PRONGHORN MANAGEMENT PLAN
ESCARPMENT HERD
Data Analysis Unit PH-1
GMUs 87, 88, 89, 90, 94, 95 & 951

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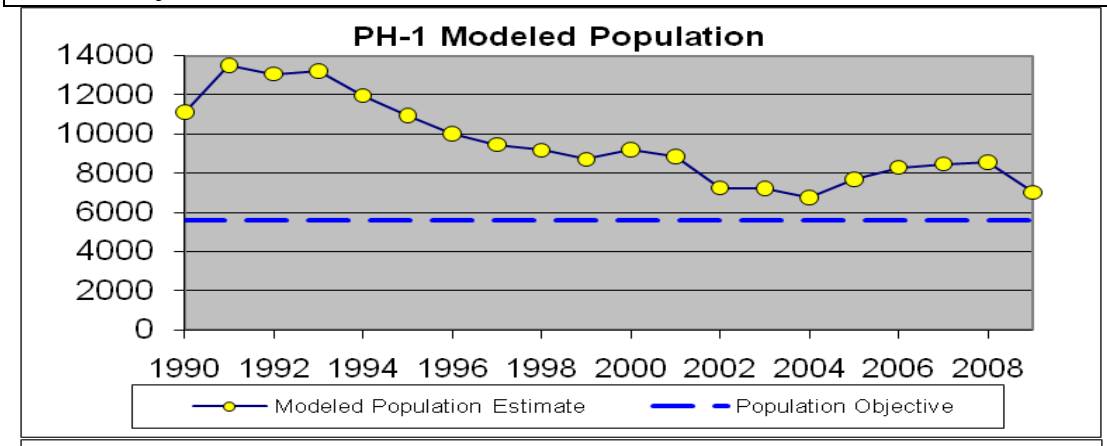
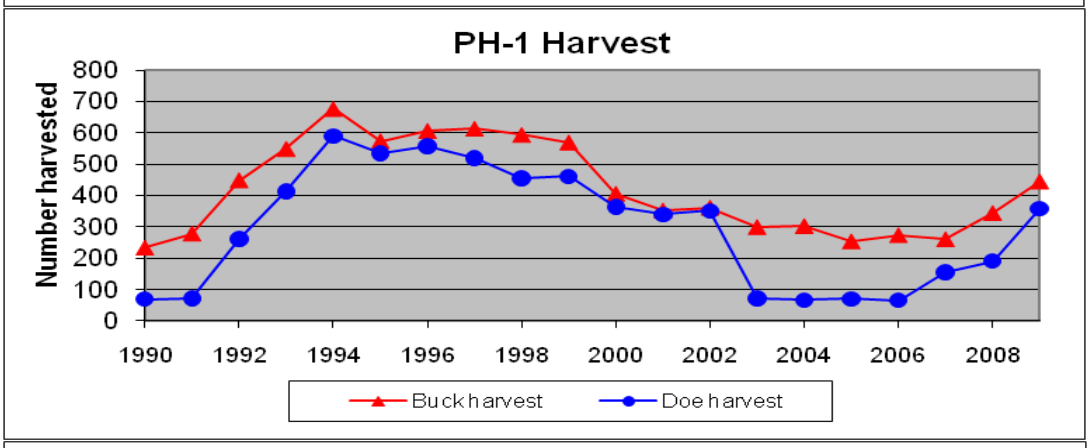
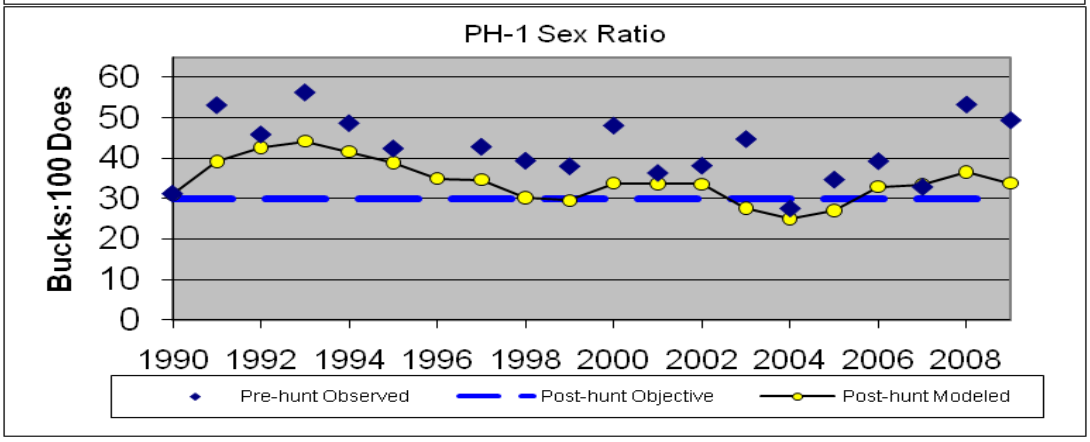
DATA ANALYSIS UNIT PLAN FOR PH-1
EXECUTIVE SUMMARY

GMUs: 87, 88, 89, 90, 94, 95 & 951
Land Ownership: 14,995 sq. mi. (92% private, 5% State, 2% USFS)
Post-hunt Population:
Previous objective: 5,600 2009 Estimate (Modeled): 7,000
Current objective**:** Alt. #2 6,500-7,500
Sex Ratio (Bucks:100 Does):
Previous Post-hunt Objective: 30 2009 Pre-hunt Observed: 49 2009 Post-hunt Modeled: 34
Current objective: Alt. #3 30-35 bucks:100 does







Background

The Escarpment DAU (PH-1) is a large pronghorn unit in northeastern Colorado. While the DAU is mostly private land, there is a significant public land resource in GMUs 87 and 88; the Pawnee National Grasslands. Higher concentrations of animals tend to be in the northern and western parts of the DAU with lower numbers of animals in the east and south-eastern parts. There is a degree of seasonal movement to the north into Wyoming, with increased pronghorn movement back into Colorado during the winter months.

Pronghorn buck hunting opportunity in PH-1 is in high demand. Resident preference points required to draw a buck rifle license in GMUs with public land were 6-8 in 2009. Private land GMUs required the same or fewer points. Antlerless licenses are also in demand and are all taken in the draw, with some doe hunt codes requiring preference points.

Two significant developments to PH-1 population management have occurred in the last 10 years. While most of PH-1 has been impacted by long-term drought conditions, the summer of 2002 was particularly dry and observed age ratios that year were under 20 fawns:100 does. This led to a near age-class loss in recruitment in 2002 and a decline in the modeled population. However, use of a new population estimation survey technique in 2008 and 2009 in PH-1 indicated the population was actually larger than had previously been modeled. The addition of this new data further refined the PH-1 population model, indicating that an evaluation of the old objective, relative to the new population estimate was necessary.

Significant Issues

Pronghorn numbers are a concern to a segment of landowners in PH-1. While game damage payments are not large, there is an underlying sentiment from many landowners, particularly wheat farmers, that there are too many pronghorn. This feeling becomes particularly evident when winter herds of pronghorn are concentrated and consistently utilize specific fields. However, there is also a large demand for pronghorn hunting opportunity in Colorado; drawing a license in a unit like PH-1 with public land and within a short drive time of the urban Front Range is particularly in demand. The desire on the part of hunters for more opportunities and more access to hunt pronghorn was expressed clearly during the public outreach process. Development of private (and potentially public) lands for wind energy may become an issue when viewed for both direct and indirect impacts to pronghorn populations in PH-1.

Management Alternatives

Current 2009 post-hunt population projection is 7,000 animals with a modeled post-hunt ratio of 34 bucks:100 does.

Population Objective Alternatives:

Population Alternative #1: 5,000-6,000

This alternative would be a ~25% reduction from 2009 post-hunt population

Population Alternative #2: 6,500-7,500

This alternative represents a range bracketing the 2009 post-hunt population

Population Alternative #3: 8,000-9,000

This alternative represents a ~20% increase from 2009 post-hunt population

Population Alternative #4: 10,000-11,000
This alternative represents a ~50% increase from 2009 post-hunt population

Herd Composition-Sex Ratio Objective Alternative

Composition Alternative #1: 20-25 bucks:100 does
This alternative represents a decrease from the current ratio objective
Composition Alternative #2: 25-30 bucks:100 does
This alternative represents a decrease/status quo from current objective
***Composition Alternative #3*:** 30-35 bucks:100 does
This alternative represents an increase/status quo from current objective

Preferred Alternatives

Population Alternative #2: 6,500-7,500
***Composition Alternative #3*:** 30-35 bucks:100 does

This alternative stabilizes the population at the current herd size and represents a compromise between reducing the herd to the previous objective (which has been shown to be obsolete based on new survey methods) or increasing it over the present level. Public comments are nearly split on increasing or decreasing current numbers, with a slight majority advocating an increase in population. Composition alternative #2 reflects the status quo (30 bucks:100) at the low end of the range, and an increase in ratio at the upper end (35 bucks:100).

This plan was approved by the Colorado Wildlife Commission on Jan 5th, 2011.

ESCARPMENT HERD
PRONGHORN MANAGEMENT PLAN
DAU PH-1 (GMUs 87, 88, 89, 90, 94 & 951)

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DATA ANALYSIS UNIT PLAN FOR PH-1

INTRODUCTION

The purpose of a Data Analysis Unit (DAU) plan is to give the Colorado Division of Wildlife (CDOW) direction in managing a big game species in a given geographical area. It identifies suitable habitat, gives the herd history and current status, and identifies issues and problems. Key features of a DAU plan are the herd size and herd composition objectives, which are developed after considering input from all interested entities. CDOW intends to update these plans as new information and data become available, at least once every ten years.

DAU PLANS AND WILDLIFE MANAGEMENT BY OBJECTIVES

The Colorado Division of Wildlife manages wildlife for the use, benefit and enjoyment of the people of the state in accordance with the CDOWs Strategic Plan and mandates from the Colorado Wildlife Commission and the Colorado Legislature. Colorado's wildlife resources require careful and increasingly intensive management to accommodate the many and varied public demands and growing impacts from people. To manage the state's big game populations, the CDOW uses a "management by objective" approach (Figure 1). Big game populations are managed to achieve population and sex ratio objectives established for Data Analysis Units.

DAUs provide the framework to manage individual herds of big game animals. DAUs are generally discrete geographically, and attempt to identify an individual big game population. However, individual animal movements may at times straddle or encompass more than one DAU. While DAU boundaries are administrative, they represent the best way to encompass the majority of a herd within a biological area, and allow the most practical application of management tools such as hunting, to reach objectives. DAUs are typically composed of smaller areas designated as game management units (GMUs), which provide a more practical framework where the management goals can be refined and applied on a finer scale, typically through hunting regulations.

The DAU plan process is designed to balance public demands, habitat capabilities and herd capabilities into a management scheme for the individual herd. The public, hunters, federal land use agencies, landowners and agricultural interests are involved in the determination of the plan objectives through input given during public meetings, the opportunity to comment on draft plans and when final review is undertaken by the Colorado Wildlife Commission.

The objectives defined in the plan guide a long term cycle of information collection, information analysis and decision making. The end product of this process is a recommendation for numbers of hunting licenses for the herd (Figure 1). A traditional DAU plan addresses two primary goals: the number of animals the DAU should contain and the sex ratio of those animals expressed as males:100 females. The plan also specifically outlines the management techniques that will be used to reach desired

objectives. The fact that DAU plans are reviewed and revised on a 5-10 year basis provides assurances against the often-dynamic fluctuations experienced by Colorado's big game herds. Changes in land development, public attitudes, hunter success, hunter access, research results, disease prevalence and game damage may all contribute new information needed when reviewing or revising a DAU plan. The CDOW strives to maintain a tight link between the inclusion of publics in the development of population objectives and the yearly iteration of data collection, analysis and renewed decision-making to reach those objectives.

Individual DAUs are managed with the goal of meeting herd objectives. Herd data, which is typically collected annually, is entered into a computer population model to get a population projection. The parameters that go into the model include harvest data from hunter surveys, sex and age composition of the herd gathered by field surveys, and mortality factors such as wounding loss and winter severity, generally acquired from field observations. The resultant computer population projection is then compared to the herd objective, and a harvest calculated to align the population with the herd objective.

COLORADO'S BIG GAME MANAGEMENT BY OBJECTIVE PROCESS

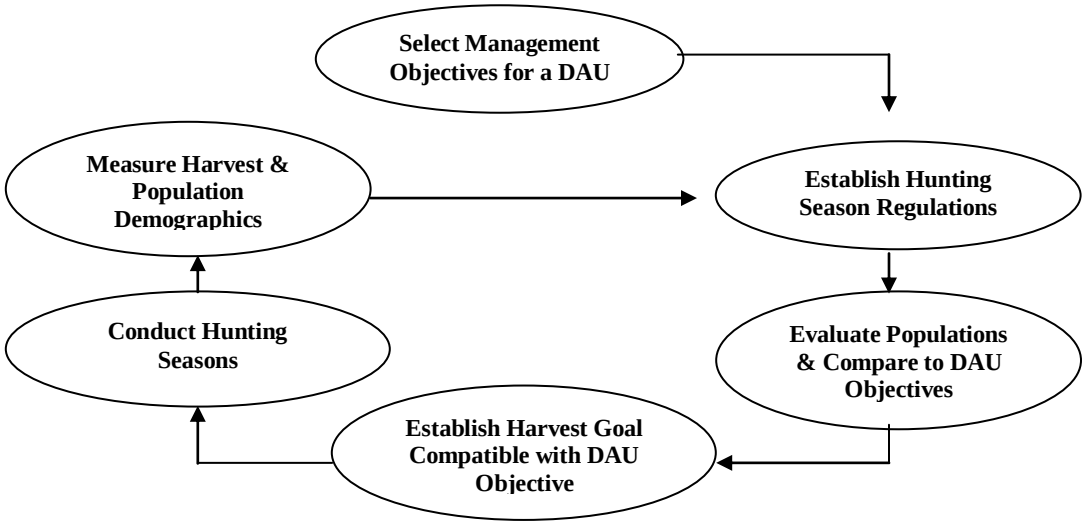

Figure 1. Management by objectives process used by the CDOW to manage big game populations on a DAU basis.

DESCRIPTION OF DAU PH-1 AND HABITAT

Geography

Pronghorn Data Analysis Unit (DAU) PH-1 is located in northeastern Colorado and encompasses most of Weld County, much of Logan and Morgan Counties and a small amount of Sedgwick County. It consists of Game Management Units; 87, 88, 89, 94, 95 and 951. PH-1 is bounded on the north by the Nebraska and Wyoming state lines, on the east and south by Colo 138, Colo 6, Logan CRs 6 ,17.7, Washington CR 58, Morgan CR W.7, 2nd St in Snyder, Colo 71, Morgan CRs W.5, 28, W, and 13.5, Colo 144, I-76 and Colo 7. The western boundary is I-25. Elevations within PH-1 range from 3,448 feet to 6,348 feet.

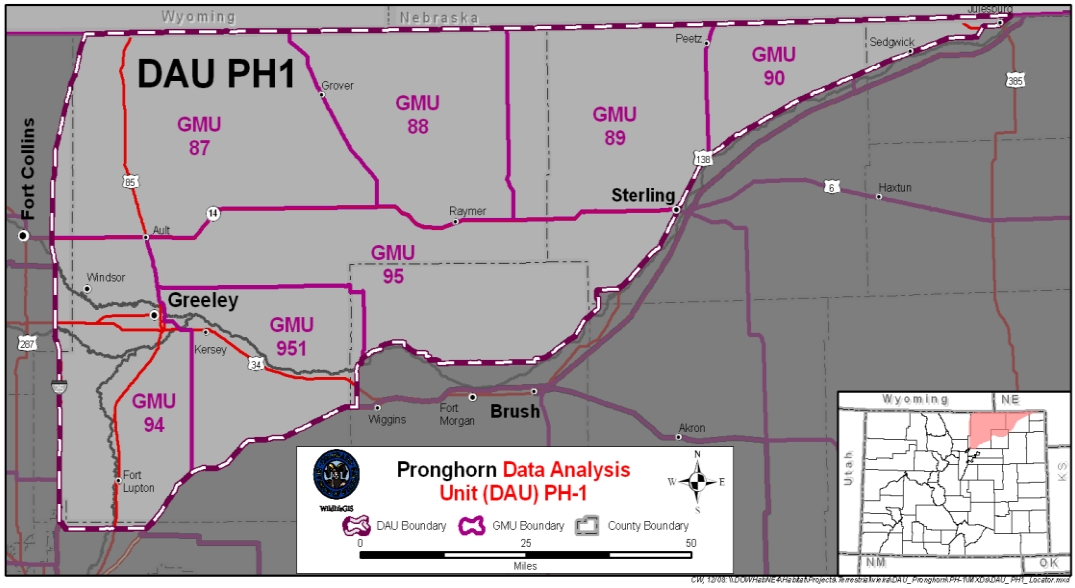

Figure 2. PH-1 Geography and GMU boundaries

Climate

The climate in PH-1 is characteristically dry with low humidity. Seasonal weather patterns are usually mild. However, occasional winter storms can produce significant snowfall accumulations across PH-1.

Land Ownership and Use

The surface area of PH-1 encompasses approximately 14,995 square miles. Privately owned lands comprise 92% (13,795 square miles) of the DAU, State Land Board comprises 4.7% (705 square miles) and US Forest Service lands (Pawnee Grasslands) account for 2% (300 square miles). The remaining 1.3 % (195 square miles) of land is owned by various city, county, state and federal agencies.

While much of PH-1 lacks high human densities, the southwestern portion of the DAU surrounding Greeley and all of GMU 94 represent suburban levels of human development. Very little of GMU 94 could still be considered pronghorn habitat due to human impacts. The majority of private land use in PH-1 is dedicated to agriculture.

Agricultural practices in PH-1 include the use of rangeland for livestock production and dryland farming. There is some limited irrigated agriculture in the southwestern part of the DAU, along with many parcels adjoining the South Platte riparian corridor.

Wind energy development in the northern and northeastern parts of the DAU has greatly escalated in pace over the last 5 years. Until 2005 there was only one wind energy project in the DAU (GMU 87), however since that time at least 3 other, larger projects have come online.

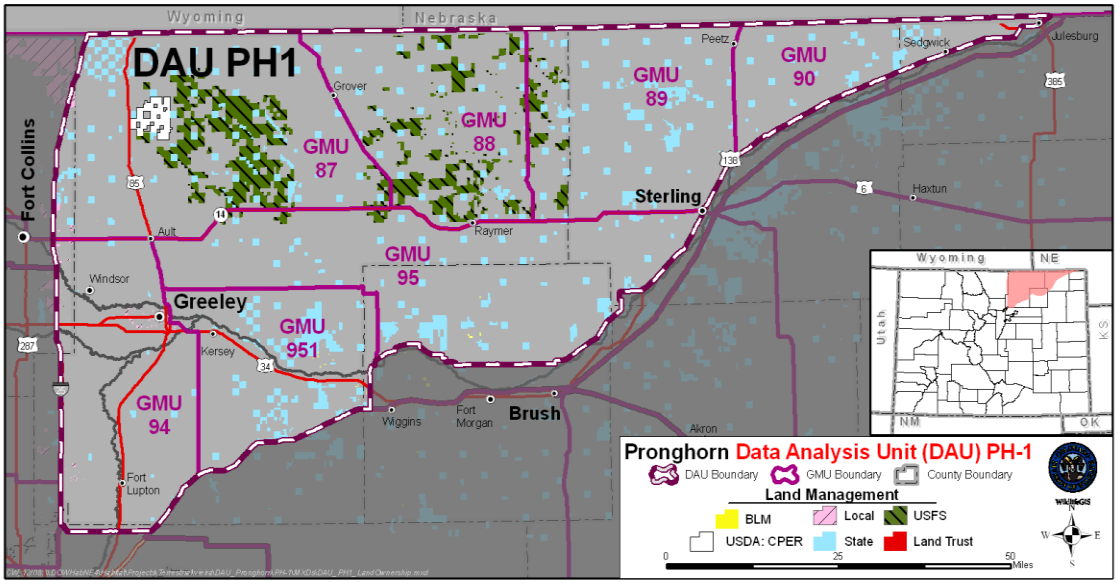

Figure 3. PH-1 Land Ownership

Vegetation

PH-1 is located in northeastern Colorado, which is generally classified as Central Shortgrass Prairie. The most commonly occurring habitat within the Shortgrass Prairie is open steppe. Open steppe is characterized by blue grama and buffalo grass, other less dominant species include fringed sage, rabbitbrush and prickly pear cactus. Plant species that often occur in riparian habitat include cottonwood, sandbar willow and widespread exotics such as Russian olive and Canada thistle.

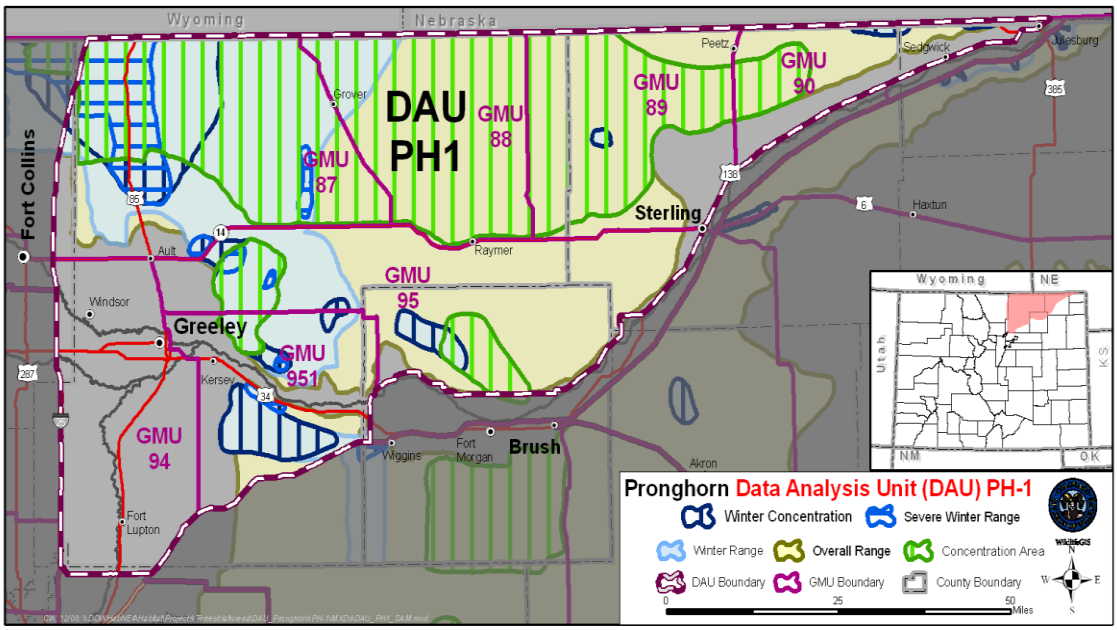

Figure 4. PH-1 Pronghorn Habitat

HERD MANAGEMENT HISTORY AND BACKGROUND

The DAU has been managed with the post-hunt objective of maintaining the herd at 5,600 animals with a buck:doe ratio of 30:100.

History

PH-1 has historically been one of the larger pronghorn herds in NE Colorado, providing significant hunting opportunity, mostly on private land. This herd is managed on a landscape with both public and private rangelands as well as agriculture, primarily dryland wheat production. Based on anecdotal evidence from the 1970s-80s, as well as from population modeling exercises, it appears this herd was larger 30-40 years ago than it is today. A study was initiated in 1985 to evaluate interstate movements to the north into Wyoming to better understand seasonal changes in pronghorn densities (CDOW internal publication, 1987). A total of 453 animals were marked in GMUs 87 and 88. From the data gathered it appears that there was a seasonal summer movement northward into Wyoming towards larger, wetter, more open pastures. During the fall rut this movement reversed and those animals, primarily does, returned to Colorado. Observations of marked pronghorn also suggests that neither Wyoming or Colorado's hunting seasons contributed to any large scale movements between states. The conclusion of the author was that pronghorn in 87, 88 and 95 did not have any definite migration patterns. This question of interstate movement to Wyoming is still one of interest to managers, as wheat damage concerns from landowners typically occur in winter when pronghorn densities are hypothesized to be higher, or more concentrated, than during the fall hunting seasons.

Until regulation changes within the last six years, PH-1 had been managed with limited buck and doe rifle licenses, limited statewide buck and doe muzzleloading licenses and statewide, unlimited, either-sex archery licenses. In 2003 GMU 87 was limited for archery, followed by GMU 88 in 2007. Both were limited due to inequities between demand and harvest by method of take. Muzzleloading licenses also were changed from statewide to DAU-specified in 2007. These changes allowed for a more equitable allocation of harvest proportion among methods. Antlered muzzleloader and either-sex archery licenses still require far fewer preference points than buck rifle licenses in GMUs 87 and 88, but the proportion of harvest in the last 3 years has been much more in line with proportion of demand.

Population and Sex Ratio

Estimating population numbers of wild animals over large geographic areas is a difficult and approximate science. Numerous attempts have been made to accurately count known numbers of wild animals in large fenced areas. All of these efforts have failed to count 100% of the animals. The CDOW recognizes the difficulties of estimating the size of pronghorn populations as a challenge in managing populations and attempts to maximize the accuracy of these estimates by using the latest technology and inventory methodology available. As better information and techniques become available (e.g., new estimates of survival/mortality, wounding loss, sex ratios, density, or new modeling techniques and software) they are evaluated and used where appropriate. The population estimate presented in this document should, therefore, not be considered a completely accurate enumeration of the animals in the DAU.

A relatively new method for estimating population size was initiated in 2008 in PH-1. Aerial distance sampling is a survey method that allows the development of a sightability probability for detecting pronghorn groups at various distances from the airplane. The fixed-wing aircraft flies a number of randomly assigned transects and collects data on the number of groups seen, group size, airplane height above ground, and distance of each group to the plane. Using these data and the sightability curve (detection function), a pronghorn density estimate along the surveyed transect line can be calculated. Transect densities are then extrapolated over the entire survey area to obtain a population estimate and confidence interval for the DAU. In the past, minimum counts (trends) of overall pronghorn numbers were all that were available. This new method provides a measure of precision (standard error or 95% confidence interval) to objectively assess the estimate.

Computer population models created prior to 2008 showed the herd to be over-objective until 2002 when drought impacts on fawn recruitment drove the model below 5,600. Conservative doe license allocation in the following years suggested that the herd was returning to long-term objective. With the inception of aerial distance sampling, population estimates with confidence intervals were obtained for both pre-hunt 2008 (10,000) and pre-hunt 2009 (7,880). Once integrated into the population modeling process, these 2 years of herd estimates significantly refined the PH-1 model. This new methodology is more precise and more accurate than previous minimum counts. Once these data were included in the modeling process a significant realignment occurred in the PH-1 model. This adjustment to the modeled population was significant in terms of

increasing the current projected population level, but also by creating a relatively obsolete former long-term objective. The current objective of 5,600 was created without the benefit of these population estimates and therefore comparisons between that objective and current modeled estimates should be viewed on a relative basis. The 2009 post-hunt model indicates that the population has actually been over-objective for the longer term and is currently in the 7,000 range. The graph shown below reflects the inclusion of the population data now used in the modeling process, previously modeled population projections did not indicate the herd was so far over-objective in the 1990s.

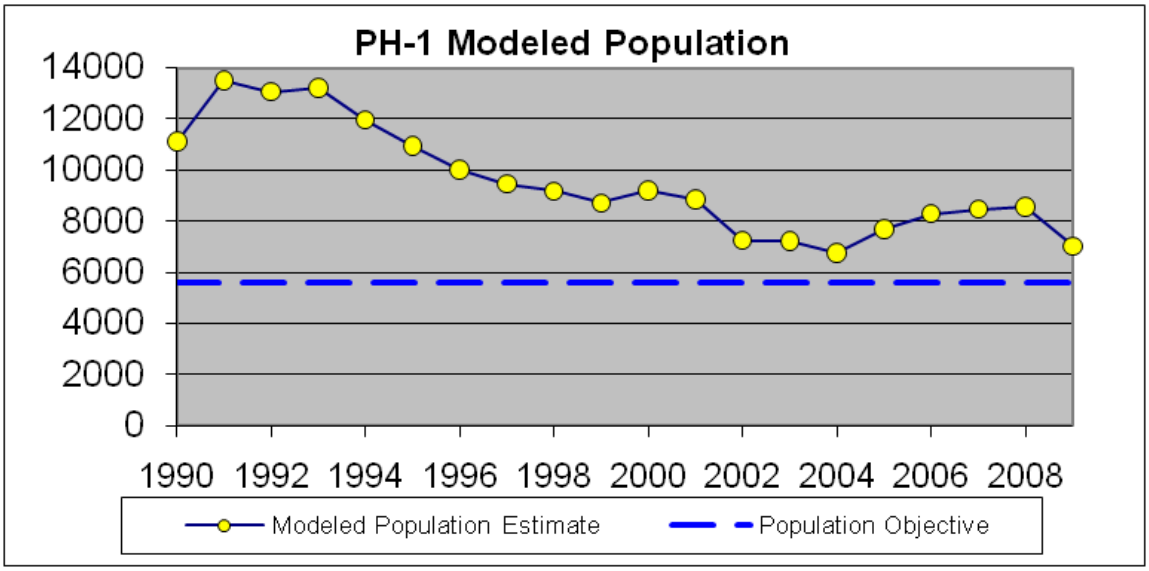

Figure 5. PH-1 Population Estimate and Objective

Pre-hunt buck:doe ratios in PH-1 have averaged 42 bucks:100 does over the last 18 years. In general, pre-hunt buck:doe ratios have been at or above the level needed to reach the post-hunt long-term objective of 30 (Figure 6). There have been a few years since 2000 when the observed ratios were in the 30s; this would have put the post-hunt buck ratio slightly under objective. The modeled post-hunt 5-year average was 33 bucks:100 does with a 2009 post-hunt modeled ratio of 34:100. The observed 2009 ratio (pre-hunt) of 49 bucks:100 does is well over objective although it is unclear why observed ratios in 2008 and 2009 represent such large increases from the lower observed ratios during the previous 4 years.

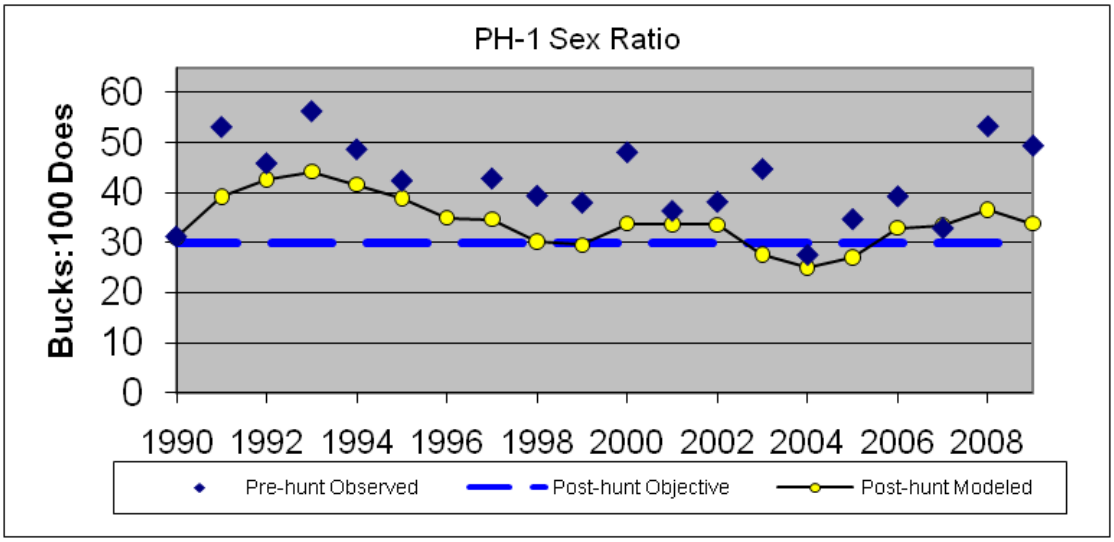

Figure 6. PH-1 Sex Ratios

Licenses

License levels in PH-1 have varied greatly in the last decade mostly due to changes in population levels and recruitment related to the ongoing effects of drought. The highest license levels in recent years were in the late 1990s; 735 buck rifle and 815 doe rifle licenses were issued for the DAU in 1996. Both buck and doe license numbers decreased slightly over the following 7 years until the profound impacts of the drought were observed on fawn recruitment during classification flights in the summer of 2002. The resulting reduction in licenses in 2003, particularly on antlerless tags, was quite pronounced. Doe rifle licenses in 2003 were cut to 105 for the entire DAU, with 295 tags available for bucks.

Until 2007 muzzleloading hunters needed to draw one of the relatively few statewide buck or doe tags to hunt in PH-1. In 2007 all DAUs in Colorado became specified for muzzleloading and since then 20 buck and 15 does licenses have been issued each year in PH-1.

Archery hunting PH-1 was historically on an over-the-counter, unlimited either-sex license. In 2003, GMU 87 was limited for archery as the proportion of bucks harvested by archers relative to rifle hunters, based on demand, was skewed. Archers were enjoying high success rates during the drought conditions and using OTC licenses were harvesting 3-4 times the proportion of bucks, relative to demand, that rifle hunters were. This was largely evident in the public land units of GMUs 87 and 88. After archer numbers were limited in GMU 87 in 2003, much of the OTC pressure moved into the adjoining public land unit, GMU 88, and the same equity issues arose again. GMU 88 was limited in 2007 to address this problem. Currently the DAU is managed with statewide, unlimited OTC archery licenses in GMUs 89, 90, 95 and 951 and limited buck and doe archery licenses in GMUs 87 and 88.

Harvest

Mirroring the trend in license numbers, pronghorn harvest in PH-1 has varied significantly since 1990. Both buck and doe harvest was at a relatively low rate in 1990 (233 antlered, 69 antlerless), followed by an upswing that peaked in 1994 with 677 antlered and 590 antlerless pronghorn taken. Harvest slowly declined through the rest of the 1990s and stabilized for the 3 years from 2000-2002 with around 350-400 pronghorn of each sex taken each year. Following the 2002 pre-hunt classification flights were a record low of 20 fawns:100 does were recorded, 2003 doe licenses were greatly reduced to a point where only approximately 70 does were harvested per year from 2003-2006. Until the dramatic doe license reductions in 2003, annual buck and doe harvest numbers had been relatively similar for the past 13 years (see Figure 7). From 1990-2003 buck harvest was often ~10-20% higher than doe harvest but the between year trends were very similar. Buck harvest also decreased slightly, but this was an artifact of a much smaller change in license numbers compared to the doe component. Post-2003 buck harvest stayed just under 300 until 2008, when herd size estimates (and ratios) indicated more male off-take was possible, so licenses were increased accordingly.

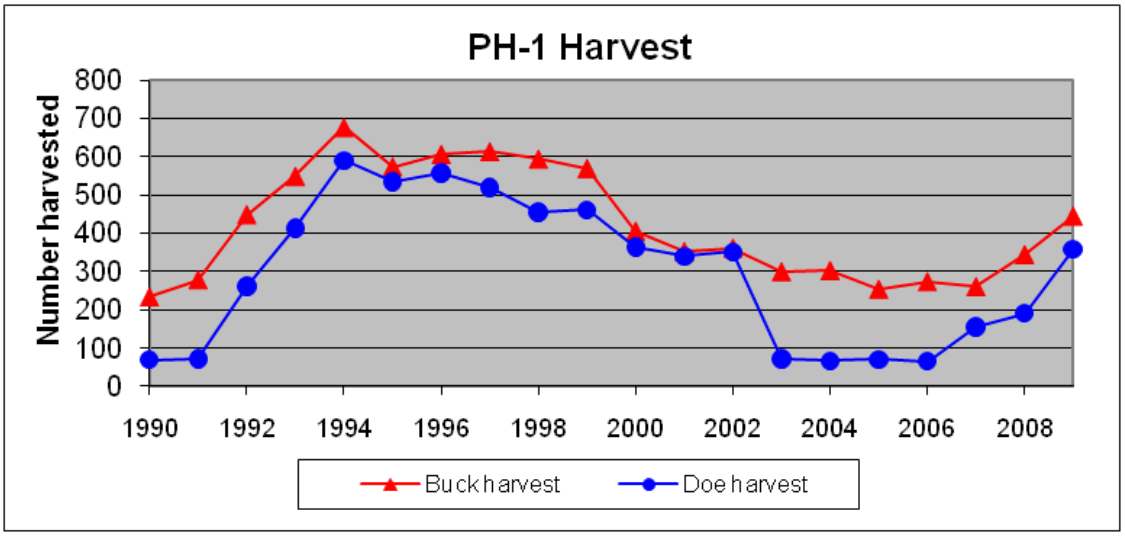

Figure 7. PH-1 Harvest

Due to problems in breaking out data by method of take in the early 1990s, the graph shown below (Figure 8) begins in 1997, the year with the highest harvest over the last 13. Mirroring the overall harvest trend, both buck and doe rifle harvest decreased between 1997-2004. Buck rifle harvest stabilized somewhere at the end of that period at just under 300 animals and has stayed at that level through 2008. As a result of increased buck licenses due to high sex ratios, buck harvest climbed to nearly 400 in 2009. All of the antlerless license reductions imposed in 2003 where in doe rifle hunts. Archery and muzzleloader licenses were either-sex unlimited and statewide, respectively, at the time so managers had no control over harvest from those methods. Therefore, to increase the population the only reductions in female harvest that could be made were in rifle hunt codes. Doe rifle harvest stayed at a relatively low level until 2008, when population

estimation improvements indicated a larger herd than previously believed and therefore more female harvest was necessary.

Both archery and muzzleloader overall harvest has been under 100 since 1997. Archery harvest peaked in 2002 at 92 bucks and 13 does harvested by 435 hunters. Harvest declined in 2003; this was directly related to GMU 87 being changed from an over-the-counter archery tag to a limited license that year and the subsequent reduction in archery pressure.

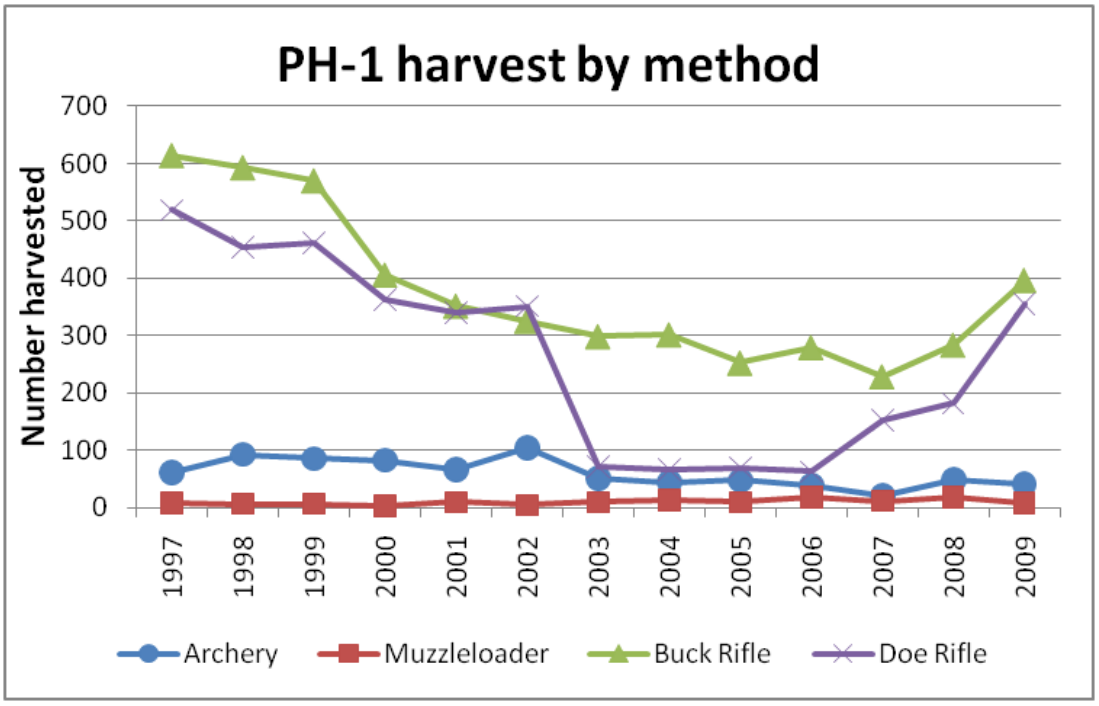

Figure 8. PH-1 Harvest by method of take

Success Rates

Harvest success rates, calculated as number of pronghorn harvested divided by number of hunters afield, have been relatively static across rifle and archery methods of take over the last 13 years. The trendline on muzzleloader success shows an increase in success, particularly from 2004-2008 (see Figure 9). Success rates were around 20% in the later 1990s, but increased to an average of around 45% during the 5 year period of 2004-2008. This success rate includes both doe and buck muzzleloader hunters, who totaled between 20 and 42 hunters annually over the last 10 years. It may be that the small number of muzzleloader hunters in the DAU contributes to a very variable success rate, with a small increase or decrease in harvest making a significant difference in overall success rate based on the proportional change.

Buck rifle success has ranged from a low of 83% up to nearly 100% in some years. Doe rifle success has been lower, typically between 65%-75% with a few years of higher success. While there certainly are more does on the landscape, this lower doe success rate may be a reflection of hunters hunting less days, or with less intensity, for

females than they would for males. Preference point levels also suggest that a buck hunt is a less frequent event for hunters (as it requires 2-3 times the preference points than a doe hunt), and perhaps hunters in PH-1 hunt "harder" for a buck.

Archery success in PH-1 has averaged near 20% for the last 13 years, a relatively high success rate for a pronghorn unit where a good portion of harvest comes from public land. Archers in 2008 enjoyed the highest success rate of the last 13 years with 26% of hunters harvesting either a buck or doe.

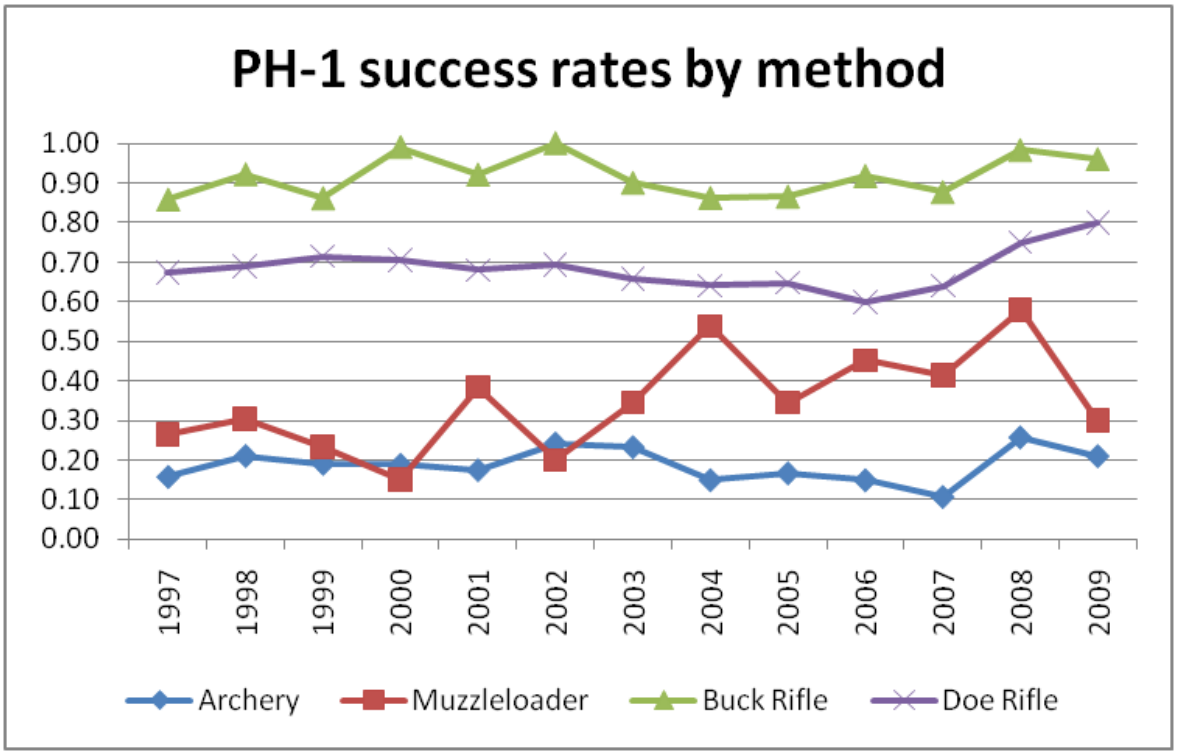

Figure 9. PH-1 Success rates by method of take

Disease

Disease is not an issue in PH-1. While chronic wasting disease has been detected in deer, elk and moose GMUs in and adjoining the DAU, to date the disease has never been diagnosed in pronghorn anywhere.

Game Damage

There is currently no appreciable level of pronghorn game damage in PH-1. Over the last 24 years (through 2008) there have only been three claims made by landowners with damages ranging from $300 to $870.

Habitat Management

Pronghorn habitat in PH-1 will likely be impacted in the future by rural housing development in the western and southern parts of the DAU and by wind energy development in the northern parts of the unit. Fencing, irrigated agriculture and fragmentation associated with human development have already reduced the available pronghorn habitat in some western portions of GMUs 87, 95 and 951. A newer and less

understood impact to habitat in PH-1 is wind energy development. Impacts to pronghorn herd population performance, vital rates, etc are still largely unknown but there is a direct loss of habitat due to the development footprint. Road density, vehicle use, and electricity transmission lines are also increasing across pronghorn habitat as a function of wind energy development.

The status of future Conservation Reserve Program (CRP) contracts in PH-1 may also produce changes in pronghorn habitat. If many landowners chose to not re-enroll current CRP lands and put them into agricultural production this could impact pronghorn in PH-1 in unknown ways.

CURRENT HERD MANAGEMENT

Current Post-hunt Population

Based on the 2009 post-hunt population model, the herd in PH-1 is currently near 7,000 animals (see Figure 5). This is above the long-term objective of 5,600 but until transect sampling for population estimation began in 2008, there weren't any rigorous population estimation data available and the herd was believed to be smaller. In the last year since those refined estimates became available, management has focused on stabilizing herd numbers until a rewrite of the DAU plan was accomplished.

Current Sex/Age Composition

Computer modeling projects the 2009 post-hunt sex ratio as 34 bucks:100 does (Figure 6). The pre-hunt August 2009 observed ratio was 49 bucks:100 does. The 3-year average observed pre-hunt ratio is 45 bucks:100 does. These high observed ratios are sufficient to reach the long-term post-hunt objective of 30 bucks:100.

Current Management Strategies/Problems

The current management strategy is to maintain/increase harvest pressure to move the population downward towards the objective. The modeling and population estimation process refinements in the last 2 years have shown the herd to be over-objective while models in previous years without that new data showed the herd to be just under objective. License numbers were increased in 2009, with particular emphasis on PLO doe hunts, and it is likely that if fawn recruitment remains at average levels, further increases in harvest will be needed to reduce this herd to 5,600 animals.

Game damage claims have been minimal although there is anecdotal evidence that landowners feel there are an over-abundance of pronghorn, particularly in GMUs 87 and 88. This landowner sentiment, particularly among wheat farmers, may reflect a belief that any concentration of pronghorn on agricultural lands represents some level of forage or crop loss to the producer. It may also be based on the decreased drawing odds that hunters, including landowners, have in drawing licenses that are becoming increasingly more in demand.

ISSUES AND STRATEGIES

Issue Solicitation Process

Two public meetings were held in mid-January 2009 to gather input from stakeholders on the direction of future management in PH-1. The meetings were advertised in local media and on the DOW website for 30 days. Combined attendance at

both meetings was 12 members of the public. A survey form was handed out to all participants in the public meetings, to interested landowners in the DAU, and was advertised and available on the DOW website for download for 45 days.

During February-March 2010 the entire draft plan (with population and sex ratio alternatives) was posted online for 45 days and sent to the USFS District Ranger and Weld County commissioners for review.

Issue Identification

Twenty three surveys were returned by the public with input on management options for PH-1. The results are summarized in Appendix A. Ten respondents were landowners within the DAU, 12 did not own land in the DAU and one was unknown. Landowners favored reducing the pronghorn herd (9 out of 10), while non-landowner respondents favored increasing or stabilizing the herd (9 out of 12). Eighteen of 23 respondents favored more buck hunting opportunity, over higher buck:doe ratios and less opportunity. About half of the respondents attended the public meetings, the rest received the survey through field staff contacts or via download from the website.

There were 5 comments received on the draft plan and alternatives. Two were responses to the original survey and three were emailed letters. All 5 comments supported an increase in herd size from current numbers and an increase in buck:doe ratios and buck maturity. These comments are compiled in Appendix B. No comments were received from the USFS, counties or other agencies.

MANAGEMENT ALTERNATIVES DEVELOPMENT

Post-hunt Population Level

Population Alternative #1: 5,000-6,000 (~25% reduction from current numbers)

This alternative would be similar to the previous objective of 5,600 animals. However, a reduction from the current population size would be needed to reach this level. Licenses would increase in the short-term to increase harvest (particularly of antlerless animals), but once the new lower population was reached, opportunity for licenses would decrease significantly.

Population Alternative #2: 6,500-7,500 (current population level)

This alternative represents the range encompassing the current population size. Under this scenario, license levels (particularly antlerless licenses) would remain relatively similar to those set in 2010. Under typical weather conditions, agricultural damage should remain similar to the low levels currently experienced.

Population Alternative #3: 8,000-9,000 (20% increase from current numbers)

Alternative #2 reflects a minor increase with respect to current herd size. Buck license numbers could stabilize near 2009 levels, based on current ratios with a moderate decrease in antlerless licenses in the short term. It is likely that under average weather conditions, agricultural damage would be similar or slightly more than what is currently experienced.

Population Alternative #4: 10,000-11,000 (~50% increase from current numbers)

This third alternative midpoint would represent a 50% increase from current herd size, and a near doubling of the previous objective. Doe harvest would need to be reduced from current levels to reach this new herd size; once at objective, this herd level would support a much larger number of licenses. Agricultural damages and landowner concerns could increase under this scenario.

Herd Composition-Sex Ratio Objective Alternative

Composition Alternative #1: 20-25 bucks:100 does (reduction)

This alternative represents the lowest level of buck numbers and maturity. This alternative would be a reduction in the buck proportion from the current objective and would allow for more buck hunting opportunity, both in the long and short term.

Composition Alternative #2: 25-30 bucks:100 does (reduction/status quo)

This status quo alternative would represent the current objective level (30 bucks:100). Buck licenses would be relatively similar to 2009 levels but would need to fluctuate based on observed ratios and desired overall population objectives. Preference points needed for a buck hunt in this DAU would likely continue to increase (or creep) at the current rate.

Composition Alternative #3: 30-35 bucks:100 does (status quo/increase)

Alternative 3 would provide an increase in the buck ratio from the current objective. To achieve this increased level of buck numbers/maturity some reduction in buck licenses would be likely, particularly under a management scenario with a reduced population objective. Preference points needed to draw a buck hunt in this DAU could increase beyond the current rate, if antlered license reductions were made.

PREFERRED ALTERNATIVES

Post-hunt Population Level and Herd Composition-Sex Ratio Objective Alternative

Population Alternative #2 (6,500-7,500)

Composition Alternative #3 (30-35 bucks:100 does)

A stabilization of current pronghorn numbers in PH-1 is likely the most satisfactory outcome for all stakeholders that have commented during the process. The population has in all likelihood always been higher than the previous objective of 5,600, making that objective obsolete. Public comments are nearly split on increasing or decreasing current herd numbers, with a slight majority of stakeholders advocating an increase in population. Population alternative #2 reflects the current range of the population (7,000 post-hunt 2009) and represents a compromise position from either increasing or decreasing the herd.

The majority of survey respondents (18 of 23) in the initial public outreach favored more buck hunting opportunity, with fewer mature animals, less preference points needed to draw and more hunters in the field. However, all 5 comments on the draft DAU plan favored more "quality" in buck hunting with a higher buck:doe ratio, and more restrictive buck licensing. Herd composition alternative #3 reflects the current sex ratio objective, with management at the upper end of the range being an increase in ratio.

LITERATURE CITED

Author unknown, Unit 87 Antelope Study. 1987. Colorado Division of Wildlife internal document.

APPENDIX A.

Survey form used for public input during DAU outreach process. Results and % of respondents selecting each response inserted into survey.

OPPORTUNITY FOR PUBLIC COMMENT
ON PRONGHORN MANAGEMENT

In Data Analysis Unit PH-1
(Pronghorn Game Management Units 87, 88, 89, 90, 94, 95 & 951)
Weld, Morgan & Logan Counties

Dear Interested Citizen:

Pronghorn herds in Colorado are managed at the Data Analysis Unit (DAU) level. The management of each herd is guided by a herd specific management plan called a DAU plan. DAU plans describe herd population and management histories, population objectives and management strategies for a 10 year period. The DAU planning process is the CDOW method for incorporating the concerns and desires of the public with the biological capabilities of a specific herd. Public input is, therefore, a very important part of the DAU planning process.

Wildlife managers have begun the process of updating the DAU plan for GMUs 87, 88, 89, 90, 94, 95 and 951. The CDOW is seeking your input on the future management of this herd. The information you provide will help the CDOW develop objectives and management strategies for pronghorn in Weld, Morgan and Logan Counties.

Please complete the following survey and return it to:

COLORADO DIVISION OF WILDLIFE
ATTN: PH-1 Survey
317 W Prospect
Fort Collins, CO 80526

Surveys must be received by the
CDOW by Fri, Feb 20th, 2009

The Escarpment pronghorn herd (PH-1) consists of Game Management Units (GMUs) 87, 88, 89, 90, 94, 95 and 951.

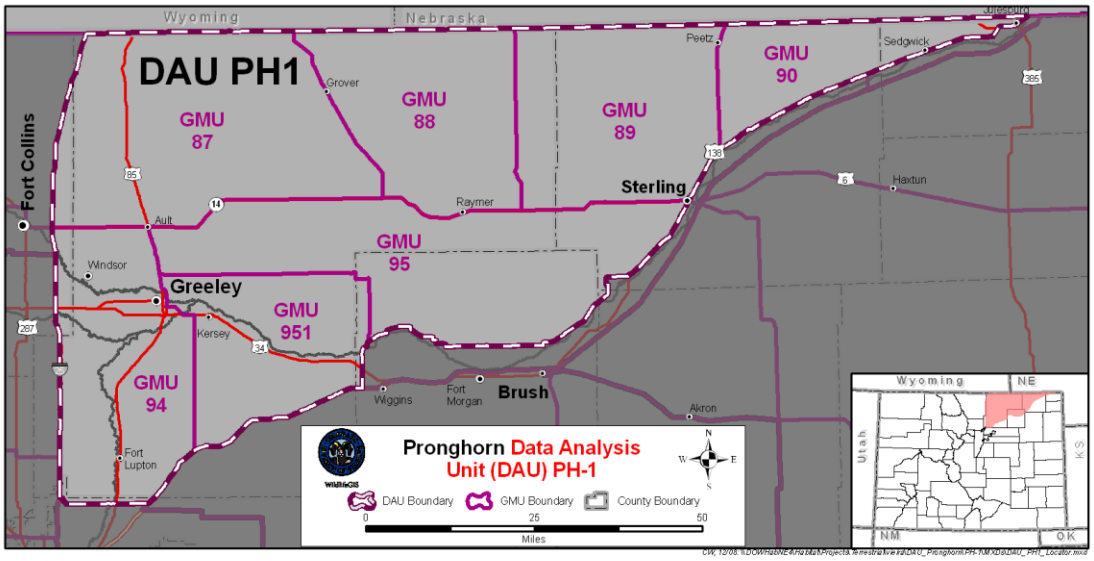

Figure 1: Pronghorn DAU PH-1.

The Colorado Division of Wildlife manages big game herds to provide the public with hunting and viewing opportunities while minimizing conflicts and habitat damage. Often in order to do this, a balance is needed in both the total number of animals and the proportion of males (buck pronghorn) in the herd. This management plan (DAU plan) will therefore, define 1) a population objective and 2) a male to female ratio objective (buck:doe-- see below).

Population Objectives: The Division strives to manage big game populations within both the biological and social carrying capacity of the herd. The biological carrying capacity is the number of animals that can be supported by the available habitat. The social carrying capacity is the number that will be tolerated by the people who are impacted by the herd. Based on a new method of estimating population size initiated in 2008, the PH-1 herd is estimated to be significantly over the current long-term objective. When pronghorn populations are managed at levels below both the biological and social carrying capacity, wildlife users can enjoy viewing, photographing and hunting while damage conflicts are minimized. As the number of pronghorn in an area increases, conflicts may arise due to damage to agriculture, auto/animal collisions, etc.

Question 1:

Would you like the **number of pronghorn** in **PH-1** to:

_____ **Increase**
_____ **Stay the same**
_____ **Decrease**
_____ **Don't Know**

Why?

If you'd like to see an increase or decrease, please describe by how much (half as many, double, etc).

RESULTS:	9 out of 23 (39%) selected INCREASE in PH-1 12 out of 23 (52%) selected DECREASE in PH-1 2 out of 23 (9%) selected DON'T KNOW

Male:Female Ratio Objective: Pronghorn herds can be managed to maximize buck hunting opportunity (which creates higher hunter numbers) or to maximize the maturity of bucks available for hunting (typically less hunters afield), or some compromise between the two. If the herd is managed to maximize the quantity of hunting opportunity, more buck hunting licenses are made available and buck hunters will be able to hunt more frequently, with less preference points. However, this results in fewer total bucks in the herd (lower buck:doe ratio) as well as fewer large/mature bucks. If a herd is managed to maximize the mature, larger-horned bucks, fewer buck licenses are issued in order to increase the number of bucks in the population (higher buck:doe ratio). As a result, the size of males harvested will be larger, but the frequency that hunters are able to hunt bucks decreases and the preference points needed to draw will increase. Therefore a trade-off exists between the number of licenses (amount of opportunity) and the size and maturity of bucks available for hunters.

Question 2:

Currently, DAU PH-1 is managed for a 30 buck:100 doe sex ratio objective.
In 2008, a minimum of between 3- 8 preference points were needed to draw a rifle buck tag, depending on the unit (eg- 8 PPs to draw GMU 88, 3 PPs to draw GMU 90).

For the purposes of pronghorn hunting, should PH-1 be managed for:

_____ Increased **quality** of hunting opportunity (higher buck to doe ratio, fewer hunters in the field, but more PP needed to draw a buck license)

_____ Increased **quantity** of hunting opportunity (lower buck to doe ratio, more hunters in the field, and easier to draw buck licenses)

_____ Status Quo (current ratio of 30:100 is providing the right balance between drawing odds and bucks in the field)

Why?

RESULTS: 3 out of 23 (13%) selected QUALITY OF OPPORTUNITY
18 out of 23 (78%) selected QUANTITY OF OPPORTUNITY
2 out of 23 (9%) selected STATUS QUO

Question 3:

Do you usually apply to hunt pronghorn in one of the GMUs in PH-1?

If so, please circle the unit you applied for in 2008 (87, 88, 89, 90, 95 or 951)?

Are you a landowner in PH-1?

RESULTS: 5 out of 23 don't apply to hunt PH-1. 18 out of 23 do apply to hunt PH-1.
12 out of 23 weren't landowners in PH-1. 10 out of 23 were landowners in PH-1.

Question 4:

Where do you live (circle one from the options below or write in)?

RESULTS:

Denver 2 **Northern Front Range (west of I-25)** 3

Weld County 11 **Northeastern CO Counties (Logan, Morgan, etc)** 5

Other 1

APPENDIX B.
Comments received during the 45 days the draft plan was posted online and shared with other agencies- Feb-Mar 2010.

1) There is ample habitat and greater population would result in more hunting opportunity; increase population. Population should be around 10,000 and DOW should be more proactive in habitat and establish wells for pronghorn. More quality is important, increase buck:doe ratios.

2) Increase the number of pronghorn in PH-1. Increase the quality in PH-1; higher buck:doe ratio. I am a landowner in PH-1.

3) What a shame that a few vociferous winter wheat landowners may ruin a pronghorn resource with the genetics to grow some Boone and Crockett quality bucks. A quick look at the B&C Record Book shows that Weld County has produced several B&C entries over the years, including a few from my clients. In fact the World Record was once held by a Weld County buck for over 10 years. As of the 12th Edition (2005) of the B&C Record Book, this buck was still #9 and still has the largest base measurements and the 2nd largest 3rd quarter measurements in the top 10. This is what Weld County is known for - mass.

There are only a few DAU's/Units in Colorado that can produce a reasonable number of B&C pronghorn. DAU PH-1 is one of them. Why cannot we manage part of the DAU or all of it for trophy pronghorn?!?! There are plenty of other places in eastern Colorado to draw an antelope hunt for an average buck with a few preference points. We should manage unit 87 and unit 88 for above average pronghorn bucks. To not do so would be a shame and an injustice to this genetic resource. A variety of hunting opportunities should be offered for pronghorn in Colorado. There should be a few areas offered for the selective/trophy hunter just as there are many areas offered for the maximum opportunity hunter. Just as the buck population was gaining some ground and maturing after the drought years, buck licenses were increased by 100 licenses in 2009, wiping out the progress made in buck maturity! So many tags and vouchers were issued that we did not even use all our vouchers as we did not want to over-harvest the bucks!

My company operates on over 60,160 acres in unit 87. I guarantee you that my landowners are not complaining about too many antelope and nobody has bothered to ask them directly but me. They tell me there are fewer antelope now than in decades past. Why are only the complaining winter wheat landowners being accommodated? I recently heard that a study determined that antelope grazed winter wheat fully recovers later in its' growth cycle and that the antelope did not affect the bushels per acre yield. Is this kind of data being shared with wheat growers?

PLEASE, PLEASE, PLEASE select alternative #3 for buck to doe ratios of 30-35 bucks per 100 does for your recommendation to the WC! PLEASE, PLEASE, PLEASE select alternative #3 (8K-9K) or #4 (10K-11K) for your herd objective. It is painfully obvious that the old objective of 5600 was far too low and was a consequence of under-counting/estimating of antelope numbers. If you think there are approximately 7900 antelope now, there must have been 12,000 before!

Please do the right thing. Manage for mature pronghorn bucks in units 87 and 88.

4) I am writing in response to what I believe is an urgent need for hunting license reduction within the pronghorn herds in Units 87/88. I cannot support the current minority landowner push

for more tags to offset winter wheat depredation.

I have hunted and/or guided antelope hunters for 25 years in both units and have seen a drastic decline in both numbers of antelope and age/quality of bucks. By default, both these units have a long history of producing Boone and Crockett quality bucks. It is primarily good habitat and bucks can grow to a ripe old age and be considered trophy quality in 5 or more years. I have archery hunted Unit 87 many times in the last 10 years and have seen the numbers of antelope crash to an all time low last year (2009). Prior to 2005, it was not unusual to see as many as 200-300 animals in a day. Last year while guiding several hunters in Unit 87, I estimate we saw 50-60 animals per day while covering a huge amount of land in excess of 60,000 acres. This downward trend has been evident since 2005 and has seemed to be on the decline every year since. The numbers of antelope that exist today are a pale remnant of 5-7 years ago.
Colorado is not known as a trophy antelope state among western states. Clearly, units 87/88 can grow big antelope and the herd has excellent genetics for big horn mass. Why can we not make those two units some of the top trophy units of the state? Limit the tags and lessen the harvest and within a few years, big bucks will be appearing again. There isn't a unit in the state where you can draw a buck tag every year and hunt for a quality buck anyway. We go to Wyoming for that. We have a huge amount of "opportunity" managed units in this state, which is great. Lets balance it out with a few trophy units as well.

5) I'm not sure what your objective is. But as a landowner who is looking out for his best interest and a sportsman who enjoys seeing quality and being able to take a trophy from time to time in my estimation there is no more than 1/3 the antelope on our 10,000 acres than was there 10 years ago. The quality of trophy bucks has declined at the same rate.