D-8 State Bridge Deer
DATA ANALYSIS UNIT PLAN
Game Management Units 15, 35, 36, and 45

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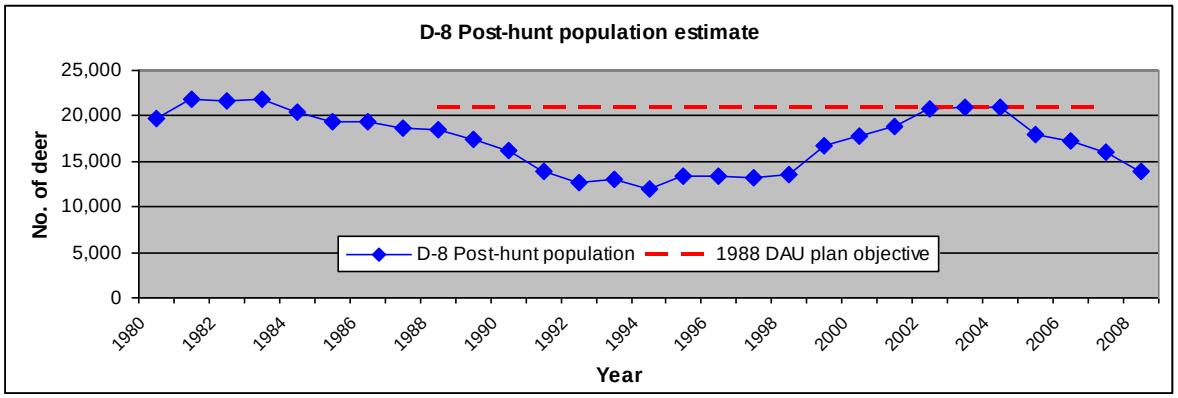
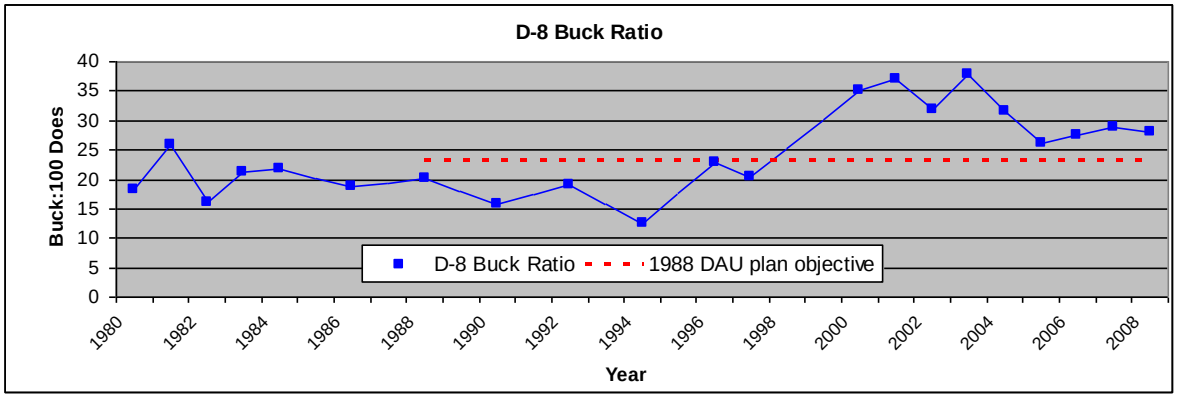
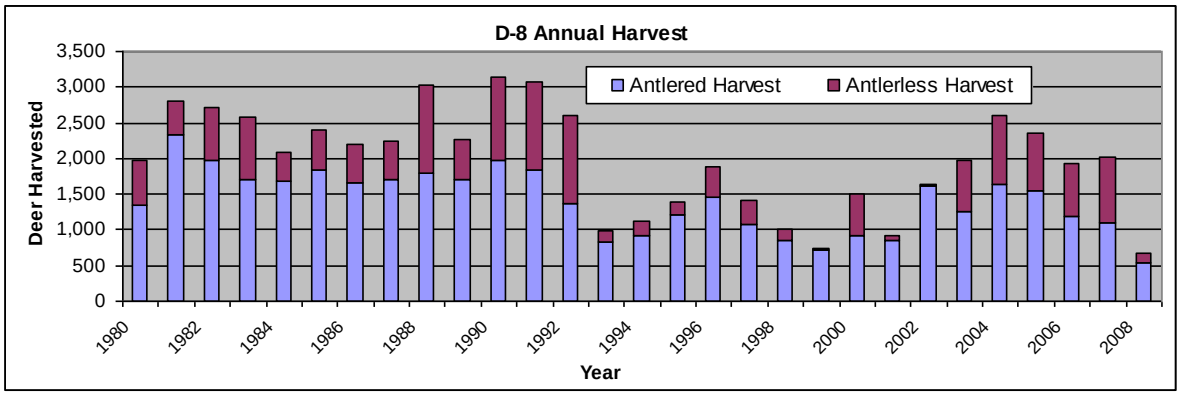
I. DAU PLAN EXECUTIVE SUMMARY

DAU: State Bridge Deer D-8
GMUs: 15, 35, 36, and 45

Current Population Estimate (post-hunt 2008)**:**	13,850 deer
Previous (1988 DAU plan) Population Objective:	21,000 deer
Current Population Objective:	13,500-16,500 deer
Current Sex Ratio Estimate (5-year average)**:**	28 bucks per 100 does
Previous (1988 DAU plan) Sex Ratio Objective:	23 bucks per 100 does
Current Sex Ratio Objective:	26-30 bucks per 100 does







Background

The State Bridge deer herd (D-8) consists of Game Management Units (GMUs) 15, 35, 36, and 45 and is located in primarily in Eagle and Routt counties, as well as small portions of Grand and Pitkin counties. The DAU contains parts of the Eagle River, Colorado River, and Yampa River watersheds. Interstate-70, Colorado State Highway 131, Colorado River Road, and US Highway 24 are the major access routes in the DAU.

During most of the 1980's the population objective was 26,000 deer. In 1988, the Colorado Division of Wildlife (CDOW) lowered the population objective to 21,000 deer. Since that time, however, loss of habitat, particularly winter range, has resulted in a deer population objective that likely exceeds the available habitat carrying capacity. The current (2008) population estimate is 13,850 deer. CDOW recommends lowering the population objective to 13,500-16,500 deer. Maintaining the population at a lower density may result in less competition among deer and between deer and elk, improved habitat condition, better body condition, higher recruitment of fawns, increased population growth rate, and thus more opportunity for hunter harvest.

Since the deer harvest became totally limited in 1999, a higher buck ratio has now been achievable and has averaged just over 28 bucks:100 does over the past 5 years. CDOW recommends increasing the sex ratio objective to 26-30 bucks:100 does to maintain quality buck hunting opportunities.

Significant Issues

An important aspect of the DAU planning process is obtaining input from all segments of the affected local populations, including the US Forest Service and Bureau of Land Management, HPP committees, county commissioners, and interested public.

Public meetings were held in 2002 during an earlier phase of development of the DAU plan, but due to management concerns about Chronic Wasting Disease, the finalization of the plan was placed on hold. Public meetings were held again in 2009 to solicit input from the public and the Board of County Commissioners from Eagle County. A questionnaire was available at these public meetings and on the CDOW web site to solicit opinions from the public. Input was also solicited from the USFS, BLM, and HPP committees.

Several significant issues were identified during the DAU planning process. The most significant issues were mule deer habitat (loss of habitat due to urban growth and rural subdivision development; habitat senescence due to fire suppression; changes in habitat due to fragmentation, historic overgrazing by livestock, and inconsistent land management practices); Interstate 70 as a source of roadkills and as a barrier to migration; weather (severe winters and drought) and the potential for starvation of deer; and competition between deer and elk for remaining habitat.

D-8 Management Alternatives

This DAU plan offers 3 long-term objective alternatives for post-hunt population size and 3 alternatives for the post-hunt buck:doe ratio. CDOW's preferred alternative, after considering public input and internal discussion, is intermediate to two of the originally proposed alternatives.

Population Objective Alternative

Population objective alternatives are provided as ranges and would provide for 3 different levels of population size and harvest opportunity.

The first (1) population alternative would decrease the herd to approximately 11,000-13,000 deer. This could be achieved through increased doe harvest for a number of years until the herd had reached this objective, at which time hunting opportunity would either remain at this harvest level or would level off, depending on deer herd productivity.

The second (2) population objective alternative calls for maintaining the herd at the current population objective level of a range of 13,000-15,000 deer. This would represent the status quo in terms of deer numbers

and could be achieved by maintaining (similar to the 2008 & 2009 seasons) or possibly slightly increasing doe harvest (to a level intermediate to the 2007 and 2008/2009 seasons).

The third (3) population objective would increase the herd to 15,000-17,000 deer. This would require a lower level of doe harvest, or possibly the elimination of doe harvest and a reduction in buck harvest, until the herd increased to objective. This alternative assumes that there is sufficient habitat available to support this higher deer density.

Sex Ratio Objective Alternatives

Sex ratio alternatives are provided as ranges and would provide for 3 different levels of buck numbers and maturity (or body size, antler size, etc).

The first (1) alternative calls for a sex ratio objective of 22-26 bucks:100 does and would significantly reduce the sex ratio from the current 28 bucks:100 does. This would increase buck hunting opportunity, although the result would be fewer mature bucks in the population. It is likely that as this objective was reached, 4th season buck hunting would be eliminated.

The second (2) alternative would manage for 26-30 bucks: 100 does, which would be comparable to recent buck license allocations. This alternative strikes a balance between hunting opportunity and body/antler size. Hunters would continue to have 4th season buck opportunities.

The third (3) alternative would increase the buck: doe ratio to 30-34 bucks: 100 does. This would slightly decrease buck hunting opportunity, but manage for a higher number of bucks in the population, as well as the more mature, large-antlered bucks. Reductions in buck licenses could be expected, so the opportunity to draw a buck license would be lower. However, hunters who did draw would experience less hunter crowding and see more mature animals. Fourth season buck hunting opportunities would remain available.

Recommended Objectives:

Recommended Population Objective: After receiving public comment and considering internal discussions, CDOW recommends a population objective of 13,500-16,500 deer, a population range that will allow for either stabilization or an increase in population size while still maintaining harvest opportunity. This objective is intermediate to Alternatives 2 & 3 and would, on average, increase the population size by 8% from its current estimate of 13,850 deer. CDOW believes that the present objective (of 21,000) represents too many deer for the current habitat conditions of declining quality and quantity of mule deer range due to land development; fire suppression; range degradation due to inappropriate historic livestock grazing, over-populations of deer in the 1950-1960s; and competition with elk. In fact, the population objective of 21,000 deer has only been obtainable when antlerless licenses are greatly reduced. Reducing the population objective to 13,500-16,500 deer would allow a reasonable number of licenses (antlered and antlerless) to be issued in most years, and would leave room for population growth if habitat conditions and weather conditions are favorable for such growth. Exceptions could be after severe winters when the population size might drop below the objective. When a severe winter occurs, a population at lower density should have more resiliency and should recover more quickly.

*Recommended Sex Ratio Objective***:** The recommended sex ratio objective of 26-30 bucks:100 does is an increase of 22% over the current objective of 23 bucks:100 does, and would maintain the current 5-year average of 28 bucks:100 does. Prior to 1999, it was not practical to attempt to increase the sex ratio above a range of 15-25 bucks:100 does. After 1999, deer hunting in this DAU was changed to totally limited licenses so the number of buck licenses and the amount of the buck harvest could be controlled. Public opinion surveys have indicated that most hunters wanted the opportunity to hunt and see more and larger bucks. A sex ratio objective of 28-32 bucks:100 will strike a balance between opportunity to draw a license and chances of harvesting a large buck.

This plan was approved by the Colorado Wildlife Commission on September 10, 2009.

II. INTRODUCTION AND PURPOSE

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 CDOW's 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, 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 a distinct 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. A 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. CDOW attempts to review and update the DAU plans on a 5-10 year basis to align the management objectives with the changing environmental, social, economic, and political conditions that affect 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. CDOW strives to maintain a tight link between the inclusion of the public 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. Roadkilled animals can also contribute to overall mortality and should be incorporated into the model, but at present, this data has not been compiled. The resultant computer population projection is then compared to the herd objective, and a harvest calculated to align the population with the herd objective.

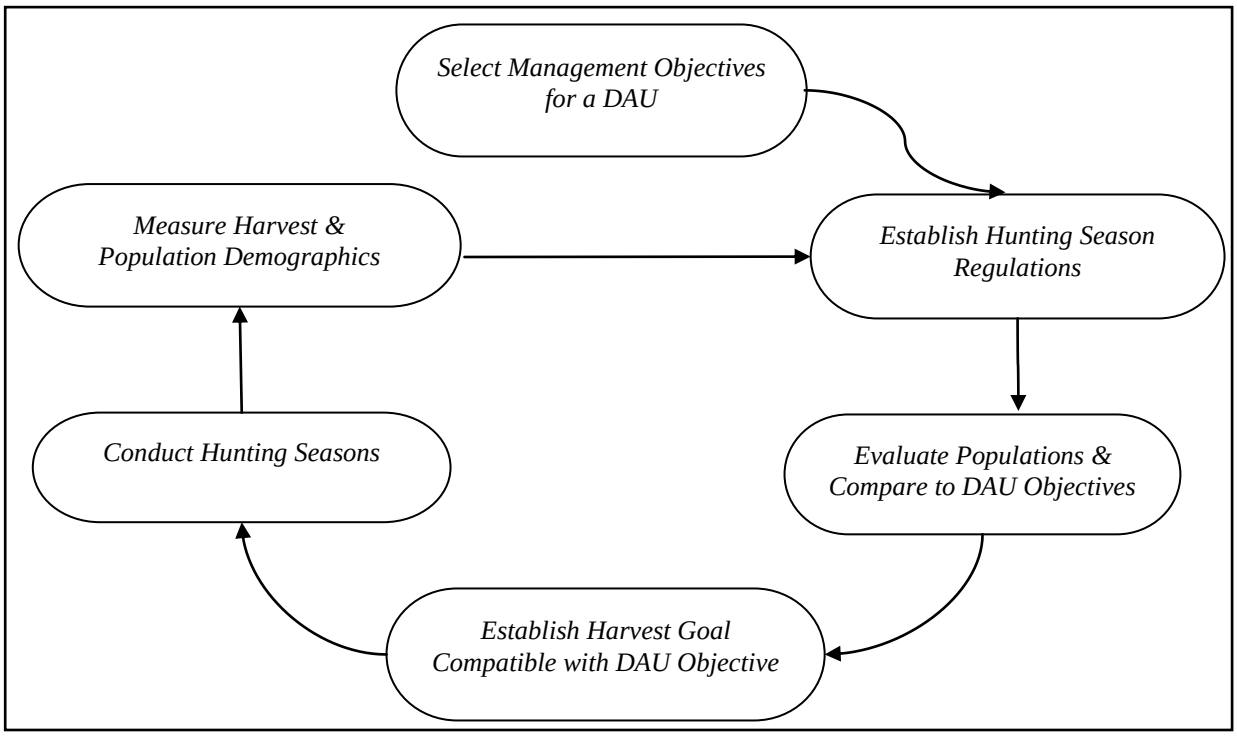
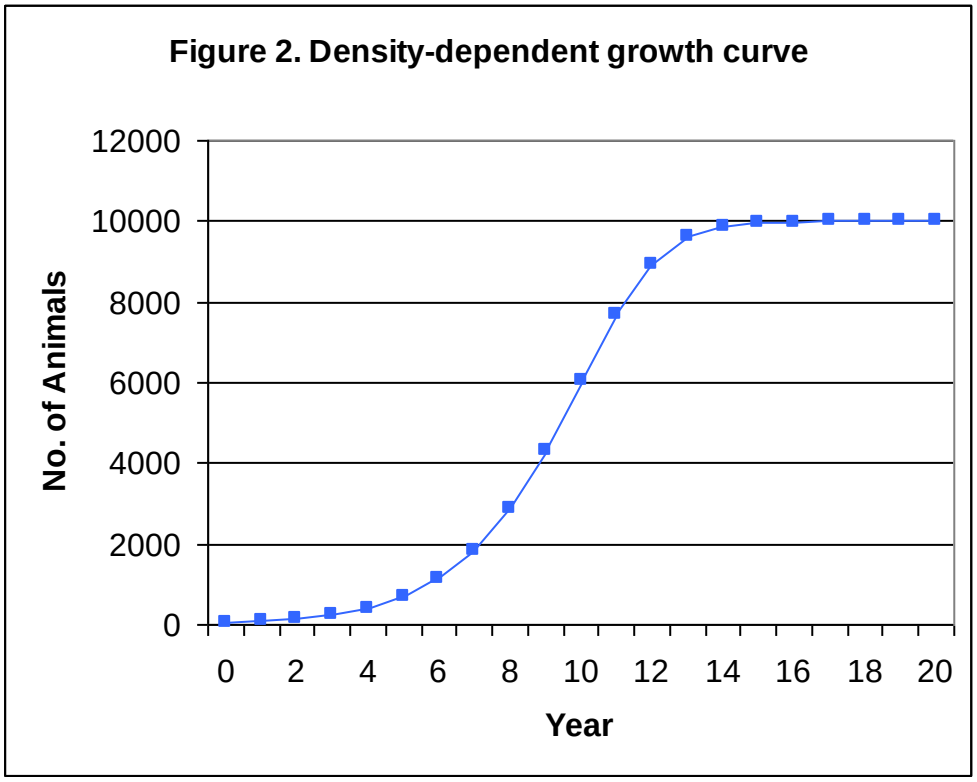


Figure 1. Management by objective process that CDOW uses to manage big game populations on a DAU basis.

Population Dynamics and Managing For Sustained Yield

Numerous studies of animal populations, including such species as mice, rabbits and white-tailed deer, have shown that the populations grow in a mathematical relationship referred to as the "density-dependent growth curve" (Figure 2). There are three distinct phases to this cycle. The first phase occurs while the population level is still very low and is characterized by a

slow growth rate. This occurs because the populations may have too few animals and the loss of even a few of them to predation or accidents can significantly affect the population.



The second phase occurs when the population number is at a moderate level. This phase is characterized by a very high reproductive and survival rate. During this phase, food, cover, water and space are not limiting factors. Also, during this phase, animals such as white-tailed deer have been known to successfully breed at six months of age and produce a live fawn on their first birthday; older does have been known to produce 3-4 fawns that are very robust and healthy. Survival rates of all the deer (bucks, does and fawns) are at maximum rates during this phase.

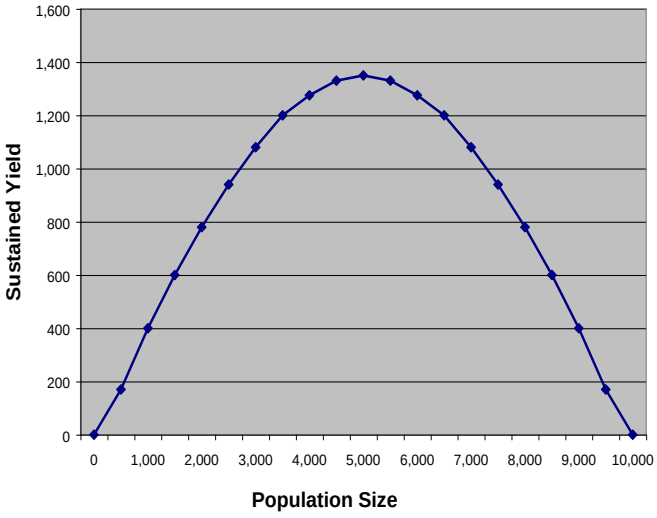
The final or third phase occurs when the habitat becomes too crowded or habitat conditions become less favorable. During this phase the quantity and quality of food, water, cover and space become scarce due to the competition with other members of the population. This phase is characterized by a decrease in reproduction and survival. Also, during this phase animals such as white-tailed deer fawns can no longer find enough food to grow to achieve a critical minimum weight that allows them to reproduce; adult does will usually only produce 1-3 fawns; and survival of all deer (bucks, does and fawns) will decrease. During severe winters, large die-offs can occur due to the crowding and lack of food. The first to die during these situations are fawns, then bucks followed by the adult does. The severe winters thus affects the future buck to doe ratios by favoring more does and fewer bucks in the population. Also, since the quality of a buck's antlers is somewhat dependent upon the quantity and quality of his diet, the antlers are stunted during this phase. If the population continues to grow, it will eventually reach a point called "K" or the maximum carrying capacity. The level is not static but varies from year to year based upon such factors as the severity of the winter. At this point, the population reaches an "equilibrium" with the habitat. The number of births each year

approximately equals the number of deaths, therefore, to maintain the population at this level would not allow for any "huntable surplus." The animals in the population would be in relatively poor condition and when a severe winter or other catastrophic event occurs, a large dieoff is inevitable.

What does all this mean to the management of Colorado's big game herds? It means that if we attempt to manage for healthy big game herds, we should attempt to hold the populations around the middle of the "sigmoid growth curve or even slightly above this point." Biologists call this "MSY" or "maximum sustained yield." At this level, which is approximately half the maximum population sizes or "K", in this example (Figure 2) it would be 5,000 animals, the population should provide the maximum production, survival and available surplus animals for hunter harvest. Also, at this level, range condition should be good to excellent and range trend should be stable. Game damage problems should not be significant and economic return to the local and state economy should be at the maximum. This population level should produce a "win-win" situation to balance sportsmen and private landowner concerns.

A graph of a hypothetical deer population showing sustained yield (harvest) potential vs. population size is shown (Figure 3). Notice that as the population increases from 0 to 5,000 deer, the harvest also increases. However, when the population reaches 5,000 or "MSY," food, water and cover becomes scarce and the harvest potential decreases. Finally, when the population reaches the maximum carrying capacity or "K" (10,000 deer in this example), the harvest potential will be reduced to zero. Also notice that it is possible to harvest exactly the same number of deer each year with 3,000 or 7,000 deer in the population. This phenomenon occurs since the population of 3,000 deer has a much higher survival and reproductive rate compared to the population of 7,000 deer. However, at the 3,000 deer level, there will be less game damage, less resource degradation, and fewer watchable wildlife opportunities.

Figure 3. **Maximum Sustained Yield**



III. DESCRIPTION OF DATA ANALYSIS UNIT

Location

The State Bridge DAU (D-8) is located in northwest Colorado and consists of GMUs 15 (Yampa), 35 (Castle Peak), 36 (Piney), and 45 (Holy Cross) (Figure 4). It is bounded on the north by U. S. Highway 40, on the east by the Gore Mountain Range and Muddy Creek, on the

south by the Continental Divide, and on the west by the Sawatch Range, East Lake Creek, Eagle River, Colorado River, and Colorado State Highway 131. Counties included in the DAU are Routt, Grand, Eagle, and Pitkin.

The DAU contains parts of the Eagle River Watershed, Colorado River Watershed, and Yampa Watershed. Parts of Eagles Nest and Holy Cross Wilderness areas, plus all of the Sarvis Creek Wilderness are in the DAU. The town of Steamboat Springs is located 4 miles north of the DAU boundary but has a strong influence on this DAU. Interstate-70, Colorado State Highway 131, Colorado River Road, and US Highway 24 are the major access routes in the DAU.

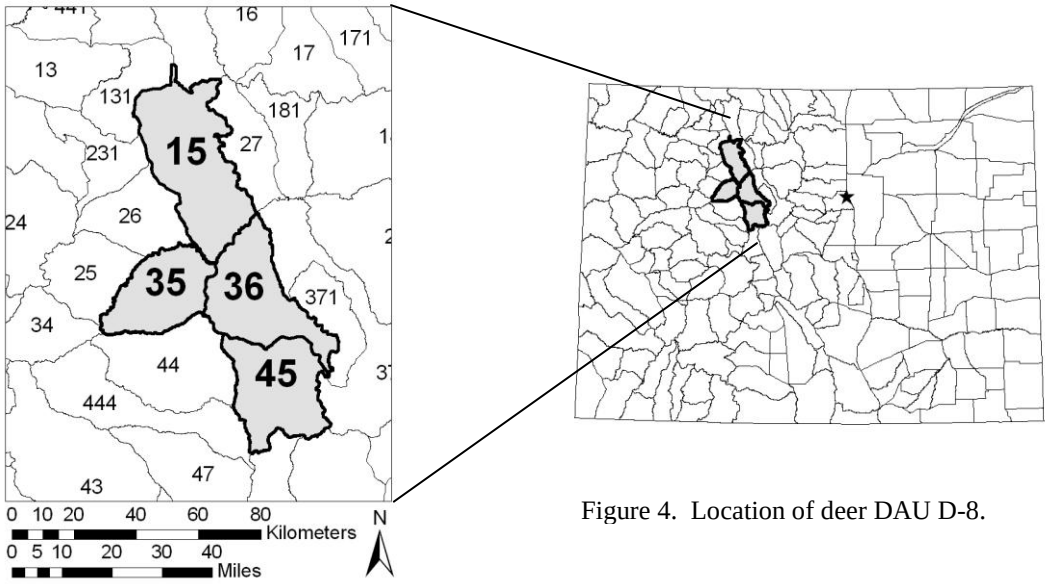


Figure 4. Location of deer DAU D-8.

Physiography

Topography

Topography in the DAU is highly varied. The Gore Range along the eastern boundary has elevations in excess of 13,000 ft. Lower elevation regions are found adjacent to the Colorado River with an average elevation of 6,500 ft. Steep rugged terrain characterizes the southern portions of the DAU. The northern portions of the DAU contain large hay meadows along the valley floors with steep slopes leading to the summer range. The highest peak in the DAU is the Mount of the Holy Cross (14,003 ft). The lowest point is Dotsero (6157 ft).

Major rivers include the parts of the Colorado, Eagle, and Yampa River drainages. Stagecoach Reservoir and Lake Catamount are in the northern part of this DAU and Homestake Reservoir is in the southern part. The DAU contains Alkali Creek, Gore Creek, Sheephorn Creek, Piney River, Rock Creek, Cross Creek and Homestake Creek.

Climate

The climate varies with the altitude. Lower elevations are characterized by moderate winters and warm summers with low to moderate precipitation. The higher elevations are characterized by long, cold winters and short mild summers with high precipitation. The higher elevations at Vail Pass receive over 25 in. of precipitation while the lower elevation around Dotsero average only 10 in. of moisture per year. Prevailing winds for this area are typically out of the northwest. Most of the annual precipitation comes from snowfall. Temperature can vary from a low of –40° F in the winter to a high of >100° F in the summer. The largest extremes occur in the lower elevations where the coldest air settles in the winter, the same areas where the temperatures can reach over >100° F in the summer. Deep snow forces deer and elk to winter in the lower elevation on south-facing or wind-blown slopes where less snow accumulates. The Castle Peak area in GMU 35 lies in the rain shadow of the Flat Tops. This results in typically low snowfall accumulation, making this area a very good mule deer wintering area.

Vegetation

Topography plays a large role in determining vegetation type. For example, some higher elevation sites with a southern exposure are dominated by sagebrush while the lower elevation areas with a more northern exposure can support aspen and coniferous forests due to the high moisture retention of the soils. This variation of vegetation types scattered throughout the DAU creates a highly desirable mosaic, with a large beneficial "edge effect" that is very beneficial to wildlife such as mule deer.

The vegetation in the State Bridge DAU can be categorized as five broad types -- cropland, wetland/riparian, rangeland, forestland and alpine:

- Croplands are found at the lower elevations and consist of irrigated hay meadows and terraces that have been re-seeded to desirable livestock forage plants. Most of the hay ground consists of Timothy, Smooth Brome, and American Sloughgrass with some sedges and rushes. Some hay meadows are planted with alfalfa. This type is scattered throughout the DAU but is most common in the Toponas to Steamboat Springs area.

- Wetland/riparian vegetation is found primarily along the river bottoms and lowland areas. Some of the best riparian habitat is along the Colorado River between McCoy and Dotsero. Narrowleaf cottonwood and willow dominate this area. The riparian habitat is one of the smallest vegetative types in the DAU but it is extremely valuable as wildlife habitat. Typically, riparian areas support the greatest abundance and diversity of wildlife in the state.

- Rangelands consist of sagebrush, mountain shrub, and native grasslands. The sagebrush type occurs at lower elevations on dry and level sites that are well drained. These areas are highly valued as deer winter range. Mountain shrub types are generally found on the moister sites of the lower elevation primarily on northern slopes. This plant community provides important wildlife food and cover and is very important as spring and fall

transitional range and on some winter range areas. Mountain mahogany, serviceberry, and Gamble oak are the three main species that make up the mountain shrub type. Native grasslands are found in two different areas. Low elevation grasslands occur on windswept sites with poorly developed soils that cannot support sagebrush. Higher elevation grasslands occur on the more level sites in forested areas and are comprised of large bunchgrasses such as Thurber's fescue, wild rye, needlegrass and brome grasses.

- Forestlands in the DAU are comprised of five types: piñon-juniper, Douglas fir, aspen, lodgepole, and spruce-fir:

  - Piñon-juniper (P-J) is found on the dry, lower-elevation slopes such as the area north of I-70 between Wolcott and Dotsero. P-J provides important cover but due to the lack of understory, provides low quantity and quality forage for wintering deer.

  - Douglas fir typically occurs on the moist north-facing slopes at lower elevations. It is a long-lived species valued for wildlife habitat diversity, scenic value and big game cover.

  - Aspen is found in the moderate to higher elevation zone of the DAU. This habitat type provides some very high quality forage and cover for deer and elk. On some sites aspen is the climax species; on other sites it is a transitional species that occurs for only a relatively short period of time after a disturbance, such as fire. Large stands of aspen can be found north of I-70 from Vail to Edwards in GMU 36.

  - Lodgepole pine grows in even-aged stands and below the spruce-fir. In mature stands, the dense overstory limits the growth of understory forage, but provides good cover. In the DAU, lodgepole is found throughout much of the DAU especially GMUs 15, 36, and 45.

  - Spruce-fir (Englemann spruce/Subalpine fir) communities occur in the higher elevations, usually from 10,000 ft. to the alpine. This habitat provides excellent summer cover for deer and elk. This type is common in the Holy Cross Wilderness and the Gore Range.

- Alpine sites occur only in the highest elevations of the DAU, usually above 11,500 ft. These areas are found in the Holy Cross and Eagles Nest Wilderness areas. They are characterized by the absence of trees. Short grasses, sedges, and numerous species of forbs make up the vegetation. This habitat provides high quality summer deer forage areas.

Land Status

Land Ownership

The State Bridge DAU covers 3,751 km^2 (1,448 mi^2) of land: 55% National Forest System land; 24% private land; and 19% Bureau of Land Management land. Representing 1% each are State Land Board and Colorado Division of Wildlife lands (Table 1, Figure 5).

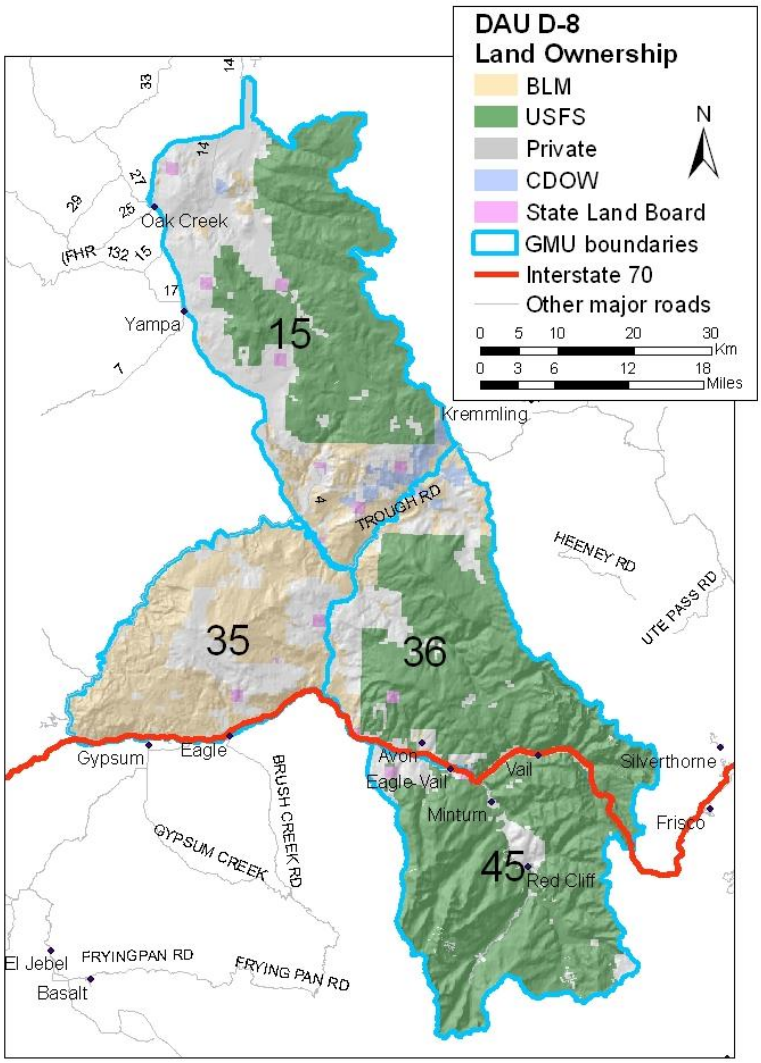


Figure 5. Land ownership in DAU D-8.

Table 1. Land Ownership by Game Management Unit in DAU D-8.

GMU	BLM		USFS		CDOW		State Land Board		Private		TOTAL	
	Area (km^2)	Area (mi^2)	Area (km^2)	Area (mi^2)	Area (km^2)	Area (mi^2)	Area (km^2)	Area (mi^2)	Area (km^2)	Area (mi^2)	Area (km^2)	Area (mi^2)
15	134	52	655	253	33	13	19	7	426	165	1,266	489
35	485	187	0	0	0	0	7	3	203	78	694	268
36	84	33	646	250	14	5	5	2	174	67	924	357
45	0	0	773	298	0	0	4	2	90	35	867	335
TOTAL	703	272	2,074	801	46	18	35	13	893	345	3,751	1,448
% of DAU	19%		55%		1%		1%		24%		100%	

Land Use

Land use is varied and diverse in the DAU. The main industries are tourism, outdoor recreation, ranching, and logging.

Ranching used to be an important industry in Vail and Avon prior to the establishment of the Vail Ski area in 1962. Since then, most of the ranch land has been developed into infrastructure of housing to support the four-season resort complex. Subdivision and development of former ranch lands in the Vail valley is one of the greatest, if not the greatest, risk towards this population.

Ranching is still an important land use in the Piney and Sheephorn Creek area of GMU 36, Burns area in GMU 35, and the McCoy to Steamboat Springs area in GMU 15. Individuals who are not heavily involved in the ranching business have purchased many of the traditional ranches in GMU 35 and 36. Some of these ranches are now managed more as wildlife habitat or wildlife refuges. Limited hunting in the Burns Hole Ranching for Wildlife Program occurs in GMU 35.

Most of the logging on U.S. Forest Service land in the past was centered around the Vail ski area and Tigiwon area in GMU 45, the Red Sandstone, Moniger Park, Piney Ridge, Muddy Pass, and Sheephorn areas in GMU 36 and the Green Ridge area in GMU 15. The current bark beetle outbreak in lodgepole forests is estimated to result in ~90% mortality of lodgepole pines of ≥5 inches Diameter Breast Height (Appendix 1, Yampa Ranger District letter). The U.S. Forest Service has several active or future timber sales intended to rejuvenate lodgepole stands by salvaging beetle-killed trees. Current logging plans on Forest Service lands focus on 1,500 acres of pine beetle-killed lodgepole in Piney River in GMU 36; 3,300 acres in upper Eagle River in GMU 45; and 6,000 acres in the Green Ridge to Gore Pass area in GMU 15. The Yampa Ranger District expects that the death of bark beetle-killed lodgepoles and the consequent opening of the forest canopy will enhance understory forage for mule deer within 3-5 years and could have a lasting effect for up to 10 years.

The Forest Service also plans to conduct prescribed burns in aspen and dead lodgepole forest northeast of Vail and in sagebrush north of Avon in GMU 36. In the past, the BLM has permitted some logging around the Black Mountain area east of McCoy in GMU 15, but there are no plans for logging in the immediate future.

There are several very popular tourist attractions in the DAU. The main attraction is the Vail and Beaver Creek Ski areas. Other major resorts located just outside of the DAU boundary are Steamboat Springs 5 miles north of the DAU and Copper Mountain 5 miles east of Vail Pass. These ski areas, like the Vail/Beaver Creek Ski areas, are major four-season resort complexes and have a significant influence on the land use in the area. The local economy in the DAU is strongly influenced by tourism. Land development and the associated impacts to mule deer habitat are major concerns in the management of this deer herd.

The DAU is bisected by Interstate 70, the major east-west artery through the Colorado Rocky Mountains and this provides the main access to the ski areas. Parts of I-70 in this DAU

are being fenced from Gypsum to Avon. There are several spanning bridges that cross the Eagle River and other drainages allowing deer to cross I-70, and there is one major wildlife underpass at Dowd Junction that allow deer to funnel under the interstate. However, this is not a cure-all and many deer find holes in the fence or access the interstate at diamond interchanges and become trapped and killed on the highway. Traffic has also increased significantly in the past decade along Highway 131, and road kills have increased correspondingly.

Hunting and fishing generate substantial economic revenue in the DAU (Pickton and Sikorowski 2004). Hunters can pursue a variety of species including deer, elk, bighorn sheep, mountain goat, moose, bear, mountain lion, dusky grouse, ducks and geese. Fishing is provided in the area's numerous small streams and high country lakes. The DAU includes portion of the White River National Forest and Routt National Forests. The National Forest provides numerous areas for hiking, four-wheeling, hunting, fishing, horseback riding, snowmobiling, wilderness trips and general sightseeing. Stagecoach Reservoir provides boating and fishing opportunities. The Holy Cross Wilderness area has some of the state's most coveted high-elevation fishing lakes.

Cinders are mined at the Dotsero Volcanic site for the making blocks and for road surfacing. Gypsum is mined just north of the town of Gypsum and a wallboard plant in the town manufactures the products. There have been numerous oil and gas wells drilled in this unit since 1940, but all the wells have been dry. Historically, limited mining occurred adjacent to the DAU in the Phippsburg and Oak Creek area, but these operations are now defunct or in reclamation. The Minturn area was a major historic mining area that has recently undergone extensive reclamation under the EPA superfund program.

Public Land Grazing

The Bureau of Land Management has all or part of 63 grazing allotments (15 inactive) in the DAU. Glenwood Springs, Little Snake, and Kremmling BLM field offices administer these allotments. Use occurs primarily in the spring, summer, and fall. The classes of livestock using these allotments are sheep, horse, and cattle.

The National Forest Service has 25 grazing allotments occurring totally or partially in the DAU. Seven allotments are vacant and not being used by domestic livestock at this time. Three allotments are for recreational use only. The period of livestock use is variable, but primarily occurs from late June through October. Classes of livestock using these allotments include cattle, sheep and goat, and horses.

IV. HABITAT RESOURCE

Habitat Distribution

The distribution of mule deer seasonal ranges between public and private lands in the DAU are shown in Table 2. The lower elevations that deer use as winter range comprise one-fourth of the DAU's area. Of this winter range, two-thirds are on public lands and one-third on private. Summer range is approximately 4/5 public and 1/5 private.

Table 2. Distribution of mule deer seasonal ranges on public and private lands in DAU D-8.

	Public lands				Private lands				Total		
Seasonal range	**Area (km^2)**	**Area (mi^2)**	**% of Seasonal Range**	**% of DAU**	**Area (km^2)**	**Area (mi^2)**	**% of Seasonal Range**	**% of DAU**	**Area (km^2)**	**Area (mi^2)**	**% of DAU**
Winter	641	247	68%	17%	295	114	32%	8%	936	361	25%
Summer	2,217	856	79%	59%	598	231	21%	16%	2,815	1,087	75%
Total DAU	2,858	1,104	--	76%	893	345	--	24%	3,751	1,448	100%

Figure 6 shows a map of mule deer winter range in D-8. Major wintering areas for deer include: GMU 15 – French, Blacktail, Green Ridge and Canyon Creek; GMU 35 – Big Alkali/Pisgah Mountain, Milk Creek and Greenhorn ridge; GMU 36 – Ute Creek to Cache Creek, Piney River Valley, Garden and McPhee Gulch. Very few deer, if any, winter in GMU 45. In fact, these deer are forced out of the GMU by the deep snow and migrate to GMU 36 or 35 via the deer underpass just above Dowd Junction under I-70.

The bulk of the winter range (over 90%) occurs on BLM and private lands. National Forest, Colorado Division of Wildlife, and State Land Board lands comprise about 1/10 of winter range (Table 3). Deer use winter ranges from about November 15 to May 15 in the Yampa River drainage and from and from December 1 to May 15 for the Colorado River drainage.

Table 3. Land ownership of mule deer winter range by Game Management Unit in DAU D-8.

	BLM		USFS		CDOW		State Land Board		Private		TOTAL	
GMU	**Area (km^2)**	**Area (mi^2)**	**Area (km^2)**	**Area (mi^2)**	**Area (km^2)**	**Area (mi^2)**	**Area (km^2)**	**Area (mi^2)**	**Area (km^2)**	**Area (mi^2)**	**Area (km^2)**	**Area (mi^2)**
15	111	43	10	4	28	11	9	4	128	49	286	110
35	357	138	0	0	0	0	4	2	79	30	440	170
36	65	25	42	16	11	4	3	1	89	34	210	81

45	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	534	206	51	20	40	15	16	6	295	114	936	361
% of winter range	57%		5%		4%		2%		32%		100%	

DAU D-8 contains 381 km^2 (147 mi^2) of severe winter range. Severe winter range is defined as the area of winter range where 90% of the deer will be confined during the worst two winters out of ten when the snow pack is at the maximum. There are 139 km^2 (54 mi^2) of winter concentration areas. Winter concentration area densities were defined as having greater than a 100% increase in deer numbers compared to the surrounding winter range density.

Habitat Condition and Capability

Mule deer winter range is in poor condition (see Section VI. Current Management Status for more discussion) due to senescence and succession of plant communities that have resulted from fire suppression. In addition, land development along the I-70 corridor has been constant since the 1980s and continues to cause significant loss and fragmentation of winter range habitat. The proposed Wolcott Reservoir project would eliminate as much as 2,500 acres of critical winter range habitat and important migration corridors along Highway 131.

A multitude of habitat improvement projects, including prescribed burns, removal of piñon-juniper encroachments, improvement of sagebrush and mountain shrub habitats, re-seeding, fertilization, and aeration, have been conducted or are on-going (Table 4). Various government agencies and private organizations have contributed to these projects. Due to the loss of important deer winter range to date, the continued preservation and improvement of existing habitat is paramount.

Table 4. Habitat improvement projects in D-8 since 1999.

Dates	Location	Acres	Treatment Type	Agency or Organization(s)	Cost
Past and ongoing projects:					
1999-present	WRNF - Eagle burn block projects	*	Prescribed burns	USFS	*
2002-present	Deer Pen (GMU 35)	5,700	Sagebrush/mountain shrub improvement, P-J removal, re-seeding - hand/fire/mechanical treatments	BLM, CDOW	$200,000
2002-present	State Bridge (GMU 35)	1,000	P-J removal - hand/fire/mechanical treatments	BLM	$50,000
2004-present	Radium SWA (GMUs 15 & 36)	1,000	Prescribed burns, soil aeration, P-J removal, re-seeding, water development	CDOW, Middle Park HPP, BLM, Mule Deer Foundation, Rocky Mountain Elk Foundation, Colorado Sheep and Goat Raffle funds, Rocky Mountain Bighorn Society	$209,700
2008-2009	Windy Point (GMU 35)	1,100	P-J removal - hand/mechanical treatments	BLM	$100,000
*	Highway 131/Wolcott and Edwards to Beaver Creek	1,300	Aerial fertilization	CDOW	*
*	Eagle County	700	P-J removal, water development, re-seeding, road closures	CDOW & Eagle County	*
Future scheduled projects:					
2009	Wolcott & Edwards	320	Aerial fertilization	CDOW	*
2009-2019	White River National Forest in GMUs 36 & 45	10,000-40,000	Prescribed burns, mechanical vegetation clearing, fertilization of winter range (oakbrush and sagebrush), timber harvest in summer range (Lodgepole pine, some spruce/fir and aspen)	USFS	*

* indicates data was not available.

Conflicts

Game damage due to deer is not a major problem in the DAU due to the general decline in livestock and agricultural uses since the 1970s.

Year-round recreational use by residents and tourists has increased in the past decades, causing disturbance of both deer and elk on fawning and calving grounds and on winter range. Dogs off-leash also contribute to the harassment and mortality of wildlife. These behavioral stressors and additional mortality can contribute to reduced recruitment of fawns into the population by directly impacting fawn survival as well as indirectly by pushing deer off of preferred feeding areas.

Also as mentioned above in the Land Use section, traffic has increased along I-70 and Highway 131, and many deer are killed in vehicle collisions.

V. PAST HERD MANAGEMENT HISTORY

Disclaimer for Population Size Estimate

Estimating population size of wild animals over large geographic areas is a difficult and inexact exercise. In several research projects, attempts have been made to accurately count all the known number of animals in large fenced areas. All of these efforts have failed to consistently count all of the animals. In most cases fewer than 30% of the animals can be observed and counted. Most population estimates are derived using computer model simulations that involve estimations for mortality rates, hunter harvest, wounding loss and annual production. These simulations are then adjusted to align on measured post-hunting season age and sex ratio classification counts and in some cases density estimates derived from line transect and quadrant surveys. It is recommended that the population estimates presented in this document be used only as an index or as trend data and not as an absolute estimate of the deer population in the DAU.

Post-hunt Population Size

CDOW biologists estimate the deer population size in the DAU using a computer modeling process. Starting in the early 1970s, CDOW used a computer modeling program called ONE POP. In the early 1980s, CDOW switched to a personal computer program based program called POP II. After 1999, CDOW has used a computer spreadsheet model to predict population size. In 2008, these spreadsheet models were standardized statewide using modeling methods developed by White and Lubow (2002). For the D-8 model, the biological parameters (i.e., juvenile and adult survival, and wounding loss) for input were constrained to reflect values obtained from field measurement of deer populations in western Colorado (Piceance Basin and Middle Park mule deer survival studies, 1997 – 2008). All models work in basically the same manner based on harvest figures, estimates for mortality, initial population size, sex ratio at birth,

and wounding loss. The best model is selected based on statistical fit to observed data. The results of the modeled population estimates are summarized in Figure 7.

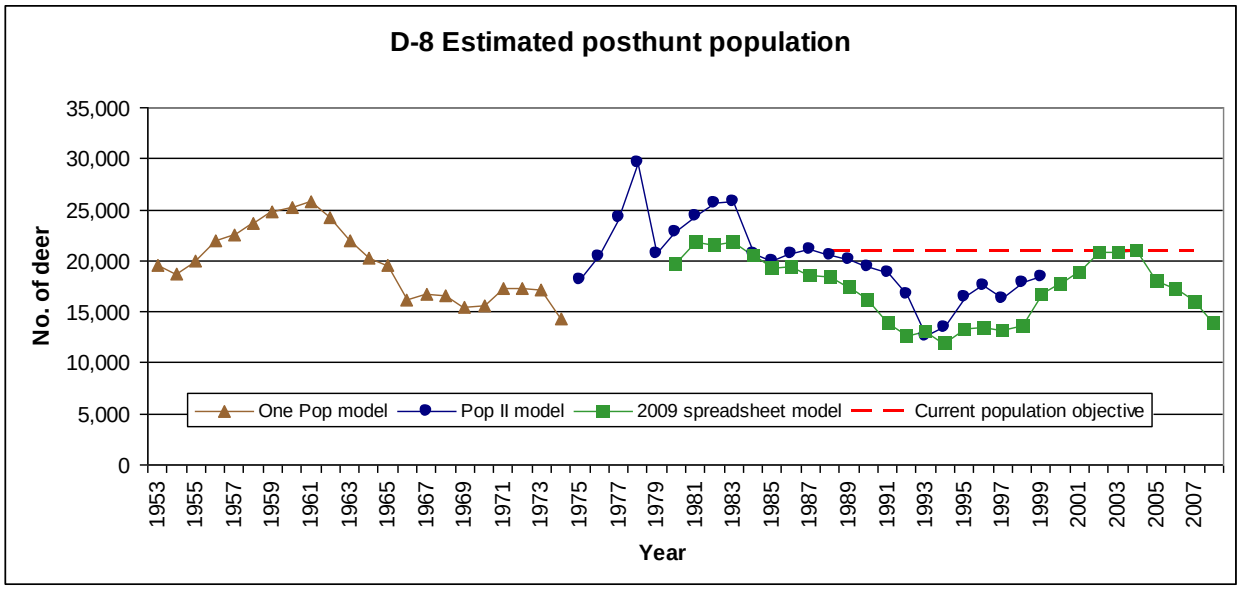


Figure 7. Post-hunt population estimates of deer in DAU D-8, 1953-2008. Various models were developed over time to estimate population size.

The estimated population from 1953 to 2008 has fluctuated between 12,000 and 26,000 deer (the spike in 1978 is likely to be an artifact of imprecision in the data). In the past 3 decades, there have been 5 notably severe winters: 1978-79, 1983-84, 1992-93, 2004-05 (in the northern part of the DAU), and 2007-08. The winter of 1983-84 was very severe in most parts of the state; however, the southern portion of this DAU was spared from the very deep snows. Also deer and elk in the DAU were fed in winters of 1983-84 and 2007-08 and this may have reduced some of the mortality. In 2007-08, deer and elk were only fed in GMU 35 and 36 near Wolcott, State Bridge, and Eagle. Drought conditions prevailed in the early 2000s, lending to mild winters but dry summers.

The 1988 DAU plan objective of 21,000 is probably close to, if not higher than, the current habitat carrying capacity, as the population has only achieved approximately 21,000 deer in the past 2 decades during the period when there was a string of mild winters as well as reduced doe licenses (see Harvest History section below) in the mid/late 1990s and early 2000s. In the late 1990s, license numbers were reduced, allowing the population to reach objective by 2003. At this time, doe licenses were increased again to stabilize the population. However, if the population size was at or above habitat carrying capacity, then doe harvest became additive to other forms of mortality, and thus the population began declining in 2005 to present. Reduced fawn ratios and yearling buck ratios (see Post-Hunt Herd Composition section below) suggest that doe reproductive fitness and fawn recruitment declined, which is consistent with a population near carrying capacity.

Post-Hunt Herd Composition

Fawn Ratios - Age and sex classification surveys using a helicopter were started in the DAU in 1973. During the early years, the surveys were conducted every other year. Since 1999, they have been conducted every year. When fawn ratios drop below approximately 45 fawns:100 does (assuming fawn and doe survival rates to be similar to those in the mule deer study sites in western Colorado [CDOW, unpublished data]), recruitment of reproductive does is insufficient to maintain the population (Unsworth et al. 1999). The fawn ratio in the DAU has averaged 69 fawns:100 does since 1973, ranging from 45 to 98 (Figure 8). The 5-year average from 2004-2008 is 57 fawns:100 does.

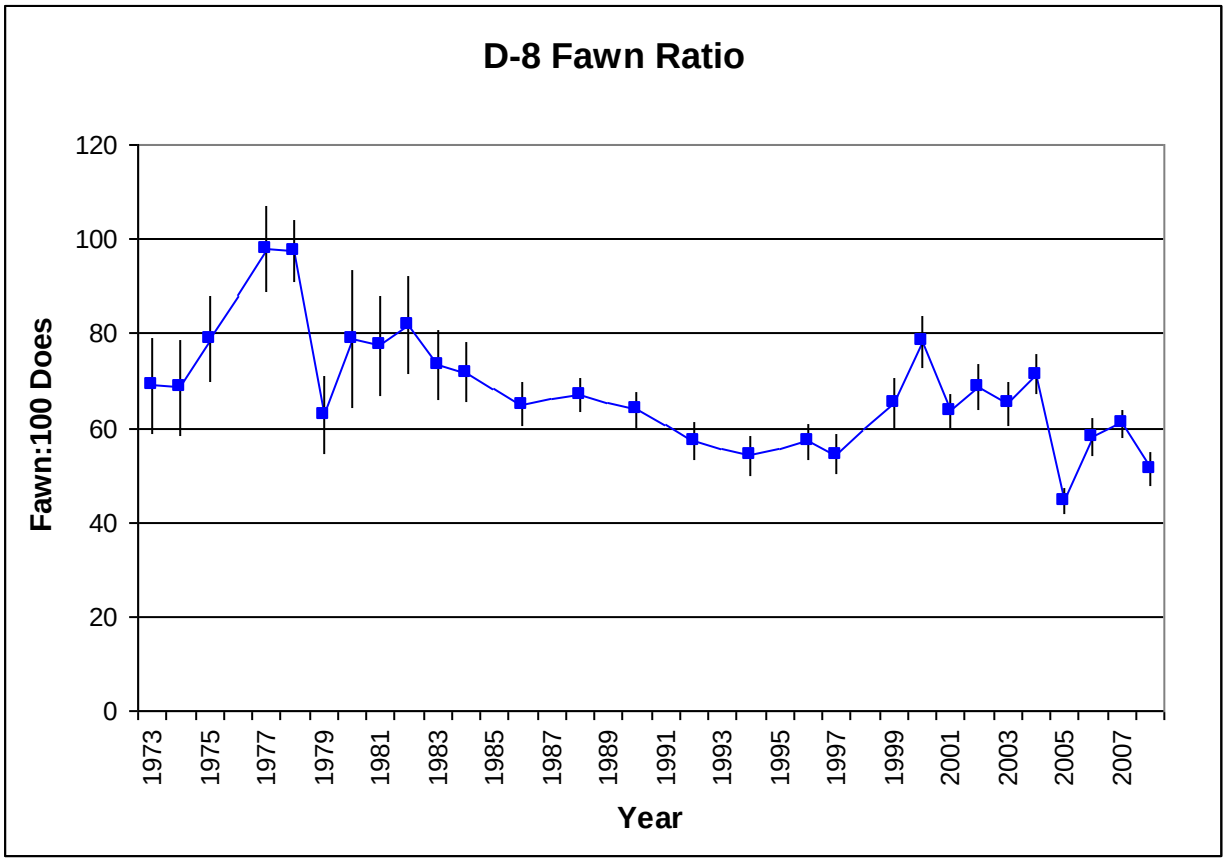


Figure 8. Observed fawn:doe ratios in DAU D-8, 1973-2008. The bars indicate the 95% confidence interval around the field estimate of the fawn:doe ratios.

Buck Ratios –The DAU has averaged 27 bucks:100 does since 1973, ranging from 13 to 40 (Figure 9). Starting in 1999, deer licenses were totally limited. As a result, buck ratios in 1999 to present are generally higher than pre-1999. The 5-year average from 2004-2008 is 28 bucks:100 does.

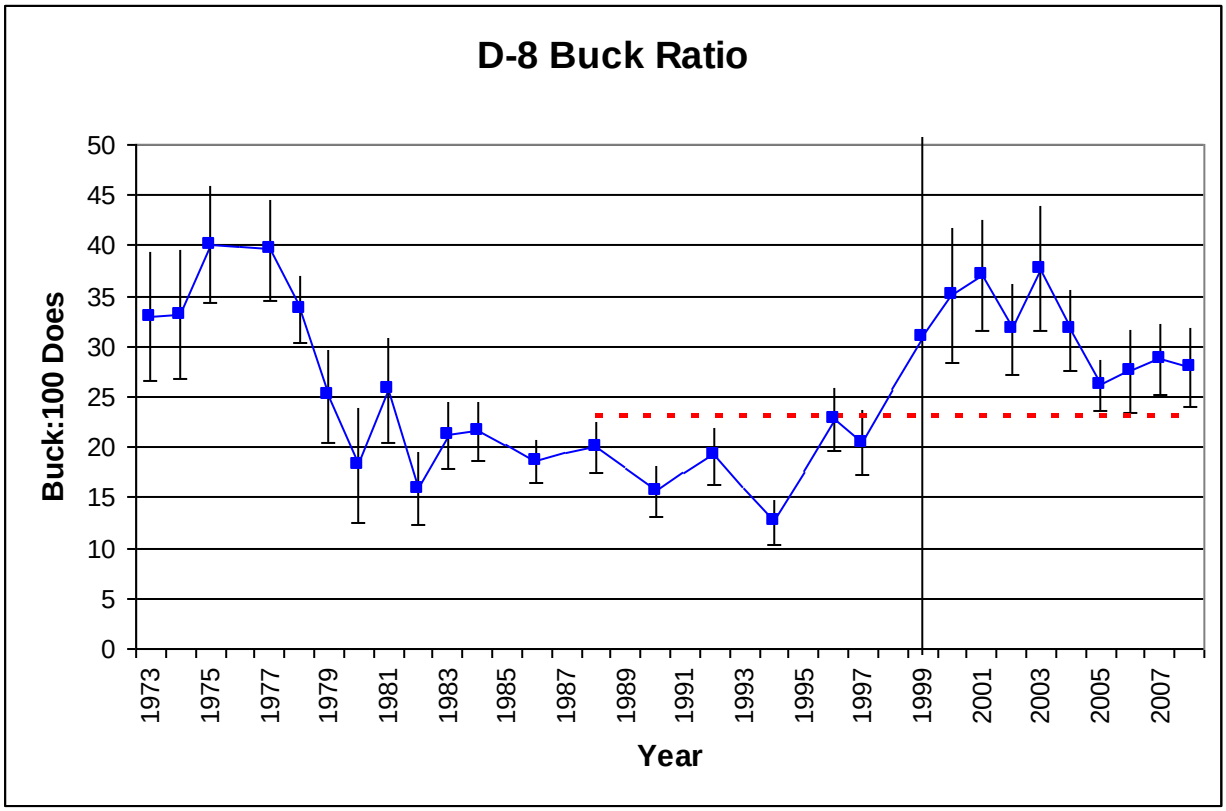


Figure 9. Observed buck:doe ratios in DAU D-8, 1973-2008. The bars indicate the 95% confidence interval (CI) around the field estimate of the buck:doe ratios. The buck:doe estimate for 1999 has an especially large CI. The dashed red line indicates the 1988 DAU plan's sex ratio objective of 23 bucks:100 does.

Yearling Buck Ratios - Biologists look at yearling buck ratio as an indication of recruitment to the population. Recruitment is the survival of fawn deer to the yearling age class. During an age and sex classification survey, yearling bucks are identified by their distinctive antler size and configuration; they usually have small spikes or two-point antlers. It is assumed that for every yearling buck, there is also a yearling doe deer.

Since 1973 yearling bucks have averaged 12 yearling bucks:100 does, ranging from 6 to 19 (Figure 10). The dips that occurred were probably related to severe winters the previous year. These years are most notable in 1979, 2005, and 2008, following the severe winters of 1978-79, 2004-05, and 2007-08. In 1984 and 1994, yearling buck ratio dropped after the previous winters, but not significantly so. The 5-year average from 2004-2008 has been 12 yearling bucks:100 does.

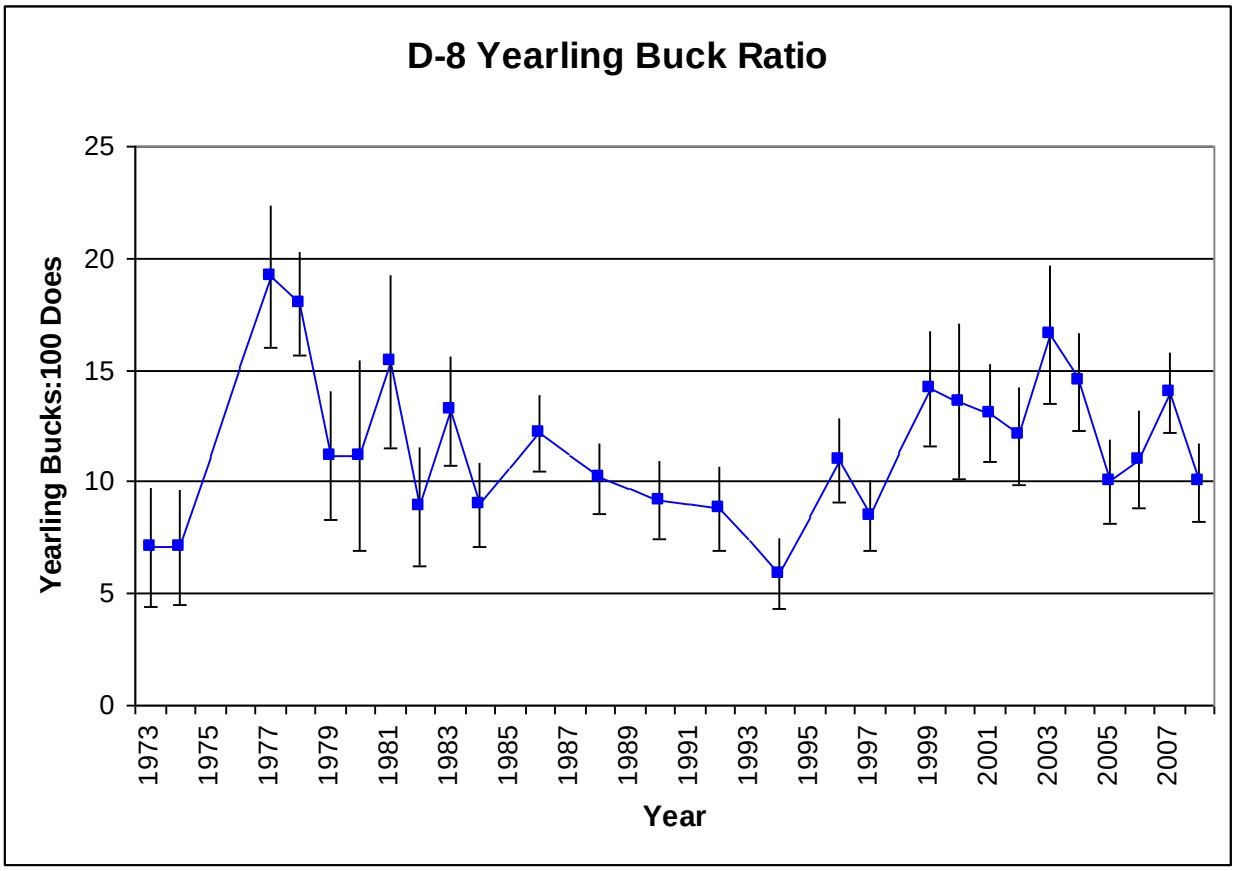


Figure 10. Observed yearling buck:doe ratios in DAU D-8, 1973-2008. The bars indicate the 95% confidence interval around the field estimate of the yearling buck:doe ratios.

Harvest History and Hunting Seasons

Hunting Season History – From simple 30-day seasons to more complicated split deer, split elk and combined seasons have been used to manage deer through the years. In the early 1960s, a hunter could take 2 or more deer. From 1971 to 2002, each hunter was limited to taking 1 deer. Since 2003, hunters have been allowed a 2nd deer license under List B (specific units and private-land-only licenses). In 1986, the Wildlife Commission approved either-sex archery, limited muzzleloader, and three combined unlimited buck and limited doe seasons as the general statewide season structure. The three combined rifle seasons were 5, 12 and 9 days in length, and were used as a method to distribute hunter pressure. While elk herds have generally been growing statewide since 1986, deer herds have generally been on the decline. Several variations of the three combined rifle seasons have been used by biologists to help improve the deer herds. In 1986, deer antler point restrictions were approved statewide, limiting harvest of bucks to those with three points or more on one antler. While antler point restrictions worked well for elk by delaying the kill one year, bucks do not show the same antler growth response as bull elk, and antler point restrictions were abandoned over much of the state after the 1991 season. Yearling bucks tend to have small two-point antlers but occasionally they are even 3 – 4 point bucks. Consequently, many hunters made mistakes and shot deer that were not legal, and in some cases, the deer were even abandoned.

In 1992, out of a growing concern for the mule deer decline, much of the state's deer hunting was restricted to a three-day buck hunt. Deer hunting for the remainder of days was limited to hunting does. This structure was very unpopular with hunters and was abandoned after 1994.

In 1995, buck hunting was extended to the first five days of each of the three combined seasons. Buck licenses remained unlimited or over-the-counter until 1999.

Starting 1999 to the present, all deer hunting in the state West of Interstate 25 was changed to a totally limited license (i.e., no over-the-counter licenses) for archery, muzzleloader, and regular rifle seasons. This was done mainly to improve the quantity and quality of the antlered deer hunts. Also, from 1999 – 2001, none of the leftover licenses from the computer drawing process were sold as leftover licenses. In 1999, only 4,585 rifle buck licenses were authorized in D-8, and archery and muzzleloader licenses were limited for the first time.

In 2000, CDOW began a new 5-year season structure that included:
1) a limited buck or either-sex archery season
2) a limited muzzleloader season for bucks and does
3) two combined rifle seasons (second and third season) for limited bucks and antlerless deer
4) a very limited fourth season for buck deer. To qualify for the limited 4th season buck deer hunt, the DAU must average more than 25 bucks:100 does for the previous three years and be at or above the long-term sex ratio objective.

In 2007, deer licenses for GMU 15 were separated from licenses for the rest of the DAU (GMUs 35, 36, and 45) to allow for better management of hunter distribution. The concern was

that with the previous DAU-wide licenses, hunting pressure in GMUs 35 and 36 was disproportionately high due to easy road access.

There have been 2 ranches in D-8 participating in the Ranching for Wildlife (RFW) program. The Ranching for Wildlife program allows large ranches greater than 15,000 contiguous acres to have separate private-land-only, 90-day hunting seasons that are not confined to the normal season structure. In return, the public is given a share of the antlerless and antlered licenses. In most cases this is about 10% of the antlered licenses and 100% of the antlerless licenses. The landowners cannot charge the public hunters a trespass fee and in most cases the hunts are a minimum of 10 days long. The Piney Valley RFW seasons ran from 1997 - 2004. This program was in Piney River and Castle Peak area and included parts of GMUs 35 & 36 for deer and elk. The Burns Hole RFW program began in 2002 through the present. Burns Hole is primarily in GMUs 25 and 26 (deer DAU D-43 and elk DAU E-6) and only contains 0.6% of D-8 in GMU 35. Deer license numbers for Burns Hole were traditionally determined based on D-43's license quotas. However, starting in 2010, Burns Hole RFW will receive several additional licenses calculated on proportional harvest in the ranch's portion of D-8, as well as D-43.

Habitat loss has reduced the deer carrying capacity of the DAU and has limited the ability to manage the deer at the current population objective. Due to the restrictive season structure outlined above and because the population was generally below the population objective in the 1990s, antlerless licenses were reduced in 1999. As a result, the deer population reached close to the population objective by 2003, at which time antlerless licenses were increased. From 2005 – 2008, the population declined to the current (2008) estimate of 13,850 deer. Due to concerns that the high snowpack of the 2007-08 winter caused high winter mortality, 2008 buck licenses were cut to half and doe licenses to $1/10^{th}$ of the previous year's quota. For 2009, licenses were maintained at this low quota to allow the population to grow.

Total Harvest – Harvest under an unlimited license structure is a crude estimation of population performance over time. From 1953 to 1963, the harvest generally increased and since 1964, total harvest has been stable to declining (Figure 11). In 1971, the Wildlife Commission was concerned enough about the mule deer decline that they instituted a statewide bucks-only season and hence the near record low harvest that year of only 760 buck deer. Harvest increased after 1971 and remained relatively stable for the next 21 years at around 2,600 deer per year. Following the severe winter of 1992-93, the deer herd has had 4 years in which the total harvest dropped below 1,000 deer: 1993, 1999, 2001, and 2008.

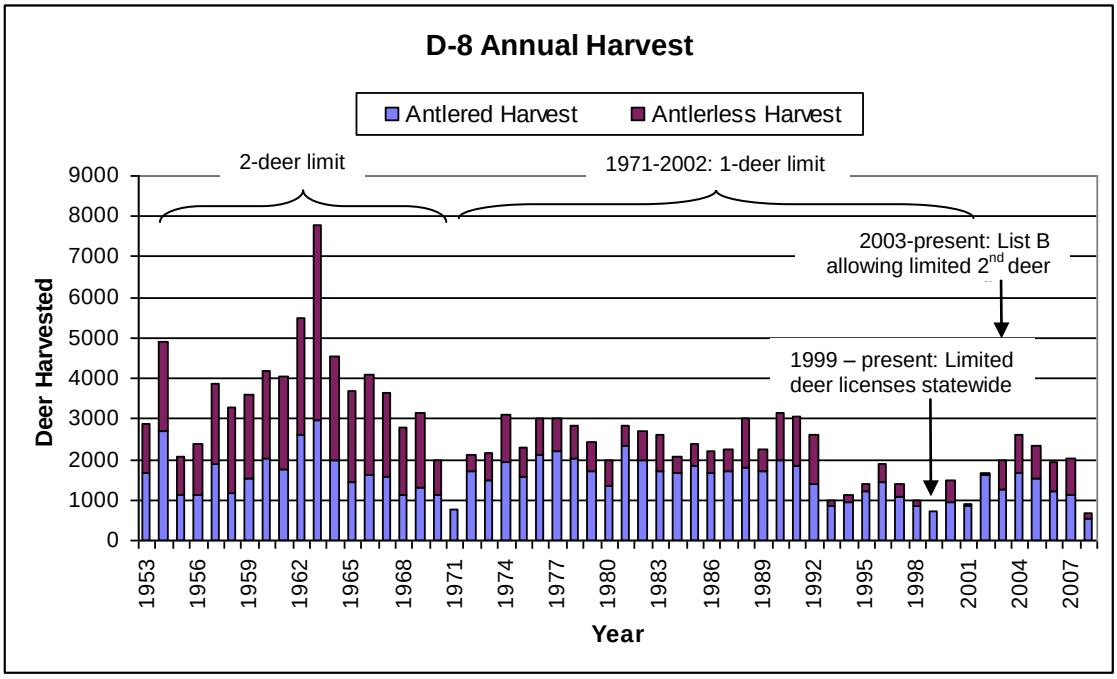


Figure 11. Total harvest of deer in DAU D-8, 1953-2008.

Buck Harvest – Until 1999, buck licenses were sold over-the-counter (unlimited). Since 1999, CDOW has maintained limited buck licenses. Since 1953, the buck harvest has averaged 1,571 bucks per year with a peak of 2,951 in 1963 and a low of 545 in 2008 (when license numbers were reduced by half of the previous year's quota) (Figure 12).

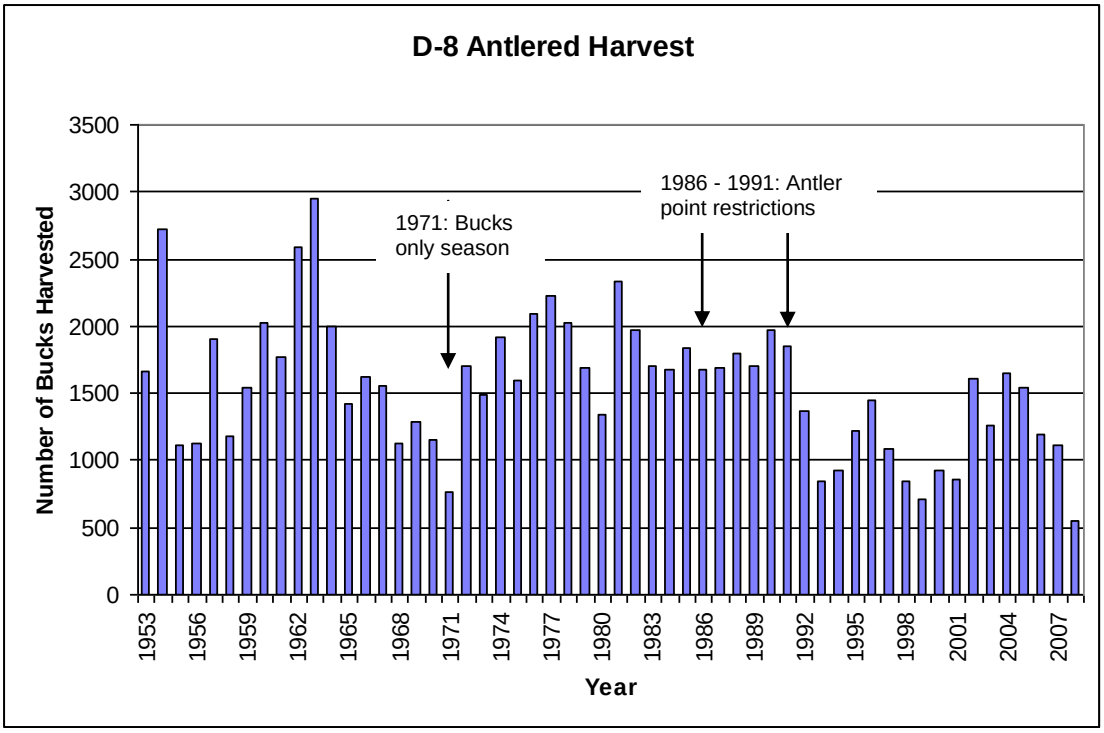


Figure 12. Harvest of antlered deer in DAU D-8, 1953-2008.

Antlerless Harvest - Limited antlerless licenses have been available throughout all years except 1971. In 1999 and 2001, antlerless licenses were only available in the Piney Valley Ranching for Wildlife program. Otherwise, there were no antlerless tags available elsewhere in D-8. Antlerless harvest increased during the period 1953 to 1963, then declined (Figure 13). Because of restrictive management, antlerless harvest has been low since 1971. From 1999-2002, the Colorado Wildlife Commission implemented more restrictive rules on antlerless harvest in the DAU, resulting in an increase in the deer population to nearly 20,000 deer in 2002. Because the population was nearing objective and CDOW was anticipating the approval of a new DAU plan with a lower population objective, the antlerless license quota was increased in 2003. In 2008, because the population had been in decline for several years and because of the effects of the harsh 2007-08 winter, antlerless licenses were reduced to 1/10th of the previous year's quota.

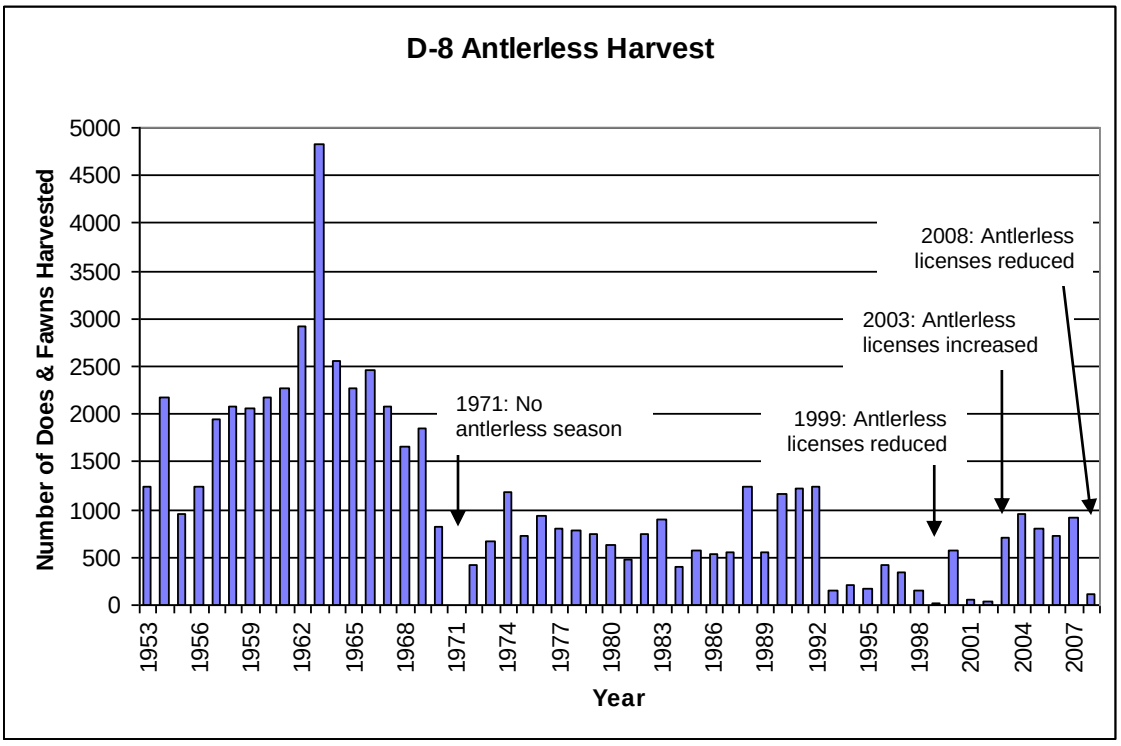


Figure 13. Harvest of antlerless deer in DAU D-8, 1953-2008.

Hunting Pressure - Hunting pressure has averaged 6,025 hunters per year from 1953-2008 (Figure 14). The highest number of hunters was 10,086 in 1988 and the lowest was 2,138 in 2008 when license numbers were significantly reduced and nationwide economic problems also contributed to fewer hunters afield.

Hunting pressure in D-8 has exhibited four distinct peaks. The first peak was in the mid-1960s, the second occurred in late 1970s/early 1980s, the third and biggest peak was in the early 1990s, and the fourth was in the 2000s. Since 1990, there has been a steady and significant decline in the number of hunters. This trend continued in 1999 when all of the deer hunting licenses in the DAU became totally limited. In 2002, leftover buck license sales resumed for the first time since 1999. In 2003, hunters could obtain a second deer license under List B and also more antlerless licenses were available. These changes increased the number of deer hunters and harvest through 2007. However, following the severe winter of 2007-08 and indications of a population decline, license quotas were reduced resulting in fewer hunters and harvests.

Hunter Success - Deer hunting success peaked in the early 1960s (when each hunter could harvest 2 deer), declined in the late 1960s and has remained relatively stable since the 1970s (Figure 14). After the totally limited license system was implemented in 1999, individual hunter success increased for several years, but then after 2004, success declined towards the long-term average (32% since 1970 to present). The 5-year average from 2004-2008 was 36%.

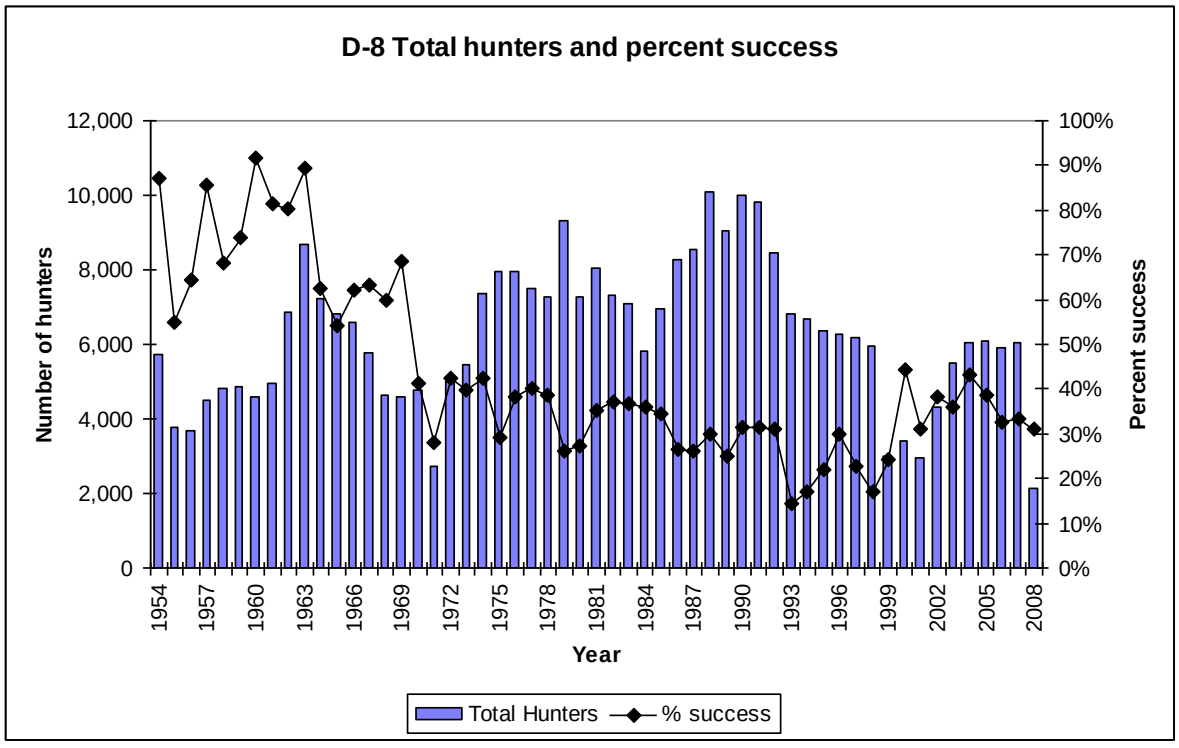


Figure 14. Total number of deer hunters based on license sales and percent success in DAU D-8, 1954-2008.

VI. CURRENT MANAGEMENT STATUS

1988 DAU Plan Objectives

Population Objective = 21,000 deer
Sex ratio Objective = 23 bucks/100 does

Current Management Strategies

The DAU is managed through totally limited licenses for both antlered and antlerless harvest for all manners of take. The 2nd and 3rd season buck licenses and private-land-only, either-sex licenses may be adjusted to ensure a quality buck hunt for the 4th rifle season antlered harvest. Private land licenses provide hunting opportunity on private lands and help to disperse deer. For the 2008 season, license numbers were reduced substantially to buffer the effects of the severe winter of 2007-08 and to stabilize the population size. In 2009, license numbers will remain at this reduced quota.

Current Management Problems

1. Limited Winter Range - Winter snow forces deer down and out of the higher elevations of the DAU to limited ranges above the Colorado River. This movement results in the use of a restricted and limited winter range and concentrates the deer in an area from approximately 6,500-9,000 ft. During light to normal winters, the winter mortality rates probably do not exceed 15 - 20% of the total deer herd. However, in severe winters, the deer can be severely concentrated in the valley floors on very limited south-facing or wind-swept slopes. Competition for food is acute and this results in high winter mortality, especially for fawns. For example, in Middle Park (D-9), 67.5% of fawns died during the severe winter of 2007-08. However, adult doe mortality during most severe winters is usually less than 30%. Winter range is considered the most limiting factor for deer in Colorado and this DAU.

2. Unfavorable Range Conditions - The big game habitat condition on winter ranges appears to be declining throughout the DAU. Long-term fire suppression has resulted in plant successional movement towards more late seral stage or climax communities. Browse plants are generally mature to over-mature and often decadent. Browse seedlings and young plants are sparse and in many areas, the grass/forb understory is sparse and lacks diversity. Piñon and juniper stands tend to be mature with a closed canopy that severely reduces understory vegetation. Due to fire suppression, piñon and juniper woodlands have invaded sagebrush shrublands and converted them to less productive sites. Many of the mixed mountain shrublands also are over-mature, less productive, and can be unavailable for winter browse use. Land development such as along the I-70 corridor has limited the use of prescribed burns on the adjacent public lands due to the fear of private property damage. In addition, some land owners oppose mechanical treatments of piñon and juniper encroachment because they find it unaesthetic.

Excessive livestock grazing probably occurred from the late 1800s to the 1960s. Prior to the Taylor Grazing Act, grazing was not regulated at all on public lands. During this period, big game winter ranges were grazed inappropriately by livestock (cattle and sheep), especially in riparian areas. In some cases, this has caused some sagebrush habitats to have a higher shrub canopy density than can be achieved under more natural conditions. When the canopy density exceeds 25%, the understory plants are greatly reduced. As mentioned earlier, fire suppression has resulted in increased piñon and Juniper encroachment into shrublands, resulting in the loss of valuable grass and forb understory vegetation. With the depleted understory, natural fire is much less likely to burn these areas and return the landscape to a more natural and desirable mosaic. Since the late 1960s the BLM and U.S. Forest Service have developed much improved grazing management plans that have addressed most of the historic livestock problems. Also, due to the general decline in agriculture in the area, livestock grazing on public lands has been reduced over the past 40 years.

3. Loss/Degradation of Habitat due to Human Impacts – Over the past 40 years there have been significant changes along the southern boundary of the DAU from the development of the skiing industry and Interstate-70. Nearly one-third of winter range is on private lands. Residential and commercial developments are resulting in a rapid loss of big game winter range and migration corridors. Harassment and displacement of deer by unleashed dogs and winter recreational users also negatively impact deer populations. Increased vehicle traffic along I-70 and Highway 131 have also resulted in increased roadkills of deer. Vehicle traffic along I-70 and the fencing of I-70 have also created a movement barrier to migration, although several spanning bridges and a wildlife underpass at Dowd Junction allow some movement of deer between GMUs 36 and 45.

4. Competition with Elk - Elk numbers in DAU steadily increased from very few elk a century ago to approximately 10,900 elk currently (estimated from proportion of bull harvest in each GMU of its DAU x DAU-wide population estimate from 2007 models). This deer herd is located in parts of three elk DAUs: E-7 which has GMU 15, E-12 which has GMU 35 & 36 and E-16 which has GMU 45. As the elk population grew over the past century, they have expanded their historic winter ranges and moved to lower elevations where they compete with deer on the limited winter ranges. Elk have more versatile food habits and are stronger and more aggressive animals than deer. The resulting increase in elk has probably been to the detriment of deer.

5. Chronic Wasting Disease (CWD) – CWD was first detected in wild cervid poulations in Colorado in the early 1980's. Because of concerns over how CWD would affect deer populations, the 2002 DAU plan for D-8 was placed on hold until further information on the prevalence and population impacts of CWD could be assessed. Monitoring of CWD incidence is achieved through laboratory testing of hunter-harvested and non-hunting mortalities of deer and elk. Within D-8, CWD has been found in GMU 15 and in the northern portion of GMU 36, although the prevalence of CWD across the DAU is low (0.5%; Miller 2008) and is not presently considered to be a significant source of mortality in this population. CDOW continues to manage deer and elk populations for low incidence of CWD.

VII. ISSUES AND STRATEGIES

Issue Solicitation Process

An important aspect of the DAU planning process is obtaining input from all segments of the affected local populations, including the BLM, US Forest Service, HPP committees, and the interested public. Scoping meetings were held to gather input from all stakeholders that have an interest in deer management, including the BLM, US Forest Service, HPP committees, and the public on the best manner to achieve the desired DAU objectives. Meetings were held on April 26, 2002, in Meeker and July 16, 2002, in Glenwood Springs with officials from local BLM and Forest Service offices to solicit input regarding deer and elk management in their Resource Areas. Input from the Burns Hole HPP committee was also sought in a meeting on April 10, 2002. These issues and concerns were noted and incorporated into this plan (Appendices 1 & 2).

In an effort to solicit recommendations on the goals and objectives of the DAU plan from the interested public, CDOW held open public meetings in Carbondale and Gypsum on May 8 and May 9, 2002. Current management objectives and alternatives were presented at these meetings. Input was requested from participants, in the form of an optional questionnaire regarding issues and concerns they might have with deer management in the DAU. Issues and concerns were noted during the meetings and incorporated into this plan (Appendix 3).

In 2002, a DAU Plan for D-8 was written and public comment was received. However, due to management concerns associated with the discovery of CWD on the western slope of Colorado, the DAU planning process was put on hold until the present time.

In 2008 and 2009, CDOW requested input from the federal agencies, HPP committees, county commissioners, and the general public. A new draft DAU plan was distributed to the agencies and HPP committees, and the plan alternatives were presented to the Eagle Board of County Commissioners and to the general public on June 22, 2009. Written comments and a compilation of the public surveys are attached in Appendices 1-3.

Issues and Concerns

BLM and Forest Service:

- Loss of winter range due to private land development and the consequent concentration of deer on BLM lands has led to deterioration of existing winter range.
- Past habitat management has been inconsistent, e.g., CDOW conducted shrub eradication projects in Milk Creek to increase grass production, which reduced the availability of sage brush habitat important to mule deer for forage and cover.
- Fire suppression, highways and increased vehicle traffic causing roadkills and habitat fragmentation/barriers to movement, drought earlier in the decade, weeds, historic overgrazing have also degraded range conditions.
- Competition with elk for winter range and forage have been detrimental to mule deer.
- Mountain mahogany browse plants are generally in excellent condition in the Glenwood Springs Resource Area (2002).

HPP Committees:

- Continued habitat treatments to improve long-term summer and winter range conditions are needed.

- The current population objective of 21,000 is too high, given the land use changes and habitat losses over the past 20 years.
- The current sex ratio of 28 bucks:100 does should continue. An increase beyond this ratio would not benefit the majority of hunters because license reductions would be needed to achieve a large increase.
- Ranching for Wildlife hunters should not be allowed to hunt deer and elk in the rut.
- CDOW should limit the number of licenses for trophy-sized bucks.
- No hunting should occur during the rut.
- To increase harvest and better manage the populations, more outfitters should be allowed on public lands .

Public:

In 2002, 2 people attended the Carbondale meeting and 5 people at the Gypsum meeting. Four questionnaires were completed and turned in for analysis. The responses regarding deer management in D-8 were:

- Varied about whether to increase, decrease, or not to change the deer population size
- Varied, but tending towards satisfied, about the DOW recommendation to increase the sex ratio objective to 30 bucks:100 does
- Satisfied with deer hunting in the prior 5 seasons (1998 – 2002)
- Varied regarding hunter crowding in the prior 5 seasons

In 2009, 8 people attended the meeting in Gypsum. The draft DAU plan and questionnaire were also posted on the CDOW website. Thirteen questionnaires were submitted. The following issues were of particular concern:

- Loss of deer habitat due to increased human population and development
- Potential starvation of deer during winter
- Potential competition between elk and deer for habitat

All of the 13 respondents were hunters/sportspersons and were overall satisfied with their deer hunting experiences in the past 5 years (2004-2008). On average, they felt that hunting conditions were moderately crowded. Most wanted to see an increase in the deer population from the current (2008) population size, but were only marginally supportive of a reduction in doe and/or buck licenses to achieve such an increase. However, here was strong support for funding habitat improvement projects. Most respondents also wanted an increase in the buck ratio and there was moderate support for an increase in doe harvest and limited motorized access during hunting season to achieve a higher buck ratio.

Eagle County Commissioners:

- Habitat protection and enhancement should be a priority, including the discouragement of land development in critical wildlife habitat, creation of wildlife mitigation trusts for habitat enhancement, and acquisition of existing habitat and migration corridors through open space and conservation easements.

VIII. ALTERNATIVE DEVELOPMENT

During the DAU planning process, the various interested groups were made aware of different alternatives to population size and composition. Both population size and composition must be considered when determining objectives and management strategies for this herd. Both characteristics of the herd will dramatically influence management regimes.

Post-hunt Population and Sex Ratio Objective Alternatives

- **Population Objective Alternatives**
  11,000-13,000 deer; 13,000-15,000 deer; 15,000-17,000 deer
- **Sex Ratio Objective Alternatives**
  22-26 bucks:100 does; 26-30 bucks:100 does; 30-34 bucks:100 does

Impacts of Population Objective Alternatives

The population objective determines the overall number of deer in the herd, regardless of sex or age class. Changes in population size objectives will impact interspecific competition, body condition of deer, quality of the habitat, and available licenses. Because native winter range habitat is rapidly being converted into human developments, the current deer population in D-8 is believed to be near or potentially above the habitat's carrying capacity. The current population objective (21,000 deer) established in the 1988 DAU plan is not sustainable, particularly because of the myriad problems of habitat loss and degradation described above in Section VI.

Alternative 1: 11,000-13,000 deer:

This alternative would result in a 13% decrease in the population size of this herd from current 2008 post-hunt population estimate of 13,850 deer. At this reduced population size, deer should be in better body condition due to lower competition among deer for habitat and forage, although annual variation in weather conditions and future habitat conditions can affect the health and productivity of the herd. In general, however, the herd should be more resilient to severe winter conditions and should have higher reproductive fitness and survival rates.

To achieve this population objective, initially antlerless license numbers would increase. While the chances of drawing a license would generally be higher, the chances of successfully harvesting a deer would be relatively lower because fewer deer per hunter would be available. Once the new population objective is achieved, the population would be evaluated to examine reproductive fitness parameters including fawn:doe ratio, fawn survival rate, and adult survival rate.

If reproductive fitness and survival are low, then license numbers would need to be reduced to maintain the herd at this population objective. If this is the case, hunting opportunity could be reduced in the long term, along with the economic benefits to the community.

If the deer herd is at an average to high level of reproductive fitness and survivorship, then the population should be able to sustain the increased level of harvest (as in the "Maximum Sustained Yield" example given in Figure 3). Hunting opportunity would remain relatively high,

and local communities would continue to benefit from the economic contributions of hunting activities.

Alternative 2: 13,000-15,000 deer:

This alternative would maintain the current population size of this herd. Antlerless license numbers would remain similar to the current license quota or might need to be slightly increased to stabilize the population at the current size.

If reproductive fitness and survival are average to low, license numbers would need to remain at the current quota, which was reduced in 2008 from the earlier quota levels. License-drawing success and harvest success would be similar to recent (2008) levels. The benefits of deer hunting to the local economies would continue, but would be lower than in the early and mid-2000s.

If reproductive fitness and survival improve due to the population being at a lower density presently compared to earlier in the 2000s, then license numbers could be increased to maintain the herd at this population objective. License quotas could be intermediate to the quotas set in 2003-2007 versus in 2008-2009. Local communities would continue to benefit from economic revenue generated from hunting activities.

Alternative 3: 15,000-17,000 deer:

This alternative would increase the current population size by 16%. Because of winter range loss and decadent winter range conditions, habitat improvement projects could be required to consistently hold the population at this increased size, especially during severe winters. If native winter range in the DAU continues to decline, the remaining habitat could further deteriorate due to relatively high concentrations of animals. At this higher population size, the herd may be more susceptible to the effects of a severe winter because individual deer will experience more competition with each other and with elk for limited forage and habitat.

If reproductive fitness and survival are low to average, license numbers would be reduced to allow the population to increase. Because doe licenses were already reduced by 90% and buck licenses by half in 2008 compared to 2003-2007, the additional licenses cuts may require eliminating doe harvest as well as further reducing buck licenses to achieve a population increase.

If reproductive fitness and survival are high, the population could increase to the new objective within several years at the present (2008) harvest level. Habitat improvements and habitat preservation through conservation easements, along with mild winters, may be necessary to achieve improved reproduction and survival of deer.

Late seasons might be necessary in areas of the winter range where high deer concentrations are affecting overused winter ranges. The population would be less productive at this higher density, so over time, license numbers would be reduced long-term to maintain the population size. Although there would be less opportunity to draw a license, those who do successfully draw a license would likely have a better chance of harvesting a deer because there

would be more deer in the DAU. Economic benefits from hunting would be reduced due to fewer licenses available and fewer hunters contributing to local establishments.

Impacts of Sex Ratio Objective Alternatives

Sex ratio objectives determine the number of bucks per 100 does. This characteristic most directly impacts the number of antlered licenses issued and the quality and quantity of bucks that are available to be harvested. Since the population size objective is established separately, the total number of deer would remain the same. Therefore there would not be any effect of different levels of sex ratio on the habitat, the need for habitat improvement projects, or game damage/human conflicts.

Alternative 1: 22-26 bucks:100 does:

This alternative would reduce the current observed sex ratio by 14%. Buck licenses available in the 2nd, 3rd, and 4th seasons would be increased (until the lower objective is attained, at which time the 4th season buck hunt would be eliminated). In addition, antlerless licenses could be cut back to increase the number of does relative to bucks. More bucks could be harvested than in the past, but fewer bucks would survive to maturity, so there would be fewer trophy bucks available in the population. This alternative would increase hunter success, total harvest, and hunter-recreation days. However, hunter crowding could be a problem.

Alternative 2: 26-30 bucks:100 does:

This alternative would maintain the sex ratio at current levels. There would be no change in the season structure and the herd would be managed for a balance between quality buck hunting and opportunity to draw a buck license.

Alternative 3: 30-34 bucks:100 does:

This alternative would increase the current observed sex ratio by 13%. Buck licenses in 2nd and 3rd seasons would be reduced to relieve hunting pressure on bucks. The opportunity to draw a buck license would be less than in the past, but more bucks would survive to maturity, so those hunters who drew a buck license would have more opportunity to harvest a quality buck.

IX. CDOW Recommended Objectives

Recommended DAU Population Objective: 13,500-16,500
(Intermediate to Alternatives 2 & 3)

Recommended DAU Sex Ratio Objective: 26-30 bucks: 100 does
(Alternative 2)

Justification and Rationale:

Recommended Population Objective: After receiving public comment and considering internal discussions, CDOW recommends a population objective of 13,500-16,500 deer, a population range that will allow for either stabilization or an increase in population size while still maintaining harvest opportunity. This objective is intermediate to Alternatives 2 & 3 and would, on average, increase the population size by 8% from its current estimate of 13,850 deer. CDOW believes that the present objective (of 21,000) represents too many deer for the current habitat conditions of declining quality and quantity of mule deer range due to land development; fire suppression; range degradation due to inappropriate historic livestock grazing, over-populations of deer in the 1950-1960s; and competition with elk. In fact, the population objective of 21,000 deer has only been obtainable when antlerless licenses are greatly reduced. Reducing the population objective to 13,500-16,500 deer would allow a reasonable number of licenses (antlered and antlerless) to be issued in most years, and would leave room for population growth if habitat conditions and weather conditions are favorable for such growth. Exceptions could be after severe winters when the population size might drop below the objective. When a severe winter occurs, a population at lower density should have more resiliency and should recover more quickly.

Recommended Sex Ratio Objective: The recommended sex ratio objective of 26-30 bucks:100 does is an increase of 22% over the current objective of 23 bucks:100 does, and would maintain the current 5-year average of 28 bucks:100 does. Prior to 1999, it was not practical to attempt to increase the sex ratio above a range of 15-25 bucks:100 does. After 1999, deer hunting in this DAU was changed to totally limited licenses so the number of buck licenses and the amount of the buck harvest could be controlled. Public opinion surveys have indicated that most hunters wanted the opportunity to hunt and see more and larger bucks. A sex ratio objective of 28-32 bucks:100 will strike a balance between opportunity to draw a license and chances of harvesting a large buck.

X. Approval/Signature Page

XI. LITERATURE CITED

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XII. Appendices

Appendix 1: Federal Agency comments

2002 US Forest Service and BLM comments

A meeting was held with the federal land management agencies at the Meeker BLM office on April 26, 2002. Letters to the Routt and White River National Forests and Glenwood Springs, Little Snake, Meeker and Kremmling Resource Areas were sent out inviting the forest supervisors and area manager and appropriate staff to these meetings. The meeting was not well-attended, especially by personnel from the southern portion of the White River National Forest. Consequentially, a second meeting was held at the Glenwood Springs CDOW office on July 17, 2002, to solicit more input from the federal wildlife biologists and range conservationists. Some of the comments regarding deer issues received at these meeting include:

Meeker Meeting – 4/26/02

- The Glenwood Springs BLM Area agreed that winter range is deteriorating as more and more private lands are developing, which then puts more pressure on the BLM ranges. He thinks some of the BLM range is in poor condition. He also mentioned that we need to think about how ranching is changing (e.g. non-traditional ranches near Aspen) because it will complicate things.

- Blanco District was concerned about competition by elk with deer. If the DOW reduces the deer population objective, elk might continue to increase and reduce forage base.

Glenwood Springs meeting - 7/16/02

This meeting was attended by 6 people from the White River National Forest: Vernon Phinney, Thomas Matza, Joe Doerr, Keith Giezentanner, Wayne Nelson, and Phil Nyland. There were two people from the BLM Glenwood Spring Resource Area: Tom Fresques and Mike Kinser.

- Mountain mahogany browse plants are generally in excellent condition in the Glenwood Springs Resource Area.

- Fire suppression has hurt the long-term condition and trend of mule deer ranges in these DAUs.

- Intense land development and related issues have removed and degraded mule deer winter ranges in these DAUs.

- High elk populations will compete with mule deer especially in recently treated areas such as prescribed burns and on winter range areas.

- There was general approval of everyone in the meeting that an average 10% reduction in the current deer population and an increase in the sex ratio objective by an average of 14% for all of the DAU plans are reasonable goals.

United States Department of Agriculture | Forest Service | Medicine Bow – Routt National Forests and Thunder Basin National Grassland | Yampa Ranger District
300 Roselawn Ave., PO Box 7
Yampa, CO 80483-0007
970-638-4516
http://www.fs.fed.us/r2/mbr

File Code: 2610
Date: August 25, 2008

Perry Will
Area Wildlife Manager
Colorado Division of Wildlife
50633 Highways 6 &24
Glenwood Springs, CO 81601

Dear Mr. Will

This letter is in response to your request for comments on Data Analysis Unit (DAU) management plans. The Yampa Ranger District is covered by a portion of the State Bridge herd (D-8) and a small portion of Sweetwater Creek herd (D-43). At this time, the Yampa Ranger District has no issues or concerns with deer herd numbers or objectives in D-8 or D-43. No additional comments will be provided for D-43 due to the small area that encompasses the Yampa Ranger District. The Piney River herd (E-12) boundary does not encompass the Yampa Ranger District, so no comments will be provided. The following information is relevant to D-8, or more specifically, to Game Management Unit (GMU) 15.

The Forest Service would like to make the Division of Wildlife aware of the extensive bark beetle impact on lodgepole pine that is occurring on Gore Pass, Sarvis Creek Wilderness, and the Morrison Creek drainage. The Forest Service is anticipating that lodgepole pine mortality will be close to 90% for trees 5" Diameter Breast Height (DBH) or greater. How the bark beetle will influence wildlife species has not been well studied. The changes in mature, lodgepole pine cover types could create an immediate substantial (1-10 years) loss of mature and older aged forest important to deer and other wildlife species. Within 3-5 years, there is generally a large increase in understory production by existing grasses, forbs, and shrubs. The release of ground vegetation could provide a beneficial impact to mule deer, in terms of forage potential. Time since death of beetle-killed trees is also an important factor determining usefulness of these trees for wildlife: wildlife species that require mature forest cover are less affected in 3 to 5 years; as the stand continues to break up over time it becomes less favorable to mature forest species; wildlife species that thrive in open, edge, or coarse woody debris habitat benefit in the mid and long term; and salvage harvesting of beetle-killed stands might rejuvenate stands more quickly.

The Yampa Ranger District has many timber sales at various stages of progress in terms of timber sale prep, sold and under contract, or active harvest is occurring in the Gore Pass area that was covered by the Rock Creek Environmental Impact Statement or other Environmental Assessments (Enclosure 1: Map of Timber Sales). Currently, the Yampa Ranger District has two active sales: Sleeping Lion Timber Sale (TS) with an approximate area of impact of 500 acres and the Long Park TS (523 ac.). The timber sales that are sold, but harvest has not begun include: South Red Dirt (518 ac.), Deadman (300 ac.), Twisted Antler (544 ac.), and Two Elks TS (1,000 ac.). Three timber sales are being prepped: Blacktail (2,017 ac.), Big Rock (1,362 ac.)

and Porcupine TS (639 ac.). Other on-going projects that will be removing beetle-killed trees include Western Area Powerline Vegetation Clearing (22 miles) and the Hazard Tree Project that will occur along major roads (levels 3-5), trails, and campgrounds. Lastly, the Yampa Ranger District is in the initial stages of identifying fuels projects in the Morrison Creek drainage to protect the rapidly growing subdivisions of the Stagecoach Property Owner's Association and in cooperation with the Community Wildfire Protection Plan.

As discussed above, the forest conditions on the Yampa Ranger District will be changing rapidly over the next several years related to the bark beetle epidemic and subsequent response to salvage timber, reduce fuel loads, and remove hazard trees. The Forest Service expects that conditions for mule deer will change over the years, in terms, of habitat use and annual movements. The mule deer is primarily a summer resident of the Routt National Forest and is a popular game species. The increase in summer forage will likely benefit mule deer populations over the next 5 to 10 years. There may be some changes to seasonal movements and mule deer moving onto the Forest earlier in the spring related to an earlier melt-off of snow due to the lack of tree cover. However, in the fall, mule deer may be pushed off the Forest Service onto private land due to increased hunting pressure from natural or human-created openings (clear-cuts and roads). If hunting pressure becomes an issue in the future, we would like the Division of Wildlife to consider the number of licenses sold for each GMU as these changes occur.

At this time, the Forest Service has not identified any concerns or issues with range and deer use in GMU 15 and we do not expect any issues to arise related to the forest changes. The Forest Service expects that forage will not be a limiting factor for wildlife or range over the next 10 years.

We thank you for letting us provide comments on your DAU management plans. If you have questions or concerns, please contact myself or the wildlife biologist, Melissa Miller at 970-638-4516.

Sincerely,

JOSH VOORHIS
Acting District Ranger

cc: Melissa A Miller

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Kremmling Field Office
P.O. Box 68, 2103 East Park Avenue
Kremmling, Colorado 80459-0068
www.blm.gov/co/st/en/fo/kfo.html

TAKE PRIDE IN AMERICA

In Reply Refer To:
6521 (CO-120)

8/20/2008

Julie Mao, Terrestrial Biologist
Colorado Division of Wildlife
50633 Highways 6 & 24
Glenwood Springs, CO 81601

Dear Ms. Mao:

Thank you for the opportunity to provide preliminary comments for the upcoming Data Analysis Unit (DAU) management plans for deer in the State Bridge herd (D-8) and Sweetwater Creek herd (D-43) and for elk in the Piney River herd (E-12). At this time, the BLM field office in Kremmling has no comments, concerns, or recommendations to offer at this stage in the planning process regarding deer and elk management in these DAUs. We look forward to reviewing the draft plans in the future.

Sincerely,

Peter G. McFadden

for David Stout
Field Manager

Appendix 2: HPP Committee comments

HPP meeting (2002)
A meeting with the Burns Hole HPP was held on April 10, 2002 at the Burns Baptist Church to solicit comments concerning DAU plans E6, E12, D8, and D43. These comments, suggestions and recommendations were recorded on a flip chart. Some of the comments have been edited or expanded to preserve the meaning. Some of the comments apply more to the 2005-2009 five-year season structure discussion.

D-8 Comments

- Ranching for Wildlife hunters should not be allowed to hunt deer and elk in the rut.
- CDOW should limit the number of licenses for trophy-sized bucks.
- No hunting should occur during the rut.
- To increase harvest and better manage the populations, more outfitters should be allowed on public lands.

Upper Yampa River HPP Committee comments (2009)
The northern portion of GMU 15, which contains primarily summer range falls within the UYHPP committee boundaries. The Committee recognizes that the vast majority of D-8, including almost all of the winter range is outside their committee boundaries. With these factors in mind, the UYHPP Committee still felt it was still worthwhile to share their thoughts with you.

Population Objective

The UYHPP Committee is concerned that the current population objective of 21,000 is too high. All members are aware of the land use changes that have occurred in the area over the last 20 years and appreciate the influence habitat loss, particularly loss of valuable winter range can have on mule deer populations. After discussing the current population estimate of 13,850, the Committee felt that it would be appropriate for the CDOW to adopt a new population objective that better reflected the current population. Committee members felt a range of 13,000 to 16,000 would likely allow the CDOW to maintain existing hunting opportunities while also affording a better balance between habitat availability and population size.

Sex Ratio Objective

The UYHPP Committee feels that the current sex ratio of 28 bucks:100 does is great! The members would like to see the CDOW increase the old sex ratio objective to maintain a range that encompasses the current observed sex ratio. In addition, committee members did not feel that increasing the sex ratio much beyond this would benefit the majority of hunters, as license reductions would be necessary to achieve a significant increase in this ratio.

Lower Colorado River HPP Committee comments (2009)

USDA United States Department of Agriculture | Forest Service | White River National Forest

Aspen-Sopris Ranger District
PO Box 309/620 Main St.
Carbondale, CO 81623
(970) 963-2266
Fax: (970) 963-1012

File Code: 2620 **Date:** June 26, 2009
To: Julie Mao, Area 8 Terrestrial Biologist, Colorado Division of Wildlife

From: Phil Nyland, Lower Colorado River HPP committee Forest Service Representative, and Aspen-Sopris District Wildlife Biologist
Subject: Forest Service Representative comments on the June 2, 2009 Draft D-8 DAU Plan

Julie;

These are my comments on the draft DAU Plan, as requested June 8, 2009, of the Lower Colorado River Habitat Partnership Program (HPP) committee Forest Service representative. The White River National Forest (WRNF) Eagle and Holy Cross Ranger Districts are within DAU D-8. Wildlife Biologists Lara Duran, (970) 328-5860, and Vern Phinney (970) 262-3491, cover these Ranger Districts. The Routt National Forest Yampa Ranger District is within DAU D-8. Wildlife Biologist Melissa Dressen, (970) 638-4177, covers this Ranger District. I have provided them a copy of the draft DAU plan and my comments in the event that they have additional comments for you.

Vegetation treatments that will improve long-term summer and winter habitat conditions for mule deer are planned on WRNF in GMU 45 and 36. These include the use of prescribed fire, mechanical vegetation clearing, and fertilization of winter range (oakbrush and sagebrush) and timber harvest in summer range (lodgepole pine and some spruce-fir and aspen). Estimated amount of area treated would be in the range of 10,000 to 40,000 acres over the next 10 years. Specific treatment plans are available from these districts.

My opinion is that high elk numbers and expanded distribution, primarily to lower elevations in winter, have had an additive effect to other factors contributing to the decline in the mule deer population in this DAU. Deer are crowded out of limited winter range by elk, and this range is being lost and degraded by human uses and development. A higher number of elk now range on historic mule deer winter range and this has helped to degrade plant condition and form. For example, potential browse for deer is out of reach because elk can reach higher and have a wider range of palatable browse species. Reduced fire cycle and effects have certainly played a role, but other factors influence decline in mule deer population.

Another factor is the increase in juniper and shrub distribution in areas that were historically dominated by sagebrush. This is probably the result of factors including fire suppression, climate, grazing, and other human-influenced factors. Also, Eagle/Holy Cross Ranger District Biologist Joe Doerr (1998-2007) believed that big game range was declining in part due to a dieback of oakbrush during 2000 to present. What causes oakbrush dieback is unclear, and I share this observation with you, but don't necessarily join Joe in his concern.

My opinion is that I-70 is a barrier to the seasonal movements within the DAU and a source of mortality that has contributed to the decline of this herd.

Page 17, paragraph 2, states, "Severe winters and habitat degradation mainly from fire suppression has negatively impacted deer herds." I do not concur that habitat degradation has *primarily* been a result of long-term fire suppression. I believe it is a combination of factors that includes suppression of fire in winter range, but also a loss of available winter and transition range, and crowding of domestic livestock and big game.

Page 22, bullet 5: I would like to see more information on how Chronic Wasting Disease (CWD) has influenced this herd population and structure. Are there known cases of CWD in this DAU? How has it affected recruitment and survivorship?

Another management problem is the movement barrier created by I-70. A game fence has recently been constructed along I-70 in the southeast portion of the DAU in an effort to reduce big game collisions. This, to a degree, and interstate traffic volume serve to block transitional movements to/from and within winter/transition range. Is this is a problem for herd movements in GMU 45 to the south of GMU 36? How is this accounted for in herd management and setting harvest objectives?

Page 36, USFS comments on the draft 2002 DAU plan. I believe these comments are still appropriate for the DAU, but also add the need to account for CWD, I-70, and some alteration of winter range sagebrush habitat in DAU planning.

I attended the meeting with the Burns Hole HPP on April 10, 2002. I did not have additional comments on DAU D-8 as a Forest Service representative. If CDOW believes that more outfitters should be allowed on Forest Service lands to better manage mule deer in the DAU, CDOW should contact the Districts to explore outfitter opportunities.

Thank you for the opportunity to comment.

Appendix 3: Comments from Public Meetings

2002 Public Meetings

Two public meetings were held to determine public issues and concerns. Both meetings were advertised in the local newspapers and on the local radio stations. The first meeting was on 5/8/02 at the Carbondale Days Inn from 4 pm to 8 pm. The second meeting was at the Gypsum Town Hall on 5/9/02 from 4 pm to 8 pm. Both meeting were conducted in the open house format. There was a station and posters for each DAU and DAU plan. Additional stations were set up to explain the DAU planning process and population dynamics. Questionnaires for deer and elk were provided and attendees were encouraged to fill them out at the meeting. Some preferred to take the questionnaires and mail them back to CDOW. All of the local DWMs, Pat Tucker (AWM) and Gene Byrne (Terrestrial Biologist) were in attendance to answer questions and serve the public. Additionally, the DAU plans and questionnaires were made available at the Glenwood Springs office.

Results:

Attendance – only two people showed up at the Carbondale meeting and 5 people at the Gypsum meeting. Only 4 questionnaires were completed and turned in for analysis.

1. Are you...
   4 a resident of Colorado? 0 a non-resident of Colorado?

2. Do you live in GMUs 25, 26, 34, 35, 36, 43, 44, 45, 47, 444, 471?
   4 Yes
   0 No

3. Do you own or lease property in GMUs 25, 26, 34, 35, 36, 43, 44, 45, 47, 444, 471?
   1 No

   3 Yes , If yes, how many acres 3.5, 1,580?

4. Which group(s) do your opinions about deer management most represent?
   (Check all that apply)
   1. 2 Rancher/farmer
   2. 1 Business owner
   3. 1 Landowner
   4. 1 Guide/outfitter
   5. Government employee
   6. 3 Hunter/sportsperson
   7. 1 Environmental/conservation interest
   8. Other, please explain: BS in Wildlife Biology

   If you checked more than one response in Question 4 above, write the number of the ONE GROUP listed that you **most represent** –

1._____ Rancher/farmer
2._____ Business owner
3._____ Landowner
4._____ Guide/outfitter
5._____ Government employee
6._2__ Hunter/sportsperson
7._____ Environmental/conservation interest
8._____ Other, please explain

5. Please indicate, by order of preference, what seasons you prefer to hunt (with "1" being the highest preference and "4" being the lowest preference).

Type Hunter						
Archery	3	4	2			
Muzzleloading	2	3				
Regular	1	1	1	1		
Other		2				
Do Not Hunt						

DEER MANAGEMENT

1. Over the past 40 years, deer populations have been up and down but mostly in a general decline. Even though we have fewer deer than we had 40 years ago, the Colorado Division of Wildlife believes that it would be unwise to attempt to increase deer numbers at this time. Deer habitat quantity and quality has been reduced or lost by land development, highways, fire suppression and competition with increasing elk herds, etc. For the health of all wildlife, it is very important to maintain forage in good condition. Also, CDOW believes that with smaller deer herds, there will be higher reproduction and survival rates. In many cases, having smaller herds should result in the same or even more surplus deer for the hunters to harvest. CDOW is <u>not</u> recommending an increase in the deer population objective at this time and feels that a decrease is necessary. With this in mind in mind, how would you like the deer populations to change?

Check only one for each DAU:

	D8	**D13**	**D14**	**D43**	**D53**
CDOW Rec. Decrease*	**-16%**	**-15%**	**-10%**	**-15%**	**-8%**
Decrease over 25%					

Decrease 11-25%	1		1		
Decrease 1-10%		1			
No Change	2	1	1	1	1
Increase	1	1	1	1	1

* % Decrease compared to the current (2001) post-hunting season population

2. The Glenwood Springs area deer herds are currently managed for a sex ratio objective of 23-35 bucks per 100 does. This is the ratio of buck deer to doe deer at the end of the fall hunting season. The current regulations allow a buck deer hunters to harvest any antlered deer with a minimum of 5-inch antler. Because all deer hunting in the Glenwood Springs area is now totally limited (no more over-the-counter licenses), CDOW is able to manipulate the buck:doe ratio by the number of licenses that are issued. Therefore, with the exception of D14 and D53, CDOW is considering increasing the buck ratios to a range of 25-35 bucks per 100 does per DAU. How satisfied are you with these recommendations? **(Please check one box per DAU):**

Deer Herd (DAU)	Current Sex Ratio Obj.	CDOW Recommend Sex Ratio Obj.	Very Dissatisfied	Somewhat Dissatisfied	Slightly Dissatisfied	Neutral	Slightly Satisfied	Somewhat Satisfied	Very Satisfied
D8	23	30		1		1			2
D13	23	30		1		1			1
D14*	35	35		1		1			1
D43	24	30		1		1			1
D53*	30	25		1		1			1

* D14 has been managed as a trophy deer area since 1992 with a sex ratio objective of 35 bucks:100 does

- D53 – despite 39% drop in buck harvest over the past 3 years, the buck ratio has remained at an average of 25.6 bucks:100 does

DEER HUNTING

1. Overall, how satisfied or dissatisfied have you been with the deer hunting in the Glenwood Springs area deer herds in the past 5 seasons? **(Please check one box per herd that you have personally hunted)**

Deer Herd (DAU)	Very Dissatisfied	Somewhat Dissatisfied	Slightly Dissatisfied	Neutral	Slightly Satisfied	Somewhat Satisfied	Very Satisfied
D8						2	1
D13						1	
D14						1	1
D43						1	1
D53		1				1	1

2. Overall, how satisfied or dissatisfied have you been with the hunter crowding while deer hunting in the Glenwood Springs area deer herds in the past 5 seasons? **(Please check one box per herd that you have personally hunted)**

Deer Herd (DAU)	Very Dissatisfied	Somewhat Dissatisfied	Slightly Dissatisfied	Neutral	Slightly Satisfied	Somewhat Satisfied	Very Satisfied
D8		1	1			1	
D13						1	
D14		1				1	
D43		1				1	
D53			2			1	

3. Overall, how would you rate the deer hunting opportunities in the Glenwood Springs area deer herds?

Deer Herd (DAU)	Very Dissatisfied	Somewhat Dissatisfied	Slightly Dissatisfied	Neutral	Slightly Satisfied	Somewhat Satisfied	Very Satisfied
D8					1	1	1
D13					1		
D14					1		1
D43					1		1
D53					2	1	

Additional Comments:

1.Leave the draw for bucks only on all seasons until November 10
2. No deer hunting in the mating season – after November 10
3. Have 3-point antler or better restriction for deer hunting

2009 Public Meeting

A public meeting was held on June 22, 2009, at Gypsum Town Hall. Approximately 8 people attended. A questionnaire was distributed and was also posted on the CDOW website. Below is a summary of responses from 13 members of the public:

BACKGROUND INFORMATION	*SUMMARY OF RESPONSES*
1) Are you a resident of Colorado?	Yes (13)
2) Do you live in GMUs 15, 35, 36, and/or 45?	No (9); Yes (4)
If yes, how many years	
and in what GMU? _____	
3) Do you own or lease property in GMUs 15, 35, 36, and/or 45?	No (10); Yes (3)
If yes, how many years	
and in what GMU? _____	
4) During the last 12 months, have you participated in outdoor recreational activities other than hunting (e.g., camping, backpacking, snowmobiling, etc.) in GMUs 15, 35, 36, and/or 45?	Yes (12); No (1)
5) Which group(s) best represent your interests in deer management in GMUs 15, 35, 36, and/or 45? *(Check all that apply)*	Number
___ A) Rancher/Farmer	0
___ B) Business owner	1
___ C) Landowner	2
___ D) Guide/Outfitter	0
___ E) Hunter/Sportsperson	13
___ F) Environmental/Conservation	5
___ G) Other, please explain	1-Hiking, Camping, Recreation
6) If you checked more than 1 response in the above question, write the letter corresponding to the interest group which most represents your opinions: _____	Hunter/Sportsperson

PEOPLE AND DEER

1) Please indicate how interested you are in each of the following activities. *(Circle one number for each item).*	Avg Score
Rank 1(No Interest) to 5 (Very Interested)	
A) Watching or photographing deer	4.0
B) Hunting deer	**4.9**
C) Learning more about deer management	**4.6**

D) Providing input for decisions regarding deer management	**4.6**

2) Please indicate how concerned you are about the following topics in GMUs 15, 35, 36, and/or 45. *(Circle one number for each item).*	Avg score
Rank 1(No Concern) to 5 (Very Concerned)	
A) Deer/Vehicle collisions	3.5
B) Economic losses to ranchers/farmers from deer damage to rangeland, crops, or fences	2.1
C) Damage to homeowners' trees, shrubs, and gardens caused by deer	1.7
D) Predation on the deer population by coyotes, bears, and mountain lions	3.7
E) Loss of deer habitat due to increased human population & development	**4.8**
F) Potential starvation of deer during the winter	**4.7**
G) Deer spreading disease to pets, livestock, or humans	2.7
H) Deer competing with livestock for forage	2.8
I) Potential competition between elk and deer for habitat	**4.2**
J) Revenue that deer hunting provides local business	3.6

3) Have you been personally affected by any of the concerns listed in Question 2 in GMU's 15, 35, 36, and 45?	F(4); D(3); A, C, E, H, I(2); J(1)
If yes, circle one: A B C D E F G H I or J	

4) How do you personally feel about deer in GMUs 15, 35, 36, and 45? *(Check ONE)*	Number of votes
___ I do not enjoy the presence of deer in these units AND regard them as a nuisance.	0
___ I enjoy the presence of deer in these units, BUT worry about the problems they may cause.	2.5
___ I enjoy the presence of deer in these units AND do not worry about the problems they may cause.	10.5
___ I have no particular feelings about deer in these units.	0

DEER MANAGEMENT

Population size:

1) How would you like the deer population in GMUs 15, 35, 36, and 45 to change, if at all, from the current population size?	Number of votes
___ Decrease (-15%)	1
___ No Change	2

___ Increase (+15%)	8.5
___ Don't know	1.5

2) How important to you is the change in the size of the deer population that you indicated in Question 1 above? *(Circle One)*

Not Important / Slightly Imp't / Imp't / Very Imp't / Don't Know	Very Important (8); Important (4); Slightly Important (1)

3) If you indicated that you would like a decrease in the deer population (in Question #1 above), what methods would you support or oppose to decrease deer numbers? (Circle one number for each item)

	Avg score (among 1 vote for decrease)
Rank 1(Strongly Oppose) to 3(No opinion) to 5 (Strongly Support)	
Increase doe tags……..……..……..	1.0
Increase either-sex tags……	**5.0**

4) If you indicated that you would like an increase in the deer population (in Question #1 above), what methods would you support or oppose to increase deer numbers? (Circle one number for each item)

	Avg score (among 10 votes for increase or increase/don't know)
Rank 1(Strongly Oppose) to 3(No opinion) to 5 (Strongly Support)	
Reduce doe tags…….……..….	3.4
Reduce doe and buck tags……..…….	3.3
Fund habitat improvement projects…….	**4.8**

Buck:doe ratio:

5) How would you like the proportion of buck deer in GMUs 15, 35, 36, and 45 to change, if at all, from the current buck:doe ratio?

	Number of votes
___ Decrease (22-26 bucks per 100 does)	0
___ No Change (26-30 bucks per 100 does)	2.5
___ Increase (30-34 bucks per 100 does)	10
___ Don't know	0.5

6) If you indicated that you would like a decrease in the proportion of buck deer in the population (in Question #5 above), what methods would you support or oppose to decrease buck deer numbers? (Circle one number for each item)

Rank 1(Strongly Oppose) to 3(No opinion) to 5 (Strongly Support)

More buck licenses

Reduce doe harvest

7) If you indicated that you would like an <u>increase</u> in the proportion of buck deer in the population (in Question #5 above), what methods would you support or oppose to increase buck deer numbers? (Circle one number for each item)	Avg score among 10 votes for Increase)
Rank 1(Strongly Oppose) to 3(No opinion) to 5 (Strongly Support)	
Fewer buck licenses	3.1
Eliminate 4th season buck hunting	2.9
Increase doe harvest	3.7
More restricted motorized access during hunting season	3.8

DEER HUNTING

1) Have you ever hunted deer in Colorado?	Yes (13)
If yes, how many years?	Average 20 years
2) Have you ever hunted deer in GMUs 15, 35, 36, and 45?	Yes (13)
	Average:
3) Overall, how satisfied have you been with your deer hunting experience(s) in GMUs 15, 35, 36, and 45 in the last 5 years? *(Circle ONE)*	3.8
Rank 1(Very Dissatisfied) to 3(Neutral) to 5 (Very Satisfied)	=Satisfied
4) Overall, to what extent have you felt crowded by other hunters while deer hunting in GMUs 15, 35, 36, and 45? *(Circle ONE)*	2.2
Rank 1(Extremely Crowded), 2(Moderately), 3(Slightly), 4(Not at all crowded)	=Moderately crowded
5) Rank the following items from 1 to 5 in the order that they would most likely improve your deer hunting experience in GMUs 15, 35, 36, and 45. (1=most likely to improve, 5=least likely to improve) Do not use any number more than once.	Average score (lower # is more preferred)
___Less hunter crowding	3
___Higher hunter success rate	4
___Less motorized vehicle access	4
___Seeing more mature bucks	**2**
___Seeing more deer	3
6) Overall, how would you rate the quality of deer hunting opportunities available in GMUs 15, 35, 36, and 45? *(Circle ONE)*	Average score:
Rank 1(Poor); 2(Fair); 3(Good); 4(V.Good); 5(Excellent); 99(No opinion)	3
	= Good

7) Which ONE factor is the MOST important to you when deer hunting in GMUs 15, 35, 36, and 45? *(Check ONE)*	Number of votes
___ Not encountering other hunters	2
___ Obtaining game meat	2
___ Seeing deer	**4.5**
___ Harvesting a trophy deer	**4.5**

In addition to the questionnaire, written comments were also taken. Below is a summary of comments from the public (Note: responses that were excessively lengthy were paraphrased and/or edited to be more concise):

- "Overall herd health concerns should be the #1 priority. Habitat improvement projects must continue. The I-70 corridor and Highway 6 from Avon to Eagle causes excessive fatalities to both deer and elk. The fence along I-70 has a gap at Singletree contributing to a higher proportion of road kill than any other section... I'd like to see the maturity level of bucks improve. Development in Eagle County will not slow down. Winter/critical winter habitat will continue to shrink. Reducing the herd population while maintaining current buck:doe ratio is the only sensible alternative. We may have to wait longer for buck tags, but quality hunting keeps the enthusiasm high. Less tags = less hunters = quality hunts. Keep the ATVs on roads. Let the fork horns and spikes live to grow old."
- "Since 1983… I have noticed the following trends: (1) Increased crowding due to the access now available through the use of ATVs. (2) A decrease in the number of trophy sized bucks; those with 28-inch spreads and massive beams. (3) It would also appear the body size of large antlered bucks has decreased. (4) The number of elk in my hunting areas (primarily McPhee Gulch and Yarmony Mountain) has increased and during hunting seasons, they occupy areas I would previously have considered deer country - low PJ and sage. (5) I consider PJ encroachment and decadent sage areas to be the single greatest limiting factor for deer populations. This is being addressed by the DOW on the RSWA and by the Forest Service in McPhee Gulch but the effort needs to be greater and more widespread... and involve the significant amount of BLM... especially those areas that border the Colorado River from Pumphouse to Dotsero."
- "Why did they take off the 3 point restrictions? Did it not help the quality of the bucks? I would like to see more mature bucks. Need to come up with a plan to increase the proportion of bucks. Also to let the bucks mature more so they can reach their growth potential."
- "I have hunted and camped in GMU 15 (Long Park Area) for over 16 years and have seen many changes in the habitat not good at all. In recent years, the logging in the area to help remove the trees damaged by beetle kill I think has affected the deer and elk populations. On that same note, change in access for vehicles in some areas has been restricted to help the population which I think is a good thing. I hope that doe tags for these areas increase. I am really disappointed in the number of tags given out the last couple of years."
- GMUs 35 & 36 should be separated from GMU 45 for the unit 35 deer tag. Most of the hunting pressure is in 35 & 36. (2) Reinstate the point restriction on bucks statewide. Most hunters who are successful have harvested very young, small 2- to 3-point bucks. The number of mature bucks is decreasing. "These units, if managed for more bucks and mature bucks could produce the best deer hunting in Colorado. This in turn would bring more money from out of state hunters that could be put toward the health and management of our deer."
- "It is important to take whatever measures are needed to restore the herd size and tag numbers… I assume the current [license] reductions are adequate to provide hunting opportunities and increase herd size… What I want to see is deer and tag numbers back up so that the opportunities hunters had in these areas area restored or even increased."
- Fewer deer after winter '07. Would like to see more numbers of deer, not people; fewer tags to non-residents; point restriction on deer; more access to private land; longer seasons to spread people out; later seasons to bring animals off of private ranches.

- "I wouldn't mind waiting and using a point or two for the opportunity to see more mature bucks."
- "Increase quality experiences for bucks. Increase habitat (projects) in winter range."
- (1) "Unless an area is completely over its objective population and lacking in winter range, I do not think doe hunting should be allowed at all. This includes public and/or private lands in an area… in area 15 it seems to drastically increase the number of hunters in the field and decrease the ethics of some of the hunters when there are a lot of doe permits." (2) The 3 point restrictions did not work in my opinion. They only led folks killing fork horns by mistake and sometime[s] smuggling them out and sometimes leaving them. From my observations this decreased the number of bucks in the field. On the other hand, I applaud the years of no leftover tags for deer... for several reasons. We saw less hunters in the area by far. We had noticeably larger and more buck deer after the first year of this restriction... I would like to see it back." (3) "Fourth deer season in area 15... is a great opportunity for Colorado hunters to harvest a fantastic old trophy buck... [and] should be limited to Residents only."
- (1)”Increase in muzzleloader and archery licenses over the past 5+ years has increased the early season hunting pressure for both elk and deer statewide.” (2) "Most of the quality mule deer I have seen in Unit 15 have been on private land (70-90%). Primarily this is due to limited hunting pressure and great feed." (3) "I agree with NO hunting on the RFW properties during the rut for both deer and elk. Further I feel that the RFW program needs to provide more licenses for the public license applicant and less for the land owner to sell at any price... Also any hunting for wildlife [Ranching for Wildlife] property permitted to hunt during the rut must make licenses available for the public applicant to hunt during the same time frame..."

Appendix 4. County Commissioners comments

OFFICE OF THE
BOARD OF COMMISSIONERS
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SARA J. FISHER
PETER F. RUNYON
JON STAVNEY

July 13, 2009

Colorado Division of Wildlife
Attn: Julie Mao
50633 Highways 6 & 24
Glenwood Springs, CO 81601

Re: D-8 Comments

Dear Ms. Mao:

In the past 10-15 years, Eagle County, in cooperation with the CDOW, other municipalities and the development community, has taken an aggressive approach to wildlife habitat protection and mitigation. These practices include discouraging development in critical wildlife habitats, creation of wildlife mitigation trusts for habitat enhancement, and the acquisition of open space and conservation easements that enhance habitat and movement corridors. After reviewing the D - 8 (State Bridge Deer) DATA ANALYSIS UNIT PLAN and listening to your PowerPoint presentation, the Eagle County Board of Commissioners (BoCC) would like to offer the following comments and recommendations:

The BoCC urges the CDOW to pursue the higher population objective for deer of 15,000 – 17,000 listed under Alternative 3. Healthy deer populations in Eagle County provide a significant economic stimulus from both consumptive users (hunters) and non-consumptive users (wildlife viewing). Larger deer populations keep Eagle County on the map for hunters, and result in high user satisfaction and better economic opportunities. Recent surveys have indicated the continued aesthetic importance of wildlife to both residents and visitors to Eagle County.

The buck:doe sex ratio is recommended in the range of 26-30 bucks per 100 does, as listed in Alternative 2. This mid-range recommendation should provide enough mature bucks to ensure favorable reproduction capabilities, resulting in a good balance of opportunities for hunters and wildlife viewers.

We recognize there are factors that may hinder or slow the attainment of these population goals; but we also believe that if other tools in addition to hunting were emphasized, the objectives could be reached more quickly, and a healthier deer herd would result. The CDOW's emphasis on managing "population size through female harvest" and managing "sex ratios through male harvest" appears to overlook the significance of the habitat component and potentially lacks a consistent long-term solution. The key items here are habitat protection and enhancement. As the Data Analysis Unit Plan states, important habitats in Eagle County have been severely degraded over the last 40 years. We believe a good deer management plan should place an emphasis on improving these habitats, thus improving overall herd conditions and creating a more sustainable deer population.

Eagle County Building, 500 Broadway, P.O. Box 850, Eagle, Colorado 81631-0850

The Eagle County Board of Commissioners recommends that the CDOW emphasize a strong habitat element in the D - 8 (State Bridge Deer) DATA ANALYSIS UNIT PLAN that would encourage and promote more habitat protections and enhancements with the U.S. Forest Service, Bureau of Land Management, cooperating counties and municipalities, and conservation organizations.

We appreciate the opportunity to comment on this deer management plan. If you have any questions please feel free to contact us.

Respectfully,
Eagle County Board of Commissioners

Sara J. Fisher
Chairman

Peter F. Runyon
Commissioner

Jon Stavney
Commissioner