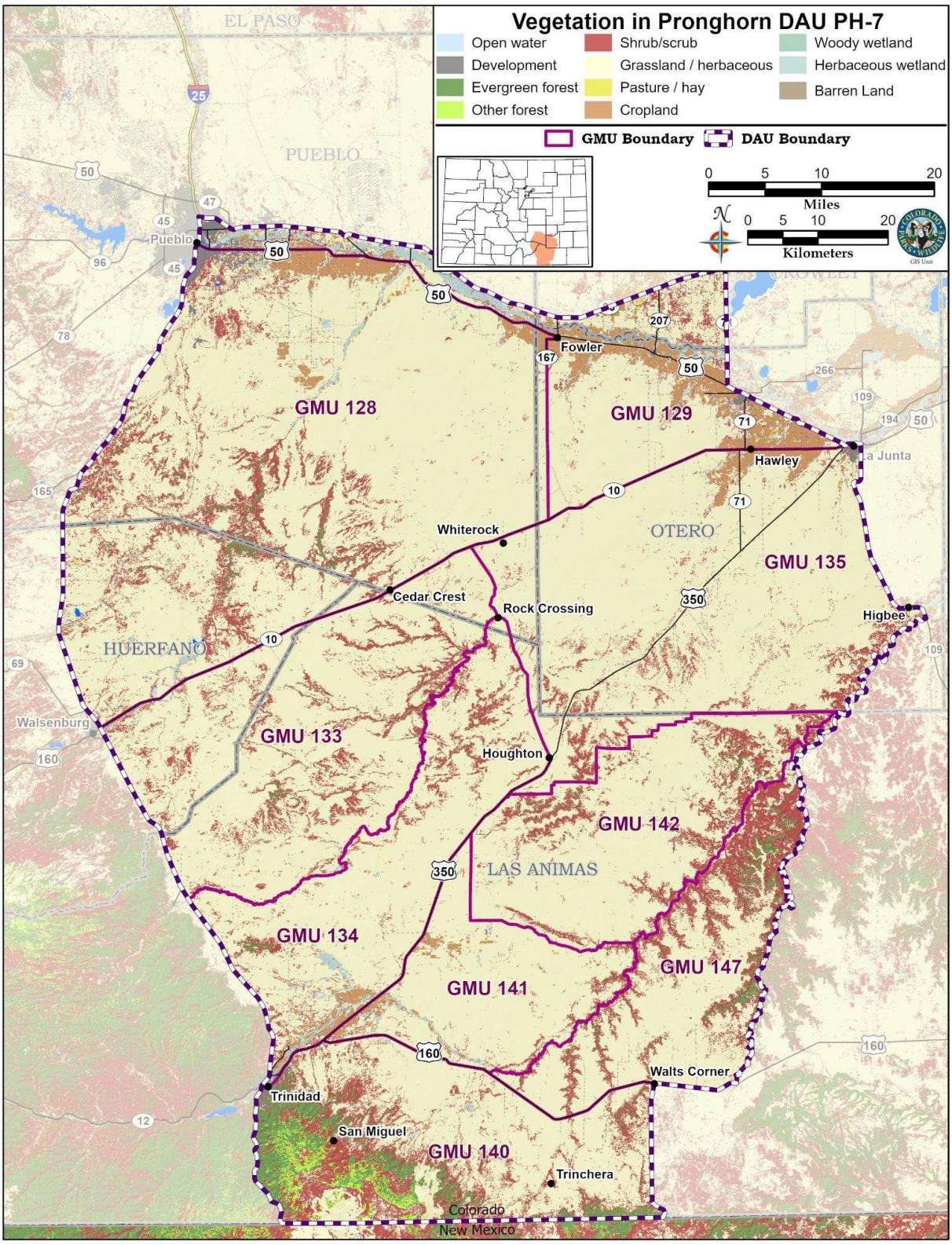


Figure PH7-6. PH-7 Land Cover.

GEOGRAPHIC LOCATION, GMUs, LAND OWNERSHIP, LAND USE DESCRIPTION

The PH-7 Thatcher Pronghorn DAU is in south-central Colorado and contains portions of Huerfano, Otero, Pueblo, and Las Animas counties. It consists of Game Management Units (GMUs) 128, 129, 133, 134, 135, 140, 141, 142, and 147. The DAU is bounded on the north by the Arkansas River; on the east by Colo. 109 (N of Purgatoire River), the Purgatoire River (S of Colorado 109), Chacuaco Creek, U.S. 160 and Colo. 389; on the south by the New Mexico State line; and on the west by I-25. Elevations in the Thatcher DAU range from 4,038 ft. where the Arkansas River flows through La Junta to 9,665 ft. at the top of Fishers Peak. Topography ranges from flat hay meadows to gentle slopes, rolling hills to steep ridges and gulches to cliffs and high elevation grasslands (Figure PH7-5). Dominant vegetation types in the DAU include shortgrass prairie or cholla grasslands. Precipitation ranges from 20 in. at higher elevations to less than 6 in. at lower elevations, mainly in the form of winter and spring snowfall and late summer thunderstorms.

The surface area of PH-7 encompasses approximately 4,581 mi^2, of which approximately 90% (4,079 mi^2) is considered pronghorn habitat. Of the 4,079 mi^2 of pronghorn habitat, 74% is privately owned. The CPW owns 83 mi^2 (2%), the SLB owns 423 mi^2 (10%), the BLM manages 21 mi^2 (1%), the USFS manages 236 mi^2 (6%) and the Department of Defense owns 311 mi^2 (8%; Figure PH7-5). Most of the public land is found in GMU 135 and on the Pinon Canyon Maneuver Site, which makes up all GMU 142. Agriculture is the primary land use in PH-7, including livestock production and dryland farming. There is limited irrigated agriculture along the Arkansas River corridor, but it is not considered within the overall pronghorn range.

Alternative energy development, including wind and solar, in PH-7 continues to be a threat to pronghorn in the DAU. This development can fragment habitat, and in the case of solar energy, prevents pronghorn use of large acres of habitat. While effects of wind farms on pronghorn are just now being examined, the initial reports are that it has long lasting effects on pronghorn utilization of the landscape (Milligan et al. 2023).

PRONGHORN HERD INFORMATION

Pronghorn are found throughout the DAU. On private lands in the DAU, the potential for game damage, primarily to fences and pasture land, is high. Pronghorn disperse across the DAU in the summer months. Pronghorn group sizes greatly increase in the winter months when herds are concentrated into winter groups.

PRONGHORN HERD CURRENT STATUS AND/OR POPULATION TREND

The population model for PH-7 is based on pre-hunt sex and age ratio flights, harvest data, and distance estimates. In 2008, the CPW began surveying pronghorn populations through aerial line transect distance sampling (Buckland et al. 2001; Guenzel 2007). Distance sampling estimates were conducted in the spring after animals have dispersed from winter concentrations and represent the number of yearlings and adults in the population. CPW has conducted four distance estimates in PH-7 (Table PH7-1). Using data from distance estimates, aerial surveys, and estimates of hunter harvest, we estimated the 2022 post-hunt modeled population for PH-7 to be 8,200 pronghorn. Since the last HMP was completed in 2012, the estimated pronghorn population has varied from a low of 7,500 to a high of 9,300 pronghorn.

Table PH7-1. Aerial line intersect distance sampling estimates conducted in PH-7. Distance estimates are conducted in May and June & include adult and yearling animals.

Year	Estimate	95% Confidence Interval
2008	8,086 pronghorn	5,566-11,746
2009	10,683 pronghorn	7,635-14,948
2014	6,987 pronghorn	5,782-8,443
2022	6,937 pronghorn	5,346-9,003

Pronghorn production is highly variable across years and is one of the primary driving factors of population growth or decline. Knowing this CPW invests a large amount of resources annually to verify the annual changes in production. Pre-hunt sex ratios are derived from summer classification flights from a fixed-wing aircraft. Observers fly three to five mile wide transects across the DAU and classify every groups observed into bucks, does and fawns. Since 2005, pronghorn pre-hunt ratios have fluctuated from a low of 25 fawns per 100 does to a high of 60 fawns per 100 does. In 2022, fawn:doe ratio was 37 fawns per 100 does.

STAKEHOLDER OUTREACH AND INPUT

Prior to drafting objectives for this HMP revision, CPW surveyed both landowners and hunters. To gather initial landowner input, we mailed surveys to 181 randomly selected landowners who owned 160 acres or more in PH-7. The surveys included a postage-paid business reply envelope. Landowners were asked to provide feedback on both impacts of pronghorn and pronghorn hunters on their property and operations. Additionally, landowners were asked about their preferences for pronghorn management. We received 55 surveys back from PH-7 landowners: a response rate of ~30%. Complete survey results are in Appendix A.

Respondents indicated having minor problems with pronghorn damage to their property. Fence damage was the largest complaint, with 53% of respondents reporting some level of damage, 16% receiving damage to other, non-wheat crops, and 4% experiencing some level of damage to growing wheat. When asked how they would like to see the population change over the next ten years, 35% (n=18) of landowners indicated they would like to see the population slightly increase, and 19% (n=7) selected the option for a moderate increase. When asked about the choice of pronghorn or hunters, 42% (n=22) of the respondents stated that “Pronghorn and hunter numbers are acceptable”.

Pronghorn damage to fences was the largest problem for the responding landowners. Of those that answered this question, 34% (n=18) indicated that they had minor problems with fence damage, 11% (n=6) of responses indicated “Moderate Problems” with fence damage, and 8% (n=4) selected “Major Problem”. Damage to wheat and other crops was lower than in other DAUs, with only 4% (n=2) saying pronghorn were damaging growing wheat and 16% (n=8) of landowners saying they had damage to other crops.

Problems related to conflicts with hunters were similar to those related to damage by pronghorn. Of the four questions relating to issues with pronghorn hunters, “too many people asking for permission to hunt” and “hunters trespassing on my property” were the primary concerns for landowners. While 45% (n=24) of landowners indicated trespassing was not a

problem, 25% (n=13) indicated trespassing was a moderate problem, 21% (n=11) identified trespassing as a minor problem, and 9% (n=5) said trespassing was a major problem. Landowner assessments of the "too many people asking permission" question were similar. Twenty-four of 52 (46%) landowners indicated that too many hunters asking permission to hunt was not a problem. About a quarter of landowners (27% or n=14) replied that the number of hunters asking for permission was a minor problem, and 27% (n=14) of the respondents replied that there were moderate to major problems with the number of people asking for pronghorn hunting access.

Most landowners, (43%, n=23) indicated they would like to see the number of buck licenses stay the same. Of the remaining respondents that answered the question, they were essentially split on whether they wanted more buck licenses or a reduction in buck licenses. Six landowners had no opinion regarding the change in buck license numbers.

In addition to landowner outreach, CPW evaluated data collected through the Big Game Opt-In Survey (Appendix B). Hunters were asked a series of questions related to their hunting experience as well as herd management objectives. More than 562 PH-7 hunters responded to the survey. Of those surveyed 55% (n=309) reported being satisfied with the total number of pronghorn encountered during the season. Thirty-seven percent (37%, n=207) reported being somewhat or very dissatisfied.

Similarly, 47% (n=264) of hunters were satisfied with the number of bucks they saw, and hunters indicated a preference to hunt more mature males (52%, n=252) as opposed to hunting more often (48%, n=232). A significant number (68%, n=329) of hunters would like to see the herd size increased. Slightly less than half of the hunters (47% or n=227) reported not feeling crowded by other hunters. In total 66% (n=318) of hunters were satisfied with their hunting experience in PH-7.

CPW also received feedback from hunters that were specific to PH-7 during the 30-day comment period (Appendix D). The hunters expressed concerns about the both number of pronghorn and crowding by other hunters on the Comanche National Grasslands in PH-7. They asked CPW in written comments to manage for higher pronghorn numbers on the public lands in the DAU.

SIGNIFICANT MANAGEMENT ISSUES

Hunter access to the pronghorn resource

As the human population continues to grow and land ownership has changed, access to huntable populations of pronghorn has become increasingly difficult (Ryan and Shaw 2011; Larson et al. 2014; Eliason et al. 2016). With the hunting public being increasingly urban they have lost direct contact with landowners, and therefore, lost the ability to establish relationships that lead to hunting access. This, combined with other factors like the division of large ranches into smaller parcels and the increase in outfitting, has reduced hunting access for pronghorn on private property. This is especially evident in pronghorn where a hunter is unlikely to pay a large trespass fee to hunt a doe pronghorn.

Habitat loss, fragmentation, and conversion

Like all big game species in Colorado, pronghorn in PH-7 are facing human-generated pressures that are changing landscape utilization and forcing the animals to persist in smaller parcels of suitable habitat. Colorado's human population is expected to double in the next 20 years resulting in further loss of pronghorn habitat due to the subdivision of former large ranches to urban/suburban developments. This coupled with further road development and additional vehicle use of formerly lightly traveled roadway leads to habitat fragmentation and direct pronghorn mortality from vehicle collisions. As mentioned earlier, increased demand for alternative energy sources has driven development of wind farms and solar farms in the heart of pronghorn habitat. All these factors continue to be areas of concern for CPW as we try to maintain pronghorn populations in an increasingly developed landscape.

OBJECTIVES

Post-hunt Population Objective Alternatives

- Alternative 1 — 9,300-12,700 pronghorn
    - The herd would have to increase ~30% to meet the midpoint (11,000 pronghorn) of this alternative.

- Alternative 2 — 8,500-11,500 pronghorn
    - The herd is currently modeling at the lower end of this objective range. The herd would have to increase by ~18% to meet the midpoint (10,000 pronghorn).

- Status Quo Alternative – 7,200-8,800 pronghorn
    - This is the current population objective range for the herd. The herd is approximately 200 pronghorn above the midpoint of this alternative.

Post-hunt Sex Ratio Objective Alternative

- Status Quo Alternative — 30-40 bucks per 100 does
    - This is the current sex ratio objective for the DAU. Currently, the herd is modeling at the lower range (31 bucks per 100 does) of this objective.

Approved Alternatives

- ***Population objective range:*** **Increase the population objective range to 9,300-12,700 pronghorn**

The DAU includes both private land and relatively large areas of public land for the eastern plains, so we attempted to balance the needs of landowners and public land hunters when choosing a preferred alternative. Since 48% of landowners and 68% of hunters feel the pronghorn population should increase, our preferred alternative is 30% above the current population objective. Under this management objective, we anticipate a reduction in hunter crowding and an increase in pronghorn populations on public land. We can manage towards an increase in the population toward the desired objective through a reduction in doe harvest. We will evaluate the population trend using our current survey and modeling practices on an annual basis, and adjust license numbers to achieve the desired population objective.

- ***Post-hunt sex ratio:*** **Status Quo of 30-40 bucks per 100 does**

  This alternative maintains the current sex ratio objective for the population. It is favored by most landowners in the DAU. We will work to maintain high buck hunting opportunities while also trying to maintain the sex ratio within objective through adjustments in license numbers.

STRATEGIES FOR ADDRESSING MANAGEMENT ISSUES AND ACHIEVING OBJECTIVES

CPW's most effective tool for managing ungulate populations is through hunter harvest and habitat management. Both strategies are hampered in PH-7 based on the minimal amount of publicly managed lands.

1. CPW will continue to foster relationships and work with private landowners to improve habitat and promote hunting opportunities. Staff will engage landowners to discuss novel ways to promote hunter access to private property. Further utilization of the Big Game Access Program and leasing the State Trust Lands within this area will be a high priority.
2. To address all development concerns CPW will work to employ the best available science and herd monitoring to inform responsible development decisions. CPW will work with partners to address concerns while advocating for pronghorn in PH-7.

RESULTS FROM THE 2022 LANDOWNER OUTREACH SURVEY

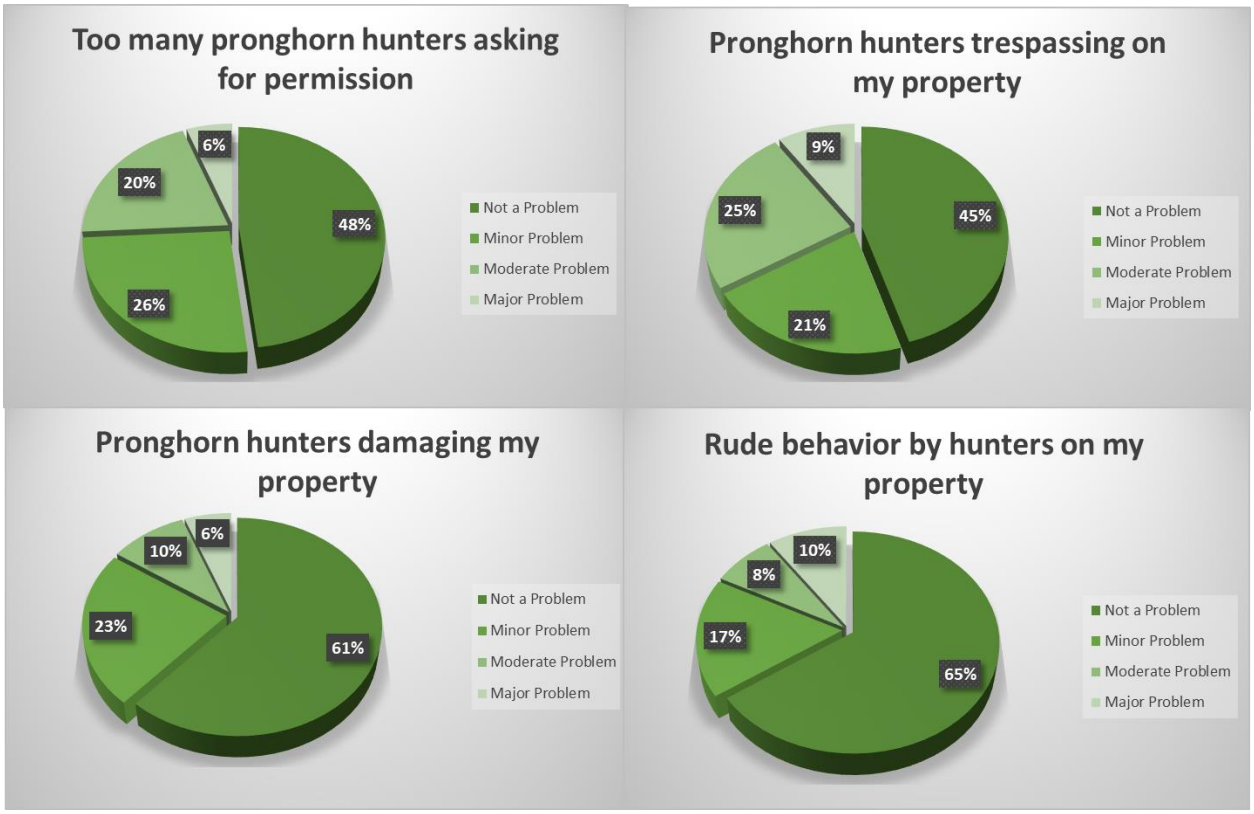


Figure PH7-7. Results from Question 4 of the 2022 PH-7 landowner survey relating to their experiences with pronghorn hunters on their property. Complete survey results are found in Appendix A.

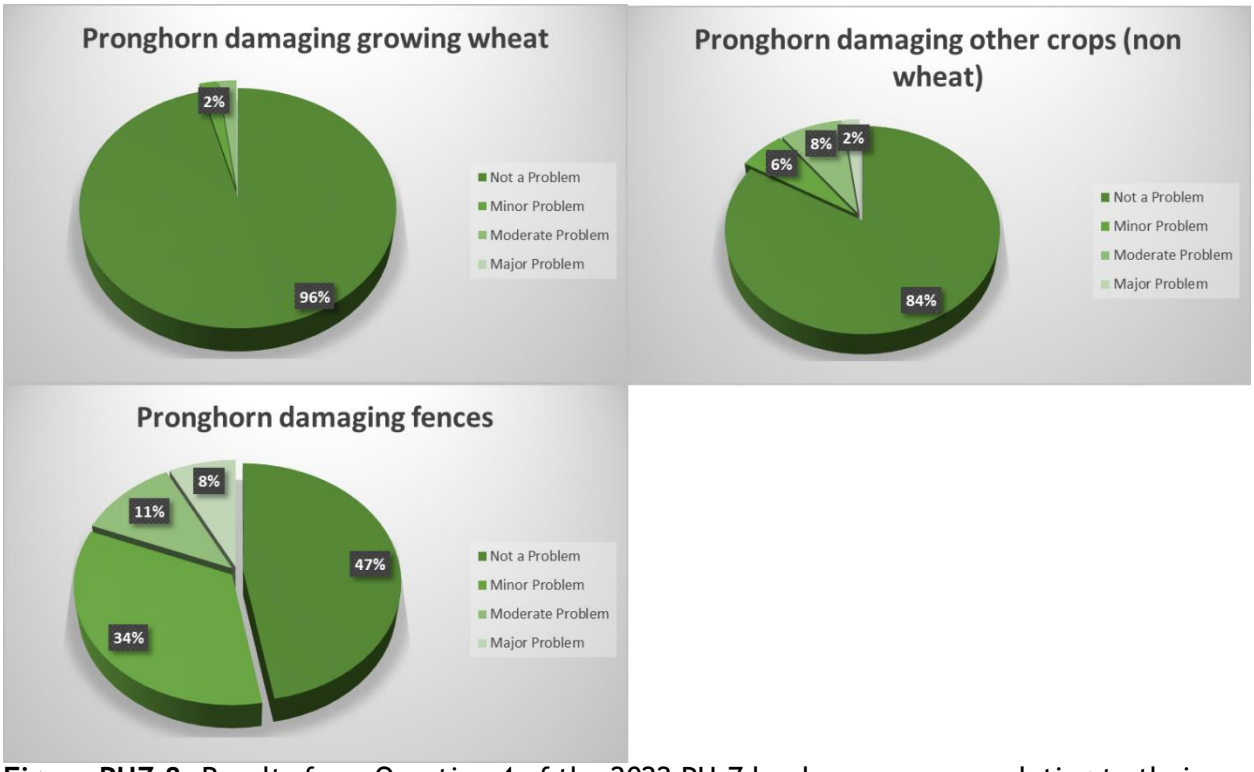


Figure PH7-8. Results from Question 4 of the 2022 PH-7 landowner survey relating to their experiences with damage caused by pronghorn. Complete survey results can be found in Appendix A.

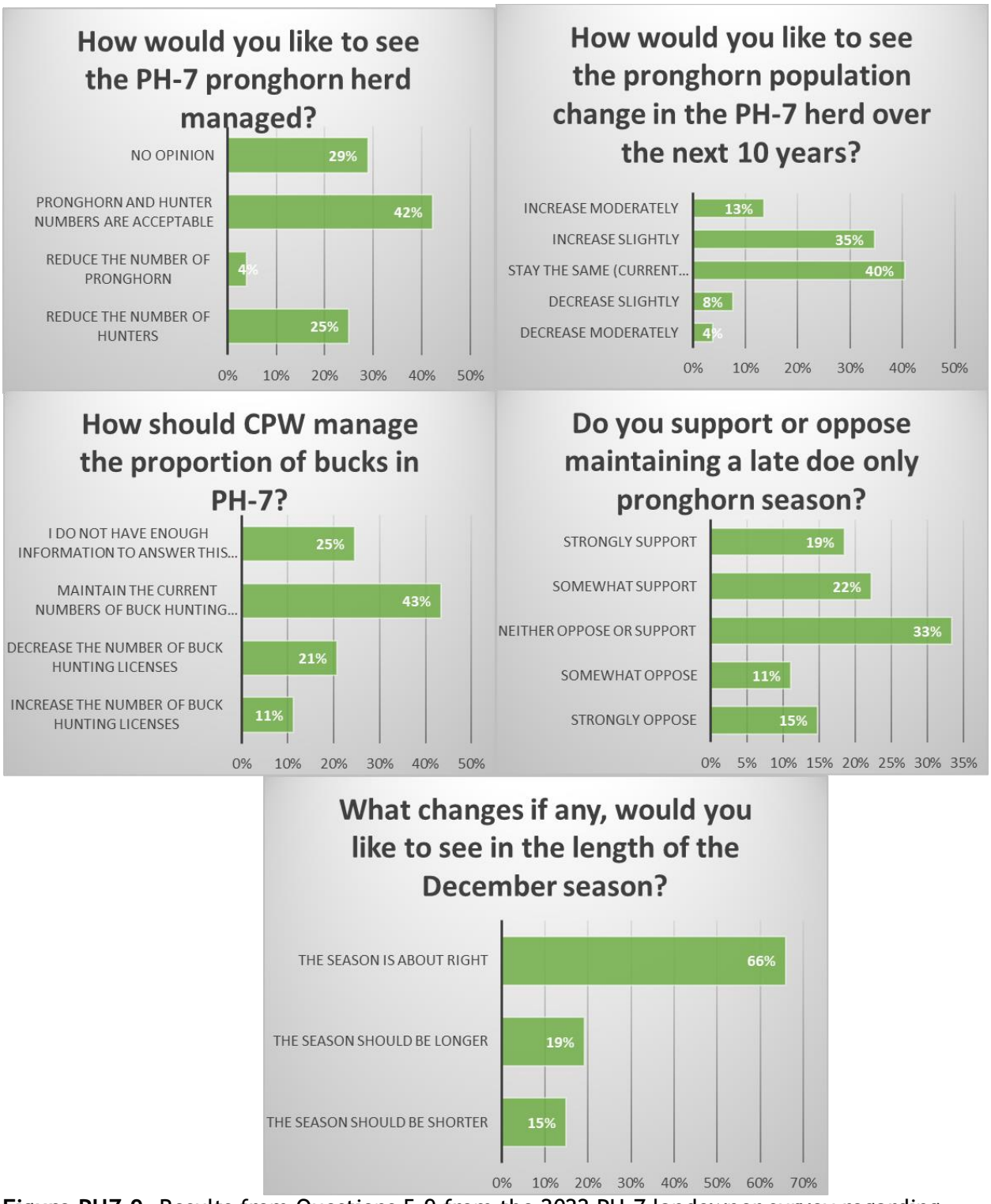


Figure PH7-9. Results from Questions 5-9 from the 2022 PH-7 landowner survey regarding management of hunter numbers, pronghorn population size, and the December doe season in PH-7. Complete results are found in Appendix A.

Yoder Pronghorn Herd Management Plan

Data Analysis Unit PH-8

Tyrel Woodward, Wildlife Biologist, Colorado Springs

GMUs: 110, 111, 118, 119, 123, & 124	**Approval Year for last HMP: 2012**
Post-hunt Population (Modeled)	
• Prior Population Objective:	6,000 (5,400-6,600) pronghorn
• 2022 Post-hunt Population Estimate:	7,600 pronghorn
• **Approved Population Objective Range:**	**Increase to 6,800-9,200 pronghorn**
Post-hunt Sex Ratio (Modeled)	
• Prior Sex Ratio Objective:	30 (25-35) bucks per 100 does
• 2022 Post-hunt Sex Ratio Estimate:	23 bucks per 100 does
• **Approved Sex Ratio Objective Range:**	**Status Quo 25-35 bucks per 100 does**

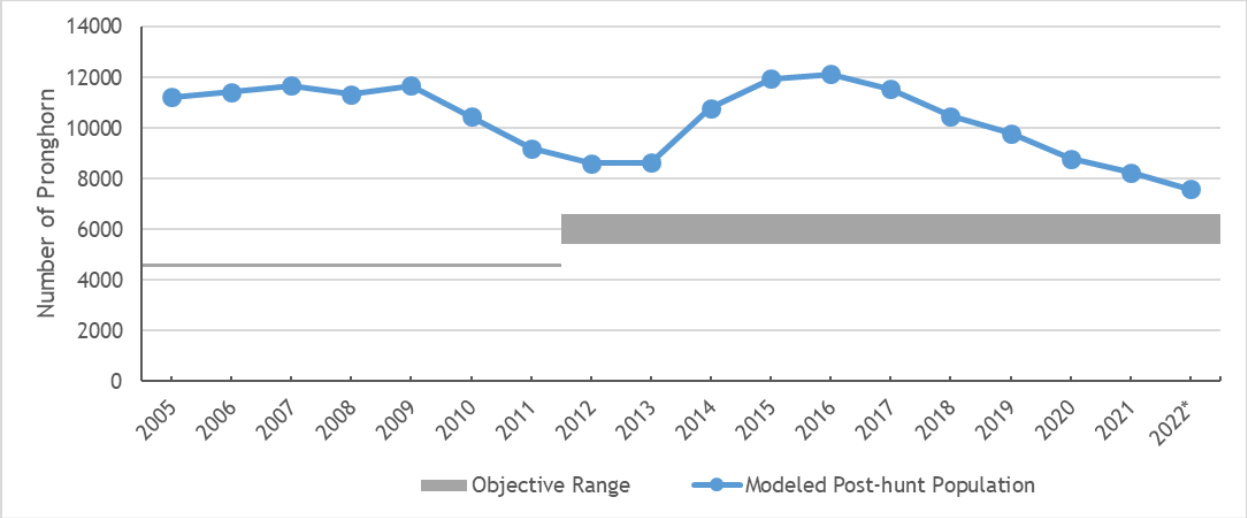


Figure PH8-1. Pronghorn DAU PH-8 modeled post-hunt population and objective range, 2005-2022.

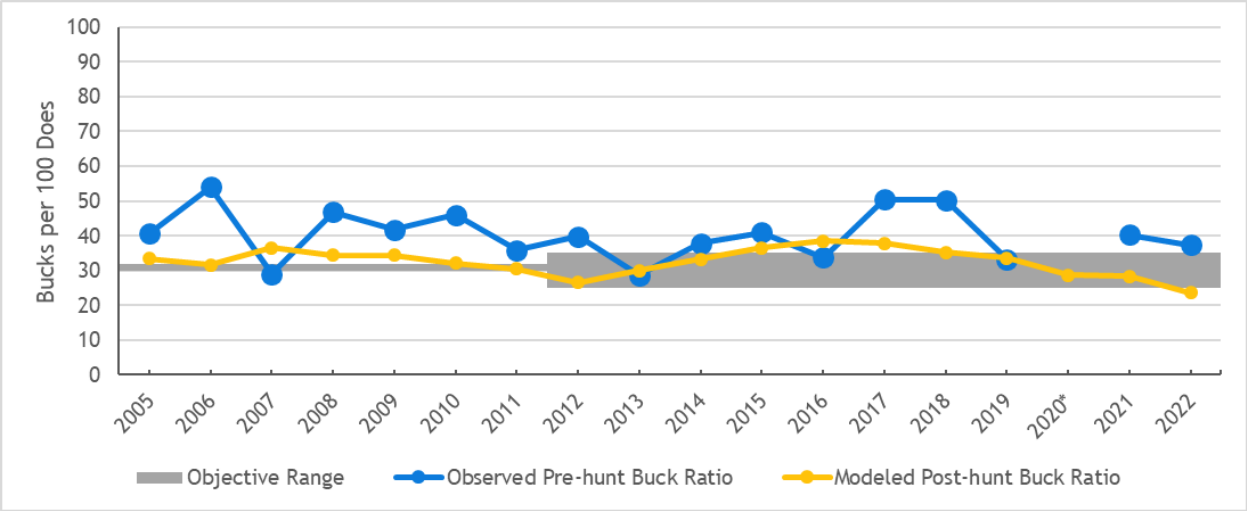


Figure PH8-2. Pronghorn DAU PH-8 observed and modeled post-hunt sex ratio (bucks:100 does), 2005-2022. *No classification data collected due to COVID restrictions.

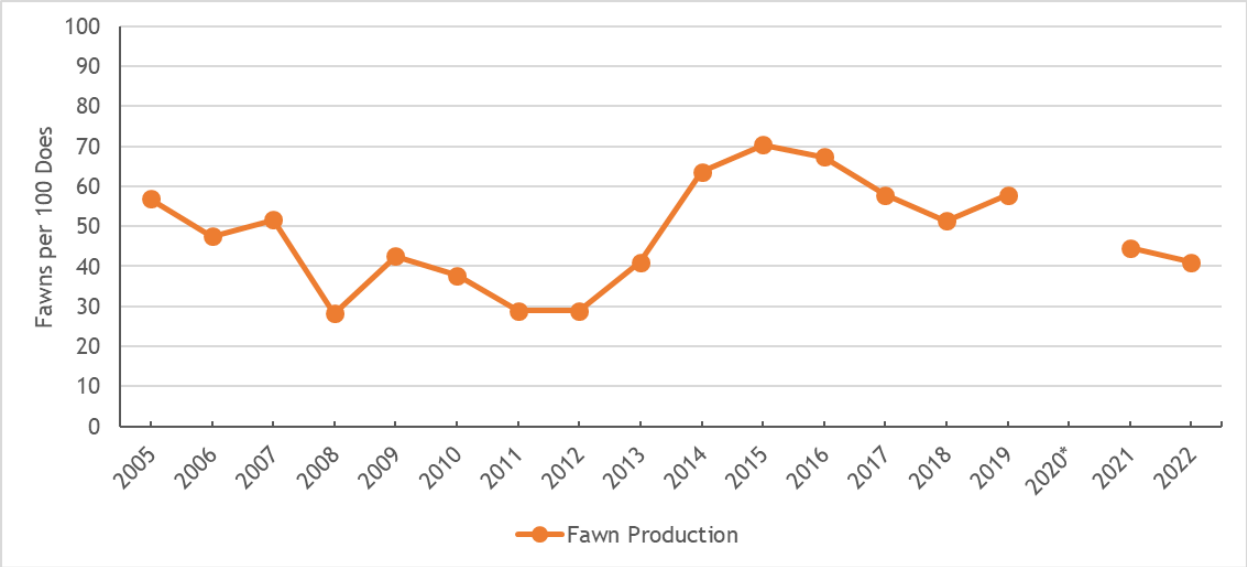


Figure PH8-3. Pronghorn DAU PH-8 fawn production (observed pre-hunt fawn:100 does ratio), 2005-2022. *No classification data collected due to COVID restrictions.

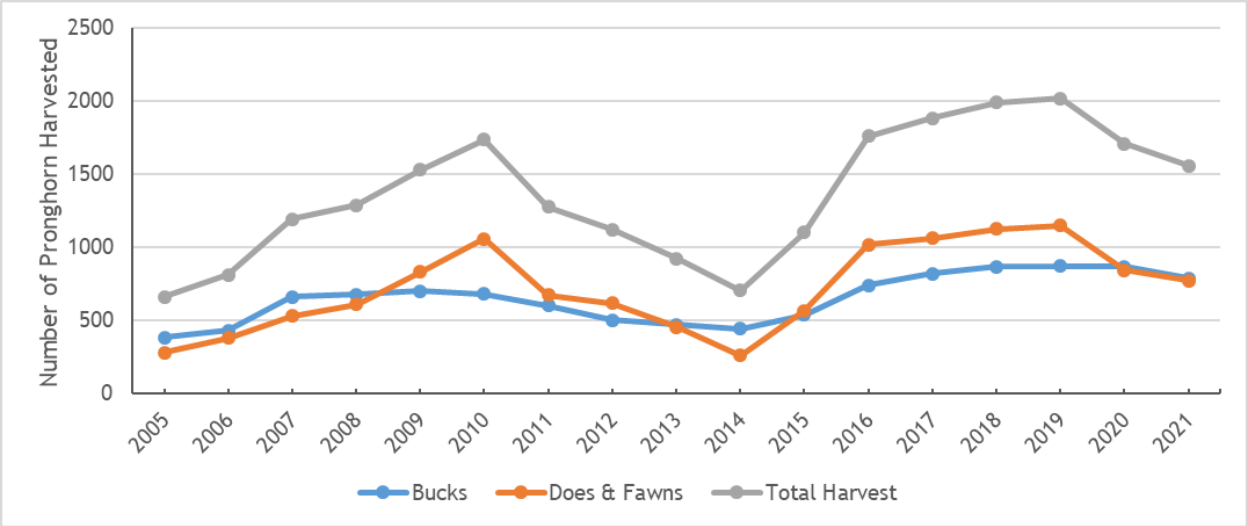


Figure PH8-4. Pronghorn harvest estimates in PH-8, 2005-2021.

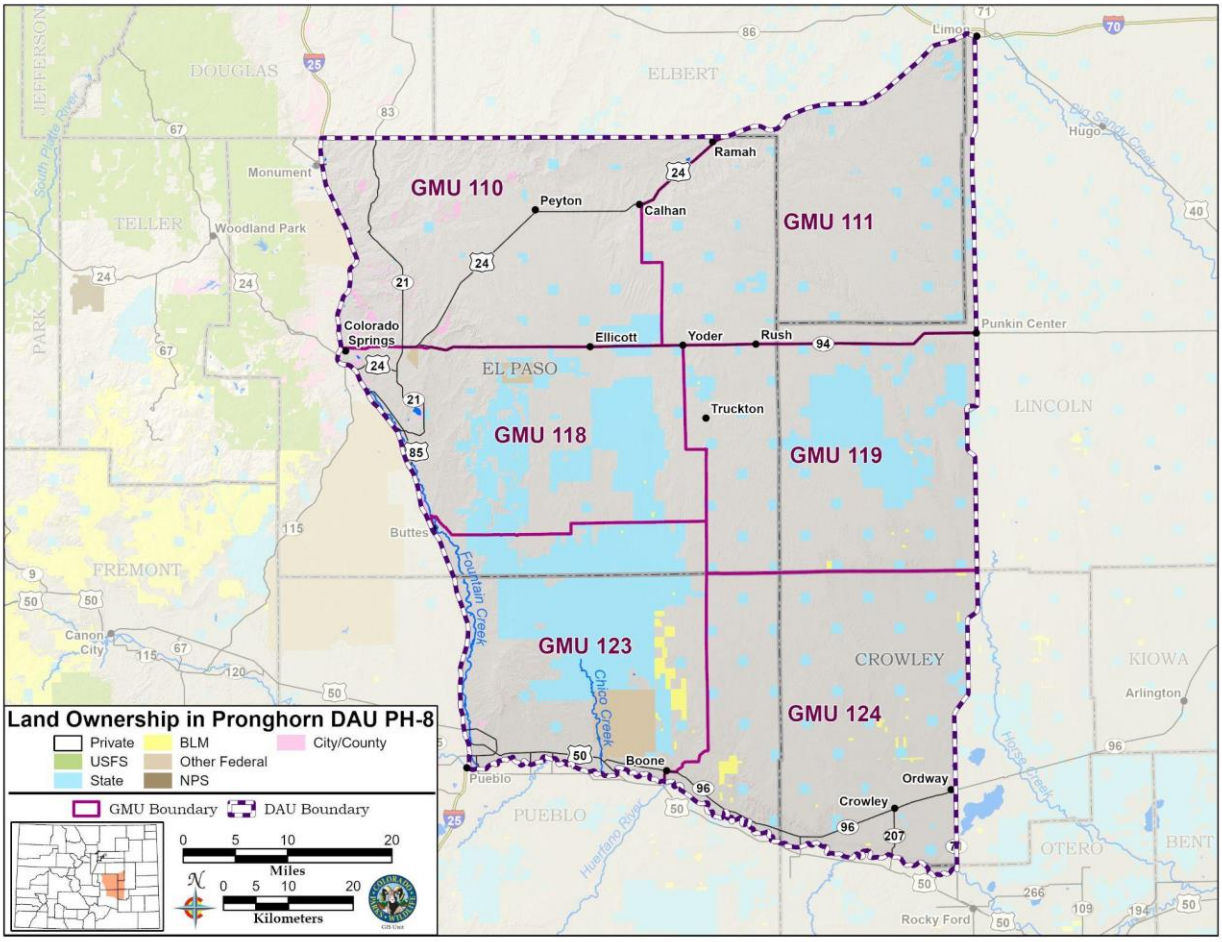


Figure PH8-5. PH-8 Land Ownership.

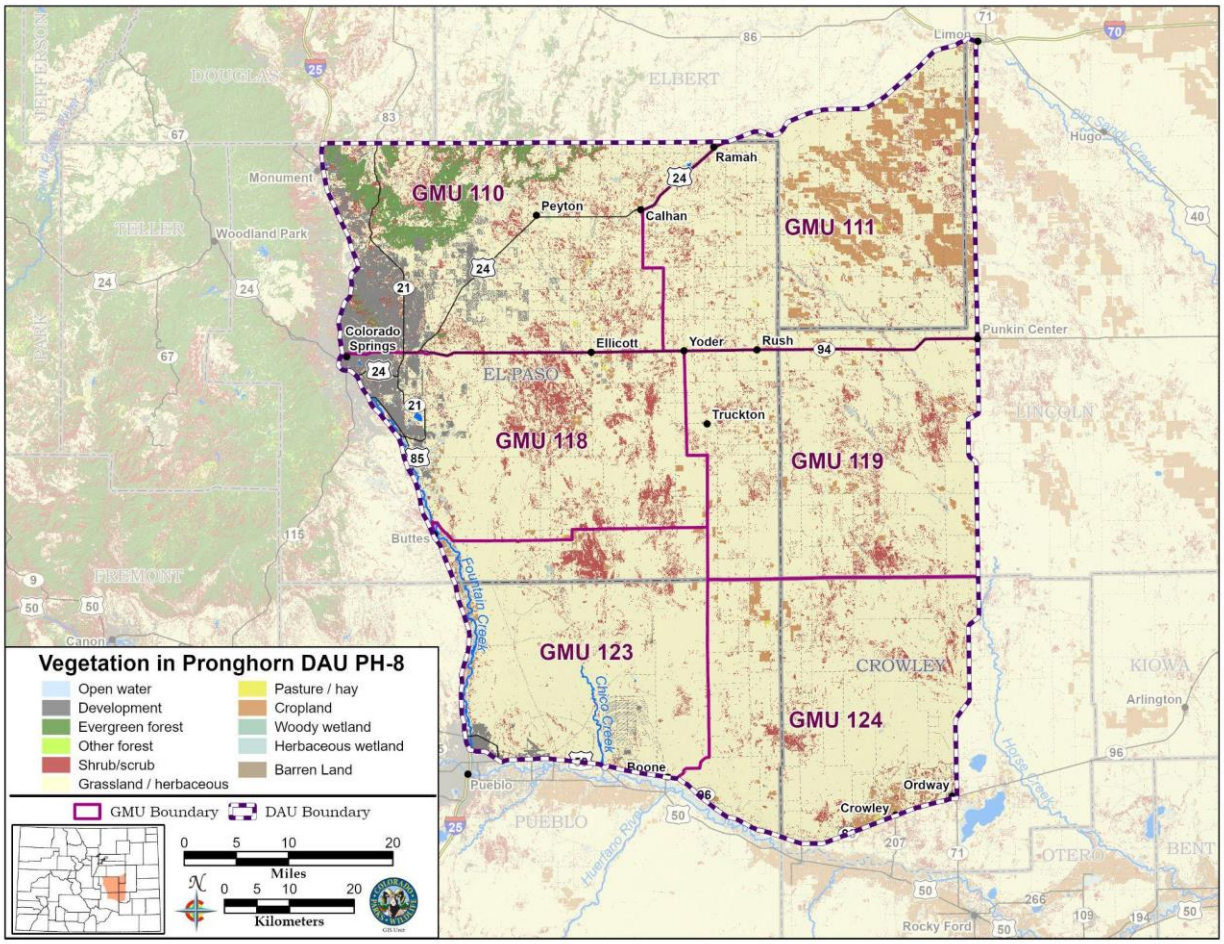


Figure PH8-6. PH-8 Land Cover.

GEOGRAPHIC LOCATION, GMUs, LAND OWNERSHIP, LAND USE DESCRIPTION

The Yoder DAU is in central Colorado (Figure PH8-5) and is comprised of Game Management Units (GMU) 110, 111, 118, 119, 123 and 124. This DAU encompasses portions of El Paso, Elbert, Lincoln, Pueblo, and Crowley counties and is bounded on the north by the Douglas-El Paso County line and U. S. Highway 24; on the east by Colorado Highway 71; on the south by the Arkansas River and on the west by Interstate 25. This DAU covers 3,604 mi^2, of which over 95% (3,424 mi^2) is considered pronghorn habitat. Elevations range from about 7,400 ft. at the top of Spruce Hill in the northwest portion of GMU 110 to about 4,200 ft. where the Arkansas River flows under Colorado Highway 71 in GMU 124. Topography ranges from steep sided bluffs to rolling hills.

Much of the DAU is owned by private entities (81% or 2,917 mi^2) or by the State Land Board (17% or 604 mi^2). It is important to note that while the State Land Board owns 604 mi^2 of land in PH-8, this is not publicly accessible land, and is closed to hunting unless permission is granted by the lessee. In limited cases CPW has acquired the recreational lease to allow hunting access on State Trust Lands through the Public Access Program (https://cpw.state.co.us/placestogo/Pages/StateTrustLands.aspx). As of 2022 there are four properties, with a total of 71,459 acres, in PH-8 which are open to hunting access. The

Federal government manages about 2% of the land in the DAU including 18 mi^2 managed by the BLM and 40 mi^2 managed by the U.S. Military. Land ownership is mapped in Figure PH8-5. Agriculture is the primary land use in the Yoder DAU. Livestock grazing occurs throughout the DAU on native rangeland. Irrigated farmland occurs along many rivers but is most common along the Arkansas River and Fountain Creek. Alfalfa, sod farms, and other row crops are the primary crops in the irrigated farmlands. Large parcels are planted as dryland winter wheat, especially in the northeastern part of the DAU, with lesser acres planted to sorghum, milo, and sunflowers.

Precipitation averages 10-15 in. per year and falls primarily in the form of thunderstorms from April through September. The majority (57%) of the DAU is classified as prairie grassland (Figure PH8-6). Shortgrass prairie, primarily in the eastern GMUs, comprises 39% (1,422 mi^2) of the DAU. Tallgrass prairie makes up 11% (388 mi^2) of the DAU while 7% (266 mi^2) of the DAU is classified as mid-grass prairie. Most of the remaining portions of the DAU (13% or 468 mi^2), especially in GMU 111, are classified as dryland agriculture. Other vegetation types in the DAU include irrigated agriculture, shrub or sand dune complexes, riparian areas, and greasewood flats. A 76 mi^2 ponderosa pine forest, the Black Forest, is in the northwestern corner of the DAU. Major drainages in the DAU include Fountain Creek, Monument Creek, the Arkansas River, Chico Creek, Black Squirrel Creek, Pond Creek, Steel Creek, Little Horse Creek, Horse Creek and North, Middle and South Rush Creeks.

Portions of the DAU have been identified as suitable for wind energy production. Wind farms have been and will continue to be developed in the DAU. As of 2021 there were 320 turbines in PH-8. All of these have been constructed since this HMP was last revised in 2012. The cumulative effect that wind farms have on pronghorn distribution is unknown. Additionally, the PH-8 landscape is increasingly targeted for solar energy developments.

PRONGHORN HERD INFORMATION

Pronghorn are found throughout the DAU. Given that land ownership in the DAU is largely private, the potential for game damage is high. Wildlife conflicts in this area include damage to winter wheat, fences, and pasture land. Pronghorn disperse across the DAU in the summer months. Group sizes greatly increase in the winter months when herds are concentrated near agricultural fields that provide winter forage.

From 2016-2022, CPW concluded a study looking at the home ranges, movement patterns, and survival rates of adult pronghorn in southeastern Colorado (Appendix C). Most of the pronghorn (59 of 76 pronghorn) radio-collared for this study were captured in PH-8, so we have a better understanding of pronghorn home ranges, movement patterns, and survival of animals in this DAU compared to the surrounding units. We found that pronghorn in the DAU have a mixed-movement pattern with some remaining in a relatively small area throughout the year, while others make seasonal movements. Annual survival rates for adult pronghorn during the study ranged from 0.85-0.94.

PRONGHORN HERD CURRENT STATUS AND/OR POPULATION TREND

The current modeled estimates for Yoder are based on an intensive monitoring program that consists of annual preseason sex/age classification flights and aerial line intersect distance sampling (Buckland et al. 2001; Guenzel 2007). Sex/age classification flights are conducted by flying North/South transects, generally spaced three miles apart, across the entire DAU.

These flights are conducted between mid-July and mid-August. Since 2004, classification flights have been conducted annually (except 2020 due to COVID-19 restrictions), where observers classify groups of pronghorn into bucks, does and fawns. Distance estimates have been calculated in three separate years (Table PH8-1). Due to the number of wind towers and increase in air traffic in PH-8, we are no longer conducting distance estimates in the DAU.

Table PH8-1. Aerial line intersect distance sampling estimates conducted in PH-8. Distance estimates are conducted in May and June & include adult and yearling animals.

Year	Estimate	95% Confidence Interval
2008	10,536 pronghorn	7,237-12,800
2010	9,693 pronghorn	7,426-10,556
2014	10,244 pronghorn	7,907-13,284

At the time objectives for PH-8 were last revised in 2012, the population was on a decreasing trend (Figure PH8-1). Based on the approved 2012 population objective of 6,000 pronghorn, CPW continued to manage the population for a decrease in the overall population. To achieve this objective we continued increasing hunting licenses and increased the season length of the December doe-only hunting season to 31 days. Following several years of high annual precipitation between 2013-2017, the population increased despite high license numbers. We estimate the population peaked in 2016, with a high of 12,100 pronghorn. CPW further liberalized the allocation of tags in response, encouraging the current negative population trend (Figure PH8-4). The current population total is a result of these management actions in combination with reduced fawn:doe ratios brought on by drought.

The 2022 post-hunt modeled population estimate for PH-8 was 7,600 individuals (Figure PH8-1). This estimate incorporates summer fawn classification data and predicted harvest estimates for the 2022 season. The current estimated population size is ~7% below the 2012 estimated population and is ~1,600 individuals above the current population objective approved in 2012. Since approval of the last HMP, CPW has not been able to reduce the population to the population objective range set in 2012.

The post-hunt sex ratio objective for PH-8 is 30 (range: 25-35) bucks per 100 does (Figure PH8-2). The population is currently modeling near objective with 24 bucks per 100 does. The average pre-hunt observed sex ratio for the DAU is 48 bucks per 100 does. It is important to note that since we collect field estimates of the sex ratio prior to the hunting season, the observed pre-hunt ratio will be higher than the post-hunt ratio. The pre-hunt observed ratio for 2022 was 37 bucks per 100 does.

In 2022, we estimated there were 41 fawns per 100 does (Figure PH8-3). This was lower compared both to the three-year average of 49 and to the overall average of 48. Current drought conditions are the likely explanation for the low numbers, since fawn to doe ratios fluctuate annually likely due to variation in annual precipitation.

STAKEHOLDER OUTREACH AND INPUT

CPW surveyed both landowners and hunters prior to drafting objectives for this HMP. To gather initial landowner input, we mailed surveys to 125 randomly selected landowners who owned 160 acres or more in PH-8. The surveys included a postage-paid business reply envelope. Landowners were asked to provide feedback on both impacts of pronghorn and pronghorn hunters on their property and operations. Additionally, landowners were asked about their preferences for pronghorn management in the DAU. We received 63 landowner surveys, a response rate of more than 50%. This was an increase from the number of responses (n=26) received during the last HMP revision process. Complete results from the survey can be found in Appendix A.

Generally, landowners reported moderate issues with hunters in the area and minimal problems with pronghorn damage to their property (Figures PH8-7, PH8-8, and PH8-9). This, however, does not nullify the fact that some landowners do incur damage to both fences and crops in PH-8, which is generally more of a concern in the northern part of the DAU. Many landowners (39%, n=24) indicated they found the current number of pronghorn and hunters to be acceptable. This is a slight increase from the results of the 2012 survey in which 33% (n=8) of landowners indicated they were satisfied with the current number of hunters and pronghorn. Compared to surrounding DAUs, damage to crops and fences by pronghorn was also relatively low. Seventy-nine percent (79%, n=45) of landowners indicated they had no problem with pronghorn damaging wheat crops, and similarly, 74% selected “Not a Problem” when asked about damage to non-wheat crops. In neighboring DAU PH-19, that number was 45% (n=36) for wheat crops and 50% (n=40) for other crops. Of those surveyed, 77% (n=29) of respondents stated they had minor to no problems with pronghorn damaging fences.

In 2012,18 of the 26 (70%) landowners indicated a moderate to major issue with trespassing. In our current survey that number was 19 of 63 (30%) landowners. This figure is comparable to surrounding DAUs PH-6 (29%, 11/35) and PH-19 (29%, 24/84). We also found that PH-8 landowners support maintaining the late doe-only December season (44%, n=27) at the current season length of 31 days (70%, n=40).

Based on these results, landowners are in favor of maintaining the current population numbers in PH-8. Of the 64 responses received for PH-8, 25 (41%) respondents indicated they would like to see the population remain the same. Additionally, damage and negative interactions with pronghorn and hunters were relatively low across the DAU.

Hunter input was gathered through the Big Game Opt-In Survey following the 2021 hunting season (Appendix B). Hunters were asked a series of questions related to their hunting experience as well as herd management objectives. More than 630 hunters responded to questions related to PH-8. Of those surveyed, 69% (n=435) reported being satisfied with the total number of pronghorn encountered during the season. Twenty percent (20%, n=126) reported being somewhat or very dissatisfied. Similarly, 64% (n=403) of hunters were satisfied with the number of bucks they saw. Most hunters preferred to hunt more often (62%, n=330) versus hunting more mature bucks (38%, n=201). Forty-nine percent (49%; n=255) of hunters preferred a slight to moderate increase in the population. Of those who responded, 89% (n=472) reported not feeling crowded by other hunters. In total 80% (n=424) of hunters were satisfied with their hunting experience in PH-8. This was the highest satisfaction rate of all 11 DAU’s surveyed in the SE Region.

SIGNIFICANT MANAGEMENT ISSUES

Management issues in PH-8 primarily revolve around habitat and limited management capabilities.

1. **Land Ownership:** The DAU is largely private property. In recent years access has increased considerably through the Public Access Program on State Trust Lands. While hunting access is still highly restricted, the harvest, and therefore management potential has been increased by the addition of these properties.
2. **Development**: Pressure on habitat quality and quantity is being applied by an increase in residential and energy development across the landscape. Given the proximity to Colorado's Front Range and the increase in human populations, there is an increasing demand for green energy projects located within the boundaries of the DAU. These projects can reduce habitat availability, increase fragmentation, and provide issues related to hunting access. Urbanization, especially east of the Colorado Springs metro area, is reducing the amount of pronghorn habitat in the DAU.
3. **Movement Patterns and Connectivity**: Along with an increase in the human population comes an increase in human infrastructure. This includes transportation infrastructure. The increased traffic on these roads has the potential to increase collision incidents between pronghorn and vehicles. Additionally, fencing which does not meet "Wildlife Friendly Standards" increases and further compounds habitat fragmentation. In certain instances obstacles (human built structures, roads, and fences) are erected which stand to isolate small herds of pronghorn adjacent to subdivision developments. In PH-8, this is especially a concern in El Paso County, which is seeing the highest rate of residential development in the DAU.
4. **Climate:** These factors are compounded by ongoing drought in the area. Drought conditions are highly influential on the number of fawns recruited into the population on an annual basis. Additionally, extreme weather events across the landscape cause production fluctuations within the herd.

OBJECTIVES

Post-hunt Population Objective Alternatives

- Alternative 1 — 6,800-9,200 pronghorn
    - This alternative includes the current population estimate within the range. The herd would have to increase ~5% to meet the midpoint of this alternative.

- Status Quo Alternative 2— 5,400-6,600 pronghorn
    - This is the current population objective range for the DAU. The herd would have to decrease by ~21% to meet the midpoint for this alternative.

Post-hunt Sex Ratio Objective Alternative

- Status Quo Alternative 1—30 bucks per 100 does (range 25-35)
    - This is the current sex ratio objective for the DAU. Currently the sex ratio is modeling within the range.

Approved Alternatives

- ***Population objective range:*** **Increase the post-hunt population range to 6,800-9,200 pronghorn**

Given the last decade of management, monitoring, and research, CPW has established a good understanding of pronghorn herd dynamics in PH-8. Tens of thousands of acres of public access have been added to the DAU, and yet harvest alone has not proven effective enough to reduce the herd to the 2012 population objective. We recognize that the DAU is largely under private ownership, and that an abundant number of hunters choose to hunt in PH-8. For these reasons we chose an alternative which balances the needs of landowners and the desire of hunters for opportunity, while also acknowledging both the social and biological carrying capacity for the landscape. Most landowners and hunters feel the current population should stay the same or increase slightly and the selected alternative was chosen to achieve this outcome. The primary management tool available to CPW to manage to objective is through doe harvest. We will evaluate the population trend using our current survey and modeling practices on an annual basis. License numbers will be adjusted annually to achieve the desired population objective.

- ***Post-hunt sex ratio:*** **Status Quo of 25-35 bucks per 100 does**

This alternative maintains the current sex ratio objective for the population. It is favored by most landowners in the DAU. We will work to maintain ample hunting opportunities while also trying to balance buck to doe ratios. Since the population is at objective, we will continue to monitor buck to doe ratios and harvest will be adjusted accordingly.

STRATEGIES FOR ADDRESSING MANAGEMENT ISSUES AND ACHIEVING OBJECTIVES

CPW's most effective tool for managing ungulate populations is through hunter harvest and habitat management. While CPW has made gains in hunting access, both strategies are limited in PH-8 due to the amount of private land and varying uses within the DAU. However:

1. CPW will continue to foster relationships and work with private landowners to improve habitat and promote hunting opportunities. This includes providing professional insights on habitat enhancements and connecting them to resources to improve habitat and hunting access. Both actions will help achieve the goals identified in this plan. CPW will continue to look for additional opportunities to increase and preserve pronghorn habitat throughout the DAU.
2. To address development concerns CPW will work to employ the best available science and herd monitoring to inform responsible development decisions. CPW will work with partners to address concerns while advocating for pronghorn in PH-8. Many actions which could be taken to address development concerns are outside the purview of CPW's management authority. CPW will focus on maintaining strong relationships with partners involved in development and land use decisions. In collaboration with the Colorado Department of Transportation, CPW is in the process of improving data collection to inform decisions aimed at mitigating wildlife-vehicle collisions.
3. Working with landowners to improve habitat can help mitigate the effects of drought and extreme weather events. Harvest rates will be adjusted to work in conjunction with habitat enhancements to reduce attrition rates.

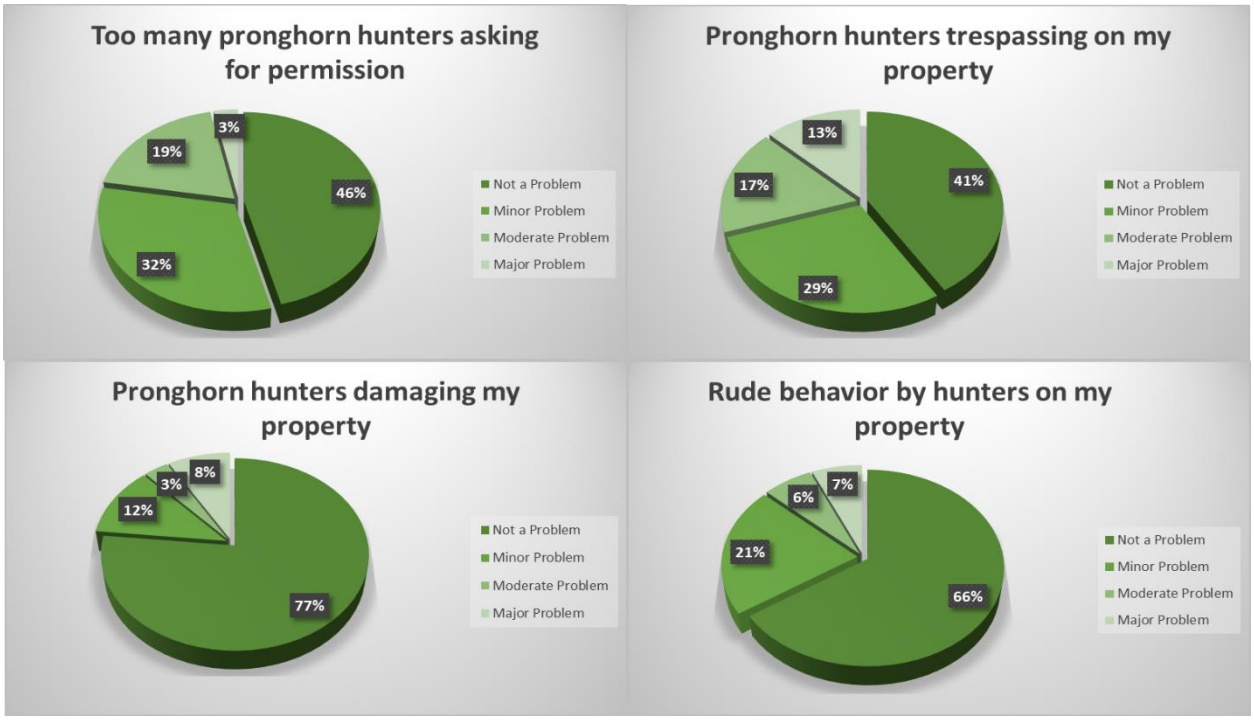


Figure PH8-7. Results from Question 4 of the 2022 PH-8 landowner survey relating to their experiences with pronghorn hunters on their property. See Appendix A for complete results.

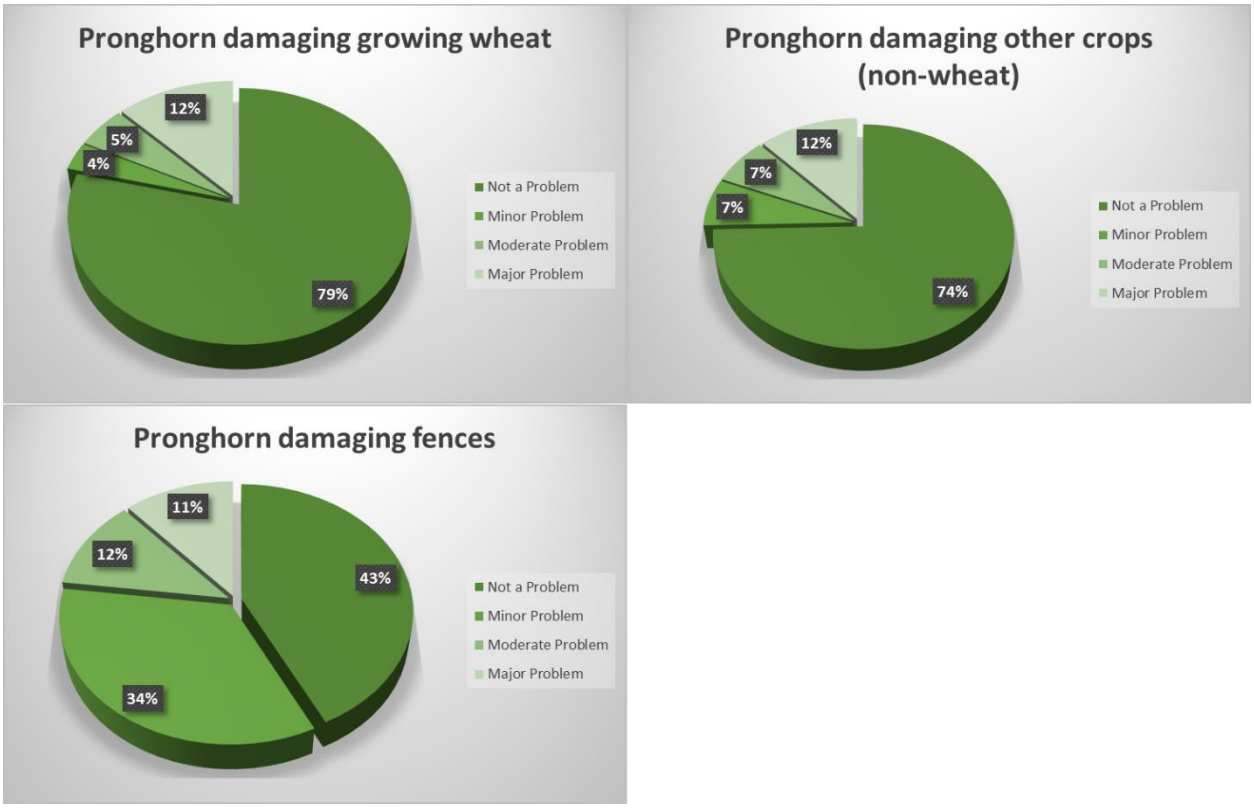


Figure PH8-8. Results from Question 4 of the 2022 PH-8 landowner survey relating to their experiences with damage caused by pronghorn. Complete survey results can be found in Appendix A.

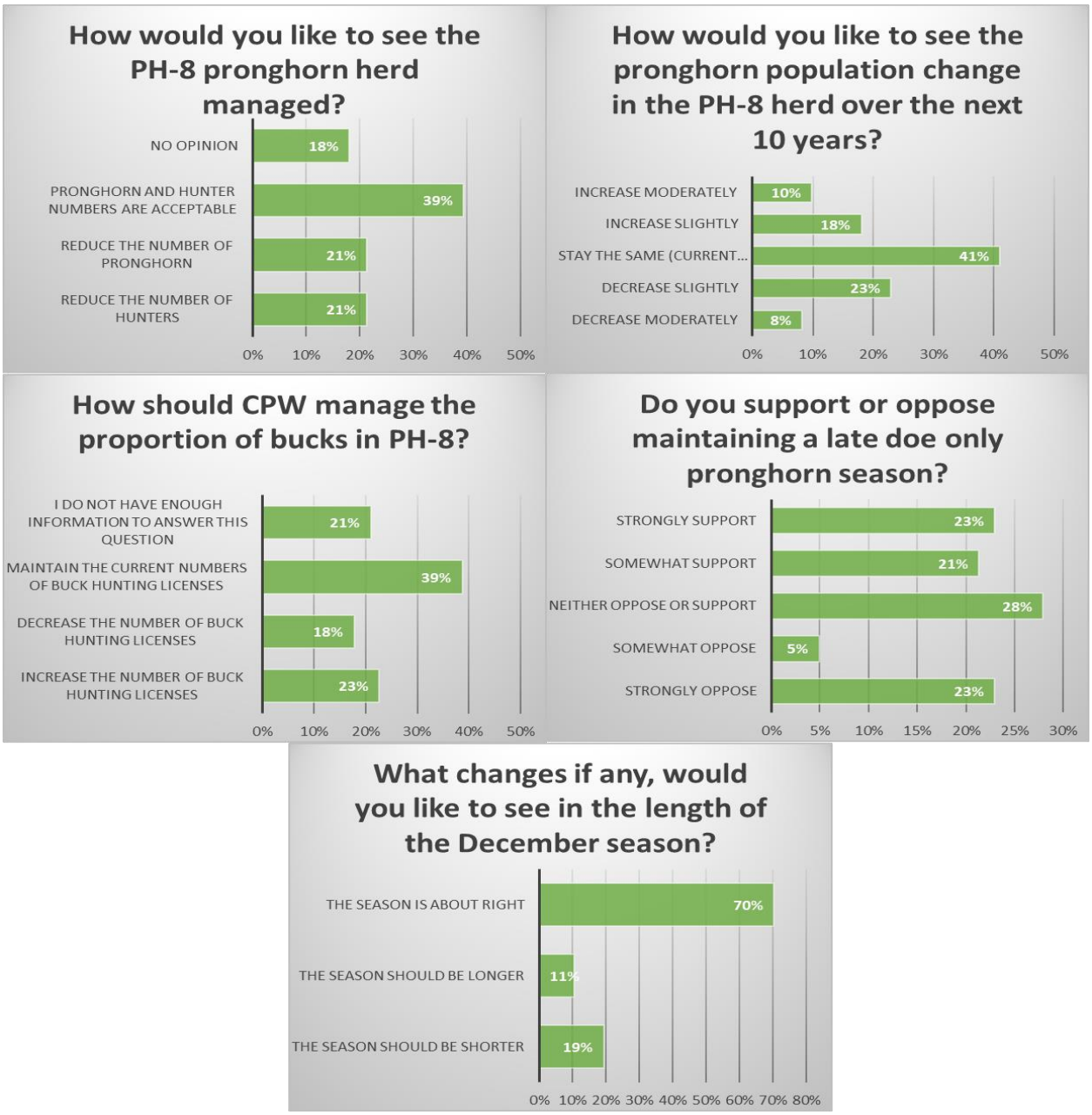


Figure PH8-9. Results from Questions 5-9 from the 2022 PH-8 landowner survey regarding management of hunter numbers, pronghorn population size, and the December doe season in PH-8. Complete survey results are found in Appendix A.

Last Chance Pronghorn Management Plan

Data Analysis Unit PH-19

Tyrel Woodward, Wildlife Biologist, Colorado Springs

GMUs: 103,106,107, & 109	**Approval Year for last HMP: 2017**
Post-hunt Population (Modeled)	
• Prior Population Objective:	2,000 (1,800-2,200) pronghorn
• 2022 Post-hunt Population Estimate:	2,500 pronghorn
• **Approved Population Objective Range:**	**Expand to 1,700-2,300 pronghorn**
Post-hunt Sex Ratio (Modeled)	
• Prior Sex Ratio Objective:	35 (30-40) bucks per 100 does
• 2022 Post-hunt Sex Ratio Estimate:	34 bucks per 100 does
• **Approved Sex Ratio Objective Range:**	**Status Quo 30-40 bucks per 100 does**

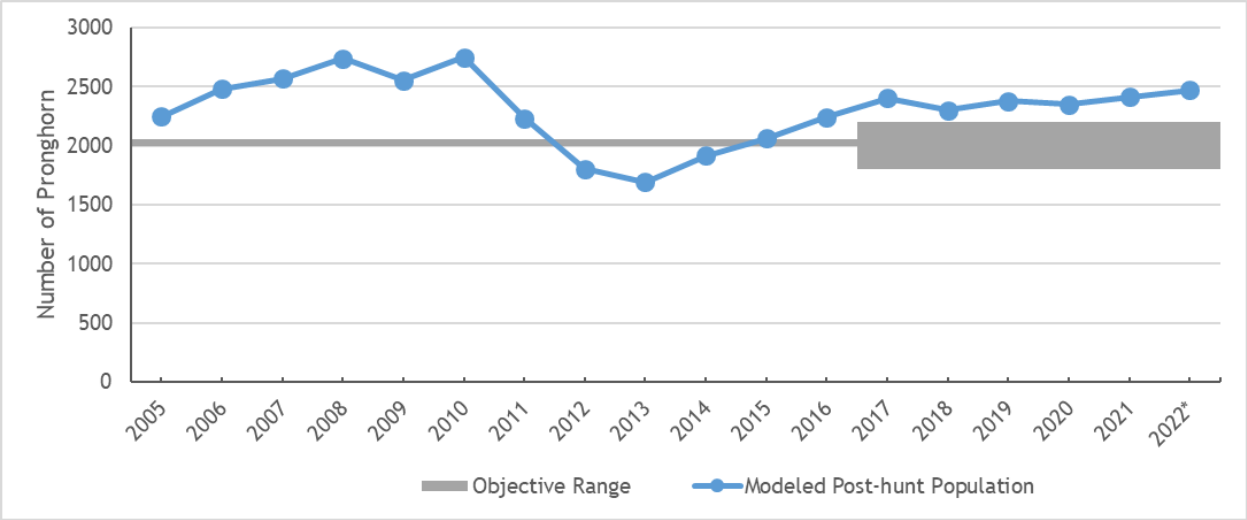


Figure PH19-1. Pronghorn DAU PH-19 modeled post-hunt population and objective range, 2005-2022.

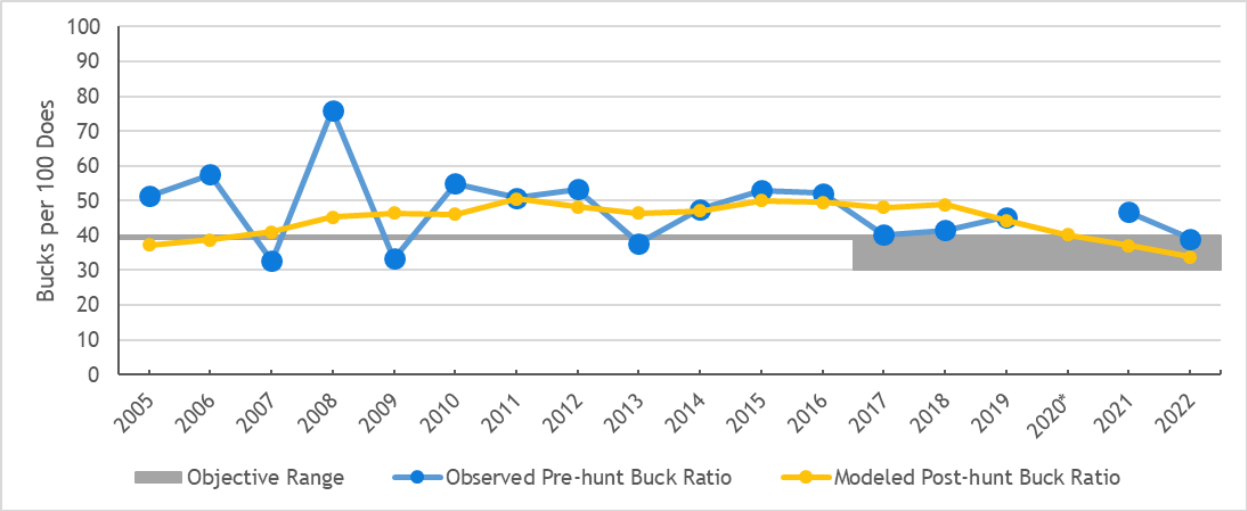


Figure PH19-2. Pronghorn DAU PH-19 observed and modeled post-hunt sex ratio (bucks:100 does), 2005-2022. *No classification data collected due to COVID restrictions.

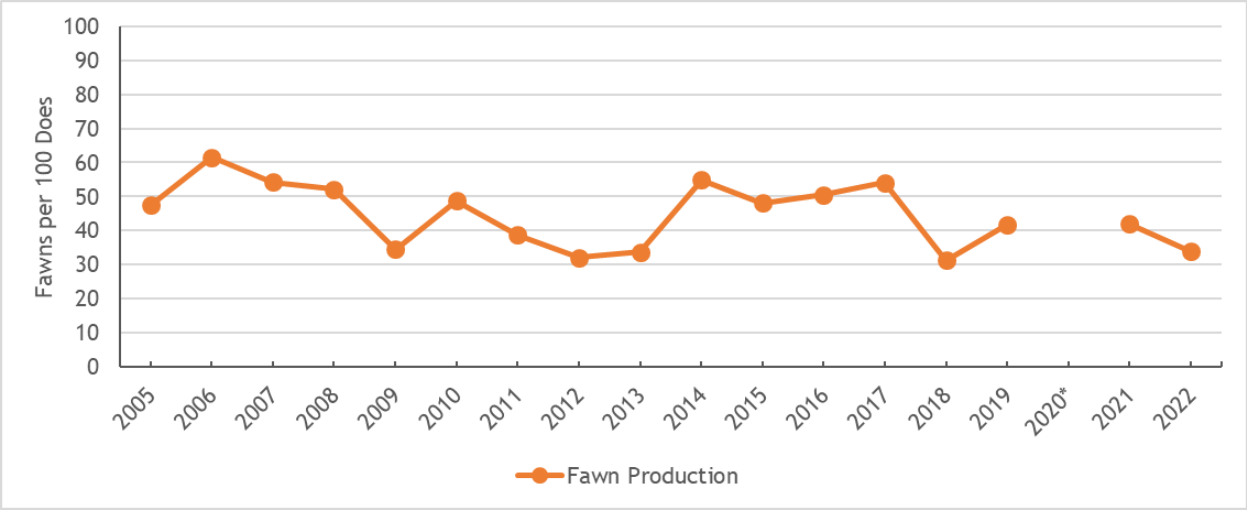


Figure PH19-3. Pronghorn DAU PH-19 fawn production (observed pre-hunt fawn:100 does ratio), 2005-2022. *No classification data collected due to COVID restrictions.

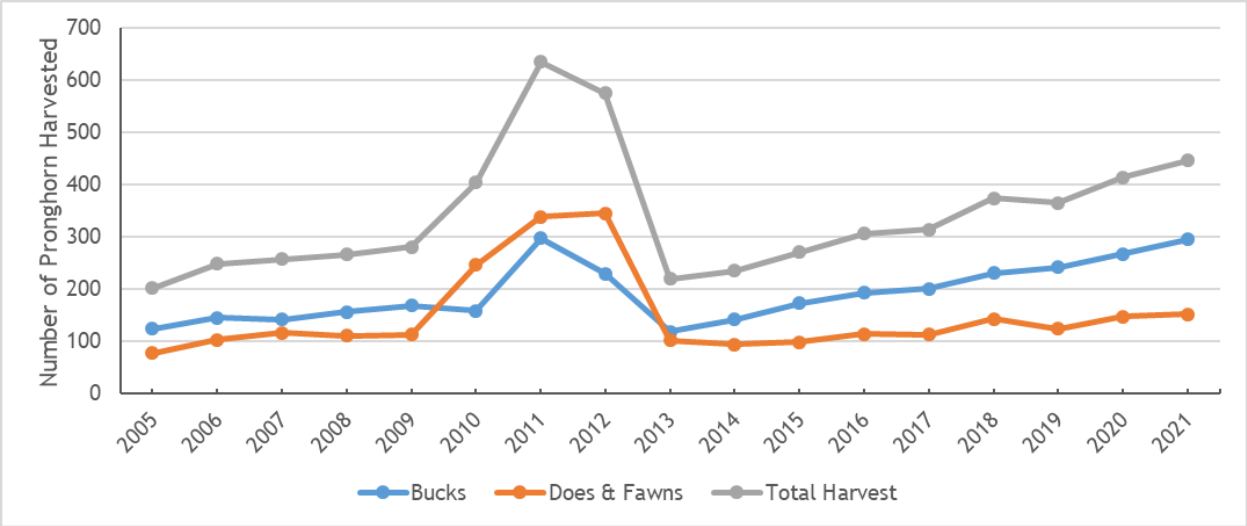


Figure PH19-4. Pronghorn harvest estimates in PH-19, years 2005-2021.

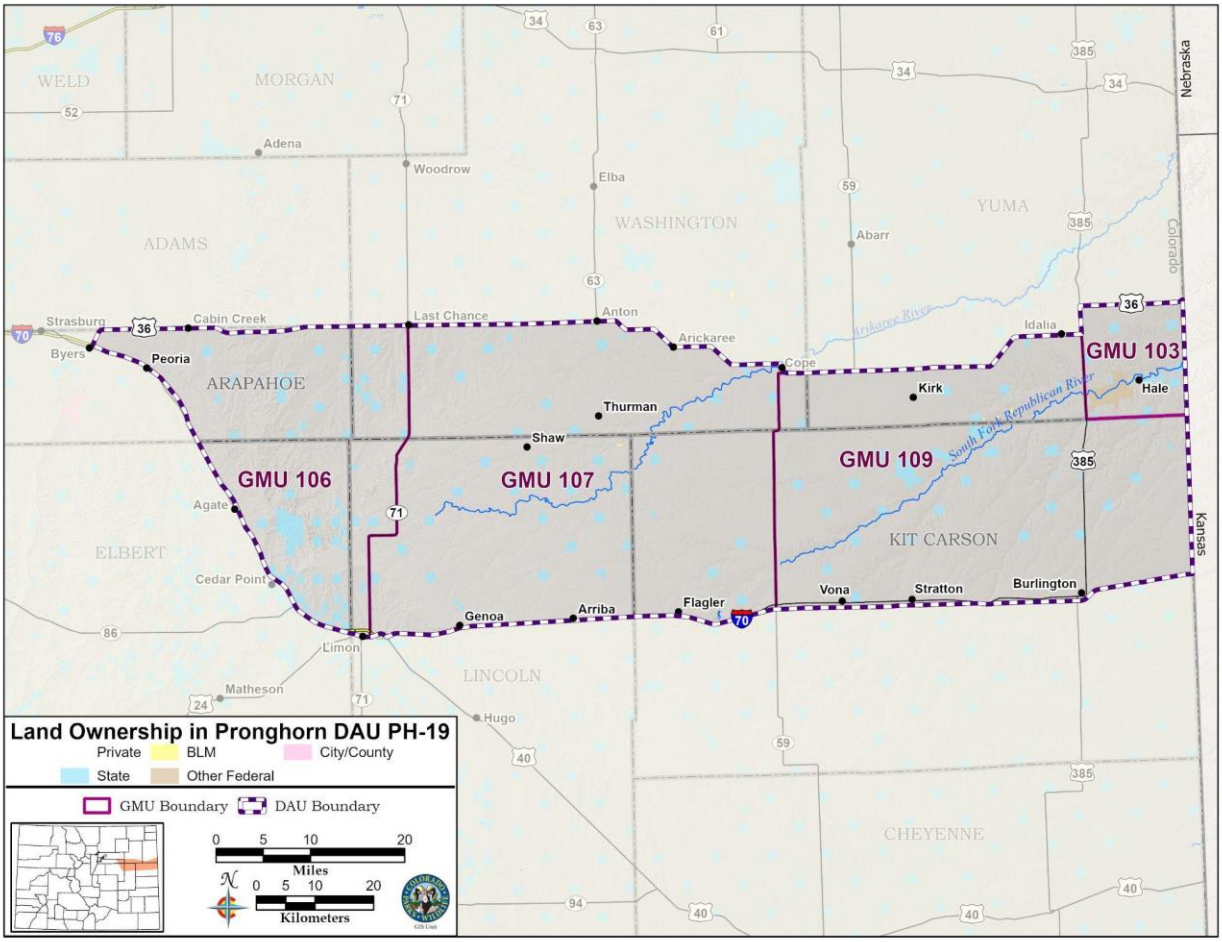


Figure PH19-5. PH-19 Land Ownership.

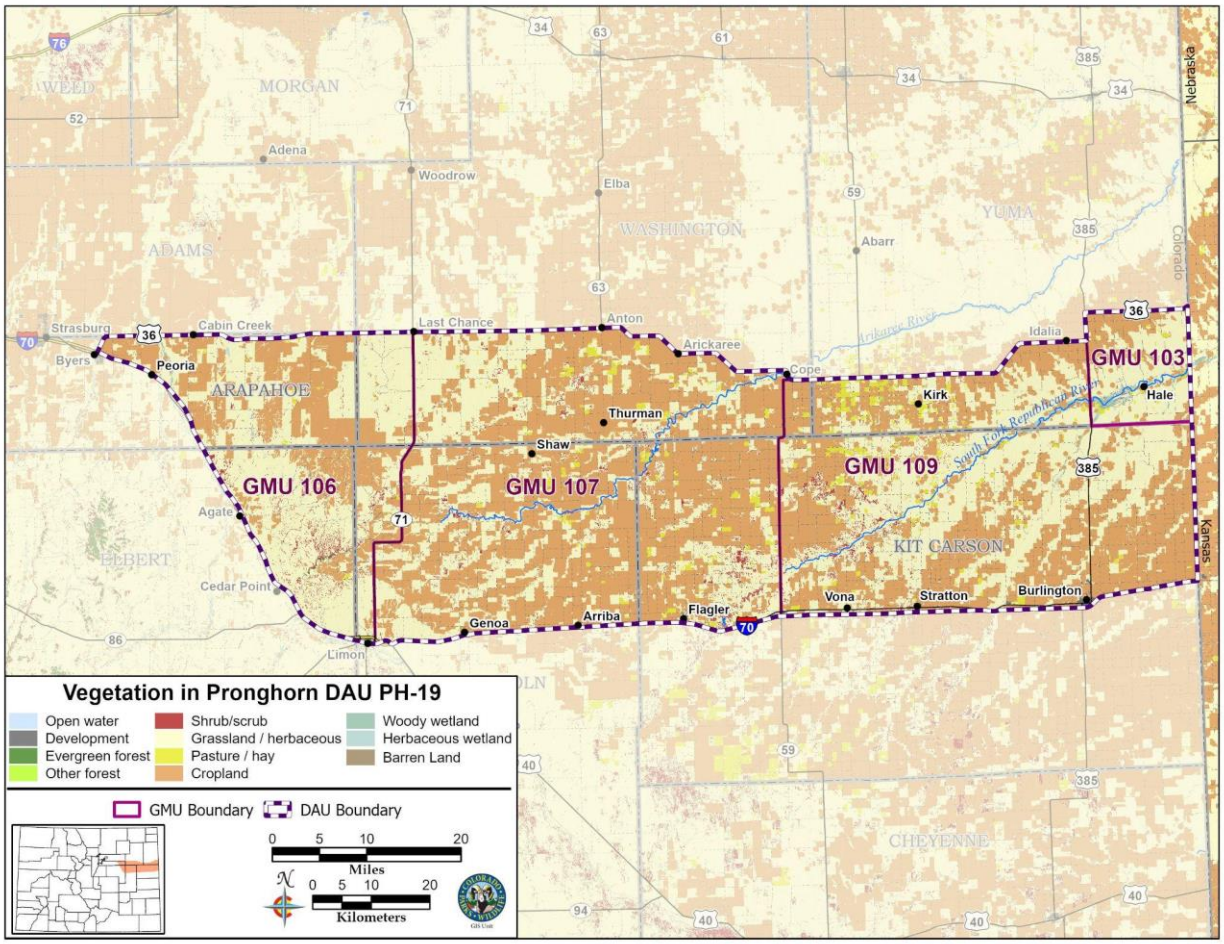


Figure PH19-6. PH-19 Land Cover.

GEOGRAPHIC LOCATION, GMUs, LAND OWNERSHIP, LAND USE DESCRIPTION

The Last Chance DAU is in east-central Colorado and includes Game Management Units (GMU) 103, 106, 107, and 109. This DAU encompasses portions of Arapahoe, Elbert, Washington, Lincoln, Kit Carson, and Yuma counties and is bounded on the north by US Highway 36; on the east by the Colorado-Kansas state line, and on the west and south by Interstate 70. The DAU covers 3,009 mi^2, of which approximately 80% (2,438 mi^2) is considered pronghorn habitat. Elevations range from about 6,000 ft on Cedar Point north of Limon to about 3,540 ft where the South Republican River flows out of Colorado. Topography ranges from riparian areas to flat farm lands, rolling prairie to rugged “breaks”. Major drainages include the South Republican, the Arikaree, and Landsman Creek.

Most of the DAU is owned by private entities (95% or 2,851 mi^2) or by the State Land Board (SLB; 4% or 123 mi^2; Figure PH19-5). The SLB properties are not publicly accessible to hunters unless permission is granted by the lessee. CPW owns approximately 1% or 35 mi^2 of the DAU in the Flagler and South Republican State Wildlife Areas. These areas are open to the public for big game hunting (Flagler is a youth-only area). However, pronghorn hunting opportunities are minimal on these properties.

Agriculture is the predominant land use in the DAU. Over half of the DAU is classified as either dryland (54% or 1635 mi^2) or irrigated (7% or 200 mi^2) agriculture (Figure PH19-6). Large parcels are planted as dryland winter wheat, especially in the central and northeastern part of the unit.

The eastern portion of the unit is dominated by irrigated farmland, including corn, milo, and sorghum (Figure PH19-6). Livestock grazing occurs throughout the DAU on native rangeland. Native rangeland includes shortgrass prairie (30% or 909 mi^2) or a sand dune shrub complex (8% or 227 mi^2).

Wind energy development is occurring throughout the southern portion of the unit. For example, in 2011, the 139-turbine Cedar Point Wind Energy Project was completed north of Limon (RES Americas 2015). The Limon I, II & III Wind Energy Centers, with 368 turbines, were completed in 2014 (NextEra Energy Resources 2015). As of 2021, there were 628 wind turbines in the DAU.

PRONGHORN HERD INFORMATION

The Last Chance Pronghorn Data Analysis Unit (DAU PH-19) is a medium-sized pronghorn herd. Pronghorn are found throughout the DAU, with higher concentrations in the west. Since the DAU is almost exclusively private, the potential for game damage, primarily to winter wheat and fences, exists throughout the DAU.

PRONGHORN HERD CURRENT STATUS AND/OR POPULATION TREND

The current modeled estimates for the Last Chance Herd are based on an intensive monitoring program that consists of annual preseason sex/age classification flights and aerial line intersect distance sampling (Buckland et al. 2001; Guenzel 2007). Sex/age classification flights are conducted by flying North/South transects, generally spaced three miles apart, across the entire DAU. Pronghorn classification flights are conducted between mid-July and mid-August. Since 2004, these flights have been conducted annually (except 2020 due to COVID-19 restrictions), where observers classify groups of pronghorn into bucks, does, and fawns. Distance estimates in PH-19 were conducted in 2009 and 2012. In 2009, we estimated there were 2,605 pronghorn (95% CI 2,012-3,374). In 2012, the distance estimate was 1,920 pronghorn (95% CI 1,438-2,563). Due to the number of wind towers in PH-19, we longer conduct distance estimates in the DAU.

At the time objectives for PH-19 were last revised in 2017, the population was increasing after having reached a 10 year low of 1,900 individuals in 2013. Through public outreach it was determined most landowners and hunters preferred maintaining the current population or increasing it slightly. It was decided at that time to maintain the current objective, but to add an objective range which included the 2015 estimate of 1,800 (this was the population estimate referenced in the landowner outreach survey at the time). The current objective was originally set in 1988 and reauthorized by the PWC in 1999, and again in 2017.

The 2022 modeled post-hunt population estimate was 2,500 pronghorn. Therefore, the population is modeling above the DAU objective (2,000).

The fawn to doe ratio is estimated annually during pre-hunt classification flights. In 2022, we estimated the ratio to be 42 fawns per 100 does. This was comparable to both the three-year average fawn to doe ratio of 42 fawns per 100 does and the average overall ratio of 45 for data collected from 2005-2022. Fawn to doe ratios fluctuate annually depending on moisture.

In 2022, the observed pre-hunt sex ratio for PH-19 was 39 bucks per 100 does (Figure PH19-2). The three-year average for the DAU was 45 bucks per 100 does and the long term average since 2005 is 48 bucks per 100 does. Since sex ratio estimates are collected prior to the hunting season, the observed pre-hunt ratio is higher than the modeled post-hunt ratio. The modeled post-hunt buck to doe ratio for 2022 was 34.

STAKEHOLDER OUTREACH AND INPUT

Prior to drafting this HMP, CPW surveyed both landowners and hunters. To gather landowner input, we mailed surveys to 150 randomly selected landowners who owned 160 acres or more in PH-19. The surveys included a postage-paid business reply envelope. Landowners were asked to for feedback on both impacts of pronghorn and pronghorn hunters on their property and operations. Additionally, landowners were asked about their preferences for pronghorn management in the DAU. We received 81 landowner surveys back in PH-19: a response rate of 54%. This was an increase from the number of responses (n=58) received during the last HMP revision process. Complete results from the survey can be found in Appendix A.

Landowners indicated having minor problems with pronghorn damage to their property (Figure PH19-7). However, in portions of the DAU where pronghorn aggregate (especially in winter), game damage issues do occur. Of the four questions relating to issues with pronghorn hunters, trespassing was the number one concern with landowners (Figure PH19-8). While 38% (n=31) of landowners indicated trespassing was not a problem, 33% (n=27) identified trespassing as a minor problem and 29% (n=24) indicated trespassing was a moderate to major problem. Compared to surrounding DAUs, landowner responses were similar to those collected in nearby PH-8 (41%, n=26 “Not a Problem”, 29%, n=18 “Minor Problem”).

When asked how landowners would like to see the population change over the next ten years, 32% (n=25) indicated they would like to see a moderate decrease, and 17% (n=13) selected the option for a slight decrease (Figure PH19-9). Of the options provided, 34% (n=26) of the respondents selected “Stay the Same”. Many landowners (43%, n=33) indicated the current number of pronghorn and hunters to be acceptable.

Problems related to damage by pronghorn in PH-19 were relatively greater than those related to hunters. When this survey was last conducted for the 2017 revision, 15 of 57 landowners indicated pronghorn had caused damage to their property. Ten of 15 (66%) landowners had damage to their fences, and 7 of 15 (47%) identified damage to winter wheat as an issue. In 2022, 61% of landowners indicated that pronghorn damaged fences. Of the 61%, 30% (n=25) indicated that they had minor problems with fence damage, 19% (n=16) had “Moderate Problems” with fence damage, and 12% (n=10) selected “Major Problem”. Overall, 55% (n=44) of respondents indicated having a problem with pronghorn damaging wheat crops.

Most landowners indicated they would like to see the number of buck licenses stay the same (n=25 of 83) or increase in number (n=27 of 83). As was explained in the survey, this will result in a reduction of the number of bucks in the population. Twenty-six landowners had no opinion regarding the change in buck license numbers.

In addition to landowner outreach, CPW evaluated data from hunters collected through the Big Game Opt-In Harvest Survey (Appendix B). Hunters were asked a series of questions related to their hunting experience as well as herd management objectives. More than 170 hunters responded to questions related to PH-19. Of those surveyed 71% (n=122) reported being satisfied with the total number of pronghorn encountered during the season. This was the highest percent satisfaction of all 11 DAUs in the SE Region. Nineteen percent (n=32) reported being somewhat or very dissatisfied.

Similarly, 67% (n=115) of hunters were satisfied with the number of bucks they saw, and hunters indicated a preference to hunt more often (55%, n=83) as opposed to hunting more mature bucks (44%, n=66). A small majority (54%, n=81) of hunters wanted to see the herd size increased. While hunters would like to see more pronghorn in the unit, 83% (n=124) reported not feeling crowded by other hunters. In total 77% (n=115) of hunters were satisfied with their hunting experience in PH-19.

SIGNIFICANT MANAGEMENT ISSUES

Management issues in PH-19 primarily revolve around habitat and limited management capabilities.

1. **Land Ownership:** The DAU is largely private property. Therefore, hunting access and the ability to manage the herd through hunting is dependent on landowner permission.
2. **Development**: Pressure on habitat quality and quantity is being applied by an increase in energy development across the landscape. Given the proximity to Colorado's Front Range and the increase in human populations, there is an increasing demand for green energy projects located within the boundaries of the DAU. These projects can reduce habitat availability, increase fragmentation, and provide issues related to hunting access.
3. **Climate:** These factors are compounded by ongoing drought in the area. Drought conditions are highly influential on the number of fawns recruited into the population on an annual basis. Additionally, extreme weather events across the landscape cause production fluctuations within the herd.

OBJECTIVES

Post-hunt Population Objective Alternatives

- Alternative 1 — Widen the population objective range to 1,700-2,300 pronghorn
    - The midpoint of this range, 2,000 pronghorn, is the current population objective target for the DAU (2017 PH-19 HMP). The herd would have to be reduced by approximately 20% to meet the midpoint of this objective.

- Status Quo Alternative – 1,800-2,200 pronghorn
    - This is the current population objective range for the herd. The herd is currently 20% above the midpoint of this alternative.

Post-hunt Sex Ratio Objective Alternative

- Status Quo Alternative — 30-40 bucks per 100 does
    - This is the current sex ratio objective for the DAU. The sex ratio would have to be reduced by approximately 35% from the current modeled ratio to meet objective.

Approved Alternatives

- ***Population objective range:*** **Widen the post-hunt population range to 1,700-2,300 pronghorn**

The DAU is primarily private land and we have attempted to balance the needs of landowners when choosing the preferred alternatives. Most landowners indicated a desire for a reduction in the population from its current level. Management actions will need to be taken to reduce the population to the preferred objective. Since hunters were generally satisfied with the current number of pronghorn, we chose an alternative that would see a decrease in the overall population while maintaining target levels which were held for the last 10 years. We will evaluate the population trend using our current survey and modeling practices on an annual basis. License numbers will be adjusted to achieve the desired population objective.

- ***Post-hunt sex ratio objective range:*** **Maintain the post-hunt sex ratio range of 30-40 bucks per 100 does**

This alternative maintains the current sex ratio objective for the population. It was favored by most landowners in the DAU. Additionally, both landowners and hunters indicated a desire to maintain or increase buck hunting opportunities. We will work to maintain high hunting opportunities while also trying to balance buck to doe ratios. We will continue to monitor buck to doe ratios and adjust harvest accordingly.

STRATEGIES FOR ADDRESSING MANAGEMENT ISSUES AND ACHIEVING OBJECTIVES

CPW's most effective tool for managing ungulate populations is through hunter harvest and habitat management. Both strategies are hampered in PH-19 based on the minimal amount of publicly managed lands.

1. CPW will continue to foster relationships and work with private landowners to increase habitat and promote hunting opportunities. This includes providing professional insights on habitat enhancements. Connecting landowners to resources to improve habitat and access will help achieve the goals identified in this plan. CPW will also look for opportunities to increase publicly available land in the DAU through acquisition or lease agreements.
2. To address development, we will work to employ the best available science and herd activity monitoring to inform responsible development decisions. We will work with partners to address concerns while advocating for pronghorn in PH-19.
3. By working with landowners to improve habitat we can help mitigate the effects of drought and extreme weather events. Improving herd health and adjusting harvest will help to reduce the impacts to the overall population.

RESULTS FROM THE 2022 LANDOWNER OUTREACH SURVEY

Figure PH19-7. Results from Question 4 of the 2022 PH-19 landowner survey relating to their experiences with pronghorn hunters on their property. See Appendix A for complete survey results.

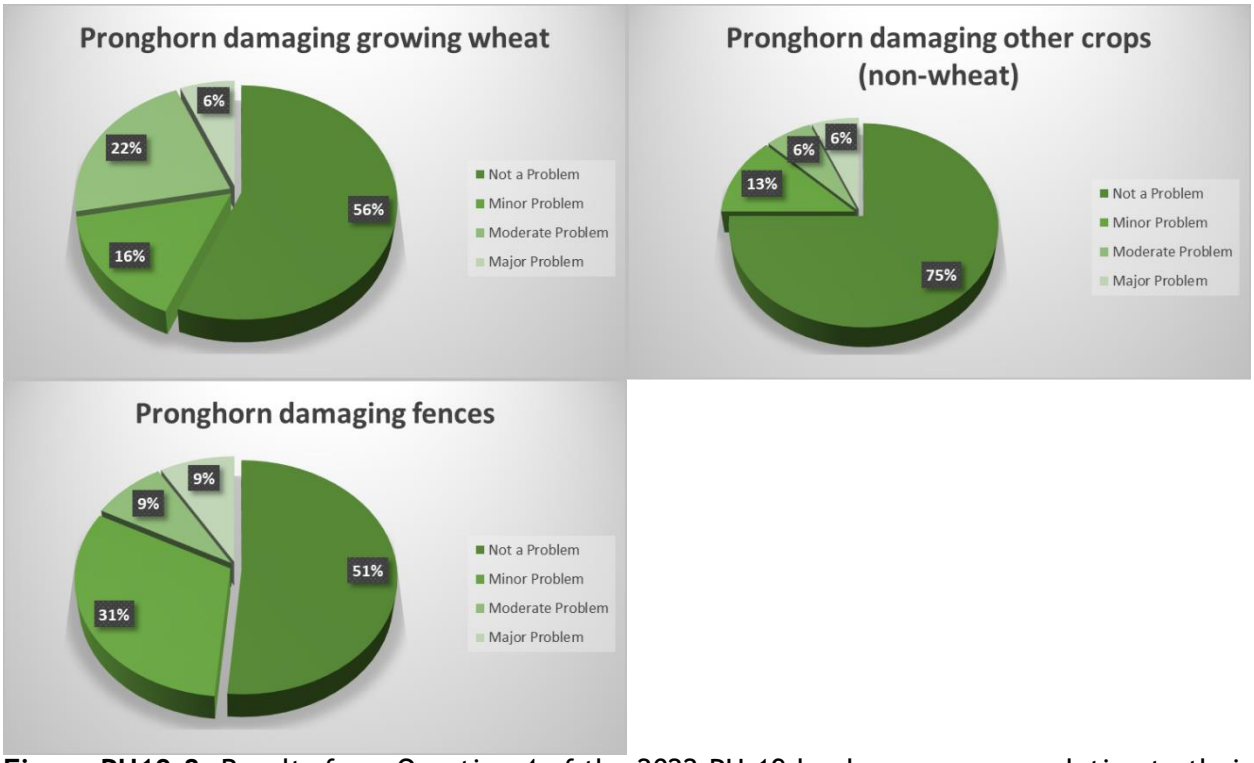


Figure PH19-8. Results from Question 4 of the 2022 PH-19 landowner survey relating to their experiences with damage caused by pronghorn. See Appendix A for complete survey results.

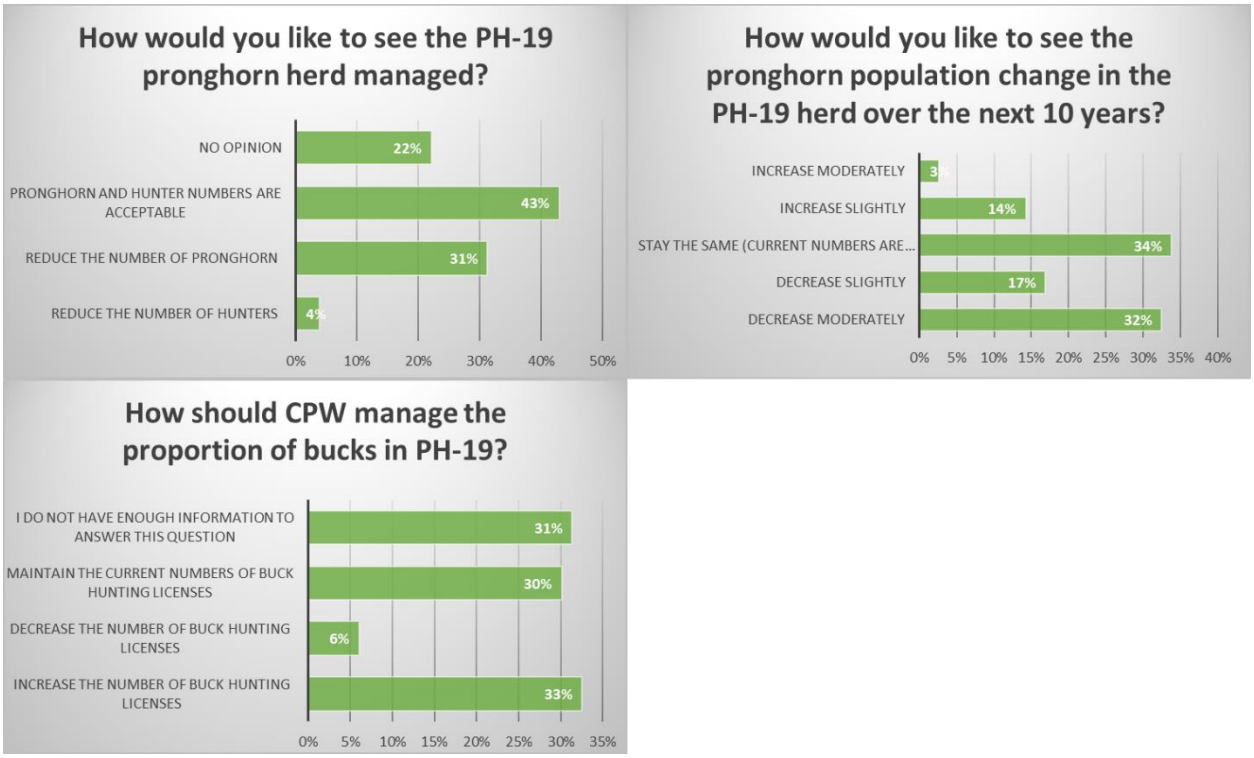


Figure PH19-9. Results from Questions 5-9 from the 2022 PH-19 landowner survey regarding management of hunter numbers and pronghorn population size. Complete survey results are found in Appendix A.

Wet Mountain Pronghorn Herd Management Plan

Data Analysis Unit PH-20
Allen Vitt, Wildlife Biologist, Pueblo

GMUs: 69, 84, 85, 86, 691, 851, & 861	**Approval Year for last HMP: 2014**
Post-hunt Population (Modeled)	
• Prior Population Objective:	2,400 (2,200-2,600) pronghorn
• 2022 Post-hunt Population Estimate:	2,500 pronghorn.
• **Approved Population Objective Range:**	**Expand to 2,000-2,800 pronghorn**
Post-hunt Sex Ratio (Modeled)	
• Prior Sex Ratio Objective:	35 (30-40) bucks per 100 does
• 2022 Post-hunt Sex Ratio Estimate:	35 bucks per 100 does
• **Approved Sex Ratio Objective Range:**	**Status Quo 30-40 bucks per 100 does**

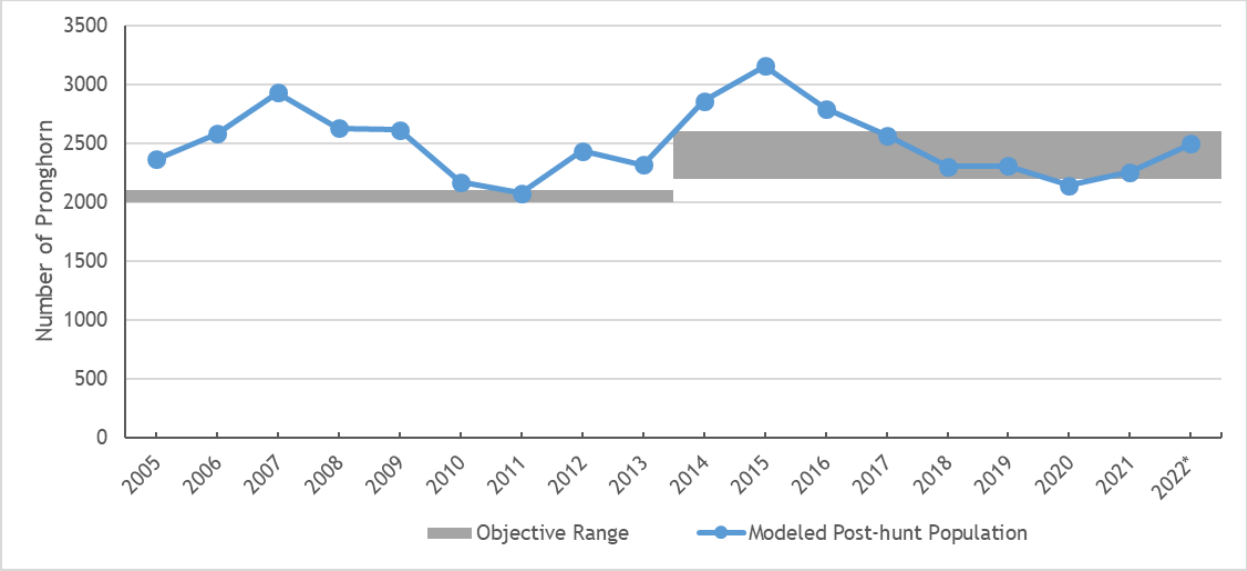


Figure PH20-1. Pronghorn DAU PH-20 modeled post-hunt population and objective range, 2005-2022.

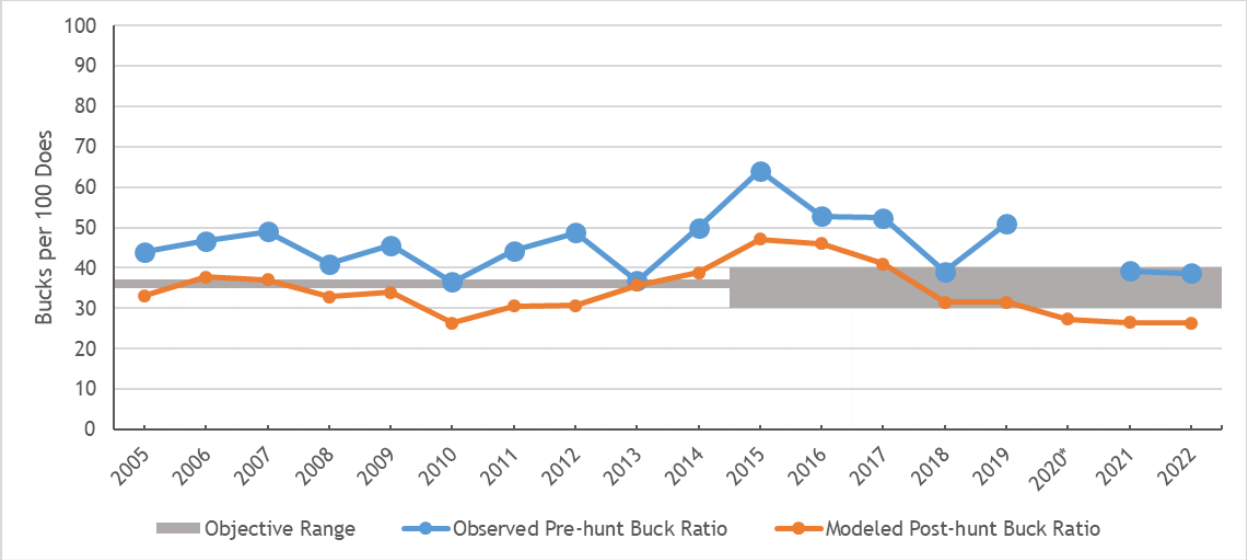


Figure PH20-2. Pronghorn DAU PH-20 observed and modeled post-hunt sex ratio (bucks:100 does), 2005-2022. *No classification data collected due to COVID restrictions.

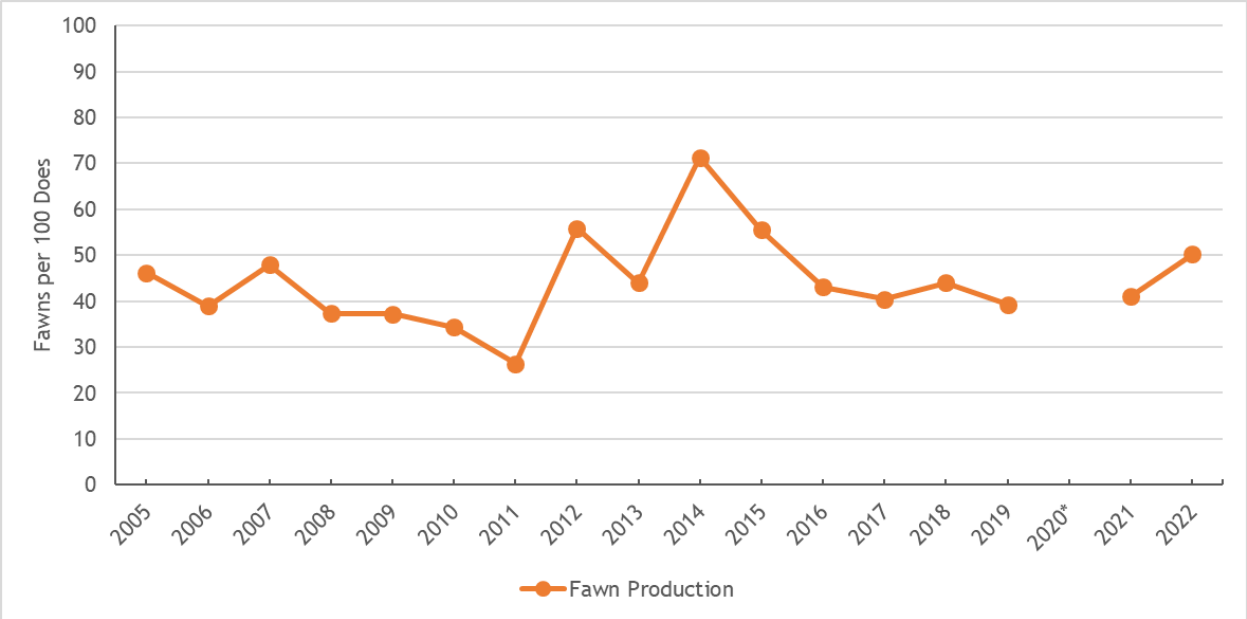


Figure PH20-3. Pronghorn DAU PH-20 fawn production (observed pre-hunt fawn:100 does ratio), 2005-2022. *No classification data collected due to COVID restrictions.

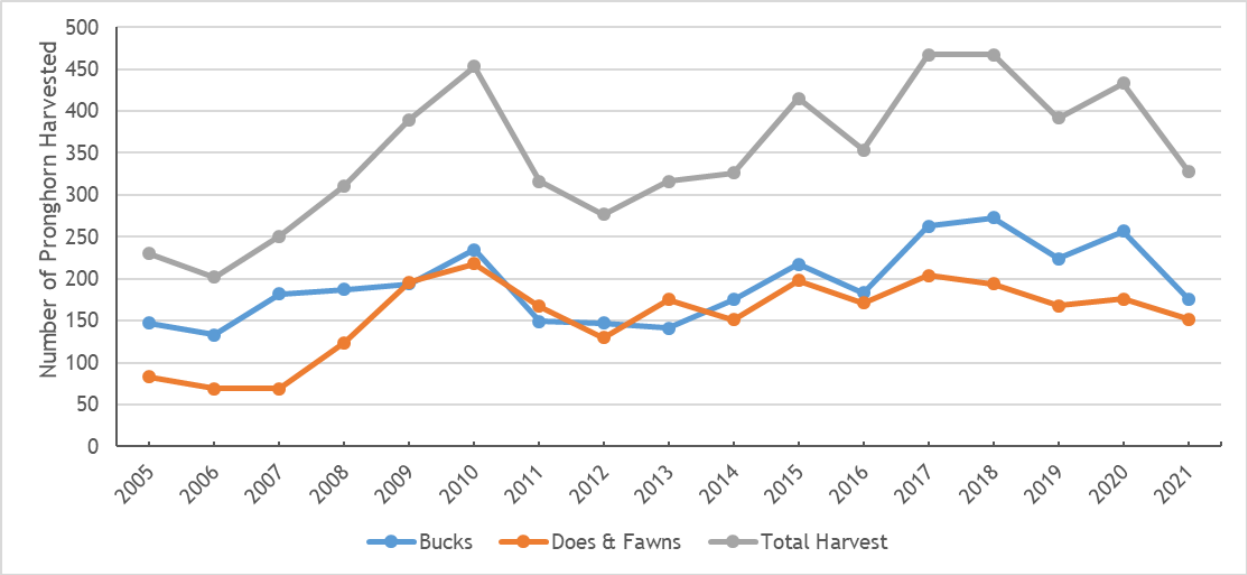


Figure PH20-4. Pronghorn harvest estimates in PH-20, 2005-2022.

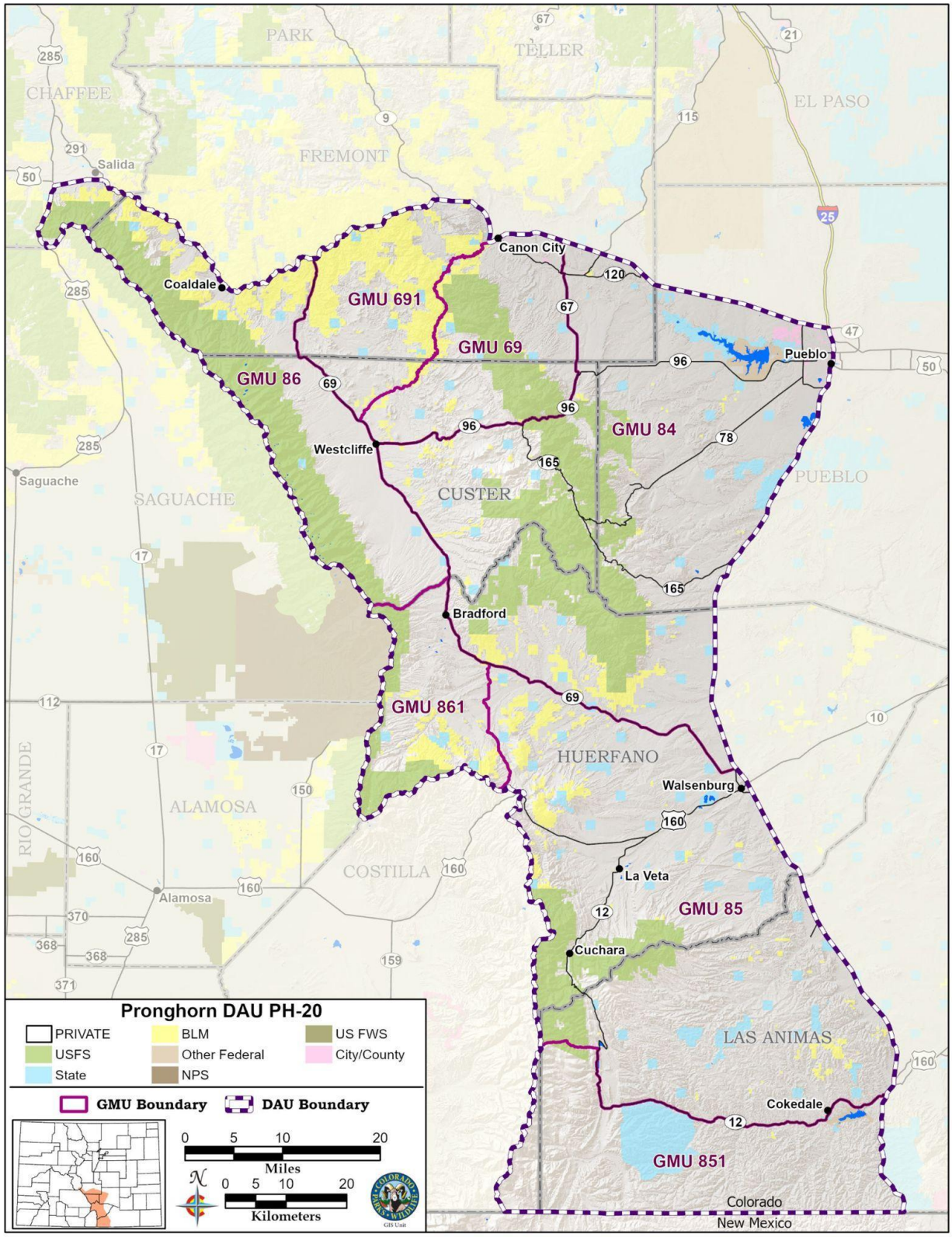


Figure PH20-5. PH-20 Land Ownership.

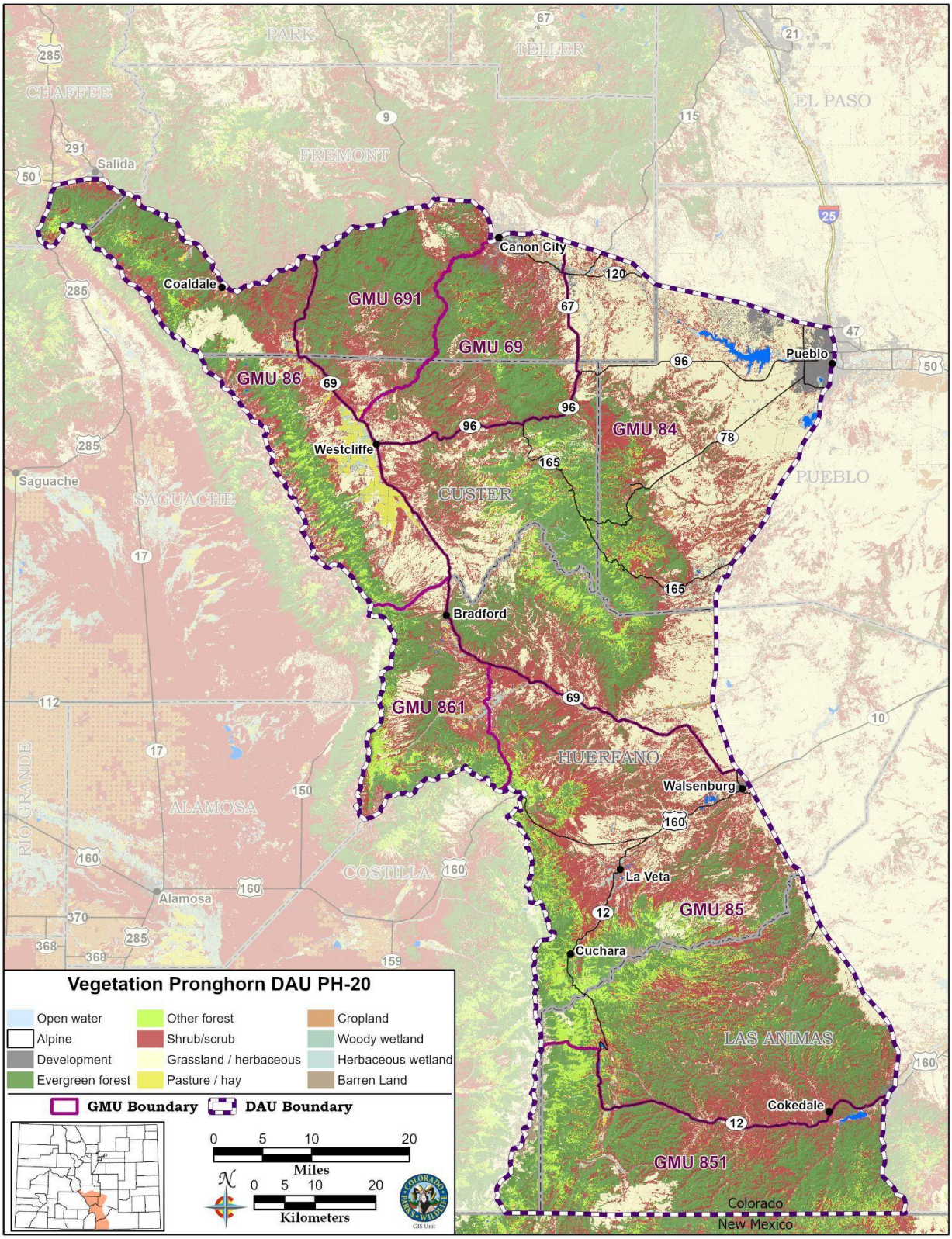


Figure PH20-6. PH-20 Land Cover.

GEOGRAPHIC LOCATION, GMUs, LAND OWNERSHIP, LAND USE DESCRIPTION

The Wet Mountain Pronghorn DAU (PH-20) is in south-central Colorado and contains all or portions of Chaffee, Custer, Fremont, Huerfano, Pueblo and Las Animas counties. It consists of Game Management Units (GMU) 69, 84, 85, 86, 691, 851 and 861. The DAU is bounded on the north by US Highway 50; on the east by Interstate 25; on the south by the New Mexico state line; and on the west by the Sangre de Cristo divide. The Wet Mountain DAU covers 4,135 mi^2. Elevations range from 4,655 ft. where the Arkansas River flows under Interstate 25 to 14,345 ft. at the top of Blanca Peak in the Sangre de Cristo Mountains. Topography ranges from flat hay meadows to gentle slopes, rolling hills to steep ridges and gulches to cliffs and alpine meadows.

Only 35% (1,429 mi^2) of PH-20 is considered pronghorn habitat. Of the pronghorn habitat in PH-20, 1,267 mi^2 (89%) is privately owned. CPW owns 11 mi^2 (1%); U. S. Forest Service manages 26 mi^2 (2%); Bureau of Land Management manages 47 mi^2 (3%), Colorado State Parks own 13 mi^2 (1%); and the Colorado State Land Board owns 61 mi^2 (4%) (Figure PH20-6).

Agriculture is the primary land use in the Wet Mountain Pronghorn DAU. Livestock grazing occurs on both private and public lands, with irrigated hay meadows common in the Wet Mountain Valley. Row crops are uncommon but do occur in small farms at lower elevations.

PRONGHORN HERD INFORMATION

Pronghorn are found throughout lower elevations the DAU. The DAU is almost exclusively private and the potential for game damage, primarily fences and pasture land, is high. Pronghorn disperse across the DAU in the summer months. Pronghorn group sizes greatly increase in the winter months when herds are concentrated into winter groups. Pronghorn within the Wet Mountain valley migrate when snow becomes too deep. A historical migration corridor from Cody Park to Webster park has probably been lost due to increasing subdivision of the Cody Park area and several years of insufficient snowfall events to trigger the movement. A second migratory corridor is also threatened by increased motor vehicle use along Hwy 69 at the end of Bandito Cone. This is a small river passage through increasingly dense pinyon pine and juniper flats. Other subpopulations do not migrate but gather in large winter herds and move about the landscape adapting to snowfall events.

From 2005 to 2022, observed pre-hunt sex ratios have varied from a high of 64 in 2015 to a low of 36 in 2010. In 2022, the pre-hunt sex ratio was estimated at 39 bucks per 100 does. From 2005 to 2022, the observed pre-hunt buck:doe ratio averaged 46 bucks per 100 does. Modeled post-hunt sex ratios are often lower than the observed pre-hunt sex ratios. Modeled post-hunt sex ratios have ranged from a high of 47 in 2015 and a low of 26 in 2010, 2021 and 2022.

PRONGHORN HERD CURRENT STATUS AND/OR POPULATION TREND

The population model for PH-20 was based on pre-hunt sex and age classification flights, harvest data, post season minimum counts and distance estimates. In 2008, the CPW began surveying pronghorn populations through aerial line transect distance sampling (Buckland et al. 2001; Guenzel 2007). Distance sampling estimates were conducted in the spring after animals have dispersed from winter concentrations but before fawns were born. Therefore, estimates produced through distance sampling represent the number of yearlings and adults

in the population. In 2014, the distance sampling estimate for the PH-20 was 2,700 pronghorn (95% CI 1,613-4,540). Aerial survey data, distance estimates, and harvest estimates were entered into a mathematical model to generate a population estimate for the PH-20 herd. The 2022 PH-20 post-hunt population estimate was 2,500 pronghorn. Since 2012, the estimated population has varied from a low of 2,100 pronghorn animals to a high of 3,200.

Pronghorn production is highly variable across years and is one of the primary driving factors of population growth or decline. Knowing this, CPW invests a large amount of resources annually to verify the annual changes in production. Pre-hunt sex ratios were derived from pre-season aerial counts conducted from a fixed-wing aircraft. Observers flew one or three mile wide transects across the DAU and classified every group observed into bucks, does, and fawns. Since 2005, pronghorn preseason ratios have fluctuated from a low of 26 fawns per 100 does to a high of 71 fawns per 100 does. The 2022 fawn:doe ratio was 50 fawns per 100 does.

STAKEHOLDER OUTREACH AND INPUT

Prior to drafting objectives for this HMP revision, CPW surveyed both landowners and hunters. To gather initial landowner input, we mailed surveys to 196 randomly selected landowners who owned 160+ acres in PH-20. We restricted the selection of landowners to those who owned property within mapped pronghorn range. The surveys included a postage-paid business reply envelope. Landowners were asked to provide feedback on both impacts of pronghorn and pronghorn hunters on their property and operations. Additionally, landowners were asked about their preferences for pronghorn management in the DAU. We received 68 landowner surveys back in PH-20; a response rate of 34%. Complete results from the survey can be found in Appendix A. We also received a letter of support from the Sangre de Cristo Habitat Partnership Program committee.

Landowners indicated they were having minor problems with pronghorn damage to their property. Fence damage was the largest complaint, with 54% of respondents reporting some level of damage, with 31% receiving damage to rangeland and 20% experiencing some level of damage to growing hay or alfalfa. When asked how landowners would like to see the population change over the next ten years, 51% (n=30) indicated they would like to see the population stay the same, and 19% (n=12) selected the option for a slight increase. When asked about the choice of pronghorn or hunters, 47% (n=31) of the respondents stated that “Pronghorn and hunter numbers are acceptable”.

Generally, landowners indicated they were having few problems with hunters. Most (68% or n=39) landowners indicated trespassing was not a problem. However, 14% (n=8) identified trespassing as a minor problem, and 18% (n=10) indicated trespassing was a moderate to major problem. Landowner assessments of the too many people asking permission to hunt were similar. Most landowners indicated that the number of hunters was not a problem with 68% (n=38) of respondents selecting this option. Twenty percent (20% or n=11) of landowners replied that the number of hunters asking for permission was a minor problem, and 12% (n=7) of the respondents replied that there were moderate to major problems with the number of people asking for pronghorn hunting access.

Problems related to damage by pronghorn are greater than those related to hunters. Pronghorn damage to fences was the largest problem. Of those that answered this question, 31% (n=18) indicated that they had minor problems with fence damage, 10% (n=6) of responses indicated “Moderate Problems” with fence damage, and 14% (n=8) selected “Major

Problem". Overall, 55% (n=32) of respondents indicated having a problem with pronghorn damaging wheat crops.

Many landowners (47%, n=27) indicated they would like to see the number of buck licenses stay the same. Of the remaining respondents, they were evenly split on whether they wanted more buck licenses or a reduction in buck licenses. Nine landowners had no opinion regarding the change in buck license numbers.

CPW has implemented late rifle doe-only seasons in other SE Region pronghorn DAUs to increase license setting flexibility. The late seasons help CPW 1) manage populations that are over objective by increasing doe harvest, and 2) reduce hunter crowding during the regular October rifle season. With this in mind, we asked PH-20 landowners if they supported the addition of a late doe-only pronghorn season to assist with managing hunter densities and obtaining doe harvest. We asked three basic questions to gather input on this management strategy, including whether landowners supported or opposed the addition of the season, when the season should occur, and how long the season should be.

The majority of PH-20 landowners were either supportive or neutral about adding a late doe-only season. Twenty-five of 68 (or 43%) of landowners supported the late season, and approximately 28% neither supported nor opposed the addition. Thirty percent (30% or 17/68) landowners opposed the additional season. For the question about when the late season should occur, 42% (20/48) of landowners preferred a December season. A mid-October timeframe, after the regular pronghorn season worked for 35% (17/48) of landowners, while 23% (11/48) preferred a late November season. For season length, an equal number of landowners supported a 5-day or a 9-day season (38% or 19/50). Eleven landowners supported a 30-day season, and one landowner wrote in 0 days for the preferred season length.

In addition to landowner outreach, CPW evaluated data collected through the 2021 Big Game Opt-In Harvest Survey (Appendix B). Hunters were asked a series of questions related to their hunting experience as well as herd management objectives and 175 hunters responded to the questions for PH-20. Of those surveyed, 68% (n=119) reported being satisfied with the total number of pronghorn encountered during the season. Nineteen percent (n=33) reported being somewhat or very dissatisfied.

Similarly, 63% (n=110) of hunters were satisfied with the number of bucks they saw, and hunters indicated a preference to hunt more mature males (57%, n=100) as opposed to hunting more often (46%, n=75). A small majority (56%, n=98) of hunters would like to see the herd size increased. While hunters would like to see more pronghorn in the unit, 75% (n=131) reported not feeling crowded by other hunters. In total 70% (n=115) of hunters were satisfied with their hunting experience in PH-20.

SIGNIFICANT MANAGEMENT ISSUES

Habitat loss, fragmentation, and conversion

Like all big game species in Colorado, pronghorn in PH-20 are facing human-generated pressures that are changing landscape utilization and forcing the animals to persist in smaller parcels of suitable habitat. Colorado's human population is expected to double in the next 20 years resulting in further loss of pronghorn habitat due to the subdivision of former large ranches to urban/suburban developments. This is particularly a concern in PH-20. Over >70% of private lands in this DAU are classified in a category that would allow for development (Introduction; Maps 3 & 4). This coupled with further road development and additional vehicle utilization of formerly lightly traveled roads leads to habitat fragmentation and direct pronghorn mortality from vehicle collisions. All of these factors continue to be areas of concern for managers in trying to maintain pronghorn populations in an increasingly developed landscape.

Hunting access on private lands

As the human population continues to grow and land ownership has changed, access to huntable populations of pronghorn has become increasingly difficult (Ryan and Shaw 2011; Larson et al. 2014; Eliason et al. 2016). With the hunting public being increasingly urban they have lost direct contact with landowners, and therefore, lost the ability to establish relationships that lead to hunting access. This, combined with other factors like the division of large ranches into smaller parcels and the increase in outfitting, has reduced hunting access for pronghorn on private property. This is especially evident in pronghorn where a hunter is unlikely to pay a large trespass fee to hunt a doe pronghorn.

Annual classification flights

Data collection on pronghorn is becoming increasingly difficult in the DAU due to housing development and the increase in hobby horse farms. Currently, we collect most pronghorn survey data from a small plane flying at low altitudes (<300 ft. above ground level) and have potential to disrupt domestic livestock animals, especially horses, during our surveys. As such, we may need to explore alternative methods for collecting data on pronghorn in the future.

OBJECTIVES

Post-hunt Population Objective Alternatives

- Alternative 1 — widen the population objective to 2,000-2,800 pronghorn
    - The midpoint of this range, 2,400 pronghorn, is the current objective for this pronghorn population. The current estimated population level of this herd is 2,500, 100 pronghorn above the midpoint of the current objective range.

- Status Quo Alternative – 2,200-2,600 pronghorn
    - This is the current population objective range for the herd. The herd is approximately 100 pronghorn above the midpoint of this alternative.

Post-hunt Sex Ratio Objective Alternative

- Status Quo Alternative — 30-40 bucks per 100 does
    - This is the current sex ratio objective for the DAU. Currently, the herd is modeling at the midpoint (35 bucks per 100 does) of this objective.

Approved Alternatives

- ***Population objective range:*** **Widen the post-hunt population range to 2,000-2,800 pronghorn**

Since the DAU is primarily private, we attempted to balance the needs of landowners when choosing a preferred alternative. Since 51% of landowners and 38% of hunters felt the pronghorn population should stay the same, our preferred alternative is to maintain the current population objective. We will evaluate the population trend using our current survey and modeling efforts annually. License numbers will be adjusted to achieve the desired population objective.

- ***Post-hunt sex ratio:*** **Status Quo of 30-40 bucks per 100 does**

This alternative maintains the current sex ratio objective for the population. It is favored by most landowners in the DAU. We will work to maintain high hunting opportunities while also trying to balance buck to doe ratios. We will continue to monitor buck to doe ratios and harvest will be adjusted accordingly.

STRATEGIES FOR ADDRESSING MANAGEMENT ISSUES AND ACHIEVING OBJECTIVES

CPW's most effective tool for managing ungulate populations is through hunter harvest and habitat management. Both strategies are limited in PH-20 due to the minimal amount of publicly managed lands.

1. CPW will continue to work with private landowners to improve habitat and promote hunting opportunities. Staff will engage landowners to discuss novel ways to promote hunter access to private property. Possible utilization of the Big Game Access Program and leasing the State Trust Lands within this area will be a high priority.
2. CPW will consider the additions of a December doe-only season and private land only licenses in PH-20 to increase flexibility in license setting. This management strategy would allow CPW further opportunity to reduce the population as needed, while not increasing hunter crowding during the regular October rifle season. Private land only licenses would allow landowners to provide hunting access to their property while allowing CPW to manage hunter number on public land.
3. To address all types of development, CPW will work to employ the best available science and herd monitoring to inform responsible development decisions. CPW will work with partners and advocate for pronghorn in PH-20.
4. CPW is always trying to modify our data collection methods to match current science. If alternative methodologies are developed to collect age and gender information, CPW will adapt it to its strategies. Without new methods, CPW will work with the communities involved to minimize conflicts and continue to gather this important information.

Figure PH20-7. Results from Question 4 of the 2022 PH-20 landowner survey relating to their experiences with pronghorn hunters on their property. See Appendix A for complete results.

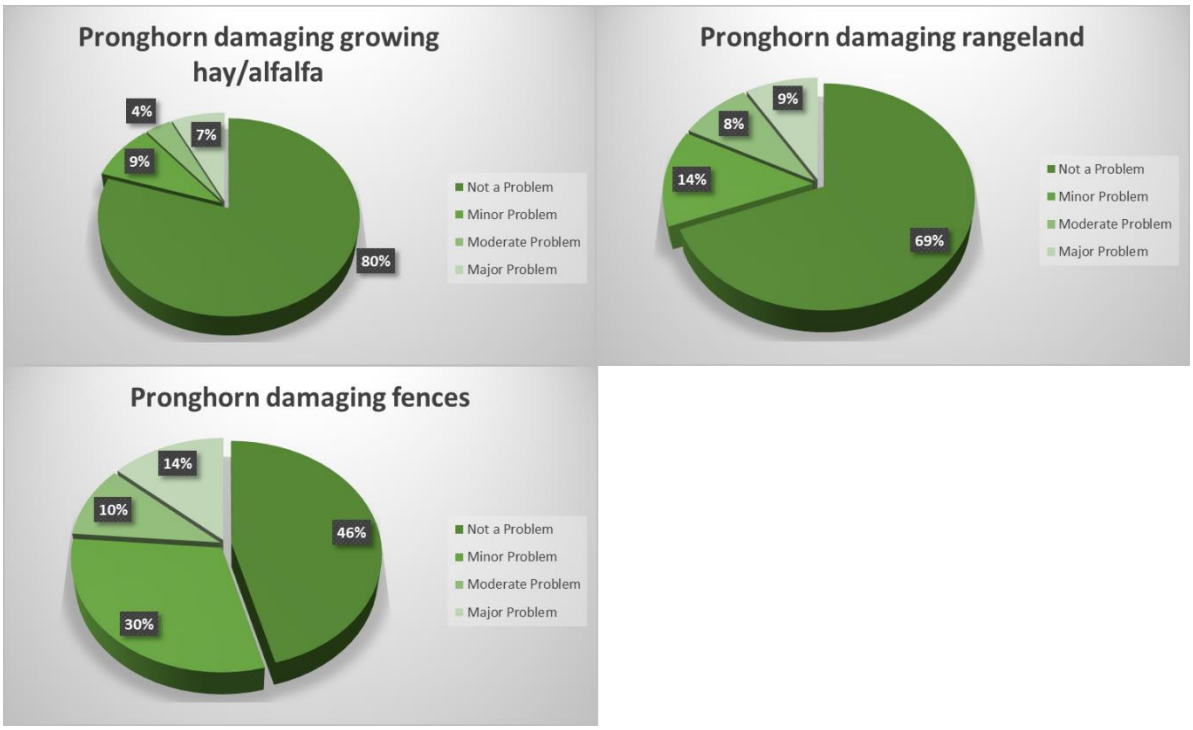


Figure PH20-8. Results from Question 4 of the 2022 PH-20 landowner survey relating to their experiences with damage caused by pronghorn. See Appendix A for complete results.

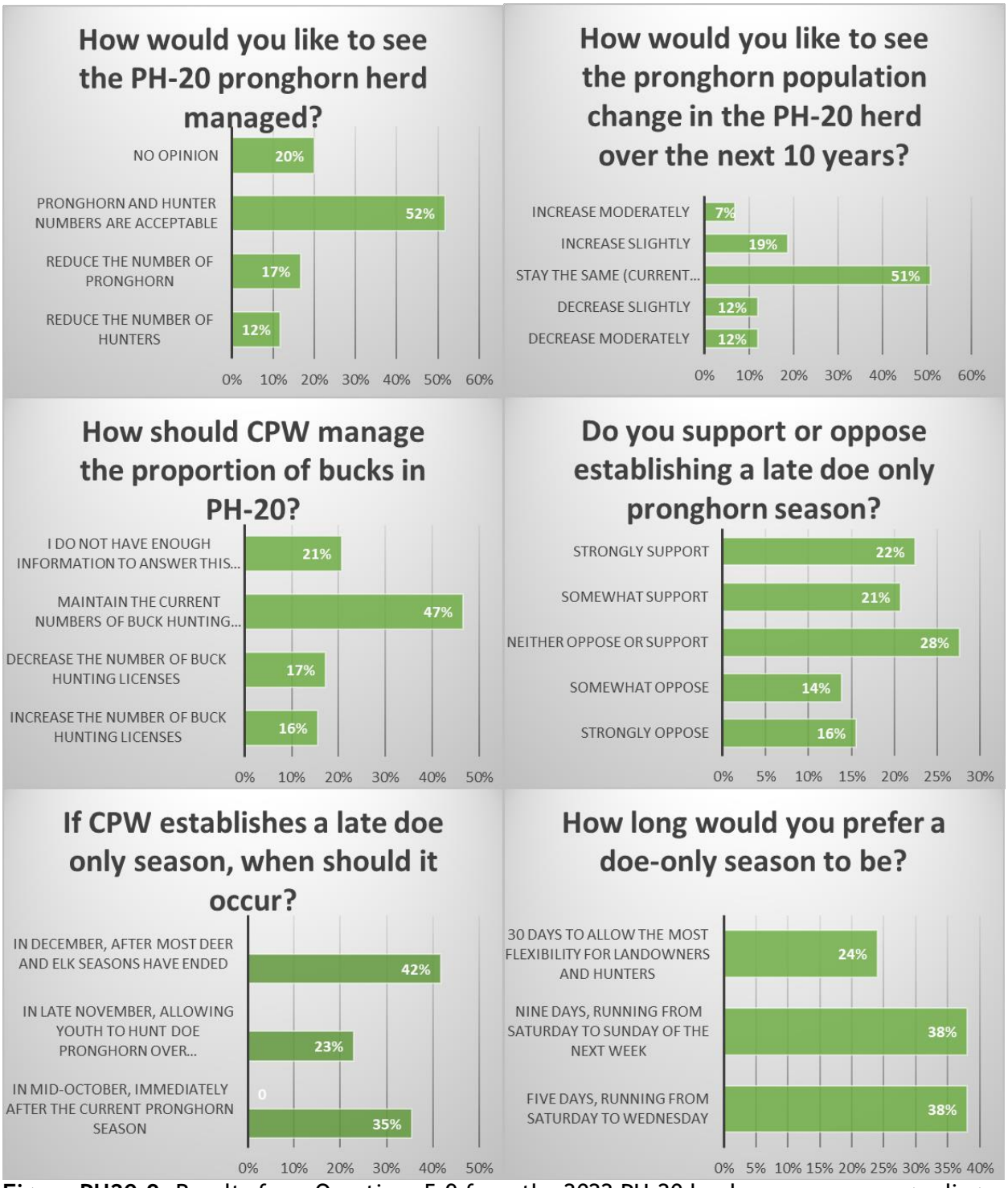


Figure PH20-9. Results from Questions 5-9 from the 2022 PH-20 landowner survey regarding management of hunter numbers, pronghorn population size, and the creation and timing of a December doe season in PH-20. Complete results are found in Appendix A.

May 10, 2023

Allen Vitt, Wildlife Biologist
Colorado Parks and Wildlife
600 Reservoir Road
Pueblo, CO 81005

RE: Sangre de Cristo Habitat Partnership Program Comments - DAU PH-20

Dear Allen:

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

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

The Sangre de Cristo HPP committee is in agreement with the following comments about proposals for the population range and sex ratio objectives for the above DAU plan.

The Sangre de Cristo HPP committee supports the draft alternative to keep the current population objective. We believe this alternative responsibly balances local range and habitat conditions with the sportsperson's desires and landowner concerns. We have not heard of any concerns about the current population or any desires to increase the local herd size and so we believe the current levels are where they should be. Any issues we have are more likely related to the distribution of the herds in the area and not the overall population size.

The Sangre de Cristo HPP committee also discussed the proposed sex ratio alternative. We believe the current sex ratio is a good balance and provides ample hunting opportunities while also providing for a reasonable number of mature animals for those hunters who want to take a larger bull or buck.

Our committee is confident about CPW being able to achieve the proposed objectives due to:

- Residential growth continues to occur in the winter range, resulting not only in a loss of critical habitat but also habitat fragmentation and increased disturbances.

- Public land recreation demands continue to increase for both motorized and non-motorized users with similar effects.

The Sangre de Cristo is also in support of developing a late-season Pronghorn Doe hunt to assist with population management objectives.

Thank you for the presentation and the opportunity to provide these comments.

Sincerely,

John Stroh, Chair
Sangre de Cristo HPP Committee

Ft. Carson Pronghorn Herd Management Plan

Data Analysis Unit PH-31

Tyrel Woodward, Wildlife Biologist, Colorado Springs

GMUs: 59 & 591	**Approval Year for last HMP: N/A**
Post-hunt Population	
• Expected Population Objective:	100-500 pronghorn
• 2022 Post-hunt Population Estimate:	100-500 pronghorn
• **Approved Population Objective Range:**	**100-500 pronghorn**
Post-hunt Sex Ratio	
• Prior Sex Ratio Objective:	25-75 bucks per 100 does
• 2022 Post-hunt Sex Ratio Estimate:	N/A
• **Approved Sex Ratio Objective Range:**	**Expected Range 25-75 bucks per 100 does**

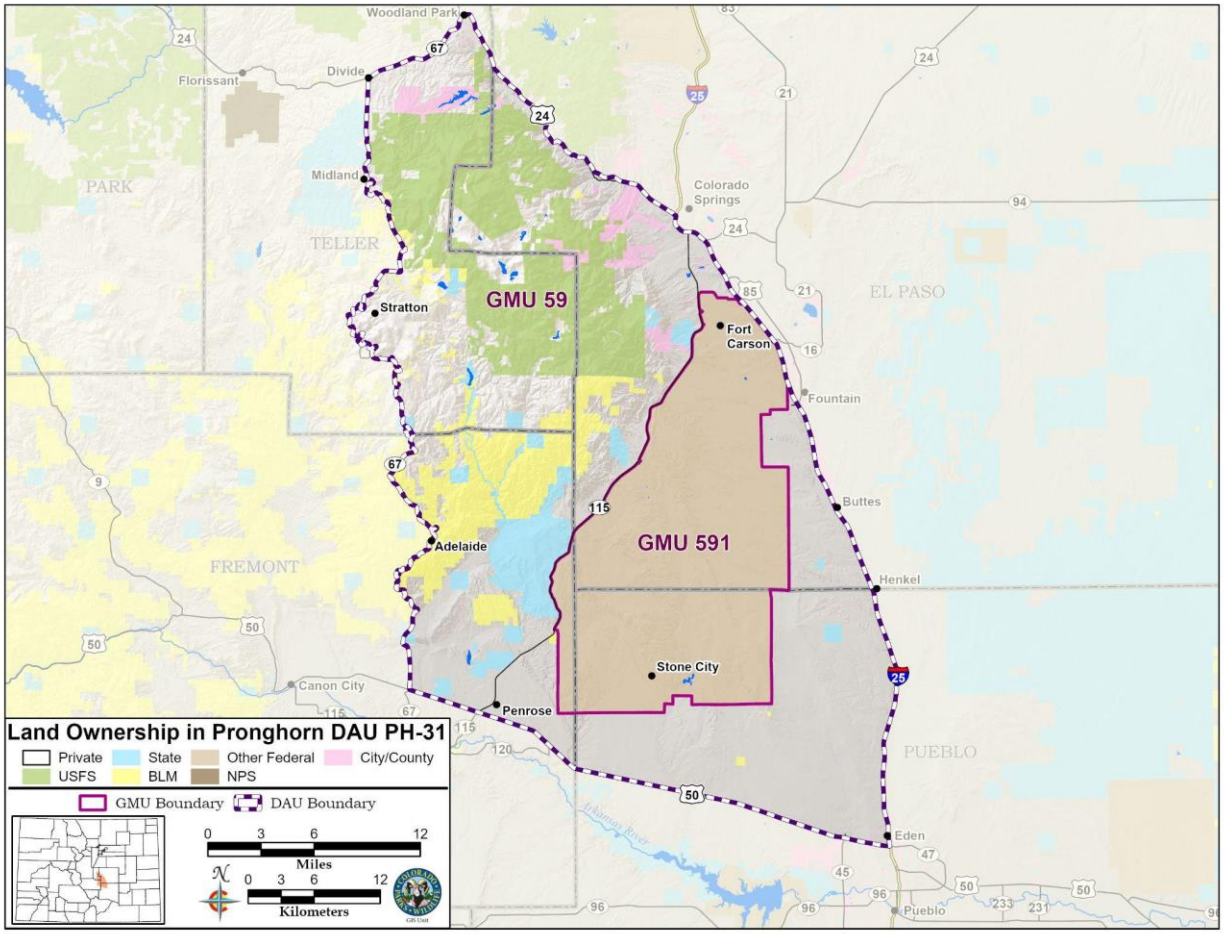


Figure PH31-1. PH-31 Land Ownership

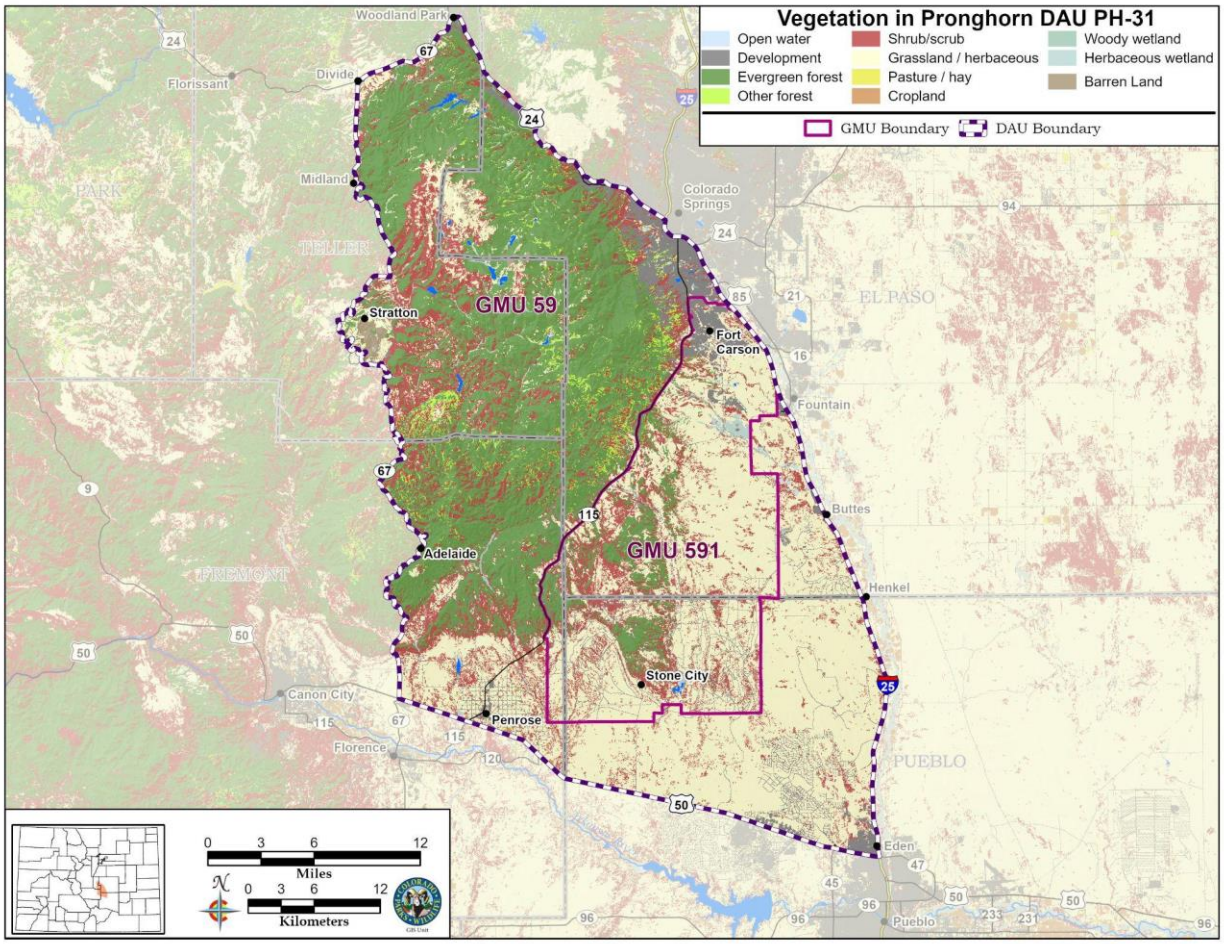


Figure PH31-2. PH-31 Land Cover

GEOGRAPHIC LOCATION, GMUs, LAND OWNERSHIP, LAND USE DESCRIPTION

The Ft. Carson DAU is in southeastern Colorado (Figure PH31-1) and includes Game Management Units (GMU) 59 and 591. This DAU encompasses portions of Teller, Fremont, Pueblo, and El Paso counties and is bounded on the north by Colorado Highway 24; on the west by Colorado Highway 67 and Phantom Canyon Rd; on the south by Colorado Highway 50 and on the east by Interstate 25. This DAU covers 860 mi^2 but only 33% (280 mi^2) is considered pronghorn habitat. Elevations range from about 5,062 ft. near Penrose, CO to about 14,110 ft. at the summit of Pikes Peak. Topography includes extreme variation from semi-flat mixed-grass/shrubland prairies on the south and east ends, to alpine tundra and granitic mountain peaks. This variation includes table top plateaus and mesas across pinyon/juniper woodlands transitioning into steep sided canyons.

Precipitation averages 10-12 in. per year near Pueblo, CO and at the highest elevation average annual precipitation is 32-36 in. per year. The weather is also highly variable. Storm events occur throughout the year and account for most of the annual precipitation in the form of thunderstorms in the lower elevations and snow storms in the higher elevations.

Most of the DAU is owned by private entities (45.8% or 395 mi^2) or by the federal government (25.0% or 215 mi^2). The federal government lands include military installations such as Ft.

Carson and the Cheyenne Mountain Space Force Station. In addition to the military installations, PH-31 also includes federally managed United States Forest Service (14.9 % or 129 mi^2) and Bureau of Land Management (7% or 44 mi^2) lands. Pronghorn are almost exclusively found on Ft. Carson and surrounding private lands.

Herbaceous grassland is the primary type in PH-31 at 39.2% (338 mi^2). This cover type varies greatly across the DAU, often changing with elevation and precipitation gradients. Within the primary pronghorn range, short and mixed-grass prairies are complemented by cholla cactus dominated systems. Evergreen forest (34.1% or 293 mi^2) is the second most dominant cover type in PH-31. While this cover type is not ideal habitat, it is not uncommon to see pronghorn occupying the fringes of pinyon/juniper. Other common cover types are shrub/scrub and developed lands. PH-31 contains 146 mi^2 of shrub dominated landscapes. These cover types are typified by Gambel's oak, mountain mahogany, sumac, rabbit brush, and currant species. While the developed areas provide little to no pronghorn habitat, individuals can still be found on their periphery. Development continues to threaten pronghorn habitat both on Ft. Carson proper and on the surrounding private lands.

PRONGHORN HERD INFORMATION

Much of the DAU does not provide suitable habitat for pronghorn. Aside from infrequent observations in the southwest portion of 59, pronghorn are largely found in the south and east portions of GMU 59 along Interstate 25, and on Ft. Carson (GMU 591). Year-round use occurs across most of Ft. Carson and overlaps with the private land surrounding the military post. Pronghorn in the PH-31 herd do not tend to migrate long distances. When on Ft. Carson, pronghorn are typically found on the large open training grounds that are dominated by mixed-grass prairie and cholla cactus. These pronghorn do occasionally move further north on post to areas of intermixed grassland and pinyon/juniper woodlands. Pronghorn can be found in areas with low density development.

PRONGHORN HERD CURRENT STATUS AND/OR POPULATION TREND

The overall population size of the PH-31 herd is unknown. Pronghorn are primarily found near the Large Impact Training Area on Ft. Carson, so there are scheduling and safety related issues which prevent CPW from conducting either ground or aerial surveys.

Anecdotal observations and hunter harvest reports provide the bulk of information related to PH-31 population trends. As of 2022, the population appears to be stable. Estimates for the overall number of pronghorn in the herd range between 200 and 400 individuals. We do not have current estimates for sex/age ratios.

STAKEHOLDER OUTREACH AND INPUT

Collaboration with staff at Ft. Carson is essential to the management of the PH-31 herd. CPW meets annually with staff from Ft. Carson's wildlife branch to discuss tag allocation and herd status on post. Input garnered from these discussions is used in drafting recommendations for license allocation.

CPW evaluated data collected through the Big Game Opt-In Harvest Survey and the optional management related questions new to the 2021 survey (Appendix B). Hunters were asked a series of questions related to their hunting experience as well as herd management

objectives. Thirty-four PH-31 hunters responded to the questions. Of those surveyed 59% (n=20) reported being satisfied with the total number of pronghorn encountered during the season. Thirty-five percent (n=11) reported being somewhat or very dissatisfied.

Hunters were asked if they were satisfied with the number of bucks they encountered regardless of the sex they were hunting. Of those who responded, 47% or 15 of 34 hunters were satisfied. Hunters indicated a preference to hunt more mature bucks (54%, n=14) as opposed to hunting more often (46%, n=12). A majority (65%, n=17) of hunters would like to see the herd size increased. While hunters would like to see more pronghorn in the unit, 73% (n=19) reported not feeling crowded or feeling crowded slightly by other hunters. In total 77% (n=20) of hunters were satisfied with their hunting experience in PH-31.

SIGNIFICANT MANAGEMENT ISSUES

As highlighted previously, land ownership issues in the Ft. Carson DAU provide the greatest management challenges. Hunting access is limited at times due to training schedules on post. This provides challenges for hunters trying to predict which areas of Ft. Carson are open to access. Lack of ability to survey pronghorn and limited access for hunting contributes to an inability for management to the degree we see with neighboring DAUs. Outside of the limitations of operating on Ft. Carson, additional issues arise from the development of habitat along the Interstate 25 corridor and near Pueblo, CO continue to reduce the amount of available habitat for pronghorn in the southeast corner of the DAU.

OBJECTIVES

Population and sex ratio objectives for PH-31 will be evaluated as expected ranges. These ranges recognize the complications in trying to model a herd in which survey data is inaccessible and harvest capabilities are relatively limited.

Approved Alternatives

- ***Post-hunt population objective*:** Set an expected population range of 100-500 pronghorn.

- ***Post-hunt sex ratio objective:*** Set an expected sex ratio range of 25-75 bucks per 100 does.

These alternatives set a range which is biologically relevant and informed by observations of nearby herds. Given the unique management challenges in PH-31 a range of expectations provides a reasonable goal for management. CPW will continue to work with partners at Ft. Carson to offer limited hunting opportunities. Input from the Big Game Opt-In Harvest Survey will be evaluated on an annual basis to inform license setting decisions.

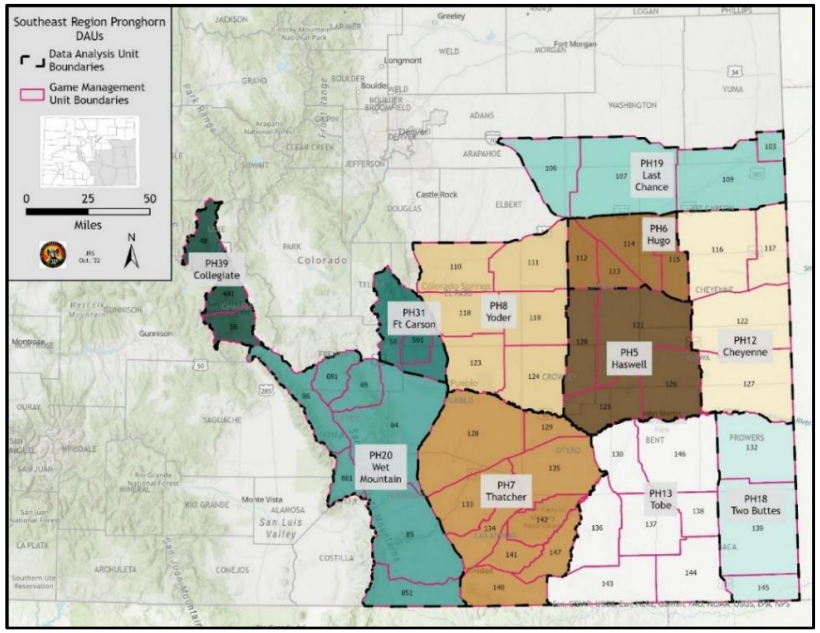
STRATEGIES FOR ADDRESSING MANAGEMENT ISSUES AND ACHIEVING OBJECTIVES

CPW will continue collaborating with Ft. Carson to maintain hunting access and seek opportunities to monitor the herd. We will coordinate and provide comments in relation to habitat encroachment and development when possible on the surrounding private lands.

HERD MANAGEMENT PLAN EXTENSIONS

DAU	Pronghorn Herd	Prior HMP Approval Year	Prior Population Objective	2022 Post-hunt Population Estimate*	Prior Post-hunt Buck Ratio Objective	2022 Post-hunt Buck Ratio Estimate*	Approved Population Objective	Approved Post-hunt Buck Ratio Objective
PH-5	**Haswell**	2019	3,000-4,000	3,200	35-45	28	Extension	Extension
PH-12	**Cheyenne**	2020	1,500-2,000	1,500	35-45	27	Extension	Extension
PH-13	**Tobe**	2019	3,000-4,000	2,750	23-31	20	Extension	Extension
PH-18	**Two Buttes**	2020	300-1,500	1,000	40-100	N/A	Extension	Extension
PH-39	**Collegiate**	2020	150-200	225	20-25	19	Extension	Extension

**2022 Modeled Estimates for all DAUs expect PH-18.*



Haswell Pronghorn Herd Management Plan Extension

Data Analysis Unit PH-5

Jonathan Reitz, Wildlife Biologist, Lamar

GMUs: 120, 121, 125, & 126	Approval Year for last HMP: 2019
Post-hunt Population (Modeled)	
• Prior Population Objective:	3,000-4,000 pronghorn
• 2022 Post-hunt Population Estimate:	3,200 pronghorn.
• **Approved Population Objective Range:**	**Status Quo 3,000-4,000 pronghorn**
Post-hunt Sex Ratio (Modeled)	
• Prior Sex Ratio Objective:	35-45 bucks per 100 does
• 2022 Post-hunt Sex Ratio Estimate:	28 bucks per 100 does
• **Approved Sex Ratio Objective Range:**	**Status Quo 35-45 bucks per 100 does**

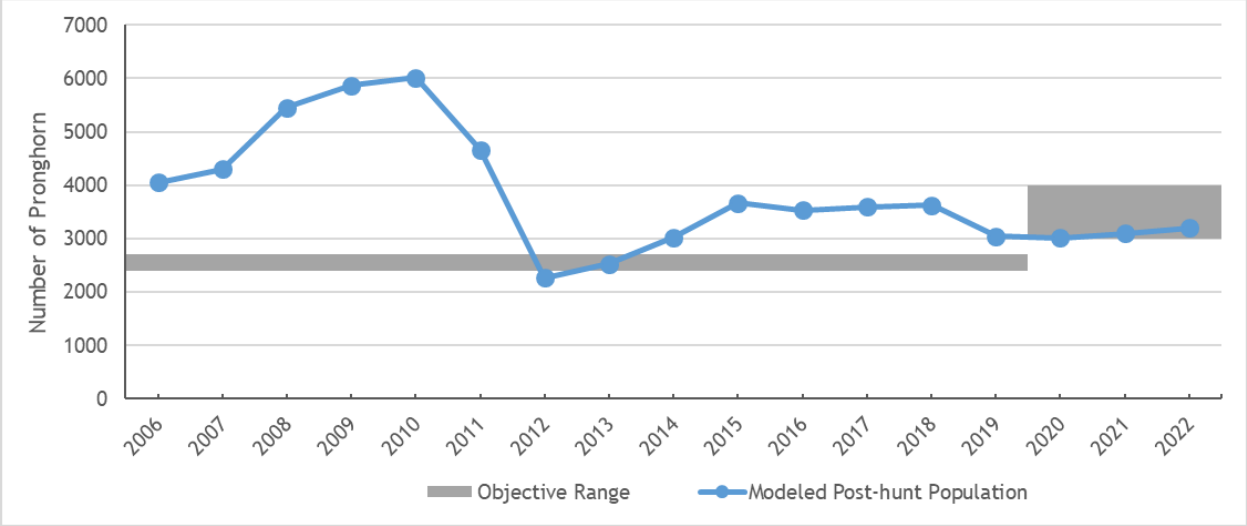


Figure PH5-1. Pronghorn DAU PH-5 modeled post-hunt population and objective range, 2006-2022.

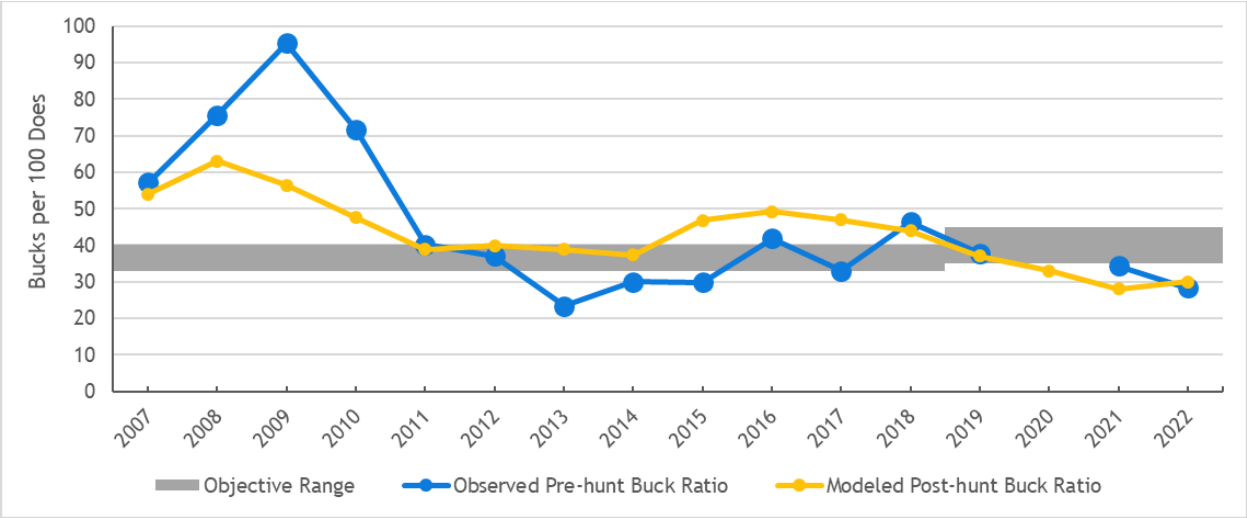


Figure PH5-2. Pronghorn DAU PH-5 observed and modeled post-hunt sex ratio (bucks:100 does), 2006-2022. No classification data were collected in 2020 due to COVID restrictions.

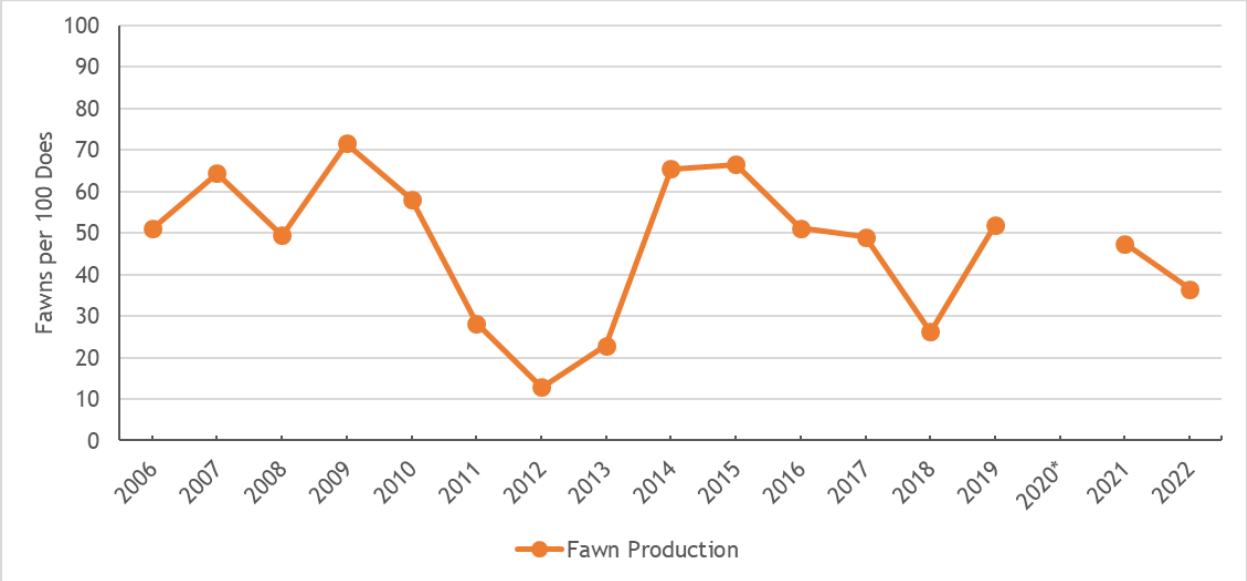


Figure PH5-3. Pronghorn DAU PH-5 fawn production (observed pre-hunt fawn:100 does ratio), 2006-2022. *No classification data collected due to COVID restrictions.

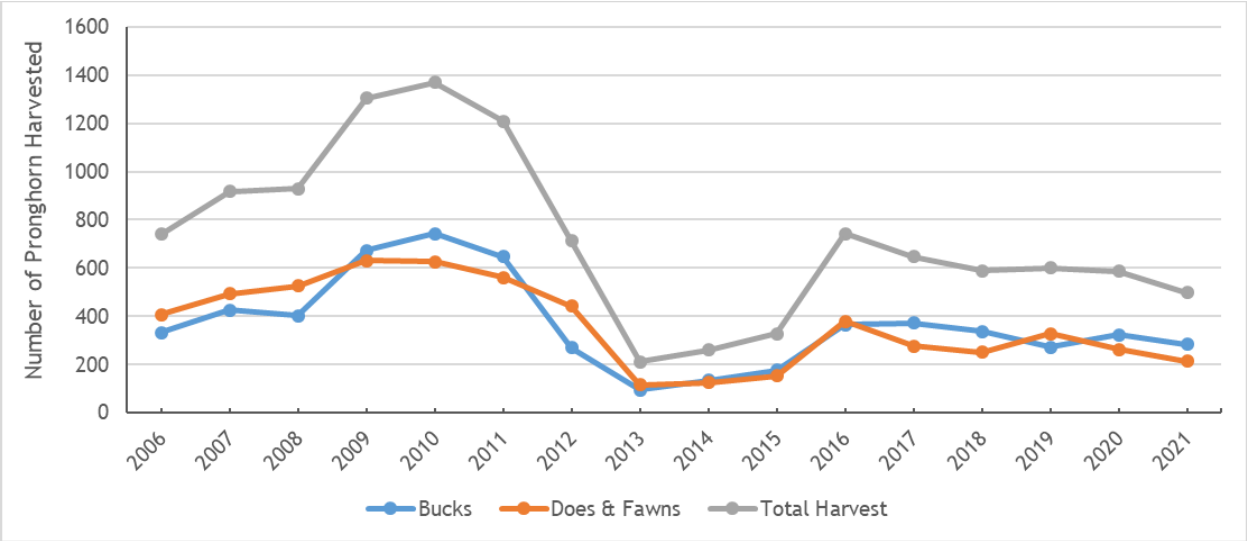


Figure PH5-4. Pronghorn harvest estimates in PH-5, 2006-2021.

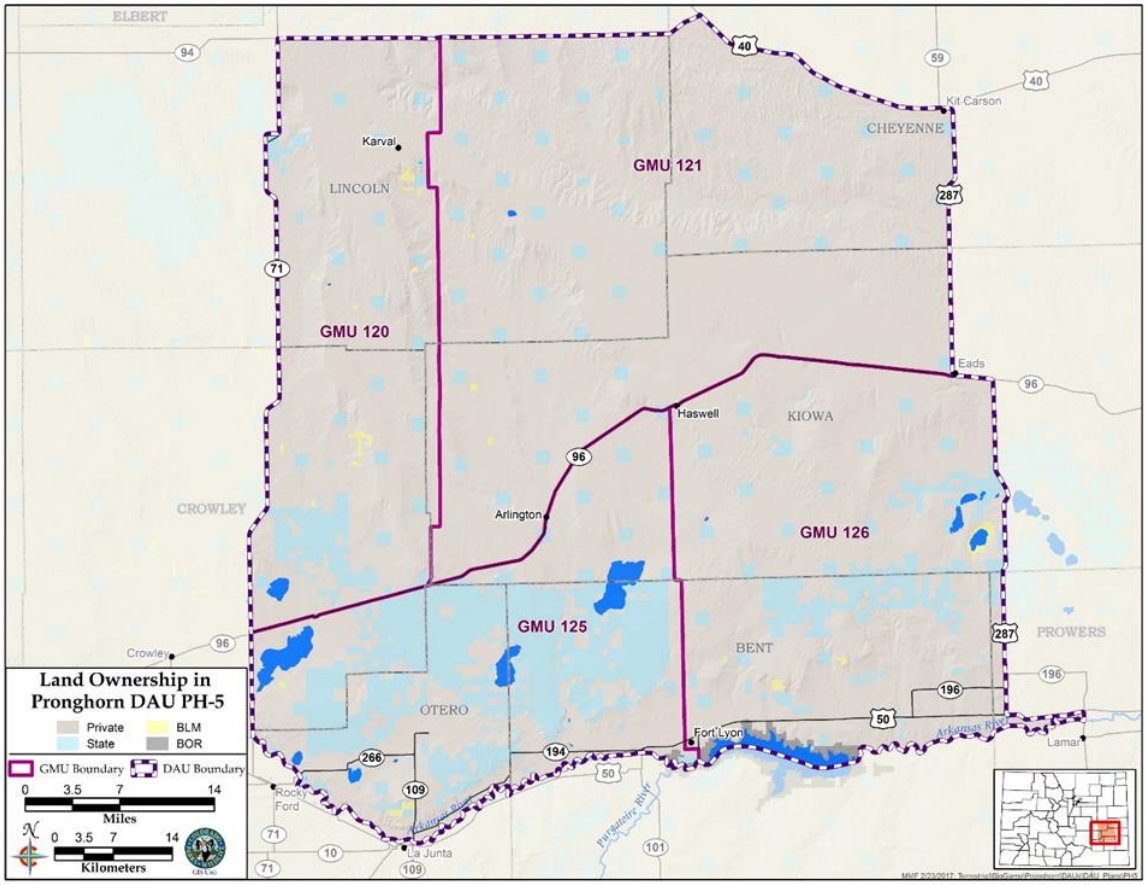


Figure PH5-5. PH-5 Land Ownership.

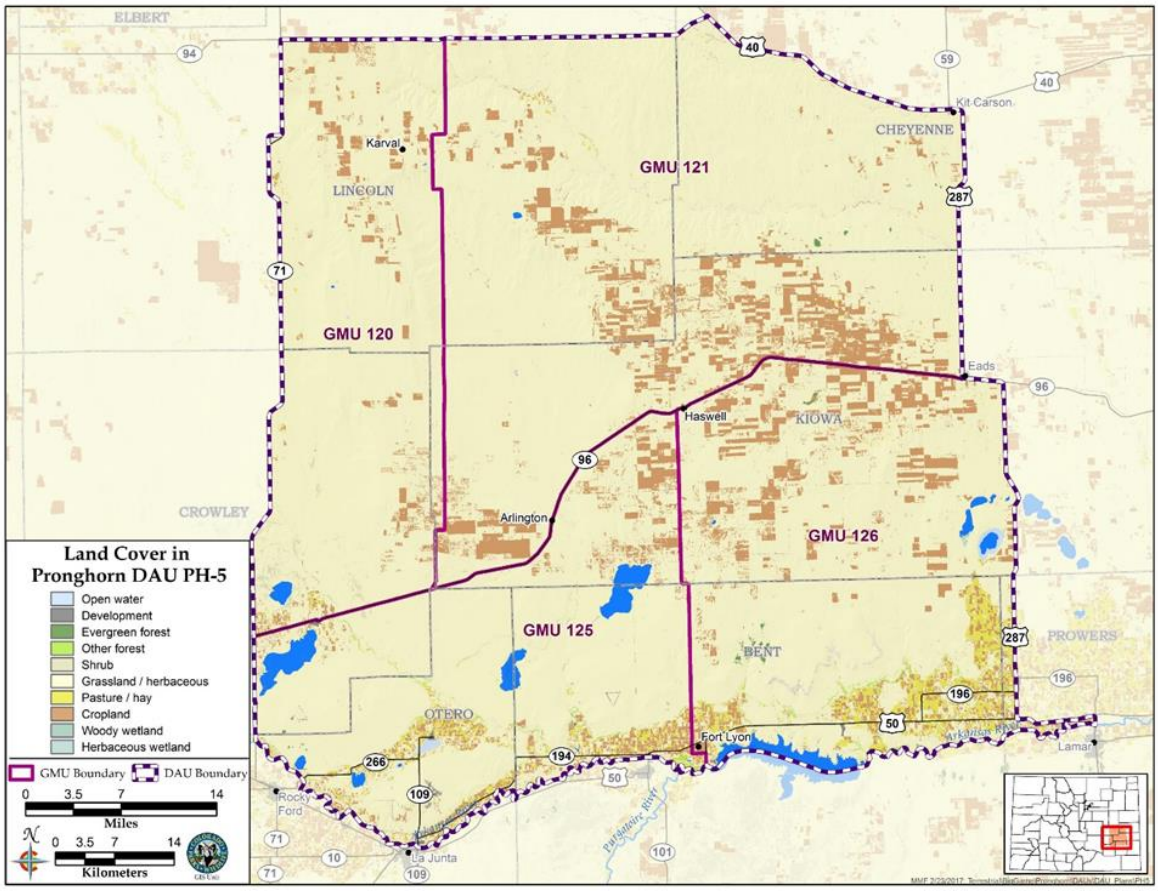


Figure PH5-6. PH-5 Land Cover.

GEOGRAPHIC LOCATION, GMUs, LAND OWNERSHIP, LAND USE DESCRIPTION

The Haswell pronghorn DAU includes game management units 120, 121, 125, and 126, covering approximately 2,814 mi^2, of which almost 95% (2,650 mi^2) is considered pronghorn habitat. The topography of Haswell consists of flat to gently rolling plains. There are several drainages across the DAU, with the Arkansas River, Adobe Creek, Rush Creek, and Sand Creek being the most prominent. Haswell's dominant vegetative community is shortgrass prairie. Sand sagebrush-covered flats, and sand hills compose most of the area between Rush Creek and Sand Creek. Dryland farm ground is scattered throughout the DAU.

Most of Haswell is privately owned (84%). The State Land Board (SLB) owns 14% of the DAU, which accounts for the majority of the DAU's public lands. Only 1.2% of Haswell is owned by other governmental agencies such as CPW, Bureau of Land Management, Bureau of Reclamation, various counties, and the National Park Service. Public pronghorn hunting opportunities are very limited in Haswell, with only 9% of the DAU being available to public pronghorn hunters. Public opportunities include State Wildlife Areas, leased SLB properties, and a small amount of BLM.

Land use (both public and private) is almost exclusively agricultural. The primary use for most of the DAU is livestock grazing. A substantial amount of dryland farming occurs, primarily in the eastern half of Haswell. Irrigated farmland is almost exclusively restricted to the Arkansas River Valley along the southern border of the DAU.

PRONGHORN HERD INFORMATION

Haswell's pronghorn habitat is ideal for supporting large numbers of pronghorn. The current population is likely to be far lower than the DAU's biological carrying capacity. The greatest limiting factor on the population is hunter harvest. In some years, natural factors such as extreme drought or severe winter storms can, in conjunction with hunter harvest, cause population decline. In the absence of relatively aggressive license setting, this population would increase quickly. Ultimately, this herd is limited by a social carrying capacity because of conflicts with agricultural activities and hunter access on private lands.

PRONGHORN HERD CURRENT STATUS AND/OR POPULATION TREND

Since 2006, Haswell's post-hunt population estimates have ranged from 2,040–6,050 pronghorn (average 3,100; Figure PH5-1). The population reached its 6,050 animal peak in 2009. Due to significant increases in hunting license numbers, the addition of a late doe-only season, and the change of all doe licenses to "list B", the population has been reduced to its current estimated post-hunt population range of 3,000-4,000 pronghorn.

Across Haswell's classification flights, the observed fawn:doe ratios ranged from a low of 13 fawns:100 does to a high of 72 fawns:100 does. The average across those years was 49 fawns:100 does.

STAKEHOLDER OUTREACH AND INPUT

To better understand landowner opinions regarding pronghorn numbers, we conducted a mail survey for 2019 HMP revision. In September of 2017, we mailed surveys to 198 randomly selected landowners in Haswell. Only landowners who owned a minimum of a quarter section (160 acres) of land were included in the landowner selection pool. This was done to eliminate owners of smaller residential properties from the list. The questionnaire included ten questions and a postage-paid return envelope. We also issued a press release on September 14th that was printed in local papers and read on several radio stations around the Haswell area. The press release informed the public about the Haswell HMP revision and offered landowners the opportunity to contact CPW to comment and/or fill out a survey. We received 67 completed landowner surveys through the mail and 1 survey completed because of the press release.

When asked how they would like to see the pronghorn population change over the next ten years, relative to the current number of pronghorn, the majority of landowners (47%) thought there should be no change to the current numbers of pronghorn (estimated 3,500 animals). Some landowners indicated that they would like to see an increase in the population, with 9% having selected "increase slightly" and 4% having selected "increase greatly." Twelve percent of respondents preferred to see the population reduced slightly, and 11% preferred to see the population reduced greatly. (Appendix PH5).

When asked about the approach to guide buck license allocation, landowner responses were fairly split on this question. Approximately 37% of respondents said they'd like to maintain license numbers maintained, 19% chose an increase, 18% chose a decrease, and 26% were not sure. Overall, responses show support for maintaining the sex ratio at or near the current estimated ratio.

We also sought hunter input regarding the Haswell population and targeted sex ratio by sending surveys to 500 hunters who had received at least one Haswell rifle or muzzleloader license for the 2014, 2015, and/or 2016 seasons. We received completed surveys from 147 hunters. In addition, we had 193 of PH-5's hunters give feedback through the 2021 Big Game Opt-In Survey (Appendix B).

When asked how they would like to see the Haswell pronghorn herd change over the next 10 years, the majority (64%-Mail Survey, 62%-Big Game Opt-In Survey) wanted to see the population increase at some level. Twenty three percent of the Mail Survey respondents and thirty three percent of the Big Game Opt-In Survey respondents thought the current numbers were acceptable.

When asked through the Mail Survey about the approach to guide buck license allocation, the majority (51%) of hunters wanted to see current numbers of buck permits maintained at their current level. A significant proportion (30%) of hunters indicated that they would be willing to have buck permits reduced in order to increase the buck:doe ratio. Only 7% of respondents stated that they would like to see the number of buck permits increased.

SIGNIFICANT MANAGEMENT ISSUES

Conflicts with Agriculture: Most pronghorn related game damage in Haswell consists of damage to growing wheat, to other growing crops, and to fences. While pronghorn do cause game damage in Haswell, the number of landowner complaints has remained low even when the population was well over objective. Between 2007 and 2022, Haswell's post-hunt population ranged between 2,400 and 6,050 (record-high) pronghorn. Over the course of those 16 years, only two pronghorn damage complaints were received by District Wildlife Managers. One conflict involved a concentration of pronghorn on growing wheat, and the other involved damage to growing onions. In both cases, landowners chose not to pursue claims or dispersal hunts.

Through the landowner survey, we found that landowners showed varied responses regarding their perception of pronghorn damage to their property (Appendix PH5). The survey asked landowners to what extent they had experienced problems with pronghorn damaging fences over the previous five years. Landowner responses are as follows: 43% No Problem, 33% Minor Problem, 20% Moderate Problem, and 4% Major Problem. Of the 67 respondents to the survey, 39 of them stated that they owned cropland. Of those 39 farmers, when asked to what extent they had experienced pronghorn damage to wheat and other crops over the previous five years, the majority stated that pronghorn damage to wheat (54%) and other growing crops (59%) had not been a problem. Responses of the other farmers were as follows: 21% Minor problem with wheat, 23% Minor problem with other crops, 13% Moderate problem with wheat, 10% Moderate problem with other crops, 13% Major problem with wheat, and 8% Major problem with other crops.

Hunter Crowding: From 2009 through 2012, hunter crowding was an issue in Haswell with rifle license numbers that ranged from 2,430 to 3,400. During that time, both landowners and hunters complained to District Wildlife Managers about the high number of hunters.

OBJECTIVES

Approved Alternatives

- ***Post-hunt population objective*:** Extend the current population objective range of 3,000-4,000 pronghorn

- ***Post-hunt sex ratio objective:*** Extend the current sex ratio objective range of 35-45 bucks per 100 does

The population objective reflects the current population for PH-5; therefore, no significant changes in licenses would be needed to achieve these objectives. Annual fluctuations in population due to weather (droughts, severe winters) will be addressed through adjustments in license allocations. Both the population objective and sex ratio objective increases made in 2019 were supported by the majority of landowner and hunter respondents (Appendix PH5). For the 2019 PH-5 HMP, the PWC approved a population objective increase from 2,400-3,000 pronghorn to 3,000-4,000 pronghorn. For the 2020 HMP, the sex ratio objective was also increased from 33-40 bucks per 100 does to 35-45 bucks per 100 does. History has shown that if the population was managed above the current objective, the number of hunters necessary for the required annual harvest would exceed landowner tolerance levels.

STRATEGIES FOR ADDRESSING MANAGEMENT ISSUES AND ACHIEVING OBJECTIVES

Conflicts with Agriculture: Since the establishment of the late doe season, game damage complaints in Haswell have been non-existent. When pronghorn densities do become too great on fields with growing crops, dispersal hunts will be used to reduce damage and disperse pronghorn.

Hunter Crowding: CPW wildlife managers believe that the population can be managed within the objective range with rifle license numbers at or around 1,500, which is where licenses have been set in recent years. In the hunter survey, hunters who had hunted in recent years were asked how other hunters affected their hunt (Appendix PH5). Over 82% of hunter respondents stated: other hunters had no impact on their hunt, they didn't see any other hunters, or there weren't enough hunters to get pronghorn moving around. Haswell's wildlife managers believe that hunter crowding issues will remain at a low level if Haswell is managed at the current objective.

Achieving Objectives: CPW biologists and wildlife managers have experience with managing the Haswell population at the approved population objective range of 3,000-4,000 animals. For 15 of the last 23 years, the post-hunt population has fallen within that range. During that time, production has been highly variable, with fawn:doe ratios as low as 12.8 and as high as 71.6. CPW staff have gained considerable understanding as to how license numbers should be set to manage at the proposed objective range even through the production extremes observed in Haswell.

Efforts will continue to achieve the sex ratio objective each year by using the observed pre-hunt buck:doe ratio and using models to estimate the doe and buck harvest needed to achieve the objective.

Since 2006, CPW has been conducting consistent and intensive survey efforts to collect data that has been used to build robust population models for Haswell. As funding allows, CPW

staff intend to continue conducting the current data collection regimen of annual harvest surveys, annual pre-hunt classification flights, and periodic distance sampling flights.

In recent years, CPW has added a couple of significant management tools to the Haswell management toolbox. The addition of the December late doe rifle season gives additional license setting flexibility. It allows CPW further opportunity to reduce the population as needed, while not increasing hunter crowding during the regular rifle season. It also helps landowners and CPW wildlife managers to reduce pronghorn damage on wheat fields, by conducting a 10-day hunting season that disperses pronghorn at the time of year when pronghorn start to congregate on growing wheat. Another recent change was the classification of all doe licenses in Haswell as list B. This gives CPW better ability to increase doe licenses when needed, without making significant increases to hunter crowding.

Cheyenne Pronghorn Herd Management Plan Extension

Data Analysis Unit PH-12

Jonathan Reitz, Wildlife Biologist, Lamar

GMUs: 116, 117, 122, & 127	Approval Year for last HMP: 2020
Post-hunt Population (Modeled)	
• Prior Population Objective:	1,500-2,000 pronghorn
• 2022 Post-hunt Population Estimate:	1,500 pronghorn.
• **Approved Population Objective Range:**	**Status Quo 1,500-2,000 pronghorn**
Post-hunt Sex Ratio (Modeled)	
• Prior Sex Ratio Objective:	35-45 bucks per 100 does
• 2022 Post-hunt Sex Ratio Estimate:	27 bucks per 100 does
• **Approved Sex Ratio Objective Range:**	**Status Quo 35-45 bucks per 100 does**

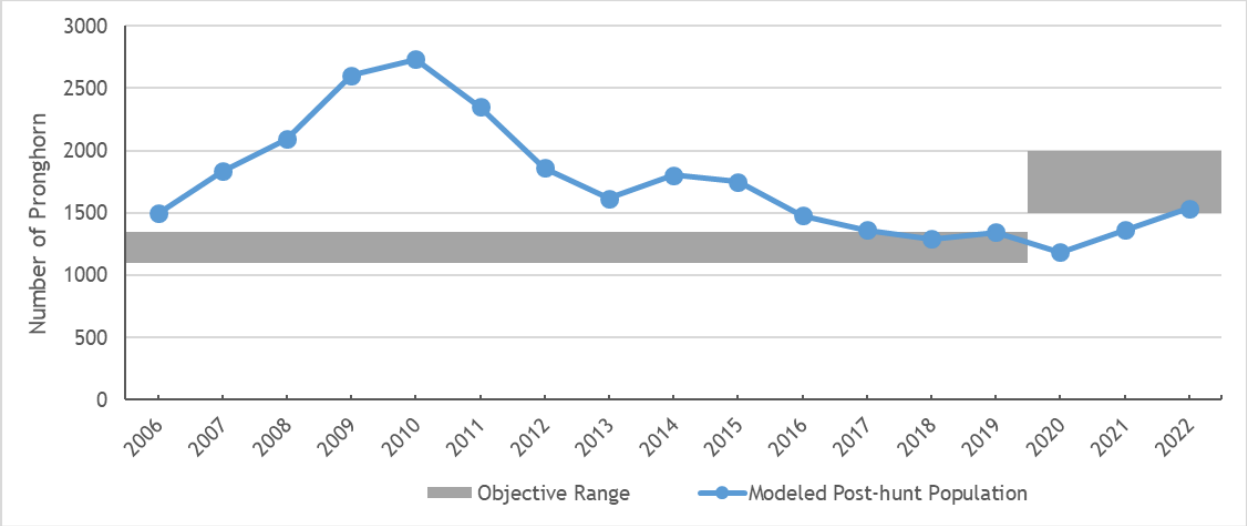


Figure PH12-1. Pronghorn DAU PH-12 modeled post-hunt population and objective range, 2006-2022.

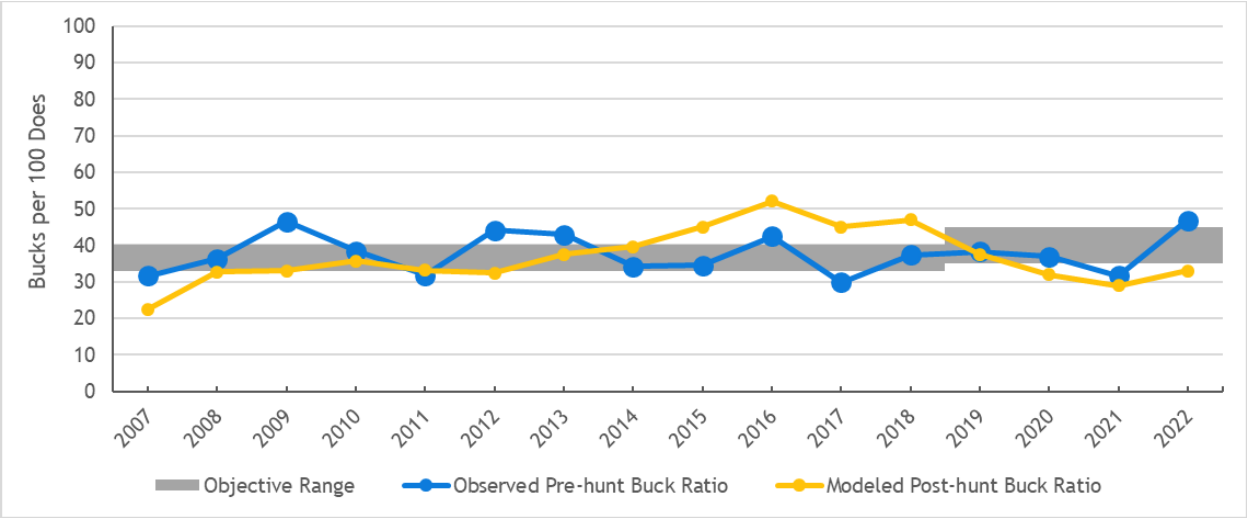


Figure PH12-2. Pronghorn DAU PH-12 observed and modeled post-hunt sex ratio (bucks:100 does), 2006-2022.

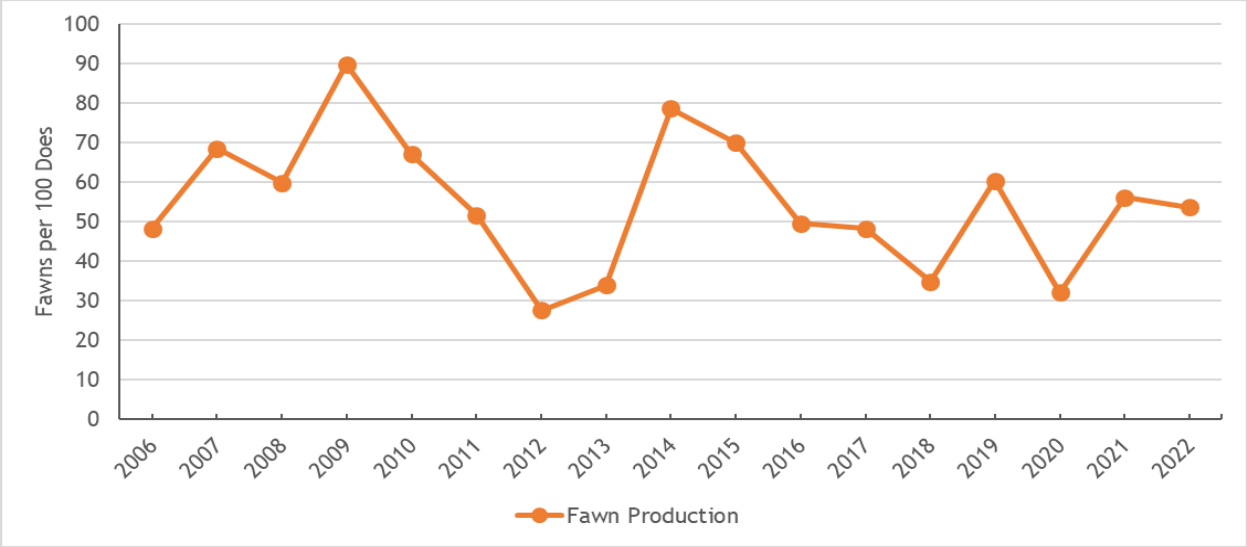


Figure PH12-3. Pronghorn DAU PH-12 fawn production (observed pre-hunt fawn:100 does ratio), 2006-2022.

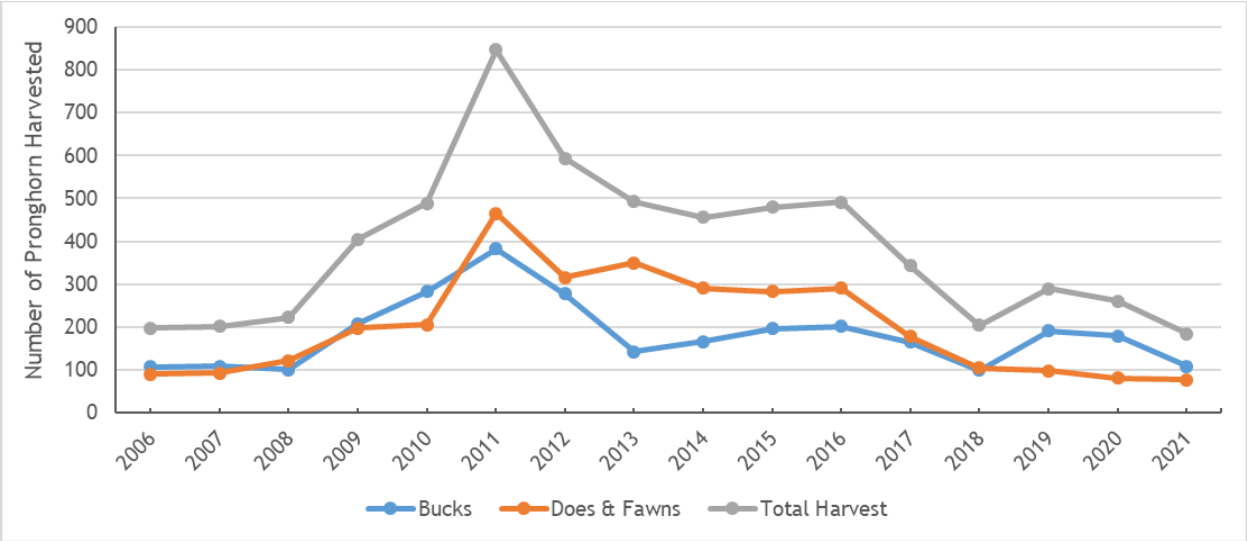


Figure PH12-4. Pronghorn harvest estimates in PH-12, 2006-2021.

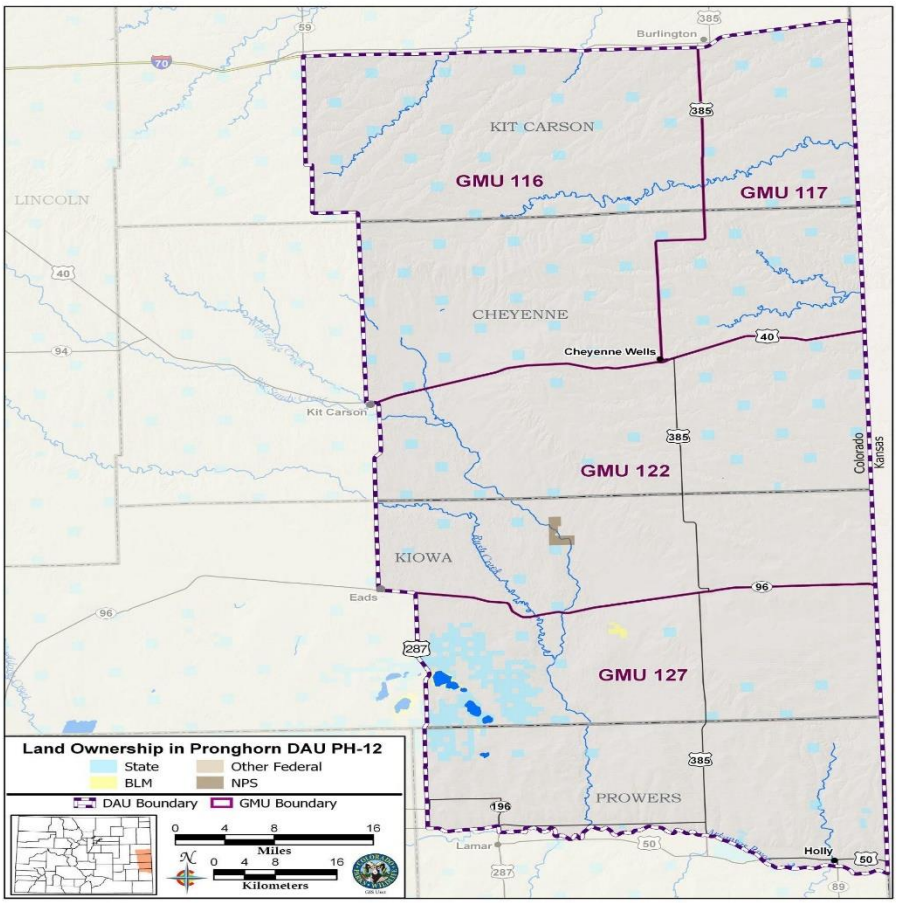


Figure PH12-5. PH-5 Land Ownership

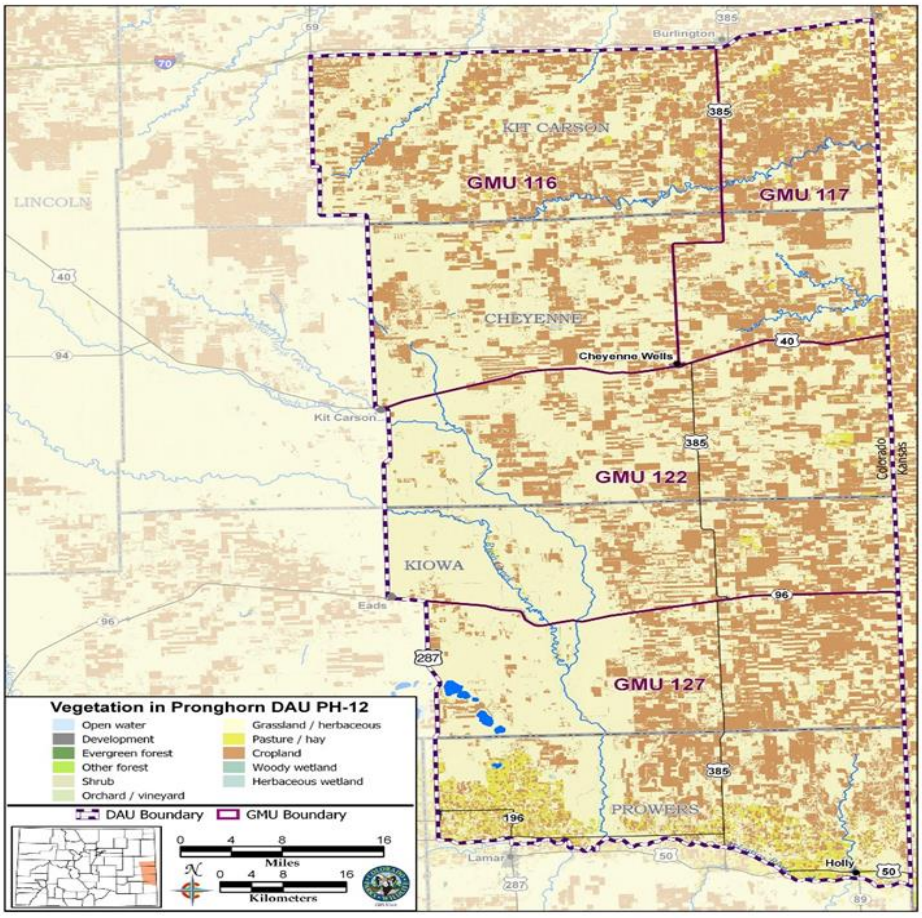


Figure PH12-6. PH-12 Land Cover

GEOGRAPHIC LOCATION, GMUs, LAND OWNERSHIP, LAND USE DESCRIPTION

The PH-12 Cheyenne pronghorn DAU includes game management units 116, 117, 122, and 127. It covers approximately 3,360 mi^2, of which approximately 94% (3,144 mi^2) is considered pronghorn habitat. The topography of PH-12 consists of flat to gently rolling plains. There are several drainages across the DAU, with the Arkansas River, the Smokey Hill River, Rush Creek, and Sand Creek being the most prominent. PH-12's dominant vegetative communities are shortgrass prairie and dryland farmland. Sand sagebrush-covered flats and sand hills compose most of the area between Rush Creek and Sand Creek.

Most of PH-12 is in private ownership (95%). The State Land Board (SLB) owns 4% of the DAU, which accounts for the majority of the DAU's public lands. Only 1% of PH-12 is owned by other governmental agencies such as CPW, Bureau of Land Management, Bureau of Reclamation, various counties, and the National Park Service. Public pronghorn hunting opportunities are extremely limited in PH-12, with only 2% of the DAU being available to public pronghorn hunters. Public opportunities include State Wildlife Areas, leased SLB properties, and a small amount of BLM.

Land use (both public and private) is almost exclusively agricultural. Approximately half of the DAU's lands are non-irrigated farmland, and most of the other half consists of pastureland used for livestock grazing. The DAU does have some irrigated farmland, mostly found along

the Arkansas River Valley along the southern border of the DAU, and in the northeastern portion of the DAU near Burlington. Land use in the DAU has not changed significantly in recent times. There are currently some land use changes taking place in the form of wind energy development. Three wind farms were recently constructed along the Kiowa/Kit Carson County border, and several other projects are planned.

PRONGHORN HERD INFORMATION

The habitat in PH-12 is ideal for supporting large numbers of pronghorn. The current population is likely to be far lower than the DAU's biological carrying capacity. The greatest limiting factor on the population is hunter harvest. In some years, natural factors such as extreme drought or severe winter storms can, in conjunction with hunter harvest, cause population decline. In the absence of aggressive license setting, this population would increase quickly. This herd is limited by a social carrying capacity because of conflicts with agricultural activities.

PRONGHORN HERD CURRENT STATUS AND/OR POPULATION TREND

Modeled population estimates in PH-12 include data from harvest surveys, sex/age classifications, and minimum counts. Since 2006, Cheyenne's post-hunt population estimates have ranged from 1,200-2,700 pronghorn (average of 1,750; Figure PH12-1). The population reached its 2,700 animal peak in 2010. Due to significant increases in hunting licenses, the addition of a late doe-only season, and the change of all doe licenses to "list B", the population was reduced to its previous population objective range in 2017 (1,100-1,350 pronghorn). Since the population objective increase in 2020, hunting license numbers have been reduced and the population has risen to 1,500 pronghorn, which is the bottom of the current population objective range.

Sex/age classification flights were flown in PH-12 during the following years: 2006-2019, and 2021-2022. In 2020, sex/age estimates were generated using coordinated ground counts. Across those 17 years, pre-season observed sex ratios have ranged from a low of 26 bucks:100 does to a high of 47 bucks:100 does (average 37 bucks:100 does). Across Cheyenne's classification flights, the observed fawn:doe ratios ranged from a low of 28 fawns:100 does to a high of 90 fawns:100 does. The average across those years was 55 fawns:100 does (Figures PH12-2, PH12-3).

STAKEHOLDER OUTREACH AND INPUT

To better understand landowner opinions regarding pronghorn numbers, we conducted a mail survey for the 2020 HMP revision. In January of 2019, surveys were mailed to 500 randomly selected landowners, which represented ~25% of Cheyenne's landowners. Only landowners who owned a minimum of a quarter section (160 acres) of land were included in the landowner selection pool. This was done to eliminate owners of smaller residential properties from the list. The questionnaire included seven questions and a postage-paid return envelope. We received completed surveys from 122 landowners.

When asked how they would like to see the pronghorn population change over the next ten years relative to the current number of pronghorn, the highest proportion of landowners (39%) thought that there should be no change to the current number of pronghorn. Some landowners indicated that they preferred to see an increase in the population, with 17% having selected "increase slightly" and 9% having selected "increase greatly." Twenty-one

percent of respondents preferred to see the population reduced slightly, and 14% preferred to see the population reduced greatly. (Appendix PH12).

When asked about the approach to guide buck license allocation, landowner responses (Appendix PH12) were fairly split on this question. Approximately 30% of respondents indicated that they preferred buck license numbers maintained, 23% indicated increase, 17% indicated decrease, and 30% were not sure. Overall, responses show support for maintaining the sex ratio at or near the sex ratios observed in recent years.

We also sought hunter input regarding the Cheyenne population and sex ratio by sending surveys to 500 hunters who had received at least one Cheyenne rifle or muzzleloader license for the 2016, 2017, and/or 2018 seasons (Appendix PH12). We received completed surveys from 137 hunters. In addition, we had 85 of PH-12's hunters give feedback through the 2021 Big Game Opt-In Survey (Appendix B).

When asked how they would like to see the Cheyenne pronghorn herd change over the next ten years, the majority of hunters (70%-2019 Mail Survey, 68%-2021 Big Game Opt-In Survey) wanted a population increase at some level. Eighteen percent of the 2019 Mail Survey respondents and twenty-seven percent of the 2021 Big Game Opt-In Survey respondents thought the current numbers were acceptable.

When asked through the 2019 Mail Survey about the approach to guide buck license allocation, the greatest proportion (49%) of hunters preferred that current numbers of buck permits be maintained at their current level (Appendix PH12). A significant proportion (34%) of hunters indicated that they would be willing to have buck permits reduced in order to increase the buck:doe ratio. Only 6% of respondents stated that they would like to see the number of buck permits increased.

SIGNIFICANT MANAGEMENT ISSUES

Conflicts with Agriculture: Most pronghorn related game damage in PH-12 consists of damage to growing wheat, to other growing crops, and to fences. While pronghorn do cause game damage in Cheyenne, the number of landowner complaints has remained low even when the population has been well over objective. Between 2006 and 2022, Cheyenne's post-hunt population ranged between 1,100 and 2,700 (record-high) pronghorn. Over the course of that seventeen-year period, District Wildlife Managers received no formal game damage complaints.

Most landowners (86% or 105/122) responding to the 2019 Landowner Survey owned cropland (Appendix PH12). Of the 105 farmers, when asked to what extent they had experienced pronghorn damage to wheat and other crops over the previous five years, the majority stated that pronghorn damage to wheat (49%) and other growing crops (59%) had not been a problem. The other farmers responded as follows: 21% Minor problem with wheat, 16%, Minor problem with other crops, 20% Moderate problem with wheat, 17% Moderate problem with other crops, 10% Major problem with wheat, and 8% Major problem with other crops.

In the 2019 Landowner Survey, we also asked landowners to what extent they had experienced problems with pronghorn damaging fences over the previous five years. Landowner responses were as follows: 57% No Problem, 27% Minor Problem, 11% Moderate Problem, and 5% Major Problem.

Hunter Crowding: For the 2019 Mail Survey, 40% of hunters stated that they had experienced moderate levels of hunter crowding while hunting the primary rifle season (Appendix PH12). An additional 11% stated that they had experienced high levels of hunter crowding. It's not a surprise that such a large proportion of hunters have experienced issues related to hunter crowding during the 2019 Mail Survey years (2016-2018). From 2009 to 2017 annual license quota was set at three to six times what it had been before 2009.

OBJECTIVES

Approved Alternatives

- ***Post-hunt population objective range*:** Extend the current objective of 1,500-2,000 pronghorn

- ***Post-hunt sex ratio objective range:*** Extend the current objective of 35-45 bucks per 100 does

The objectives reflect the current population and management strategy for PH-12; therefore, no significant changes in licenses would be needed to achieve these objectives. Annual fluctuations in population due to weather (droughts, severe winters) will be addressed through adjustments in license allocations. Both the population objective and sex ratio objectives set in 2020 were supported by the majority of landowner and hunter respondents (Appendix PH12). For the 2020 PH-12 HMP, the PWC approved a population objective increase from 1,100-1,350 pronghorn to 1,500-2,000 pronghorn. For the 2020 HMP, the sex ratio objective was also increased from 33-40 bucks per 100 does to 35-45 bucks per 100 does.

STRATEGIES FOR ADDRESSING MANAGEMENT ISSUES AND ACHIEVING OBJECTIVES

Conflicts with Agriculture: Pronghorn damage has not been a major issue in PH-12 in recent years. CPW has instituted several tools that have helped to alleviate issues with pronghorn-caused crop damage. Since the establishment of the late doe season, game damage complaints in PH-12 have been nearly non-existent. When pronghorn densities become too great on fields with growing crops, dispersal hunts will be used to reduce damage and disperse pronghorn.

Hunter Crowding: For the 2019 Mail Survey, over 50% of hunters from the 2016-2018 time period indicated they had experienced moderate to high levels of hunter crowding while hunting during the primary rifle season (Appendix PH12). CPW reduced license numbers after the objectives were changed in 2020, which alleviated most of the hunter crowding issues. The 2021 Big Game Opt-In Survey (Appendix B) results showed that hunters have experienced less crowding in 2021 compared to (61%-not at all crowded, 19%-slightly crowded, and 9% moderately crowded).

In the past several years, CPW has also made some regulation changes that have resulted in reduced hunter crowding. When CPW established all doe pronghorn licenses as list B, allowing one hunter to use two doe licenses, it reduced the number of hunters required to get the desired harvest. With the addition of the late December doe season, regular season hunter crowding was reduced by shifting some of the regular season licenses to the late season. Another way in which CPW helped to minimize hunter crowding was by increasing the length of the primary rifle season to include a second weekend, a change made for the 2020-2024 Big

Game Season Structure. While most of the hunters still hunt on opening day, some hunters choose to hunt on the second weekend to avoid hunter crowding.

Achieving Objectives: Since the population objective increase in 2020, CPW has set licenses in order to bring the population from the previous objective range up to the current range. In 2022 the estimated population reached the bottom of the "new" objective range. CPW will continue to consider annual variation in production and adapt license quota allocation to manage toward the midpoint of the population objective range (1,750).

The proposed post-hunt sex ratio objective is: 35-45 bucks:100 does. This is a higher buck:doe ratio than the previous objective (33-40) but is consistent with post-hunt sex ratios when the 2019 Mail Surveys were conducted. The ratio of 35-45 was supported by the majority of 2019 Mail Survey respondents. Efforts will continue to achieve the sex ratio objective each year by using the observed pre-season buck:doe ratio and using models to estimate the doe and buck harvest needed to achieve the objective.

Tobe Pronghorn Herd Management Plan Extension

Data Analysis Unit PH-13

Jonathan Reitz, Wildlife Biologist, Lamar

GMUs: 130, 136, 137, 138, 143, 144, & 146	**Approval Year for last HMP: 2019**
Post-hunt Population (Modeled)	
• Prior Population Objective:	3,000-4,000 pronghorn
• 2022 Post-hunt Population Estimate:	2,750 pronghorn
• **Approved Population Objective Range:**	**Status Quo 3,000-4,000 pronghorn**
Post-hunt Sex Ratio (Modeled)	
• Prior Sex Ratio Objective:	23-31 bucks per 100 does
• 2022 Post-hunt Sex Ratio Estimate:	20 bucks per 100 does
• **Approved Sex Ratio Objective Range:**	**Status Quo 23-31 bucks per 100 does**

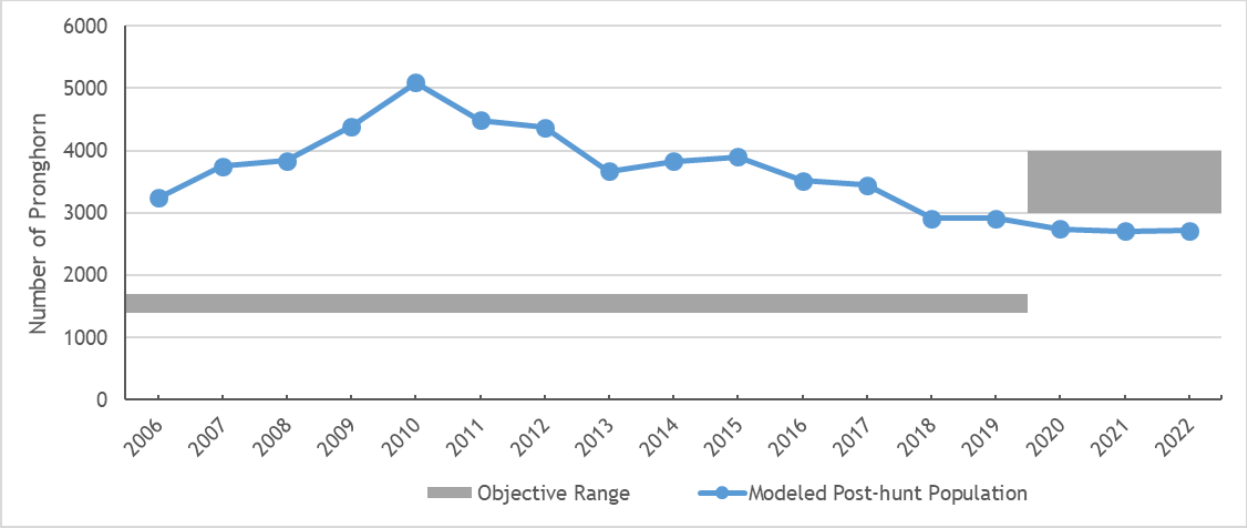


Figure PH13-1. Pronghorn DAU PH-13 modeled post-hunt population and objective range, 2006-2022.

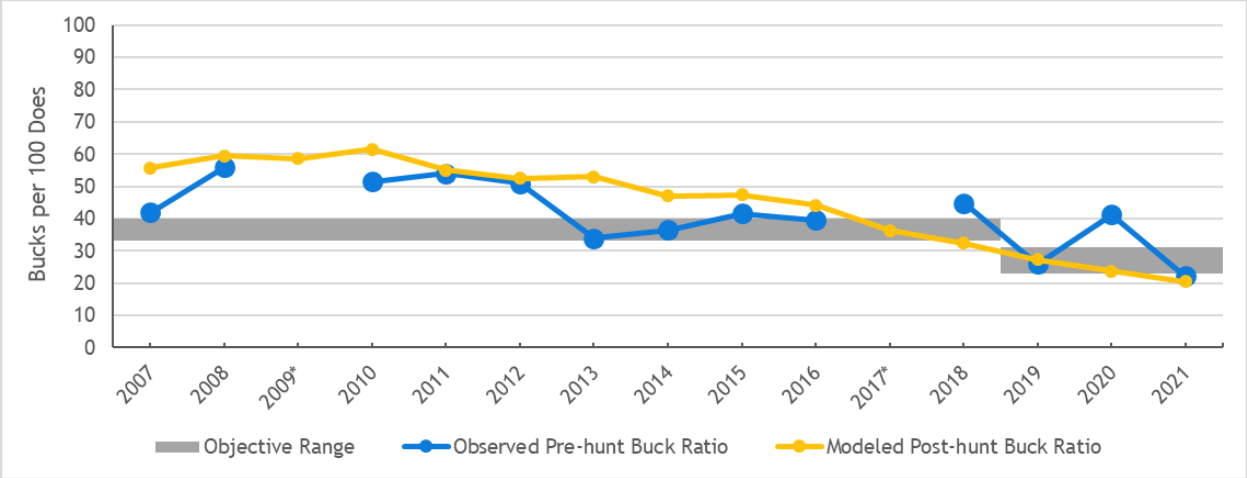


Figure PH13-2. Pronghorn DAU PH-13 observed and modeled post-hunt sex ratio (bucks:100 does), 2007-2021. CPW did not collect classification data in 2009, 2017, or 2022.

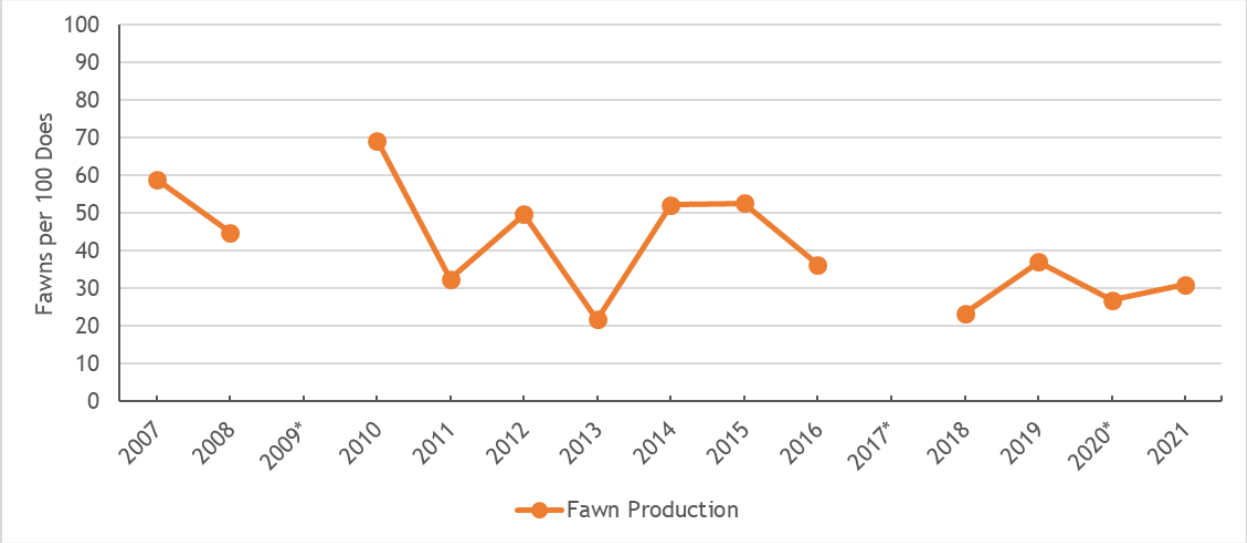


Figure PH13-3. Pronghorn DAU PH-13 fawn production (observed pre-hunt fawn:100 does ratio), 2007-2021.

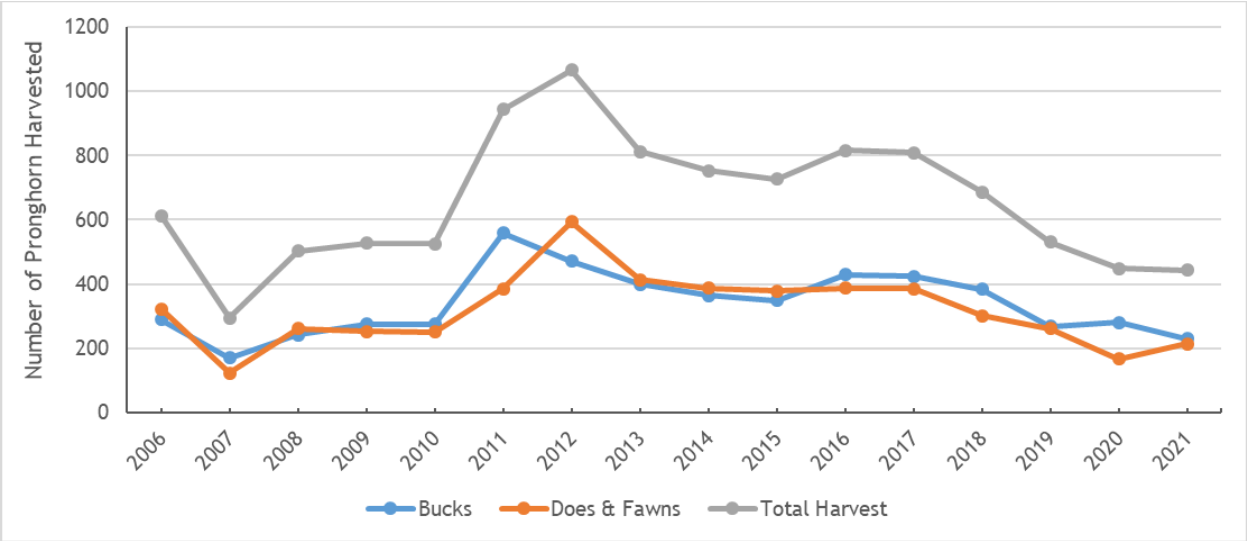


Figure PH13-4. Pronghorn harvest estimates in PH-13, 2006-2021.

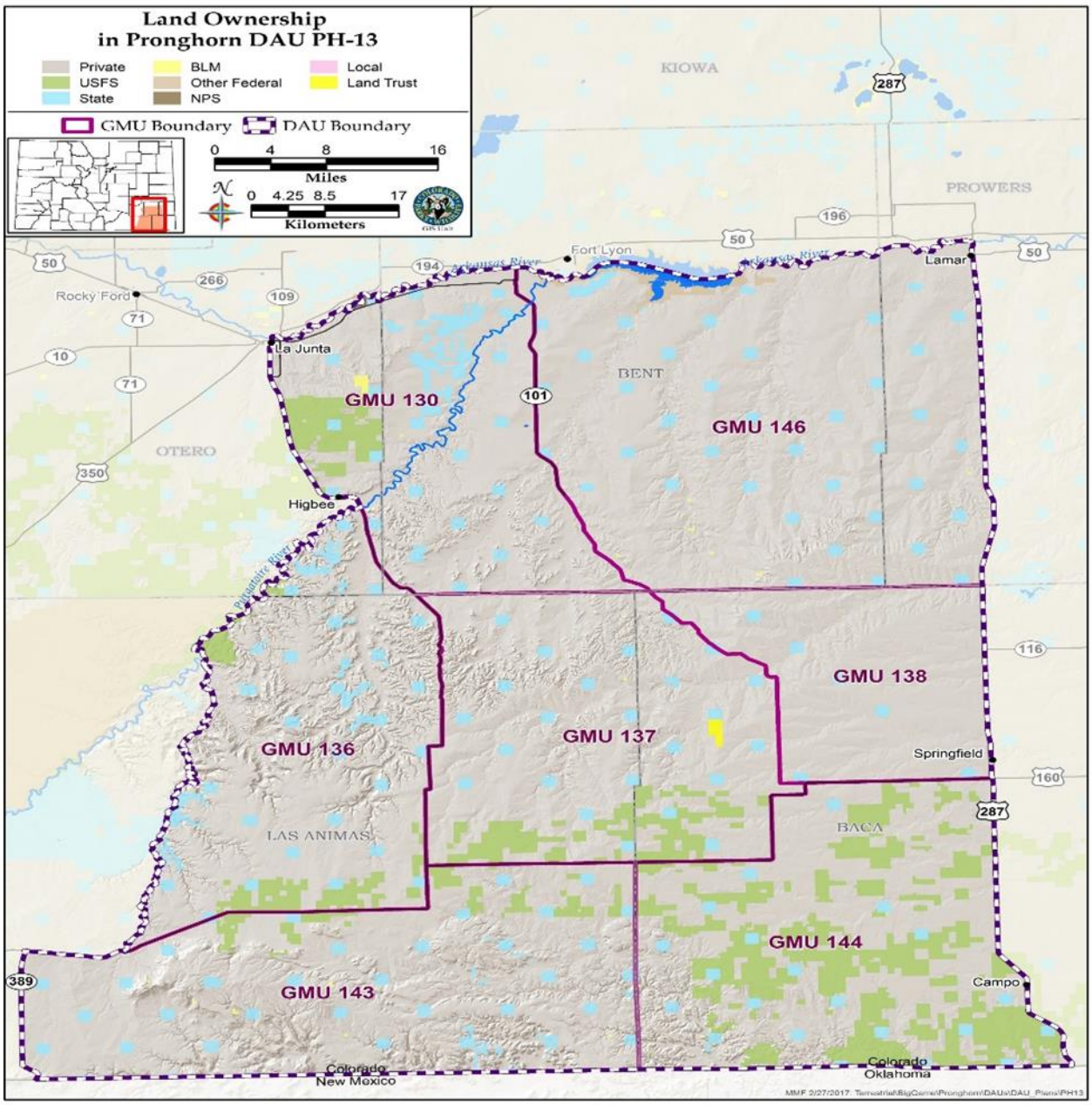


Figure PH13-5. PH-13 Land Ownership

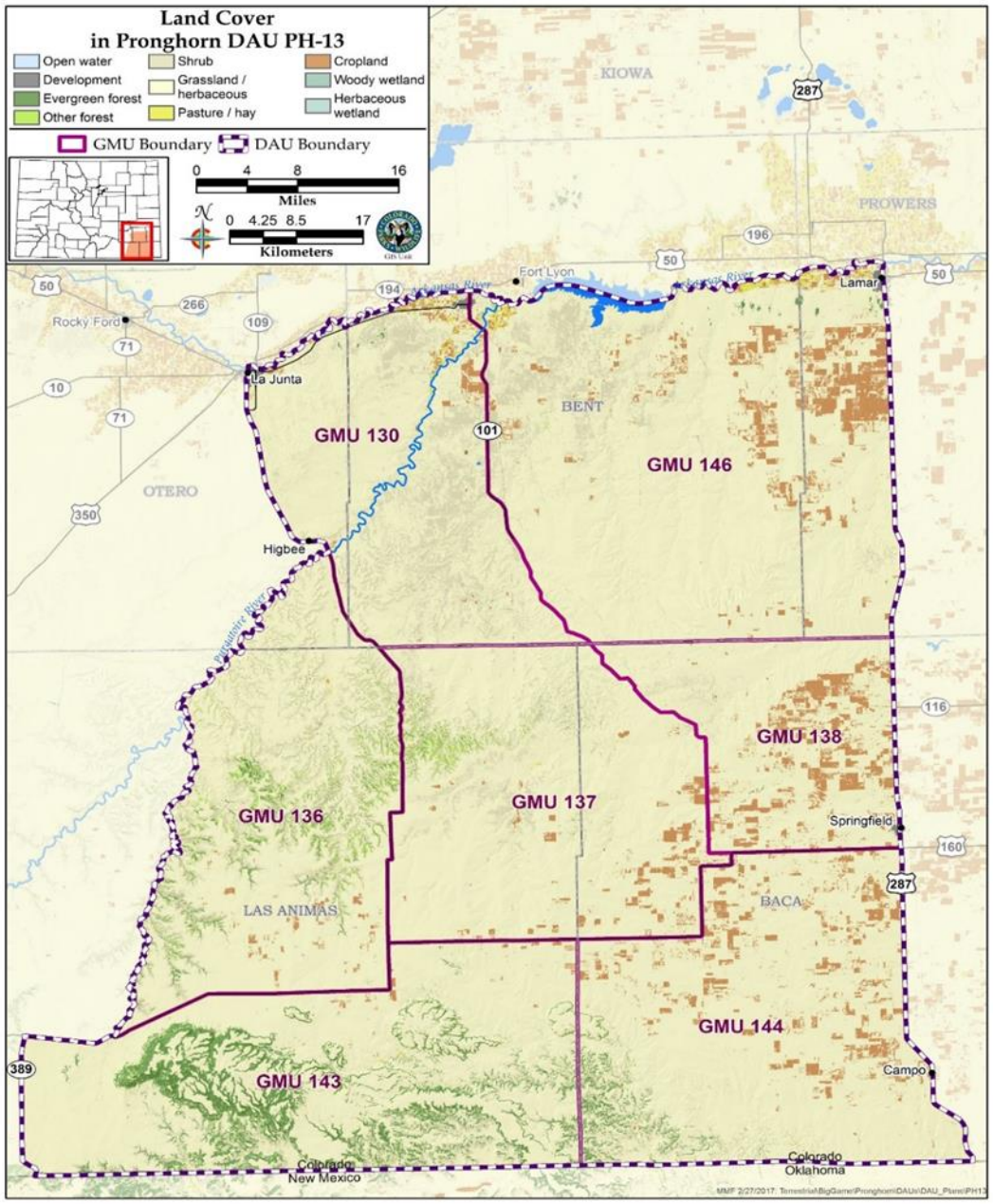


Figure PH13-6. PH-13 Land Cover

GEOGRAPHIC LOCATION, GMUs, LAND OWNERSHIP, LAND USE DESCRIPTION

The Tobe pronghorn DAU (PH-13) includes the following game management units: 130, 136, 137, 138, 143, 144, and 146. The DAU is extensive, covering approximately 4,200 mi^2, of which 90% (3,790 mi^2) is pronghorn habitat. The topography of Tobe is varied and includes mesa breaks, pinyon juniper canyon lands, relatively flat shortgrass prairie, and dryland farm ground. There are several drainages across the DAU, with the Arkansas and Purgatoire Rivers being the most prominent.

Most land in PH-13 is in private ownership (84% or 3,554 mi^2). The Comanche National Grasslands, administered by the US Forest Service, accounts for 10% (360 mi^2) of PH-13. This

is over half of the total area of the Comanche National Grasslands. Other land managers include the State Land Board (202 mi^2 or 5%), CPW (57 mi^2 or 1%), and the Bureau of Land Management (BLM: 3 mi^2 or <1%). Most public land is found in the southern half and the northwest corner of the DAU. Approximately 12% (~422 mi^2) of the unit is open for public hunting.

Land use (both public and private) is almost exclusively agricultural. The primary use for most of the DAU is livestock grazing. A substantial amount of dryland farming occurs, primarily in the eastern third of PH-13. Livestock grazing is controlled on USFS holdings with a system of grazing allotments leased to private entities.

Land use in the DAU has not changed significantly in recent times. The major changes would be in the varieties of crops planted and a slight increase in irrigated cropland from center pivot irrigation systems. Currently, portions of one wind farm are found within the DAU, and other wind energy projects are planned in the area.

PRONGHORN HERD INFORMATION

The habitat in PH-13 is ideal for supporting large numbers of pronghorn. The current population is likely to be far lower than the DAU's biological carrying capacity. Historically, the greatest limiting factor on the population is hunter harvest. In some years, natural factors such as extreme drought or severe winter storms can, in conjunction with hunter harvest, cause population decline. Primarily this herd is limited by a social carrying capacity because of conflicts with agricultural activities and hunter access on private lands.

PRONGHORN HERD CURRENT STATUS AND/OR POPULATION TREND

CPW used models based on data from harvest surveys, sex/age classifications, minimum counts, and distance sampling estimates to produce population size estimates. Since 2006, Tobe's modeled post-hunt population estimates have ranged from 2,700 - 5,000 pronghorn (average 3,600). The population reached its 5,000 animal peak in 2010. Due to significant increases in hunting license numbers, the addition of a late doe-only season, and the change of all doe licenses to "list B," the population was reduced from its high of 5,000 to below 3,000. Even with an aggressive license setting strategy, list B doe licenses, and a 31-day late season, the population did not decline to its previous objective of 1,400-1,700.

Since the population objective was increased in 2019, CPW has made substantial (51%) reductions in the hunting license quota. Due to low fawn production in recent years (likely drought caused), the quota reductions have not been enough to bring the population up to the population objective. Years with better fawn recruitment and/or further license reductions are needed to bring the population within the population objective range.

Sex/age classification flights were flown in Tobe during the following years: 2007, 2008, 2010, 2011-2016, 2018, 2019, and 2021. In 2020, a coordinated ground survey was used to generate classification estimates. Across those years, pre-season observed sex ratios have ranged from a low of 23 bucks:100 does to a high of 54 bucks:100 does (average 42 bucks:100 does). The modeled post-hunt buck:doe ratio from 2006 through 2022 has ranged from 20 to 61 bucks:100 does (average 45 bucks:100 does). The previous post-hunt buck:doe ratio objective was a target of 36 with a range of 33-40.

Across classification flights in the Tobe pronghorn herd, the observed fawn:doe ratios ranged from a low of 22 fawns:100 does to a high of 73 fawns:100 does. The average across those years was 49 fawns:100 does.

STAKEHOLDER OUTREACH AND INPUT

To better understand landowner opinions regarding pronghorn numbers, we conducted a mail survey for the 2019 PH-13 HMP revision. In September 2017, we mailed surveys to 271 randomly selected landowners in PH-13. Only landowners who owned a minimum of a quarter section (160 acres) of land were included. This was done to eliminate owners of smaller residential properties from the list. The questionnaire included nine questions and a postage-paid return envelope. We also issued a press release that was printed in local papers and read on several radio stations around the Tobe area. The press release informed the public about the Tobe PH-13 HMP revision and offered landowners an opportunity to contact CPW to comment and/or fill out a survey. We received 88 completed landowner surveys through the mail and one survey completed as a result of the press release.

When asked how they would like to see the pronghorn population change over the next ten years relative to current numbers, the greatest proportion of landowners (32%) indicated that there should be no change to the current numbers of pronghorn (2017 estimate: 3,500 animals). That was followed by an even split between increase slightly (22%) and decrease slightly (19%). Smaller percentages of landowners selected increase greatly (10%) and decrease greatly (10%). Seven percent of landowners were “not sure” (Appendix PH13).

When asked about the approach to guide buck license allocation, landowner responses (Appendix PH13) were fairly split on this question. Approximately 35% of respondents said they’d like to maintain license numbers maintained, 30% chose an increase, 16% chose a decrease, and 19% were not sure. Overall, responses show that the landowner majority prefer the buck:doe ratio to be maintained or increased.

We also sought hunter input regarding the Tobe population and targeted sex ratio by sending surveys to 600 hunters who had received at least one Tobe rifle or muzzleloader license for the 2014, 2015, and/or 2016 seasons (Appendix PH13). We received completed surveys from 224 hunters. In addition, we had 322 of PH-13’s hunters give feedback through the 2021 Big Game Opt-In Survey (Appendix B).

When asked how they would like to see the Tobe pronghorn herd change over the next ten years, the majority of hunters (72%-2017 Mail Survey, 73%-2021 Big Game Opt-In Survey) called for an increase in the population size.

When asked through the 2017 Mail Survey about the approach to guide buck license allocation, the greatest proportion (44%) of hunters wanted to see current numbers of buck permits maintained at their current (2017) level (Appendix PH13). A significant proportion (32%) of hunters indicated that they would be willing to have buck permits reduced to increase the buck:doe ratio. Only 3% of respondents stated that they would like to see the number of buck permits increased.

SIGNIFICANT MANAGEMENT ISSUES

Conflicts with Agriculture: Most pronghorn related game damage in Tobe consists of damage to growing wheat, damage to other growing crops, and damage to fences. During the 1980s and 1990s, moderate levels of game damage conflicts and landowner complaints led CPW managers to set and maintain all population objectives at low levels (1,400-1,700 pronghorn). There appears to have been a shift in the real and/or perceived level of damage occurring in the Tobe PH-13 DAU. The landowner survey showed that there was landowner support to maintain a population at 3,500 pronghorn, well above the previous objective range.

Between 2007 and 2022, Tobe's post-hunt population has ranged between 3,000 and 5,000 (record-high) pronghorn. Over the course of those 16 years, CPW received substantial numbers of game damage complaints only when the population exceeded 4,000 pronghorn. Those complaints involved concentrations of pronghorn on growing wheat and were resolved through the use of dispersal hunts.

The landowner survey was completed when the population was estimated to be 3,500 pronghorn. The survey included a couple of game damage-related questions. When asked to what extent they had experienced pronghorn damage to wheat and other crops over the previous five years, the strong majority (79%) of respondents stated that pronghorn damage to wheat (79%) and other growing crops (75%) has not been a problem. Only 8% of respondents stated that pronghorn damage to wheat and other crops have been a major problem. This is somewhat misleading, as only 24 of the 89 respondents noted that they own cropland. Regarding the level of pronghorn damage to wheat, the breakdown of the 24 farmer responses are as follows: 38% No Problem, 21% Minor Problem, 21% Moderate Problem, and 21% Major Problem. Regarding the level of pronghorn damage to other growing crops, the responses of the 24 farmers showed: 58% No problem, 8% Minor Problem, 17% Moderate Problem, and 17% Major Problem.

The landowner survey also asked landowners to what extent they had experienced problems with pronghorn damaging fences over the previous five years. Landowner responses are as follows: 34% No Problem, 37% Minor Problem, 17% Moderate Problem, and 12% Major Problem.

Hunter Crowding: With high license numbers from 2011-2019, many of Tobe's hunters had issues with hunter crowding. In the 2021 Mail Survey, 63% of regular-season rifle hunters reported experiencing moderate to high levels of hunter crowding (Appendix PH13). Nearly 1/3 of hunters reported that their hunts were negatively impacted by too many hunters in the area (Appendix PH13). With the higher population objective approved by the PWC in 2019, CPW reduced the quota by 36%, with an additional reduction of 15% in 2022. Results from the 2021 Big Game Opt-In Survey indicate that hunter crowding issues have been greatly reduced. Only 22% of Big Game Opt-In Survey Respondents indicated that they had experienced moderate to high levels of hunter crowding (Appendix B).

OBJECTIVES

Approved Alternatives

- ***Post-hunt population objective range*:** Extend the current objective of 3,000-4,000 pronghorn

The current population objective (approved 2019) is substantially higher than the previous objective of 1,400-1,700 pronghorn. The 2017 Mail Surveys for both landowners and hunters showed support for the increased population objective. This objective range allows for higher numbers of pronghorn and reduced hunter crowding while also keeping the population within landowner tolerance levels. Annual fluctuations in population due to weather (droughts, severe winters) will be addressed through adjustments in license allocations.

- ***Post-hunt sex ratio objective range:*** Extend the current objective of 23-31 bucks per 100 does

Both landowner and hunter surveys showed support for maintaining buck:doe ratios at the levels observed in recent years. The 5-year average is 28 bucks:100 does. This sex ratio objective is on the lower side for SE Colorado pronghorn DAUs. The lower the sex ratio, the higher the herd's productive output because of the greater proportion of the population consisting of fawn-producing does. With higher productive output, higher numbers of hunters/licenses are required to offset the high output and keep the population below the top of the population objective range. Since Tobe PH-13 has a higher percentage of land with public access, offered by the Comanche National Grasslands, compared to surrounding pronghorn DAUs, there is more capacity for the higher hunter numbers required to manage to a lower buck:doe ratio.

STRATEGIES FOR ADDRESSING MANAGEMENT ISSUES AND ACHIEVING OBJECTIVES

Conflicts with Agriculture: Pronghorn damage has not been a major issue in Tobe in recent years. CPW receives relatively few game damage complaints when the population is under the top of the objective range (4,000 pronghorn). CPW has instituted several tools to help alleviate issues with pronghorn-caused crop damage. Since the establishment of the late doe season, game damage complaints in Tobe have been nearly non-existent. When pronghorn densities do become too great on fields with growing crops, dispersal hunts will be used to reduce damage and disperse pronghorn.

Hunter Crowding: In an attempt to bring the population down towards the previous objective of 1,400-1,700 pronghorn, CPW set the license quota at very high levels. High levels of hunter crowding resulted. Since CPW changed the population objective to its current range of 3,000-4,000 pronghorn, the license quota has been reduced by 51%. With the quota reductions, most hunter crowding issues have been eliminated.

Achieving Objectives: The Tobe herd has been within the 3,000-4,000 objective range for 10 of the last 16 years. The 10-year average population size is 3,600. Over the last five years, poor fawn production has caused the population to track just below the population objective range. CPW has reduced the quota to get the population back into the objective range. CPW will continue to adapt to annual fluctuations in population due to weather (droughts, severe winters), addressing those fluctuations through adjustments in license allocations.

Two Buttes Pronghorn Herd Management Plan Extension

Data Analysis Unit PH-18

Jonathan Reitz, Wildlife Biologist, Lamar

GMUs: 132, 139 & 145	**Approval Year for last HMP: 2020**
Post-hunt Population	
• Prior Population Objective:	300-1,500 pronghorn
• 2022 Post-hunt Population Estimate:	1,000 pronghorn
• **Approved Population Objective Range:**	**Status Quo 500-1,500 pronghorn**
Post-hunt Sex Ratio	
• **Expected Post-hunt Sex Ratio:**	40-100 bucks per 100 does

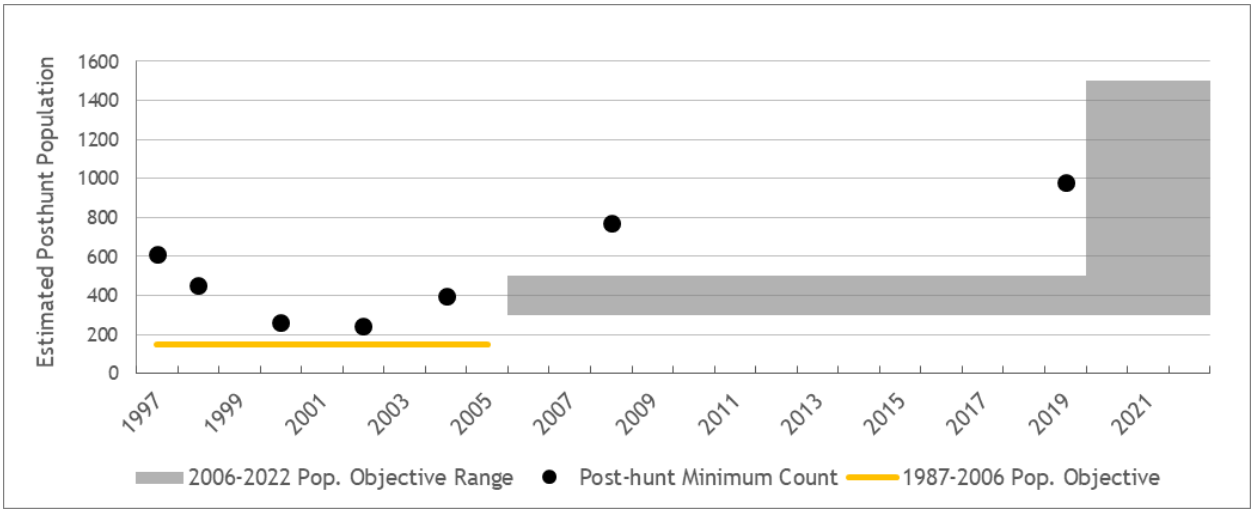


Figure PH18-1. Pronghorn DAU PH-18 population objectives and minimum counts, 1997-2022.

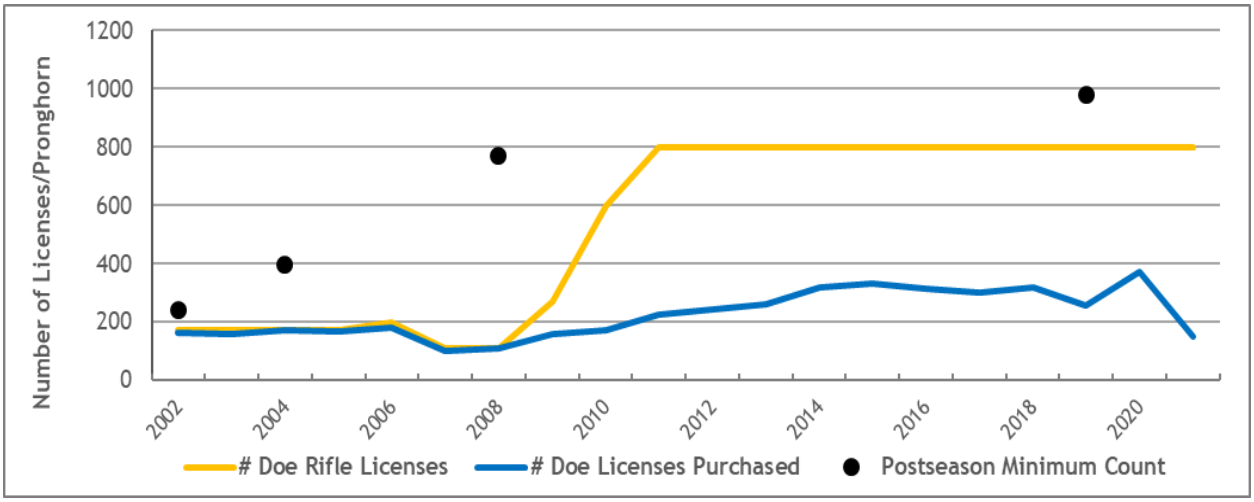


Figure PH18-2. Numbers of doe rifle licenses issued, numbers of doe licenses purchased, and post-hunt minimum counts for PH-18, 2002-2022.

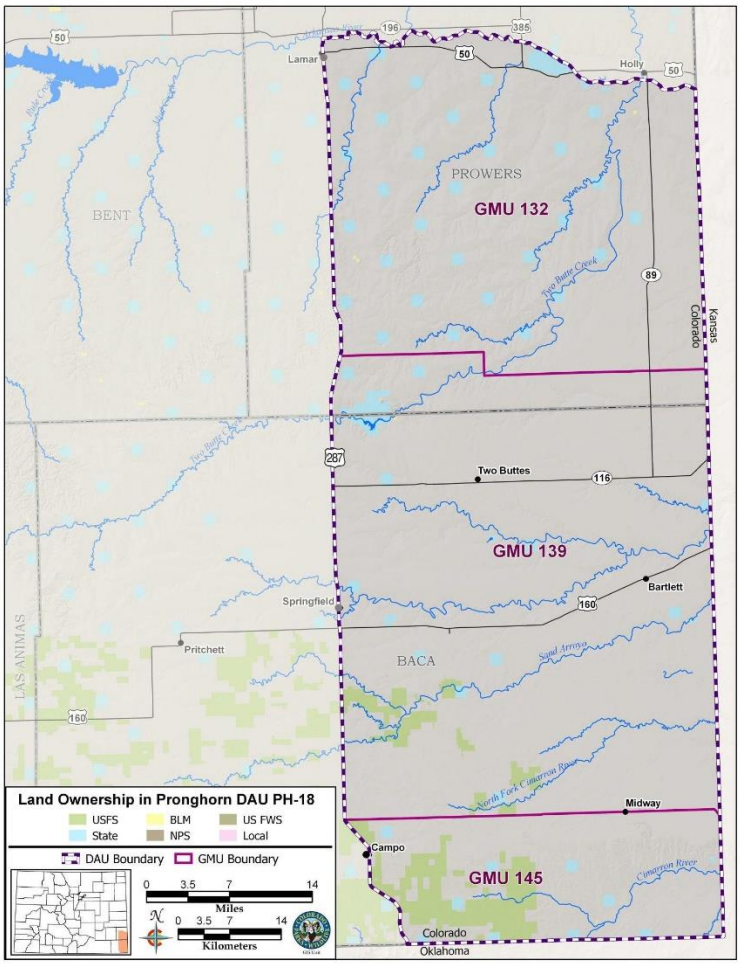


Figure PH18-3. PH-18 Land Ownership

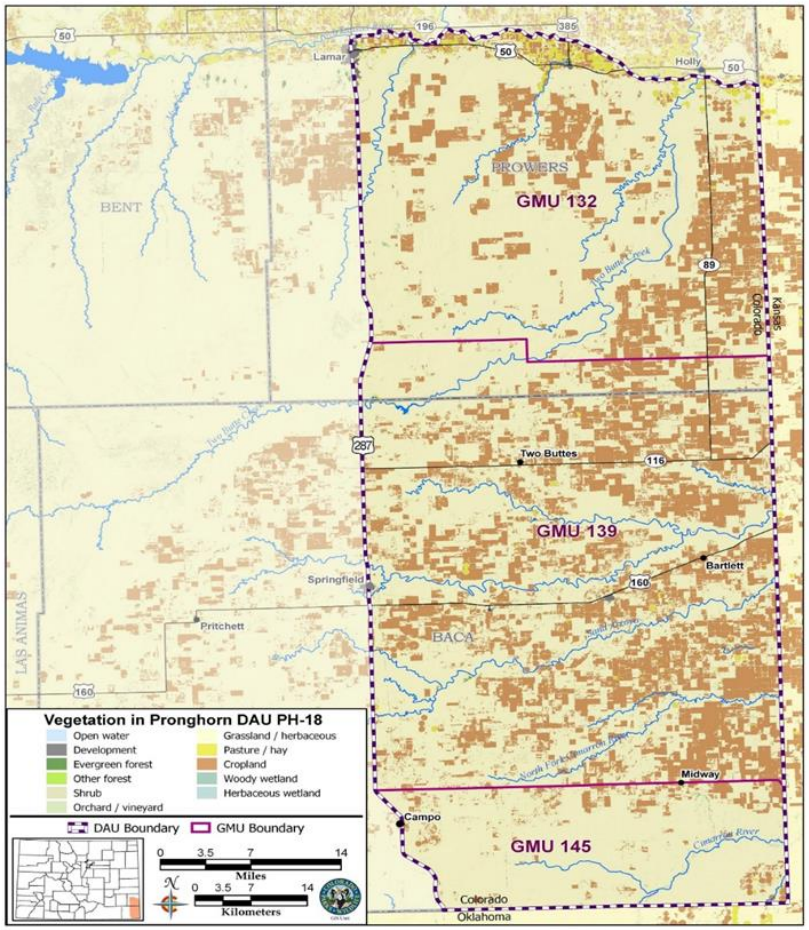


Figure PH18-4. PH-18 Land Cover

GEOGRAPHIC LOCATION, GMUs, LAND OWNERSHIP, LAND USE DESCRIPTION

Two Buttes includes game management units (GMUs) 132, 139, and 145 and covers approximately 2,326 mi^2, of which over 97% (2,262 mi^2) is considered pronghorn habitat. Two Buttes consists of flat to gently rolling plains. There are several drainages across the DAU, with the Arkansas River, Butte Creek, Horse Creek, Bear Creek, the Sand Arroyo, and the Cimarron River being the most prominent. Two Buttes' dominant vegetative communities are shortgrass prairie and dryland farmland. Significant portions of the DAU also consist of sand sagebrush prairie and center-pivot irrigated farmland.

Most of Two Buttes is in private ownership (93%). The Comanche National Grasslands, administered by the US Forest Service, accounts for 4% (~54,000 acres) of Two Buttes. Other land managers include the State Land Board (2%) and CPW (1%). Each year, CPW enrolls several thousand acres of the DAU's private lands into the Walk-In Access program. However, most of those Walk-In properties offer very little pronghorn hunting opportunity as pronghorn are rarely found on them. Approximately 7% of the unit is open for public hunting.

Land use (both public and private) is almost exclusively agricultural. Approximately half of the DAU's lands are non-irrigated farmland, and most of the other half consists of pastureland used for livestock grazing. Some areas in the DAU contain irrigated farmland. These irrigated areas are less frequented by pronghorn and are primarily found along the Arkansas River and

in GMU 139. Land use in the DAU has not changed significantly in recent times, except for some land use changes taking place in the form of wind energy development. The DAU currently has one wind farm along the GMU 132/139 border, and two other wind development projects are planned in the north half of GMU 139.

PRONGHORN HERD INFORMATION

Much of PH-18's pronghorn habitat is ideal for supporting large numbers of pronghorn. The current population is likely to be far lower than the DAU's biological carrying capacity. In some years, natural factors such as extreme drought or severe winter storms can, in conjunction with hunter harvest, cause population decline. Without aggressive license setting, this population would increase quickly. This herd is limited by a social carrying capacity because of conflicts with agricultural activities. Therefore, the greatest limiting factor on the population is hunter harvest to address landowner tolerance for pronghorn.

PRONGHORN HERD CURRENT STATUS AND/OR POPULATION TREND

Population estimates for most pronghorn DAUs in southeast Colorado are based on an intensive monitoring program that consists of annual preseason sex/age classification flights and aerial line intersect distance sampling. However, these techniques require sufficient pronghorn densities to produce precise estimates. Since pronghorn densities are low in this DAU, CPW has chosen to prioritize limited flight resources to other pronghorn DAUs. Two Buttes has not had a preseason classification flight conducted since 2011 due to its relatively low population. Distance sampling has never been conducted in Two Buttes because the pronghorn density is too low for the method to be practical.

Ultimately, flight resources are best utilized when their resulting data can inform decisions that may result in management changes. Regarding the Two Buttes DAU, CPW concluded that while managing according to the 2006 HMP objectives (300-500 pronghorn), no management would likely change through the collection of sex/age classification data. The DAU's population has been well over objective since 2007. To bring the population to objective, CPW initiated several management actions that included: setting doe license numbers above demand (including leftover demand), setting buck license numbers at 1st choice applicant demand, making all doe licenses list B, and creating a 31-day-long doe-only late rifle season. Even with aggressive management actions, the population remained above the 2006 objective. CPW biologists recognized that sex/age classification flights would make no difference to the license numbers set, as the numbers of licenses issued were consistently higher than the number of pronghorn hunters in the DAU.

While not practical to conduct annual sex/age classifications flights, CPW periodically conducts minimum counts in Two Buttes. A minimum count provides a minimum estimate of the number of pronghorn in the DAU, but since the number of pronghorn missed is unknown, it does not reflect a population estimate with an estimate of statistical precision. Minimum counts are used to verify population estimates from the model, making sure that the model is not underestimating the population. Minimum counts of pronghorn in Two Buttes were conducted in 1997, 1998, 2000, 2002, 2004, 2005, 2008, and 2019 (Figure PH18-1). Minimum counts were flown post-hunt, usually in December. They consisted of flying North/South transects across the entire DAU with 1-mile spacing between transects.

The current population estimate is based on a minimum count conducted in the winter of 2019. There were 980 pronghorn observed on that flight. Since pronghorn were missed on the

minimum count, CPW estimated that the Two Buttes post-hunt population was over 1,000 pronghorn. That was well over the previous HMP objective of 300-500.

STAKEHOLDER OUTREACH AND INPUT

To better understand landowner opinions regarding pronghorn numbers, we conducted a mail survey for the 2020 HMP revision. In December 2019, surveys were mailed to 500 randomly selected landowners, which represented ~42% of PH-18's landowners. Only landowners who owned a minimum of a quarter section (160 acres) of land were included in the landowner selection pool. This was done to eliminate owners of smaller residential properties from the list. The questionnaire included six questions and a postage-paid return envelope. We received completed surveys from 118 landowners.

When asked how they would like to see the pronghorn population change over the next ten years relative to the current number of pronghorn, the greatest proportion of landowners (28%) thought there should be no change to the current numbers of pronghorn. Some landowners indicated that they would like to see an increase in the population, with 17% having selected "increase slightly" and 6% having selected "increase greatly." Nine percent of respondents preferred to see the population reduced slightly, and 22% preferred to see the population reduced greatly. (Appendix PH18).

We also sought hunter input regarding the Two Buttes population and targeted sex ratio by sending surveys to 500 hunters who had received at least one Two Buttes rifle or muzzleloader license for the 2016, 2017, and/or 2018 seasons. We received completed surveys from 157 hunters.

When asked about the number of pronghorn and the number of hunters in Two Buttes, the greatest proportion of the respondents (46%) preferred pronghorn numbers and license numbers to remain the same (Appendix PH18). Forty-one percent (41%) of respondents preferred to see pronghorn numbers increased, even if that meant licenses would be more difficult to draw. Six percent (6%) of hunters stated that they would like to see the pronghorn numbers decreased.

When asked how they would like to see the Two Buttes pronghorn herd change over the next 10 years, the majority (65%) of hunters wanted to see the population increase at some level. Twenty-one percent of hunters thought the current numbers were acceptable. Ten percent of respondents called for a decrease in the population.

When asked about the approach to guide buck license allocation, the slight majority (47%) of hunters would like to see buck permit numbers maintained at their current level. Most (41%) hunters indicated that they would be willing to have buck permits reduced to increase the buck:doe ratio. Only 4% of respondents stated that they would like to see the number of buck permits increased.

SIGNIFICANT MANAGEMENT ISSUES

Conflicts with Agriculture: Most pronghorn related game damage in Two Buttes consists of damage to growing wheat, to other growing crops, and to fences. While pronghorn do cause game damage in Two Buttes, the number of landowner complaints over the last 14 years has remained low even when the population has remained well over objective. Between 2009-2022, no formal game damage complaint was received by District Wildlife Managers.

In the landowner survey, we asked landowners to what extent they had experienced problems with pronghorn damaging fences over the previous five years. Landowner responses are as follows: 56% No Problem, 18% Minor Problem, 13% Moderate Problem, and 13% Major Problem.

Of the 118 respondents to the landowner survey, 102 of them stated that they owned cropland. Of those 102 farmers, when asked to what extent they had experienced pronghorn damage to wheat and other crops over the previous five years, the majority stated that pronghorn damage to wheat (53%) and other growing crops (52%) has not been a problem. Responses of the other farmers are as follows: 19% Minor problem with wheat, 19% Minor problem with other crops, 13% Moderate problem with wheat, 14% Moderate problem with other crops, 14% Major problem with wheat, and 14% Major problem with other crops.

Population and Harvest: From 2007 to 2020, to bring the Two Buttes population closer to the population objective of that time (300-500 pronghorn), CPW maintained doe license numbers above the level of demand (Figure PH18-2). From 2011 to 2020, doe license allocation remained constant, with CPW issuing 400 general doe licenses and 400 late-season doe licenses each year. During that time, the number of hunters purchasing those licenses remained consistent, with around 200 general season doe licenses and 100 late season doe licenses purchased each year. Even as leftover licenses, the muzzleloader season doe, the general rifle season doe, and the late season doe licenses never sold out. Doe harvest has not been limited in PH-18 through license quota allocation. Pronghorn doe harvest in Two Buttes is primarily limited by private land access.

From 2007 to 2020, CPW was unable to reduce the population of pronghorn towards the previous population objective of 300-500 pronghorn, despite several management actions employed to try to bring the population to objective. These management actions included: setting doe license quota above draw and leftover demand levels, setting buck licenses at the level of first-choice applicant demand, making all doe licenses list B, and initiating a 31-day-long December season for does. Even with these actions, the population slowly increased. In 2019, CPW counted 980 pronghorn on a minimum count survey.

In 2021, CPW added private-land-only (PLO) hunt codes to PH-18 for the regular rifle season. For the 2022 hunting season, CPW then shifted most of the quota allocation to these hunt codes. Only 2% of the quota was assigned to rifle hunt codes that could be used on public lands. This was done to help pronghorn numbers recover on the DAU's public lands, where game damage is not an issue and where pronghorn numbers have been greatly reduced by extremely high hunting pressure. With the shift of most licenses to PLO, the number of purchased doe licenses went down by half, likely further decreasing doe harvest in Two Buttes. CPW anticipates that pronghorn numbers may increase in the DAU due to these management changes.

Hunter Crowding and Low Pronghorn Numbers on Public Lands: For the hunter survey, only 18% of hunters stated that they had experienced a high level of hunter crowding. The comments from those hunters show that many of those respondents were hunting on the Comanche National Grasslands and did not have enjoyable hunts. In most years, very few pronghorn can be found on the Comanche Grasslands during the primary rifle season. With it being the primary public land in the DAU, it is common for there to be too many hunters for the number of pronghorn available.

OBJECTIVES

Approved Alternatives

- ***Post-hunt population objective*:** Extend the current population range of 300-1,500

The population objective is paired with the licensing strategy of setting doe license numbers above demand and setting buck license numbers at demand unless the population goes below the minimum of the range. This strategy lines up with the management strategy used for the previous twelve years and is supported by most landowners and hunters.

- ***Post-hunt sex ratio:*** Extend the expected sex ratio of 40-100 bucks per 100 does

The "expected sex ratio range" considers the unlikelihood that sufficient data would be collected annually in this DAU to generate precise sex ratio estimates. This alternative would be paired with the licensing strategy of setting doe license numbers above demand and setting buck license numbers at demand unless the population goes below the minimum of the population objective range.

STRATEGIES FOR ADDRESSING MANAGEMENT ISSUES AND ACHIEVING OBJECTIVES

Population and Inventory: Between 2009-2019, the Two Buttes population grew slowly and had been well over the previous objective of 300-500 set in 2006. The following management actions have not reduced the Two Buttes population: the addition of a 31-day-long doe-only late season, changing doe licenses to list B, setting doe license numbers at levels high enough that they never sold out, and setting buck license numbers at the level of 1st choice applicant demand. Both landowner and hunter surveys showed support for managing the Two Buttes population at the levels seen in recent years. Local CPW staff are confident that this population can be maintained within the population objective range by setting license numbers as they have been set since 2006 (i.e., doe licenses set above demand and buck licenses set at demand of 1st choice applicants). History suggests that the population is likely to remain within the new objective range. Due to the PLO-caused decrease in license purchases, the population is likely to slowly increase unless hunters start purchasing higher numbers of pronghorn licenses.

The 2020 HMP called for a management scheme for Two Buttes that does not include annual pre-season sex/age classification flights. The plan includes the following management actions:

- Conducting post-hunt minimum count flights every 3 to 5 years to verify that the population is within the objective range.

- Conducting post-season ground surveys in years when no minimum count flight will occur. Ground surveys can be used to determine if the population is at least above the minimum of its range. This acts as a preventative measure of overharvest.

- If ground survey data suggests that the population is below objective, then an additional minimum count flight may be conducted to verify that the population is below objective.

- Doe license numbers are set above the level of demand, where leftover licenses are unlikely to sell out for the regular rifle season, the late season, or the muzzleloader season. Doe license numbers would be decreased if the population were to go below objective.

- Annual buck license numbers are set close to the number of 1st choice applicants that applied for the license during the previous year. Buck license numbers may be decreased if the population were to go below population objective.

- The population objective is set at a wide range: 300-1,500. The bottom of the range coincides with the minimum of the range from the previous HMP. The top end of the range represents the maximum population that wildlife managers think the population may reach under the current license-setting scheme.

- There is no sex ratio objective for the DAU, but instead an "expected sex ratio range." Expected sex ratio ranges have traditionally used for over-the-counter elk DAUs, where it's difficult to control sex ratios. Using an expected sex ratio range is appropriate for this management strategy due to the expected lack of sex classification data and the plan to set license numbers at or above demand.

CPW has 12 years of history managing Two Buttes with this license setting strategy. The strategy has been shown to be successful. With doe license numbers set so high, hunter opportunity has been maximized, and game damage issues have been minimized. Even with the liberal license allocation, the population has increased. The landowner and hunter majority support a population at this level. One of the primary concerns with this strategy is that there is opportunity to overharvest pronghorn. This plan utilizes minimum counts and ground counts as safeguards against overharvest.

Game Damage: Pronghorn damage has not been a major issue in Two Buttes in the last 12+ years. By setting doe licenses above demand, landowners can reduce game damage through hunting. Additionally, another major tool that CPW has given landowners is a late season that gives wheat farmers the ability to reduce pronghorn numbers and disperse them from their fields when they start congregating on them in early December. If game damage claims do occur outside the rifle season structure, dispersal hunts can be used when needed.

Hunter Crowding and Low Pronghorn Numbers on Public Lands: In 2020, CPW added PLO hunt codes for the primary rifle season. In 2021 and 2022, only 2% of the rifle license quota allocation went to hunt codes for licenses that can be used on public lands. This has greatly reduced crowding on the PH-18 portion of the Comanche National Grasslands, has improved hunt quality, and is allowing pronghorn numbers to increase on public lands.

Collegiate Range Pronghorn Herd Management Plan Extension

Data Analysis Unit PH-39

Bryan Lamont, Wildlife Biologist, Salida

GMUs: 48, 56, & 481	**Approval Year for last HMP: 2020**
Post-hunt Population (Modeled)	
• Prior Population Objective:	150-200 pronghorn
• 2022 Post-hunt Population Estimate:	225 pronghorn
• **Approved Population Objective Range:**	**Status Quo 150-200 pronghorn**
Post-hunt Sex Ratio (Modeled)	
• Prior Sex Ratio Objective:	20-25 bucks per 100 does
• 2022 Post-hunt Sex Ratio Estimate:	19 bucks per 100 does
• **Approved Sex Ratio Objective Range:**	**Status Quo 20-25 bucks per 100 does**

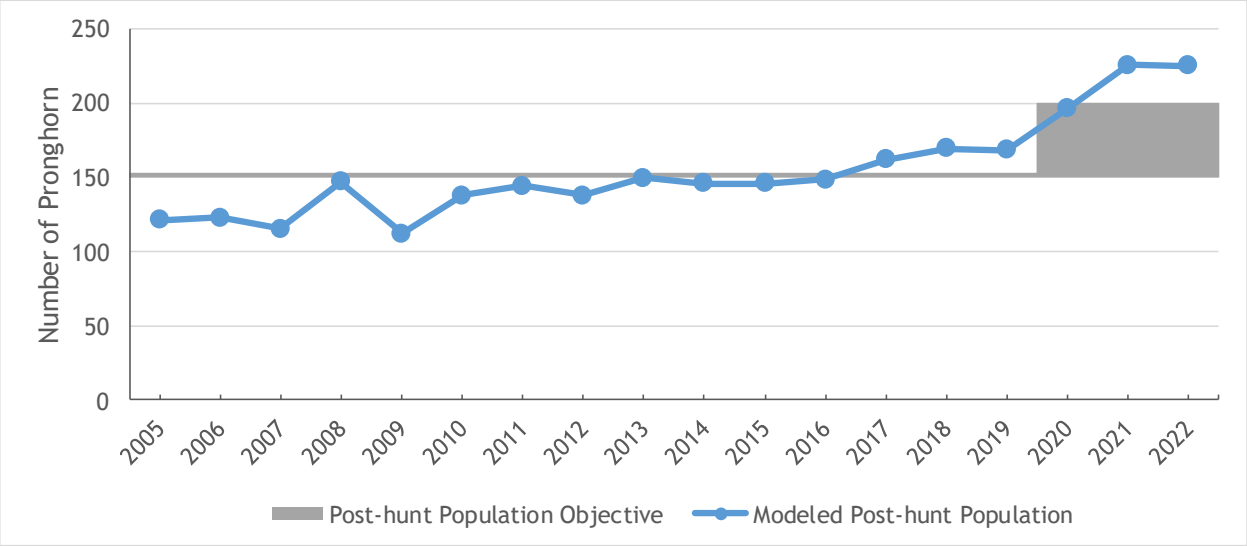


Figure PH39-1. Pronghorn DAU PH-39 modeled post-hunt population and objective range, 2005-2022.

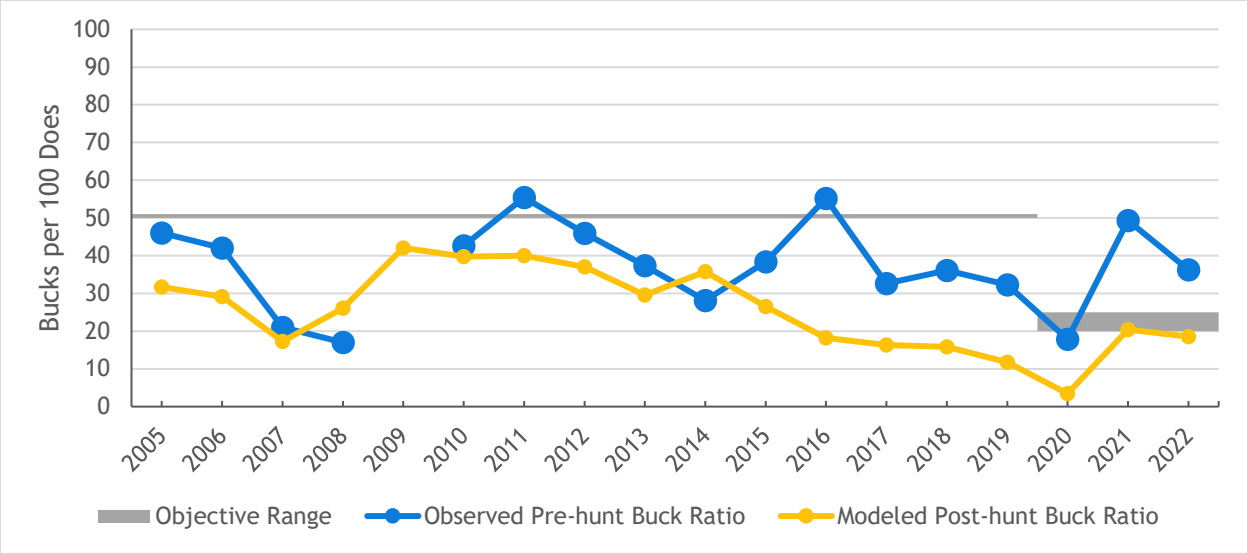


Figure PH39-2. Pronghorn DAU PH-39 observed and modeled post-hunt sex ratio (bucks:100 does), 2005-2022.

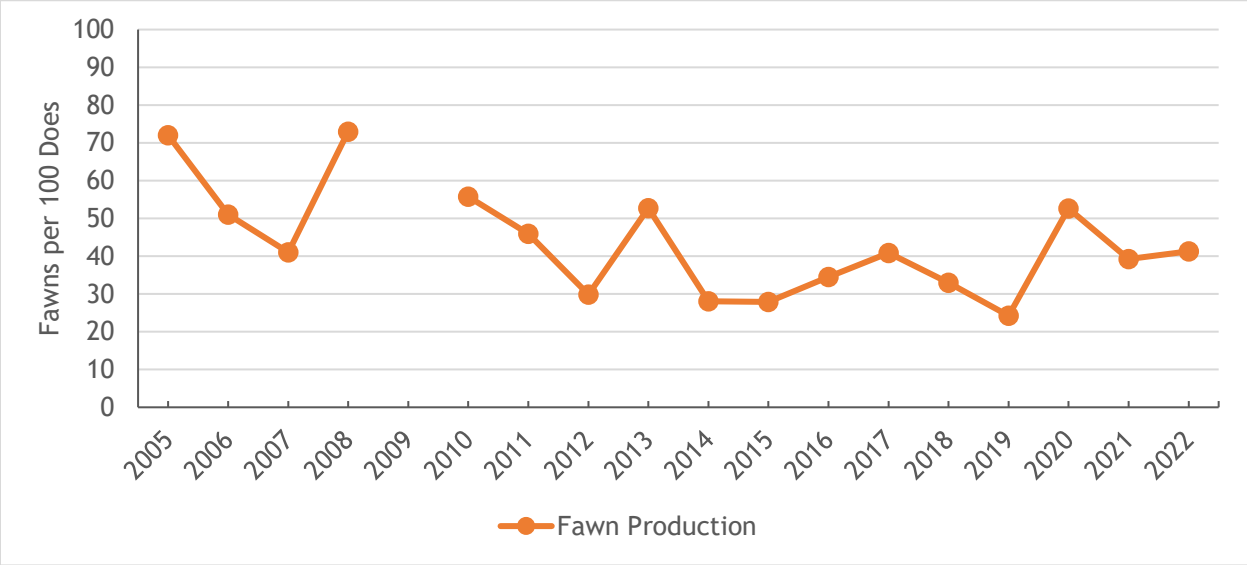


Figure PH39-3. Pronghorn DAU PH-39 fawn production (observed pre-hunt fawn:100 does ratio), 2005-2022.

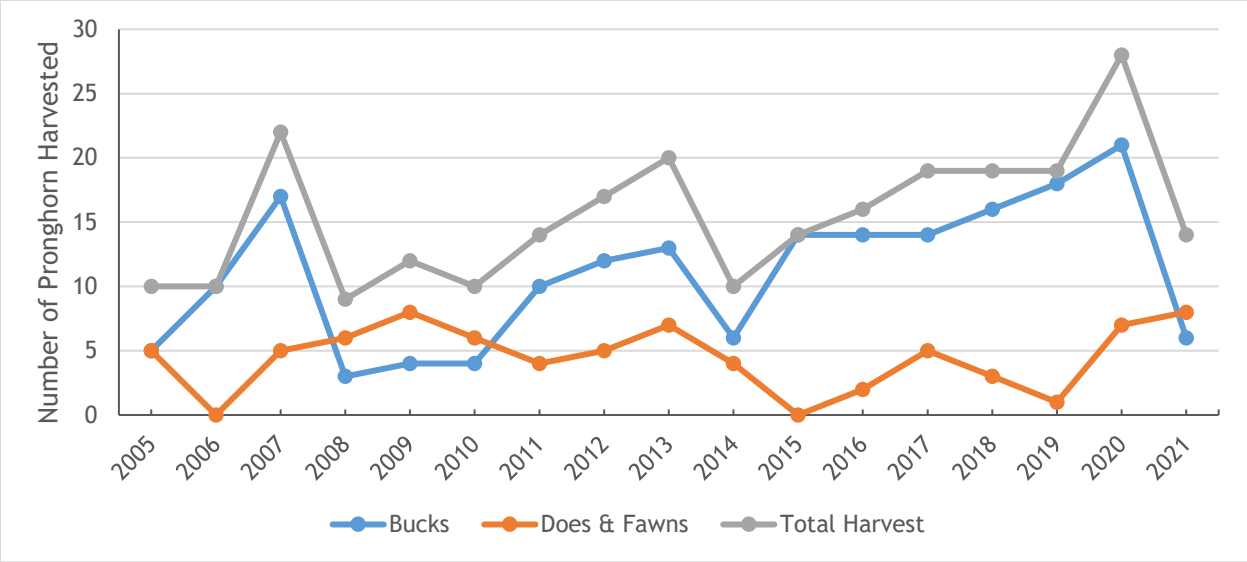


Figure PH39-4. Pronghorn harvest estimates in PH-39, 2005-2021.

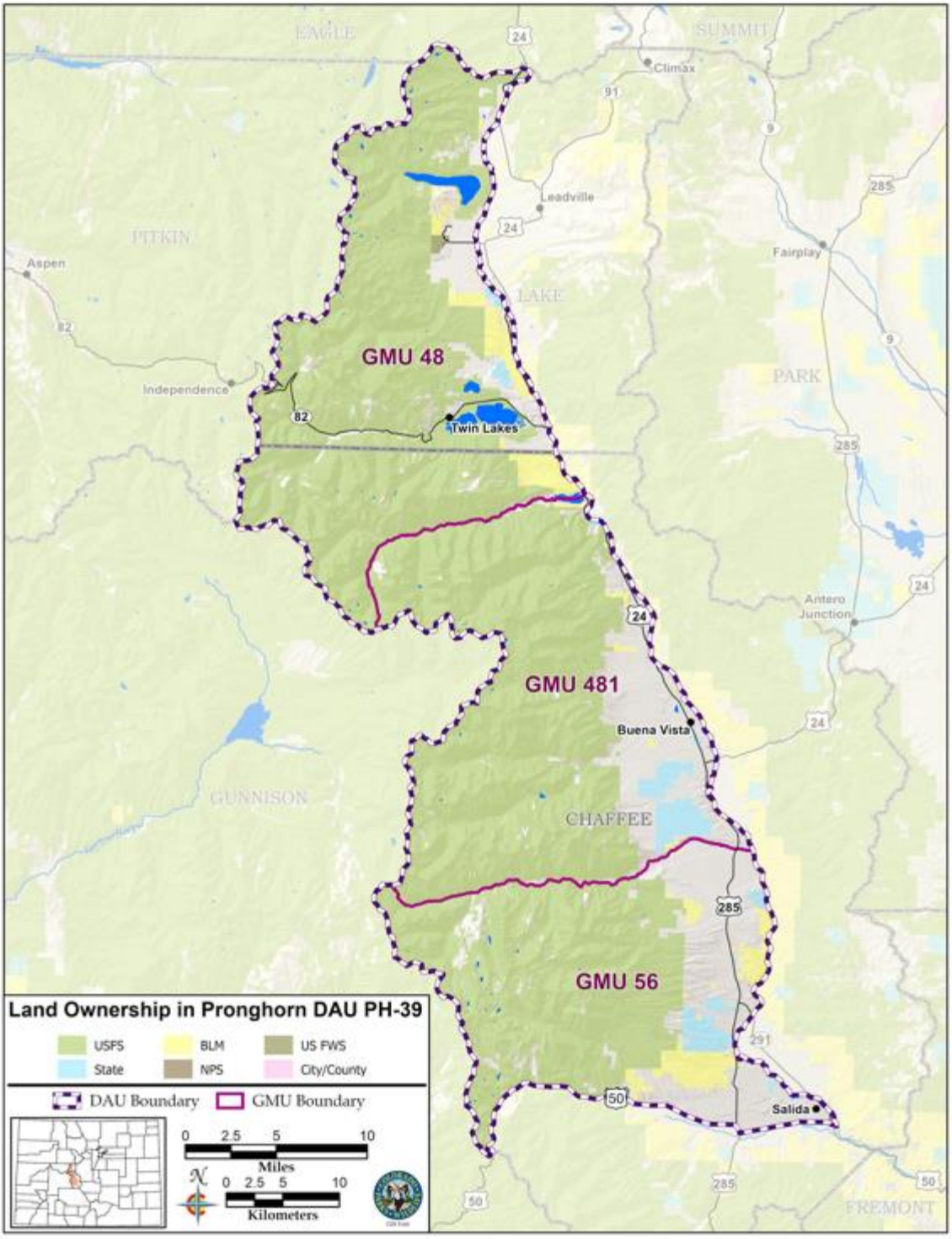


Figure PH39-5. PH-39 Land Ownership

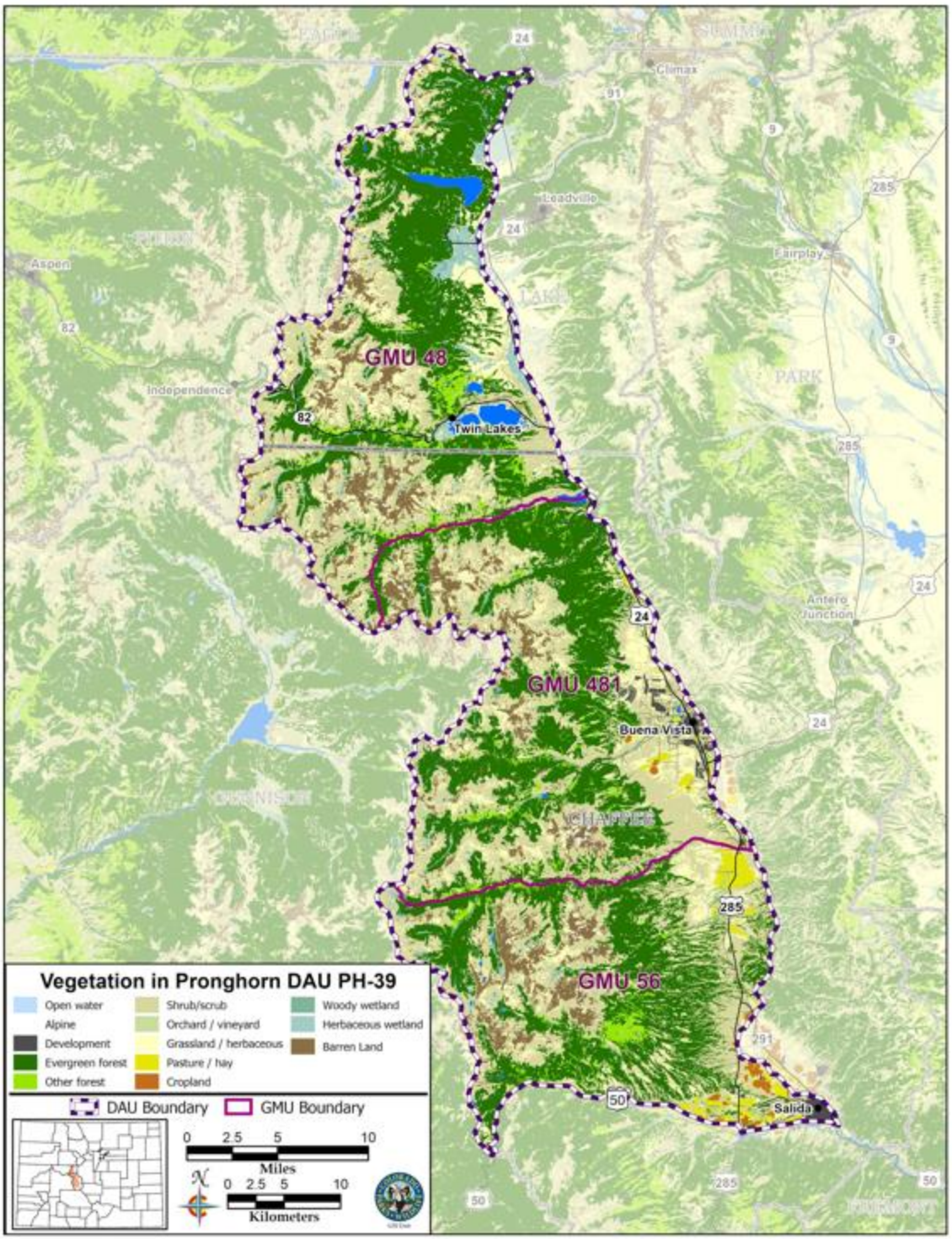


Figure PH39-6. PH-39 Land Cover

GEOGRAPHIC LOCATION, GMUs, LAND OWNERSHIP, LAND USE DESCRIPTION

The PH-39 Collegiate Range Pronghorn Data Analysis Unit (DAU) is located in central Colorado and is comprised of Game Management Units (GMUs) 48, 56, and 481 (Figure PH39-5). The DAU is bounded on the north and west by the Continental Divide, on the east by the Arkansas River and on the south by the South Arkansas River and U.S. Hwy 50. The DAU includes portions of Chaffee and Lake Counties. Nearly 80% (656 mi^2) of the PH-39 DAU consists of public lands, though pronghorn use a disproportionate amount of the private lands in the valley bottom. Only 12% of PH-39 (96 mi^2) is considered pronghorn habitat and the limited amount of habitat combined with high elevations and sometimes-severe winters prevents the population from growing beyond a couple hundred animals.

PRONGHORN HERD INFORMATION

Pronghorn in this herd generally use the low elevation grasslands, shrublands, and ranchlands in the valley bottom. They typically migrate north up the valley during summer and south down the valley during winter.

PRONGHORN HERD CURRENT STATUS AND/OR POPULATION TREND

The PH-39 model estimates there are approximately 225 pronghorn in the population, with a slightly increasing trend since the early-2000s (Figure PH39-1). As the population has increased since 2005, fawn:doe ratios have simultaneously decreased, perhaps indicating that the population is nearing its habitat carrying capacity. Population surveys for this herd are conducted via a coordinated ground count, which occurs every August prior to the opening of the archery season. The number of animals classified during these surveys have ranged from 121-173 animals since 2010, with a slightly increasing trend. During these surveys, ratios are collected of bucks:100 does and fawns:100 does. Pre-hunt buck ratios have averaged 38 bucks:100 does over the previous 5 years of surveys while pre-hunt fawn ratios have averaged 33 fawns:100 does during that same span (Figures PH39-2 and PH39-3). Classification data from the surveys, along with harvest data and survival rate data, are entered into a mathematical population model that provides an annual population estimate.

STAKEHOLDER OUTREACH AND INPUT

When drafting the 2020 PH-39 HMP, CPW sought input from local landowners, hunters, and CPW staff. The draft plan was also sent to the Arkansas River Habitat Partnership Program and posted on the CPW website for a 30-day comment period. Comments generally favored the Preferred Alternatives CPW brought forward to the PWC.

SIGNIFICANT MANAGEMENT ISSUES

Based on the comments received from hunters, the local HPP committee, and field staff, we considered these issues the most important components to setting objectives in 2020.

1. Hunter crowding during the archery season and pronghorn taking refuge on private lands
Historically, PH-39 was included in the units with Over-The-Counter archery hunting. However, during the drafting of the 2020 plan, we heard from numerous hunters, landowners, and CPW personnel that believed the unlimited Over-The-Counter archery season was increasingly causing hunter crowding issues on public lands and driving pronghorn onto private

lands. Often the pronghorn would move onto private land refuges during the archery season and become difficult for public land hunters to access during the muzzleloader and rifle seasons. In response to these concerns, CPW asked the PWC to remove the GMUs in PH-39 from the list of unlimited, Over-The-Counter units. The PWC approved this change for the 2021 season. The three GMUs in PH-39 are now combined into two limited hunt codes, one for archery buck licenses and one for archery antlerless licenses.

2. Hunting access - Hunters were concerned about lack of hunting access, since many pronghorn in this DAU reside on private lands and/or move onto private lands to avoid hunting pressure. Access onto private land for hunting is difficult to obtain in these units.

3. Housing development – During the last several decades, low-density housing developments have reduced the available pronghorn habitat in PH-39 due to direct habitat loss and indirect factors such as human presence, pets, fences and disturbance. Given that the population in Colorado is expected to increase from 5.8 million people in 2019 to 8.1 million by 2050 (https://demography.dola.colorado.gov/), this trend is expected to be one of the main areas of concern for managers, both with trying to maintain wildlife populations and allowing population management on an increasingly developed landscape.

4. Invasive weeds and other habitat changes – Habitat changes due to invasive noxious weeds, drought, and the loss of irrigation in the valley have all contributed to changes to the availability and quality of pronghorn habitat in the valley. Noxious weed invasions including cheat grass, houndstongue, leafy spurge, various knapweeds, thistles, and toad flaxes. These plants have the potential to reduce land productivity to the point that it has little wildlife value. Infestations are exacerbated by reduced funding for treatment on federal lands, absentee landowners without a historical weed knowledge, and increased disturbance caused by increasing road and housing densities. These threats are expected to increase over the timeframe of this plan.

OBJECTIVES

Approved Alternatives

- ***Post-hunt population objective range*:** Extend the current objective of 150-200 pronghorn

The long-term population objectives for this herd should be managed as ranges, rather than point values. Objective ranges better reflect the uncertainty inherent in wildlife population estimates. Also, having the flexibility to manage this pronghorn herd within a range is more fitting to annual variability in ecological conditions. References below to the current population are based on the 2022 post-hunt population of ~200 pronghorn.

The current pronghorn population is slightly above this objective range. However, there is historical evidence that this DAU is capable of sustaining more than 200 pronghorn. Based on internal and external outreach conducted during the 2020 planning effort, stakeholders supported maintaining the current population size. Since the current pronghorn population size is near this objective range, we will be able to maintain this population at current license levels.

- ***Post-hunt sex ratio objective range:*** Extend the current objective of 23-31 bucks per 100 does

Data collection for pronghorn are different from deer and elk because data are collected prior to the hunting seasons each summer. We call these pre-hunt ratios. To maintain consistency with deer and elk, which use post-hunt ratios, we set pronghorn objectives based on modeled, post-hunt ratios.

This objective represents a range that includes the 2020-2022 3-yr-avg modeled post-hunt sex ratio of 23 bucks:100 does for this herd. Landowner and hunter satisfaction currently seems high and CPW personnel see no reason to change current management and license allocation for this herd.

STRATEGIES FOR ADDRESSING MANAGEMENT ISSUES AND ACHIEVING OBJECTIVES

CPW has limited ability to affect several of the issues identified by stakeholders and staff, including housing development, pronghorn taking refuge on private lands, and hunter access. However, CPW will seek any opportunities available to conserve large tracts of land through fee title purchase or conservation easements, which may contain a hunting access component. To address game damage, CPW will continue to offer dispersal licenses and use existing HPP and Game Damage programs for landowners that are experiencing pronghorn conflicts that cannot be addressed through the general hunting seasons on an individual basis. Additionally, CPW will continue to look for opportunities for hunter access onto or through private property.

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Appendix A – 2022 Landowner Survey with Results by DAU

HUGO PH-6 LANDOWNER SURVEY

August 19th, 2022

Dear Landowner/Land Manager:

Wildlife managers at Colorado Parks and Wildlife are updating the Hugo PH-6 pronghorn Herd Management Plan in eastern Colorado. The Herd Management Plan includes pronghorn located in all or part of the following counties (see-attached map): Cheyenne, Kit Carson, and Lincoln. Your input is a very important part of the planning process. The information you provide will help guide management of the pronghorn herd for the next 10 years.

Please take a few minutes to fill out this short survey and return it in the enclosed postage-paid envelope. Your identity will be kept confidential in published reports.

You can find more information about Herd Management Plans on our website:
https://cpw.state.co.us/thingstodo/Pages/HerdManagementPlans.aspx

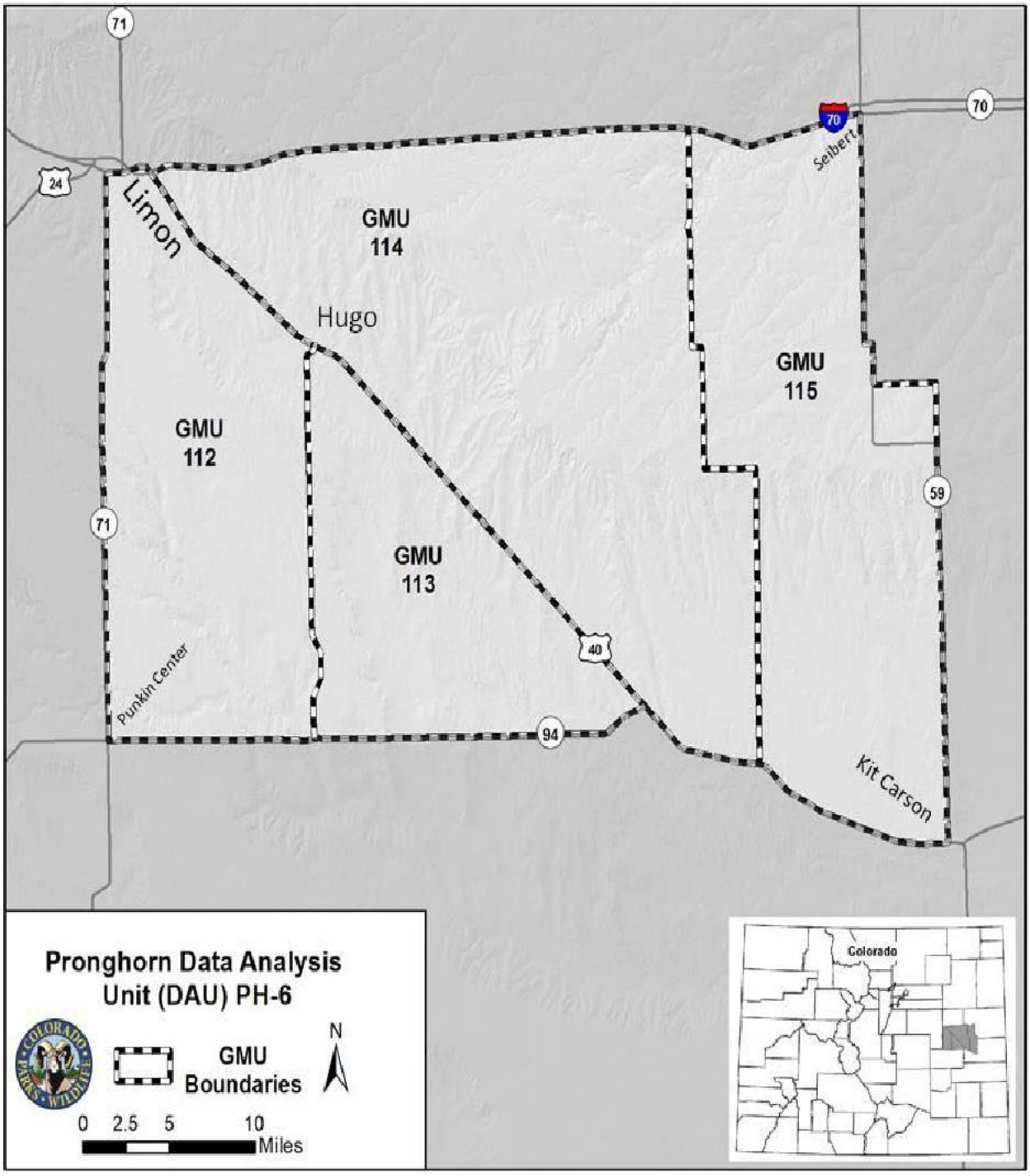
Surveys must be returned by **October 3rd, 2022**.

If you have any questions about this survey, please feel free to contact me at the number or email below.

Thank you for your participation.

Sincerely,

Ty Woodward
4255 Sinton Rd
Colorado Springs, CO 80907
719.227.5220
tyrel.woodward@state.co.us


71
70
24
Limon
Seibert
GMU
114
Hugo
GMU
115
GMU
112
59
71
GMU
113
40
Punkin Center
94
Kit Carson
Pronghorn Data Analysis
Unit (DAU) PH-6
GMU
Boundaries
N
0 2.5 5 10
Miles
Colorado

1. Which county/ counties do you own land in? (Mark all that apply) ***(n=35 responses, 5 landowners had land in multiple counties)***
   - Cheyenne ***(n=6)***
   - Kit Carson ***(n=7)***
   - Lincoln ***(n=28)***

2. How would you describe the land that you own in the PH-6 pronghorn management unit? (please check only one) ***(n=35 responses)***
   - Cropland ***(n=2)***
   - Rangeland ***(n=13)***
   - A mixture of Cropland and Rangeland ***(n=20)***
   - Other, please specify ***(n=0)***

   _____

3. Over the last 5 years which of the following have you allowed to hunt pronghorn on your property? ***(n=35 responses, 29 landowners indicated they provided access to more than one group)***
   - Youth ***(n=27)***
   - Friends and/or neighbors ***(n=30)***
   - Public hunters that do not pay an access fee ***(n=16)***
   - Hunters or outfitters that have leased the land or paid an access fee ***(n=8)***
   - I no longer allow pronghorn hunting on my land ***(n=1)***
   - I have never allowed pronghorn hunting on my land ***(n=0)***
   - Other, please specify ***(n=0)***

   _____

4. To what extent have you experienced any of the following problems related to pronghorn and pronghorn hunters in the last 5 years? ***(n=35 responses)***

	Not a Problem	Minor Problem	Moderate Problem	Major Problem
Too many pronghorn hunters asking for permission to hunt	***17***	***10***	***5***	***2***
Pronghorn hunters trespassing on my property	***8***	***17***	***8***	***2***
Pronghorn hunters damaging my property	***17***	***14***	***1***	***2***
Rude behavior by pronghorn hunters on my property	***20***	***10***	***3***	***2***
Pronghorn damaging growing wheat	***18***	***5***	***7***	***2***
Pronghorn damaging other crops (non-wheat)	***24***	***4***	***2***	***2***
Pronghorn damaging fences	***18***	***11***	***3***	***3***

Hunting licenses are the primary tool available to CPW for managing pronghorn numbers. For landowners, this creates a potential tradeoff between the number of pronghorn on their property and hunting pressure on or around their property. To lower the number of pronghorn, CPW typically increases the number of hunting licenses (primarily for females) available, which increases the number of hunters in the field.

5. How would you like to see the PH-6 pronghorn herd managed? (Please check only one) ***(n=35 responses)***

   - Reduce the number of hunters (more pronghorn, fewer hunters) ***(n=7)***
   - Reduce the number of pronghorn (fewer pronghorn, more hunters) ***(n=7)***
   - The current numbers of hunters and pronghorn are acceptable ***(n=19)***
   - No opinion ***(n=2)***

6. Compared to the current population of pronghorn, how would you like to see the pronghorn population change in the PH-6 herd over the next 10 years? ***(n=35 responses)***

   - Decrease moderately ***(n=3)***
   - Decrease slightly ***(n=5)***
   - Stay the same (current numbers are acceptable) ***(n=18)***
   - Increase slightly ***(n=4)***
   - Increase moderately ***(n=5)***

Before answering the following question, please read the following brief description about managing the number of buck pronghorn in a herd.

If a pronghorn herd is managed for ***buck hunting opportunities***, CPW issues more buck licenses, and buck hunters can generally hunt more frequently. This management objective can result in fewer bucks in the herd after the hunting season.

If a herd is managed for ***a higher number of bucks***, CPW issues fewer licenses. This management objective generally results in less frequent buck hunting opportunities and fewer hunters in the field, but it can also result in a greater chance of encountering a buck during the hunting season.

7. Given this information, should CPW? ***(n=35 responses)***

   - Increase the number of buck hunting licenses (easier to draw a license, more buck hunters in the field) ***(n=2)***
   - Decrease the number of buck hunting licenses (harder to draw a license, more bucks in the population) ***(n=7)***
   - Maintain the current numbers of buck hunting licenses ***(n=21)***
   - I do not have enough information to answer this question ***(n=5)***

CPW uses a 14-day December doe only season in PH-6 to increase doe harvest outside of the regular season. This allows us to manage the pronghorn population without increasing the number of doe hunters in the regular rifle season.

8. Do you support or oppose maintaining a late doe only pronghorn season in the PH-6 herd management unit? ***(n=35 responses)***

- Strongly oppose ***(n=4)***
- Somewhat oppose ***(n=4)***
- Neither oppose or support ***(n=8)***
- Somewhat support ***(n=10)***
- Strongly support ***(n=9)***

9. What changes if any, would you like to see in the length of the December season? ***(n=35 responses)***

- The season should be shorter ***(n=7)***
- The season should be longer ***(n=7)***
- The season is about right ***(n=21)***

Thank you for participating in this survey! Your responses will help us better manage your wildlife resources. Please provide any additional comments you have in the space provided below. ***(n=7 landowners provided written comments)***

1	Hunters given access are very respectful. Most hunters fill their tags with trophy bucks, the groups were larger and there were fewer babies in the spring- there needs to be more balance. NO DEC SEASON
2	It seems that several years ago the landowner preference draw was changed to allow fewer tags under the landowner preference program. That was a bad decision
3	Let landowners manage herd- DWMs never around. Do not give vouchers to people to sell to outfitters, do away with Dec OTC licenses, give landowners free licenses (YOUR wildlife eats our grass and livestock and when we try to get a claim we have to deal with a dumbass DWM that does not know which end of a cow to kiss, thank you CSU) [rambling about coyotes and pheasants/quail, more insults for CSU and DWMs]
4	See people hunting from the road
5	Stop Dec season altogether
6	Too many hunters on property without permission
7	We have a problem in 115 with too many acres being locked up by guides and outfitters who are only interested in taking big bucks (on paid hunts). This really increases the hunting pressure/hunt request numbers on those of us who allow general public access for free hunts. I don't really have a solution, but if game damage payments ever happen, those who do not allow reasonable public access should not be eligible for any of this assistance.

THATCHER PH-7 LANDOWNER SURVEY

August 19, 2022

Dear Landowner/Land Manager:

Wildlife managers at Colorado Parks and Wildlife are updating the Thatcher PH-7 pronghorn Herd Management Plan in eastern Colorado. The Herd Management Plan includes pronghorn located in all or part of the following counties (see attached map): Pueblo, Otero, Las Animas, and Huerfano. Your input is a very important part of the planning process. The information you provide will help guide management of the pronghorn herd for the next 10 years.

Please take a few minutes to fill out this short survey and return it in the enclosed postage-paid envelope. Your identity will be kept confidential in published reports.

You can find more information about Herd Management Plans on our website: https://cpw.state.co.us/thingstodo/Pages/HerdManagementPlans.aspx

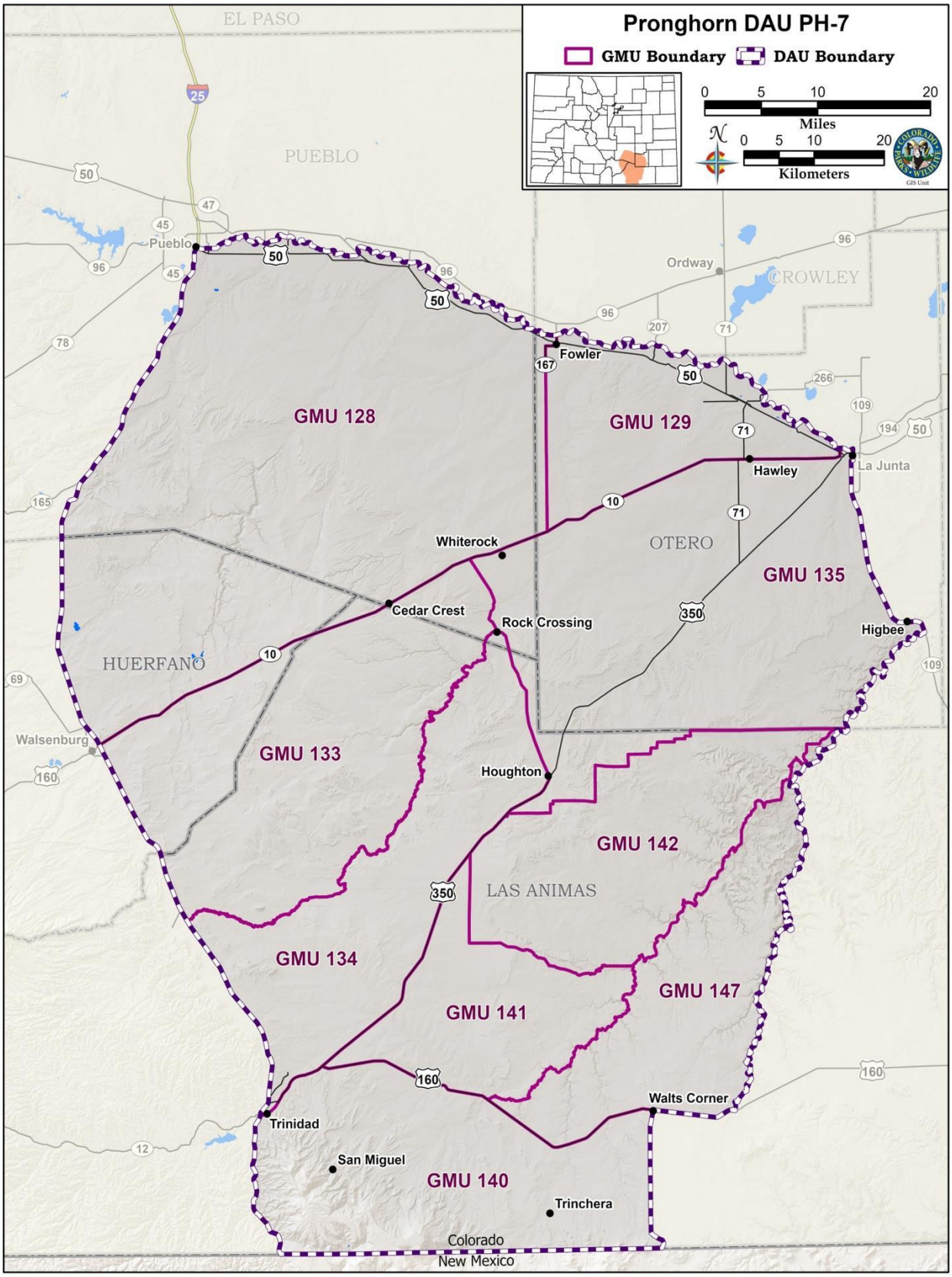
Surveys must be returned **October 3rd, 2022**.

If you have any questions about this survey, please feel free to contact me at the number or email below.

Thank you for your participation.

Sincerely,

Allen Vitt
600 Pueblo Reservoir Rd
Pueblo, CO 81005
719.561.5306
allen.vitt@state.co.us


Pronghorn DAU PH-7
GMU Boundary
DAU Boundary
0 5 10 20
Miles
0 5 10 20
Kilometers
EL PASO
PUEBLO
CROWLEY
OTERO
HUERFANO
LAS ANIMAS
GMU 128
GMU 129
GMU 133
GMU 134
GMU 135
GMU 140
GMU 141
GMU 142
GMU 147
Pueblo
Ordway
Fowler
Hawley
La Junta
Whiterock
Cedar Crest
Rock Crossing
Higbee
Walsenburg
Houghton
Trinidad
San Miguel
Trinchera
Walts Corner
Colorado
New Mexico

1. Which county/ counties do you own land in? (Mark all that apply) ***(n=53 responses, 12 landowners have land in multiple counties)***
   - Huerfano ***(n=9)***
   - Las Animas ***(n=30***)
   - Otero ***(n=15)***
   - Pueblo ***(n=14)***

2. How would you describe the land that you own in the PH-7 pronghorn management unit? (please check only one) ***(n=53 responses)***
   - Cropland ***(n=0)***
   - Rangeland ***(n=38***)
   - A mixture of Cropland and Rangeland ***(n=15)***
   - Other, please specify ***(n=0)***

3. Over the last 5 years which of the following have you allowed to hunt pronghorn on your property? ***(n=51 responses, 24 landowners indicated they provide access to more than one group)***
   - Youth ***(n=22)***
   - Friends and/or neighbors ***(n=31)***
   - Public hunters that do not pay an access fee ***(n=10)***
   - Hunters or outfitters that have leased the land or paid an access fee ***(n=14)***
   - I no longer allow pronghorn hunting on my land ***(n=0)***
   - I have never allowed pronghorn hunting on my land ***(n=6)***
   - Other, please specify ***(n=0)***

4. To what extent have you experienced any of the following problems related to pronghorn and pronghorn hunters in the last 5 years?

	Not a Problem	Minor Problem	Moderate Problem	Major Problem
Too many pronghorn hunters asking for permission to hunt	***24***	***14***	***11***	***3***
Pronghorn hunters trespassing on my property	***23***	***10***	***13***	***5***
Pronghorn hunters damaging my property	***30***	***12***	***5***	***3***
Rude behavior by pronghorn hunters on my property	***32***	***9***	***4***	***5***
Pronghorn damaging growing wheat	***46***	***1***	***0***	***0***
Pronghorn damaging other crops (non wheat)	***40***	***2***	***4***	***1***
Pronghorn damaging fences	***24***	***18***	***5***	***4***

Hunting licenses are the primary tool available to CPW for managing pronghorn numbers. For landowners, this creates a potential tradeoff between the number of pronghorn on their property and hunting pressure on or around their property. To lower the number of pronghorn, CPW typically increases the number of hunting licenses (primarily for females) available, which increases the number of hunters in the field.

5. How would you like to see the PH-7 pronghorn herd managed? (Please check only one) ***(n=50 responses)***
   - Reduce the number of hunters (more pronghorn, fewer hunters) ***(n=13)***
   - Reduce the number of pronghorn (fewer pronghorn, more hunters) ***(n=2)***
   - The current numbers of hunters and pronghorn are acceptable ***(n=22)***
   - No opinion ***(n=13)***

6. Compared to the current population of pronghorn, how would you like to see the pronghorn population change in the PH-7 herd over the next 10 years? ***(n=50 responses)***
   - Decrease moderately ***(n=2)***
   - Decrease slightly ***(n=4)***
   - Stay the same (current numbers are acceptable) ***(n=19)***
   - Increase slightly ***(n=18)***
   - Increase moderately ***(n=7)***

Before answering the following question, please read the following brief description about managing the number of buck pronghorn in a herd.

If a pronghorn herd is managed for ***buck hunting opportunities***, CPW issues more buck licenses, and buck hunters can generally hunt more frequently. This management objective can result in fewer bucks in the herd after the hunting season.

If a herd is managed for ***a higher number of bucks***, CPW issues fewer licenses. This management objective generally results in less frequent buck hunting opportunities and fewer hunters in the field, but it can also result in a greater chance of encountering a buck during the hunting season.

7. Given this information, should CPW? ***(n=51 responses)***
   - Increase the number of buck hunting licenses (easier to draw a license, more buck hunters in the field) ***(n=5)***
   - Decrease the number of buck hunting licenses (harder to draw a license, more bucks in the population) ***(n=11)***
   - Maintain the current number of buck hunting licenses ***(n=23)***
   - I do not have enough information to answer this question ***(n=12)***

CPW uses a 5-day December doe-only season in PH-7 to increase doe harvest outside the regular season. This allows us to manage the pronghorn population without increasing the number of doe hunters in the regular rifle season.

8. Do you support or oppose maintaining a late doe-only pronghorn season in the PH-7 herd management unit? ***(n=52 responses)***
   - Strongly oppose ***(n=8)***
   - Somewhat oppose ***(n=6)***
   - Neither oppose or support ***(n=16)***
   - Somewhat support ***(n=12)***
   - Strongly support ***(n=10)***

9. What changes, if any, would you like to see in the length of the December season? ***(n=47 responses)***
   - The season should be shorter ***(n=7)***
   - The season should be longer ***(n=9)***
   - The season is about right ***(n=31***)

Thank you for participating in this survey! Your responses will help us better manage your wildlife resources. Please provide any additional comments you have in the space provided below. ***(n=14 landowners provided comment)***

1	Give the landowner more say in management
2	Never saw PH on property
3	Need more DWMs in unit 133 opening weekend
4	There are CRs on 3 sides of my property (64th ln, Garret rd, 62nd ln) and PH are shot every year without permission, usually from the road AND inside a truck. PH have been shot right next to my house before sunrise. It is becoming a very big problem.
5	There are too many licenses for the amount of land available for public hunting in unit 133. They all end up in one place and its too many
6	Also allow combat veterans to hunt on land
7	Too many licenses in unit 133
8	I have never found PH on my property but I have seen them on adjacent properties
9	There has never been any PH on my farm
10	The PH population on our property has decreased over the last 12 years and we would like to see more PH. Hunters do trespass but we don't know what they are hunting.
11	The Dec hunt should not be continued. There has been a dramatic reduction in the number of PH and PH babies over 5-6 years even despite having good moisture for 2 years.
12	Dec season should be eliminated
13	There should be fewer (maybe 2) hunting seasons in this unit due to the constant pressure PH face. They are harassed and/or wounded by hunters (Bow and MLD specifically) shooting 200+yds with guns that only go 75 yds. Hunters also camped/set up blinds right next to the water in 100 degree heat
14	Nobody has ever asked to hunt PH on my property

YODER PH-8 LANDOWNER SURVEY

August 19, 2022

Dear Landowner/Land Manager:

Wildlife managers at Colorado Parks and Wildlife are updating the Yoder PH-8 pronghorn Herd Management Plan in eastern Colorado. The Herd Management Plan includes pronghorn located in all or part of the following counties (see-attached map): Crowley, Elbert, El Paso, Lincoln and Pueblo. Your input is a very important part of the planning process. The information you provide will help guide management of the pronghorn herd for the next 10 years.

Please take a few minutes to fill out this short survey and return it in the enclosed postage-paid envelope. Your identity will be kept confidential in published reports.

You can find more information about Herd Management Plans on our website:
https://cpw.state.co.us/thingstodo/Pages/HerdManagementPlans.aspx

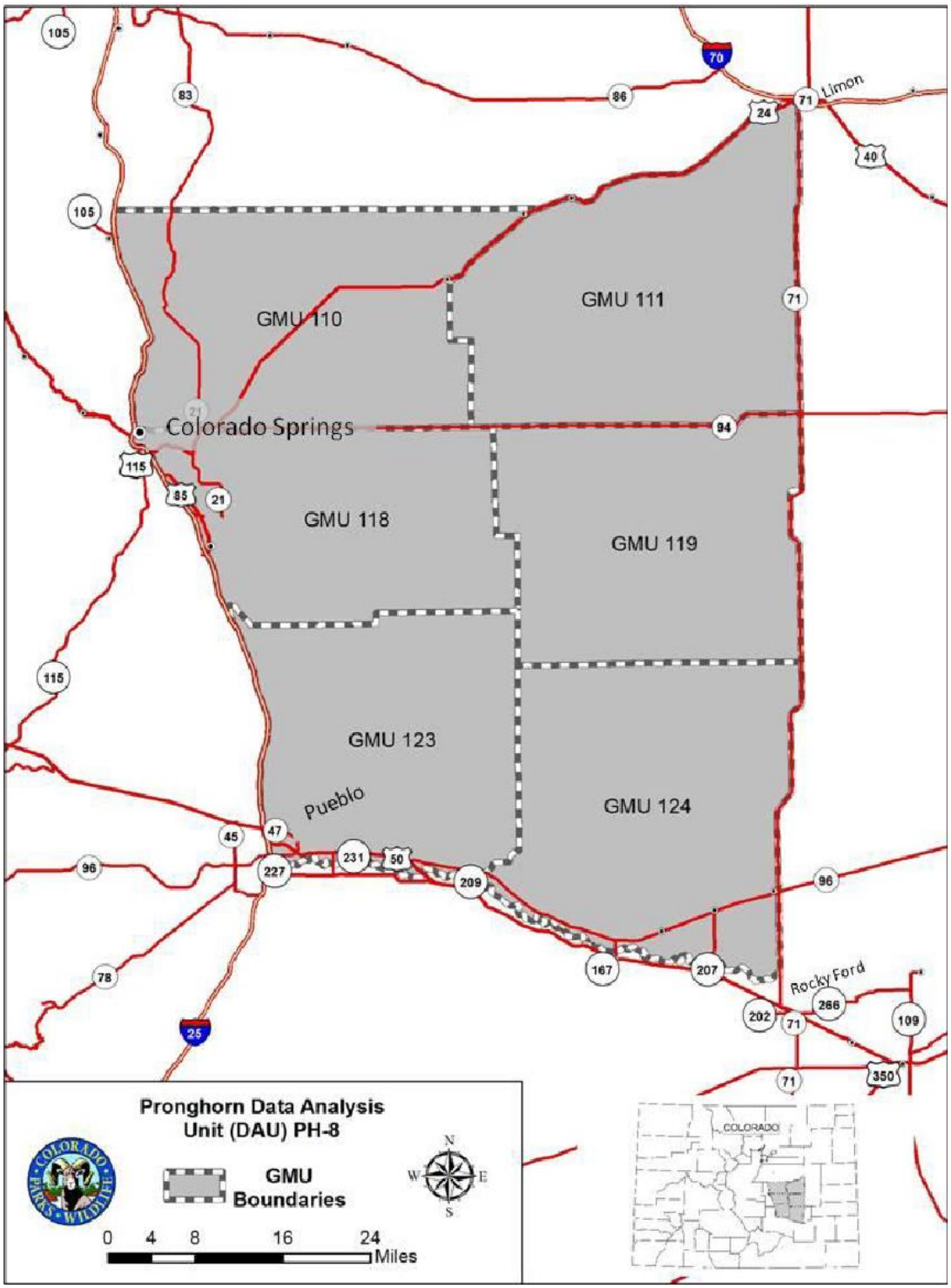
Surveys must be returned by **October 3rd, 2022**.

If you have any questions about this survey, please feel free to contact me at the number or email below.

Thank you for your participation.

Sincerely,

Ty Woodward
4255 Sinton Rd
Colorado Springs, CO 80907
719.227.5220
tyrel.woodward@state.co.us


GMU 110
GMU 111
GMU 118
GMU 119
GMU 123
GMU 124
Colorado Springs
Pueblo
Limon
Rocky Ford
Pronghorn Data Analysis Unit (DAU) PH-8
GMU Boundaries
0 4 8 16 24
Miles
COLORADO

1. Which county/ counties do you own land in? (Mark all that apply) ***(n=61 responses, 20 landowners have land in multiple counties)***
   - Crowley ***(n=6)***
   - Elbert ***(n=15)***
   - El Paso ***(n=31)***
   - Lincoln ***(n-19)***
   - Pueblo ***(n=13)***
2. How would you describe the land that you own in the PH-8 pronghorn management unit? (please check only one) ***(n=61 responses)***
   - Cropland ***(n=1)***
   - Rangeland ***(n=36)***
   - A mixture of Cropland and Rangeland ***(n=19)***
   - Other, please specify ***(n=4)***

     _____
3. Over the last 5 years which of the following have you allowed to hunt pronghorn on your property? ***(n=60 responses, 25 landowners indicated they provide access to more than one group)***
   - Youth ***(n=22)***
   - Friends and/or neighbors ***(n=38)***
   - Public hunters that do not pay an access fee ***(n=12)***
   - Hunters or outfitters that have leased the land or paid an access fee ***(n=9)***
   - I no longer allow pronghorn hunting on my land ***(n=2)***
   - I have never allowed pronghorn hunting on my land ***(n=12)***
   - Other, please specify ***(n=0)***

4. To what extent have you experienced any of the following problems related to pronghorn and pronghorn hunters in the last 5 years? ***(n=63 responses)***

	Not a Problem	Minor Problem	Moderate Problem	Major Problem
Too many pronghorn hunters asking for permission to hunt	***29***	***20***	***12***	***2***
Pronghorn hunters trespassing on my property	***26***	***18***	***11***	***8***
Pronghorn hunters damaging my property	***46***	***7***	***2***	***5***
Rude behavior by pronghorn hunters on my property	***40***	***13***	***4***	***4***
Pronghorn damaging growing wheat	***45***	***2***	***3***	***7***
Pronghorn damaging other crops (non-wheat)	***44***	***4***	***4***	***7***
Pronghorn damaging fences	***26***	***21***	***7***	***7***

Hunting licenses are the primary tool available to CPW for managing pronghorn numbers. For landowners, this creates a potential tradeoff between the number of pronghorn on their property and hunting pressure on or around their property. To lower the number of pronghorn, CPW typically increases the number of hunting licenses (primarily for females) available, which increases the number of hunters in the field.

5. How would you like to see the PH-8 pronghorn herd managed? (Please check only one) ***(n=61 responses)***
   - Reduce the number of hunters (more pronghorn, fewer hunters) ***(n=13)***
   - Reduce the number of pronghorn (fewer pronghorn, more hunters) ***(n=13)***
   - The current numbers of hunters and pronghorn are acceptable ***(n=24)***
   - No opinion ***(n=11)***

6. Compared to the current population of pronghorn, how would you like to see the pronghorn population change in the PH-8 herd over the next 10 years? ***(n=61 responses)***
   - Decrease moderately ***(n=5)***
   - Decrease slightly ***(n=14)***
   - Stay the same (current numbers are acceptable) ***(n=25)***
   - Increase slightly ***(n=11)***
   - Increase moderately ***(n=6)***

Before answering the following question, please read the following brief description about managing the number of buck pronghorn in a herd.

If a pronghorn herd is managed for ***buck hunting opportunities***, CPW issues more buck licenses, and buck hunters can generally hunt more frequently. This management objective can result in fewer bucks in the herd after the hunting season.

If a herd is managed for ***a higher number of bucks***, CPW issues fewer licenses. This management objective generally results in less frequent buck hunting opportunities and fewer hunters in the field, but it can also result in a greater chance of encountering a buck during the hunting season.

7. Given this information, should CPW? ***(n=62 responses)***
   - Increase the number of buck hunting licenses (easier to draw a license, more buck hunters in the field) ***(n=14)***
   - Decrease the number of buck hunting licenses (harder to draw a license, more bucks in the population) ***(n=11)***
   - Maintain the current numbers of buck hunting licenses ***(n=24)***
   - I do not have enough information to answer this question ***(n=13)***

CPW uses a 30-day December doe-only season in PH-8 to increase doe harvest outside of the regular season. This allows us to manage the pronghorn population without increasing the number of doe hunters in the regular rifle season.

8. Do you support or oppose maintaining a late doe only pronghorn season in the PH-8 herd management unit? ***(n=61 responses)***
   - Strongly oppose ***(n=14)***
   - Somewhat oppose ***(n=3)***
   - Neither oppose or support ***(n=17)***
   - Somewhat support ***(n=13)***
   - Strongly support ***(n=14)***

9. What changes if any, would you like to see in the length of the December season? ***(n=57 responses)***
   - The season should be shorter ***(n=11)***
   - The season should be longer ***(n=6)***
   - The season is about right ***(n=40)***

Thank you for participating in this survey! Your responses will help us better manage your wildlife resources. Please provide any additional comments you have in the space provided below. ***(n=10 landowners provided comment)***

1	I have allowed public hunting in the past, due to the number of hunters straining my land, so I have shut down public access and switched to an access fee and now only allow 1 hunter per season. We also had a registered angus bull that was shot during rifle season
2	We only have 3-5 PH and they disappear in winter. Once had a herd of 20-30 go through
3	5 families depending on draw. Seems herd is down this year sec 123
4	Our antelope numbers are very low. I used to see 15-20 PH, now I see 1-2 or none
5	Allow hunters to take 2 does a year!!
6	I also allow all hunters that use pure copper bullets. Thank you!!
7	In 6 years I have only seen 1 PH on my land
8	It would be beneficial to landowners to be notified of various hunting seasons. We do not hunt, and we are not aware of when the various seasons are held and the length of those seasons. The December PH season does not seem beneficial. Few, if any, PH are harvested on our property. The initial season in October is too long!! Many landowners, particularly ranchers, are trying to wean calves then and the long season conflicts with trying to work cattle.
9	No December Season
10	The hunters are the problem not the antelope

LAST CHANCE PH-19 LANDOWNER SURVEY

August 19, 2022

Dear Landowner/Land Manager:

Wildlife managers at Colorado Parks and Wildlife are updating the Last Chance PH-19 pronghorn Herd Management Plan in eastern Colorado. The Herd Management Plan includes pronghorn located in all or part of the following counties (see-attached map): Arapahoe, Washington, Yuma, Elbert, Lincoln, and Kit Carson. Your input is a very important part of the planning process. The information you provide will help guide management of the pronghorn herd for the next 10 years.

Please take a few minutes to fill out this short survey and return it in the enclosed postage-paid envelope. Your identity will be kept confidential in published reports.

You can find more information about Herd Management Plans on our website:
https://cpw.state.co.us/thingstodo/Pages/HerdManagementPlans.aspx

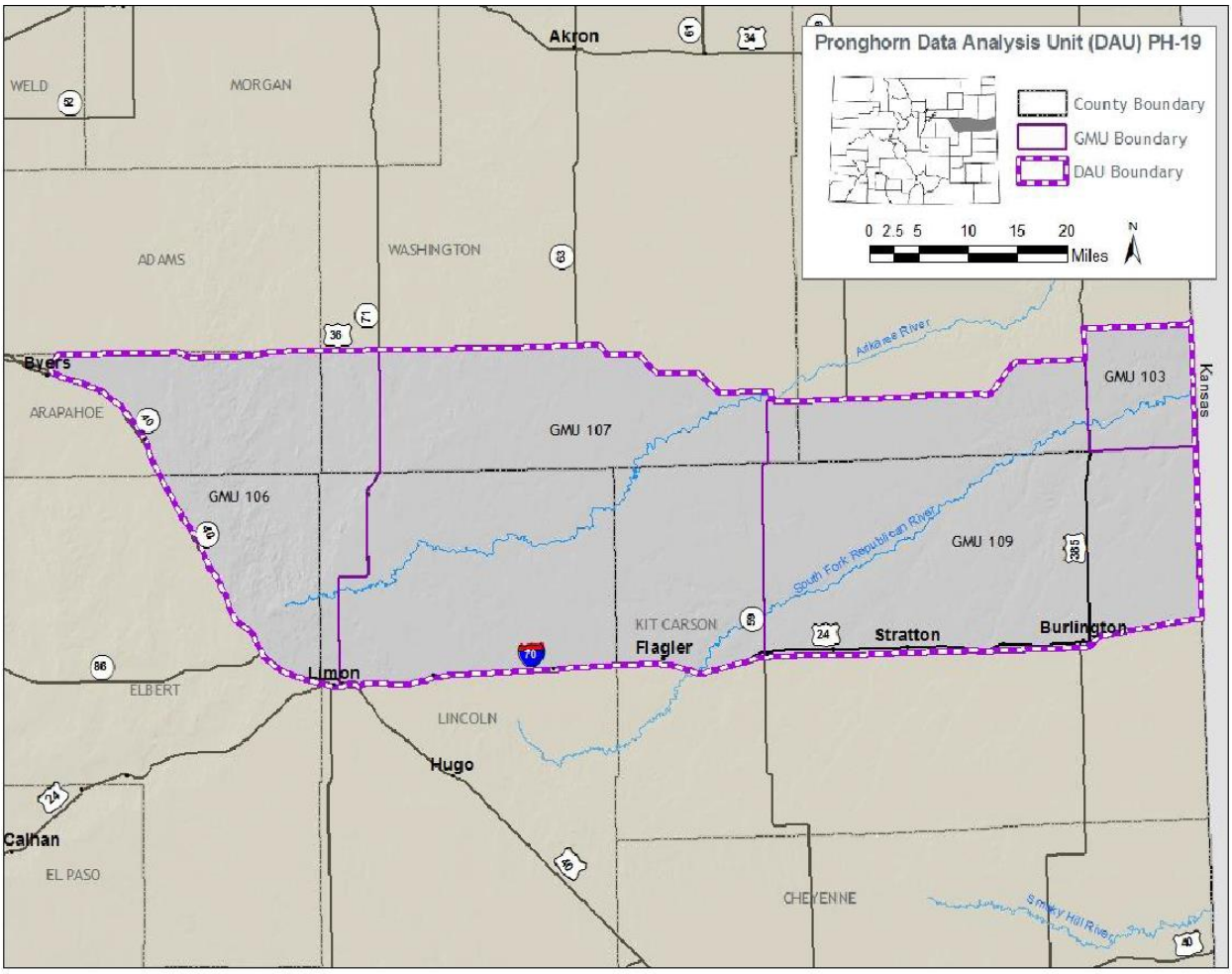
Surveys must be returned by **October 3rd, 2022**.

If you have any questions about this survey, please feel free to contact me at the number or email below.

Thank you for your participation.

Sincerely,

Ty Woodward
4255 Sinton Rd
Colorado Springs, CO 80907
719.227.5220
tyrel.woodward@state.co.us


Pronghorn Data Analysis Unit (DAU) PH-19
County Boundary
GMU Boundary
DAU Boundary
0 2.5 5 10 15 20
Miles
N
Akron
WELD
MORGAN
ADAMS
WASHINGTON
Byers
ARAPAHOE
GMU 107
GMU 106
GMU 103
GMU 109
Arikaree River
South Fork Republican River
Kansas
KIT CARSON
Flagler
Stratton
Burlington
Limon
ELBERT
LINCOLN
Hugo
Calhan
EL PASO
CHEYENNE
Smoky Hill River

1. Which county/ counties do you own land in? (Mark all that apply) ***(n=84 responses, 37 landowners have land in multiple counties)***
   - Arapahoe ***(n=29)***
   - Elbert ***(n=18)***
   - Kit Carson ***(n=20)***
   - Lincoln ***(n=31)***
   - Yuma ***(n=10)***
   - Washington ***(n=20)***

2. How would you describe the land that you own in the PH-19 pronghorn management unit? (please check only one) ***(n=76 responses)***
   - Cropland ***(n=16)***
   - Rangeland ***(n=16)***
   - A mixture of Cropland and Rangeland ***(n=44)***
   - Other, please specify ***(n=0)***

3. Over the last 5 years which of the following have you allowed to hunt pronghorn on your property? ***(n=72 responses, 33 landowners indicated they provided access to more than one group)***
   - Youth ***(n=27)***
   - Friends and/or neighbors ***(n=45)***
   - Public hunters that do not pay an access fee ***(n=26)***
   - Hunters or outfitters that have leased the land or paid an access fee ***(n=19)***
   - I no longer allow pronghorn hunting on my land ***(n=4)***
   - I have never allowed pronghorn hunting on my land ***(n=7)***
   - Other, please specify ***(n=0)***

4. To what extent have you experienced any of the following problems related to pronghorn and pronghorn hunters in the last 5 years? ***(n=84 responses)***

	Not a Problem	Minor Problem	Moderate Problem	Major Problem
Too many pronghorn hunters asking for permission to hunt	***46***	***24***	***8***	***2***
Pronghorn hunters trespassing on my property	***31***	***27***	***16***	***8***
Pronghorn hunters damaging my property	***44***	***26***	***8***	***3***
Rude behavior by pronghorn hunters on my property	***51***	***21***	***4***	***3***
Pronghorn damaging growing wheat	***36***	***14***	***14***	***16***
Pronghorn damaging other crops (non-wheat)	***40***	***18***	***13***	***10***
Pronghorn damaging fences	***32***	***25***	***16***	***10***

Hunting licenses are the primary tool available to CPW for managing pronghorn numbers. For landowners, this creates a potential tradeoff between the number of pronghorn on their property and hunting pressure on or around their property. To lower the number of pronghorn, CPW typically increases the number of hunting licenses (primarily for females) available, which increases the number of hunters in the field.

5. How would you like to see the PH-19 pronghorn herd managed? (Please check only one) ***(n=77 responses)***
   - Reduce the number of hunters (more pronghorn, fewer hunters) ***(n=3)***
   - Reduce the number of pronghorn (fewer pronghorn, more hunters) ***(n=24)***
   - The current numbers of hunters and pronghorn are acceptable ***(n=33)***
   - No opinion ***(n=17)***
6. Compared to the current population of pronghorn, how would you like to see the pronghorn population change in the PH-19 herd over the next 10 years? ***(n=77 responses)***
   - Decrease moderately ***(n=25)***
   - Decrease slightly ***(n=13)***
   - Stay the same (current numbers are acceptable) ***(n=26)***
   - Increase slightly ***(n=11)***
   - Increase moderately ***(n=2)***

Before answering question 7, please read the following brief description about managing the number of buck pronghorn in a herd.

If a pronghorn herd is managed for ***buck hunting opportunities***, CPW issues more buck licenses, and buck hunters can generally hunt more frequently. This management objective can result in fewer bucks in the herd after the hunting season.

If a herd is managed for ***a higher number of bucks***, CPW issues fewer licenses. This management objective generally results in less frequent buck hunting opportunities and fewer hunters in the field, but it can also result in a greater chance of encountering a buck during the hunting season.

7. Given this information, should CPW? ***(n=83 responses)***
   - Increase the number of buck hunting licenses (easier to draw a license, more buck hunters in the field) ***(n=27)***
   - Decrease the number of buck hunting licenses (harder to draw a license, more bucks in the population) ***(n=5)***
   - Maintain the current numbers of buck hunting licenses ***(n=25)***
   - I do not have enough information to answer this question ***(n=26)***

Thank you for participating in this survey! Your responses will help us better manage your wildlife resources. Please provide any additional comments you have in the space provided below. ***(n=19 landowners that provided comment)***

1	Property is in a conservation easement. Our property in Kit Carson Yuma counties do not see many PH, if any
2	I think youth antelope hunting is a very good way to get youth interested in big game hunting! My child did this and it was a good experience
3	More landowner permits
4	No one ever asks for access to our property as we do not have PH on our land
5	Herds need to be much smaller
6	No one asks permission but there are a lot of trespassers. It is becoming a major problem
7	You need to issue more landowner permits, our population has exploded! Population should decrease by 40%. More landowner permits!!
8	My friends have applied for the past several years and have not drawn any licenses. I would let them hunt because they are careful and respect the land. So your process to pick the right people to hunt sucks
9	This land is highly erodible
10	Not many PH on my land south of hwy 36, quite a few PH on property north of hwy 36
11	Thank you for this survey. PH numbers have increased greatly over the past 10yrs, There are huge herds during the winter and I believe we are over capacity in south Washington County
12	No one has ever asked permission to hunt my property
13	The hunters that ask for permission to hunt are usually respectful and careful of our property. They have even contacted us to inform us that other hunters have left our gates open and that all our cows were loose. So now we have to check our pastures in the evenings to make sure they are closed- we have never had to do this before. Also, we have a bridge on the CR just 1/2 mile from our home. For the past 2-3 years we have noticed that hunters dump their trash off the bridge to blow everywhere. It's on CR 8 and close to Rd GG, SE of Anton, CO. It is not the usual respectful hunters but ones we do not know that hunt without permission.
14	Just purchased property last year in Lincoln county, never asked about property in Arapaho
15	Most hunters are considerate. One time I had a hunter break down a pasture fence for no reason.
16	Saw 123+ PH on the Lincoln/Washington county line this spring! Unprecedented # in the 60yrs I've lived here!! That's a lot of pasture grass!
17	Do not have PH
18	Used to allow non-friends/neighbors to hunt but have stopped due to disrespect of property- driving on crops, shooting from roads in trucks, walking passed no trespassing signs, etc. Hunting is necessary to control the size of herds which help reduce loss of crops range damage. Hunters have become disrespectful to our land and property. During hunting season we need more wildlife rangers in the field for if nothing else a visual presence to hunters
19	Population needs to be reduced greatly

WET MOUNTAIN PH-20 LANDOWNER SURVEY

January 13, 2023

Dear Landowner/Land Manager:

Wildlife managers at Colorado Parks and Wildlife are updating the Wet Mountain PH-20 Pronghorn Herd Management Plan. The Herd Management Plan includes pronghorn located in all or part of the following counties (see attached map): Custer, Pueblo, Otero, Las Animas, and Huerfano. Your input is a very important part of the planning process. The information you provide will help guide the management of the pronghorn herd for the next 10 years.

Please take a few minutes to fill out this short survey and return it in the enclosed postage-paid envelope. Your identity will be kept confidential in published reports.

You can find more information about Herd Management Plans on our website: https://cpw.state.co.us/thingstodo/Pages/HerdManagementPlans.aspx

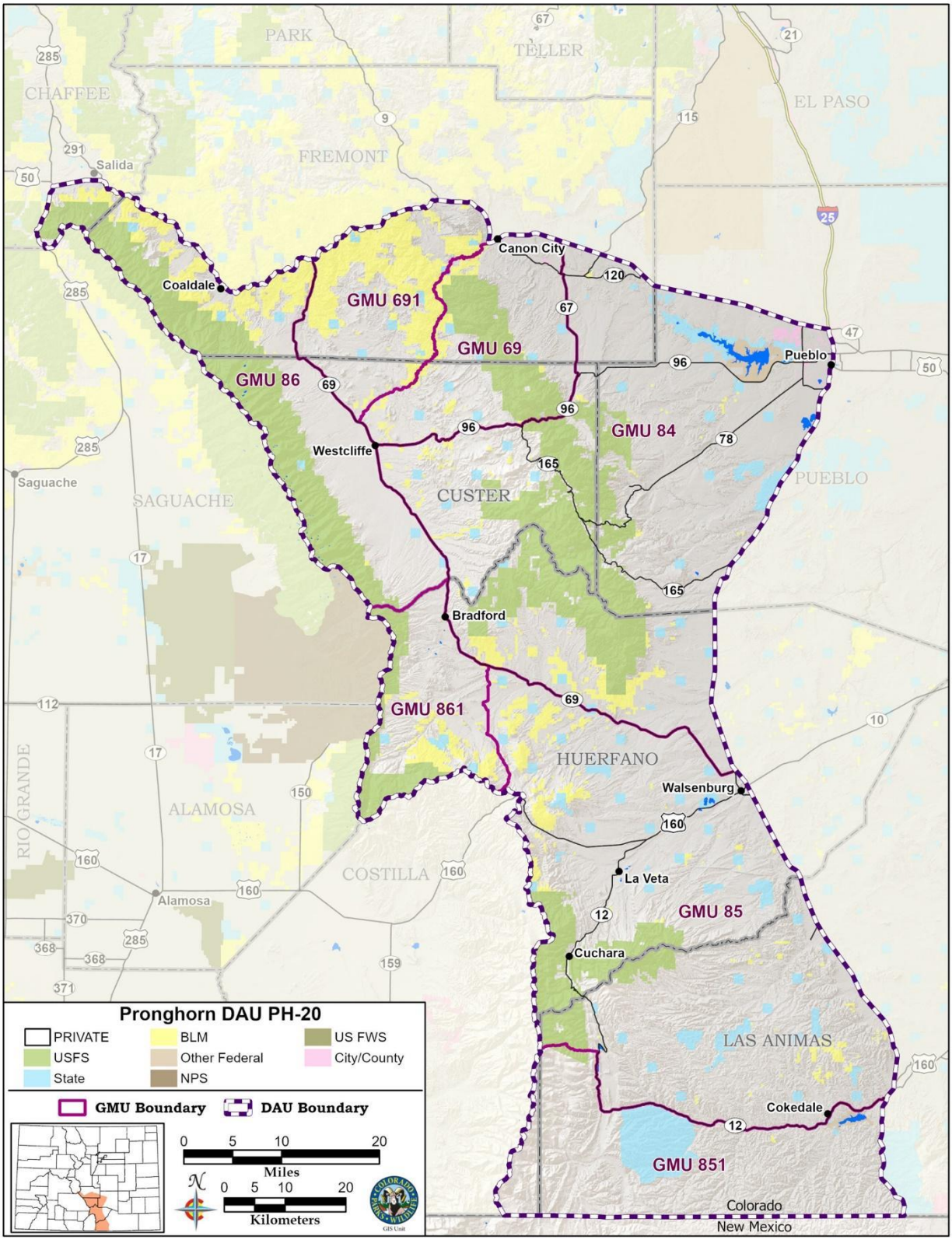
Surveys must be returned by **November 18, 2022**

If you have any questions about this survey, please feel free to contact me at the number or email below.

Thank you for your participation.

Sincerely,

Allen Vitt
600 Pueblo Reservoir Rd
Pueblo, CO 81005
719.561.5306
allen.vitt@state.co.us


PARK
TELLER
CHAFFEE
EL PASO
FREMONT
Salida
Canon City
Coaldale
GMU 691
GMU 69
GMU 86
Pueblo
GMU 84
Westcliffe
Saguache
SAGUACHE
CUSTER
PUEBLO
Bradford
GMU 861
HUERFANO
Walsenburg
RIO GRANDE
ALAMOSA
COSTILLA
La Veta
Alamosa
GMU 85
Cuchara
LAS ANIMAS
Cokedale
GMU 851
Colorado
New Mexico
Pronghorn DAU PH-20
PRIVATE
BLM
US FWS
USFS
Other Federal
City/County
State
NPS
GMU Boundary
DAU Boundary
0 5 10 20
Miles
0 5 10 20
Kilometers

1. Which county/ counties do you own land in? (Mark all that apply) ***(n=59 responses, 9 landowners have land in multiple counties)***

   - Custer (n=17)
   - Fremont ***(n=2)***
   - Huerfano ***(n=25)***
   - Las Animas ***(n=4)***
   - Pueblo ***(n=19)***

2. How would you describe the land that you own in the PH-20 pronghorn management unit? (please check only one) ***(n=59 responses)***

   - Cropland ***(n=0)***
   - Rangeland ***(n=36)***
   - A mixture of Cropland and Rangeland ***(n=22)***
   - Other, please specify ***(n=2)***
     _____***Woodland, Residential***_____

3. Over the last 5 years who have you allowed to hunt pronghorn on your property (select all that apply)? ***(n=57 responses, 23 landowners indicated they provide access to more than one group)***

   - Youth ***(n=19)***
   - Friends and/or neighbors ***(n=31)***
   - Public hunters that do not pay an access fee ***(n=7)***
   - Hunters or outfitters that have leased the land or paid an access fee ***(n=9)***
   - I no longer allow pronghorn hunting on my land ***(n=4)***
   - I have never allowed pronghorn hunting on my land ***(n=18)***
   - Other, please specify ***(n=0)***

4. To what extent have you experienced any of the following problems related to pronghorn and pronghorn hunters in the last 5 years? ***(n=59 responses)***

	Not a Problem	Minor Problem	Moderate Problem	Major Problem
Too many pronghorn hunters asking for permission to hunt	***40***	***11***	***4***	***3***
Pronghorn hunters trespassing on my property	***39***	***10***	***5***	***5***
Pronghorn hunters damaging my property	***53***	***2***	***3***	***0***
Rude behavior by pronghorn hunters on my property	***52***	***6***	***1***	***0***
Pronghorn damaging growing hay/alfalfa	***46***	***5***	***2***	***4***
Pronghorn damaging rangeland	***42***	***8***	***5***	***5***
Pronghorn damaging fences	***28***	***18***	***7***	***8***

Hunting licenses are the primary tool available to CPW for managing pronghorn numbers. For landowners, this creates a potential tradeoff between the number of pronghorn on their property and hunting pressure on or around their property. To lower the number of pronghorn, CPW typically increases the number of hunting licenses (primarily for females) available, which increases the number of hunters in the field.

5. How would you like to see the PH-20 pronghorn herd managed? (Please check only one) ***(n=61 responses)***

   - Reduce the number of hunters (more pronghorn, fewer hunters) ***(n=8)***
   - Reduce the number of pronghorn (fewer pronghorn, more hunters) ***(n=10)***
   - The current numbers of hunters and pronghorn are acceptable ***(n=31)***
   - No opinion ***(n=12)***

6. Compared to the current number of pronghorn in PH-20, how would you like to see the pronghorn population change over the next 10 years? ***(n=60 responses)***

   - Decrease moderately ***(n=7)***
   - Decrease slightly ***(n=7)***
   - Stay the same (current numbers are acceptable) ***(n=32)***
   - Increase slightly ***(n=10)***
   - Increase moderately ***(n=4)***

   Before answering the following question, please read the following brief description about managing the number of bucks in a pronghorn herd.

   If a pronghorn herd is managed for ***buck hunting opportunities***, CPW issues more buck licenses, and buck hunters can generally hunt more frequently. This management objective can result in fewer bucks in the herd after the hunting season.

   If a herd is managed for ***a higher number of bucks***, CPW issues fewer licenses. This management objective generally results in less frequent buck hunting opportunities and fewer hunters in the field, but it can also result in a greater chance of encountering a buck during the hunting season.

7. Given this information, should CPW? ***(n=59 responses)***
   - Increase the number of buck hunting licenses (easier to draw a license, more buck hunters in the field) ***(n=8)***
   - Decrease the number of buck hunting licenses (harder to draw a license, more bucks in the population) ***(n=10)***
   - Maintain the current number of buck hunting licenses ***(n=27)***
   - I do not have enough information to answer this question ***(n=14)***

In areas where the pronghorn herd is above the population management objective, CPW has the option of starting a hunting season for female (doe) pronghorn outside of the regular pronghorn rifle season. We use this doe-only season to increase the harvest of doe pronghorn, which reduces the overall pronghorn population. This allows us to manage the pronghorn population without increasing the number of pronghorn hunters during the regular rifle season, when most buck pronghorn licenses are available to hunters.

8. Do you support or oppose beginning a late doe-only pronghorn season in the PH-20 herd management unit? ***(n=58 responses)***
   - Strongly oppose ***(n=8)***
   - Somewhat oppose ***(n=8)***
   - Neither oppose or support ***(n=17)***
   - Somewhat support ***(n=12)***
   - Strongly support ***(n=13)***

9. If CPW establishes a doe-only season, what time frame do you think the season would work with your operations and achieve the harvest we desire? ***(n=48 responses)***
   - In mid-October, immediately after the current pronghorn season ***(n=16)***
   - In late November, allowing youth to hunt doe pronghorn over Thanksgiving Break***(n=12)***
   - In December, after most deer and elk seasons have ended ***(n=19)***
   - Other ***(n=1)***

     _____***"0"***_____

10. How long would you prefer a doe-only season to be? ***(n=50 responses)***
    - Five days, running from Saturday to Wednesday ***(n=19***)
    - Nine days, running from Saturday to Sunday of the next week ***(n=19)***
    - 30 days to allow the most flexibility for landowners and hunters ***(n=11)***
    - Other ***(n=1)***

      _***"none"***_____

Thank you for participating in this survey! Your responses will help us better manage your wildlife resources. Please provide any additional comments you have on the back of this page. (n=12 landowners that provided comment)

1	It would be good if landowners could get a buck license for family use or to sell to help pay for feed, tub mineral, and salt that they eat all season. It's very expensive
2	Change the GMUs. I'd like to see Unit 86 separate from the lands east of Wetmore. I'd be more than happy to discuss this
3	Don't have PH on our property
4	You don't care what we think!!!!
5	Also marked no. 10 as "other" and wrote in zero
6	Urban cropland has less deer. Rural rangeland many more deer
7	Wrote in 'none' for no. 9 and 10
8	Thank you for your interest. We sold this land in early 2018. We avoided going to the land during hunting season when we did own it because hunters disregarded signs on the fences indicating it was posted as private & no hunting or trespass
9	Increase doe licenses
10	I have not allowed hunters on m y property in the last 5 years
11	Only myself and employees are allowed to hunt this property to manage overpopulation using damage permits
12	Hello-Sold all of this land approximately three years ago

Appendix B – Hunter Outreach from 2021 Big Game Opt-In Survey

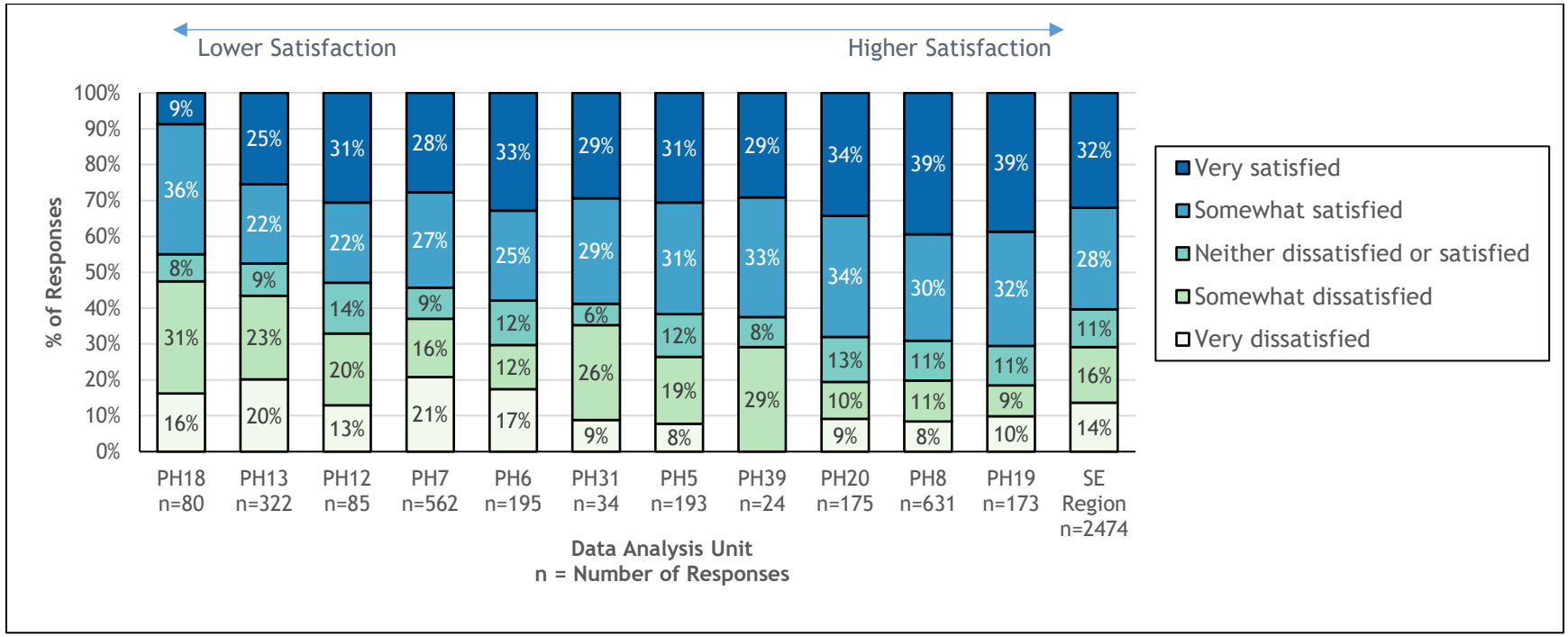
For this herd management planning process, we used results from the 2021 Big Game Harvest Opt-In Survey for hunter input. Each year, Colorado Parks and Wildlife contracts with an outside firm to collect hunt and harvest information from pronghorn hunters for the Big Game Harvest, including questions that relate to where and when they hunted, did they harvest, what they harvested, were they satisfied with their hunt and did they feel crowded by other people during their hunt. Each year Colorado has over 350,000 deer, elk and pronghorn hunters. Approximately 190,000 hunters are randomly selected to participate in the annual harvest survey, which is designed to estimate harvest and participation for all seasons and manners of take at the herd level. This information is then used with information collected by CPW biologists to estimate deer, elk, and pronghorn population numbers.

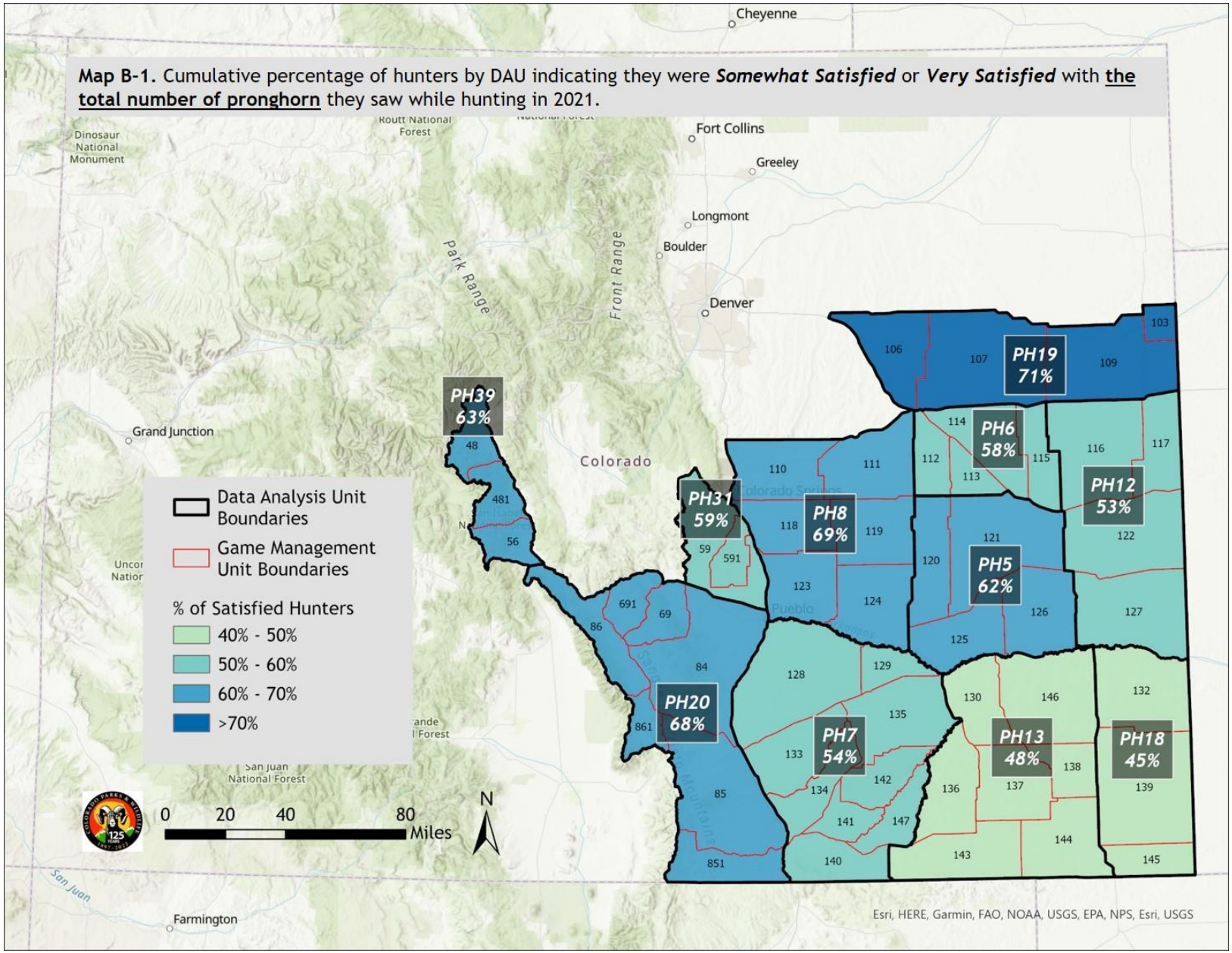
Beginning in 2021, 5 opt-in questions were added to the Big Game Harvest Survey. These questions were optional and presented at the end of the survey. They were designed to collect feedback from hunters to inform herd management. CPW was interested in hearing hunter preferences on herd populations and hunting opportunity, how satisfied hunters were with their hunt, and how crowded they felt.

The seven graphs and maps below depict the hunters' responses to seven questions relating to their hunting experience and observations in the 11 different DAUs in southeast Colorado. The DAUs in each graph are ranked from least satisfied to most satisfied.

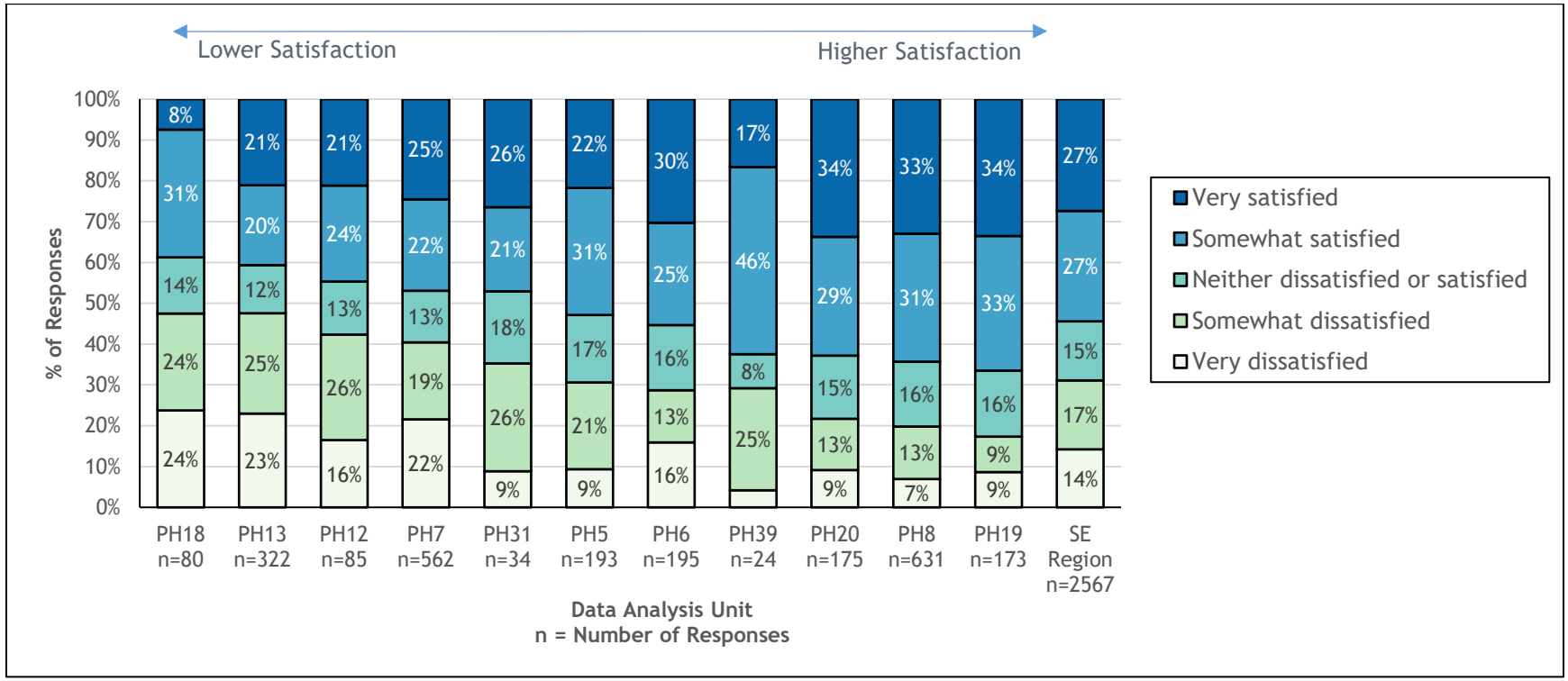
Note: Colors used in following maps and graphs were created based on schemes from ColorBrewer 2.0 to improve accessibility for readers with color vision deficiency (link accessed November 2022, https://colorbrewer2.org/).

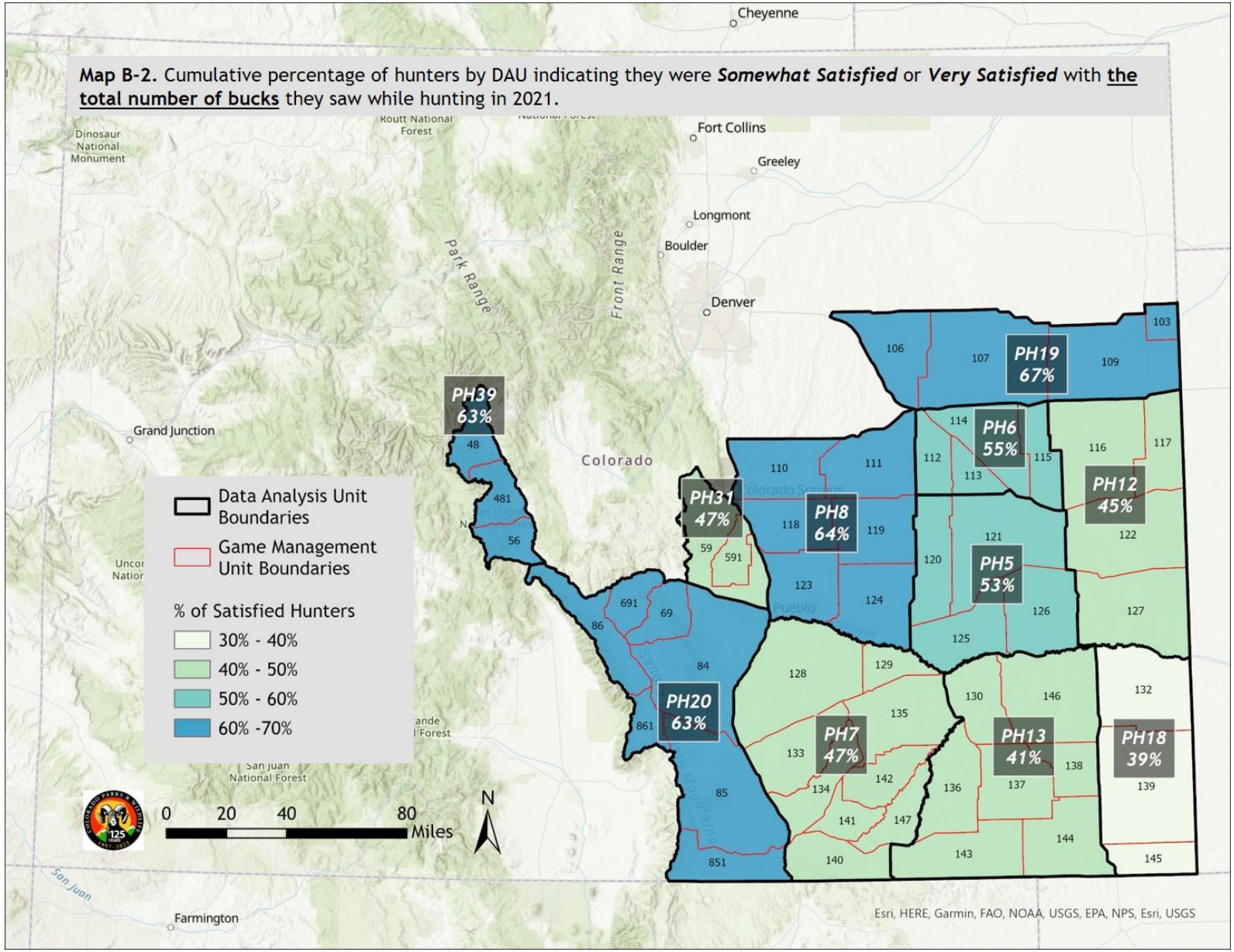
Question 1. How dissatisfied or satisfied were you with the ***total number of pronghorn*** you saw in the unit you hunted during the 2021 pronghorn season? See map next page.




Map B-1. Cumulative percentage of hunters by DAU indicating they were Somewhat Satisfied or Very Satisfied with the total number of pronghorn they saw while hunting in 2021.
Cheyenne
Fort Collins
Greeley
Longmont
Boulder
Denver
Routt National Forest
Dinosaur National Monument
Park Range
Front Range
Grand Junction
Colorado
Colorado Springs
Pueblo
San Juan National Forest
Farmington
San Juan
PH39 63%
PH31 59%
PH8 69%
PH19 71%
PH6 58%
PH12 53%
PH5 62%
PH20 68%
PH7 54%
PH13 48%
PH18 45%
Data Analysis Unit Boundaries
Game Management Unit Boundaries
% of Satisfied Hunters
40% - 50%
50% - 60%
60% - 70%
>70%
0 20 40 80 Miles
N
Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS, Esri, USGS

Question 2. Even if you were only hunting doe pronghorn, how dissatisfied or satisfied were you with the ***total number of bucks*** you saw while hunting pronghorn during the 2021 pronghorn season? See map next page.

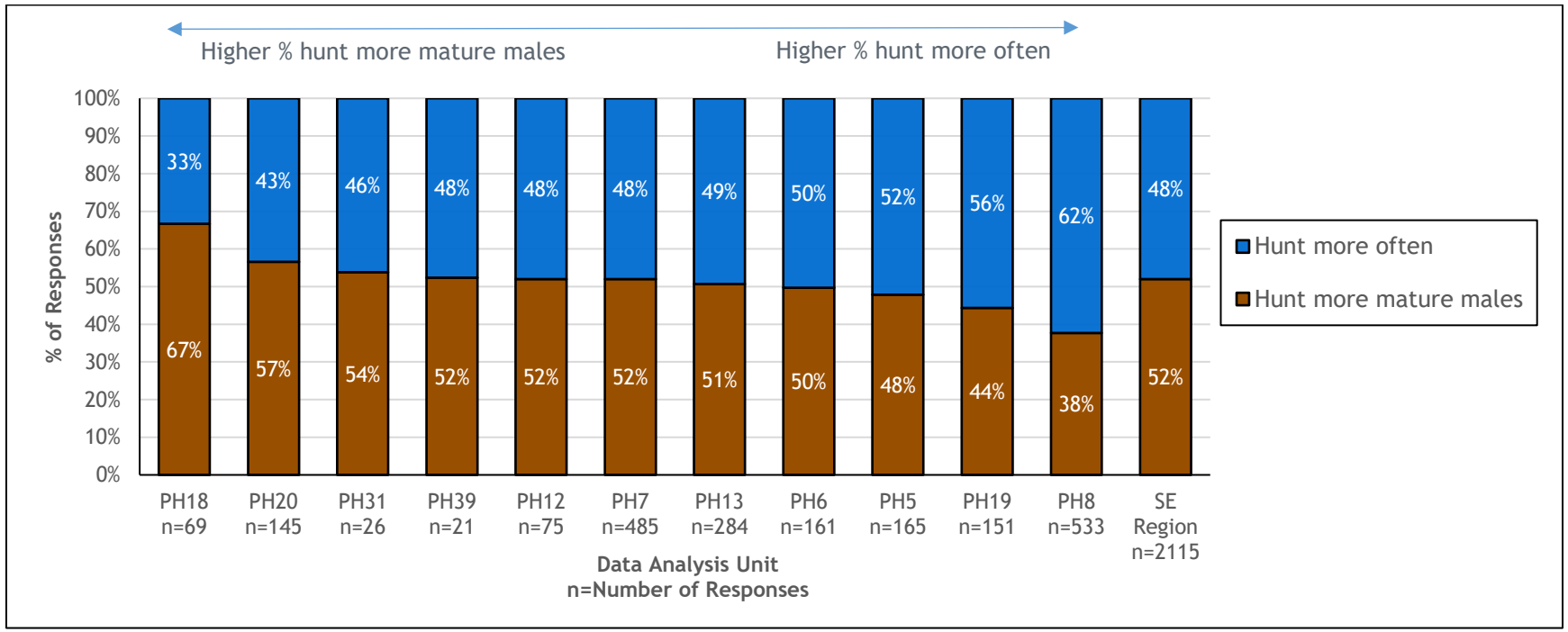


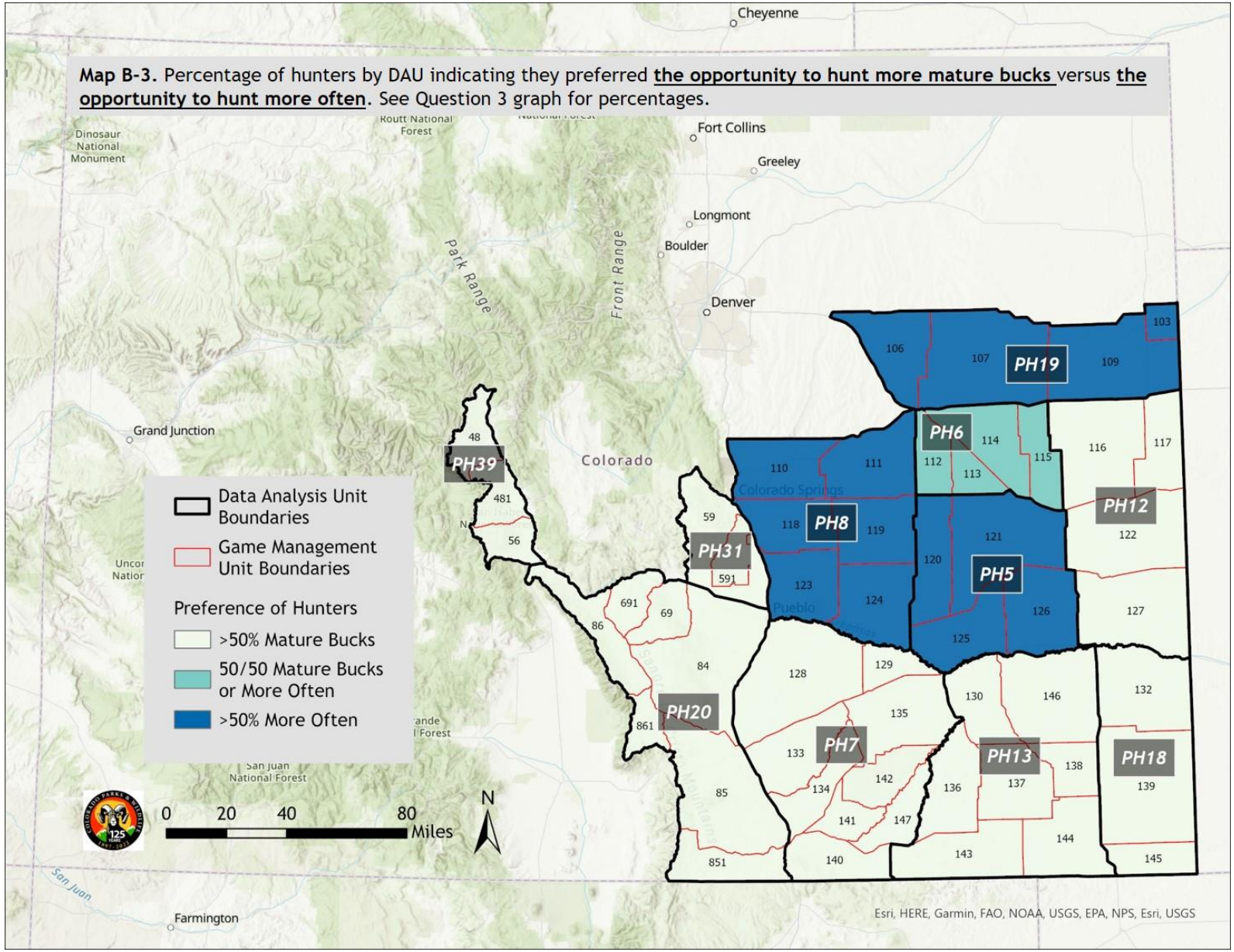

Map B-2. Cumulative percentage of hunters by DAU indicating they were Somewhat Satisfied or Very Satisfied with the total number of bucks they saw while hunting in 2021.
Cheyenne
Fort Collins
Greeley
Longmont
Boulder
Denver
Routt National Forest
Dinosaur National Monument
Park Range
Front Range
Grand Junction
Colorado
Colorado Springs
Pueblo
San Juan National Forest
Farmington
San Juan
PH39 63%
PH31 47%
PH8 64%
PH19 67%
PH6 55%
PH12 45%
PH5 53%
PH20 63%
PH7 47%
PH13 41%
PH18 39%
Data Analysis Unit Boundaries
Game Management Unit Boundaries
% of Satisfied Hunters
30% - 40%
40% - 50%
50% - 60%
60% -70%
0 20 40 80 Miles
N
Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS, Esri, USGS

Question 3. Which statement comes closer to your own opinion:

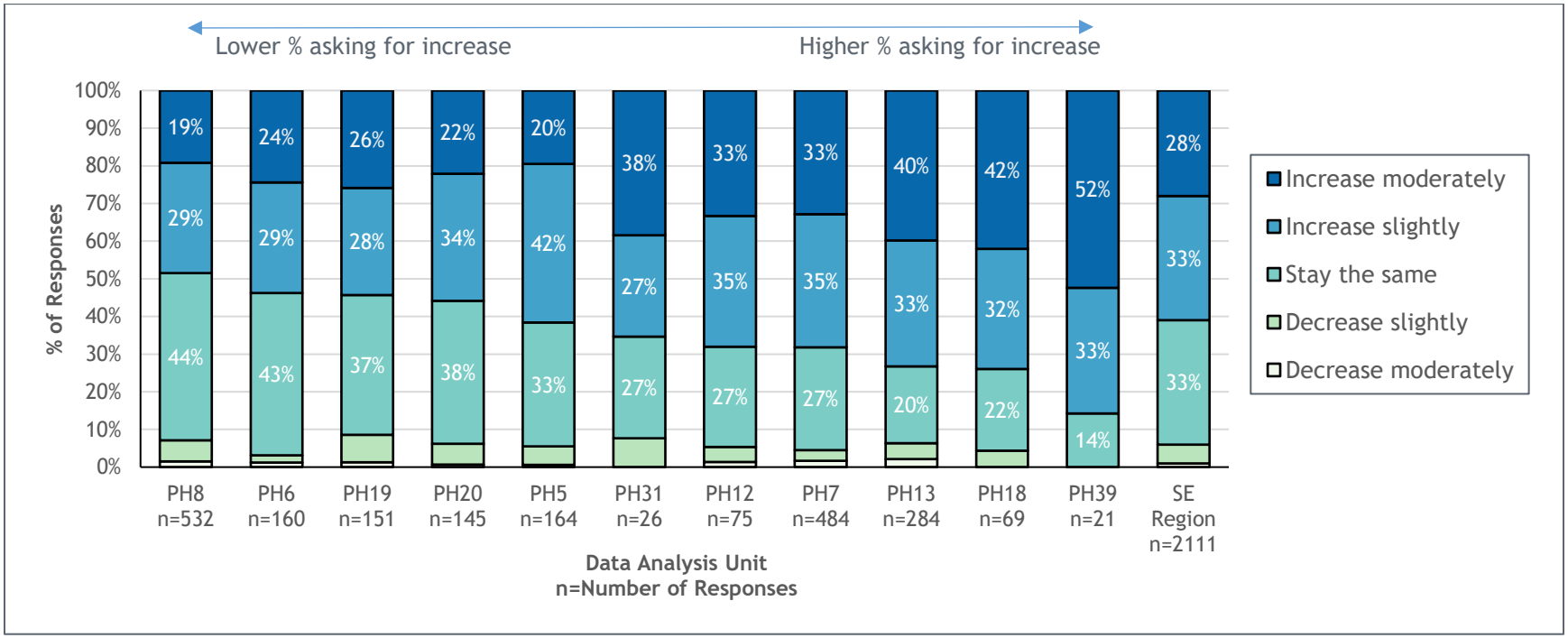
a) I want to be able to hunt pronghorn as often as possible even if it means fewer mature bucks
b) I want to be able to hunt mature bucks even if it means I am able to hunt less often

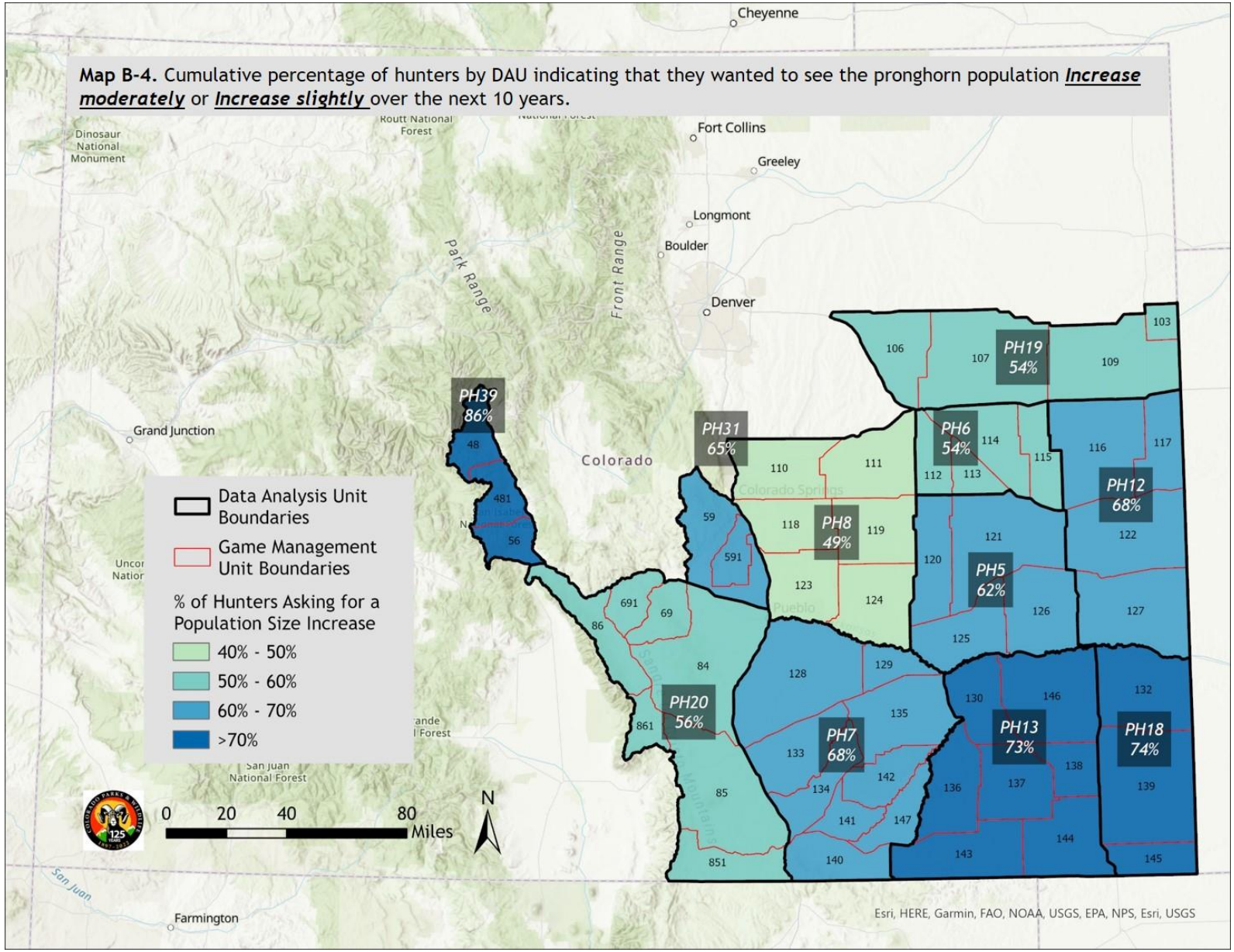
See map next page.



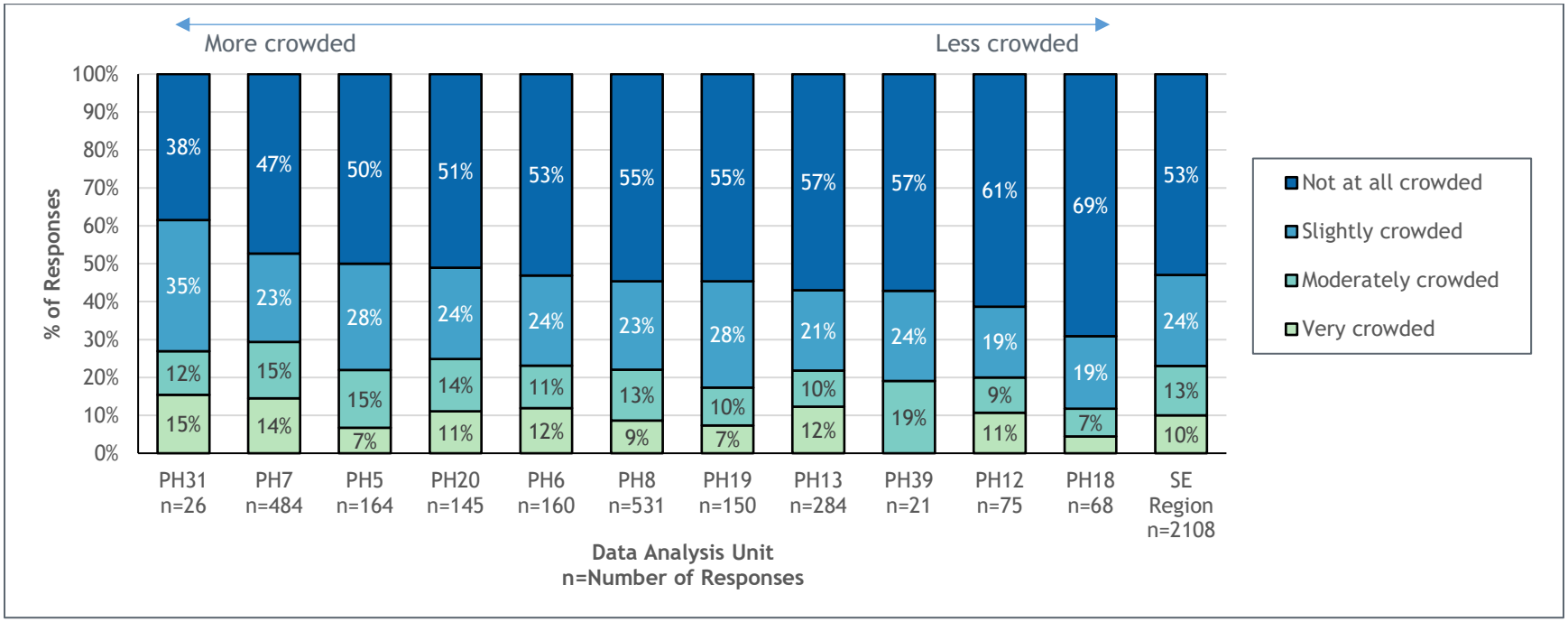

Map B-3. Percentage of hunters by DAU indicating they preferred the opportunity to hunt more mature bucks versus the opportunity to hunt more often. See Question 3 graph for percentages.
Cheyenne
Routt National Forest
Dinosaur National Monument
Fort Collins
Greeley
Longmont
Boulder
Park Range
Front Range
Denver
Grand Junction
Colorado
Colorado Springs
Pueblo
San Juan National Forest
Farmington
San Juan
Data Analysis Unit Boundaries
Game Management Unit Boundaries
Preference of Hunters
>50% Mature Bucks
50/50 Mature Bucks or More Often
>50% More Often
0 20 40 80 Miles
N
PH39
PH19
PH6
PH8
PH12
PH31
PH5
PH20
PH7
PH13
PH18
48
481
56
59
591
691
69
86
84
861
85
851
103
106
107
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
146
132
133
134
135
136
137
138
139
140
141
142
143
144
145
147
Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS, Esri, USGS

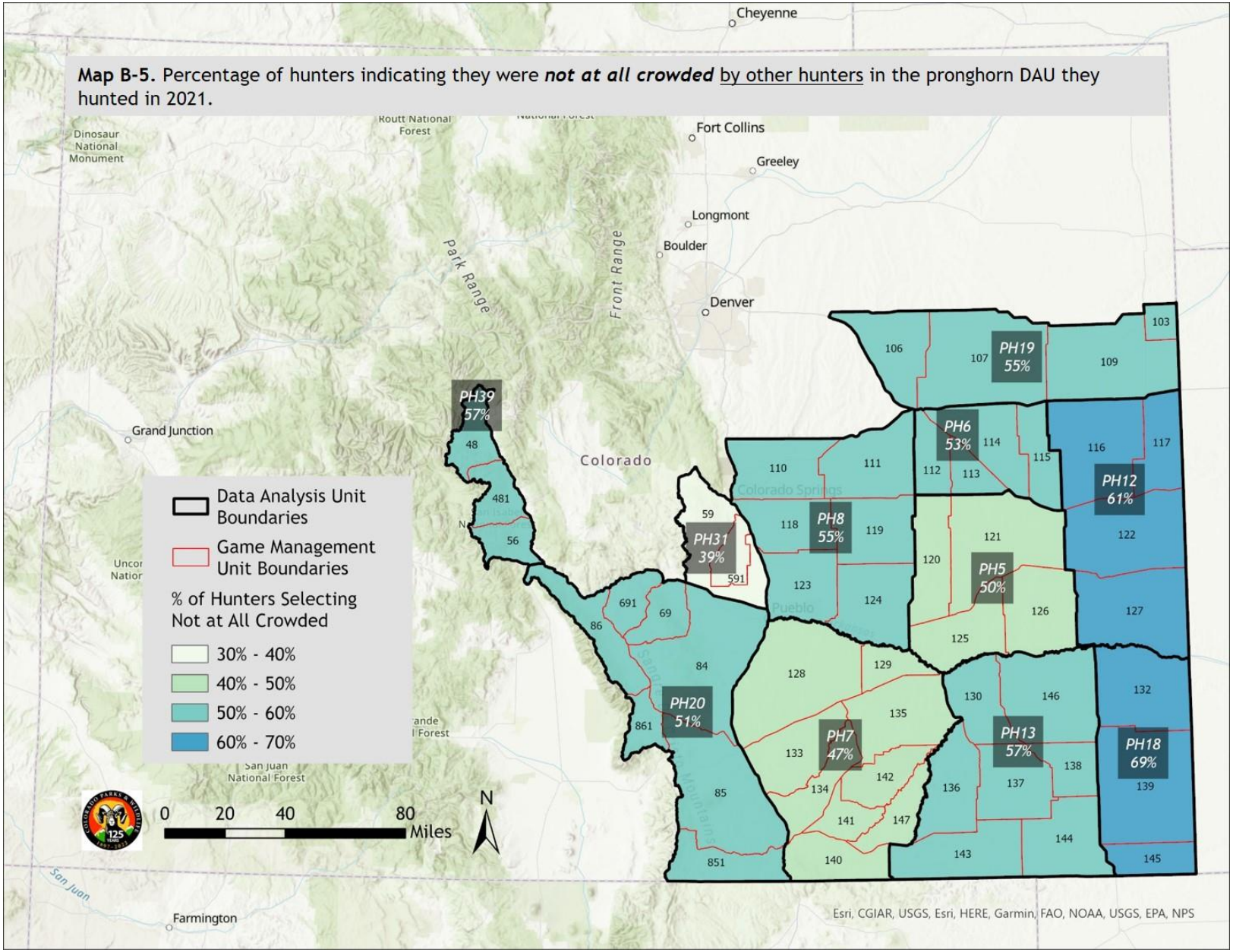
Question 4. Over the next ten (10) years, do you think that the ***pronghorn population*** in the unit you hunted should ….
See map next page.



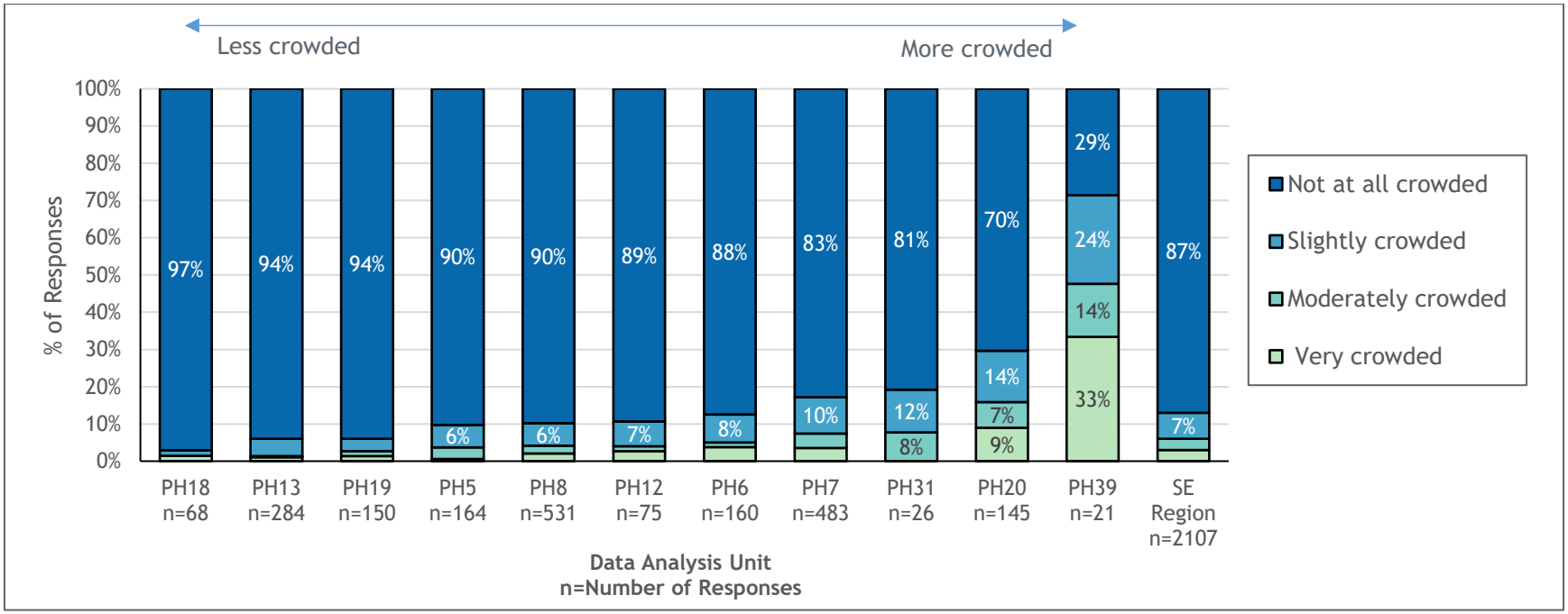

Map B-4. Cumulative percentage of hunters by DAU indicating that they wanted to see the pronghorn population Increase moderately or Increase slightly over the next 10 years.
Cheyenne
Fort Collins
Greeley
Longmont
Boulder
Denver
Grand Junction
Colorado
Colorado Springs
Pueblo
Farmington
San Juan
Routt National Forest
Dinosaur National Monument
San Juan National Forest
Park Range
Front Range
PH39 86%
PH31 65%
PH6 54%
PH19 54%
PH12 68%
PH8 49%
PH5 62%
PH20 56%
PH7 68%
PH13 73%
PH18 74%
Data Analysis Unit Boundaries
Game Management Unit Boundaries
% of Hunters Asking for a Population Size Increase
40% - 50%
50% - 60%
60% - 70%
>70%
0 20 40 80 Miles
N
Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS, Esri, USGS

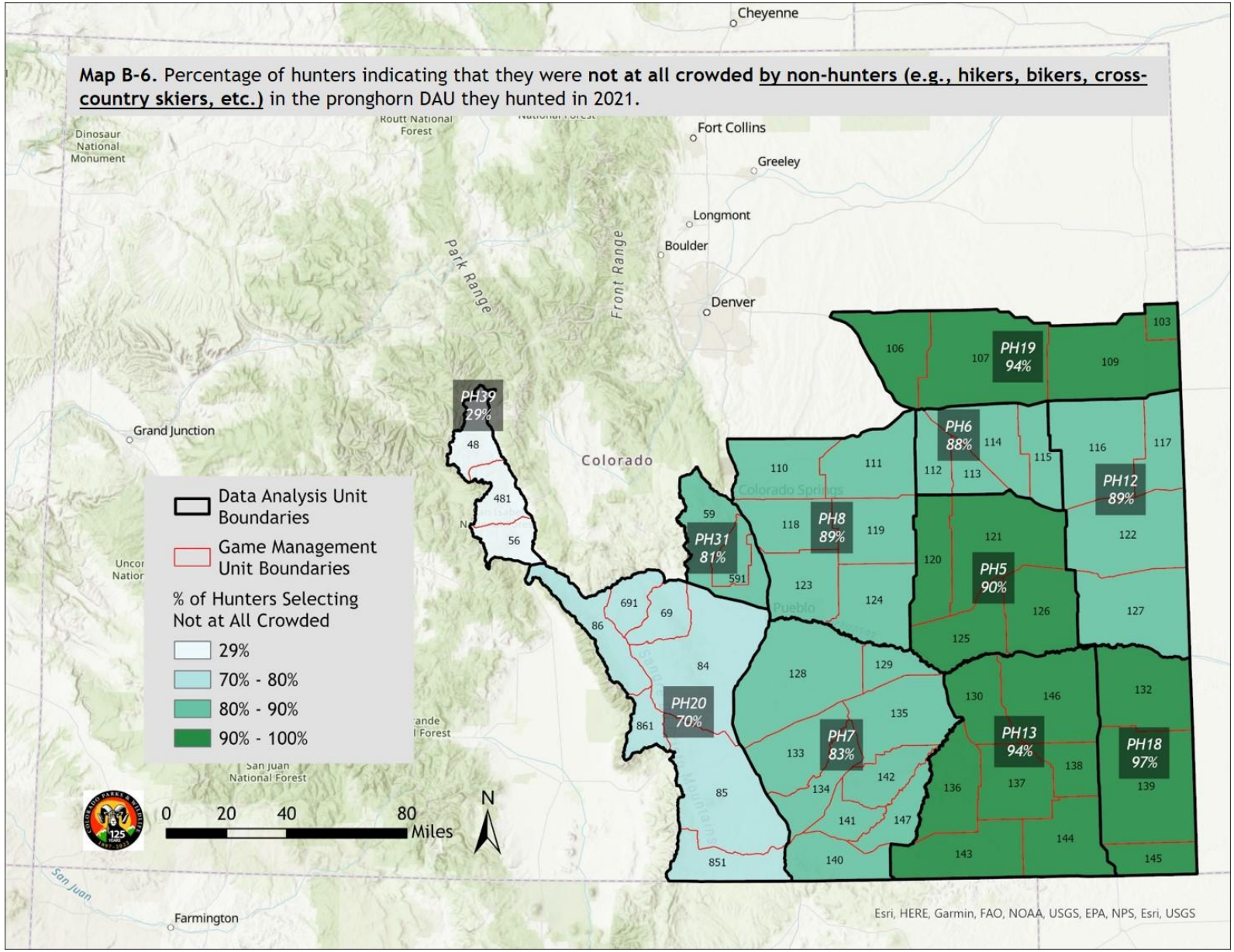
Question 5. To what extent did you feel ***crowded by other hunters*** while pronghorn hunting in the unit you hunted in 2021? See map next page.



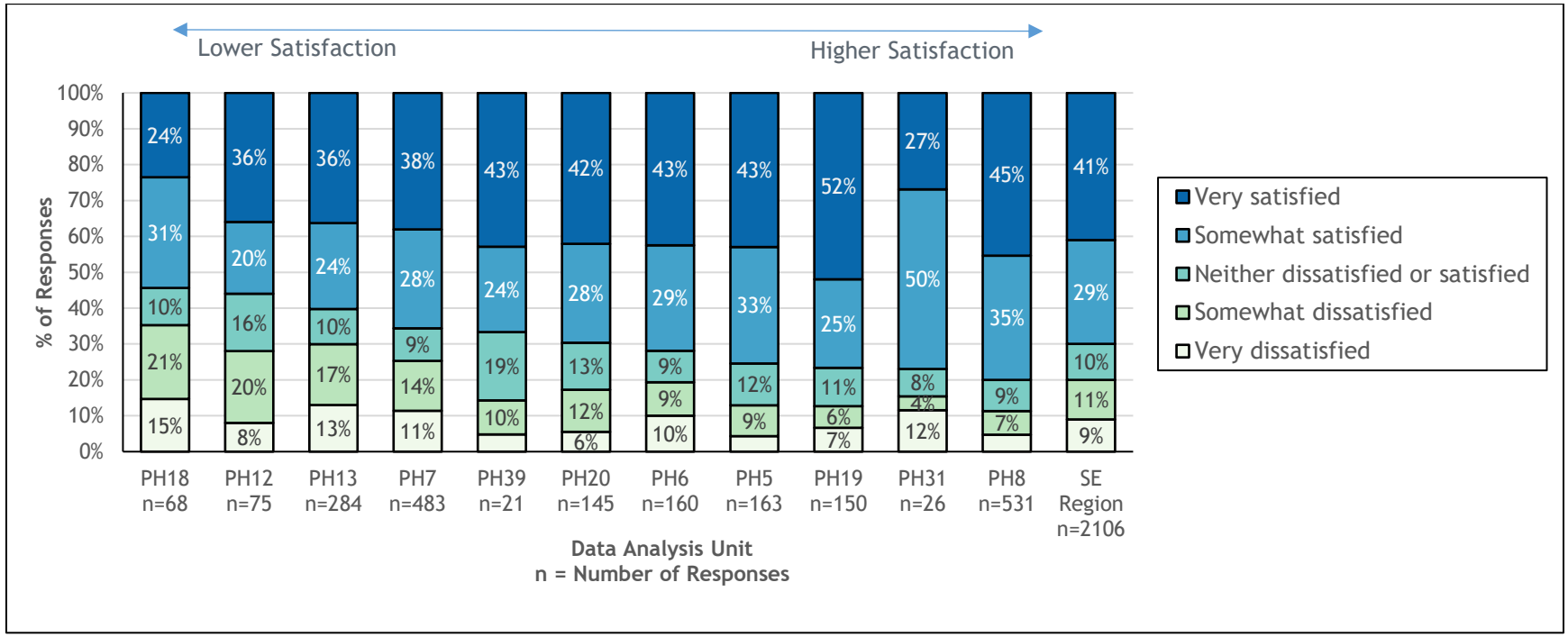

Map B-5. Percentage of hunters indicating they were *not at all crowded* by other hunters in the pronghorn DAU they hunted in 2021.
Cheyenne
Fort Collins
Greeley
Longmont
Boulder
Denver
Routt National Forest
Dinosaur National Monument
Park Range
Front Range
Grand Junction
Colorado
Colorado Springs
Pueblo
San Juan National Forest
Farmington
San Juan
PH39 57%
PH19 55%
PH6 53%
PH12 61%
PH8 55%
PH31 39%
PH5 50%
PH20 51%
PH7 47%
PH13 57%
PH18 69%
Data Analysis Unit Boundaries
Game Management Unit Boundaries
% of Hunters Selecting Not at All Crowded
30% - 40%
40% - 50%
50% - 60%
60% - 70%
0 20 40 80 Miles
N
Esri, CGIAR, USGS, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS

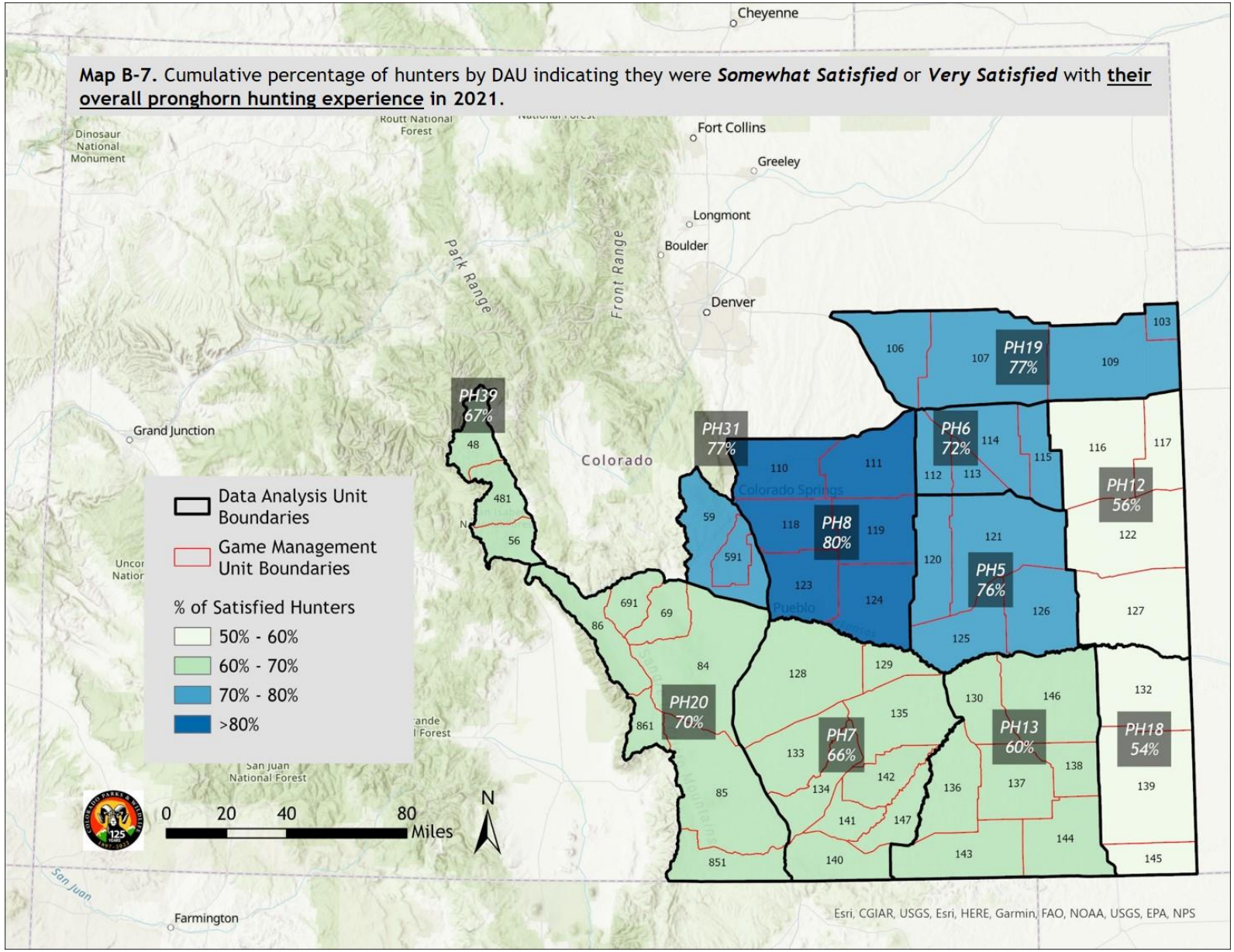
Question 6. To what extent did you feel ***crowded by non-hunters (e.g., hikers, bikers, cross-country skiers, etc.)*** while in the unit you hunted pronghorn in 2021? See map next page.




Map B-6. Percentage of hunters indicating that they were not at all crowded by non-hunters (e.g., hikers, bikers, cross-country skiers, etc.) in the pronghorn DAU they hunted in 2021.
Cheyenne
Routt National Forest
Fort Collins
Greeley
Dinosaur National Monument
Longmont
Boulder
Park Range
Front Range
Denver
Grand Junction
Colorado
Colorado Springs
Pueblo
San Juan National Forest
Farmington
San Juan
PH39 29%
PH20 70%
PH31 81%
PH8 89%
PH6 88%
PH19 94%
PH12 89%
PH5 90%
PH7 83%
PH13 94%
PH18 97%
Data Analysis Unit Boundaries
Game Management Unit Boundaries
% of Hunters Selecting Not at All Crowded
29%
70% - 80%
80% - 90%
90% - 100%
0 20 40 80 Miles
N
Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS, Esri, USGS

Question 7. Overall, how dissatisfied or satisfied were you with ***your pronghorn hunting experience*** in the unit you hunted in 2021? See map next page.




Map B-7. Cumulative percentage of hunters by DAU indicating they were Somewhat Satisfied or Very Satisfied with their overall pronghorn hunting experience in 2021.
Cheyenne
Fort Collins
Greeley
Longmont
Boulder
Denver
Routt National Forest
Dinosaur National Monument
Park Range
Front Range
Grand Junction
Colorado
Colorado Springs
Pueblo
San Juan National Forest
Farmington
San Juan
PH39 67%
PH31 77%
PH6 72%
PH19 77%
PH12 56%
PH8 80%
PH5 76%
PH20 70%
PH7 66%
PH13 60%
PH18 54%
Data Analysis Unit Boundaries
Game Management Unit Boundaries
% of Satisfied Hunters
50% - 60%
60% - 70%
70% - 80%
>80%
0 20 40 80 Miles
N
Esri, CGIAR, USGS, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS

Appendix C – Final Report: Pronghorn Movement and Survival in Southeastern Colorado
2016-2019

Julie Stiver, Wildlife Biologist, Colorado Parks & Wildlife

Acknowledgments

This project would not have been possible without the assistance of several landowners in PH-6, PH-8, and PH-35 who provided CPW with access to their property to trap pronghorn and recover carcasses. We appreciate your interest in pronghorn management in southeast Colorado. Funding was provided through grants from Auction and Raffle Special Funds. We thank the fund-raising organizations who support the program and the sportspersons who purchased the auction tags and raffle tickets.

Abstract

The goal of this study was to increase our understanding of pronghorn movement patterns and survival in the southeastern portion Colorado, which is home to about 50% of the state's pronghorn population. Better understanding of pronghorn movement patterns and survival improves our ability to precisely model pronghorn populations, set appropriate hunting license numbers, and generally manage the species. In February 2016, we captured 44 pronghorn and fit them with an equal number of GPS and VHF radio-collars. In February 2017, we redeployed nine collars retrieved from 2016 mortalities. In February 2018, we deployed five new GPS collars, six new VHF collars, and two VHF collars that were retrieved from 2017 mortalities. In February 2019, we deployed seven new GPS collars and two VHF collars retrieved from 2018 mortalities. We have used aerial telemetry (VHF collars) or data from satellite uplinks (GPS collars) to follow animals. Data from the collared animals is being analyzed to further our understanding of pronghorn home range sizes, timing, direction and length of movements as well as inform estimates of annual adult survival rates. Additionally, we are using data collected during telemetry flights to model group size changes through the year. Although the Special Funds have expired for this project, we will continue monitoring the collared pronghorn for the remainder of the collar life or until all collared pronghorn have died.

Objectives

a. Monitor adult pronghorn movements within and between pronghorn Data Analysis Units (DAU) in southeastern Colorado (Figure 1)
b. Establish initial survival data for adult pronghorn in southeastern Colorado
c. Model annual changes in pronghorn group size

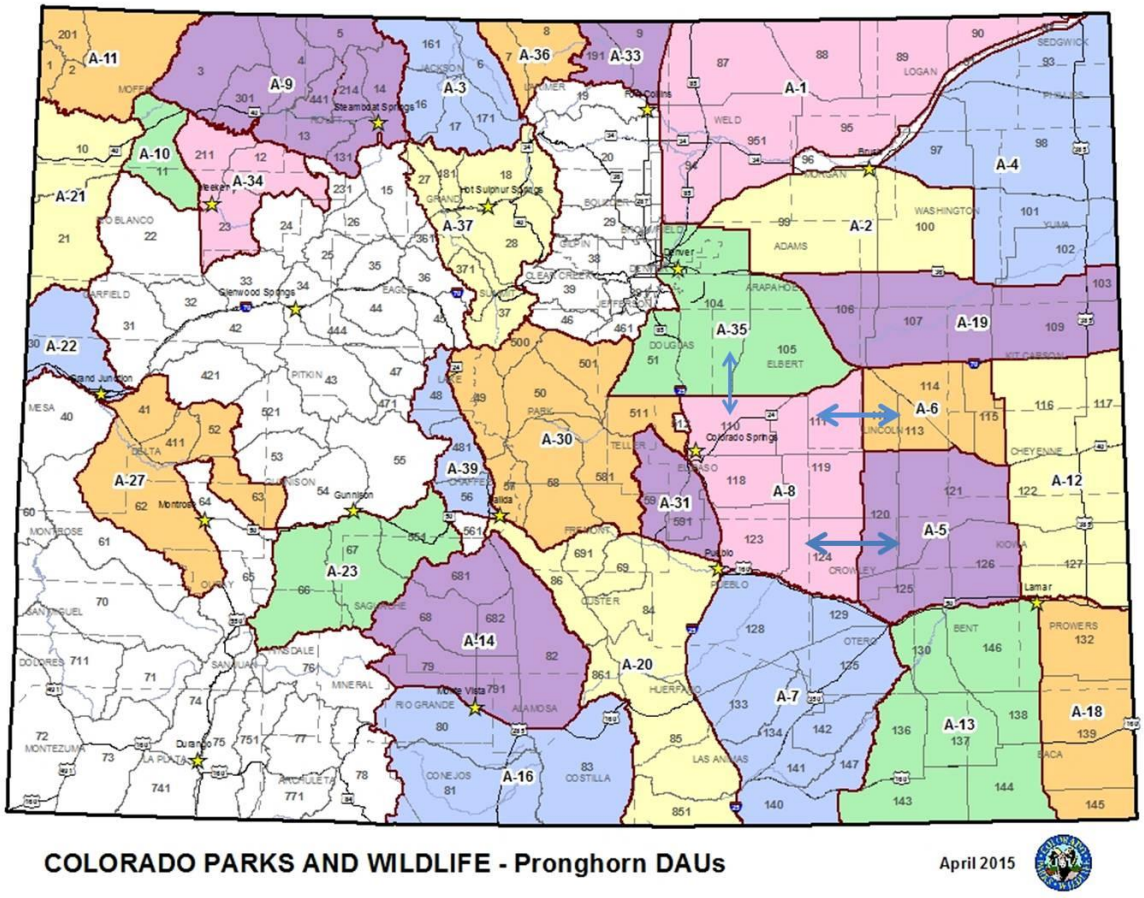


Figure 1*. Colorado's pronghorn Data Analysis Units (DAUs). Blue arrows indicate DAU which are thought to exchange pronghorn with PH8. The southern boundary of PH8 is US Highway 50 and the Arkansas River. Therefore, pronghorn movements between PH7 and PH8 are unlikely.*

Introduction

In 2015, we purchased 22 VHF (very high frequency) and 22 GPS (global positioning system) collars for this study. The collars were purchased from Advanced Telemetry Systems, Inc (AST, Inc.; Isanti, MN). The VHF collars were programmed with an 8-hour mortality signal so we could obtain survival data along with locations. The GPS collars were programmed to record two locations per day on rotating 13-hour intervals. GPS collars also have a VHF signal. In April 2017, we purchased an additional six VHF radio-collars with the 2015-2017 allocation of A/R funds. In 2017, we received additional funding from the Auction and Raffle committee to continue this project. Part of the funding from the 2017 application was allocated for the purchase of additional GPS collars. In 2016 and 2017, many of the original GPS collars that we purchased from ATS, Inc. stopped transmitting GPS data. Therefore, we purchased the five

new GPS collars from Lotek Wireless, Inc. (Newmarket, Canada) after comparing prices for GPS collars with similar specifications.

In February 2016, we radio-collared 44 pronghorn with helicopter net-gunning. The capture crew recorded age (1, 2, & 3+ years), sex, and capture location for each animal (Table 1). Pronghorn were captured in DAUs PH8 and PH35. We recovered collars from 12 mortalities in 2016 (see survival below). Ten collars (6 GPS and 4 VHF) were suitable for redeployment and were fitted on pronghorn in February 2017 (Table 2). The 2017 captures were done in DAUs PH35 and PH6. One pronghorn, a mature buck collared with a VHF transmitter, died shortly after capture. Therefore our total sample size at the start of 2017 was 53 pronghorn, including animals that had died between February 2016 and February 2017.

In February 2018, we deployed the five new Lotek GPS collars, six new ATS VHF collars, and two ATS VHF collars that had been recovered from 2017 mortalities. In February 2019, we deployed an additional seven Lotek GPS collars and two ATS VHF collars. All pronghorn collared in 2018 and 2019 were captured in DAU PH8. The total sample size for the project was 75 pronghorn.

We locate VHF collared animals from our fixed-winged airplane approximately every four to eight weeks, and count the total group size of pronghorn with the collared animal. As of June 2019, we are monitoring 18 GPS collared pronghorn (17 does & 1 buck) and 23 VHF collared pronghorn (all does).

Summary statistics are presented as mean ± standard error unless otherwise noted. Data analyses were conducted in Program R version 3.3.3 (R Core Team 2017), Geospatial Modeling Environment version 0.7.4.0 (Beyer 2015), and ArcGIS 10.6 (ERSI 2017).

Table 1. Age and sex of the 44 animals captured in February 2016 for the SE Colorado pronghorn survival and movement study. Pronghorn were captured in PH8 and PH35.

Age	Females	Males	Total
1	10	2	12
2	8	1	9
3+	20	3	23
Total	38	6	44

***Table 2**. Age and sex of the 10 animals captured in February 2017 for the SE Colorado pronghorn survival and movement study. Pronghorn were captured in PH6 and PH35.*

Age	Females	Males	Total
1	0	1	1
3+	8	1	9
Total	8	2	10

***Table 3**. Age of the 13 doe pronghorn captured in February 2018 for the SE Colorado pronghorn survival and movement study. Pronghorn were captured in PH8.*

Age	Females	Total
1	2	2
2	4	4
3+	7	7
Total	13	13

Table 4*. Age and gender of the 9 pronghorn captured in February 2019 for the SE Colorado pronghorn survival and movement study. Pronghorn were captured in PH8.*

Age	Females	Males	Total
1	2	0	2
2	3	1	4
3+	3	0	7
Total	8	1	9

Objective A: Monitor adult pronghorn movements within and between pronghorn DAUs in southeastern Colorado

As of June 2019, five pronghorn have crossed DAU boundaries, four between PH8 and PH35 and one between PH8 and PH5. The first was a two-year old doe, g287, who was captured in 2016 in southwestern PH8. She died of unknown causes in PH35 in October 2016. The second is a three year old doe captured in PH35 in 2017 near Matheson. She has crossed Highway 24, which is the DAU boundary, on several occasions, but is currently in PH35. The third is a yearling pronghorn, g462, who was captured in 2018 in the southwestern part of PH8. She crossed into PH35 in April 2018, and died in PH35 in October 2018. The fourth pronghorn to cross from PH8 to PH35 was a yearling, g510, captured in southwestern PH8 in February 2019. She crossed in PH35 in April 2019 and traveled into Elbert Co. The final pronghorn was captured in GMU 119 (PH8) in February 2018. She was found in GMU 120 (PH5) in June 2019, which was on the east side of Highway 71.

Pronghorn g287, g462, g510 have made the farthest straight-line distance movements of any animals collared in the study to date (101 km, 90 km, and 94 km, respectively). Does g287 and g462 were captured in the same area of northeastern Pueblo Co. and moved to a field in southern Douglas Co. near Larkspur. However, their path of movement differed. Pronghorn g287 traveled northeast to Ramah immediately after her capture in February 2016 where she stayed until May 2016. She then crossed Highway 24 and moved northwest, passing close to the town of Elbert. She crossed Highway 83 and traveled north once she reached I-25. Her northern most location, recorded in June 2016, was halfway between Larkspur and Castle Rock. She returned to southeastern Douglas Co., before dying of unknown causes in southwest Elbert Co. in October 2016. Pronghorn g462, captured in February 2018, did not initiate her northern movement until April 2018. She moved on a more northwesterly path compared to g287 and only took 10 days to reach the field near Larkspur, compared to ~3 months for g287. She died of bluetongue in October 2018 in southeastern Douglas County. Doe pronghorn g510 was captured in February 2019 and moved due north immediately following capture. She has crossed Highways 94, 24, and 86. Her northern most location to date was near the Jumping

Cow State Wildlife Area in Elbert County. She has moved south, crossing State Highway 86, and is currently located north of Highway 24 between Peyton and Calhan.

To date, we have detected at least one highway crossing for 27 of 75 pronghorn (36%, Figure 2). These highways include State Highways 71, 83, 86, and 94 as well as US Highway 24. Two pronghorn have crossed two highways and three pronghorn have crossed three highways. None of the collared pronghorn have crossed an interstate. Since we monitor VHF collared pronghorn less frequently than GPS collared pronghorn, we might have missed some highway crossings by VHF collared pronghorn. However, we have detected highway crossings for an equal proportion VHF collared pronghorn (13/35 or 36%) compared to GPS collared pronghorn (14/40 or 35%).

Although some pronghorn are willing to cross highways, roads appear to be a barrier to movement for a subset of individuals. Of the GPS collared pronghorn who have not crossed highways (n=26), four have approached highways without crossing. Two examples include g275 and g289, both adult does (+3 years) captured in 2016 (Figures 3 & 4). G275 was captured in northeastern Pueblo County. She traveled north to Highway 94 and paralleled the highway for several months. G289 was captured in Elbert Co near Highway 24. She ranged between Highways 24 and 86 without crossing either road. Highways were not within the home ranges of the remaining 22 GPS collared pronghorn. The same pattern is likely for VHF collared pronghorn but we did not look at this factor due to the lower data resolution in locations for this group.

We originally proposed using kernel density estimates (KDE) to investigate home ranges of VHF collared pronghorn. The recommended number of locations to run KDEs is >50 locations per animal (M. Rice, personal comm.). However, we have collected a maximum of 45 locations on VHF collared pronghorn to date. For datasets with less than the recommended number of locations, minimum convex polygons can be used to answer questions about the total area used per animal and are therefore the most appropriate for our current dataset.

We calculated minimum convex polygons (MCP) for both the GPS and VHF collared pronghorn to examine total area used, excluding animals with less than five locations (Figure 5). Minimum convex polygons ranged from 13 km^2 to 1,506 km^2 (n=71 pronghorn). We found no difference in MCP size between GPS and VHF pronghorn despite the higher resolution in GPS data ($F_{1,69} = 1.223$; p=0.273). We combined data from the two collar types (data were log-transformed to account for right skew). The average MCP size was 298.7 ± 41.0 km^2. Based on these data, we think both sedentary and migratory pronghorn are in this herd.

For GPS collared pronghorn, we calculated Brownian Bridge Movement Models to examine home range and corridors of movement (BBMM; Horne et al. 2007). For animals with sufficient data to calculate a BBMM, we used locations collected from two-weeks post-capture through June 2019 to generate home ranges based on 99% isopleth contours (n=30 pronghorn). We excluded the first two weeks of locations to account for capture-related movements. Home ranges of the 99% contours for the 30 pronghorn averaged 258.8 ± 58.2 km^2 (range 29.7-1471.3 km^2; Figure 6). We have mapped the 99% contours to identify corridors of movement within both PH8 and PH35, including several areas where animals cross highways (Figures 7, 8, & 9).

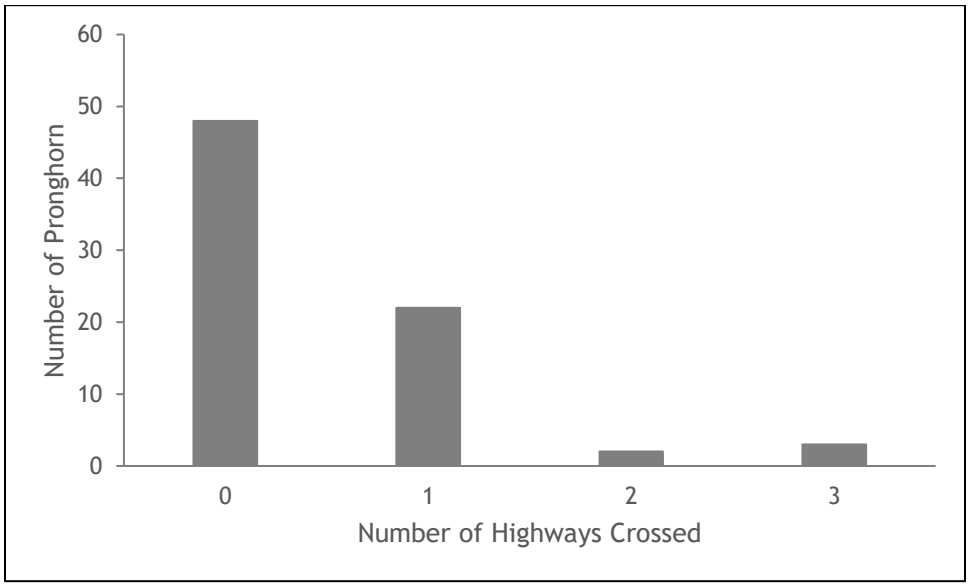


***Figure 2**. Number of highways crossed by radio-collared pronghorn. The highways include State Highways 71, 83, 86, & 94 and US Highway 24.*

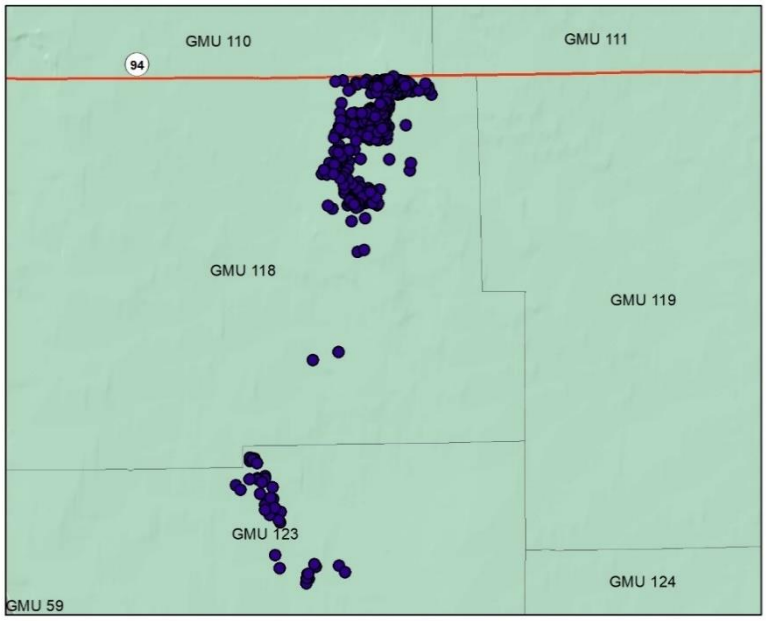


***Figure 3**. Locations of GPS collared pronghorn g275 south of State Highway 94.*

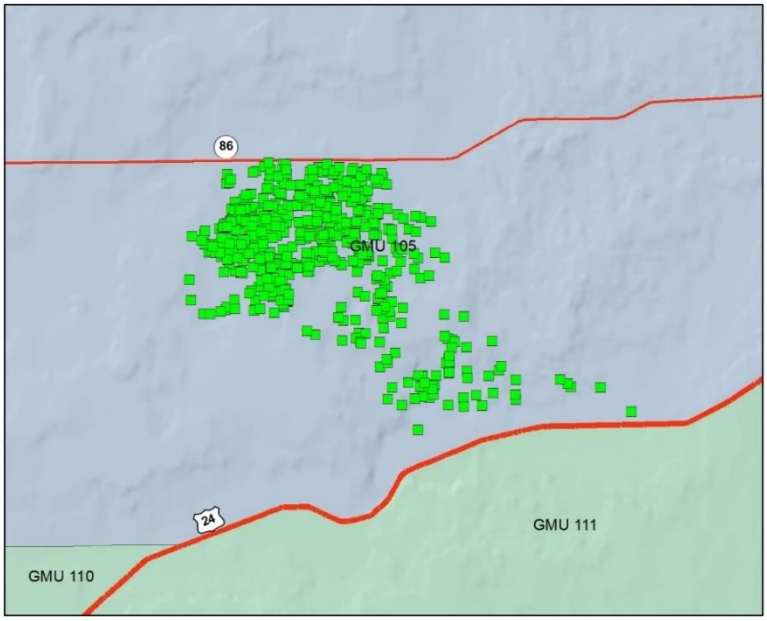


***Figure 4**. Locations of GPS collared pronghorn g289 between State Highway 86 and US Highway 24.*

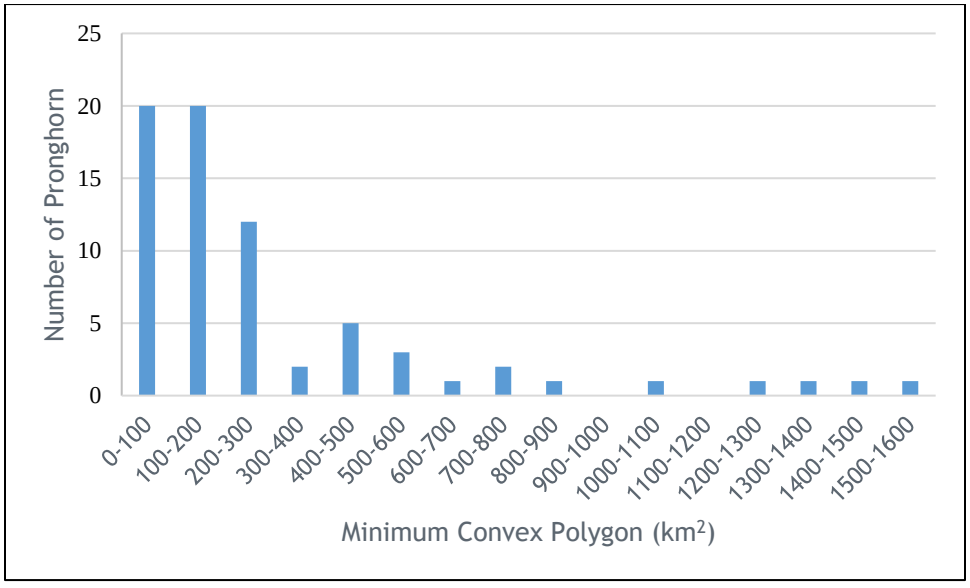


***Figure 5**. Area of minimum convex polygon for each of the 71 radio-collared pronghorn with a minimum of five locations monitored thus far in the study, including both VHF and GPS collared pronghorn.*

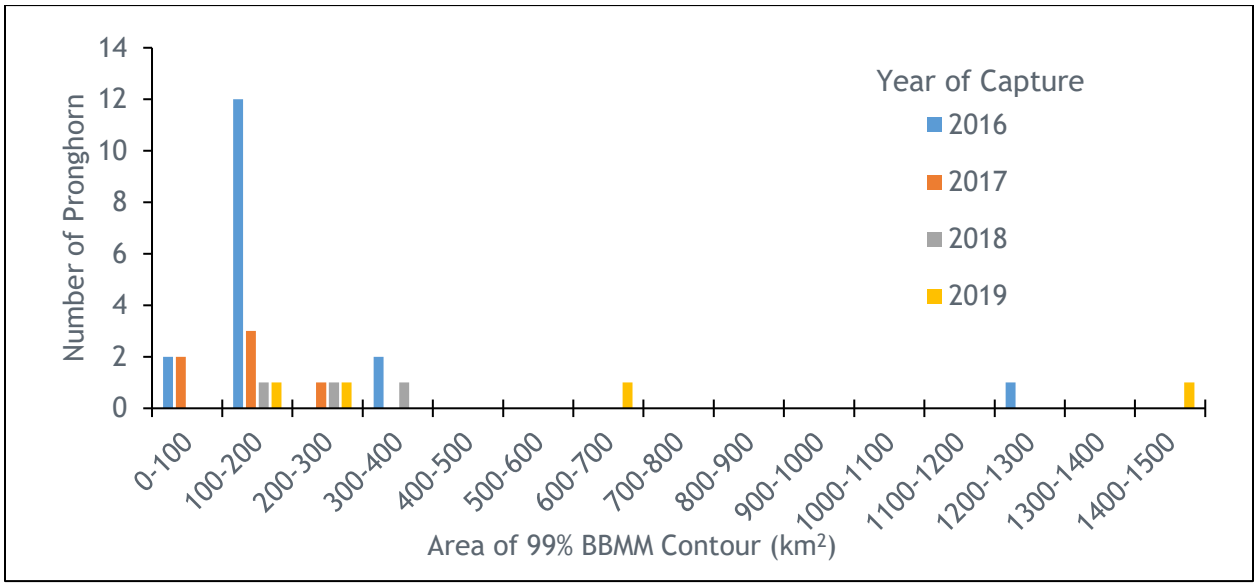


***Figure 6**. Area of 99% Brownian Bridge Movement Model Contours for 30 pronghorn monitored with GPS collars, February 2016-June 2019.*

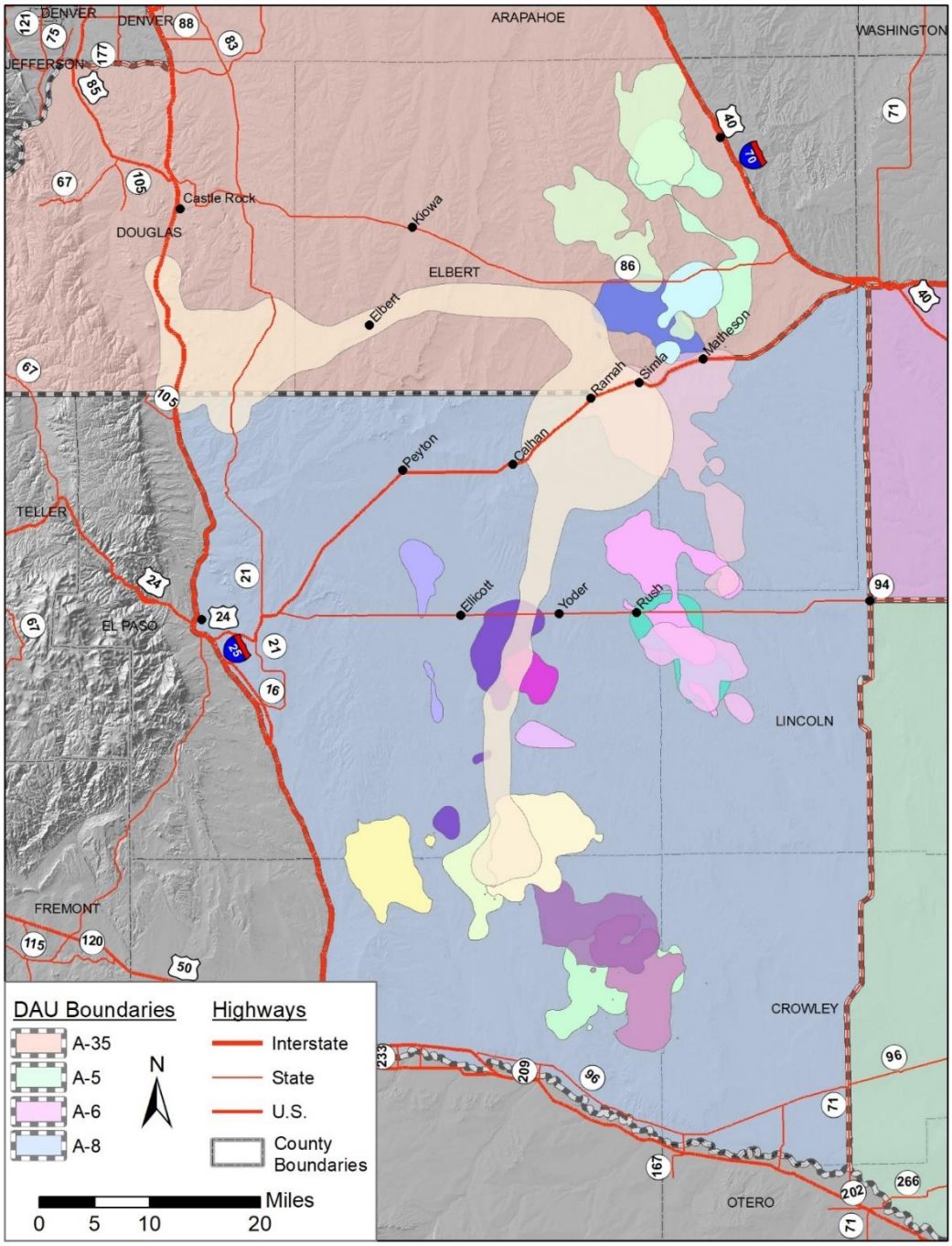


***Figure 7**. Pronghorn home ranges calculated with Brownian Bridge Movement Models for GPS collared animals captured in 2016. Each color represents a separate animal.*

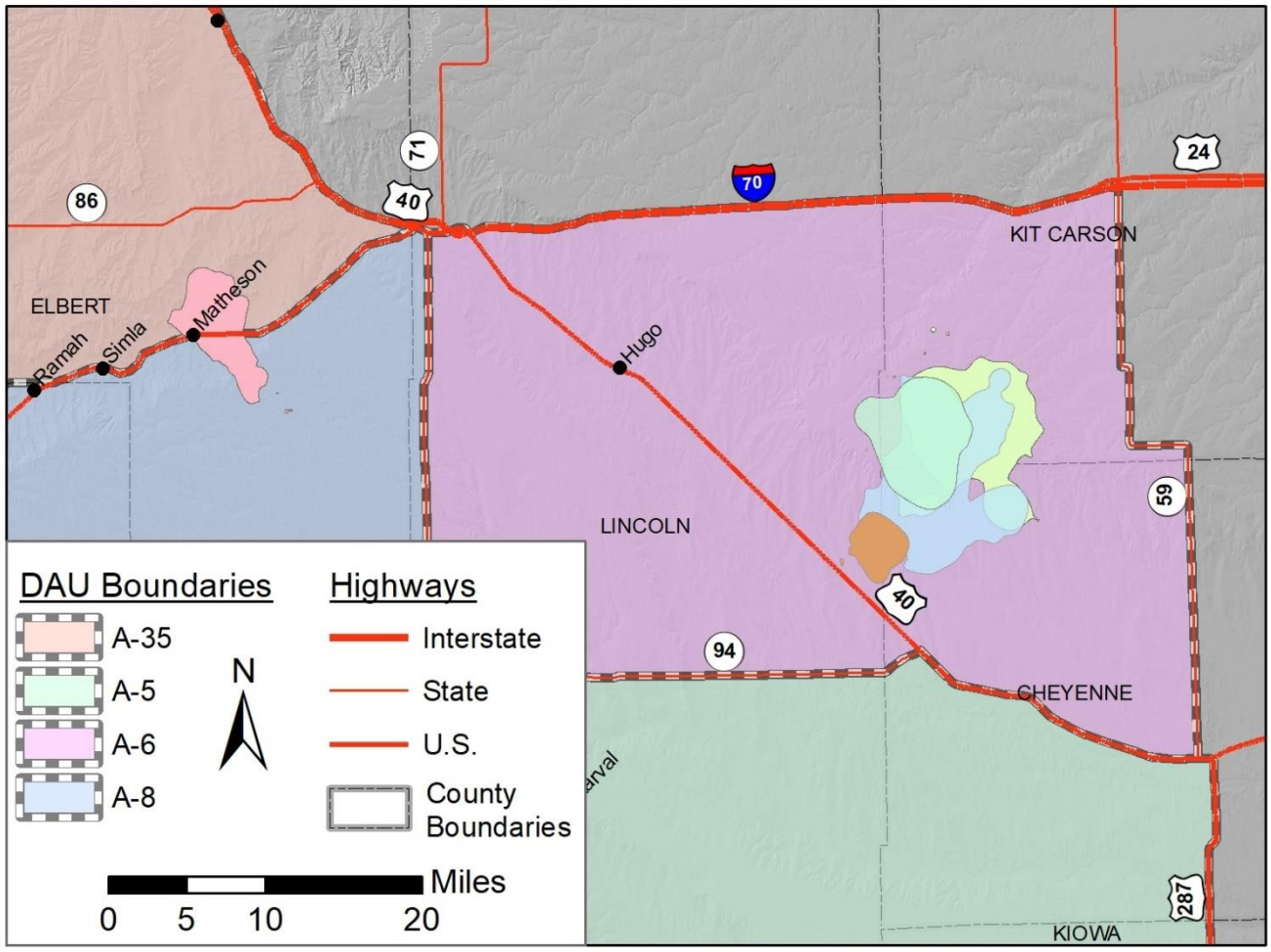


***Figure 8**. Pronghorn home ranges calculated with Brownian Bridge Movement Models for GPS collared animals captured in 2017. Each color represents a separate animal.*

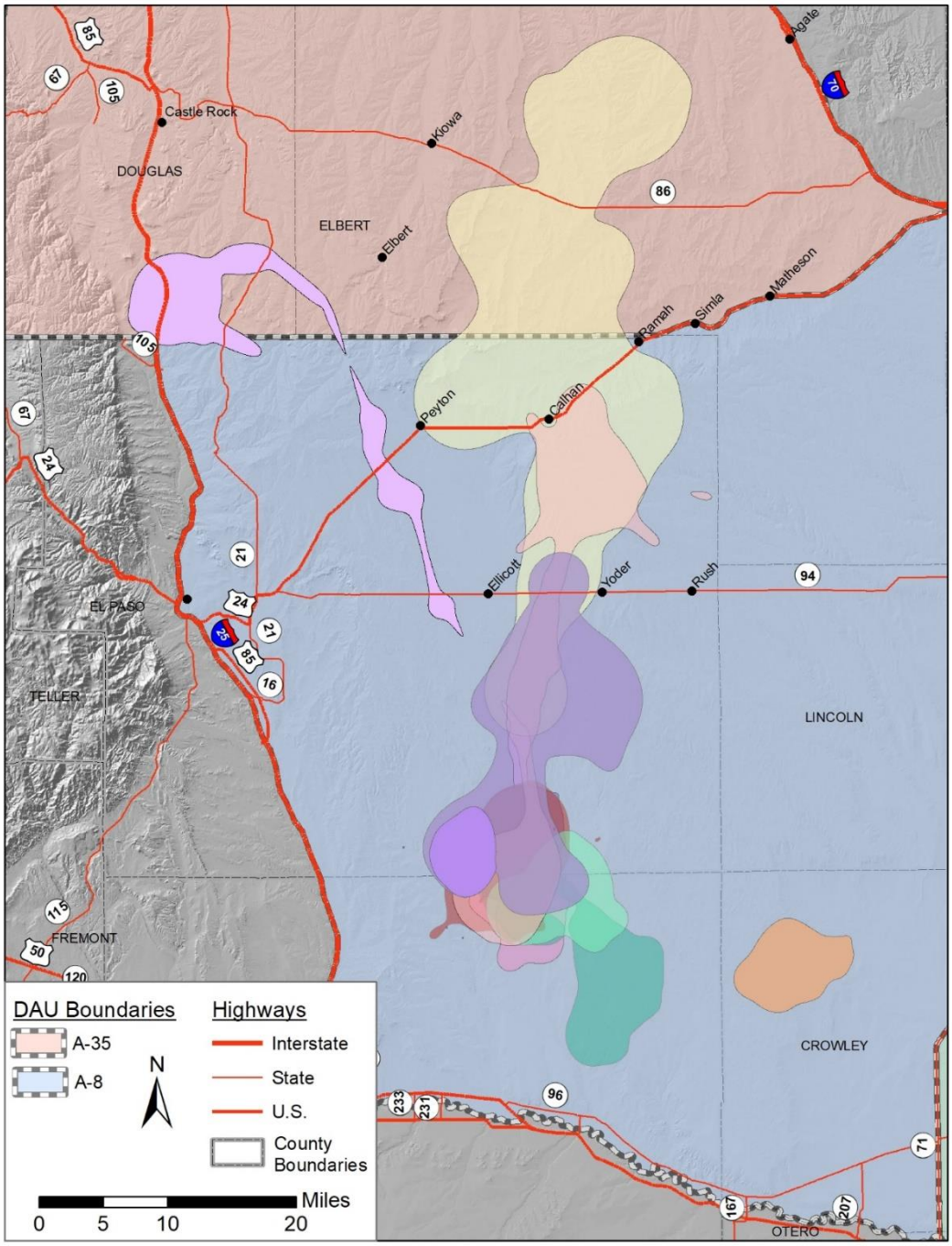


***Figure 9**. Pronghorn home ranges calculated with Brownian Bridge Movement Models for GPS collared animals captured in 2018 and 2019. Each color represents a separate animal.*

Objective B: Establish baseline survival data for adult pronghorn in southeastern Colorado

We calculated annual survival with the same spreadsheet used to calculate deer survival in CPW's five Mule Deer Intensive Monitoring Areas. Survival is calculated with the Kaplan-Meier staggered entry design (Pollock et al. 1989). As with mule deer survival, we censored known harvest mortalities. For mule deer, survival is calculated from December to December. However, we ran the calculation for the February to February timeframe to account for the February capture. We also grouped bucks and does for the survival calculation since we did not have the power to run separate analyses by gender.

Between February 2016-February 2017, 12 of 44 radio-collared pronghorn died. Six (2 bucks, 4 does) pronghorn were harvested. Of the remaining six mortalities, two animals died during the hunting season so wounding loss was one possible cause of death. We do not know the cause of death in the other four cases. Most carcasses were heavily scavenged by the time we found them, even for GPS collars that were recovered within 48 hours of death.

The February 2016-February 2017 adult pronghorn survival rate was 0.858 ± 0.058 (Figure 10). From 2005-2007, adult survival rates were calculated for pronghorn radio-collared in central-eastern Colorado (Table 4). The survival rate for the first year of this study was comparable to data collected in 2005 and 2006. However, the rates in 2005, 2006, and 2016 were higher than the rate for 2007, when the eastern plains experienced a heavy blizzard.

Between February 2017-February 2018, 4 of 33 pronghorn died (Figure 11). Two does were harvested. One buck and doe died of unknown causes. As with the mortalities in 2016-2017, the carcasses were heavily scavenged by the time they were recovered. The annual survival rate was 0.941 ± 0.042, which was higher than the rates observed during the Lindstrom study in the mid-2000's and the first year of this study.

Nine of the 42 pronghorn (all does) alive in February 2018 died before February 2019. Three animals were harvested. One doe was killed by a vehicle on a rural road in Crowley County and one doe died of bluetongue. These mortalities were the first confirmed roadkill and death from disease we have observed during the study. The remaining four pronghorn died of unknown causes. The annual survival for this time period was 0.849 ± 0.058, which was comparable to survival rates from 2005-2006 and 2016 (Figure 12).

Table 4*. Comparison between annual adult survival rates for a pervious study conducted for BioYears 2005-2007 to this study. Harvest mortalities are censored.*

BioYear	*Survival*	*Standard Error*	*Source*
2005	*0.856*	*0.059*	*Lindstrom unpublished*
2006	*0.863*	*0.045*	
2007	*0.602*	*0.068*	
2016	*0.858*	*0.058*	*This Study*
2017	*0.941*	*0.042*	
2018	*0.849*	*0.058*	

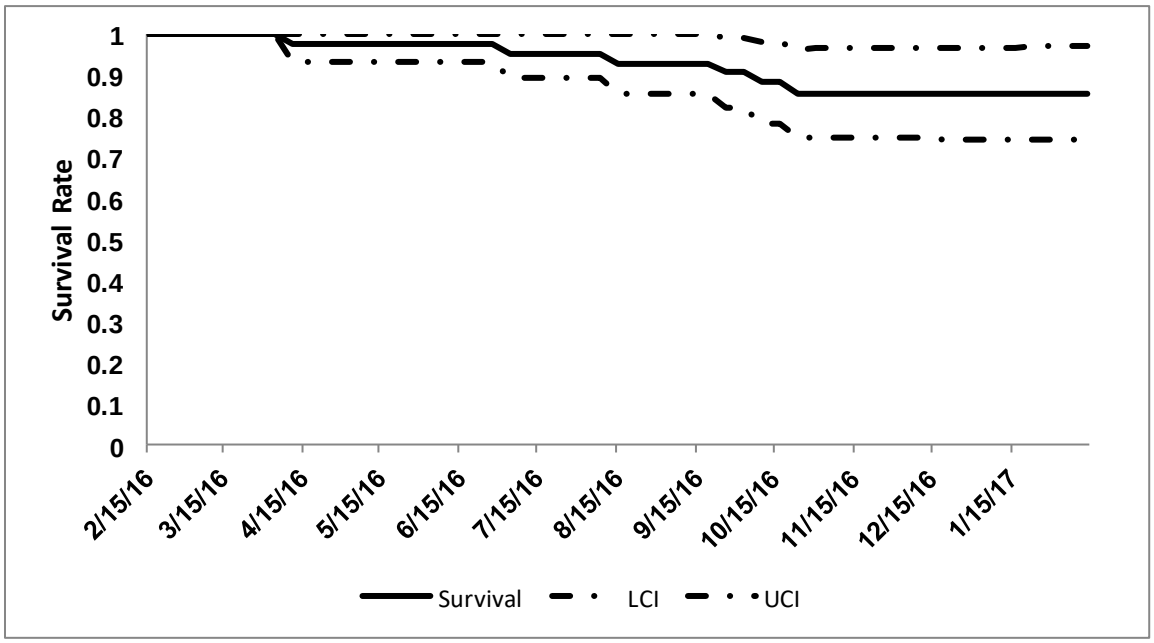


***Figure 10**. Survival rate and 95% confidence interval from February 2016-February 2017 for 44 pronghorn collared for this study. Harvest mortalities are censored.*

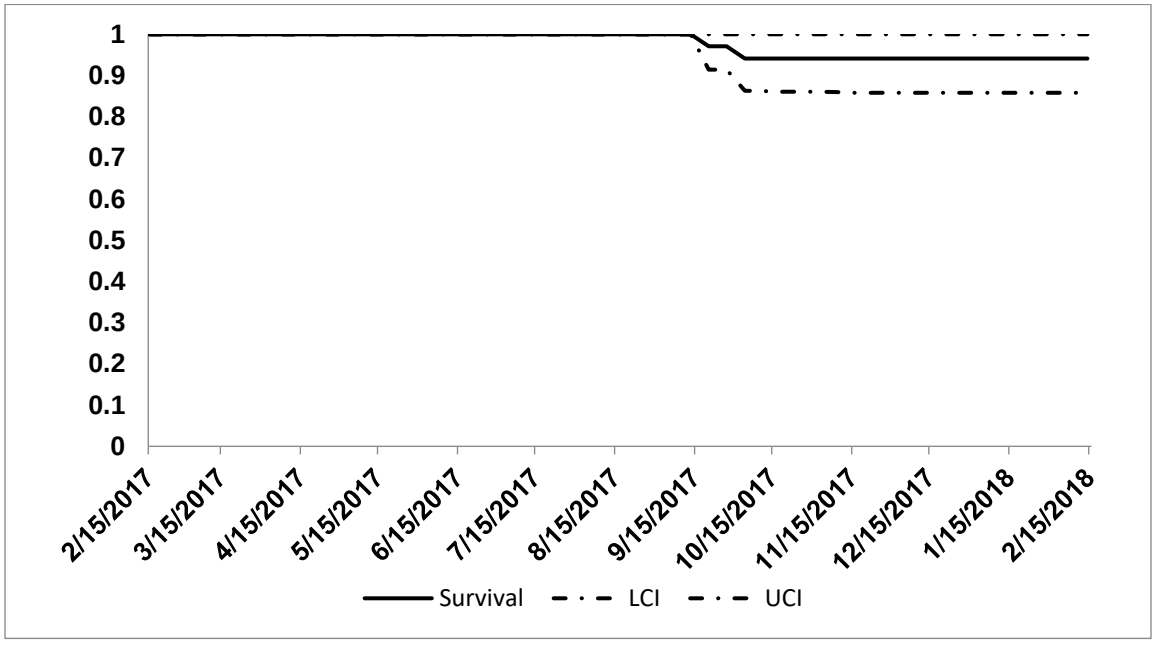


***Figure 11**. Survival rate and 95% confidence interval from February 2017-February 2018 for 33 pronghorn that were monitored during the year. Harvest mortalities are censored.*

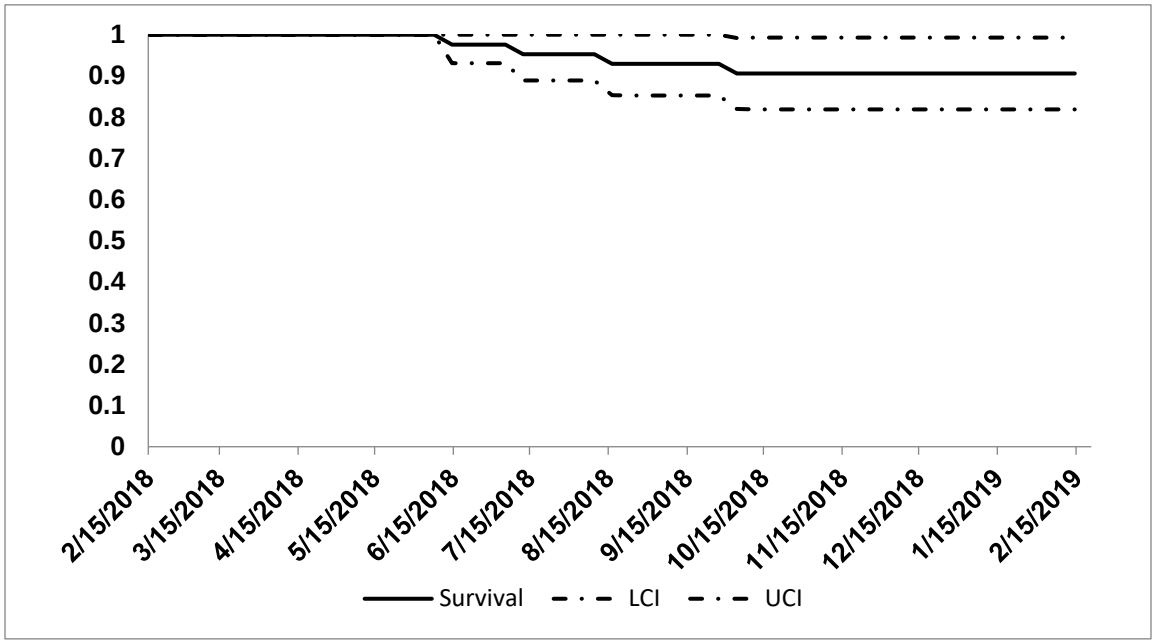


***Figure 12**. Survival rate and 95% confidence interval from February 2018-February 2019 for 42 pronghorn that were monitored during the year. Harvest mortalities are censored.*

***Objective C**: Model annual changes in pronghorn group size*

We recorded group size along with a GPS waypoint when locating VHF collared pronghorn from the airplane. To model group size, we used data collected from March 2016 through December 2018. Over this period pronghorn group size has averaged 13.7 ± 0.52 animals per group and ranged from 1 to 150 (n=699 groups & 33 VHF collared pronghorn). Group size peaked in mid-winter and was the lowest in late spring (June 13). We also saw a decrease in group size during the rut in mid- to late-September. To model changes in group size throughout the year, we fit a cubic-cyclic model to the data with a generalized additive model. We fit group size with a negative binomial error distribution to account for over-dispersion in the biological data (K. Blecha, personal comm.). Results are presented in Figures 13-16 and Table 5.

***Table 5**. Parameters from generalize additive model predicting group size by Julian Date for pronghorn in southeastern Colorado.*

	ß	SE	z-value	p-value
Intercept	2.63	0.043	61.4	0.00
2017	-0.306	0.072	-4.23	0.00
2018	-0.314	0.067	-4.71	0.00

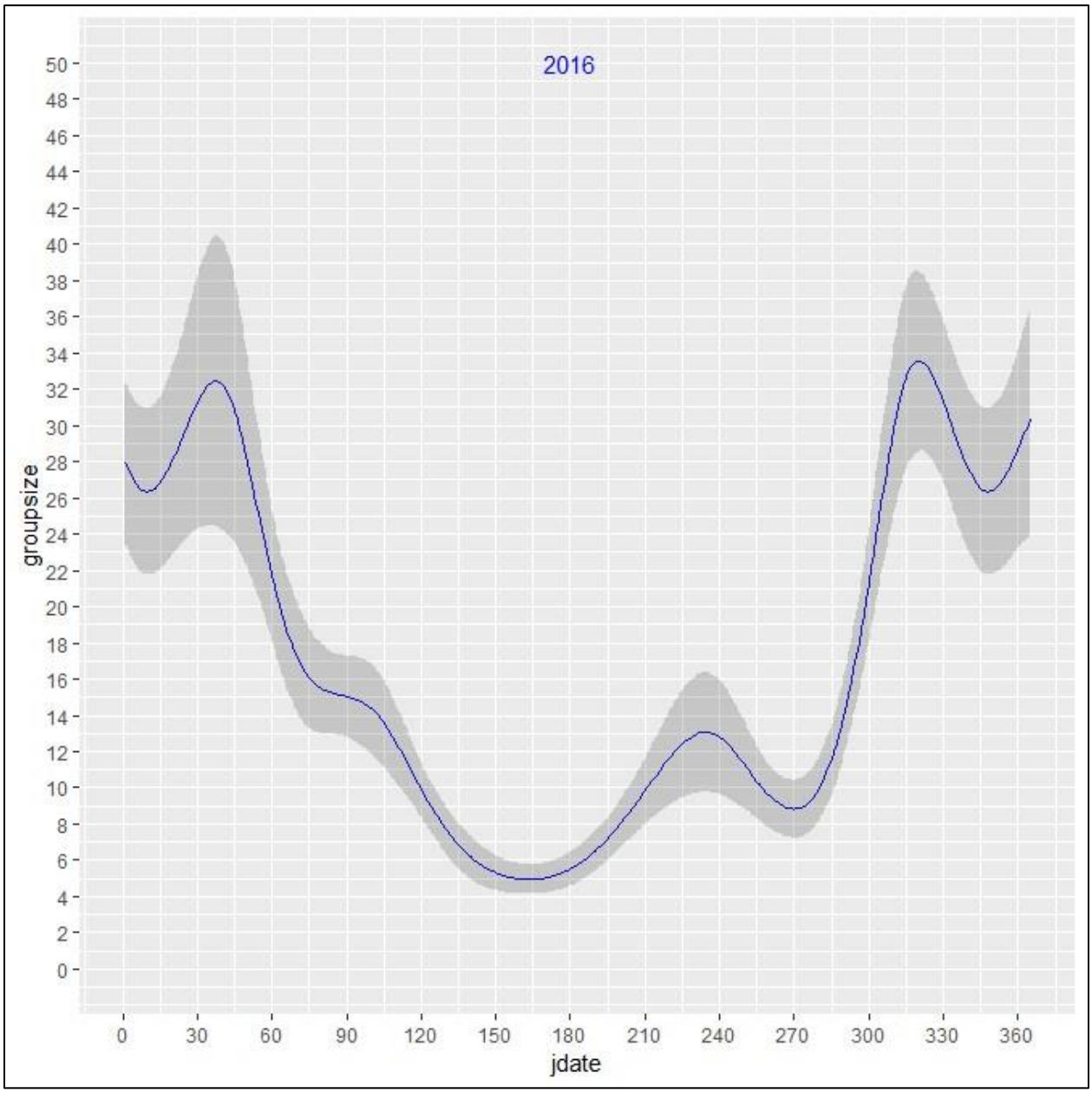


***Figure 13**. Predicted group size by Julian Date (jdate) for pronghorn in southeastern Colorado, 2016. The minimum predicted group size occurred on 13 June (jdate=164).*

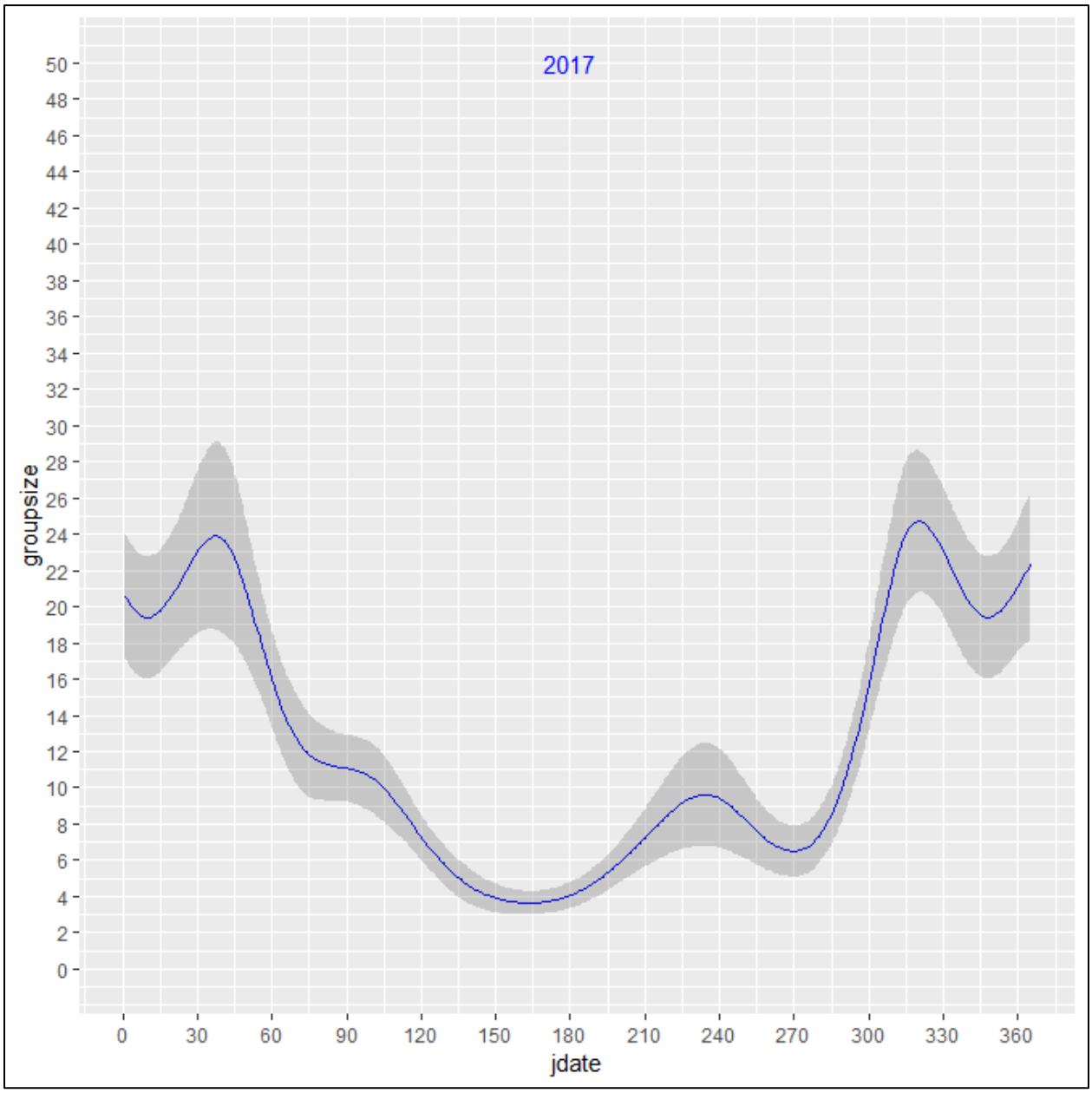


***Figure 14**. Predicted group size by Julian Date (jdate) for pronghorn in southeastern Colorado, 2017. The minimum predicted group size occurred on 13 June (jdate=164).*

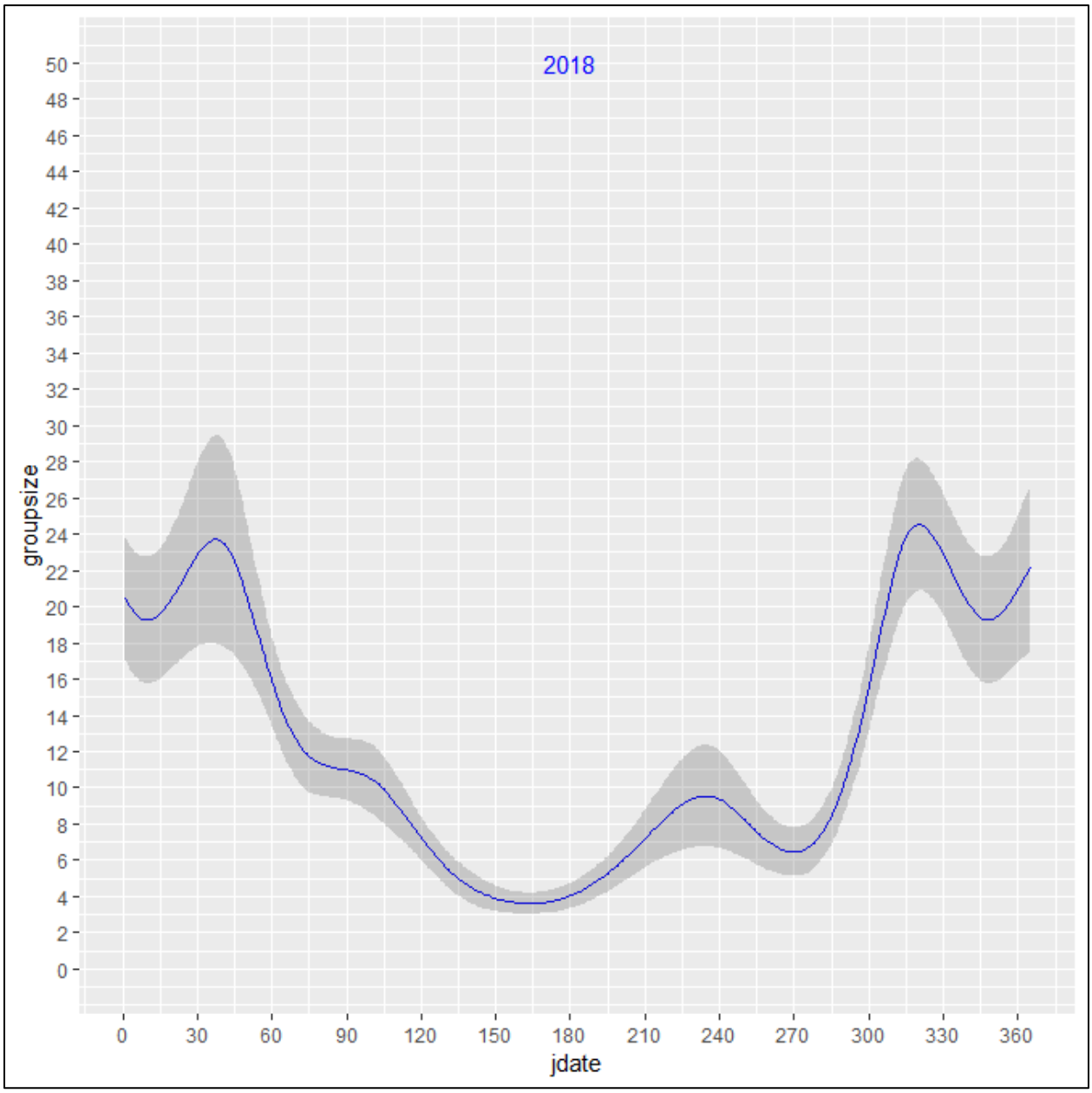


***Figure 15**. Predicted group size by Julian Date (jdate) for pronghorn in southeastern Colorado, 2018. The minimum predicted group size occurred on 13 June (jdate=164).*

Disease Monitoring

Texas Parks & Wildlife (TP&W) requested a transplant of pronghorn from PH8 to supplement restoration efforts in the Trans-Pecos area of the state. In preparation for the transplant, we partnered with veterinarians from TP&W and CPW to provide blood samples to Texas from pronghorn captured for this project. TP&W paid for the sampling costs and they shared the results of the disease testing with us. They specifically tested pronghorn for exposure to epizootic hemorrhagic disease (EHD) and bluetongue (BT). In 2018, all 13 pronghorn tested positive for exposure to EHD and 11 of 13 tested positive for BT. One of the two pronghorn who tested negative for exposure to BT died of the disease in October 2018 (g462). She was one of the pronghorn captured in Pueblo County who moved to Douglas County. All nine pronghorn captured in 2019 tested positive to exposure to both EHD and BT.

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https://gisgeography.com/geospatial-modelling-environment-gme-hawths-tools/

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Horne, J. S., E. O. Garton, S. M. Krone, and J. S. Lewis. 2007. Analyzing animal movements using Brownian bridges. Ecology. 88:2354-2363.

Pollock, K. H., S. R. Winterstein, C. M. Bunck, and P. D. Curtis. 1989. Survival analysis in telemetry studies: the staggered entry design. Journal of Wildlife Management. 59:7-15.

R Core Team. 2017. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.

Subsequent analyses of data collected during this project have been presented in:

Beaupre, C. 2022. Animal sample size guidelines for mapping migrations and distribution with GPS Collars. M.S. Thesis. Western Colorado University, Gunnison, Colorado. 61 pp.

Colorado Parks and Wildlife. June 30, 2022. DNR Wildly Important Goals #2: Balance Outdoor Recreation and Conservation. Strategy 4: Big Game Migration Summary Reports.

Appendix D – 30-day Public Comment Period

The draft plan was posted for 30-day comment period on CPW's webpage Herd Management Plans (HMP) in January-February 2023. To inform interested stakeholders about the comment period, CPW posted a news release on January 24, 2023. Additionally, we emailed the plan directly to the Colorado Farm Bureau, the Colorado Cattlemen's Association, the Colorado Cattlemen's Agricultural Land Trust, the Nature Conservancy, the Colorado State Land Board, county commissioners, the Transportation Technology Center, Inc., Ft. Carson Army Installation & Pinon Canyon Maneuver Site, and the Bureau of Land Management. The State Land Board Recreation Program also assisted us by publicizing the comment period in their February 2023 newsletter to individuals with private recreation leases on State Trust Lands.

This appendix contains the written comments we received during the 30-day comment period from eight members of the public, the Bureau of Land Management, and the Transportation Technology Center. Personal information has been redacted from the written comments provide by the public to protect their privacy.

We also received comments from the Pinon Canyon Maneuverer Site. Those comments were primarily editorial comments to the draft document and were provided directly to us as comments in a PDF so we have not included them in this appendix.

STATE OF COLORADO

Stiver - DNR, Julie <julie.stiver@state.co.us>

Hugo Pronghorn

[redacted] Thu, Feb 9, 2023 at 2:48 PM

To: "julie.stiver@state.co.us" <julie.stiver@state.co.us>

We probably have a 1 to 1 buck ratio. For a majority of the year our ranch is home to hundreds of pronghorn. We can't get over a few land owner vouchers every year. What a joke.
Also, your biologists are a joke. You have season and shoot the biggest bucks off every year before the females even cycle. Great management.... The season should be 2+ weeks later and last a week longer, but that would interfere with the more important elk..... y'all spend hundreds of thousands if not millions to survey the wildlife and y'all still have no clue.
[redacted]

Sent from my iPhone

STATE OF COLORADO

Stiver - DNR, Julie <julie.stiver@state.co.us>

PH 13 PH 18 comments

[redacted] Fri, Feb 17, 2023 at 12:30 PM

To: Julie.Stiver@state.co.us

Thanks for an opportunity to comment on the proposed plans. We are landowners in Tobe and Two Buttes areas. Our experiences are somewhat different on populations and hunter pressure. In Tobe (we are on the extreme east edge) we are not as concerned. However in the Two Buttes (132) area we have had concerns that the population objectives are too broad...300 to 1500. Seems that years ago the numbers were much lower (lower than 1000) and when the numbers in the field exceeded the upper end the upper number has been moved up to substitute for management issues. We have leased our hunting rights in part to reduce the hunter pressure before and during seasons. We are still experiencing some hunter angst from those hunters that do not respect private property. Our biggest issue is the concentration of antelope herds, sometimes exceeding 100 animals, on our winter wheat fields. Our wheat fields have become a winter respite as the only source of green vegetation while waiting for spring pasture to green up! The doe hunts are helpful but not well known by some meat hunters. Perhaps more flexibility on doe permits for problem areas would help. I'm amused by the survey responses I read. Seems you have 180 degree spectrum of opinions to sort out.
Thanks, [redacted] Lamar, CO

STATE OF COLORADO

Stiver - DNR, Julie <julie.stiver@state.co.us>

Haswell Pronghorn Management Plan

[redacted]

Wed, Jan 25, 2023 at 7:20 AM

To: "julie.stiver@state.co.us" <julie.stiver@state.co.us>

Julie:

I have hunted this herd for the last 20+ years. I like and agree with the plan.

Thanks for all of your and your staff's hard work.

[redacted]

STATE OF COLORADO

Stiver - DNR, Julie <julie.stiver@state.co.us>

Input on Haswell pronghorn HMP

[redacted] Mon, Feb 20, 2023 at 8:24 AM

To: julie.stiver@state.co.us

Dear Julie,

I am writing to provide input for the public comment period created for the Southeast Region pronghorn herd.

I am a lifelong hunter, professional land manager specializing in native rangeland restoration who has worked in federal, state (cpw) and municipal capacities.

I have hunted pronghorn in unit 120 most years since 2010. While hunting this area I have stayed in a local hotel, a rancher's Airbnb, and patronized restaurants, grocery stores, gas stations, etc.

I have read the Draft Herd Management Plan, specifically the Haswell herd plan and would like to respectfully weigh in on future management.

After reviewing the population trends, carrying capacity, landowner and hunter input I submit the following opinions:

I believe based on the data provided that the units could sustain higher populations than the current 3,200 without severe consequences to agricultural interests.

I believe the uptick in landowner and hunters' perception of overcrowding during the pre 2012 crash as stated in the report was a result of the widespread landowner big game access program which was largely discontinued in the areas I hunt (north of Sugar City). The number of other hunters I have encountered has dropped dramatically due to lack of opportunities and access. I imagine the local economy around Ordway has suffered as a result.

I would advocate increasing the herd to an objective of 4,000 to 5000 and keeping the buck doe ratio at current objective.

I think that this could be done by eliminating the late season doe hunt until the higher population objective is met. Further, I think that if the population reaches its new objective, an increase in tags allocated to farmers and ranchers that are being adversely affected by increased numbers be used to balance the herd...win-win for pronghorns and landowners that want the herd dispersed off of wheat fields with also a chance to solicit trespass fees for access or receive funding from the state for public access.

Ending the late season hunt is just a "spitballing" suggestion and I would defer to the expertise of wildlife managers to create a strategy to increase numbers if it comes to pass.

I just received the 2023 Big game brochure and was alarmed to see the liberal allocation of B-tags for both bucks and does. It seems to me that this change if combined with conditions we saw in 2002 and 2012 may be devastating to the herd.

I think a better strategy would be to bring the populations up and play with house money in the future as it is easier to pivot strategies with a larger population. I believe the current tag allocation and structure is too aggressive for a population at current numbers.

As someone who has hunted during the salad days of the pre 2012 crash, I long to see these kinds of numbers on the landscape again. The changes in the structure of seasons for 2023 combined with low population objectives is of great concern to me...I am truly worried for the wellbeing of this herd going forward.

Thank you,

[redacted]

Salida, CO

Subject: Comments on Southeastern Region Draft Pronghorn Herd Management Plan, Colorado Parks and Wildlife, Dated January 2023

General: I have read pages i-17, 30-42, and Appendices A, B, and C of the subject plan. I am focusing my review on the pronghorn herd on public land in this region, specifically in Unit 135, Comanche National Grasslands because I am familiar with that area and have been for approximately 27 years but am concerned about big game populations on all public land located in the region. I have seen ups and downs in pronghorn numbers over that period of time but have not seen what I consider drastic reductions in pronghorn numbers in the last 10 or so years. Over this period, I have seen large increases in hunter presence and heavy use of roads that were previously faint 2 tracks, and rarely used. This uncontrolled road access is leading to bad behavior which I have observed recently with hunters chasing pronghorn in vehicles and practicing "American Sniper" hunting. I had always considered this public land able to provide a quality hunt with good pronghorn numbers and a reasonable number of pronghorns that could be considered trophies for the area. I do not feel this is true now. Large drops in big game populations do not normally happen overnight and often occur over years unless there are severe disease outbreaks or very severe weather occurrences. Most of the subject pronghorn range is private land but Unit 135 does have a large amount of public land in relatively large unbroken expanses. Most of this land appears to me to be pronghorn habitat of relatively high quality.

Access to public land to hunt is generally easy, made even more so with GPS technology. Access to private land to hunt is much more difficult for many reasons. It is also normally more costly, especially if the private land hunted is managed by outfitters. This ease of access makes public land very attractive to many hunters and has resulted in unprecedented hunting pressure, potentially resulting in overharvest and other negative outcomes. These problems are exacerbated by setting pronghorn license quotas at a fixed number for a Unit of land that contains a large amount of private land and less, sometimes much less public land and not designating licenses proportionally for public and private. This results in an excessive number of hunters gravitating to the easy to access land. This could be solved to a great extent by designating pronghorn licenses as valid on private or public land, not both, in order to control harvest on the public land. This would require a few more hunt codes and would only be applicable to a few areas, but it seems to me the burden is outweighed by the benefits of providing quality hunts on public lands and protecting pronghorn herds that reside there from overharvest and displacement to private land due to hunting pressure. The common response I get from CPW officials when mentioning this is that "we don't want to make the Big Game Brochure lengthier and more complex than it already is with more hunt codes". I don't see this as a valid excuse for not doing so since it appears to me the public does just fine figuring out how to apply for big game tags.

Another concern I have is the harvest reporting process. Statistics gained from this process drives much of the decision making for the management plan. The harvest reporting questionnaire does not require the hunter to indicate whether they harvested on public or private land. A requirement to do this would help quantify hunting pressure on public land and make better decisions on tag quotas and enable the harvest data to be tied to the location of the harvest, public or private. This would prevent skewing and cross contamination of data generated by two very different hunting experiences and disproportionate amount of public and private land in a unit(s). I see that harvest reporting data from the opt-in questions

is available to use in the writing of this plan but not to the public. To me, this would be valuable information to provide to the public.

I think I understand many of the complexities of the pronghorn counting process, but pronghorns do inhabit open country. That is why I wonder if the public land areas of Unit 135 have been counted consistently in recent years and if so, what the numbers were. If so and you saw a steady decrease in numbers there, like I have, why some action was not taken to at least stabilize the herd.

The most disturbing aspect of this plan to me is what seems like a serious imbalance of concern for pronghorn populations on private lane as opposed to public land. Public land pronghorn management does not even make your list of management challenges on page i of the plan. Because public land makes up such a small portion of the Management Plan area it seems to be largely disregarded. I can tell you that public land is very important to me and many others. It might not carry the political weight of private land, but it deserves more attention than this plan provides. Public land did not have a voice in your landowner surveys. Maybe it was allowed to speak in your hunter surveys but what it could say was limited to the questions you chose to ask and only very recently were the opt-in questions included. But still the questions and answers were not required to be specific to the type of land, public or private, that the hunter hunted. This greatly affects how the data obtained can be interpreted.

The plan is mostly a macro-management plan and does not include any process to micro-manage specific problem areas. Do you have another process for that? There are so many "venues" to voice your concerns that I seem to have trouble selecting the proper one.

Comments:

1. Page i, last paragraph, I don't consider the population of pronghorn to be robust in the area I hunt. The herd has been decimated by overhunting and other factors. To me that is a significant management problem and should be recognized by being listed specifically. Predator control is not listed as a management problem, especially coyote predation on does and fawns during the birthing process and a period thereafter.
2. Page 7, last paragraph, With respect to the counting process you indicate you do not count fawns during the mid-May to mid -June count but do count during the pre-hunt count. If you counted fawns during the early count after fawning is complete and during the pre-hunt count and compared the numbers, it would be valuable data to determine whether the fawns were never born or died during the interim period between the counts. This would give clues as to why the later fawn count is what it is. I think a lot of fawns are killed by coyotes during the birthing process and shortly thereafter as do a lot of wildlife professionals. It seems like you only cite one study as a basis for your opinion that predation is not a problem.
3. Page 8, paragraph 2, I realize drought is a major factor in sustaining and growing wildlife populations and your biologists insist it is the major factor. I graphed pronghorn license quota numbers versus time, and it shows that numbers have not been reduced significantly since 2003 but were increased significantly in 2008 and drastically from 2014 to 2020. There is little potential for pronghorn damage in Unit 135 except for maybe fence damage so how do you justify these increases in tags, that are not specific to public or private land, when this region, except for a few sporadic years of increased precipitation, has been under sustained drought?

4. Pages 10-11, last 5 sentences under "Private Land", This is a problem because you make no distinction between private pronghorn tags(hunt codes) and public ones. The large number of people looking for a place to hunt gravitate to public land presenting the potential for overharvest and often force pronghorns onto private land where they cannot be legally hunted. This same issue is also present on paragraph 2 of page 11. Again, nothing is done to control hunting pressure on public land.
5. Page 11, paragraph 3, It is nice that more state trust lands were opened up for hunters to utilize, however much of this land has very limited access. An example is in Unit 128 where I attempted to hunt pronghorns this year. The Hungerford and Flying A tracts have only one access point for two very large tracts, and you must walk in or ride a horse from there. One tract is about 5 miles across and the other 11 miles. It would be difficult for me at my age, even though I am in good health and shape to carry even a quartered pronghorn out that far and I don't have a horse. I walked into the Hungerford tract about 2.5 miles only to see a rancher drive past me on a road. Why are ranchers allowed to use roads on state trust lands while hunters must walk or ride a horse? Was this part of the deal cut between CPW and the Land Board? I also had a rancher approach me and act rudely while I was on state trust land. Seems like CPW is worried about hunters being rude to ranchers but not vice vera.
6. Page 8, last paragraph, Changing from 10 to 15 % just makes it easier to meet objectives. Whatever the range is, it seems like CPW needs to be more aggressive to meet them. Seems to me the objective should be to do what it takes to maintain good consistent populations that are within objective throughout the region rather that meeting one huge objective for such a massive amount of range and to help avoid the peaks and valleys in population numbers.
7. Page 10 paragraph 2, You are creating your own problems with landowner/hunter issues by not designating separate licenses for private and public land and restricting where hunters can hunt. Paragraph 3, You can reduce pressure on public lands by issuing public land only licenses.
8. Page 15, You don't mention excess hunting pressure as a factor forcing the movement, especially from public to private land during hunting season. It has been my experience that pronghorn vehicle collision is not as big a problem as with deer and elk because pronghorn move much more during the day.
9. Page 35, under Pronghorn Herd Information, You could insert the sentence to read " the DAU herd is predominantly private land but does include relatively large expanses of public land in Unit 135 and Unit 142 is all public land".
10. Page 37, under "Hunter Access…", Why don't you include a statement such as "Increasing difficulty in accessing private land has resulted in increasing pressure on public land resulting in an unbalanced harvest between the public and private land within a Unit and hunt code", an issue not addressed in this plan.
11. Pages 38-39, This section is weak on recognizing the problems on public land management. It fails to address the needs of Units like 135 that have a very significant amount of public land. Unit 135 is one unit in the DAU as are a few others in the SE Region, that need management different than the others that are almost totally private. Unit 142 seems to have a different type of management that provides a better-quality hunt for pronghorn (and deer too) than other public land, as evidenced by the number of preference points required to draw them.
12. With respect to the owners of the public land (USFS, COE, BLM, DOD, State of CO, etc.) I am not familiar with the details of the agreements between them and CPW with respect to the

management of wildlife. I can recall two instances in recent years I have had while hunting on this land that seem to indicate territory disagreement and squabbles between the parties on certain issues. Access is one that seems to have disagreement issues. I'm sure there are others.

13. I have graphed from the Statistics section of the CPW website from 2003 to 2021-22 pronghorn license quotas in Unit 135 by sex, harvest by sex, harvest by rifle, muzzle loader, and archery, and percent of the total harvest of does. I do not think that pronghorn herds needed to provide a quality hunt on public land can be sustained by the total quotas, female quotas, rifle hunt quotas, and unlimited archery tags that are being issued. This is especially true since you do not from the quota standpoint restrict hunters on whether they hunt on public or private, and from the harvest standpoint you do not require hunters to state whether they harvested on public or private land. It is true that archery harvest numbers are small but the number of archery hunters resulting from unlimited over the counter licenses and an increasing popularity of the sport has had an impact on other hunting seasons. Many of the archers I talk with today are shooting arrows at pronghorns and other big game at 80 to 90 yards, with results, I'm sure, much like the "American Sniper Hunters" shooting at pronghorns and other big game at over 1000 yards with centerfire rifles. I am sure many pronghorns are hit and never recovered. I think the number of harvest numbers reported by archery hunting is somewhat low for that reason. The muzzle loader harvest is relatively small but has increased in recent years. Muzzleloaders today rival centerfire rifles in power.
14. If you don't take drastic measures to rebuild the pronghorn population in Unit 135, it will take many years to do so and the rate of increase will depend on some factors that are beyond anybody's control.
15. It appears that CPW is experiencing significant turmoil at this time. I know that many hardworking and dedicated professionals work here. I worked as an Occupational Safety and Health Program Manager for many years for a very large government bureaucracy and very well understand the difficulties and challenges of working in that environment. What I learned is that the problems are usually the dysfunction of the bureaucracy, not the people that come to work every day and try to do their job.

Thank you for the opportunity to comment on this plan.

Respectfully,

[redacted]

Pueblo

STATE OF COLORADO

Stiver - DNR, Julie <julie.stiver@state.co.us>

Input Herd Management Plans 11 SE Antelope DMU's Comments

[redacted] Mon, Jan 30, 2023 at 12:54 PM

To: julie.stiver@state.co.us

Colorado Parks and Wildlife

Julie Stiver – Wildlife Biologist

DRAFT PRONGHORN HERD MANAGEMENT PLANS - SOUTHEAST REGION... *comments sought.*

Hello Ms. Stiver,

I was today able to fully read the release of the Jan. 2023 Pronghorn Management Plan. A couple of items I would like to offer as comments & inputs to the (draft) plan document. My overall interpretation of Herd Management Plan appear to show the CPW must manage landowner complaint data, with an analysis equal (or even greater) than the actual species population dynamics data. In short point format, I would like to see the necessary study Herd Management Plans include:

Add a "Road Mortality" paragraph, this would show Antelope herd losses resulting from vehicle collisions. The current Antelope Management Plans only lists a "Predation" paragraph, which is little use as no data, or numbers are offered for consideration. (One is left wondering whether Predation or Road Collisions should be further understood by CPW Biologists, and the reader of the Plan.) State wide numbers on road kills of Antelope are available, reported and summarized by/for the CPW by CDOT and should be included in an effect on herd (including fawn) population dynamics. Since the CPW lists its "Main Priority" is to "Facilitate and maintain connectivity for all Big Game Herds in Colorado, ignoring the Road Mortality data does not make it go away, or diminish its importance. (See attachment for more)

For all 11 Pronghorn DMU's, include **BOTH** the Total Square miles within each DMU, GMU , **AND** the total Square Miles of **Pronghorn Habitat** in each DMU. In the 2023 Draft Plan, only Wildlife Biologist Allen Vitt for PH-7 includes the necessary "land to habitat" - ratio data in an accessible format as: "surface area of PH-7 encompasses approximately 4,581 mi², of which approximately 4,079 mi² is considered pronghorn habitat. All other DMU reports include either the Total Square miles of the **PH-Unit**, but not a separate mi² summary of the Antelope Habits by square miles. Each DMU/GMU reporting presents the critical land data differently, depending on the CPW author , but should overall be offered a uniform format, in the larger plan document.

No mention of any Native or Historical ranges of the Antelope in Colorado - or if any restoration of populations can, will ,or should occur even if not yet funded.

Surprising, no mention is made in the Antelope Management Plan on current and future loss of Antelope drinking water sources on fawning, population health, etc. The CO State Water Engineer has issued (2021) a complete review (and possible removal) of 10,000 ponds in the Arkansas River that might not be in legal compliance with water rights owners.

A curious consideration might also be on the topic of CPW paid, or anticipated Animal Damage Claims. It seems that if CPW pays any damage claim with public funds, then the public should have some improved level of a landowner willingness (requirement?) to allow hunting on any private lands receiving those funds. Public funds paid for animal damages should = public access to hunt the animals. (This could be drafted as a "*Public Access for paying out Public Animal Damage Funds*" question for both on the "Hunter Outreach Survey" & "Landowner Outreach Survey").

Thank you for your consideration

[redacted]

Black Forest, CO

[redacted]

CDOT Antelope Road Kills Data El Paso County.xlsx
56K

STATE OF COLORADO

Stiver - DNR, Julie <julie.stiver@state.co.us>

pronghorn management plans

[redacted] Sat, Jan 28, 2023 at 3:55 PM

To: "julie.stiver@state.co.us" <julie.stiver@state.co.us>

Julie

This is [redacted] so you know who this is coming from. I had the opportunity to review both Thatcher and Tobe's draft plans before retiring. I will say that I think both are well thought out and written. Also I think that biologically both could handle more animals, but I think that Alan and Jonathan were right in putting the numbers where they did due to public perception.

Though I have told both biologists about a few concerns that I have with season structure, those issues are not addressed in the DAU plans and they don't need to be.

So you know those issues are: I think that the December season in 135 needs to go away, or if we keep it, it needs to be extended to at least 2 weeks. In 11 years I didn't have a single complaint from a landowner about pronghorn damage. With a GMU that is largely public land, and the areas with pronghorn have almost no cropland, a 5 day private land only December season doesn't make a lot of sense.

Also units 130 and 146 are much different from each other, due to habitat and land ownership. I never thought that pairing them was a good idea.

I do however have a concern about how this went out to the public for comment. In the future I would recommend having each DAU plan separate, with a map showing what area that it covers. A 295 page document is a bit daunting to look at, and I'm afraid that many people would see that and never open it. Worse yet, some may feel that they weren't welcome to (I don't believe that is the case). I went to the table of contents, then scrolled through to those DAUs that I wanted to look at and it worked fine, but I'm not your average citizen when it comes to this.

Knowing those involved, I think that the goal is to do due diligence, and that you do care what the public thinks. Hopefully this would be useful in the future.

Thank you.

[redacted]

STATE OF COLORADO

Stiver - DNR, Julie <julie.stiver@state.co.us>

Public comments on antelope management plans

[redacted] Tue, Jan 24, 2023 at 7:58 PM

To: lance.carpenter@state.co.us, julie.stiver@state.co.us

I appreciate the opportunity to provide comments on the current management plans. My comments on both regions are pretty focused on two things:
1) Please help boost populations in both regions. Current population levels are socially set lower than carrying capacity thus limiting hunting opportunities for a species that is becoming increasingly popular to hunt. I believe we can and should increase these population targets substantially in both regions
2) Expand public access to hunt antelope in both regions. Units 87 and 88 take multiple points to shoot a doe antelope because there's good access, good habitat and good populations. I think would be great to put together a management plan which seeks to replicate this elsewhere.

Sent from my iPhone

STATE OF COLORADO

Stiver - DNR, Julie <julie.stiver@state.co.us>

RE: Pronghorn management plan for your review

1 message

terrill.terrence@ensco.com <terrill.terrence@ensco.com> Thu, Feb 16, 2023 at 2:52 PM
To: "Stiver - DNR, Julie" <julie.stiver@state.co.us>, Tyrel Woodward - DNR <tyrel.woodward@state.co.us>
Cc: "Sherrock.Eric" <Sherrock.Eric@ensco.com>, "Maal, Luis (FRA)" <luis.maal@dot.gov>

Julie

It was great to hear from you and congratulations on your promotion. It has been several years since we have touched paths. We at the Transportation Technology Center (TTC) always have taken pride in protecting wildlife at TTC.

I have reviewed the PH-8 Yoder Pronghorn Portion of the Pronghorn Movement & Survival Study Final Report, which includes lands east of Interstate 25 and north of Colorado Highway 50 in Pueblo County.

Due to several influences over the past five years that have led to the decrease of Pronghorn population we have also seen a decrease in the population at the facility. The only increase in populous is during hunting seasons. It is our intent to support the increase in population of average norms of the past years. Please provide an average count that would be expected for the PH-8 area.

We would also request different ideas in affectively reducing vehicle and test train hits. It is difficult not to strike animals when conducting test activities or common travel on the DOT road to and from work. Any suggestions on preventative measures would be welcome.

We look forward to visiting with you in the future and supporting DPW activities.

From: Stiver - DNR, Julie <julie.stiver@state.co.us>
Sent: Friday, January 27, 2023 8:47 AM
To: Terrill.Terrence (US) <terrill.terrence@ensco.com>; Tyrel Woodward - DNR <tyrel.woodward@state.co.us>
Subject: Pronghorn management plan for your review

***** WARNING *****
EXTERNAL EMAIL -- This message originates from outside ENSCO Inc.

Hi Terry,

It was great to catch up with you today! Thank you so much for your help reviewing and distributing our pronghorn plan. As I mentioned, the whole document is lengthy, but we separated each part of the document to help with the review process. The relevant parts of the plan for the TTCI are:

The Executive Summary:

Introduction and Purpose which goes into the planning process, initial landowner & stakeholder outreach efforts, and threats to the pronghorn resource across eastern Colorado.

The PH-8 Yoder Pronghorn Herd which includes lands east of Interstate 25 and north of Colorado Highway 50 in Pueblo County.

Appendix C: The Pronghorn Movement & Survival Study Final Report:

You can access the entire planning document at this site: https://sites.google.com/state.co.us/draft-herd-management-plans/home or find more information about our herd management planning process on this page: http://cpw.state.co.us/thingstodo/Pages/HerdManagementPlans.aspx

We will be accepting comments through February.20, 2023. Please let me know if you have any questions or need additional information.

Take care,

Julie

--

Julie Stiver

Senior Wildlife Biologist - SE Region

LIVE LIFE OUTSIDE

P 719.227.5225 | F 719.227.5264 | C 719.313.6066 (best number)

4255 Sinton Road, Colorado Springs, CO 80907

julie.stiver@state.co.us | cpw.state.co.us

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Royal Gorge Field Office
3028 East Main Street
Cañon City, Colorado 81212

In Reply Refer To:
6500 (COF020, DM)

Colorado Parks and Wildlife
ATTN: Julie Stiver, Senior Wildlife Biologist
4255 Sinton Road
Colorado Springs, CO 80907

Dear Ms. Stiver,

The Bureau of Land Management (BLM) Royal Gorge Field Office (RGFO) is appreciative for the opportunity to comment on the proposed management objectives developed by Colorado Parks and Wildlife (CPW) for the 11 pronghorn herds in southeastern Colorado. Specialists from multiple resources, including wildlife, range, and recreation, have reviewed the proposed objectives. The RGFO has no objections and supports the proposed management objectives for pronghorn herds throughout southeastern Colorado.

BLM-administered lands in many of the pronghorn data analysis units within southeastern Colorado are small, isolated parcels that are surrounded by private or state-owned land. Much of the state-owned land in this region is owned by the State Land Board, and therefore closed to hunting unless permission is granted by the lessee. As a result, publically accessible BLM lands experience the vast majority of hunting pressure within many pronghorn management units. The RGFO applauds recent decisions by the Colorado Board of Land Commissioners and CPW to expand hunting access on state trust lands, and any further efforts to do so, especially when expanded access to currently inaccessible BLM lands is a result. More balanced hunting pressure will benefit the land, wildlife populations, and recreational experiences.

The partnership between BLM and CPW is critical to managing sustainable wildlife populations and their habitats. Thank you again for the opportunity to comment. Please contact RGFO Wildlife Biologist David McNitt (dmcnitt@blm.gov) for additional coordination on this matter.

Sincerely,

Keith E. Berger
Field Manager
Royal Gorge Field Office

INTERIOR REGION 7 • UPPER COLORADO BASIN
COLORADO, NEW MEXICO, UTAH, WYOMING

Appendix PH5: 2017 PH-5 Landowner and Hunter Surveys

HASWELL PRONGHORN HERD: LANDOWNER SURVEY
DATA ANALYSIS UNIT PH-5

Dear Landowner,

Colorado Parks & Wildlife (CPW) is interested in **your input** on the management of pronghorn antelope in the Haswell Pronghorn Herd Management Unit, Game Management Units (GMUs) 120, 121, 125, 126.

Your input is a **very important part** of the planning process. The information you provide will help guide management of the pronghorn herd for the next 10 years!

Please help us learn what is most important to you about pronghorn management in this area. Your identity will be kept confidential and the information you provide will never be associated with your name.

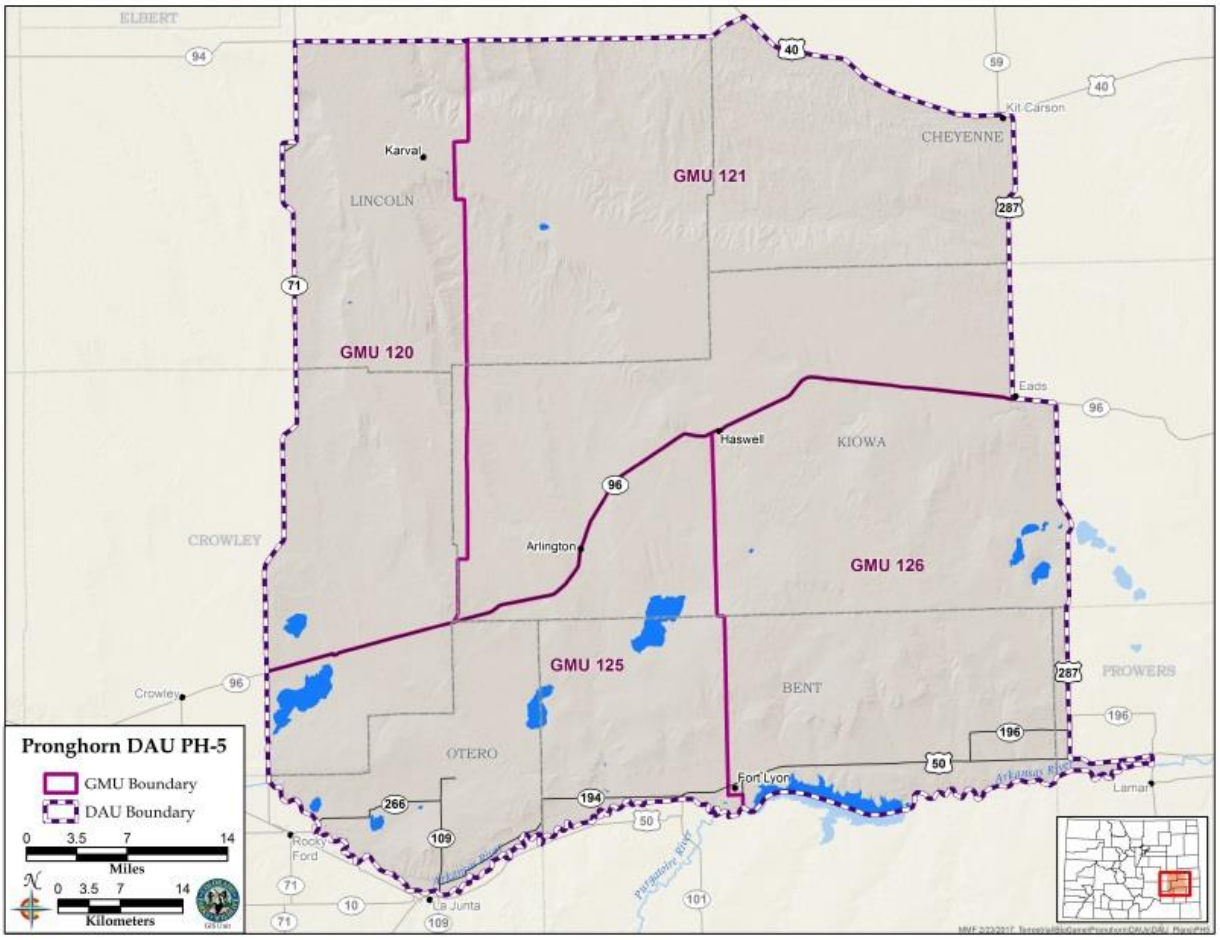
If you have any questions about the pronghorn herd please contact either:

- Jonathan Reitz, Wildlife Biologist, at (719) 691-9130; jonathan.reitz@state.co.us
- Travis Black, Area Wildlife Manager, at (719) 336-6603; travis.black@state.co.us

Surveys must be completed before **October 7th**.

Thank you for participating!

This survey is specific to the Haswell Pronghorn Herd Management Unit. This unit is bounded by highway 50 on the south, highway 287 on the east, highways 94/40 on the north, and highway 71 on the west. The map below is for reference. ***Please answer the following questions concerning pronghorn management in this area only***.

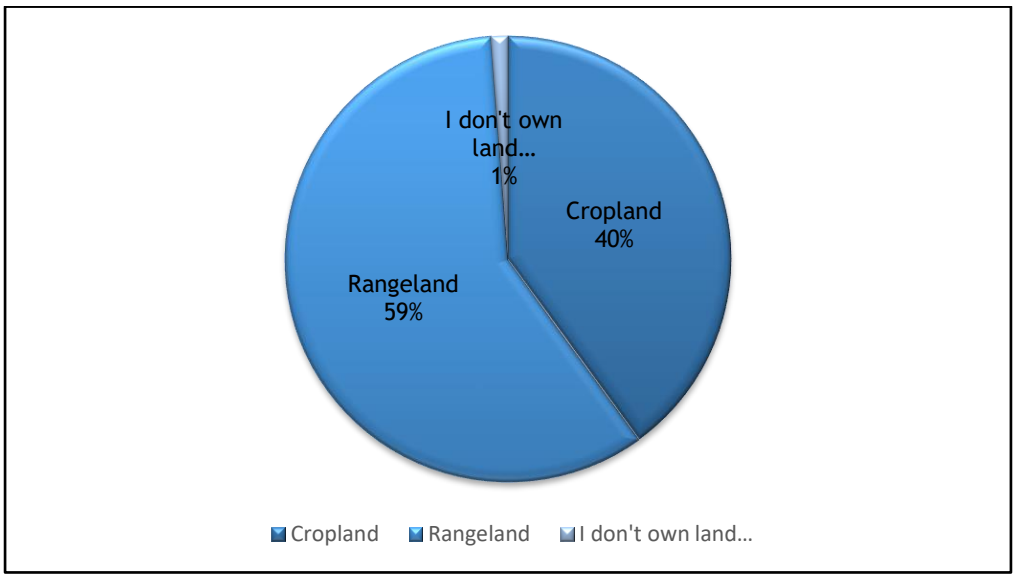


1. **How would you describe the land that you own in the Haswell Herd Management Unit?** (Please check all that apply.)

☐ Cropland

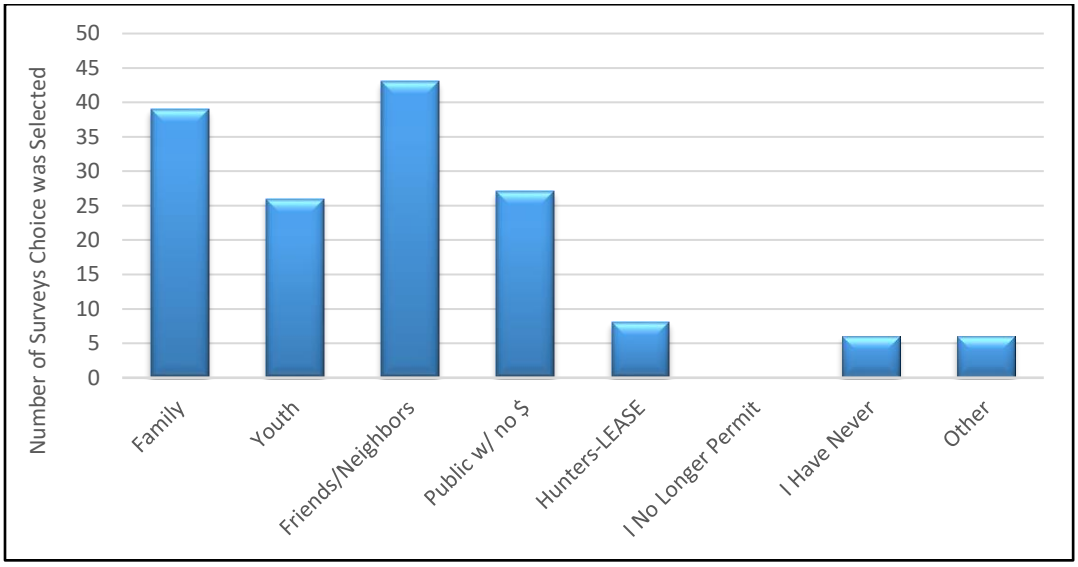
☐ Rangeland

☐ I don't own land in the Haswell herd unit



2. **Over the last five years, which of the following did you allow to hunt pronghorn on your property?** (Please check all that apply)

☐ Family
☐ Youth
☐ Friends and/or neighbors
☐ Public hunters who did not pay an access fee
☐ Hunters or outfitters who have leased the land or paid an access fee
☐ I no longer permit pronghorn hunting on my land
☐ I have never allowed anyone to hunt pronghorn on my land
☐ Other (Please specify):_____



3. **Have you hunted pronghorn in the Haswell Herd Management Unit during the last five years?**

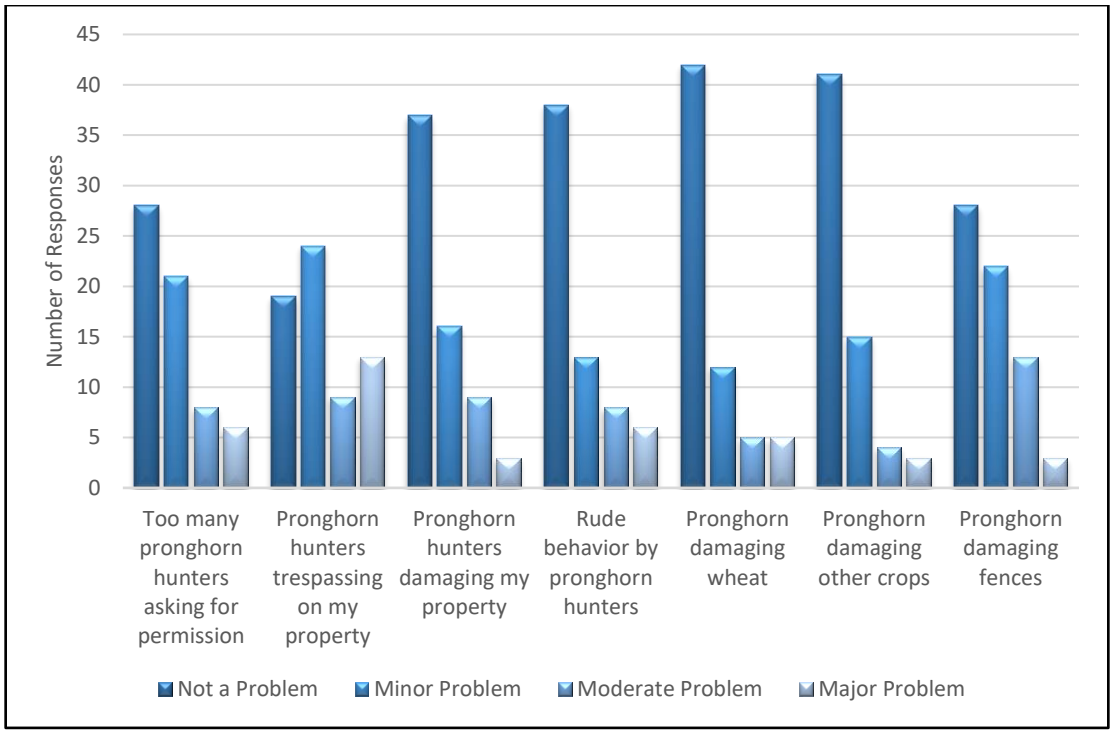
☐ Yes

☐ No

Yes: 26%	No: 74%

~~4.~~ To what extent have you experienced any of the following problems related to pronghorn and pronghorn hunters in the last 5 years? (Please check one response for each statement.)

	Not a Problem	Minor Problem	Moderate Problem	Major Problem
Too many pronghorn hunters asking for permission to hunt	○	○	○	○
Pronghorn hunters trespassing on my property	○	○	○	○
Pronghorn hunters damaging my property	○	○	○	○
Rude behavior by pronghorn hunters on my property	○	○	○	○
Pronghorn damaging growing wheat	○	○	○	○
Pronghorn damaging other crops (non wheat)	○	○	○	○
Pronghorn damaging fences	○	○	○	○



5. **Have you experienced other problems related to pronghorn causing damage and/or pronghorn hunters?** (Please specify):

_____

_____

_____

Please read the following brief description before answering questions 6 and 7.

Hunting licenses are the primary tool available to CPW for managing pronghorn numbers. For landowners, this creates a potential tradeoff between the number of pronghorn on their property and hunting pressure on or around their property. To lower the number of pronghorn, CPW typically increases the number hunting licenses (primarily for females) available, which increases the number of hunters in the field.

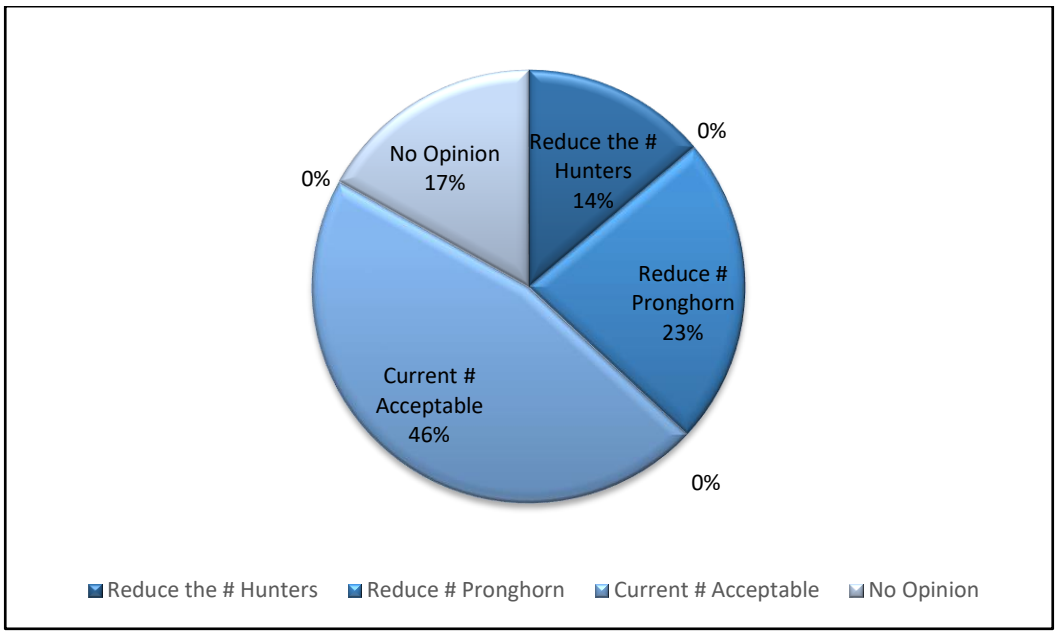
6. **How would you like to see the Haswell Herd managed? (Please check only one)**

☐ Reduce the number of hunters (more pronghorn, fewer hunters)

☐ Reduce the number of pronghorn (fewer pronghorn, more hunters)

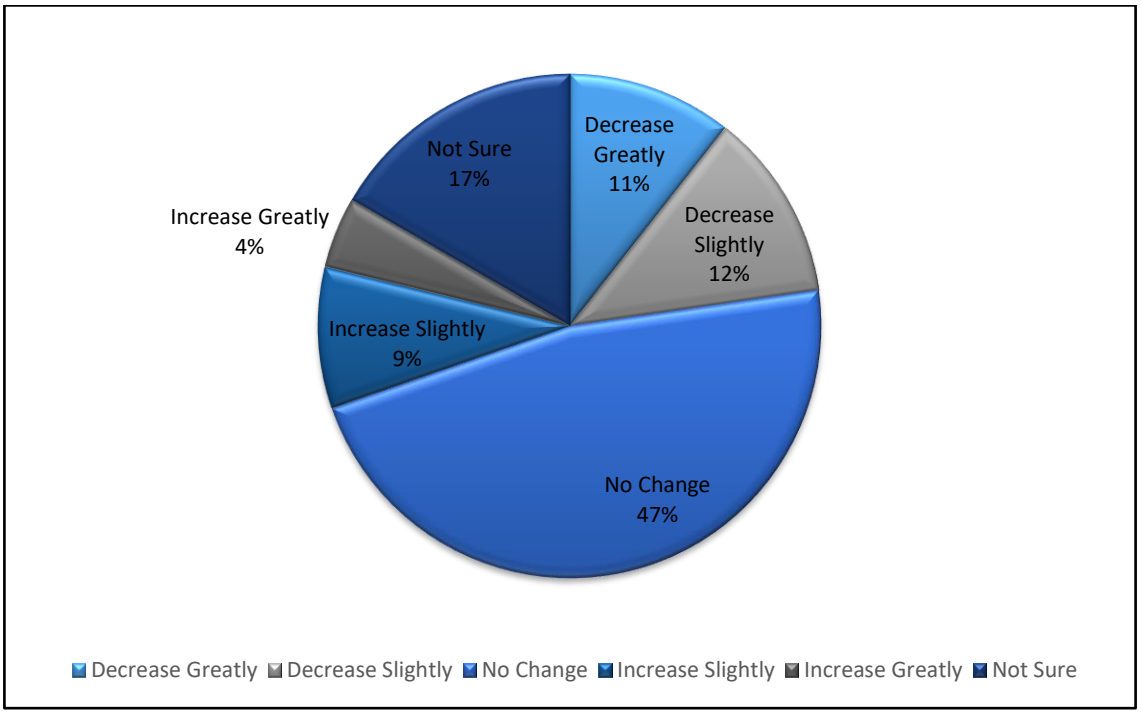
☐ The current numbers of hunters and pronghorn in the GMU(s) are acceptable

☐ No Opinion



7. For the 2018-2028 time period, relative to the current number of pronghorn, how would you like to see the pronghorn population change in the Haswell Herd Management Unit?

	Decrease greatly (~50% fewer pronghorn)	Decrease slightly (~15% fewer pronghorn)	No change (Current numbers are acceptable)	Increase slightly (~15% more pronghorn)	Increase greatly (~50% more pronghorn)	Not Sure
I would like the pronghorn population to:	☐	☐	☐	☐	☐	☐



Please read the following brief description about managing male-to-female ratios before answering question 8 (below).

If a pronghorn herd is managed for **increased hunting opportunity**, more buck hunting licenses are made available and buck hunters are generally able to hunt more frequently. This can result in fewer total bucks in the herd (*lower buck-to-doe ratio*) and fewer mature bucks.

If a herd is managed for **increased buck quality**, fewer buck licenses are issued in order to increase the number of bucks in the population (*higher buck-to-doe ratio*). This generally results in less frequent hunting opportunities and fewer hunters in the field, but it can also result in a greater chance of encountering a mature buck.

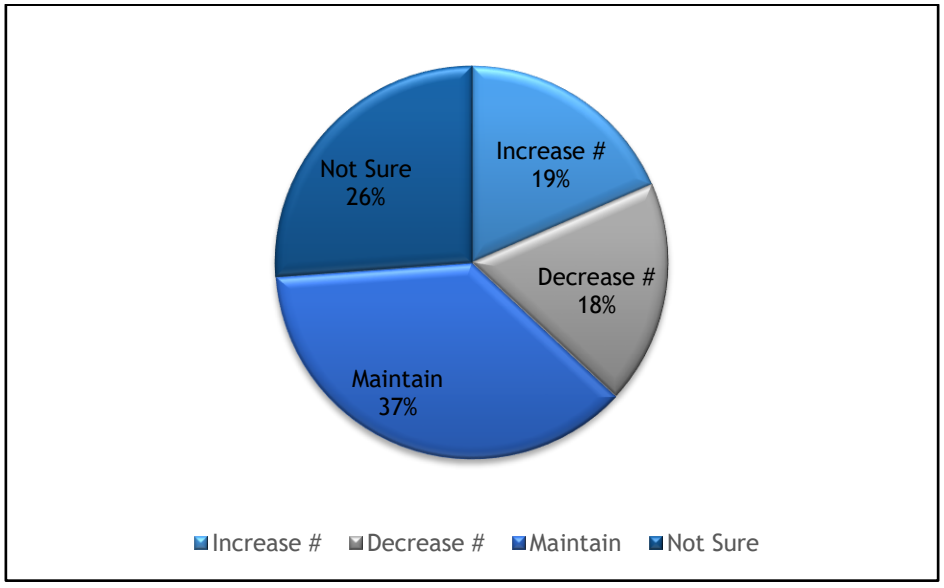
8. **Which of the following approaches should guide the number of buck licenses allocated in the Haswell herd unit?**

☐ Increase the number of buck hunting permits (easier to draw a license, more hunters in the field)

☐ Decrease the number of buck hunting permits (more preference points required to draw a license, more bucks in the population)

☐ Maintain the current number of buck hunting permits

☐ I'm not sure



Since 2009, CPW has held a late season doe hunt in the Haswell herd unit. The purpose of this

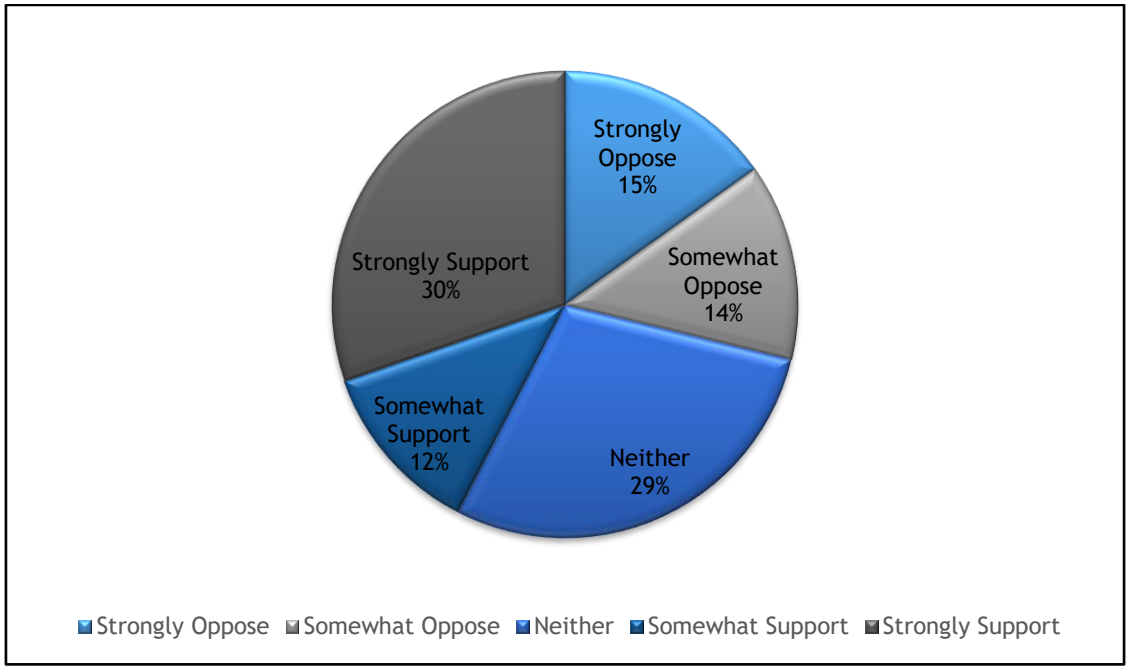
10 day season is to increase CPWs ability to keep pronghorn numbers under control as well as to give landowners another tool to help keep pronghorn concentrations from getting too large on wheat fields. Some additional benefits of the season are that it increases hunter opportunity, and reduces hunter crowding during the primary season by shifting some of the doe licenses to the late season.

CPW is considering extending to 31 days (December 1-31). The longer season gives hunters and/or landowners:

- increased flexibility with hunting dates
- reduced hunter crowing
- the opportunity for more time afield
- more time to have hunters push pronghorn off of fields of growing wheat

9. Do you support or oppose maintaining a late doe only pronghorn season in the Haswell Herd Management Unit?

☐ Strongly oppose
☐ Somewhat oppose
☐ Neither oppose nor support
☐ Somewhat support
☐ Strongly support



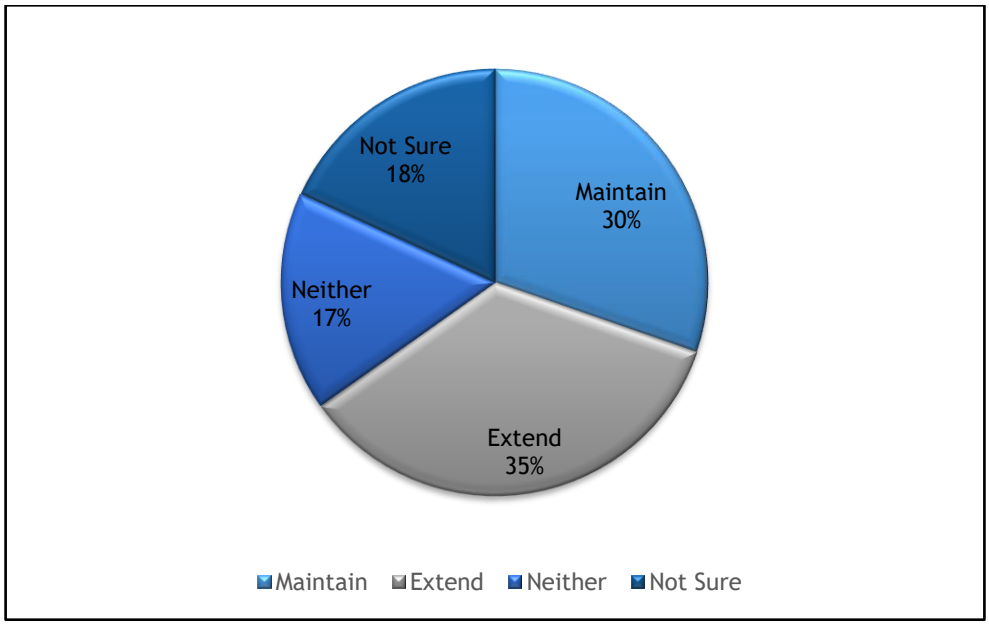
10. Would you prefer CPW to maintain a 10 day late season hunt, or extend the season to include the entire month of December?

☐ Maintain the 10 day season

☐ Extend the season to include December 1-31

☐ Neither

☐ Not sure



Thank you very much for taking the time to complete this survey. Your input is very valuable to us and will help us better manage your wildlife resources. Please feel free to leave us any additional comments regarding pronghorn management below.

HASWELL PRONGHORN HERD: 2017 LANDOWNER SURVEY QUESTION #5 RESPONSES

- Usual – gates not shut by hunters
- No
- Hunters leaving gates open, hunting on private property insisting it is state land. Hunters driving over the grass in the pasture not using just the roads. Hunters dropping off trash, damage to the fences
- In the past gates have been left open. Hunters misread maps and were not on public land.
- I have not
- Hunters hunting without permission/trespassing. Damaging property and fences. The people are the problem, not the animals
- On my property, sections xxxxxxx and xxxxxxxxxx, the pronghorn are too concentrated. As a result, the large amount of hunters in the area is causing blowing on the trail roads. Also, the antelope are eating the wheat and spreading bind weed. Please reduce the number in this area
- December season – residential theft of fuel, tools, and equipment no DOW presence enforcing any laws. DOW sells licenses to anyone to hunt on private land, hasn't paid any grazing fees in compliance to Colorado statues DOW committing FRAUD! To all license applicants. DOW needs liability ins. to cover all damages caused by their license holders. DOW need to have current landowner maps in possession to have done their due diligence as an officer of the la.
- Had several hunters trespassing and later found the carcass with head and front cape removed. Trophy hunting is becoming a problem and those hunters don't have the balls to even donate the meat
- Young people can't afford to pay to [?] so to many want to [?] I don't have that much land on [?]
- Leaving gates open or cutting fences to property they don't have permission to be on. They say they hunt for the neighbor and we thought this is their land. Some years we have no problem
- No
- n/a
- people need to be required to have written permission from landowners before putting in for tags
- I don't live there so not sure on exactly what is happening
- We have a lot of road hunters that shoot bucks and drag them to their vehicles. We've called in several in Lincoln County and that has helped

- Spread noxious weeds, they eat a lot!
- Pronghorn #s on our ranch north of Ordway are way down. The people that we have let hunt the last several years have had poor hunting experience due to low #s
- No we have just has 320 acres.
- Too many hunters draw tags and then ask permission or "Road Hunt". I'd like to see in private owned areas that they receive permission before they apply for a tag
- Access without permission. Hunting from county road. Leaving trash from cleaning animals in bags (esp guts)
- Pronghorn grazing neighbor bindweed and spreading it
- They leave gates open allowing livestock to roam. Damage fences, drive on wheat fields
- My cattle ranch is carefully marked "No Hunting!" "No Trespassing"! Only my family has permission to hunt! Others No! I'll call the Kiowa County Sheriff!
- They cause the ground to blow. Hunters must prove permission before getting license and know how's property they are on
- In the past gates have been left open. Hunters misread maps and were not on public land.

HASWELL PRONGHORN HERD: 2017 LANDOWNER SURVEY ADDITIONAL COMMENTS

- Please call if I can be of further assistance! Thanks
- The herd numbers have went down to much since the program. We manage our herds and hunters and seem to always have some antelope although the quality has greatly diminished. The problem we see is that everyone else has lost their herds due to over hunting and now more and more people are wanting on our land. Our herds would be destroyed if we did this as well. I'd like to see license numbers go down or put a minimum in horn size so everyone would stop harvesting immature animals. Numbers have slightly come up this last year but bucks need one or two more to reach maturity
- Consider a longer season. Short season encourage hunters to be less cautious. A windy opening weekend can ruin the success, encourage poor shots, etc.
- We do not hunt so most of this is irrelevant to us.
- Hunters need hand written proof of permission to hunt on the land they are hunting on
- Longer season (at least two weekends)
- I would like to see the late season be does only for 10 days ad for youth only
- Before you changed the program, we could get credit for leased ground giving us more permits. Now we still manage the leased ground but receive ½ of the permits. With more permits we were able to allow families to hunt. Moms and dads and their kids. We also cater to handicap people
- I misread the form and signed up for "family" tags only, rather than for general use. Unfortunately the family vouchers were not used.
- I would like to see at least 25% of bucks. You know more about managing buck nos. licenses in late season. Too many antelope, add hunters. Too few, fewer licenses. Managed according to range conditions and size of herd
- Cancel the season DOW personnel will not patrol and uphold laws. Don't increase liability to landowners. More landowner licenses to allow owners to manage herd numbers.
- I would like to extend the first season to 10-12 days instead of one week this would give the hunters a lot better chance to harvest an animal and maybe try to get permission to hunt since they would not feel like they were pressured to get one right away. With the extended season they would have 2 full weekends to harvest an antelope.
- I don't like hunters bothering me or my cattle more than 10 days

HASWELL PRONGHORN HERD: HUNTER SURVEY
DATA ANALYSIS UNIT PH-5

Dear Hunter,

Colorado Parks & Wildlife (CPW) is interested in **your input** on the management of the Haswell Pronghorn Herd (Game Management Units 120, 121, 125, and 126).

Your input is a **very important** part of the planning process. The information you provide will help guide management of the pronghorn herd for the next 10 years!

Please help us learn what is most important to you about pronghorn management in this area. Your identity will be kept confidential and the information you provide will never be associated with your name.

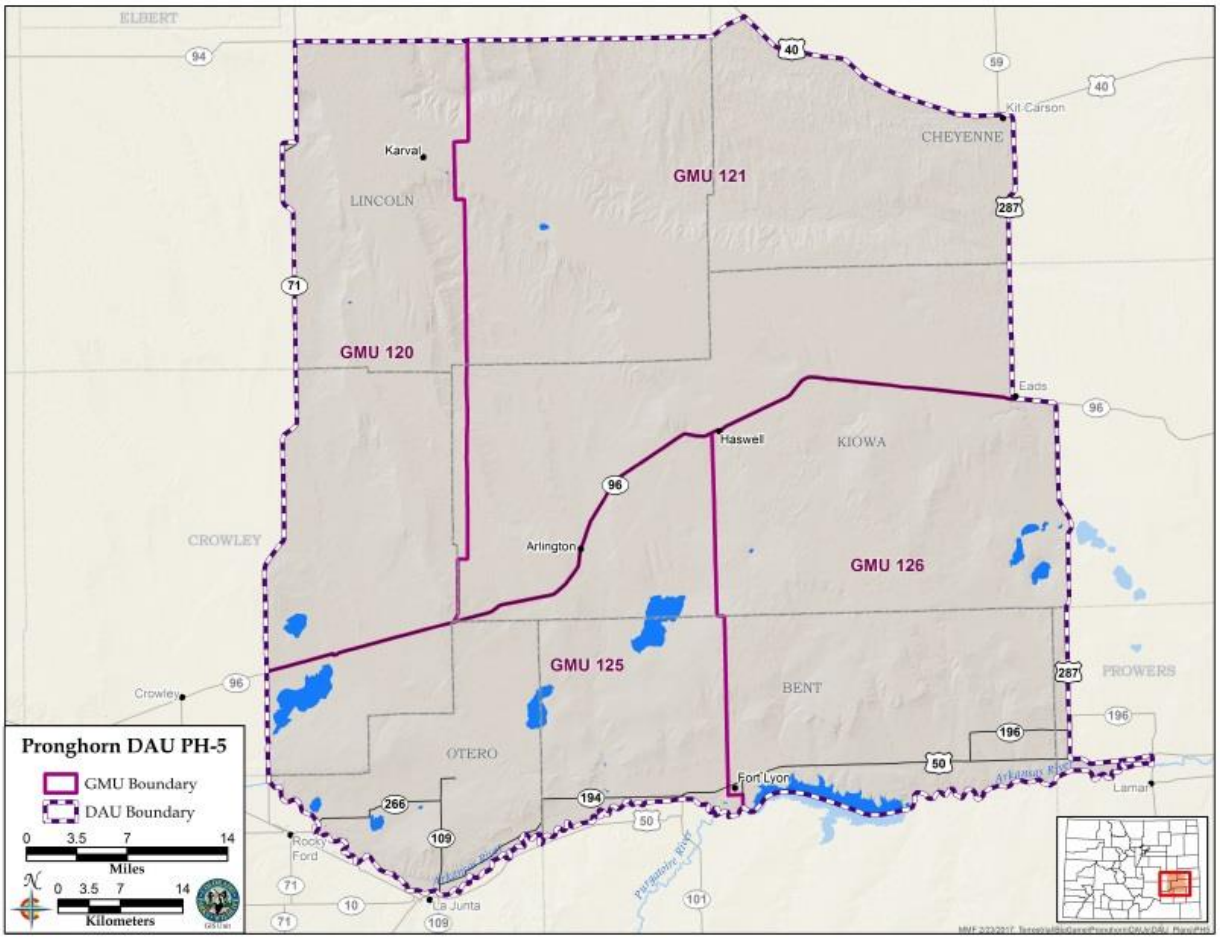
If you have any questions about the pronghorn herd please contact either:

- Jonathan Reitz, Wildlife Biologist, at (719) 691-9130; jonathan.reitz@state.co.us
- Travis Black, Area Wildlife Manager, at (719) 336-6603; travis.black@state.co.us.

Surveys must be completed before **October 15th**.

Thank you for participating!

This survey is specific to the Haswell Pronghorn Herd Management Unit. It includes Game Management Units 120, 121, 125, and 126. The map below is for reference. ***Please answer the following questions concerning your experiences in this area only.***



1. **Which of the following year(s) have you hunted pronghorn in the Haswell Herd Management Unit?** (*Please check all that apply.*)

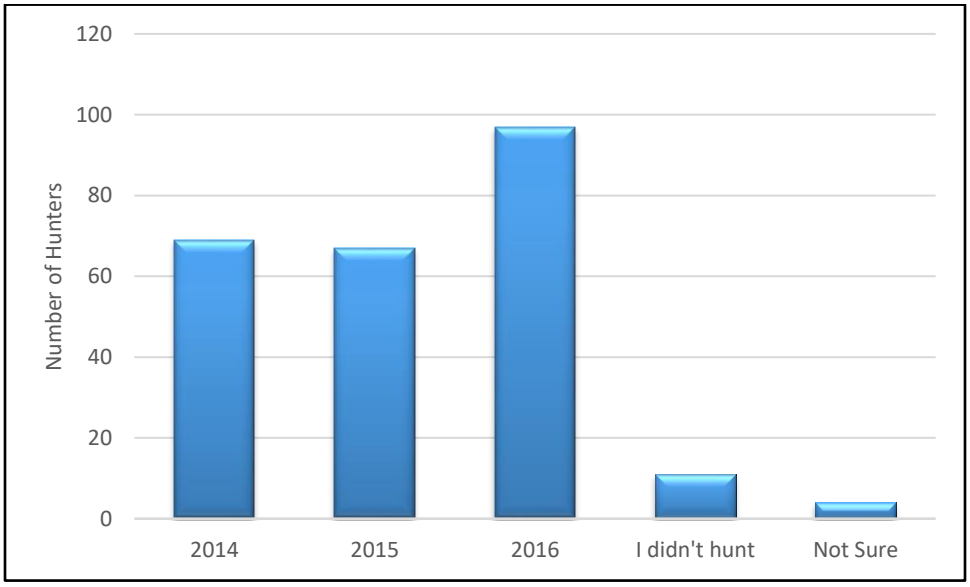
☐ 2014

☐ 2015

☐ 2016

☐ I did not hunt pronghorn in the Haswell Herd Management Unit during any of these years. (please skip to question #10)

☐ I am not sure



2. **During the previous three years which of the following license(s) did you obtain for the Haswell Herd Management Unit? (*Please check all that apply.*)**

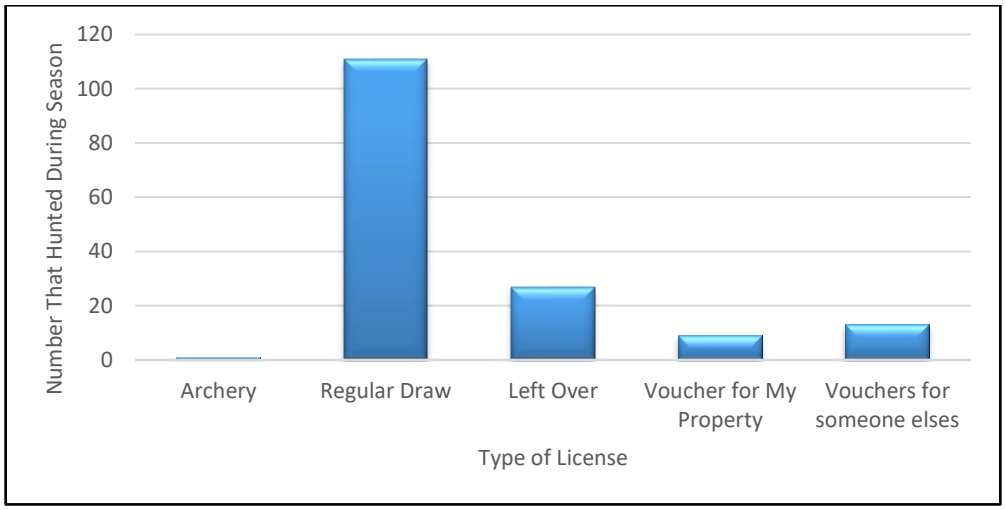
☐ An over-the-counter either sex archery license

☐ A regular draw license

☐ A left over license

☐ A landowner voucher for the property I own or manage

☐ A landowner voucher for another property



3. **Do you live within the Haswell Herd Management Unit?**
(*See map above, and check only one*).

☐ Yes

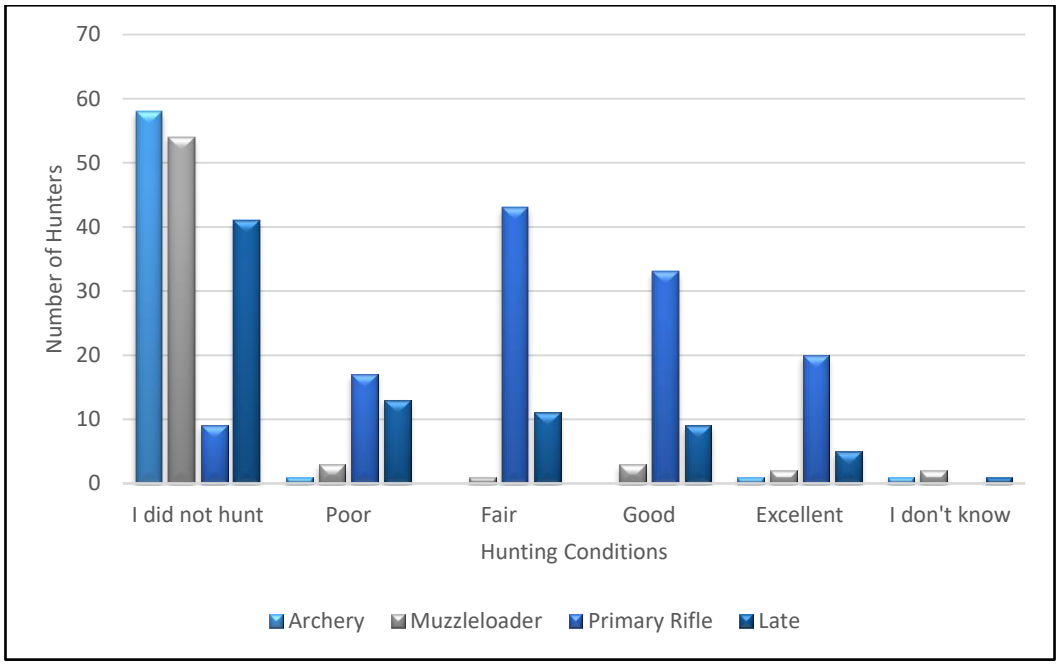
☐ No

Yes: 10%	No: 90%

4. How would you rate the quality of pronghorn hunting in the Haswell Herd Management Unit for any of the seasons that you hunted from 2014-2016?

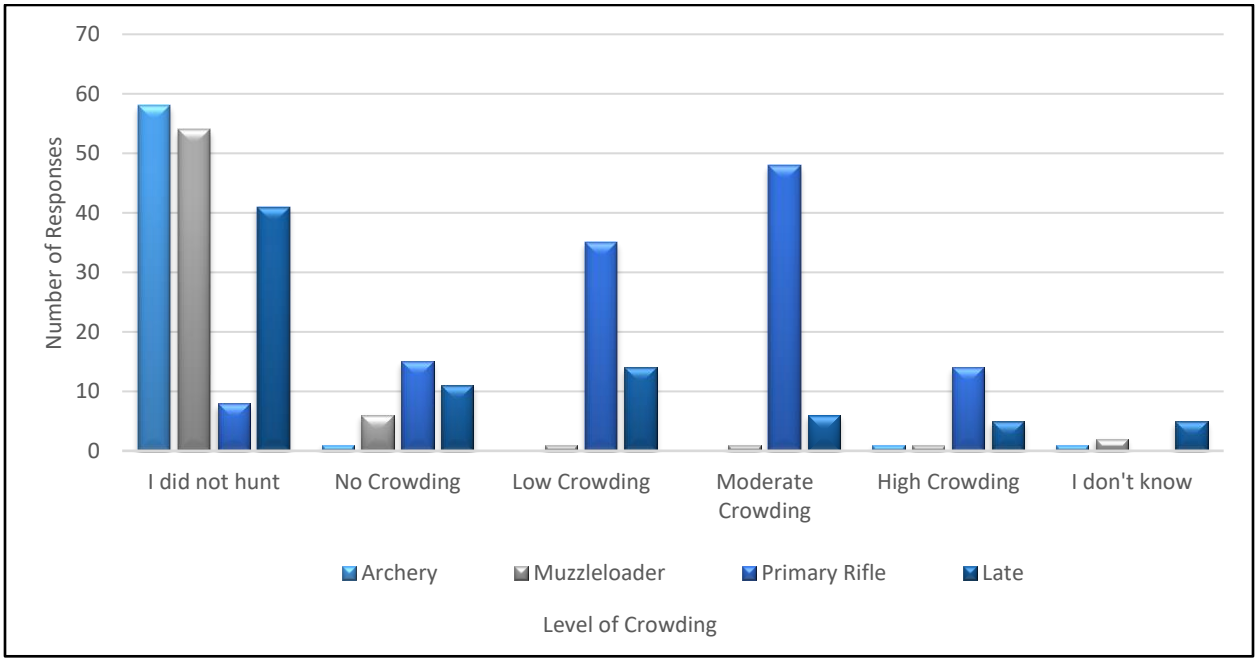
(*Please check only one response per season.***)**

	I did not hunt this season	Poor	Fair	Good	Excellent	I don't know
Either Sex Archery Season	○	○	○	○	○	○
Muzzleloader Season	○	○	○	○	○	○
Primary Rifle Season (Early October)	○	○	○	○	○	○
Late Season Doe Only Rifle Season (December)	○	○	○	○	○	○



5. **How would you rate the level of <u>hunter crowding</u> in the Haswell Herd Management Unit for any of the seasons that you hunted from 2014-2016?**
(*Please check only <u>one</u> response per season.***)**

	I did not hunt this season	No Crowding	Low level of crowding	Moderate level of crowding	High level of Crowding	I don't know
Either Sex Archery Season	○	○	○	○	○	○
Muzzleloader Season	○	○	○	○	○	○
Primary Rifle Season (Early October)	○	○	○	○	○	○
Late Season Doe Only Rifle Season (December)	○	○	○	○	○	○



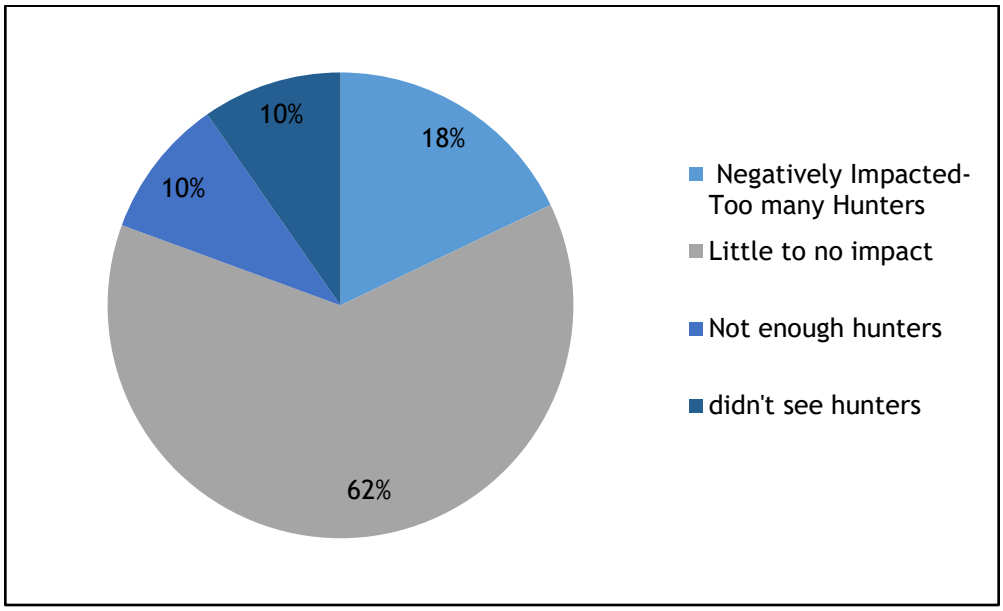
6. **Which of the following best describes your pronghorn hunting experience(s) in the Haswell Herd Management Unit from 2014-2016? (***Please check only one.***)**

☐ My hunt was negatively impacted by their being too many hunters in the area I hunted.

☐ Other hunters in the area had little to no impact on my hunt.

☐ There were not enough hunters around to get the pronghorn moving around.

☐ I didn't really see any other hunters.



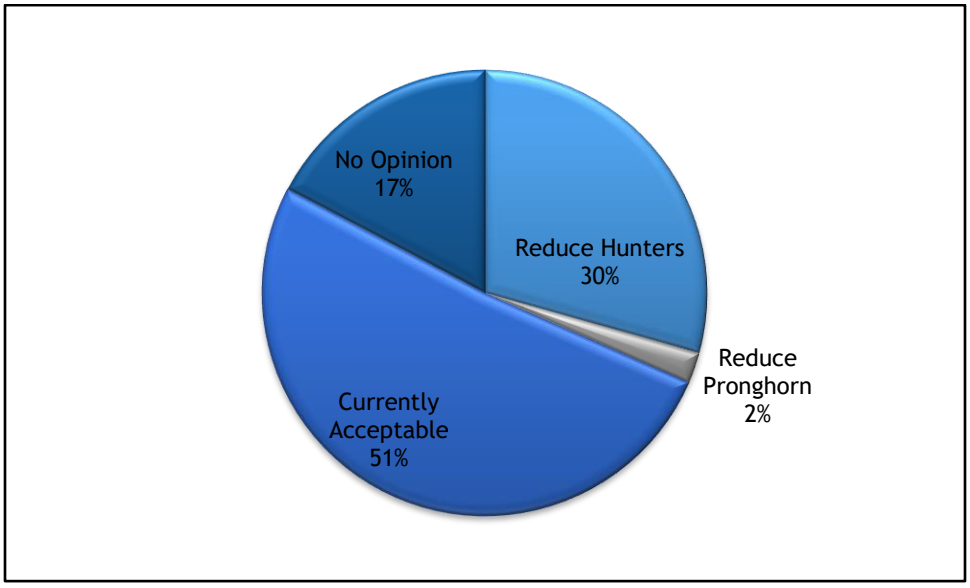
7. **For the purposes of pronghorn management in the Haswell Herd Management Unit, what is your preference? (***Please check only one.***)**

☐ Reduce the number of hunters (more pronghorn, fewer hunters, harder to draw a license, higher harvest success rates)

☐ Reduce the number of pronghorn (fewer pronghorn, more hunters, easier to draw a license, lower harvest success rates)

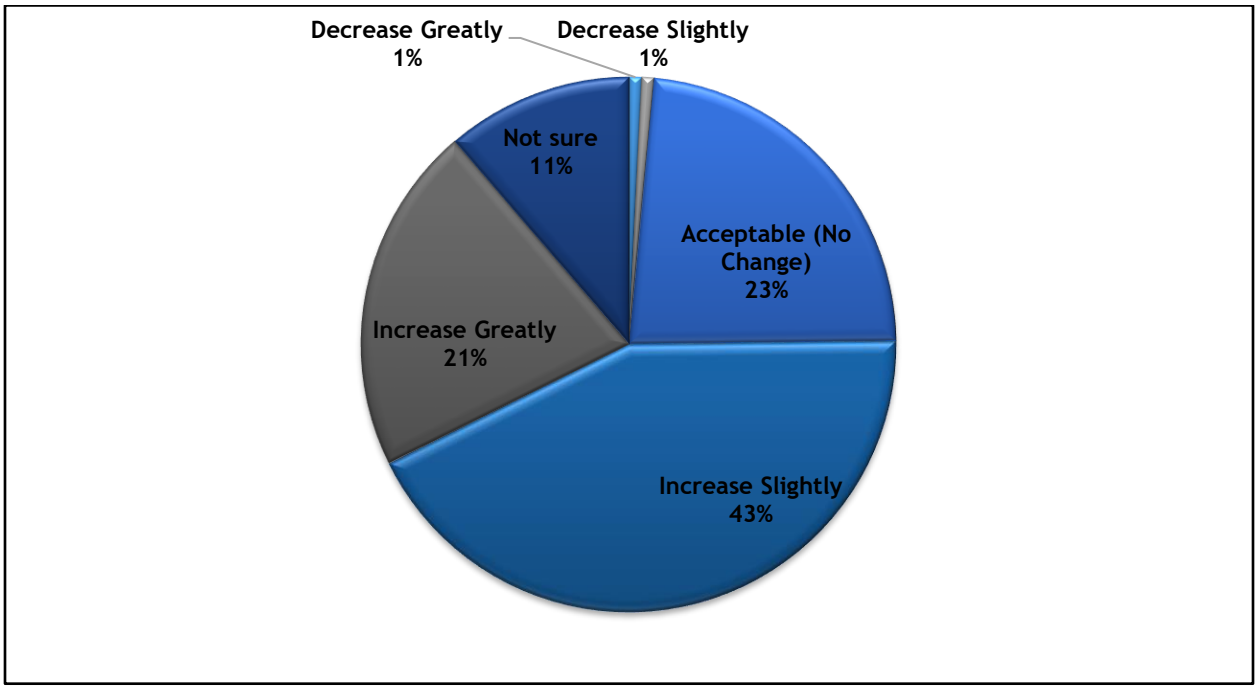
☐ The current numbers of hunters and pronghorn in herd unit are acceptable

☐ No opinion



8. How would you like to see the Haswell pronghorn herd population change over the next 10 years? (*Please check only one.*)

	Decrease greatly (~50% fewer pronghorn)	Decrease slightly (~15% fewer pronghorn)	No change (current numbers are acceptable)	Increase slightly (~15% more pronghorn)	Increase greatly (~50% more pronghorn)	Not Sure
I would like the pronghorn population to:	☐	☐	☐	☐	☐	☐



Please read the following brief description about managing male-to-female ratios before answering question 9.

If a pronghorn herd is managed for **increased hunting opportunity**, more buck hunting licenses are made available and buck hunters are generally able to hunt more frequently. This can result in fewer total bucks in the herd (*lower buck-to-doe ratio*) and fewer mature bucks.

If a herd is managed for **increased hunt quality**, fewer buck licenses are issued in order to increase the number of bucks in the population (*higher buck-to-doe ratio*). This generally results in less frequent hunting opportunities and fewer hunters in the field, but it can also result in a greater chance of encountering a mature buck.

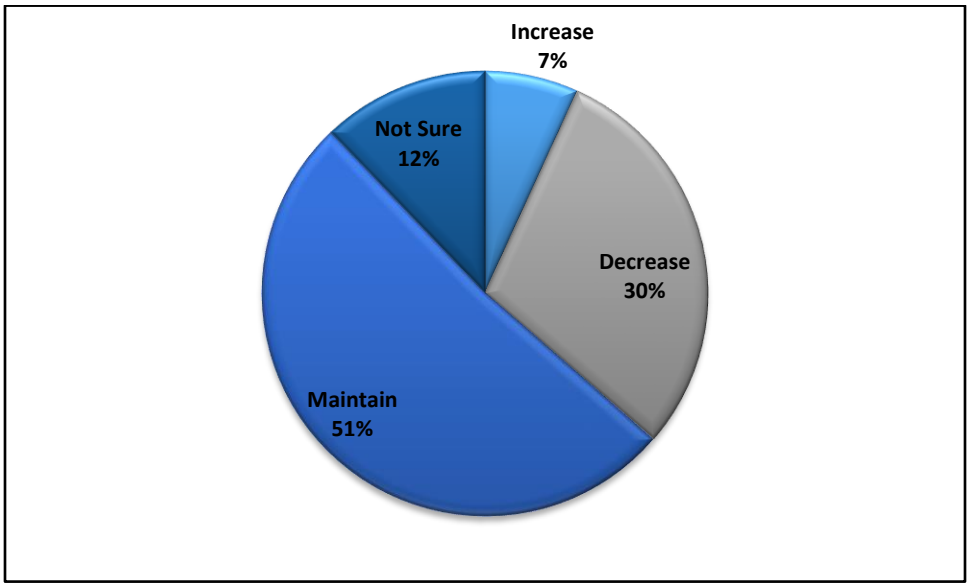
9. Which of the following approaches should guide the number of buck licenses allocated in the Haswell Herd Management Unit? (*Please check only one*.)

☐ Increase the number of buck hunting permits (easier to draw a license, more hunters in the field)

☐ Decrease the number of buck hunting permits (more preference points required to draw a license, more bucks in the population)

☐ Maintain the current number of buck hunting permits

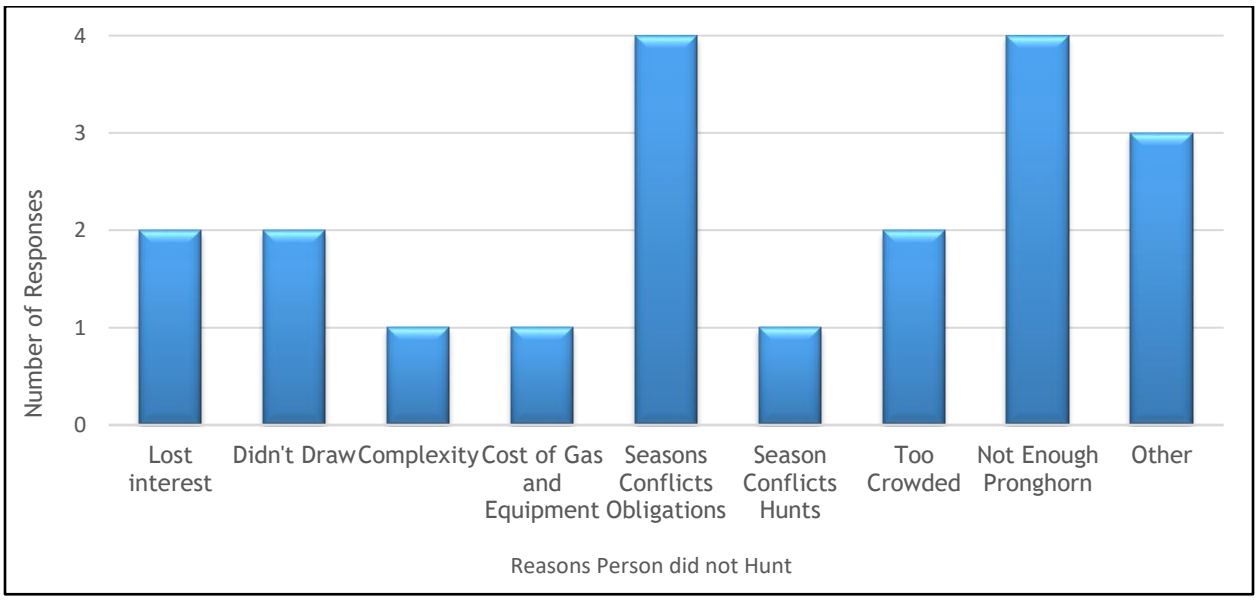
☐ I'm not sure



If you HUNTED pronghorn in the Haswell herd unit from 2014-2016, you are DONE with this survey. Please SKIP question #10.

10. **Why did you NOT HUNT pronghorn in the Haswell Herd Management Unit during 2014, 2015, or 2016? (*Please check all that apply*)**

- ☐ I lost interest in hunting pronghorn the year(s) that I had a license
- ☐ Did not draw a license
- ☐ The complexity of hunting regulations in Colorado
- ☐ The cost of gas, equipment, or other expenses
- ☐ Season conflicted with other obligations
- ☐ Season conflicted with other hunts
- ☐ The Haswell Herd Management Unit has become too crowded with hunters
- ☐ There were not enough pronghorn where I hunt
- ☐ Other (please specify)



Thank you very much for taking the time to complete this survey. Your input is very valuable to us and will help us better manage your wildlife resources. Please feel free to leave us any additional comments regarding pronghorn management on the space below.

HASWELL PRONGHORN HERD:
HUNTER SURVEY QUESTION 10 "OTHER" RESPONSES

- Did not draw. Hunted from La Junta to east end of units. All pronghorn on wheatfield no way to get there. Started to hint 146 unit

HASWELL PRONGHORN HERD:

HUNTER SURVEY ADDITIONAL COMMENTS

- There was a noticeable increase in hunter numbers after zone 125 was combined with others in the draw. It seemed much better in 2016
- A lot of pronghorn in the area depends on rains and it helps the vegetation grow
- There were very few animals on the property I had permission to hunt. The one herd of about 20 animals were so skittish that they headed to New Mexico while we were belly crawling & we weren't within a ¼ mile of them! Hunted the next three days, and saw no other animals. Very disappointing season.
- Availability of hunting area
- I am ok with current conditions
- I cannot answer you survey accurately because I hunt private property in 121.
- Worst ever! Hunted 3 days- never was able to get a shot at a doe. All were over 500 yards away- usually on the run. We will not hunt that area again unless it greatly improves!
- Could not find hunting access without paying big money. No public hunting areas that had animals- opinion
- The CPW put kit fox counter out at punkin center one wk. before opening in 120 running the pronghorn off. Not a good thing to do just before start of our hunt!!
- Please note! – I have the privilege to hunt on private property with the permission of the property manager. My knowledge of the entire Haswell Unit as a whole is lacking.
- I did not draw a license I 2016 I believe. The other years I hunted I did not harvest an animal
- I hunt private land on [unk] edge. Do not scoot anywhere else do not know herd size. Trespass fees of 1-3+ hundred too much on [unk] properties. Pronghorn stay here, no one to move them around

- Give hunters more permits instead one two or three
- Walk in hunting- too large and no place close to get permits Colorado Parks and Wildlife is making harder to hunt. Why combine units? By doing so takes away tags from other units. Way too many out of state hunters.
- 2014, 2015 I feel that there were not enough antelope and far too many hunters. The antelope numbers appear to be on the rebound in the last couple of years (2016, 2017), so possibly the number of hunters may not be that excessive. I hunt in unit 120 (for antelope) but live in unit 140
- CDOW has historically done a great job of balancing interests. Keep up the good work with that history in mind. It is easy to bow to all the recent special interests groups and see our state and its culture change with money interests. Sincere regards
- Thank you!
- Lots of trick questions on this survey… Of course I would Love to see more Antelope in the unit, but not at the expense of being able to hunt. This is the Unit that almost guarantees me a tag & a kill every year. I hunt it specifically for the chance of putting meat in my freezer.

- Sorry I don't have an opinion on a few questions as I only hunted the last day of the 2016 season on a piece of public land, saw no hunters and shot a nice 14" buck so all I can say is things looked good in my eyes. Thanks, [signature]
- More familiar with hunting in unit 116

Appendix PH12: 2019 PH-12 Landowner and Hunter Surveys

CHEYENNE PRONGHORN HERD: LANDOWNER SURVEY
DATA ANALYSIS UNIT PH-12

Dear Landowner,

Colorado Parks & Wildlife (CPW) is interested in **your input** on the management of pronghorn antelope in the Cheyenne Pronghorn Herd Management Unit, Game Management Units (GMUs) 116, 117, 122, and 127.

Your input is a **very important part** of the planning process. The information you provide will help guide management of the pronghorn herd for the next 10 years!

Please help us learn what is most important to you about pronghorn management in this area. Your identity will be kept confidential and the information you provide will never be associated with your name.

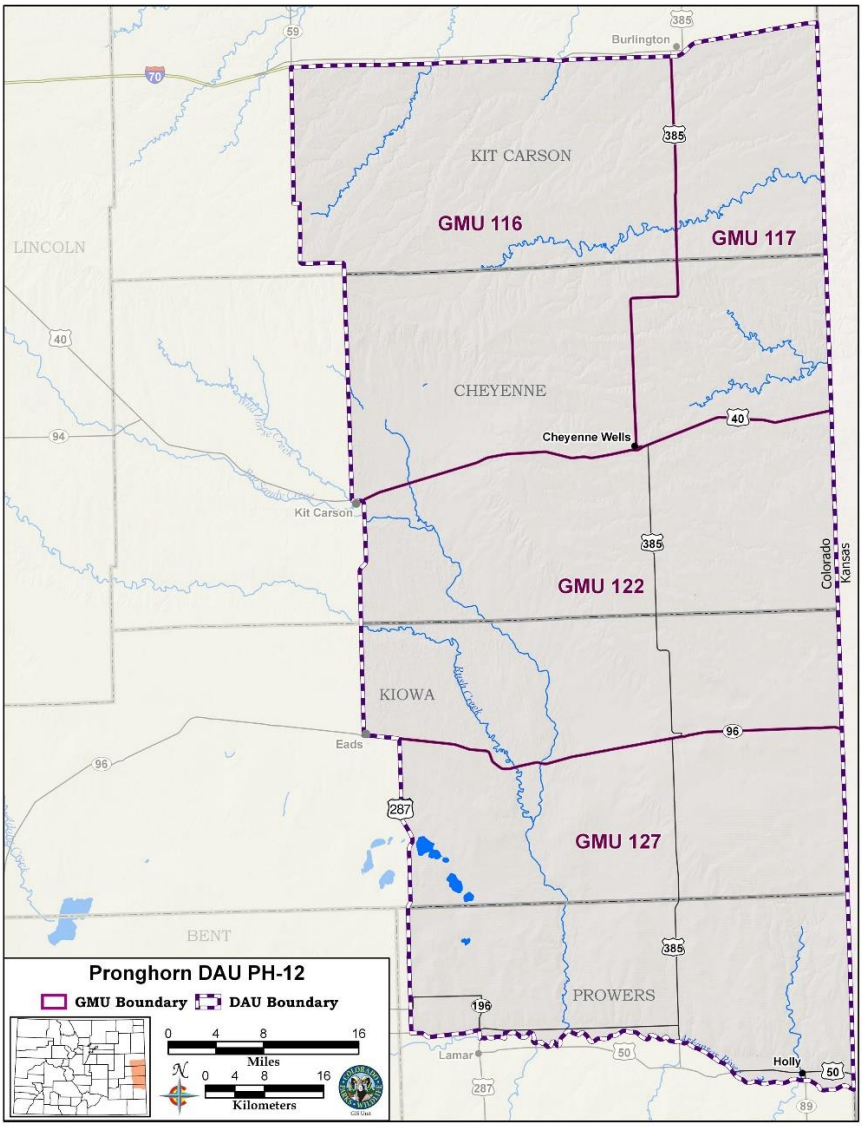
If you have any questions about the pronghorn herd please contact either:

- Jonathan Reitz, Wildlife Biologist, at (719) 691-9130; jonathan.reitz@state.co.us
- Travis Black, Area Wildlife Manager, at (719) 336-6603; travis.black@state.co.us

Please complete surveys before **January 31.**

Thank you for participating!

This survey is specific to the Cheyenne Pronghorn Herd Management Unit. The map below is for reference. ***Please answer the following questions concerning pronghorn management in this area only.***

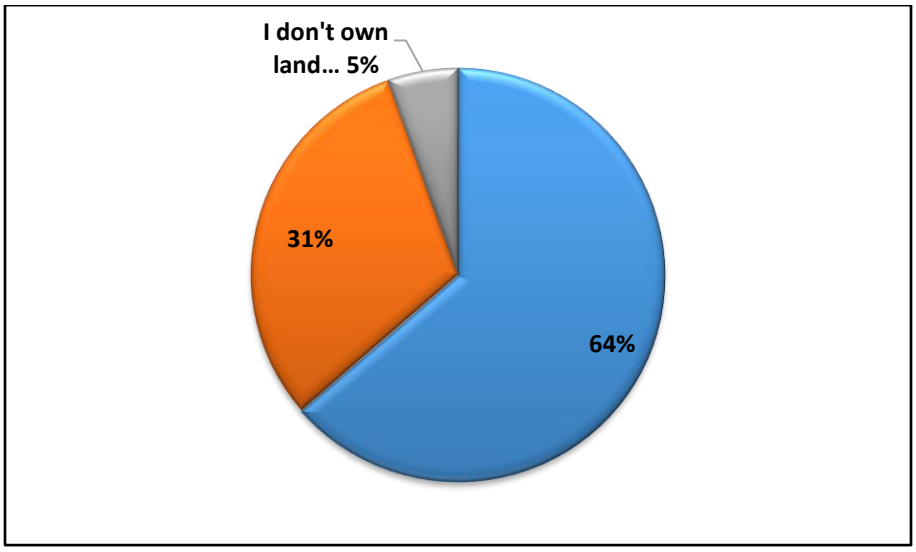


1. **How would you describe the land that you own in the Cheyenne Herd Management Unit?** (Please check all that apply.)

☐ Cropland

☐ Rangeland

☐ I don't own land in the Cheyenne Herd Management Unit



2. Over the last five years, which of the following did you allow to hunt pronghorn on your property? (Please check all that apply)

☐ Family

☐ Youth

☐ Friends and/or neighbors

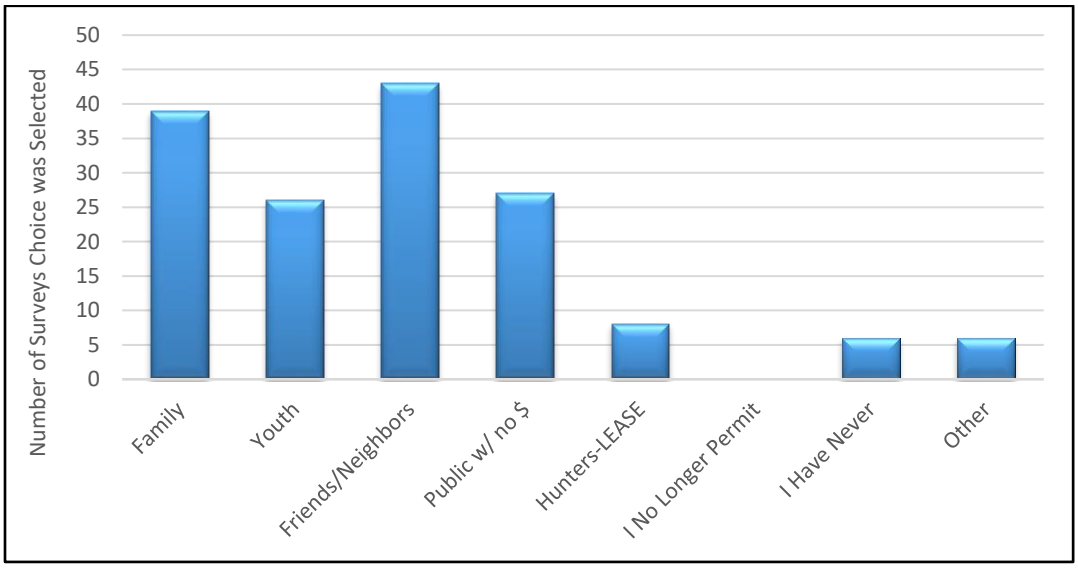
☐ Public hunters who did not pay an access fee

☐ Hunters or outfitters who have leased the land or paid an access fee

☐ I no longer permit pronghorn hunting on my land

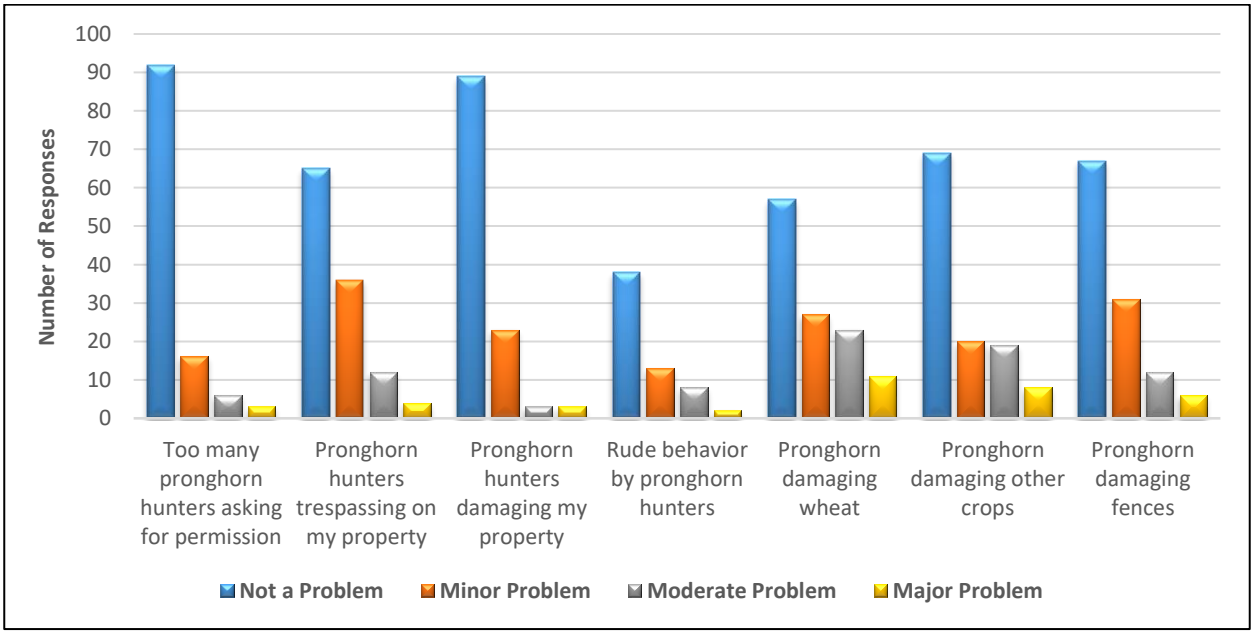
☐ I have never allowed anyone to hunt pronghorn on my land

☐ Other (Please specify):_____



3. To what extent have you experienced any of the following problems related to pronghorn and pronghorn hunters in the last 5 years? (Please check one response for each statement.)

	Not a Problem	Minor Problem	Moderate Problem	Major Problem
Too many pronghorn hunters asking for permission to hunt	○	○	○	○
Pronghorn hunters trespassing on my property	○	○	○	○
Pronghorn hunters damaging my property	○	○	○	○
Rude behavior by pronghorn hunters on my property	○	○	○	○
Pronghorn damaging growing wheat	○	○	○	○
Pronghorn damaging other crops (non wheat)	○	○	○	○
Pronghorn damaging fences	○	○	○	○



4. Have you experienced other problems related to pronghorn causing damage and/or pronghorn hunters? (Please specify):

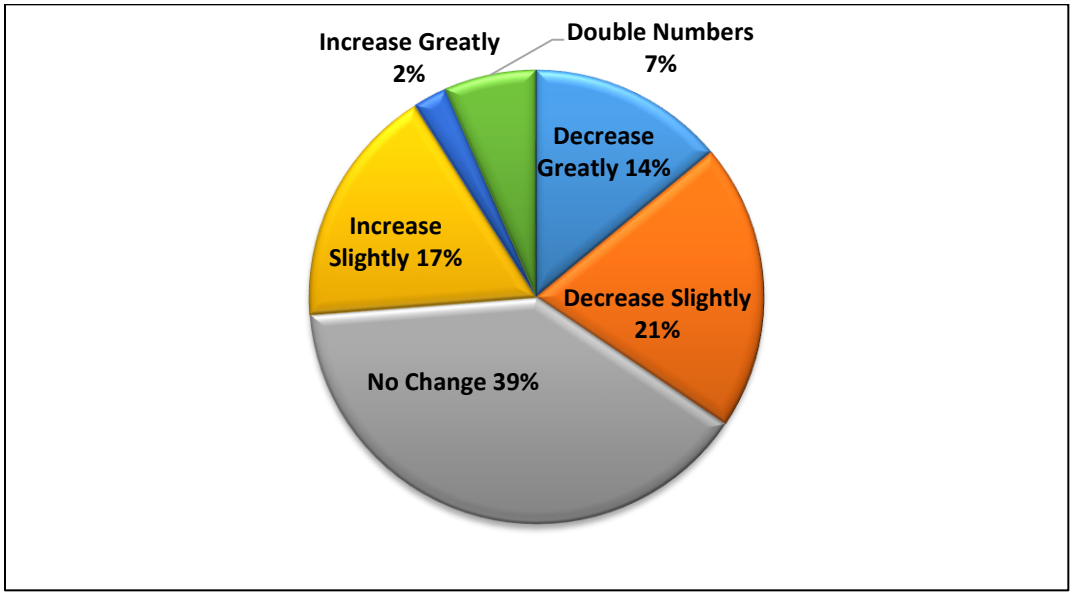
_____

_____

_____

5. For the 2019-2029 time period, relative to the current number of pronghorn, how would you like to see the pronghorn population change in the Cheyenne Herd Management Unit?

	Decrease greatly (~50% fewer pronghorn)	Decrease slightly (~15% fewer pronghorn)	No change (Current numbers are acceptable)	Increase slightly (~15% more pronghorn)	Increase moderately (~50% more pronghorn)	Double numbers (i.e. numbers similar to those in years 2009 and 2010)
I would like the pronghorn population to:	☐	☐	☐	☐	☐	☐



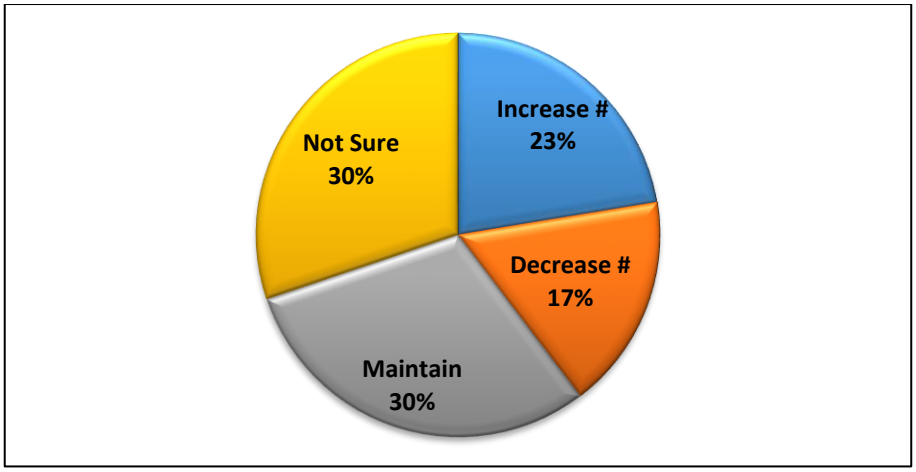
Please read the following brief description about managing male-to-female ratios before answering question 5 (below).

If a pronghorn herd is managed for **increased hunting opportunity**, more buck hunting licenses are made available and buck hunters are generally able to hunt more frequently. This can result in fewer total bucks in the herd (*lower buck-to-doe ratio*) and fewer mature bucks.

If a herd is managed for **increased buck quality**, fewer buck licenses are issued in order to increase the number of bucks in the population (*higher buck-to-doe ratio*). This generally results in less frequent hunting opportunities and fewer hunters in the field, but it can also result in a greater chance of encountering a mature buck.

6. Which of the following approaches should guide the number of buck licenses allocated in the Cheyenne herd unit?

- ☐ Increase the number of buck hunting permits (easier to draw a license, more hunters in the field)
- ☐ Decrease the number of buck hunting permits (more preference points required to draw a license, more bucks in the population)
- ☐ Maintain the current number of buck hunting permits
- ☐ I'm not sure



Since 2012, CPW has held a late season doe hunt in the Cheyenne herd unit. The purpose of this 31 day season is to increase CPWs ability to keep pronghorn numbers under control as well as to give landowners another tool to help keep pronghorn concentrations from getting too large on wheat fields. Some additional benefits of the season are that it increases hunter opportunity, and reduces hunter crowding during the primary season by shifting some of the doe licenses to the late season.

7. Do you support or oppose maintaining a late doe only pronghorn season in the Cheyenne Herd Management Unit?

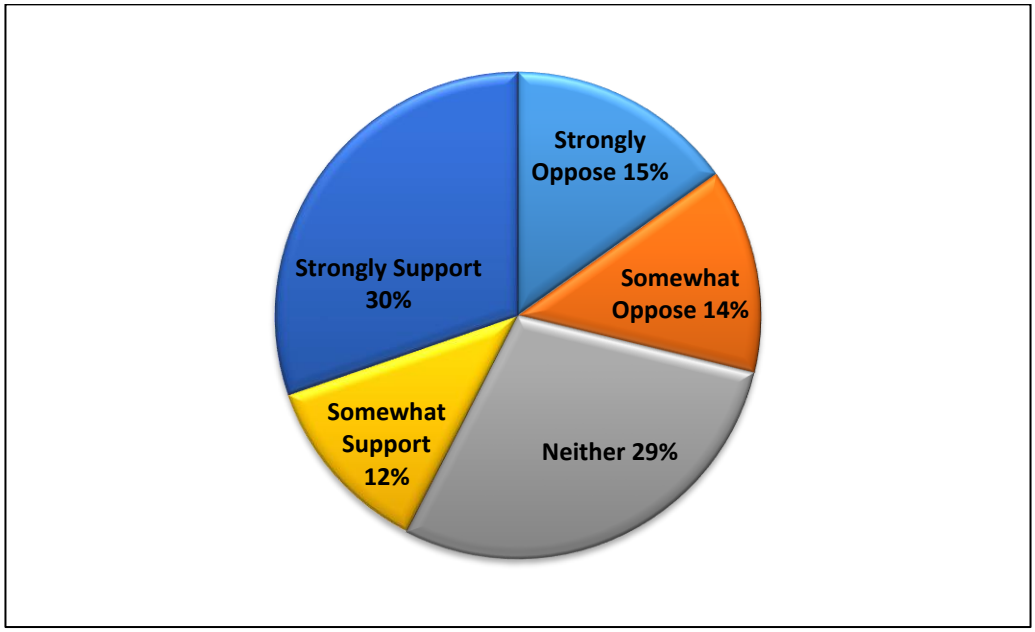
☐ Strongly oppose

☐ Somewhat oppose

☐ Neither oppose nor support

☐ Somewhat support

☐ Strongly support



Thank you very much for taking the time to complete this survey. Your input is very valuable to us and will help us better manage your wildlife resources. Please feel free to leave us any additional comments regarding pronghorn management below.

CHEYENNE PRONGHORN HERD: LANDOWNER SURVEY QUESTION #4 RESPONSES

- Yes, antelope spread bindweed. They eat it and then their droppings will contain the bindweed seed
- No
- No
- In all honesty I haven't had a problem so far
- No
- No
- No
- No
- No
- No, our land is in CRP
- Absolutely no problem with the pronghorns or the hunters. We enjoy having the pronghorns, hunting them, and allowing hunters to hunt on our cropland.
- Over last three years population is down on my land. They knock insulators off, wouldn't call it major. Hunters sneaking in will always be a problem. Not as bad as in past.
- Bindweed seed being transported/planted
- No
- No
- No
- No
- Not that I am aware of
- Running through my young 2-10 inch corn and also hunters drive on posted property
- No
- No! Recently we talked and (name removed) about this because (name removed) bought the farm from us. Also has the lease on the farm ground in the past. Have seen the pronghorn or antelope south of our property. Have not seen any on our property.
- No
- SE Kit Carson County see big increase in pronghorn see herd of 15 to 30 head
- Mostly damaging crops and spreading bindweed. Bindweed is a major damage to my land.

- No
- No
- Pronghorns broadcast bindweed and other weeds
- No
- Pronghorn like to eat and thus spread field bindweed. It is a very troublesome weed for us. Most hunters are respectful, but a few we have had issues with.
- We've actually had more problems with pheasant hunters. Do not want hunters driving across stubble or crop.
- No
- We're getting too many pronghorn. We need more control!
- None
- There have not been big bucks in 116/117 for many years. Not sure why because I don't see that many hunters either.
- I believe spread bindweed seeds.
- No
- Growing numbers of pronghorn with that other problems start to be an issue as well!
- Road hunting/ poaching
- No
- No
- No
- Trespassing and poaching is major problem. Our concern is that there are a small number of pronghorn (15 to 20) that we want to stay on the ranch. And they are constantly pursued to the point of driving them through fences and chasing them through cattle.
- No
- No
- I just don't like the attitude of some hunters thinking because they have a license they can do whatever they want.
- Bindweed spreading
- Pronghorns spreading bindweed.
- No
- Basically the major problem is the spread of bindweed.
- Pronghorns spread bindweed. Damage winter wheat, crops, tear up fences… Pronghorns do more damage. THE HERDS ARE OUT OF CONTROLL
- Sometimes usually gates left open
- No experience with hunters
- No cleaning catch facilities (tags) hotel rooms stink- towels damaged.
- No cleaning catch facilities (tags) hotel rooms stink- towels damaged.

- No
- Grain loss = revenue loss – we don't need any more revenue loss! Spreading noxious weeds and seeds around the country.
- No
- No
- Looked inside storage facility without permission
- I own land in your survey area, however do not live there. I would support whatever you and residents there feel is positive to maintain a healthy area for both wildlife and crop production. Thanks for your interest in both.
- None that I know of.
- We don't see as many antelope on our land in Kiowa County as we do south of (unknown)
- I live out of state. My lease has not mentioned any problems
- Just my trees
- NO
- Some hunters telling others they cant hunt when both parties have permission
- Usually people that ask to hunt are cleared to hunt on our property. When some of those hunters tell other people with cleareance to hunt, they cant it is unacceptable

CHEYENNE PRONGHORN HERD: LANDOWNER SURVEY ADDITIONAL COMMENTS

- The herds of antelope can easily destroy growing wheat crops and cause the land to blow. I am all for getting the antelope herds totally out of southeast Colorado where we have experienced a harsh drought for the last six to seven years.
- I don't want hunters on my place
- Haven't bothered me so far. I don't feel it fair to pass judgment on a situation that hasn't effected me so far. Thank you.
- We would like to see our local herd number substantially increase GMU 127
- I have no knowledge about this issue. I don't want antelope or hunting on my land. So I oppose the project. My land is in CRP so I have to follow the rules.
- For this question I suggest you contact (name removed) we are not out there very much. (cell number removed). If we were still living in that area we would probably support the late doe season and support the other farmers in the area that have problem with the pronghorn.
- Today numbers are much (seem to be) greater than 25 years ago. Management decisions might want to consider going back to those levels. Thank you for giving us the opportunity to voice our opinion in the matter.
- Too many unethical hunters shoot bucks with shedded sheaths.
- (Names removed) is no longer living. My stepfather (name removed) is also deceased. My wife (name removed) own about ½ of their property. I would like you to call me because I'd rather talk to somebody on the phone or in person. (Phone number removed) thanks.
- I still feel that landowners are being slighted in drawing of licenses. This last year hardly any of the landowners I talk to drew a license at all. I feel like landowners should have somewhat of a priority. We put up with all the animals and hunters. We deserve treated more fairly. Too many times we go without.
- Stop (name removed) from doing guided hunts.
- I truly believe the same should apply to deer hunting, the main problem with deer hunting I have especially buck deer there are way too many trophy hunters and that causes a major problem for me as you need a dominance of the older bucks in the herds for breeding purposes. Thanks (name removed)
- In our property we have had no problems thus far. But we would not be pleased to have them on our property. Do not number.
- Thank you for soliciting landowner input. (Location of farm removed). We don't have an antelope problem on our farms. Being a landowner and a hunter, I acknowledge that I don't have all the answers but I have seen how others have solved these problems. I have been very fortunate in that I have hunted around the world. In areas that were "overrun" with wildlife, the perception was that "something" was more

valuable that the wildlife. In many of these areas the problem was solved by giving the animal more value that whatever was perceived to be lost. In Colorado this might be successful if wheat farmers realized that the antelope might bring in more revenue than whatever wheat they thought they were losing. Some problem areas use a landowner tag system where the landowner could get tags based on game populations and damage. These tags could be sold to an outfitter who would guide and manage the access to his land. When this brings more revenue that whatever wheat was being lost suddenly the antelope has value and isn't a problem. Game populations in SE Colorado along the Arkansas River have changed in the last 70 years. In the 1950's, we had a migratory waterfowl and some pheasants and quail. When we had the big grasshopper infestation in the 50's, we lost a lot of the upland birds. There were very few deer in the area at that time. Now we see turkeys and deer regularly. We even see bobcats. I anticipate great challenges in wildlife management along the Arkansas in the coming years. (Company removed) is buying up land and water rights east of Lamar. If they are successful in building a large power plant, irrigation water will be taken away from farmland making its value and usefulness change. The nice way to describe these effected farms will be to say that they have become wildlife habitat. Now they can be managed for habitat and hunting, the land might have value again.

CHEYENNE PRONGHORN HERD: HUNTER SURVEY
DATA ANALYSIS UNIT PH-12

Dear Hunter,

Colorado Parks & Wildlife (CPW) is interested in **your input** on the management of the Cheyenne Pronghorn Herd (Game Management Units 116, 117, 122, and 127).

Your input is a **very important** part of the planning process. The information you provide will help guide management of the pronghorn herd for the next 10 years!

Please help us learn what is most important to you about pronghorn management in this area. Your identity will be kept confidential and the information you provide will never be associated with your name.

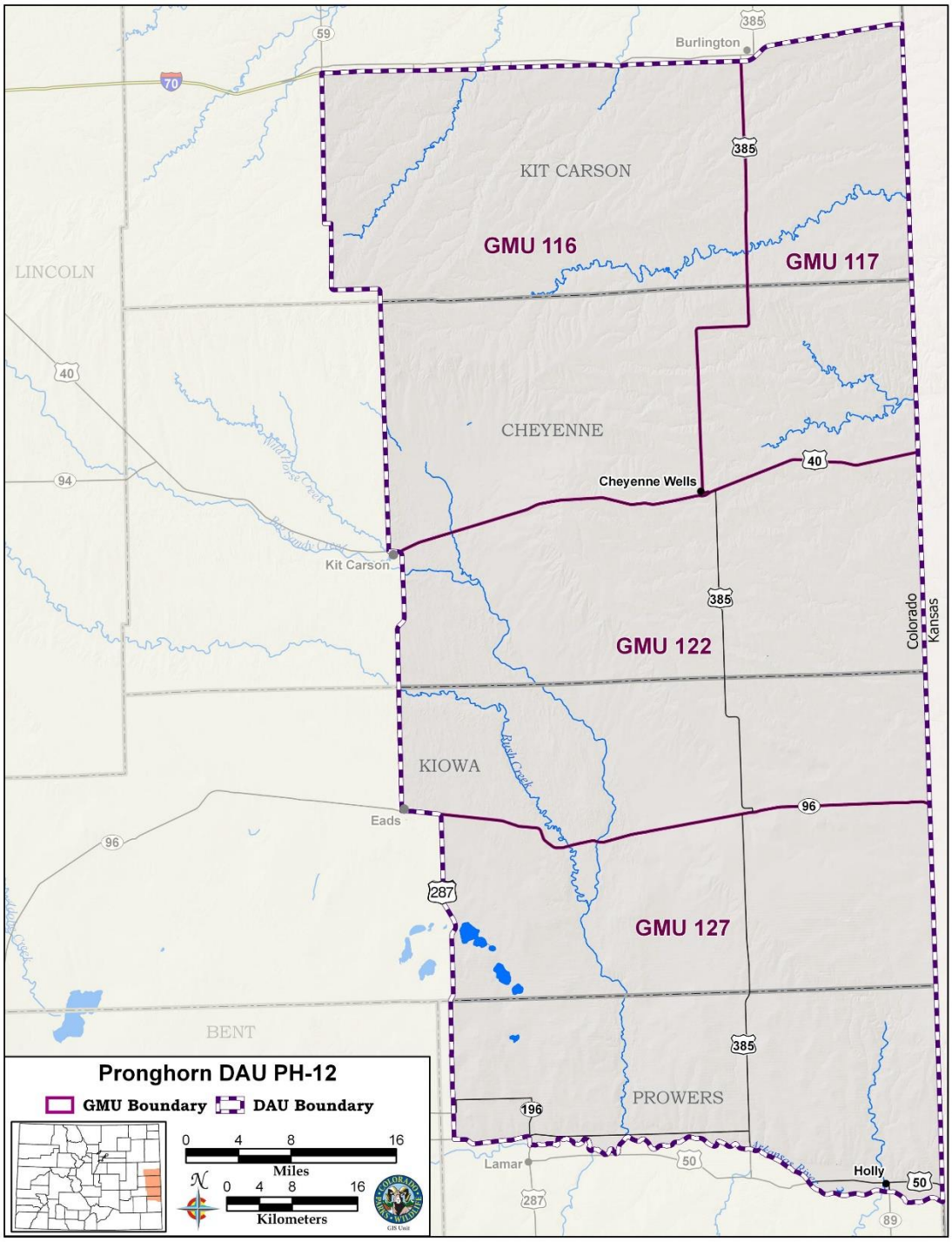
If you have any questions about the pronghorn herd please contact either:

- Jonathan Reitz, Wildlife Biologist, at (719) 691-9130; jonathan.reitz@state.co.us
- Travis Black, Area Wildlife Manager, at (719) 336-6603; travis.black@state.co.us.

Surveys must be completed before **September 1**.

Thank you for participating!

This survey is specific to the Cheyenne Pronghorn Herd Management Unit. The map below is for reference. ***Please answer the following questions concerning pronghorn management in this area only.***



1. **Which of the following year(s) have you hunted pronghorn in the Cheyenne Herd Management**

Unit? (*Please check all that apply.***)**

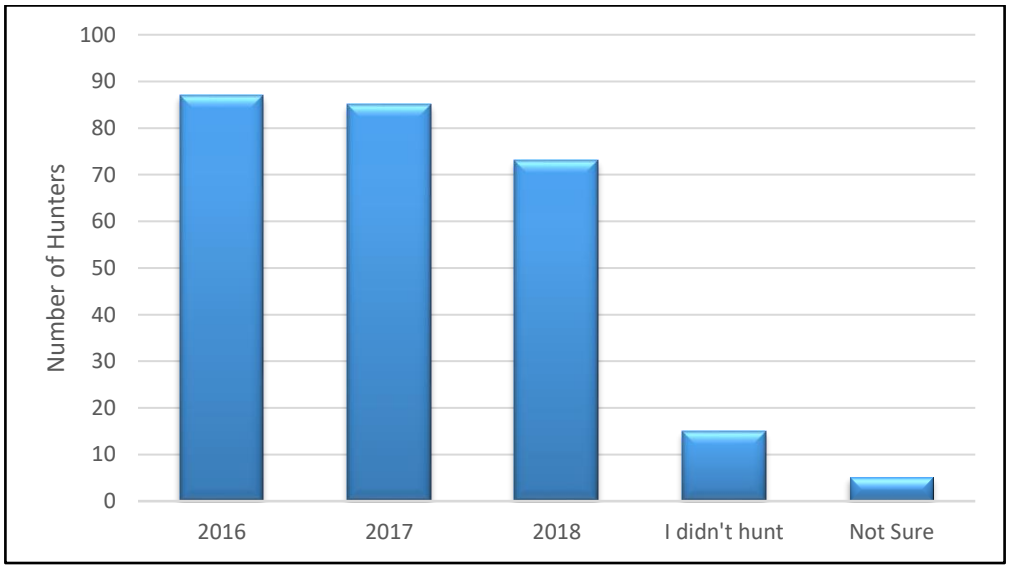
☐ 2016

☐ 2017

☐ 2018

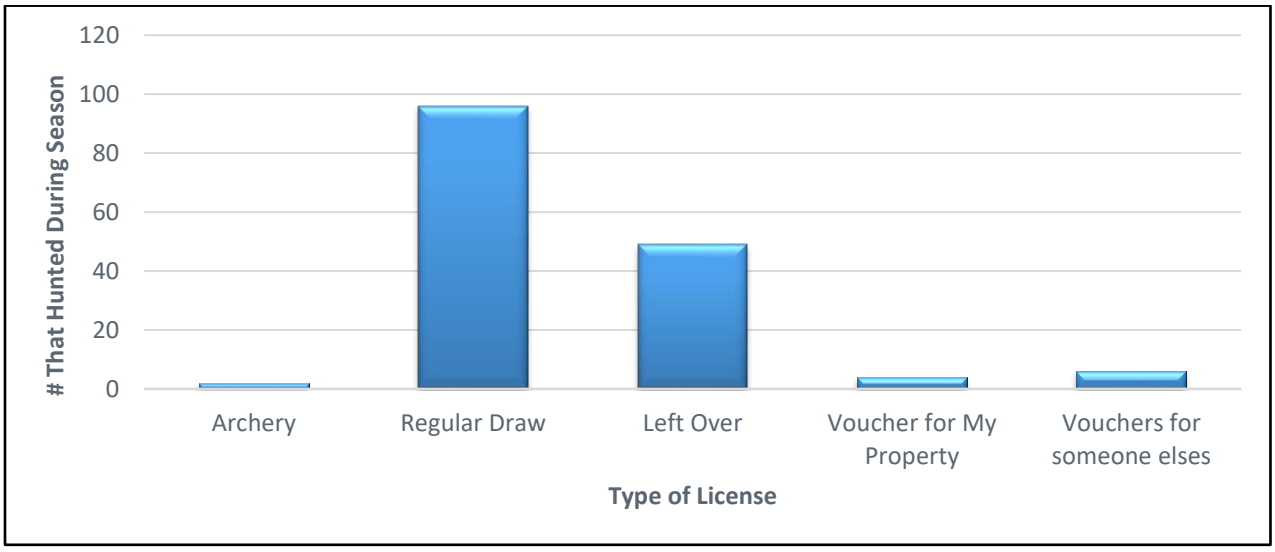
☐ I did not hunt pronghorn in the Cheyenne Herd Management Unit during any of these years. (please skip to question #9)

☐ I am not sure



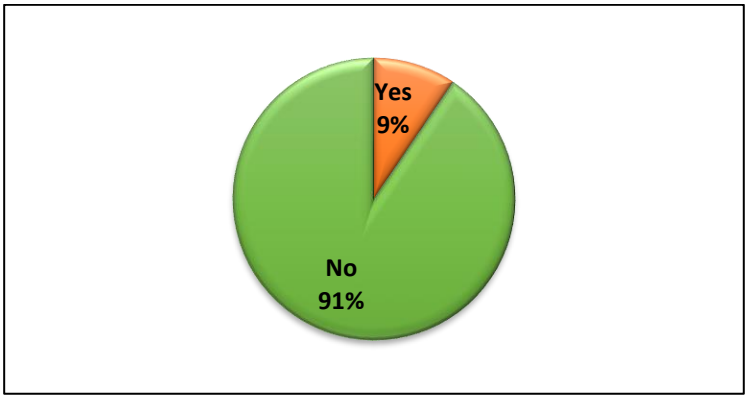
2. During the previous three years which of the following license(s) did you obtain for the Cheyenne Herd Management Unit? (*Please check all that apply.***)**

- ☐ An over-the-counter either sex archery license
- ☐ A regular draw license
- ☐ A left over license
- ☐ A landowner voucher for the property I own or manage
- ☐ A landowner voucher for another property



3. Do you live within the Cheyenne Herd Management Unit? (*See map above, and check only one***).**

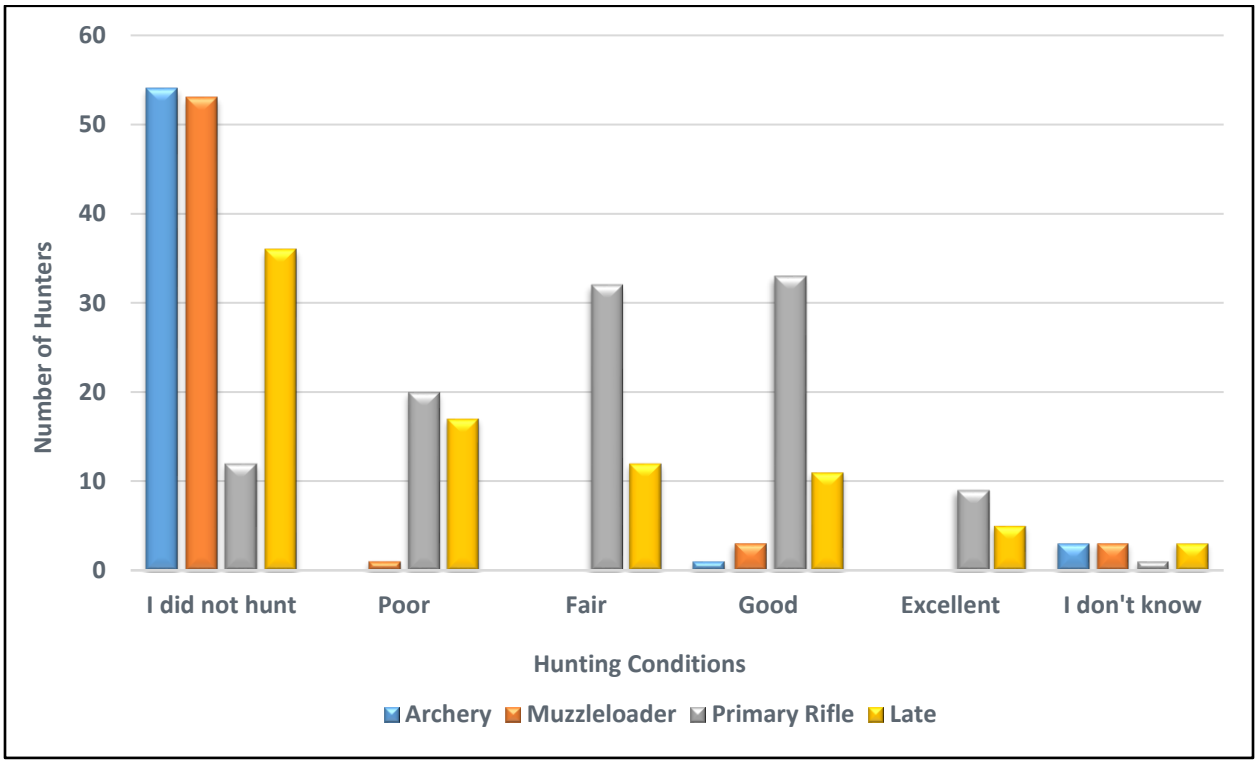
- ☐ Yes
- ☐ No



4. How would you rate the <u>quality of pronghorn hunting</u> in the Cheyenne Herd Management Unit

for any of the seasons that you hunted from 2016-2018?
(*Please check only <u>one</u> response per season.***)**

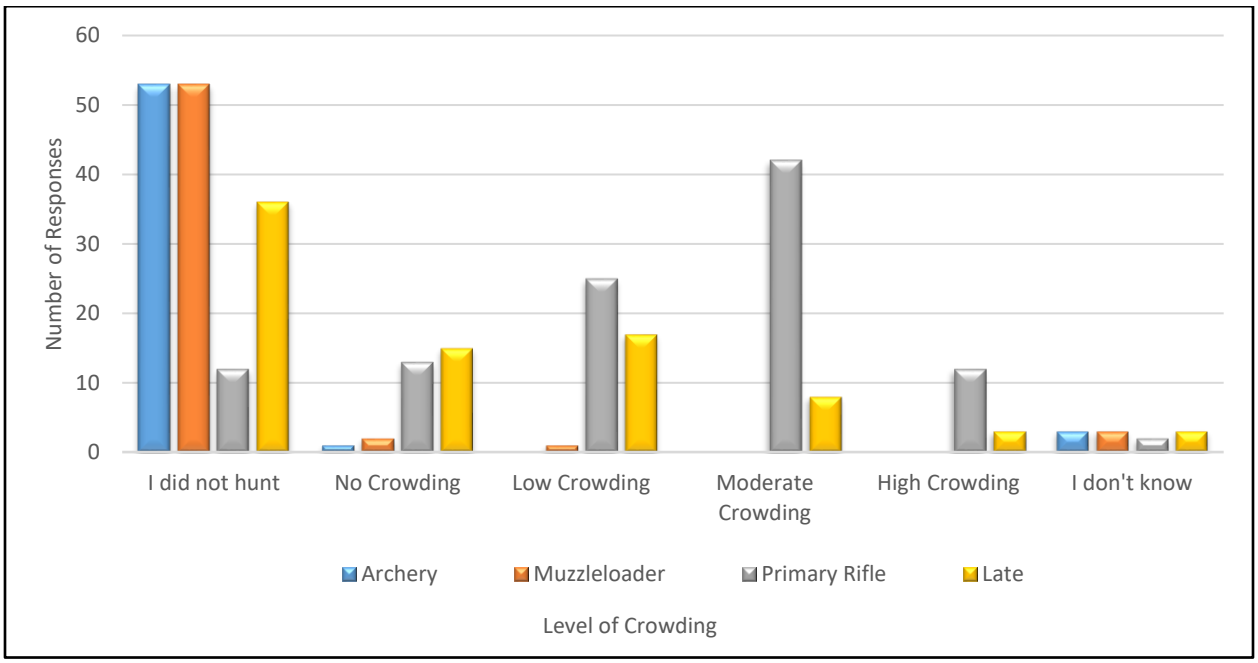
	I did not hunt this season	Poor	Fair	Good	Excellent	I don't know
Either Sex Archery Season	○	○	○	○	○	○
Muzzleloader Season	○	○	○	○	○	○
Primary Rifle Season (Early October)	○	○	○	○	○	○
Late Season Doe Only Rifle Season (December)	○	○	○	○	○	○



5. How would you rate the level of <u>hunter crowding</u> in the Cheyenne Herd Management Unit for any of the seasons that you hunted from 2016-2018?

(*Please check only <u>one</u> response per season.***)**

	I did not hunt this season	No Crowding	Low level of crowding	Moderate level of crowding	High level of Crowding	I don't know
Either Sex Archery Season	○	○	○	○	○	○
Muzzleloader Season	○	○	○	○	○	○
Primary Rifle Season (Early October)	○	○	○	○	○	○
Late Season Doe Only Rifle Season (December)	○	○	○	○	○	○



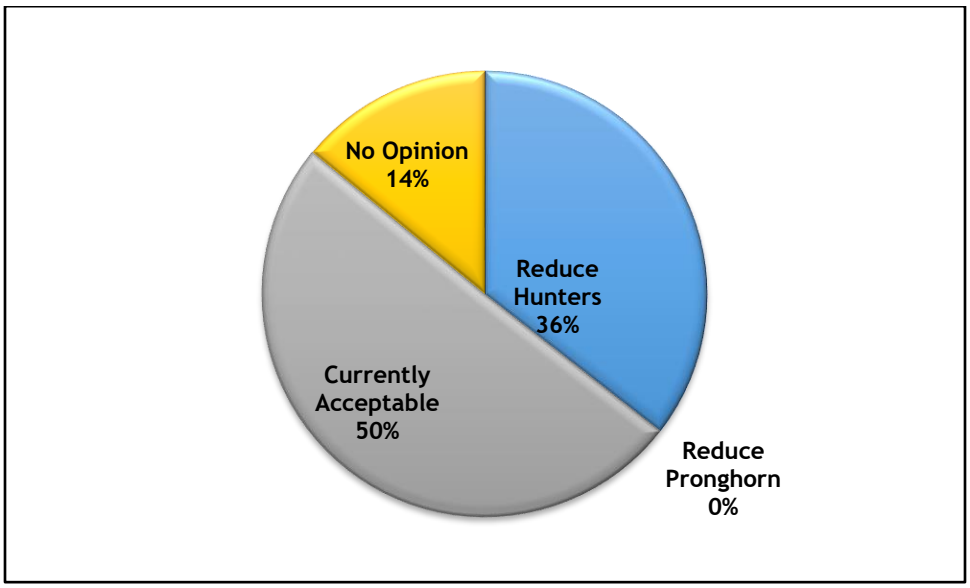
6. For the purposes of pronghorn management in the Cheyenne Herd Management Unit, what is your preference? (*Please check only one.***)**

☐ Reduce the number of hunters (more pronghorn, fewer hunters, harder to draw a license, higher harvest success rates)

☐ Reduce the number of pronghorn (fewer pronghorn, more hunters, easier to draw a license, lower harvest success rates)

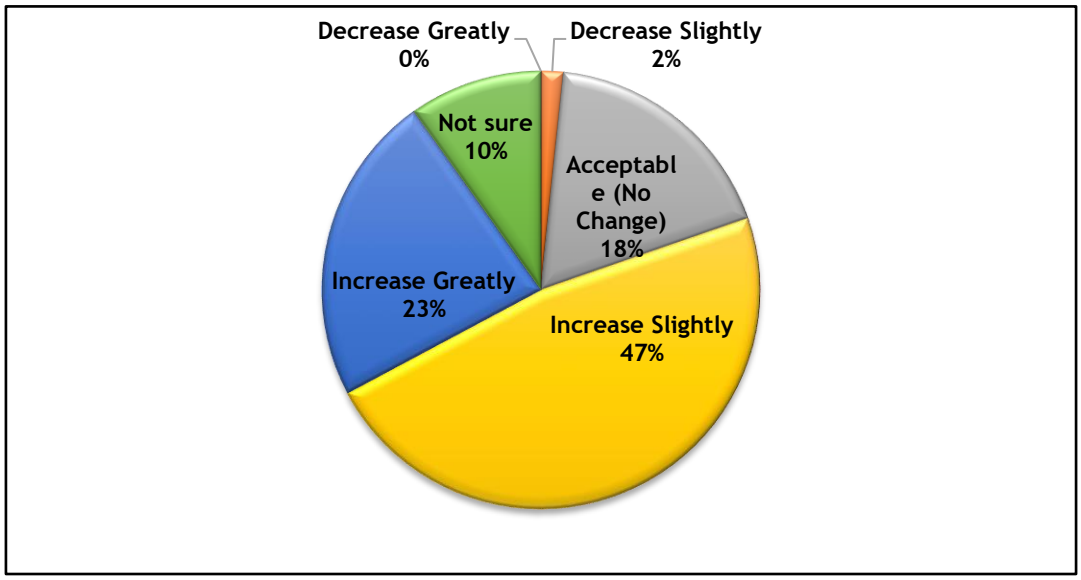
☐ The current numbers of hunters and pronghorn in herd unit are acceptable

☐ No opinion



7. How would you like to see the Cheyenne pronghorn herd population change over the next 10 years? (*Please check only one.***)**

	Decrease greatly (half population)	**Decrease slightly** (~25% fewer pronghorn)	**No change** (current numbers are acceptable)	**Increase slightly** (~25% more pronghorn)	**Increase greatly** (double population)	**Not Sure**
I would like the pronghorn population to:	☐	☐	☐	☐	☐	☐



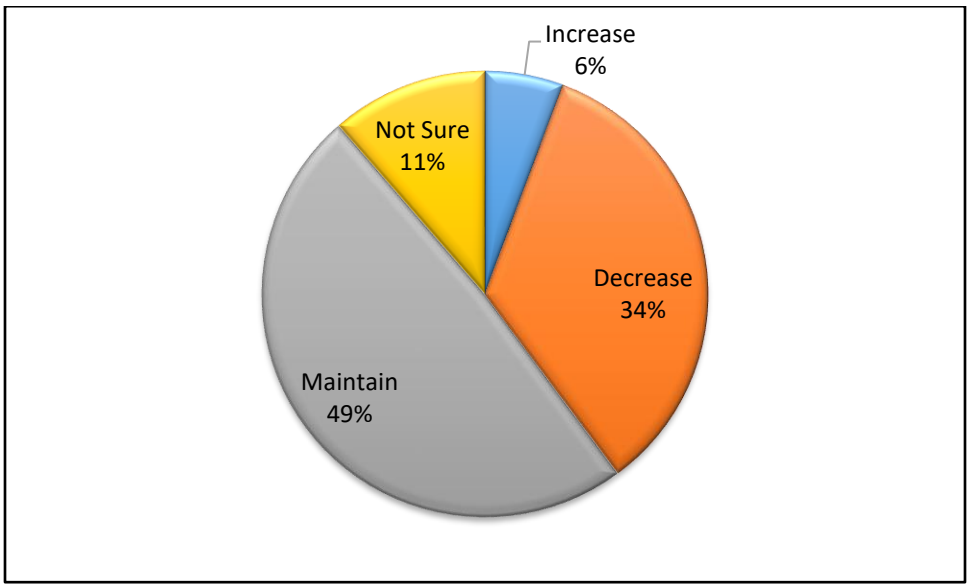
Please read the following brief description about managing male-to-female ratios before answering question 8.

If a pronghorn herd is managed for **increased hunting opportunity**, more buck hunting licenses are made available and buck hunters are generally able to hunt more frequently. This can result in fewer total bucks in the herd (*lower buck-to-doe ratio*) and fewer mature bucks.

If a herd is managed for **increased hunt quality**, fewer buck licenses are issued in order to increase the number of bucks in the population (*higher buck-to-doe ratio*). This generally results in less frequent hunting opportunities and fewer hunters in the field, but it can also result in a greater chance of encountering a mature buck.

8. Which of the following approaches should guide the number of buck licenses allocated in the Cheyenne Herd Management Unit? (*Please check only one.*)

- ☐ Increase the number of buck hunting permits (easier to draw a license, more hunters in the field)
- ☐ Decrease the number of buck hunting permits (more preference points required to draw a license, more bucks in the population)
- ☐ Maintain the current number of buck hunting permits
- ☐ I'm not sure

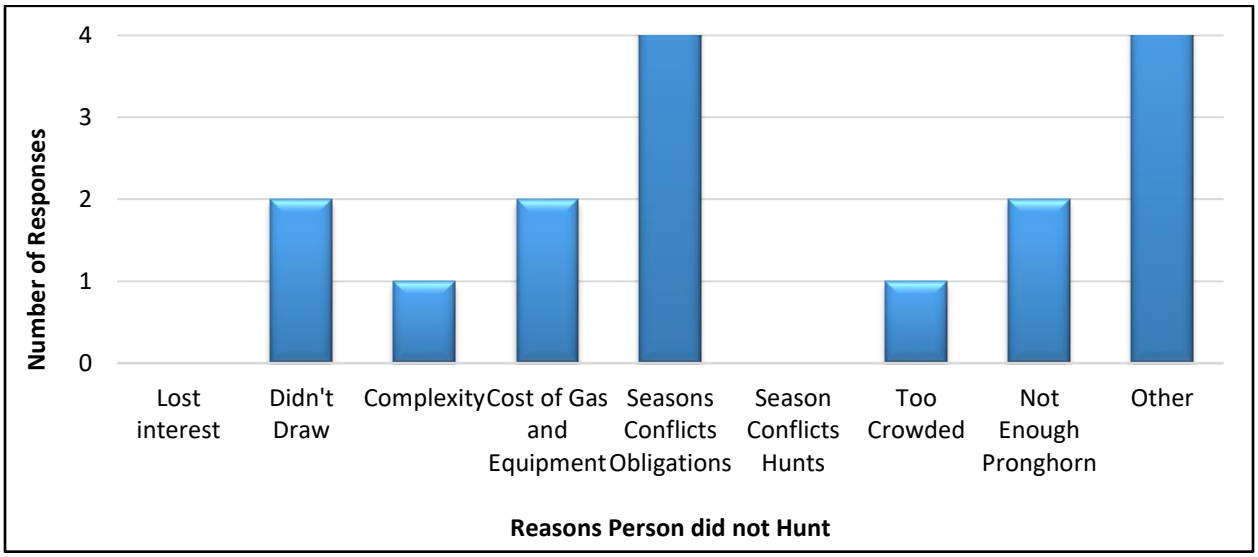


If you HUNTED pronghorn in the Cheyenne herd unit from 2016-2018, you are

DONE with this survey. Please SKIP question #9.

9. Why did you NOT HUNT pronghorn in the Cheyenne Herd Management Unit during 2016, 2017, or 2018? (*Please check all that apply*)

- ☐ I lost interest in hunting pronghorn the year(s) that I had a license
- ☐ Did not draw a license
- ☐ The complexity of hunting regulations in Colorado
- ☐ The cost of gas, equipment, or other expenses
- ☐ Season conflicted with other obligations
- ☐ Season conflicted with other hunts
- ☐ The Cheyenne Herd Management Unit has become too crowded with hunters
- ☐ There were not enough pronghorn where I hunt
- ☐ Other (please specify)



Thank you very much for taking the time to complete this survey. Your input is very valuable to us and will help us better manage your wildlife resources. Please feel free to leave us any additional comments regarding pronghorn management on the space below.

CHEYENNE PRONGHORN HERD: HUNTER SURVEY QUESTION 9 "OTHER" RESPONSES

- " Never have hunted in that unit"
- " Difficulty accessing herds on big ranches where the animals seek refuge as far from public roads as possible."
- "Spinal health problems"
- "The private land owner that I was going to hunt with decided not to hunt with me so I no longer hd access to the area I planned to hunt in 116"
- "I did not hunt or get a license for the Cheyenne Hunt Management unit."

CHEYENNE PRONGHORN HERD: HUNTER SURVEY ADDITIONAL COMMENTS

- "Moved to Denver for school. Not worth the drive and cost."
- "Over ran with hunters- I hunted almost every day and didn't get a shot."
- "I'd love to see bigger bucks. I think the genetics out here produce it, but most bucks are shot before they reach 12" so we never find out."
- " Love the peace and quite- and wide open spaces one of my favorite hunts!!!"
- "Just seems like there are less animals in unit 177 than 8 years ago, could only find one heard in the regular season last year, and two fawns in the late"
- "Bring back the big game walk in. No land to hunt out there all private. Makes it very hard to hunt"
- " It is getting to hard to hunt on private property without paying big money to hunt on any property no matter what your hunting."
- "I just started hunting in 2018 and the doe I harvested was my first"
- "Very poor numbers in the herd. Animals that are there see a human or a pickup over a mile away and take off. Will never hunt this unit again. Hunted for years every year it gets worse!"
- "I feel that antelope hunting is the greatest. They are the neatest big game animals out there. But its hard to find places to hunt its hard to find landowners to ask for permission I would like to see more opps for public land hunting expecilly during the archery seasons I would be great to be able to call your office or somebody and get some ideias or even on where to hunt its hard to find a place when you don't live around there"
- "I happened to be in area during the season. Otherwise it was challenging for me to get out there from the west slope."
- "I believe the current situation with permits is perfect it is almost guaranteed draw every other year for a buck tag. If the population increases the local farmer will be very upset and if the numbers go down the hunting community will be upset. So I believe the current situation is perfect."

Appendix PH13: 2017 PH-13 Landowner and Hunter Surveys

TOBE PRONGHORN HERD: LANDOWNER SURVEY
DATA ANALYSIS UNIT PH-13

Dear Landowner,

Colorado Parks & Wildlife (CPW) is interested in **your input** on the management of pronghorn antelope in the Tobe Pronghorn Herd Management Unit, Game Management Units (GMUs) 130, 136, 137, 138, 143, 144, and 146.

Your input is a **very important part** of the planning process. The information you provide will help guide management of the pronghorn herd for the next 10 years!

Please help us learn what is most important to you about pronghorn management in this area. Your identity will be kept confidential and the information you provide will never be associated with your name.

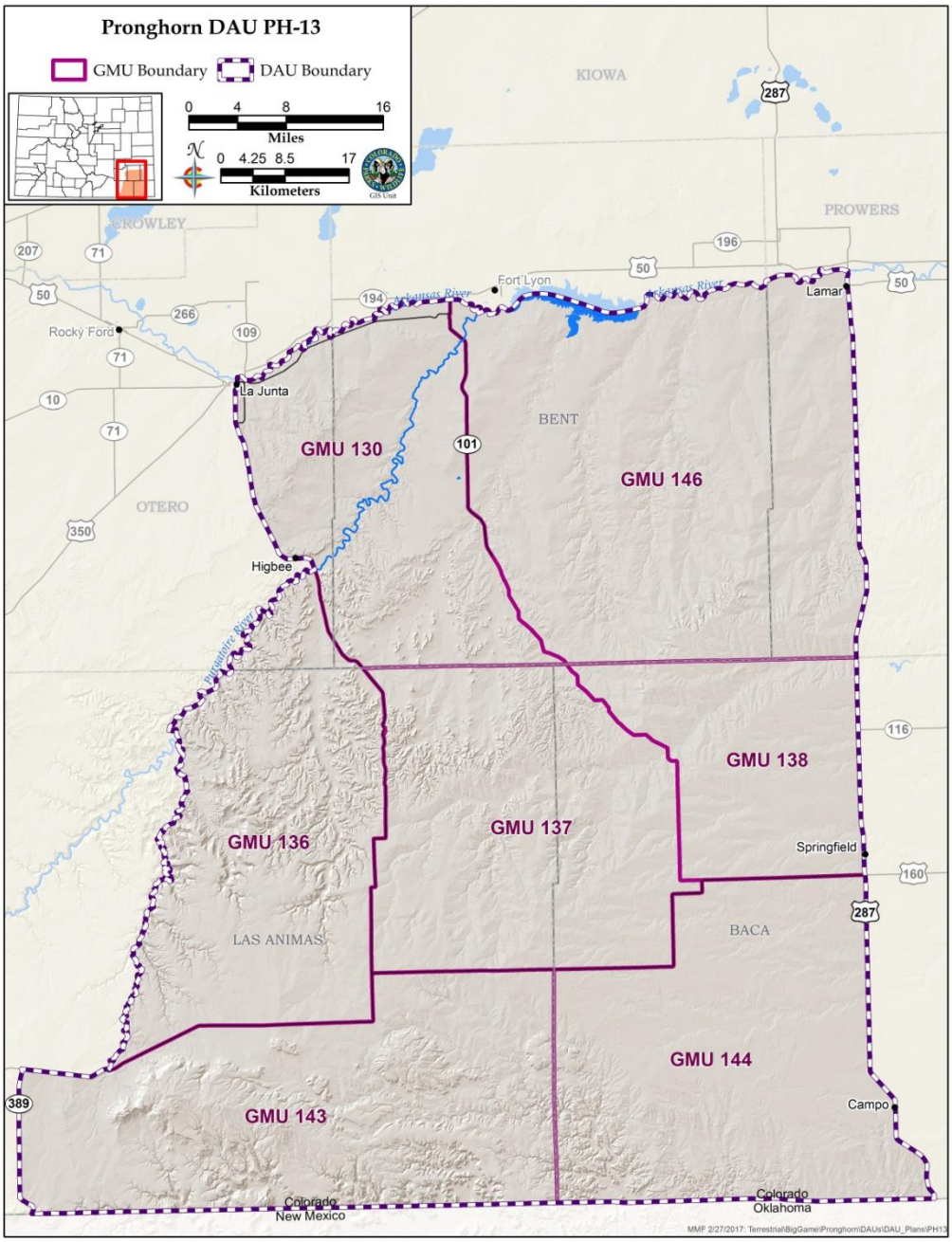
If you have any questions about the pronghorn herd please contact either:

- ☐ Jonathan Reitz, Wildlife Biologist, at (719) 691-9130; jonathan.reitz@state.co.us
- ☐ Travis Black, Area Wildlife Manager, at (719) 336-6603; travis.black@state.co.us

Surveys must be completed before **October 7th**.

Thank you for participating!

This survey is specific to the Tobe Pronghorn Herd Management Unit. The map below is for reference. ***Please answer the following questions concerning pronghorn management in this area only.***

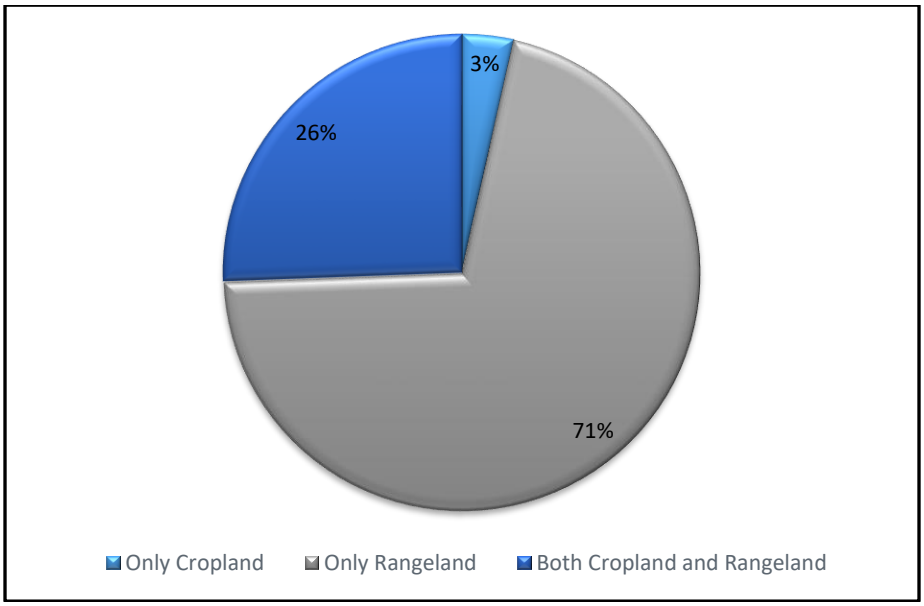


1. How would you describe the land that you own in the Tobe Herd Management Unit? (Please check all that apply.)

☐ Cropland

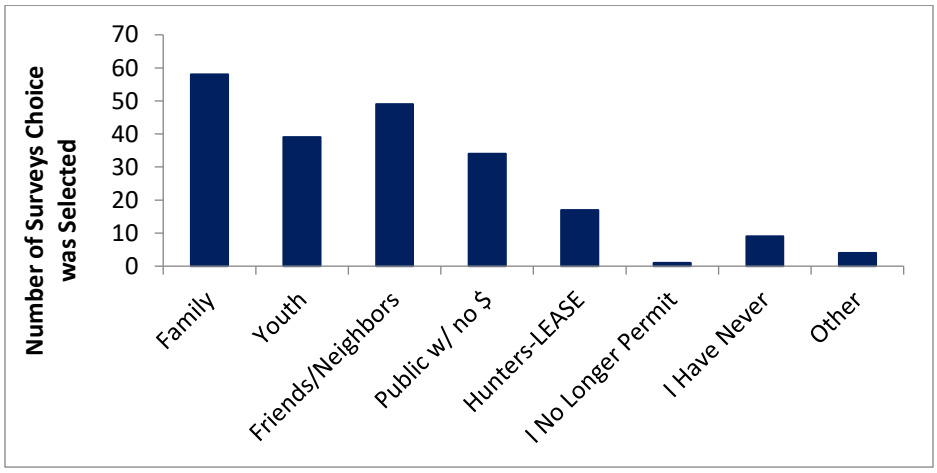
☐ Rangeland

☐ I don't own land in the Tobe Herd Management Unit



2. Over the last five years, which of the following did you allow to hunt pronghorn on your property? (Please check all that apply)

- ☐ Family
- ☐ Youth
- ☐ Friends and/or neighbors
- ☐ Public hunters who did not pay an access fee
- ☐ Hunters or outfitters who have leased the land or paid an access fee
- ☐ I no longer permit pronghorn hunting on my land
- ☐ I have never allowed anyone to hunt pronghorn on my land
- ☐ Other (Please specify):__No responses for "Other" category_____



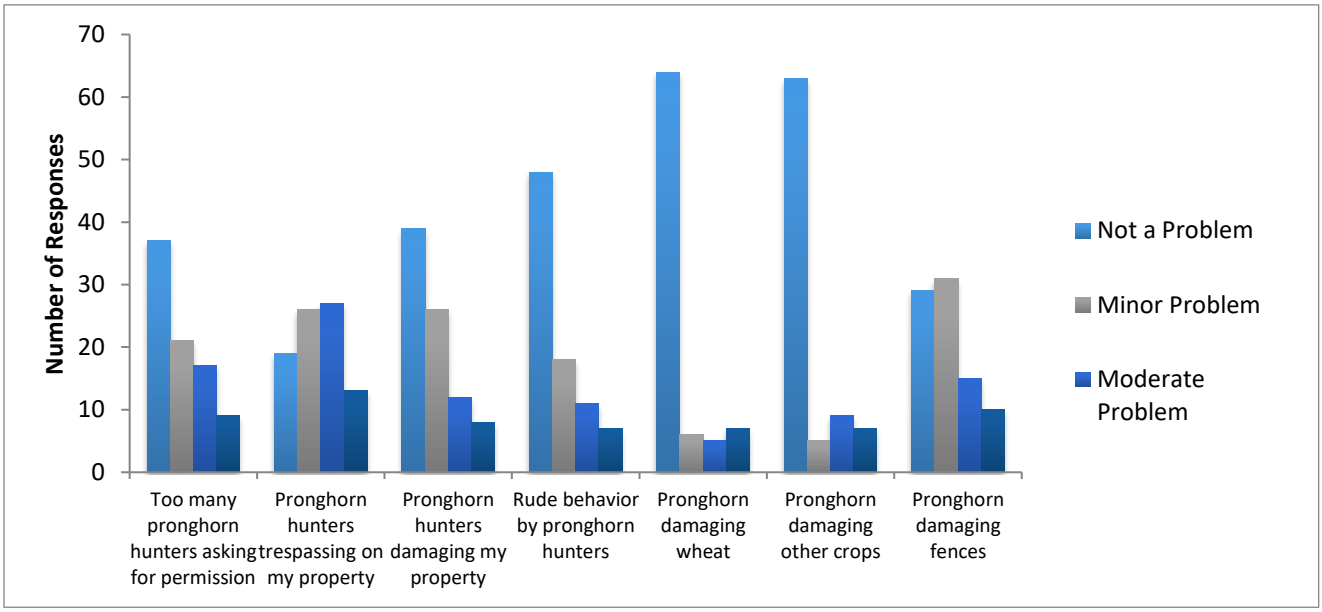
3. Have you hunted pronghorn in the Tobe Herd Management Unit during the last five years?

- ☐ Yes
- ☐ No

Yes: 24%	No: 76%

4. To what extent have you experienced any of the following problems related to pronghorn and pronghorn hunters in the last 5 years? (Please check one response for each statement.)

	Not a Problem	Minor Problem	Moderate Problem	Major Problem
Too many pronghorn hunters asking for permission to hunt	○	○	○	○
Pronghorn hunters trespassing on my property	○	○	○	○
Pronghorn hunters damaging my property	○	○	○	○
Rude behavior by pronghorn hunters on my property	○	○	○	○
Pronghorn damaging growing wheat	○	○	○	○
Pronghorn damaging other crops (non wheat)	○	○	○	○
Pronghorn damaging fences	○	○	○	○



5. Have you experienced other problems related to pronghorn causing damage and/or pronghorn hunters? (Please specify):

_____

_____

_____

Please read the following brief description before answering questions 6 and 7.

Hunting licenses are the primary tool available to CPW for managing pronghorn numbers. For landowners, this creates a potential tradeoff between the number of pronghorn on their property and hunting pressure on or around their property. To lower the number of pronghorn, CPW typically increases the number hunting licenses (primarily for females) available, which increases the number of hunters in the field.

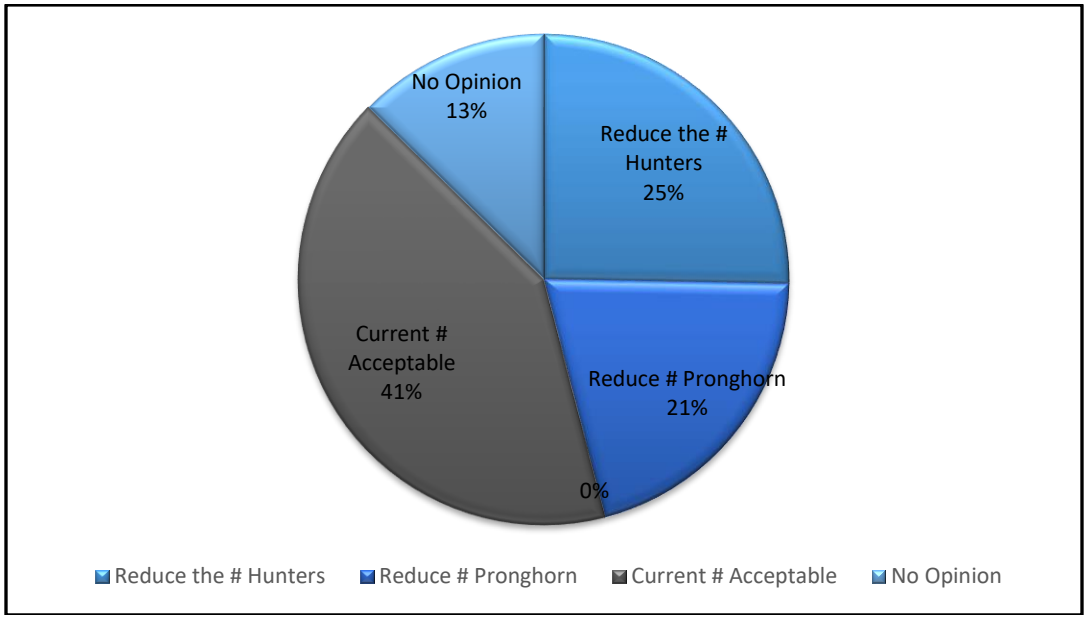
6. How would you like to see the Tobe Herd managed? (Please check only one)

☐ Reduce the number of hunters (more pronghorn, fewer hunters)

☐ Reduce the number of pronghorn (fewer pronghorn, more hunters)

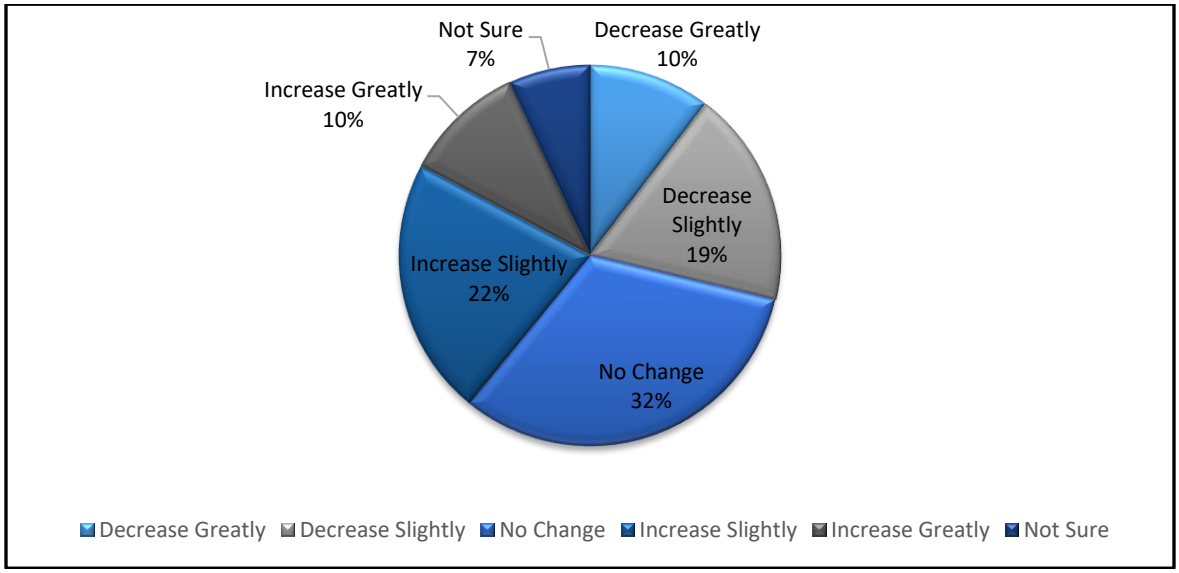
☐ The current numbers of hunters and pronghorn in the GMU(s) are acceptable

☐ No Opinion



7. For the 2018-2028 time period, relative to the current number of pronghorn, how would you like to see the pronghorn population change in the Tobe Herd Management Unit?

	Decrease greatly (~50% fewer pronghorn)	Decrease slightly (~15% fewer pronghorn)	No change (Current numbers are acceptable)	Increase slightly (~15% more pronghorn)	Increase greatly (~50% more pronghorn)	Not Sure
I would like the pronghorn population to:	☐	☐	☐	☐	☐	☐



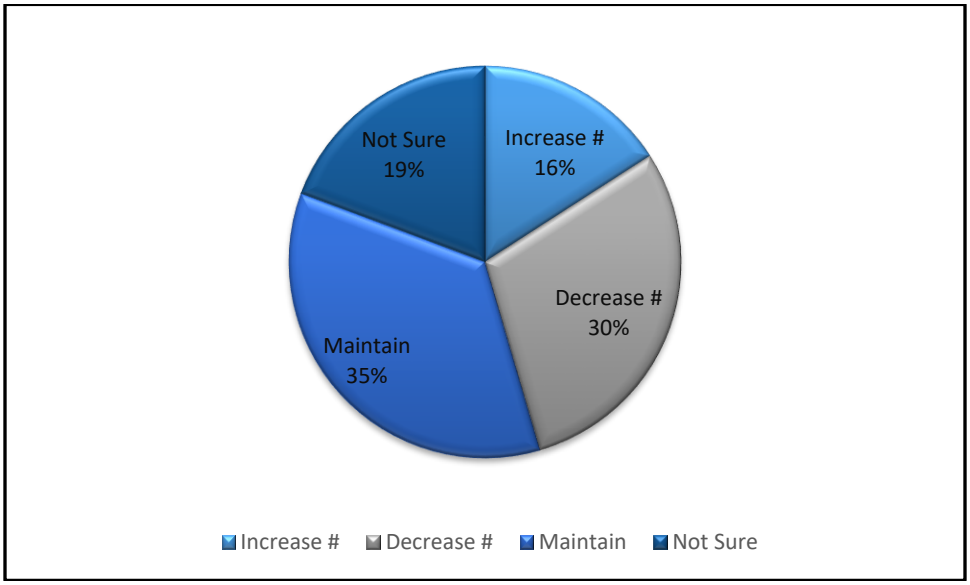
Please read the following brief description about managing male-to-female ratios before answering question 8 (below).

If a pronghorn herd is managed for **increased hunting opportunity**, more buck hunting licenses are made available and buck hunters are generally able to hunt more frequently. This can result in fewer total bucks in the herd (*lower buck-to-doe ratio*) and fewer mature bucks.

If a herd is managed for **increased buck quality**, fewer buck licenses are issued in order to increase the number of bucks in the population (*higher buck-to-doe ratio*). This generally results in less frequent hunting opportunities and fewer hunters in the field, but it can also result in a greater chance of encountering a mature buck.

8. Which of the following approaches should guide the number of buck licenses allocated in the Tobe herd unit?

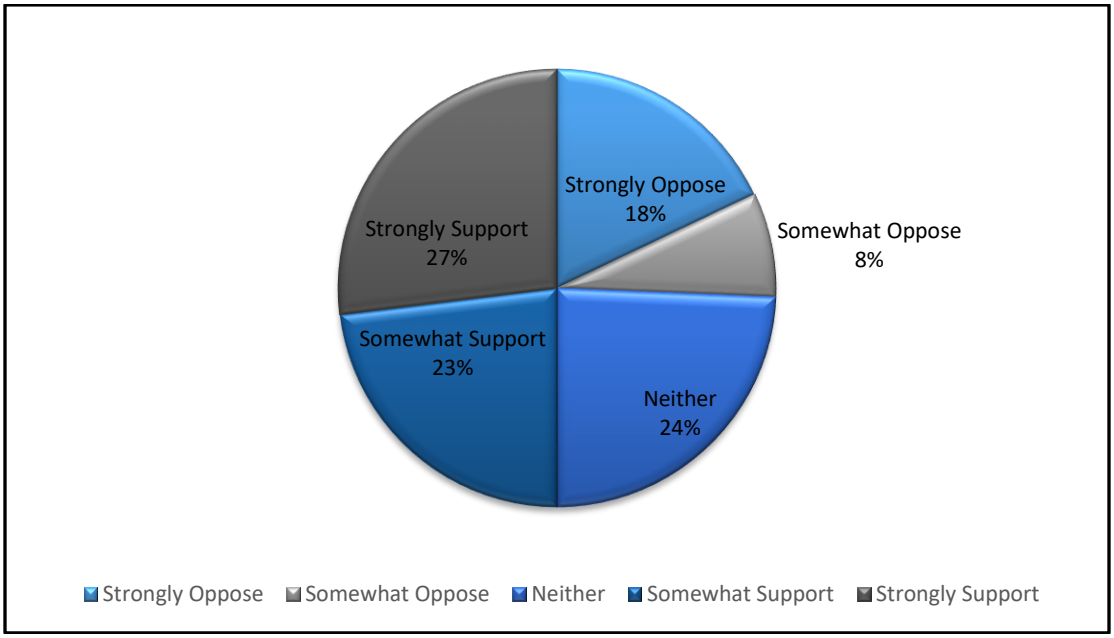
- ☐ Increase the number of buck hunting permits (easier to draw a license, more hunters in the field)
- ☐ Decrease the number of buck hunting permits (more preference points required to draw a license, more bucks in the population)
- ☐ Maintain the current number of buck hunting permits
- ☐ I'm not sure



Since 2012, CPW has held a late season doe hunt in the Tobe herd unit. The purpose of this 31 day season is to increase CPWs ability to keep pronghorn numbers under control as well as to give landowners another tool to help keep pronghorn concentrations from getting too large on wheat fields. Some additional benefits of the season are that it increases hunter opportunity, and reduces hunter crowding during the primary season by shifting some of the doe licenses to the late season.

9. Do you support or oppose maintaining a late doe only pronghorn season in the Tobe Herd Management Unit?

- ☐ Strongly oppose
- ☐ Somewhat oppose
- ☐ Neither oppose nor support
- ☐ Somewhat support
- ☐ Strongly support



Thank you very much for taking the time to complete this survey. Your input is very valuable to us and will help us better manage your wildlife resources. Please feel free to leave us any additional comments regarding pronghorn management below.

TOBE PRONGHORN HERD: LANDOWNER SURVEY QUESTION #5 RESPONSES

- No
- N/A
- No
- No
- Hunters not shutting gates properly. Hunters driving off the two track trails in pastures
- The spread of noxious weeds
- Hunters without permission
- Leaving gates open. 2 yrs ago 1 calf shot
- No
- No
- Breaking insulator on hot fence
- They spread bind weed which causes a major problem
- No
- No
- I have never seen pronghorn on my property so have not experienced problems with animals or hunters of that species.
- I'm an out of state landowner, however haven't noticed any problems. Unless I had a tag for myself I don't mind neighbors and locals using my land as long as they're respectful.
- No
- No
- Leaving gates open! Especially on Comanche National Grasslands!
- No
- No
- The hunters go wherever they please
- Pronghorn are not a problem for us. Pronghorn hunters have trespassed, cut gate/fence, shot near livestock, shot signs, left trash, and behaved in rude and threatening manner.
- Road hunters
- Eat cattle feed and minerals
- Need 2 seasons in Oct. ½ the hunters at a time. Ridiculous #s of hunters getting in

each other's way.

- Hunters getting on private land when hunting on government
- Hunters are [?] on leaving gates open or driving through fence
- Fences – gates down
- I will have to say antelope hunters are the rudest, most disrespectful hunters there are. We have more uninvited, unwanted hunters on our land during that season than any. It is mostly people that come down from the city and think the whole county is government ground. They run through our fences, shoot the animals and leave them lie or gut them right in our gate access and leave the mess.
- Hunters calling leaving a number to call if you do not call them back. They think it is ok to hunt especially if you have let them hunt before
- On our cropland property we have a problem with bind weed. The pronghorn animal fertilizes bind weed.
- Open gates – fences cut
- State hunters are over abundant and it feels unsafe; they don't watch where they are shooting and what is around them.
- Yes- went in vacant building an damaged property.
- I run an expansive Farm and ranch that spans 3 different counties and hunting areas. I also operate an outfitting business that offers exclusive guided hunts only. Every year I encounter public hunters trespassing on my property, most times knowingly. Their reasoning is often resentment that I own/control large acreages an reserve it for both my business and personal hunting. The public hunters need to know and realize NO MEANS NO and it can be for whatever reason the landowner/ lease deems fit!
- There are not enough pronghorn to be concerned with.
- Drive on land, leave hydrant open, leave gates open
- Pronghorn hunters who get private land tags that don't have any property and come during the hunt and want permission. Why can't we bring back the proof of landowner permission before they take these tags out of the draw and take away opportunity for people who have permission and don't get tags.
- Way too many hunters in 146

• TOBE PRONGHORN HERD: LANDOWNER SURVEY ADDITIONAL COMMENTS

- By the season opening very few pronghorn area round, but 2 months before the season there is adequate number. 2017 late season there was no antelope to be seen but there was way to many hunters around. Driving around and all over public and state land. It is hard to say wat kind of a season will be in April when the draw (your license is due). With the drought last year, there was not any antelope or very few.
- I would like to see the late doe season be for youth or disabled only
- We rarely have pronghorn on our property. When we do they are almost always moving. Going from one place to another. GMU 136 central
- I wish there were more pronghorn on my property. Thank you for caring how we feel. Thank you for this survey – Good luck to you
- I have never seen a pronghorn on my ranch, although I have seen a few on the county road leading to my property. I can't confidently comment on the need to control the herd as I have not personally been impacted negatively.
- I am on the NM state line directly south of Kim, CO. I do not have antelope on my Colorado property currently. I own property in NM where I do have antelope. I am not fond of them!!!
- On #9: different time for hunt, when bucks still have horns bucks are shot and left
- On #9: the doe hunters are much worse than buck hunters. Very arrogant and with chips on their shoulders.
- Jonathan Reitz, I live near Ninaview, CO. I have seen only 1 pronghorn on my land, so I am not qualified to answer questions on your survey. Have not heard the neighbors say anything about pronghorn on their land. Have not had any hunters because there are no pronghorn in this part of the Tobe Pronghorn Herd Unit.
- 2 years ago I inquired about my [unk] to your office. Your response was negative. I was disappointed

TOBE PRONGHORN HERD: HUNTER SURVEY
DATA ANALYSIS UNIT PH-13

Dear Hunter,

Colorado Parks & Wildlife (CPW) is interested in **your input** on the management of the Tobe Pronghorn Herd (Game Management Units 130, 136, 137, 138, 143, 144, and 146).

Your input is a **very important** part of the planning process. The information you provide will help guide management of the pronghorn herd for the next 10 years!

Please help us learn what is most important to you about pronghorn management in this area. Your identity will be kept confidential and the information you provide will never be associated with your name.

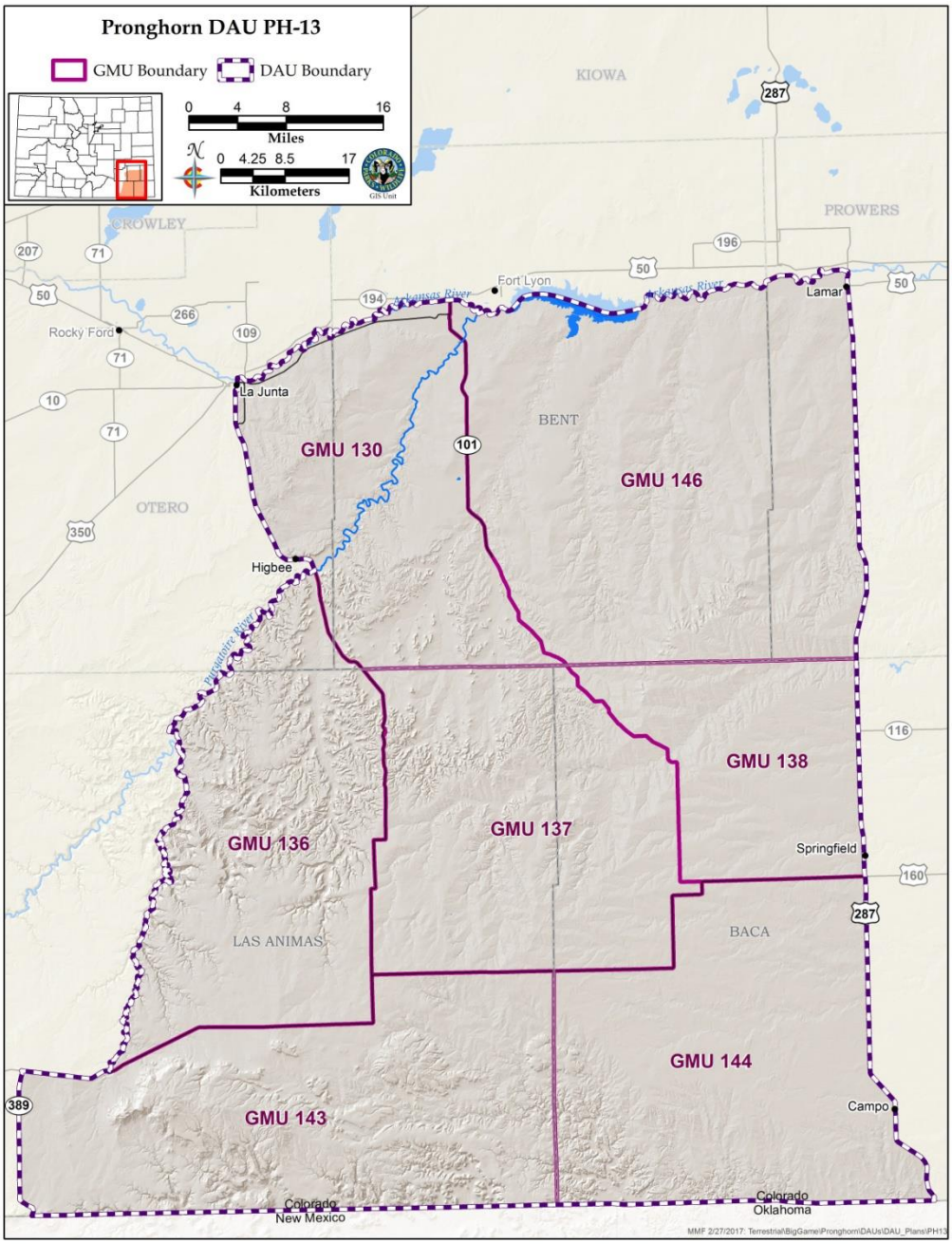
If you have any questions about the pronghorn herd please contact either:

- Jonathan Reitz, Wildlife Biologist, at (719) 691-9130; jonathan.reitz@state.co.us
- Travis Black, Area Wildlife Manager, at (719) 336-6603; travis.black@state.co.us.

Surveys must be completed before **October 15th**.

Thank you for participating!

This survey is specific to the Tobe Pronghorn Herd Management Unit. The map below is for reference. ***Please answer the following questions concerning pronghorn management in this area only.***



1. **Which of the following year(s) have you hunted pronghorn in the Tobe Herd Management Unit? (*Please check all that apply.*)**

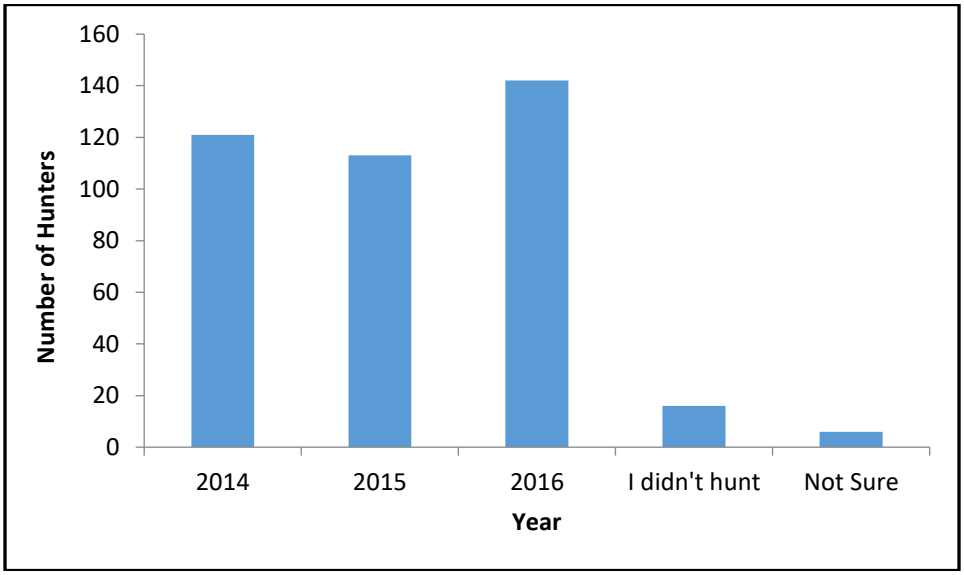
☐ 2014

☐ 2015

☐ 2016

☐ I did not hunt pronghorn in the Tobe Herd Management Unit during any of these years. (please skip to question #10)

☐ I am not sure



2. During the previous three years which of the following license(s) did you obtain for the Tobe Herd Management Unit? (*Please check all that apply.*)

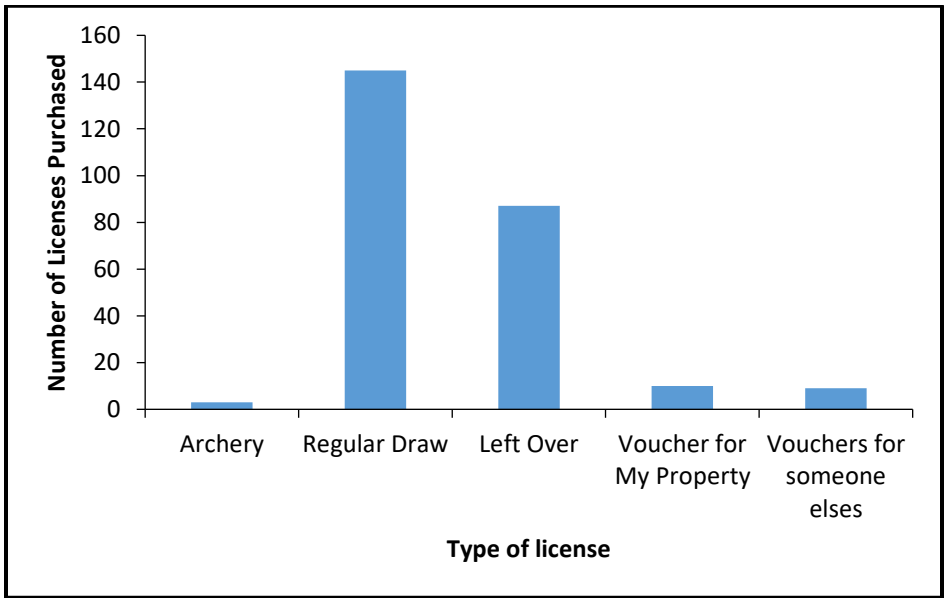
☐ An over-the-counter either sex archery license

☐ A regular draw license

☐ A left over license

☐ A landowner voucher for the property I own or manage

☐ A landowner voucher for another property



3. Do you live within the Tobe Herd Management Unit?
(*See map above, and check only one*).

- o Yes
- o No

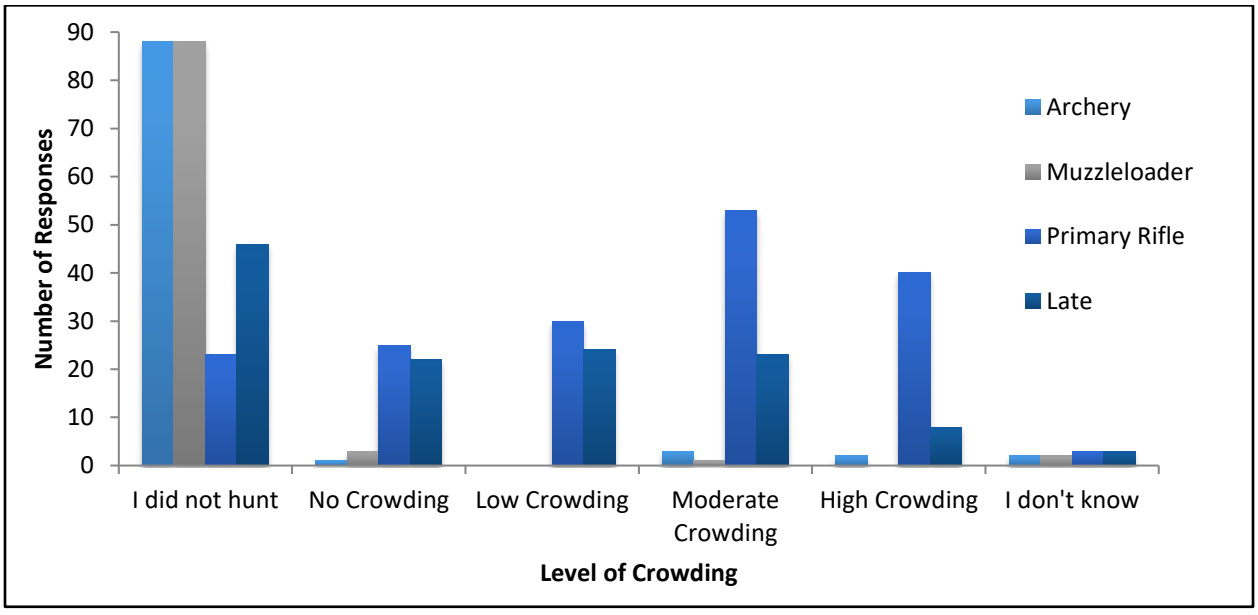
Yes: 7%	No: 93%

4. How would you rate the quality of pronghorn hunting in the Tobe Herd Management Unit for any of the seasons that you hunted from 2014-2016?
(*Please check only one response per season.*)

	I did not hunt this season	Poor	Fair	Good	Excellent	I don't know
Either Sex Archery Season	○	○	○	○	○	○
Muzzleloader Season	○	○	○	○	○	○
Primary Rifle Season (Early October)	○	○	○	○	○	○
Late Season Doe Only Rifle Season (December)	○	○	○	○	○	○

5. How would you rate the level of hunter crowding in the Tobe Herd Management Unit for any of the seasons that you hunted from 2014-2016?
(*Please check only one response per season.***)**

	I did not hunt this season	No Crowding	Low level of crowding	Moderate level of crowding	High level of Crowding	I don't know
Either Sex Archery Season	○	○	○	○	○	○
Muzzleloader Season	○	○	○	○	○	○
Primary Rifle Season (Early October)	○	○	○	○	○	○
Late Season Doe Only Rifle Season (December)	○	○	○	○	○	○



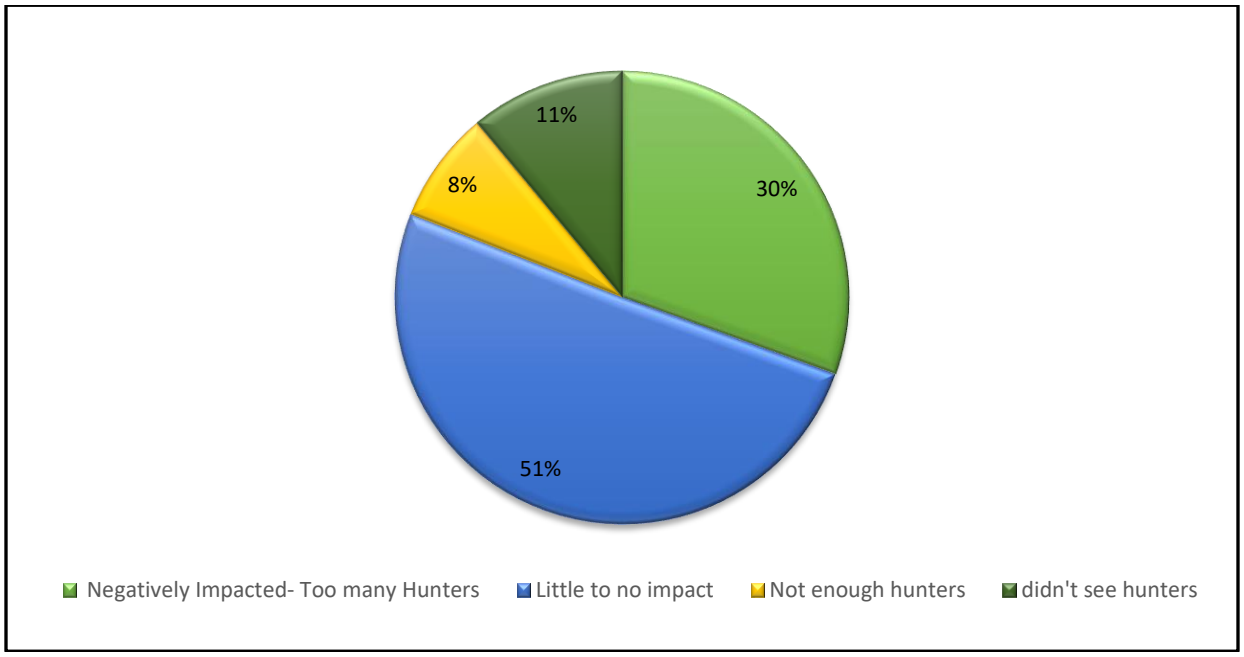
6. Which of the following best describes your pronghorn hunting experience(s) in the Tobe Herd Management Unit from 2014-2016? (*Please check only one.*)

☐ My hunt was negatively impacted by their being too many hunters in the area I hunted.

☐ Other hunters in the area had little to no impact on my hunt.

☐ There were not enough hunters around to get the pronghorn moving around.

☐ I didn't really see any other hunters.



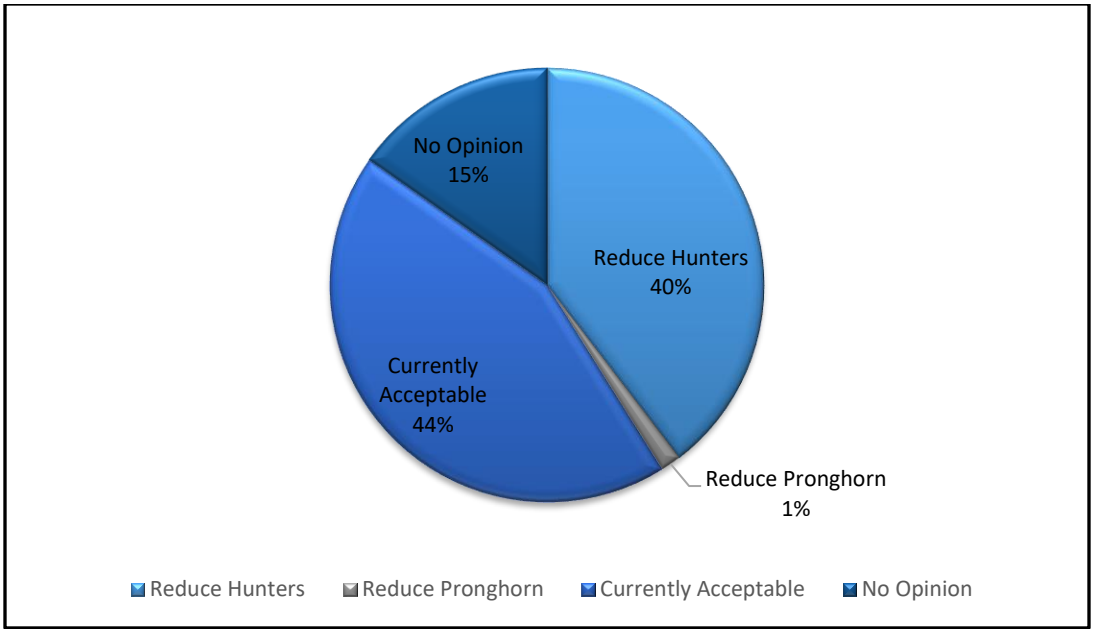
7. **For the purposes of pronghorn management in the Tobe Herd Management Unit, what is your preference? (*Please check only one*.)**

☐ Reduce the number of hunters (more pronghorn, fewer hunters, harder to draw a license, higher harvest success rates)

☐ Reduce the number of pronghorn (fewer pronghorn, more hunters, easier to draw a license, lower harvest success rates)

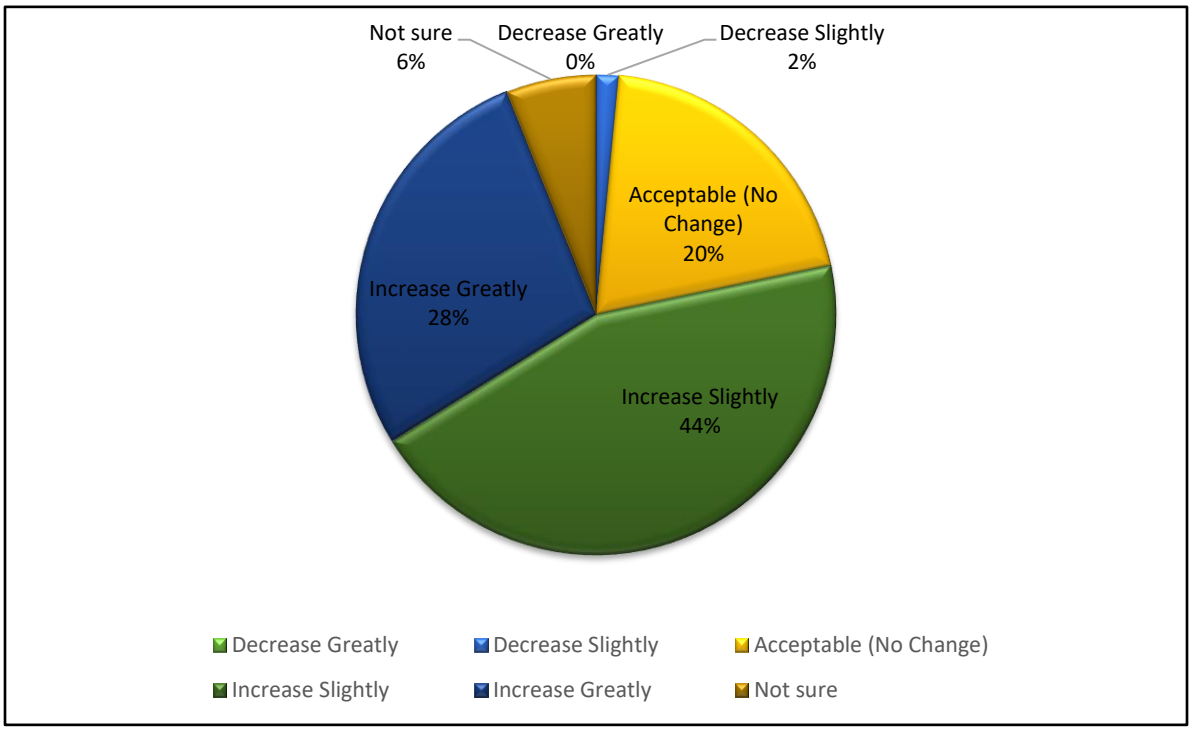
☐ The current numbers of hunters and pronghorn in herd unit are acceptable

☐ No opinion



8. How would you like to see the Tobe pronghorn herd population change over the next 10 years? (*Please check only one.*)

	Decrease greatly (~50% fewer pronghorn)	Decrease slightly (~15% fewer pronghorn)	No change (current numbers are acceptable)	Increase slightly (~15% more pronghorn)	Increase greatly (~50% more pronghorn)	Not Sure
I would like the pronghorn population to:	☐	☐	☐	☐	☐	☐



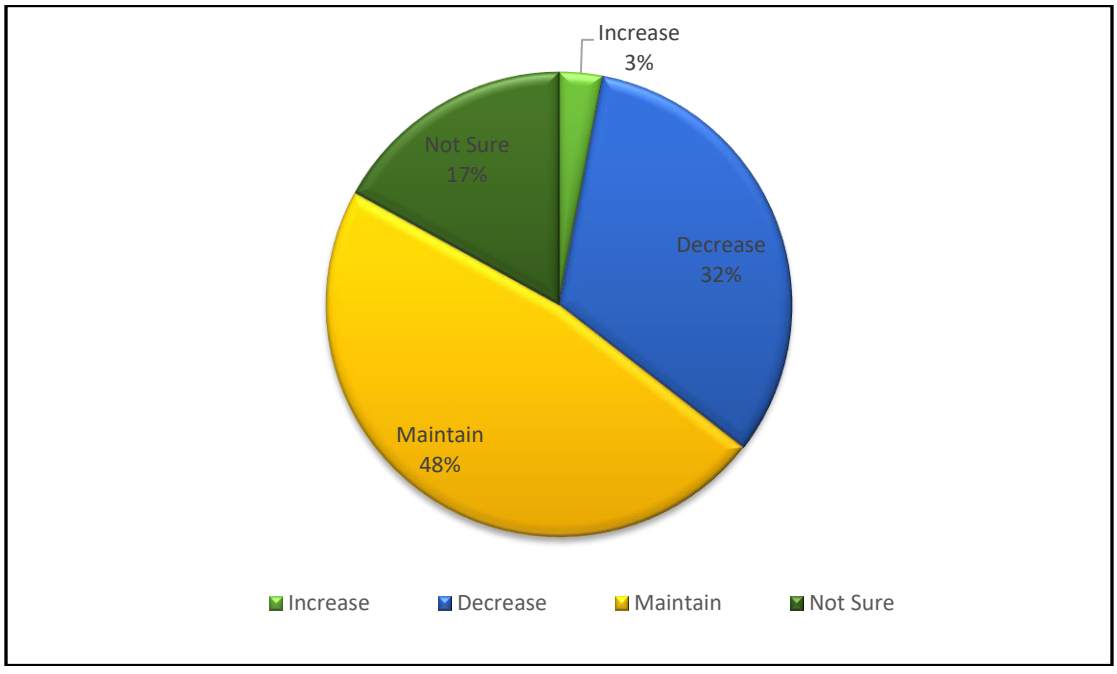
Please read the following brief description about managing male-to-female ratios before answering question 9.

If a pronghorn herd is managed for **increased hunting opportunity**, more buck hunting licenses are made available and buck hunters are generally able to hunt more frequently. This can result in fewer total bucks in the herd (*lower buck-to-doe ratio*) and fewer mature bucks.

If a herd is managed for **increased hunt quality**, fewer buck licenses are issued in order to increase the number of bucks in the population (*higher buck-to-doe ratio*). This generally results in less frequent hunting opportunities and fewer hunters in the field, but it can also result in a greater chance of encountering a mature buck.

9. Which of the following approaches should guide the number of buck licenses allocated in the Tobe Herd Management Unit? (*Please check only one*.)

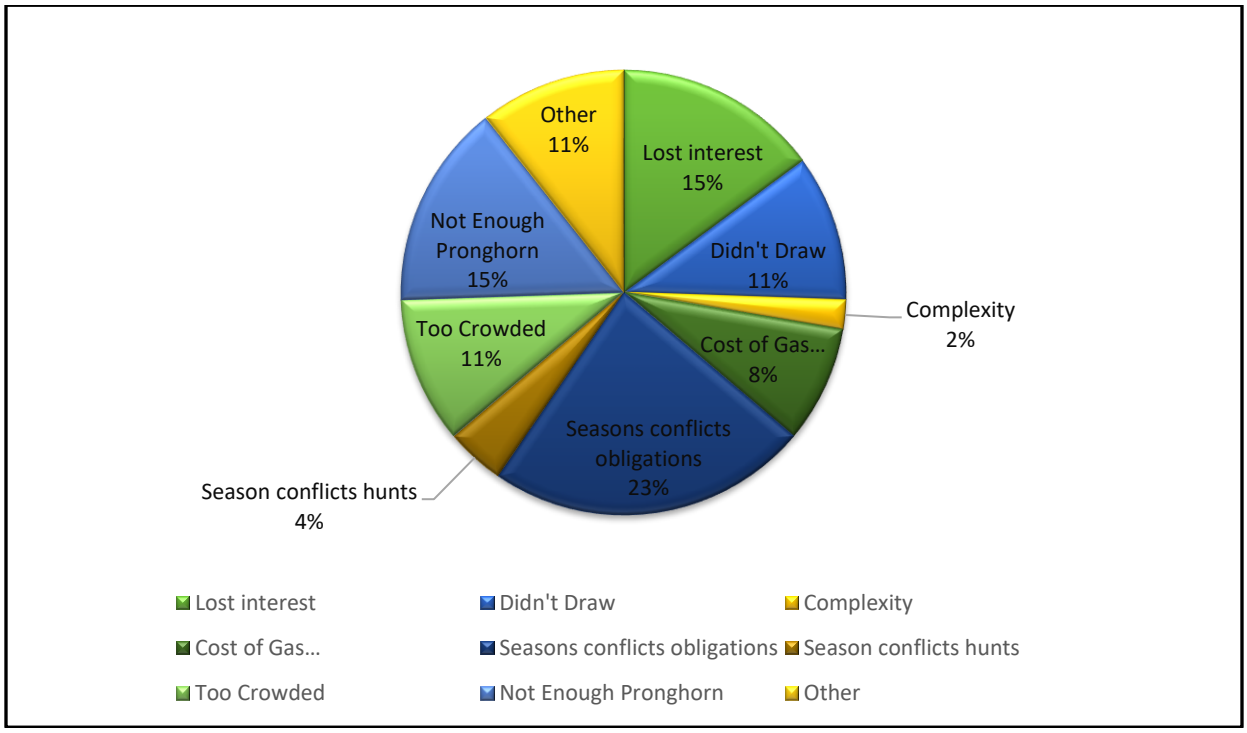
- ☐ Increase the number of buck hunting permits (easier to draw a license, more hunters in the field)
- ☐ Decrease the number of buck hunting permits (more preference points required to draw a license, more bucks in the population)
- ☐ Maintain the current number of buck hunting permits
- ☐ I'm not sure



If you HUNTED pronghorn in the Tobe herd unit from 2014-2016, you are DONE with this survey. Please SKIP question #10.

10. **Why did you NOT HUNT pronghorn in the Tobe Herd Management Unit during 2014, 2015, or 2016? (*Please check all that apply*)**

- ☐ I lost interest in hunting pronghorn the year(s) that I had a license
- ☐ Did not draw a license
- ☐ The complexity of hunting regulations in Colorado
- ☐ The cost of gas, equipment, or other expenses
- ☐ Season conflicted with other obligations
- ☐ Season conflicted with other hunts
- ☐ The Tobe Herd Management Unit has become too crowded with hunters
- ☐ There were not enough pronghorn where I hunt
- ☐ Other (please specify)



Thank you very much for taking the time to complete this survey. Your input is very valuable to us and will help us better manage your wildlife resources. Please feel free to leave us any additional comments regarding pronghorn management on the space below.

TOBE PRONGHORN HERD: HUNTER SURVEY ADDITIONAL COMMENTS

- Thank you CDOW, your officers and staff are top notch that handle complex management with grace!
- Of course I would Love to see more Antelope in the unit, but not at the expense of being able to hunt. This is the Unit that almost guarantees me a tag & a kill every year. I hunt it specifically for the chance of putting meat in my freezer.
- Access to public land is a real issue.
- In 2015 I hunted late season doe for one day encountering 4 herds. In 2016 I hunted same area for two days only seeing 1 herd of 3. Did something happen? I would like to see more does as it's a great hunt to take my children on for success.
- Went hunting the week after opening weekend. Hunted the grasslands, only two does were seen on public land. Few others on private. Maybe they were scattered already. Pete
- I am frustrated by the slow response to game management when culling a herd size down by the issuance of extreme doe tags for a long period of time. In an effort to reduce herd numbers with doe tags to appease farmer's interests, the herds in the Tobe unit became nearly killed off with very few animals to rebuild herds. Between the politics of farming and [can't read word] interests and the (Dow?) not being funded out of general legislative funding, increased license sales are used to detriment of game herds. Dow accomplished exactly what was intended, nearly exterminate Tobe herd. Issuing hundreds of doe tags in regular season and again in late season is the fastest way to kill off herds. Every doe killed is two with pregnant doe. - Dusty
- I was only able to hunt one day, but did not see any pronghorn to hunt. I may try the late doe season again, but would want at least a full weekend. Thanks for taking the time to go through all these surveys!
- Reduce the number of doe tags to let population recover (written under #9)
- The pronghorn herd in the Tobe herd management area has been going down and animals are hard to find and few hunters to help move animals – we need animals put back in the area!!
- I've been hunting that area for 14 + years. The number of antelope seem down slightly, but most move to private ground on opening day or so. Land owners have approached my camp offering to let us hunt their land for $300-$600 per rifle. I've seen good bucks and fair numbers of pronghorn on private land. Can't afford hunting

public animals on private ground. Good move putting black powder before rifle.

- By December most of the herds were on private land
- Very difficult to access public land. Locals have not been as open to hunting as in past. Some are out right "no hunting". Seems like Cabelas and outfitters are starting to buy out farm land. CO. needs to move to the WY model and give ranchers and farmers vouchers for every kill. There must be some incentive to farmers to go back to public support and not sell out to corporate hunters. Rich T.
- #4) Poor: could only hunt public lands (grasslands [national]) checkerboard public/private, antelope immediately ran to and stayed on private lands. #5) No/Moderate crowding: Depending on whether it was early, (1st few days of Dec) weekends, etc. #6) Neg. impact/not enough hunters: depending on time and situation. Public lands too small to keep animals w/in it – antelope very people shy, but also vehicle shy. Would hear a vehicle miles away and move off. #7) Did not answer: None of the above. Except for locals who are in the area year round & know the antelope patterns & may have private land access hunting for most will be poor & very iffy. Solution, late season acquire private land access (similar to walk in program). Area could support more animals – higher population. Open up all trust lands to hunting etc. Shouldn't be trust lands if public access is denied. Probably won't hunt this year due to limited access. #9) shift buck hunting more into late season. Allow breeding & less chance does/fawns etc killed. Acquire private land access for late season. #10) did hunt those years – mainly something to do late season, however hunting due to limited access was poor. Animals extremely shy in units 136, 143, 137, 144 even more so than most antelope. Would keep a ½ - 1 mile distance from vehicle if you even see them. See attached add. Information pertaining to hunting & DOW/Dept. of Parks and Wildlife regulations/actions.
- Late season… no other hunters, but all pronghorn are on private property
- Either stop or greatly curtail the Dec. doe season
- Herd numbers are a result of range quality rather than hunter numbers to a large degree. Most of this land is private so much of this information isn't what you or I would like to see but landowners allowing or denying access.
- Got back into hunting last year – 2016. Was not all that familiar of Colorado hunting and the draw program
- Antelope so skiddish! Could not find antelope on public land
- Please remove winter doe hunt, numbers dropped from it
- Note: "hunters" on ATV/OHV carts have spoiled the hunts and increased environmental damage. This is the most important problem with plains hunting! – Darryl
- - I saw antelope - all on private land, which after hearing from locals during a lunch break, I wish more PL owners would allow hunting. They don't care for antelope particularly. There was no press to get them off P. L.
- 30 yrs hunting Tobe till US Forest Service parking or camping violation @$275.00 x 2

$550.00

- Hunt this area since I was 18 now 63 – more hunters and no pronghorn. There used to be herds of 40 to 100 last time I went I seen 12 pronghorn
- Reduce doe tags! They overwhelm buck hunters
- I have been hunting unit 136 about 10 yrs in my observation pronghorn populations are 50% less then when I started hunting here. There are always leftover tags and you can always end up with 2 tags (public/private). I think tags should be cut back where you can still draw with no points but without the guarantee of getting multiple tags. Overall I'd like management to reflect a few less hunters and more pronghorn without making it a trophy unit that take 5 yrs to draw like 135 – Thanks,
- I have hunted but I think the area should be split back up I did not harvest a buck because lack of mature bucks
- I hunted 2016, never hunted antelope before
- I did not apply or seek leftover for 2017. I had success with late season doe tags in 2015 and 2015. I did not have success in 2016 and the herds appeared smaller and it seemed like population had diminished. I would like to see the herd size grow significantly so in the future there is still good late season doe hunting and more mature bucks. I do not want to see the population dwindle. Thank you for your work.
- I very much appreciate the landowners who allow hunting on their property
- Did not see a single animal in 3 days and covered many miles,
- I was very disappointed last year with very low pronghorn densities. I put on over 200 miles scouting both west and east of Kim. I saw exactly 2 pronghorn bucks and very few does on public land and only a few on private. I would like to see a very limited numbers of does licenses given out, especially during the late season – maybe 20 youth tags. I hunted this area around 2009-2010 and there were many more pronghorn than now
- Gentlemen, I am the father of the survey taker. There seems to be more antelope and more hunters which appears to have decreased the number of animals harvested. My sons and I hunting experience while not terrible was somewhat disappointing due to the number of others after the same groups as we were (plenty of animals). I was wondering if you could apply the same approach to antelope hunting as you do with elk hunting for cows in the Bosque del Oro area? Differing start and end dates – while entering the season puts more stress on the animals, the hunting/harvesting of more animals might also make the hunting experience a more enjoyable rewarding process and help the harvest goals. Sincerely, [signed]
- For 2017 I chose to hunt WY. Low success rates made it not worth the drive. Saving points for North Central, CO.
- The game warden drove us off this area. We drove our pickups in an area for 10 yrs and in 2014 he came and ticketed us so I will never go back there! A warning would have been sufficient!

- Would like to see more detailed map. Private landowners not as accepting as in past. More detail would prevent some of problems from discrepancy. The main problem is that the private landowners do not allow regular hunters on their property to keep the animals moving. Once they are shot at they move to private property & do not come off that land unless they are pushed off. CPW continues to give private landowners permits to sell at ridiculous prices & issue crop damage checks. Permits are being wasted because they are not being purchased or used by landowners. Landowners should not be given licenses or crop damage checks unless they can prove they are allowing the public access. This will keep animals moving & increase the success rate for everyone, not just those that have money to pay for

Appendix PH18: 2019 PH-18 Landowner and Hunter Surveys

TWO BUTTES PRONGHORN HERD: LANDOWNER SURVEY DATA ANALYSIS UNIT PH-18

Dear Landowner,

Colorado Parks & Wildlife (CPW) is interested in **your input** on the management of pronghorn antelope in the Two Buttes Pronghorn Herd Management Unit, Game Management Units (GMUs) 132, 139, and 145.

Your input is a **very important part** of the planning process. The information you provide will help guide management of the pronghorn herd for the next 10 years!

Please help us learn what is most important to you about pronghorn management in this area. Your identity will be kept confidential and the information you provide will never be associated with your name.

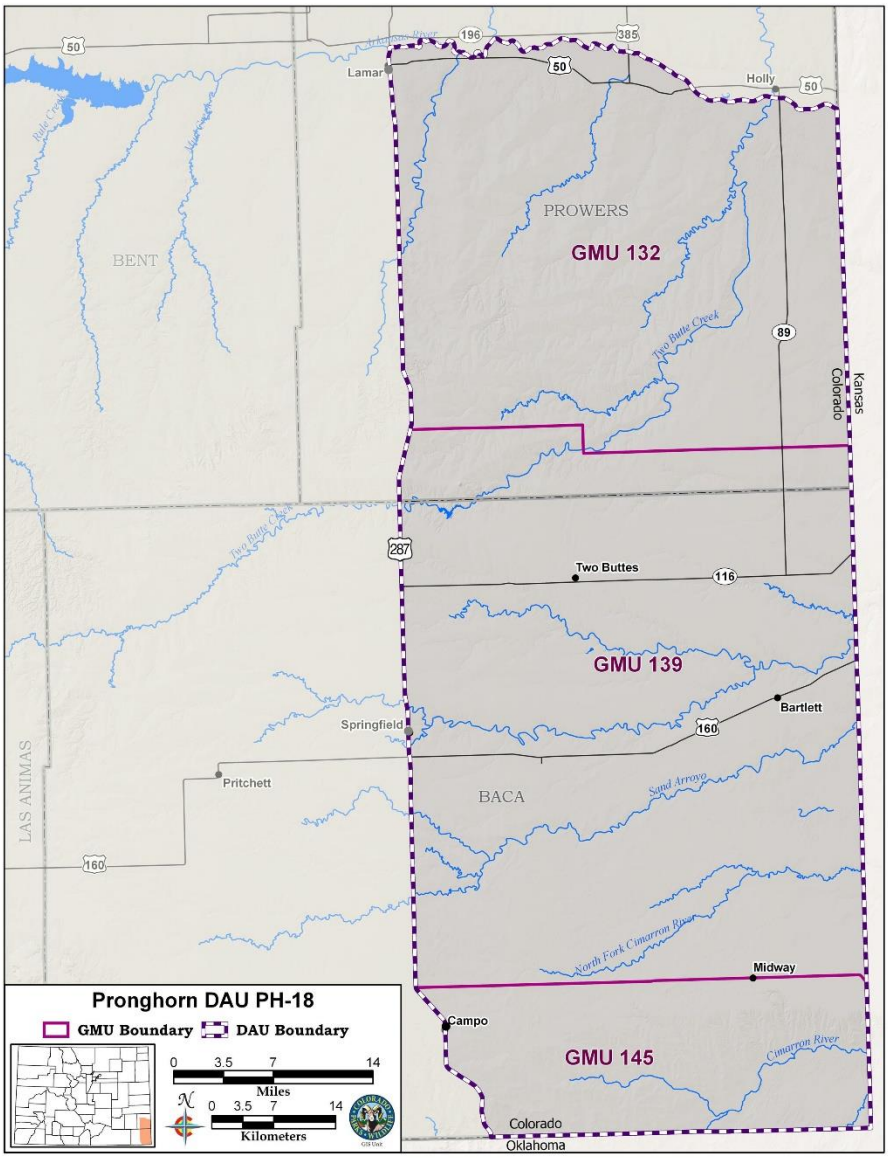
If you have any questions about the pronghorn herd please contact either:

- Jonathan Reitz, Wildlife Biologist, at (719) 691-9130; jonathan.reitz@state.co.us
- Todd Marriott, Area Wildlife Manager, at (719) 336-6603; todd.marriott@state.co.us

Surveys must be completed before **January 31st.**

Thank you for participating!

This survey is specific to the Two Buttes Pronghorn Herd Management Unit. This unit is bounded by the Oklahoma/Colorado border on the south, highway 287 on the west, the Arkansas River on the north, and Kansas/Colorado border on the east. The map below is for reference. ***Please answer the following questions concerning pronghorn management in this area only.***

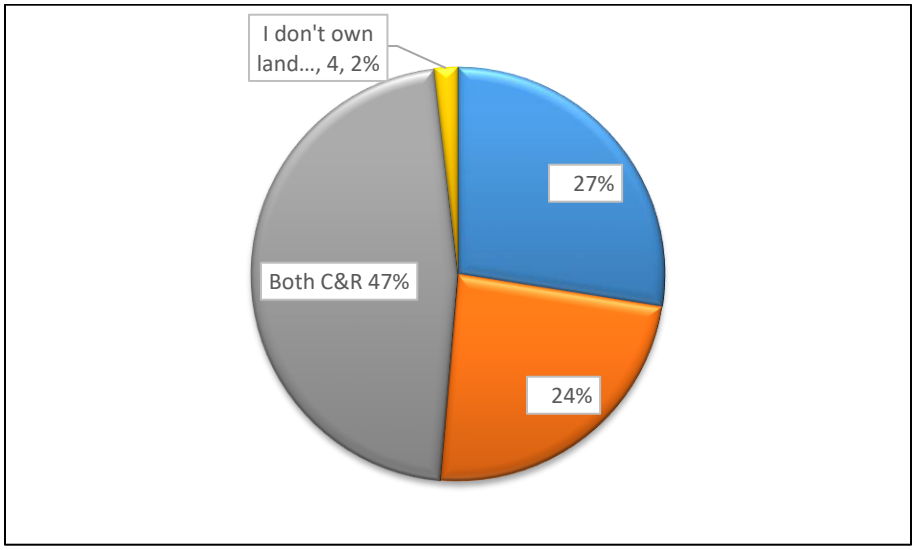


1. How would you describe the land that you own in the Two Buttes Herd Management Unit?
(Please check all that apply.)

☐ Cropland

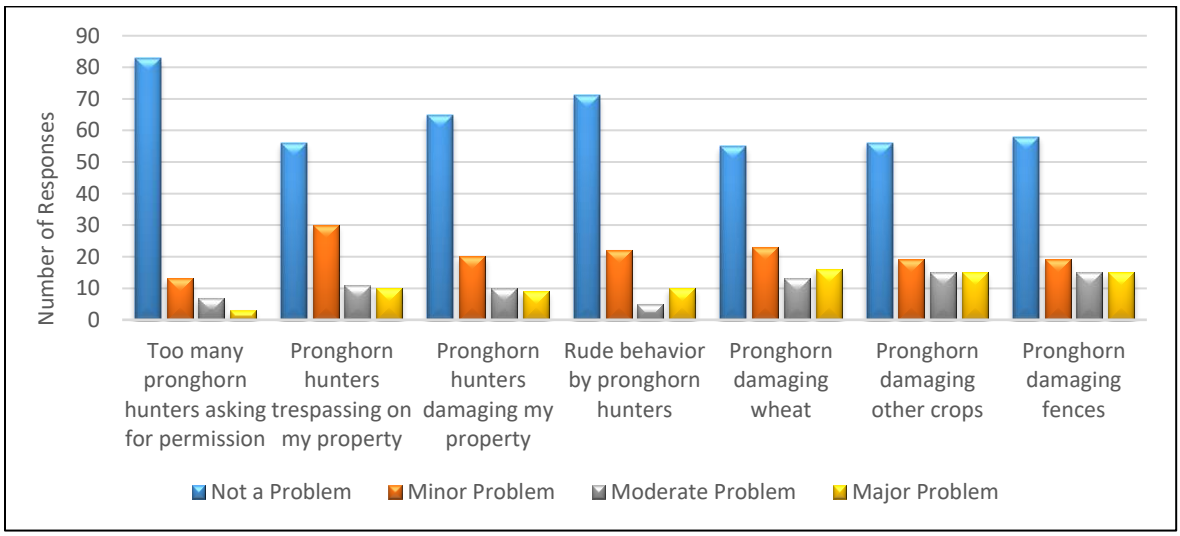
☐ Rangeland

☐ I don't own land in the Two Buttes herd unit



2. To what extent have you experienced any of the following problems related to pronghorn and pronghorn hunters in the last 5 years? (Please check one response for each statement.)

	Not a Problem	Minor Problem	Moderate Problem	Major Problem
Too many pronghorn hunters asking for permission to hunt	○	○	○	○
Pronghorn hunters trespassing on my property	○	○	○	○
Pronghorn hunters damaging my property	○	○	○	○
Rude behavior by pronghorn hunters on my property	○	○	○	○
Pronghorn damaging growing wheat	○	○	○	○
Pronghorn damaging other crops (non wheat)	○	○	○	○
Pronghorn damaging fences	○	○	○	○



3. Have you experienced other problems related to pronghorn causing damage and/or pronghorn hunters? (Please specify):

_____

_____

_____

4. For what proportion of the year do you believe pronghorn can be found on your property?

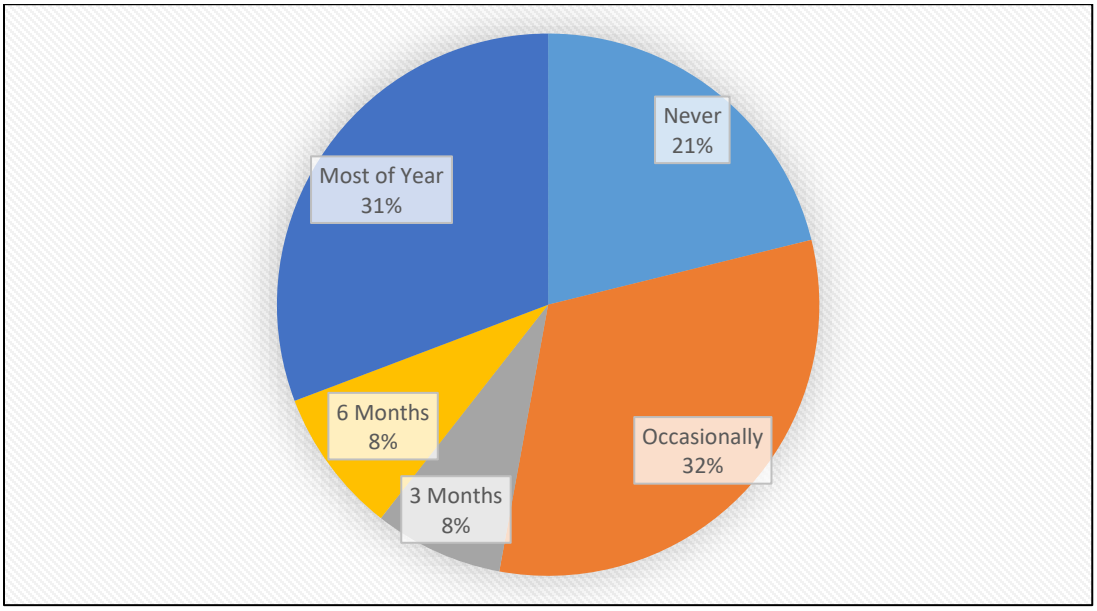
☐ I never see pronghorn on my property

☐ Pronghorn are occasionally on my property

☐ Pronghorn are likely on my property for **as much as three months** out of the year

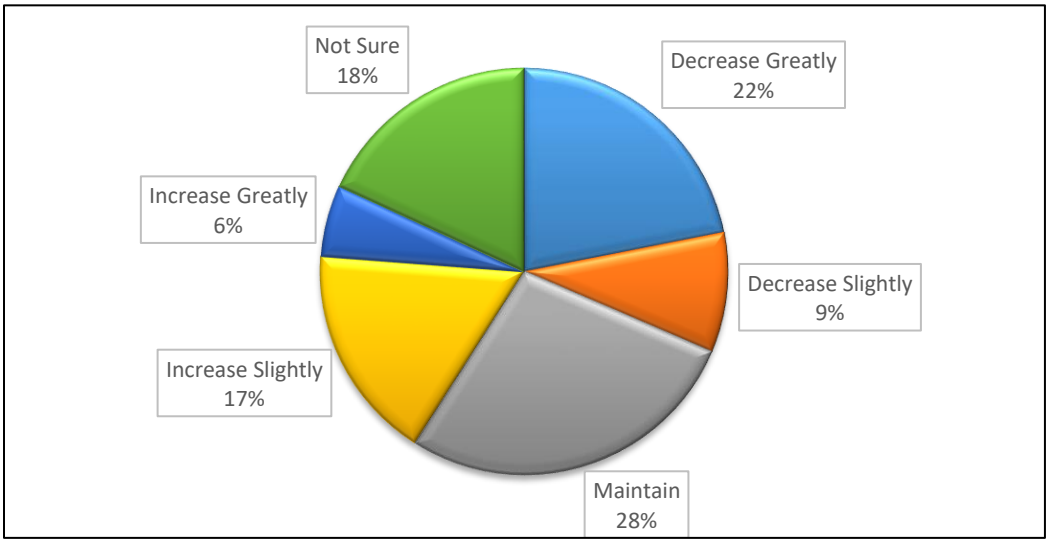
☐ Pronghorn are likely on my property for **as much as six months** out of the year

☐ Pronghorn are likely on my **property most of the year**



5. **For the 2020-2030 time period, relative to the <u>current</u> number of pronghorn, how would you like to see the pronghorn population change in the Two Buttes Herd Management Unit?**

	Decrease greatly (~50% fewer pronghorn)	Decrease slightly (~15% fewer pronghorn)	No change (Current numbers are acceptable)	Increase slightly (~15% more pronghorn)	Increase greatly (~50% more pronghorn)	Not Sure
I would like the pronghorn population to:	☐	☐	☐	☐	☐	☐



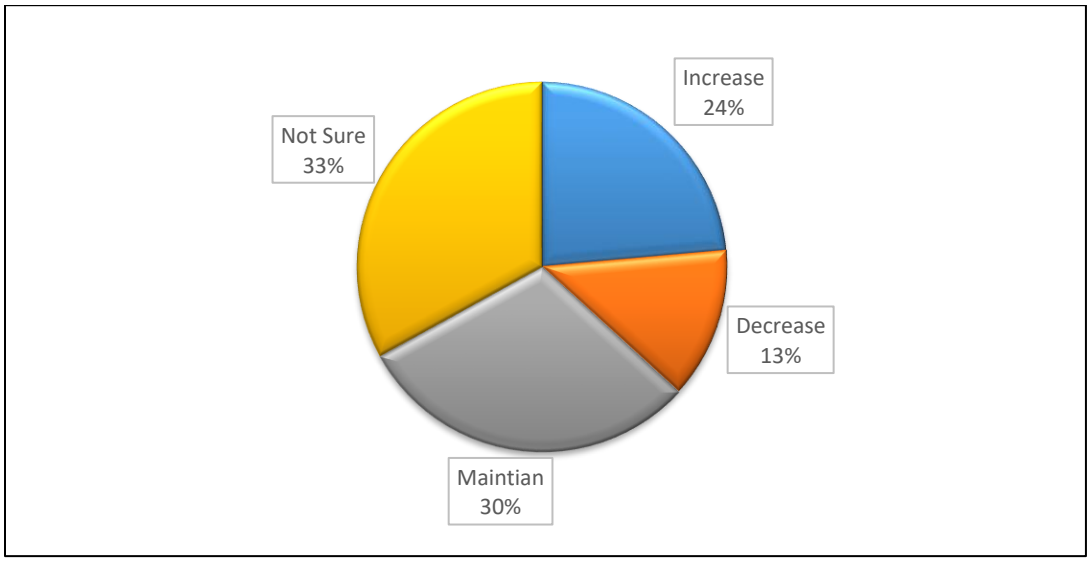
Please read the following brief description about managing male-to-female ratios before answering question 6 (below):

If a pronghorn herd is managed for **increased hunting opportunity**, more buck hunting licenses are made available and buck hunters are generally able to hunt more frequently. This can result in fewer total bucks in the herd (*lower buck-to-doe ratio*) and fewer mature bucks.

If a herd is managed for **increased buck quality**, fewer buck licenses are issued in order to increase the number of bucks in the population (*higher buck-to-doe ratio*). This generally results in less frequent hunting opportunities and fewer hunters in the field, but it can also result in a greater chance of encountering a mature buck.

6. Which of the following approaches should guide the number of buck licenses allocated in the Two Buttes herd unit?

- ☐ Increase the number of buck hunting permits (easier to draw a license, more hunters in the field, less bucks in the population)
- ☐ Decrease the number of buck hunting permits (more preference points required to draw a license, more bucks in the population)
- ☐ Maintain the current number of buck hunting permits
- ☐ I'm not sure



Thank you very much for taking the time to complete this survey. Your input is very valuable to us and will help us better manage your wildlife resources. Please feel free to leave us any additional comments regarding pronghorn management below.

Additional Comments:

TWO BUTTES PRONGHORN HERD: LANDOWNER SURVEY QUESTION #3 RESPONSES

- "I have government permits and have had lots of problems with hunters on government land."
- "Pronghorn are bad about carrying bindweed seed from other properties on to my land. It is very costly to control bindweed"
- "We have pronghorn hunters using the season to scout deer for the upcoming season."
- "Several years ago, someone erected a stand to hunt. No permission was given. We know who this was and notified this sheriff. Unfortunately, we had to post the property due to a lot of trespassing."
- "They spread noxious weeds across our fields."
- "Pronghorn cause some of the spread of the bindweed."
- "We don't have any on our land. We live in the south part of said unit."
- "The scattering of bindweed seed. An expense to keep it from spreading throughout the field."
- "Very minor crop damage. Hunters should be monitored by wardens and any abusive hunters should lose their right to hunt. Some hunters think that buying a license gives them more rights than landowners."
- "None, my property is on the South edge of ********, inside city limits."
- "Hunters leaving gates open and cattle getting out on road and hit by pickup and killed."
- "Hunters cut our fence."
- "Pronghorn causing the spread of bindweed and other noxious weeds."
- "The antelope eat bindweed and defecate the seeds all over the property. This requires chemicals to kill the bindweed creating yet another additional expense for landowners."
- "Someone driving across planted wheat. Possibly pronghorn hunters or coyote hunters??"
- "Pronghorn spread bindweed."
- "Haven't even seen a pronghorn and what few deer I've seen in a sight."
- " I am and out of state land owner and have had no complaints."
- "No, we like having them around and we do hunt them."
- "I am an out of state landowner- have no problems in this case."
- "Pronghorn come through fences rather than jumping like deer, so they damage wires. If the land is not posted "No Hunting", some hunters come onto the land without asking and also may damage fences."
- "Not sure it was all pronghorn hunters?"
- "Not enough pronghorn numbers remaining to do any damage. Issued extremely too many tags

and killed of nearly all pronghorn herds in SE Colorado."

- "They drive across the pastures, they trespass, they run through fences. Too many antelope."
- "Not in this area. North of Coolidge and Holly Colo is another story. Too many Pronghorns."
- "No we are absentee landowners who usually see the land in question once a year so we may not be a representative of the issue in question."
- "Pronghorn hunters driven through electric fences."
- "Hunters tear up fencing- Don't ask permission and if we happen to see hunters they either run or avoid landowners or lie about having permission. Pronghorn don't cause much damage to my fencing mainly hunters are the problem- I do not have crops just pasture."
- "Pronghorn show up now and then especially when I am irrigating, but no problems."
- "They spread bindweed to new areas."
- "I do not know if this is a problem but we have had equipment and other things stolen from our property so not excited to invite any more problem or people onto property."
- "Have not heard any issues from those who lease our property."
- "Mainly fences damaged."

TWO BUTTES PRONGHORN HERD: LANDOWNER SURVEY ADDITIONAL COMMENTS

- "Pronghorn feast on bindweed increasing the increasing the spread. Do whatever the park and wildlife can do to reduce the overall population."
- "I'm tired of people getting on the internet and buying licenses and then showing up around here feeling entitled to hunt where they please. My family farms and ranches 20,000 acres in the area and ONE person has asked us for permission. We spend a lot of time and money- putting signs up, driving around making sure no one is trespassing, and we always catch people. Even with us doing that there is always tracks through our fields from people we didn't catch. Luckily the damage from this has been minor to this point but eventually they will cause a fire or disaster that costs large amounts of money loss for us. To control sizes of herds of animals just shoot some and donate the meat to a food shelter or a welfare program."
- "Only 15 acres farm land on north border, regulate buck licenses as needed."
- "They are no problem, once in a while they will knock down fence. Hard to teach them how to jump LOL"
- "Offer doe tag at a discounted rate (price) to encourage more license sales."
- "The main problem we have is the fences they destroy."
- "There are way too many antelope out there. I commonly see herds of 30-50 head. Any cropland they cross is very difficult to stay ahead of the bindweed on. When it is dry like it is now they destroy what little crop we have as well as create an environment conducive to dirt blowing."
- "As landowner I am troubled by the DOW's approach. There are too many outfitters trying to hunt our area. You need to solicit more advice from the landowners and less from outside sources i.e. Outfitters. At the present, I would like to see less wildlife and hunters."
- "I live in ********* and only visit the property about once or twice a year. The land has been in

CRP for the last 15 years and has a beautiful stand of grass."

- "To decrease herd size you're going to have to do something with the doe population."
- "There are too many does. Increase the number of doe tags. Even offer doe tags at a reduced price to encourage more people to hunt does."
- "We only have 40 acres."
- "Please do what's best for the herd so they can exist for another 60 years. I remember seeing the herd in the 1950's, 60's, 70's."
- "I appreciate and applaud your efforts. However, I have not been in the area for decades. I can't possibly answer the questions in your important survey, I'm very sorry I can't. Please accept my apologies."
- "There is just too many antelope on my property. I cannot understand why there is a need for so many animals? They are NOT endangered species. How about some prairie chickens or turkeys? Thank you for asking, I appreciate it."
- "I feel that there are adequate numbers of pronghorn in the unit 132, I don't know much about unit 139. I haven't encountered a lot of mature bucks in unit 132."
- "I do not reside at our little ranch south of ******so am not there on a daily basis. To my knowledge, we have not seen any pronghorn antelope on our property. The cuprite we have to deal with are coyotes. There is definitely an overabundance of them.
- "Thank you so much for asking the opinion of the land owners/operators who feed all these animals before writing policy for how to manage them. I love wildlife and watching them but I also need to make a living with the crops they eat and destroy. It's a delicate balance."
- "I have had hunters tear down fences and gates to hunt on my pasture land because the herds can get water the runs through my land. Not sure if some of the damage could be from deer and goose hunters?"
- "Quit issuing unsustainable tag numbers and killing off nearly all pronghorn herds in Eastern Colorado. Quit issuing doe tags whereby you kill bred does and cull the herds to nothing. Find a way to fund DOW without excessive tags for revenue. You are sacrificing Colorado wildlife for the sake of revenue. You are terrible stewards of our public game resources. Your herd count algorithms are so far off it is embarrassing- you show herd numbers much higher than actual counts."
- "Seems to me that the landowner has less say in the management of the herds. This was one of the worst years we have had with hunters. Don't like the outfitters. I feel that the outfitters have a bigger voice in the management than the landowners. Decrease the herds, decrease the hunters! DOW needs to let us (the landowners) have a bigger say in the hunting, in all of it. If there isn't a change just remove the herds. The landowners feeds the wildlife, we need more oversight."
- " I live in ******* so am not familiar with the numbers of pronghorn in this area-Most of my land is in grass(CRP) so the animals would love it. Perhaps ******** who rents some pasture from me may give you some information."
- "Absentee landowner only, not there very often, actually would like to see a few more."
- "Thank you for asking our input."
- "I only visit my property a couple of days annually."
- "I live out of state so my input isn't relevant."

- “They have a lot to do with our problem fighting Bindweed!”
- “I think the CPW does a great job on the whole.”
- “Private citizen management not the answer. Feed the homeless with harvested. Direct damage to crops by overpopulation leads some type of disease likely that will attack the pronghorn herds equals then under population.”
- “I would hope that whatever is decided the landowner property will be respected. We have had many things stolen- farm equipment etc. so patrols by officer would be appreciated and there should be checkpoints.”
- “We lease the property and do not physically visit.”
- “We don’t live in ******. We live in ********** we ask some neighbors about the pronghorn problem.”
- “Close to town. Seeing antelope is not common but occasionally occurs.”

TWO BUTTES PRONGHORN HERD: HUNTER SURVEY
DATA ANALYSIS UNIT PH-18

Dear Hunter,

Colorado Parks & Wildlife (CPW) is interested in **your input** on the management of the Two Buttes Pronghorn Herd (Game Management Units 132, 139, and 145).

Your input is a **very important** part of the planning process. The information you provide will help guide management of the pronghorn herd for the next 10 years!

Please help us learn what is most important to you about pronghorn management in this area. Your identity will be kept confidential and the information you provide will never be associated with your name.

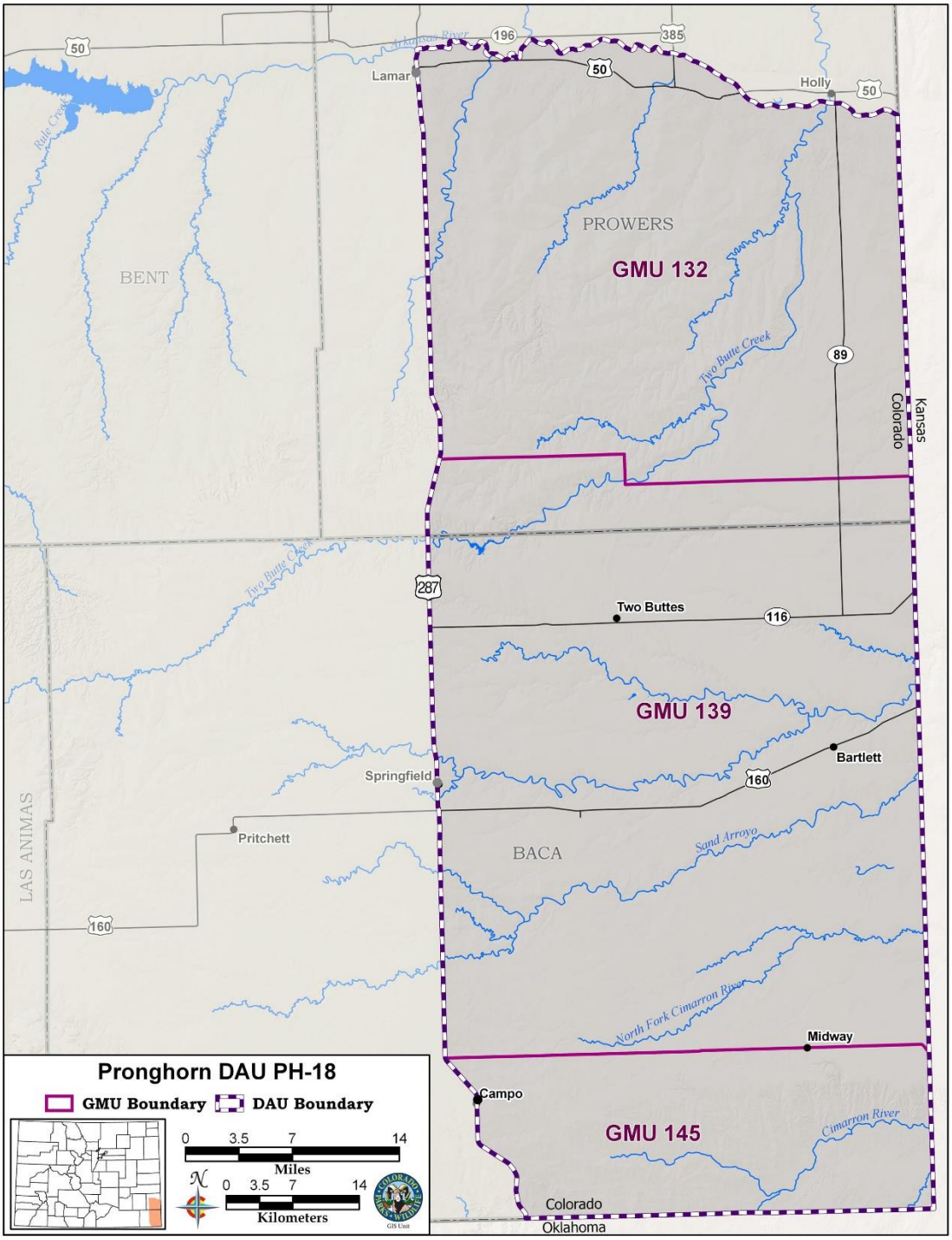
If you have any questions about the pronghorn herd please contact either:

- Jonathan Reitz, Wildlife Biologist, at (719) 691-9130; jonathan.reitz@state.co.us
- Travis Black, Area Wildlife Manager, at (719) 336-6603; travis.black@state.co.us.

Surveys must be completed before **September 1**.

Thank you for participating!

This survey is specific to the Two Buttes Pronghorn Herd Management Unit. The map below is for reference. ***Please answer the following questions concerning pronghorn management in this area only.***



1. **Which of the following year(s) have you hunted pronghorn in the Two Buttes Herd Management Unit? (***Please check all that apply.***)**

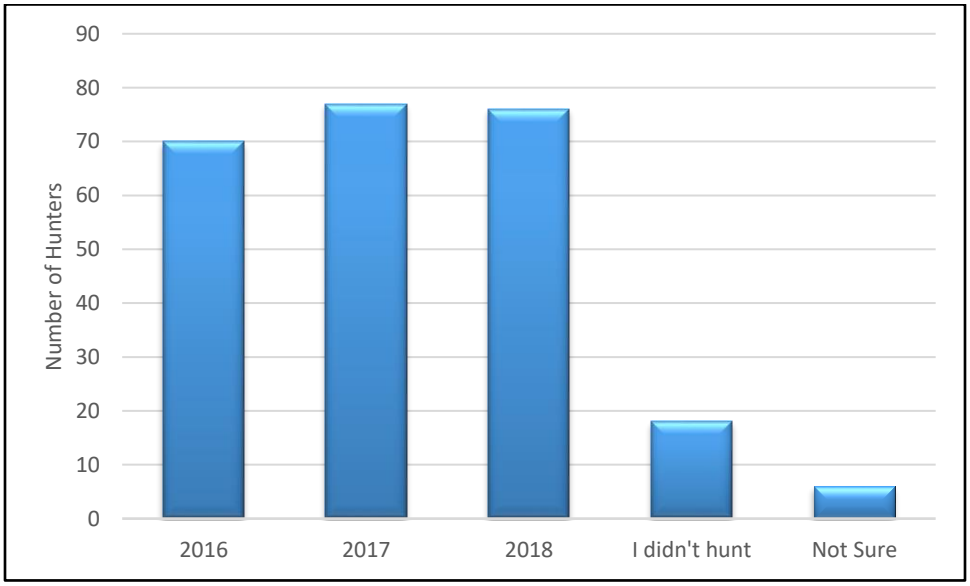
☐ 2016

☐ 2017

☐ 2018

☐ I did not hunt pronghorn in the Two Buttes Herd Management Unit during any of these years. (please skip to question #9)

☐ I am not sure



2. During the previous three years which of the following license(s) did you obtain for the Two Buttes Herd Management Unit? (*Please check all that apply.***)**

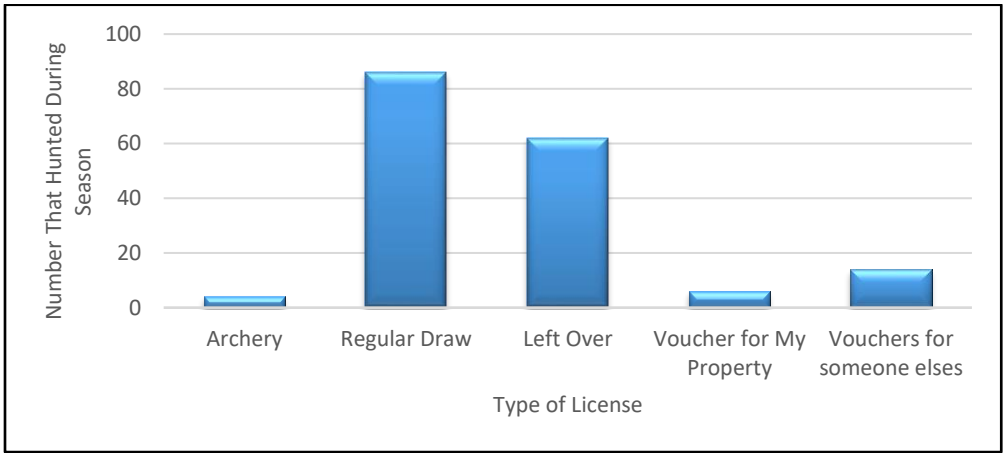
☐ An over-the-counter either sex archery license

☐ A regular draw license

☐ A left over license

☐ A landowner voucher for the property I own or manage

☐ A landowner voucher for another property



3. Do you live within the Two Buttes Herd Management Unit? (*See map above, and check only one***).**

☐ Yes (20%)

☐ No (805)

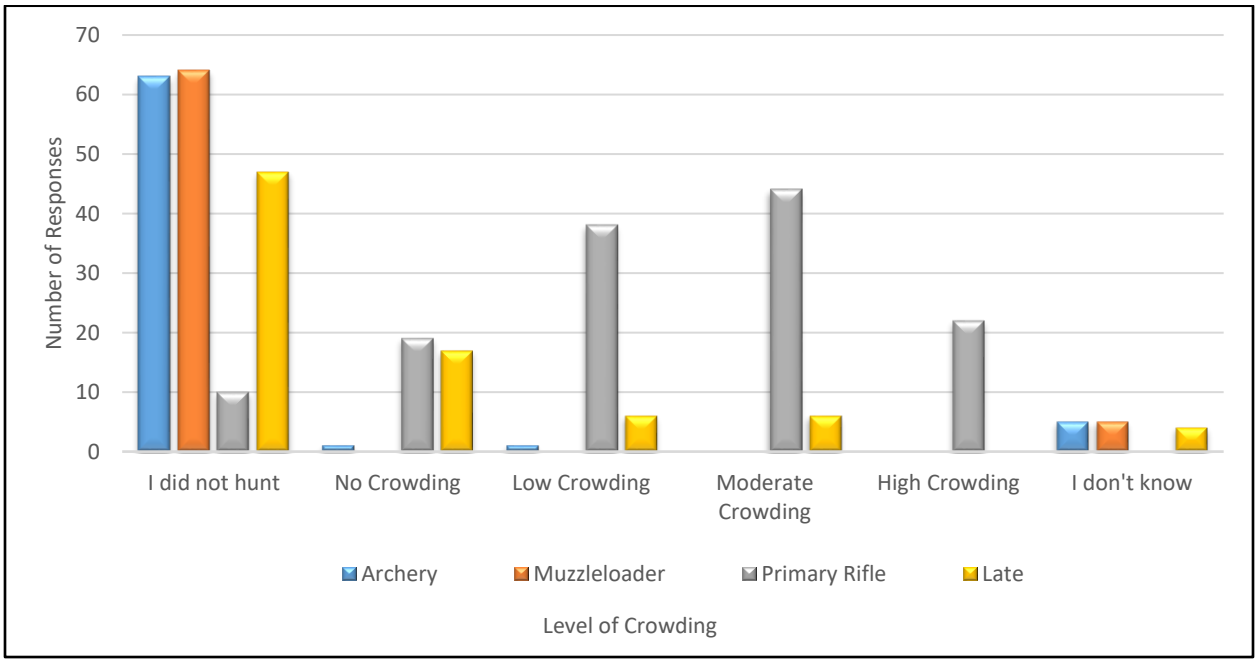
4. How would you rate the <u>quality of pronghorn hunting</u> in the Two Buttes Herd Management Unit for any of the seasons that you hunted from 2016-2018? (*Please check only <u>one</u> response per season.***)**

	I did not hunt this season	Poor	Fair	Good	Excellent	I don't know
Either Sex Archery Season	○	○	○	○	○	○
Muzzleloader Season	○	○	○	○	○	○
Primary Rifle Season (Early October)	○	○	○	○	○	○
Late Season Doe Only Rifle Season (December)	○	○	○	○	○	○

5. How would you rate the level of <u>hunter crowding</u> in the Two Buttes Herd Management Unit for any of the seasons that you hunted from 2016-2018?

(*Please check only <u>one</u> response per season.***)**

	I did not hunt this season	No Crowding	Low level of crowding	Moderate level of crowding	High level of Crowding	I don't know
Either Sex Archery Season	○	○	○	○	○	○
Muzzleloader Season	○	○	○	○	○	○
Primary Rifle Season (Early October)	○	○	○	○	○	○
Late Season Doe Only Rifle Season (December)	○	○	○	○	○	○



6. For the purposes of pronghorn management in the Two Buttes Herd Management Unit, hat is

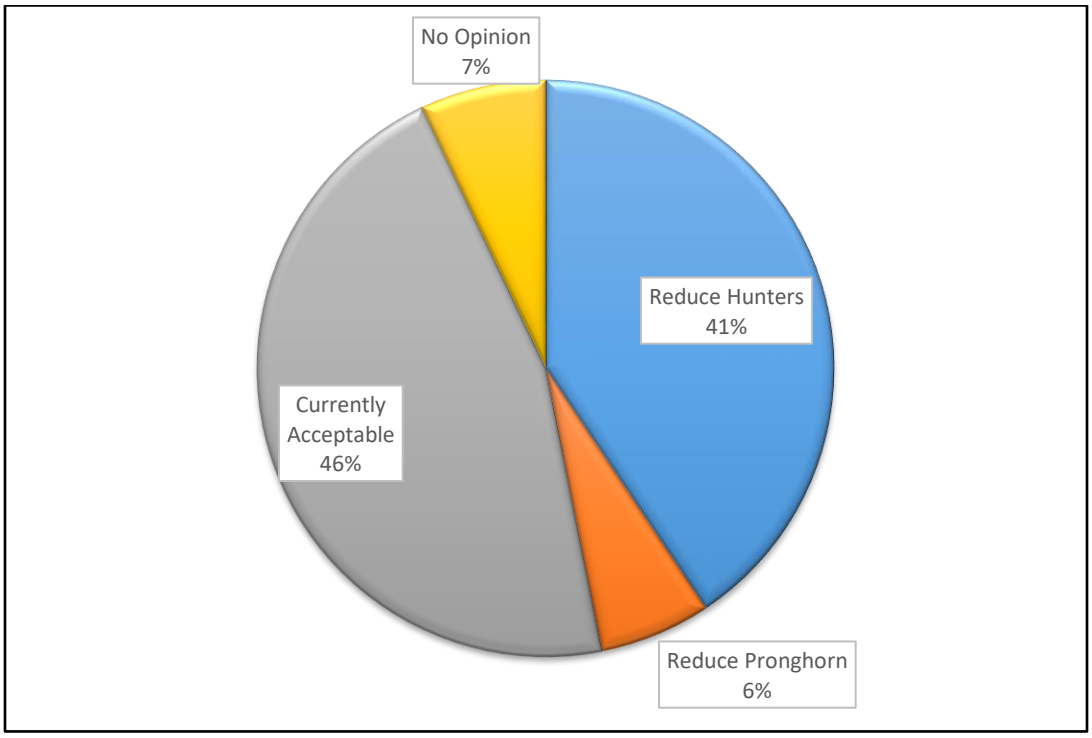
your preference? (*Please check only one.***)**

☐ Reduce the number of hunters (more pronghorn, fewer hunters, harder to draw a license, higher harvest success rates)

☐ Reduce the number of pronghorn (fewer pronghorn, more hunters, easier to draw a license, lower harvest success rates)

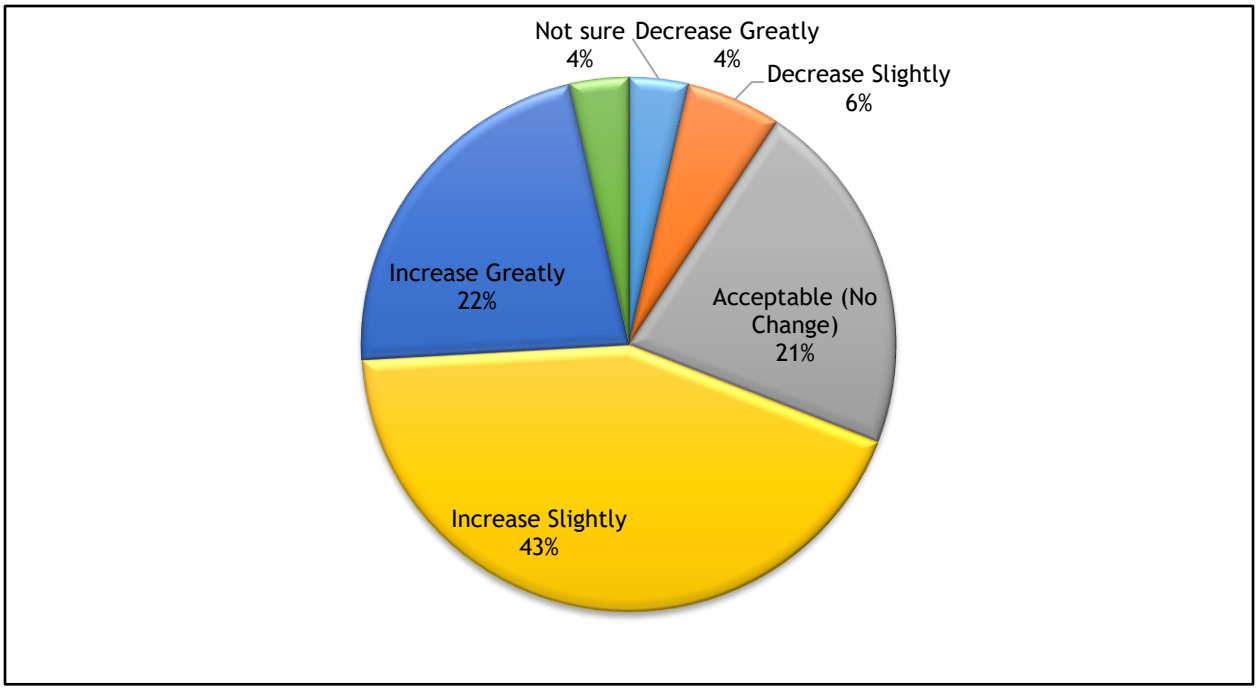
☐ The current numbers of hunters and pronghorn in herd unit are acceptable

☐ No opinion



7. How would you like to see the Two Buttes pronghorn herd population change over the next 10 years? (*Please check only one.***)**

	Decrease greatly (half population)	**Decrease slightly** (~25% fewer pronghorn)	**No change** (current numbers are acceptable)	**Increase slightly** (~25% more pronghorn)	**Increase greatly** (double population)	**Not Sure**
I would like the pronghorn population to:	☐	☐	☐	☐	☐	☐



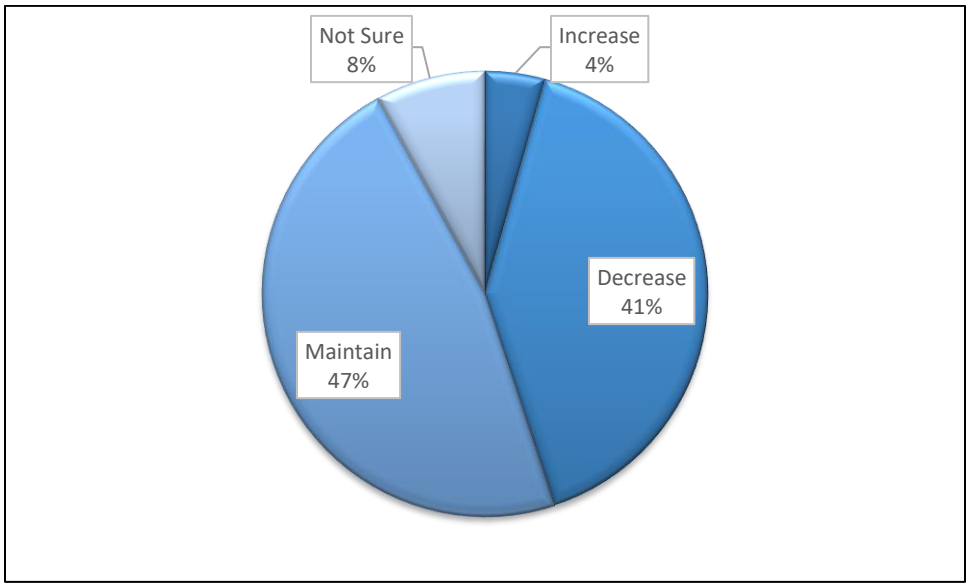
Please read the following brief description about managing male-to-female ratios before answering question 8.

If a pronghorn herd is managed for **increased hunting opportunity**, more buck hunting licenses are made available and buck hunters are generally able to hunt more frequently. This can result in fewer total bucks in the herd (*lower buck-to-doe ratio*) and fewer mature bucks.

If a herd is managed for **increased hunt quality**, fewer buck licenses are issued in order to increase the number of bucks in the population (*higher buck-to-doe ratio*). This generally results in less frequent hunting opportunities and fewer hunters in the field, but it can also result in a greater chance of encountering a mature buck.

8. Which of the following approaches should guide the number of buck licenses allocated in the Two Buttes Herd Management Unit? (*Please check only one.*)

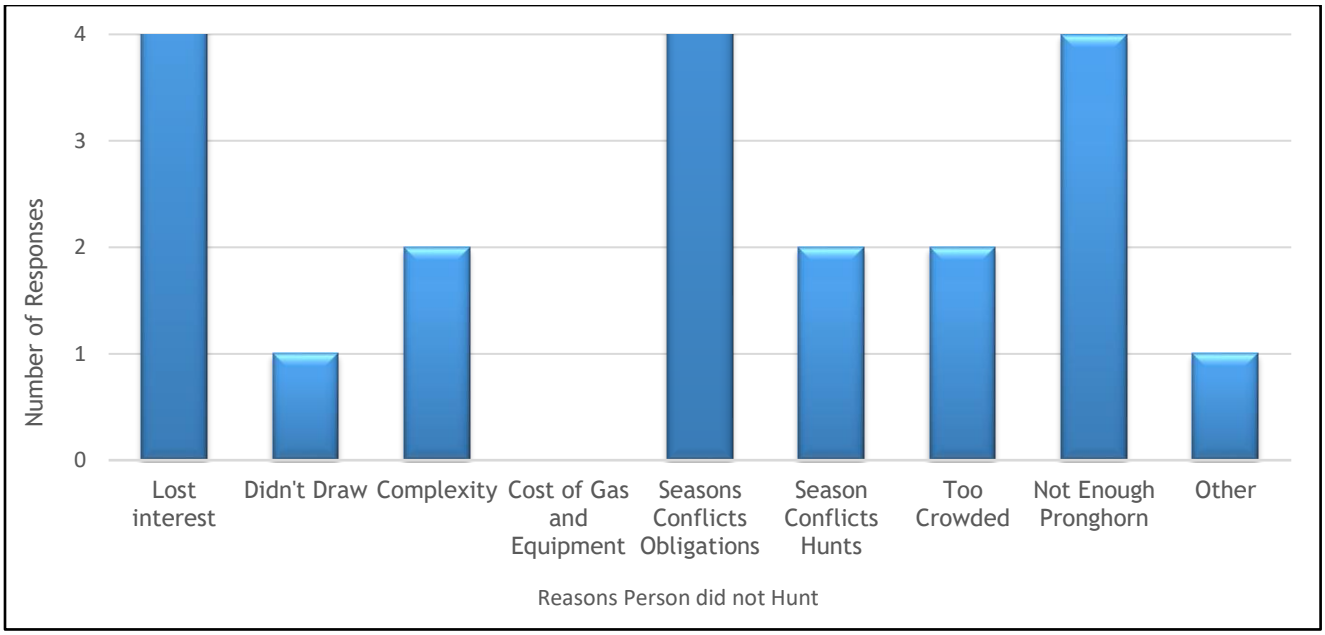
- ☐ Increase the number of buck hunting permits (easier to draw a license, more hunters in the field)
- ☐ Decrease the number of buck hunting permits (more preference points required to draw a license, more bucks in the population)
- ☐ Maintain the current number of buck hunting permits
- ☐ I'm not sure



If you HUNTED pronghorn in the Two Buttes herd unit from 2016-2018, you are DONE with this survey. Please SKIP question #9.

9. Why did you NOT HUNT pronghorn in the Two Buttes Herd Management Unit during 2016, 2017, or 2018? (*Please check all that apply*)

- ☐ I lost interest in hunting pronghorn the year(s) that I had a license
- ☐ Did not draw a license
- ☐ The complexity of hunting regulations in Colorado
- ☐ The cost of gas, equipment, or other expenses
- ☐ Season conflicted with other obligations
- ☐ Season conflicted with other hunts
- ☐ The Two Buttes Herd Management Unit has become too crowded with hunters
- ☐ There were not enough pronghorn where I hunt
- ☐ Other (please specify)



Thank you very much for taking the time to complete this survey. Your input is very valuable to us and will help us better manage your wildlife resources. Please feel free to leave us any additional comments regarding pronghorn management on the space below.

TWO BUTTES PRONGHORN HERD: HUNTER SURVEY ADDITIONAL COMMENTS

- "Gents, I scouted unit 145 and the very south end of unit 139 2 weeks prior to the start of the season. I spent 3 days in the area with 2 full days scouting. Saw only a single buck and one small band of one buck and three does (on private property). Very few watering holes with little if any sign around them. The area is a checkerboard of private, state and Comanche National Grasslands which makes it difficult at times to know if you are within legal hunting areas. I was aware of the potential difficulty of determining exactly where you might be but with correct maps and GPS it was not a hunt stopper.
- I was surprised at the lack of Pronghorn even though success rates were low in this area. My guess was this is not prime short grass habitat and even though it is beautiful prairie country it would not support a large population. Because of the lack of sightings and the lack of sign I decided not to hunt the area. Note: I had a leftover doe tag."
- "I would like to see more emphasis put on letting potential hunters know that most land in the area is private. Recently I have encountered other hunters hunting any herd they happen to drive by regardless of property ownership. I am from the area and know many landowners in the area."
- "I will not hunt there again I put in for pcms 142-3"
- "This hunt was a joke. This animals have been shot at for 12 months They are as wild as I have ever seen. Many people were chasing them with pickups. These animals need patrolled more. I will not do this hunt again. Pickups were everywhere chasing animals."
- "The years that I have went, we ran into a lot of hunters who were not from our area. Our experience has been that out of area hunters were rude and disrespectful to land owners."
- "Tired of trying to get permission to hunt. Land owners revoked and sold out to an outfitter."
- "I hunted unit 145 for 4 days and never saw even one pronghorn. I covered all the aviable public land and feel confident there are zero animals in the area. Very disappointed in the animal quantity in unit 145."
- "Limited access to public land with private parcels causing limited locations to hunt. Hunters seen shooting out of truck while vehicle was moving buck was injured and not recovered."
- "I personally feel that the quality of the hunters is the biggest drawback to this hunt. I always find animals but putting a spot and stalk on animals with people trying to run them down in trucks becomes quite frustrating."
- " Too many people hunting from their trucks and on the road."
- "I recommend that doe permits in this unit be issued as private land only. This would reduce crowding on the public land. Or issue only a percent of doe permits as eligible on public land."
- "Out of state hunters making it tough on locals to fill a tag as well as them having no respect for our land and people. Leaving gates open and letting livestock out, Its unacceptable."

- “We have seen a significant decline in pronghorn numbers in unit 139 in the past several years.”
- “In my opinion it seems that there is a conflict between CPW and private property owners. CPW posts all these license to appease the land owners, but there are no goats on public land. Me being from the other corner of the state do not know where to find private land owners to ask permission plus to hunt for 8 hours and only see 3 goats that did it for me.”
- “I saw about 6 pronghorn, and drove 100’s of miles, unless the population increases greatly, I will never hunt the east side of Colorado, ever again, thanks.”