

D-9 (Middle Park Deer)
DATA ANALYSIS UNIT PLAN
Game Management Units 18, 181, 27, 28, 37, and 371



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DATA ANALYSIS UNIT PLAN
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I. DAU PLAN EXECUTIVE SUMMARY

GMUs: 18, 181, 27, 28, 37 and 371 (Grand and Summit Counties)
Land Ownership: 67.5% Public, 6.3% National Park, 26.2% Private

Post-hunt Population:

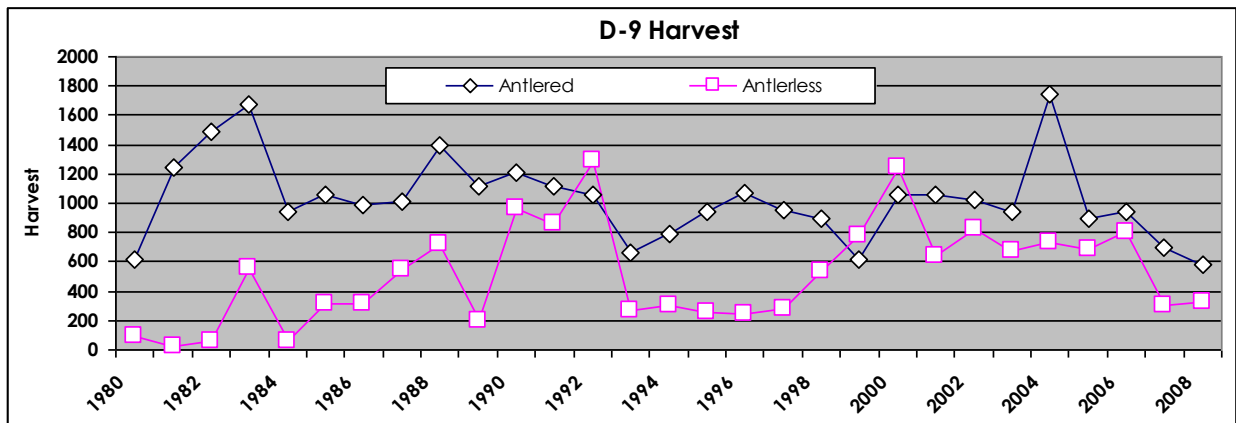
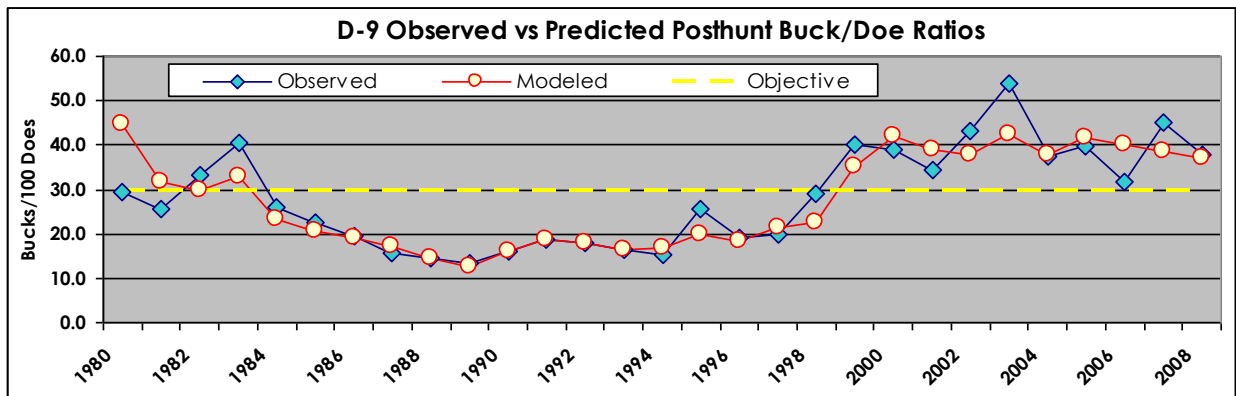
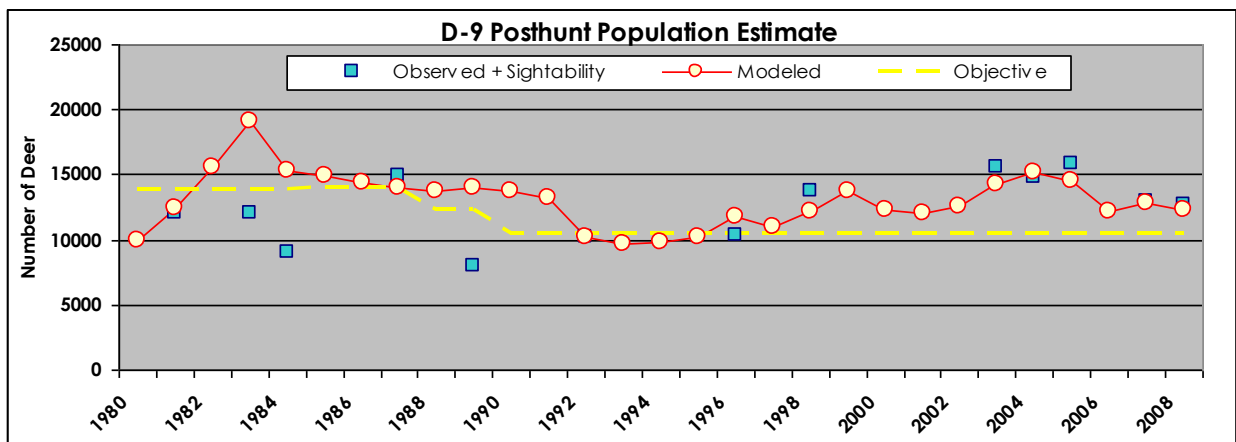
Current Objective: 10,500 – 12,500

Previous Objective: 10,500 2008 Estimate: 12,300

Post-hunt Sex Ratio (bucks: 100 does):

Current Objective: 30-35 bucks: 100 does

Previous Objective: 30 2008 Estimate: 38



Background

The Middle Park deer herd (D-9) consists of Game Management Units (GMUs) 18, 181, 27, 28, 37, and 371 and is located west of the Continental Divide and encompasses all of Grand and Summit Counties.

Since 1989, the population objective for D-9 has been 10,500 animals and 30 bucks: 100 does. The deer population was relatively high in D-9 during the early 1980's through the early 1990's. Since that time, the herd slightly declined, rebounded, and then has shown a decline the past few years. The current model estimates a deer population of approximately 12,300 animals, which is still greater than the current herd objective. The historical trends of this herd mirrored those seen in most mule deer populations throughout Colorado and the Western U.S.

The CDOW has conducted aerial sex and age composition surveys in D-9 since the late 1960's. Early records in the 1980's show that total buck: doe ratios were around 30 bucks: 100 does. Although the buck:doe ratio was below the objective until the mid-1990s, these ratios have generally increased and remained above objective since then to recent levels of 30-40 bucks:100 does, in large part due to totally limited male licenses implemented in 1999. The average buck: doe ratio in the DAU for the last 28 years is 28.3 bucks: 100 does. Post-hunt classifications in 2008 estimated 37.8 bucks: 100 does.

The post-hunt fawn: doe ratios are indicators of how successful the reproduction was for the past spring and how well fawns survived until December. This is a critical indicator of the condition of the herd. Fawn production in the DAU has been good over the years, generally ranging between a low of 40 fawns: 100 does and a high of 90 fawns: 100 does in the early 1980s. The 20 year average for fawn production has averaged approximately 63 fawns: 100 does. Since the early 1990's, production has averaged 53 fawns: 100 does. In 1999, the Colorado Division of Wildlife instituted a fawn and doe survival study to more closely monitor cause-specific mortality factors in both the juvenile and adult doe segment of the Middle Park deer herd. An annual sample size of 60 fawns and 90 does is maintained via radio-collar deployment in early December. Fawn survival is monitored for six months from the time of collaring to mid-June. Juvenile radio collars are designed to drop-off animals in late summer so as not to interfere with growth. Adult does are monitored on a yearly basis from collaring to the following December. Adult radio collars are designed to stay on the animal for multiple years to allow for multiple years of data collection. Survival rates for fawns and does allow for more precise modeling by adding observed survival rates to the modeled population.

Deer harvest in DAU D-9 has changed substantially over time, peaking in the late 1980's and mid 1990s for antlered deer and the early 1990s for does, followed by significant reductions, particularly in doe harvest. Antlered deer harvest has averaged close to 1000 animals per year since 1980, with the exception of the past 4 years, where it has declined to an average of 780 bucks per year. Doe harvest has varied throughout the years with peaks in 1992 and 2000, but has averaged around 500 does per year since 1980. Middle Park has been fairly aggressive with issuing doe licenses throughout the years.

Significant Issues

The most important aspect of the DAU planning process is obtaining input from all segments of the affected local populations, including the US Forest Service (USFS) and Bureau of Land Management (BLM), HPP committees, and interested public.

Meetings were held to solicit input from the USFS, BLM, the local public, and the Boards of County Commissioners from Grand and Summit Counties. A questionnaire was available at these public meetings and on the DOW web site to solicit opinions from the public. Several significant issues were identified during the DAU planning process. During the last Middle Park DAU planning process (1998) the most significant issues were habitat loss, elk competition, vehicle collisions and predation. According to recent surveys, the most significant issues identified were elk competition and limited winter range in Middle Park.

The primary concerns for the Colorado Division of Wildlife (CDOW) are continued habitat loss and fragmentation due to development, the possible effects of potential oil and gas development, reducing or maintaining current levels of Chronic Wasting Disease (CWD) prevalence, and the unknown effects of the pine beetle situation currently spreading throughout Middle Park.

The USFS Dillon Ranger District, the USFS Sulphur Ranger District, and the Kremmling Field office of the BLM were all satisfied with the current population level and buck: doe ratios. The Middle Park HPP Committee and the public respondents favored an increase in the current population objective and an increase in the buck: doe ratios.

D-9 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.

Population Objective Alternatives

The first (1) population alternative would decrease the herd to approximately 8,500 - 10,500 deer. This would require more aggressive doe harvest for a number of years until the herd had reached this objective, at which time hunting opportunity would level off as management would focus on stabilization at this new level.

The second (2) population objective alternative calls for maintaining the herd at the current population objective level of a range of 10,500 – 12,500 deer. This would represent the status quo in terms of deer numbers and would be at a level similar to deer populations seen over the past three years.

The third (3) population objective would increase the herd to a level closer to that of the 1980s of approximately 12,500 – 14,500. This would require a lower level of doe harvest until the herd increased to objective, followed by an increase in hunting opportunity over current levels. This alternative assumes that there is sufficient habitat available to support this higher deer density and could increase CWD prevalence in the Middle Park Deer herd.

Herd Composition-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 decrease in the sex ratio objective to 25-30 bucks: 100 does. This would increase buck hunting opportunity, although the result would be fewer mature bucks in the population and a general decrease in antler/body size. It is likely that as this objective was reached, 4th season buck hunting would be eliminated; although bucks testing positive for Chronic Wasting Disease would be reduced.

The second (2) alternative would manage for 30-35 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 35-40 bucks: 100 does. This would slightly decrease buck hunting opportunity, but manage for the highest number of bucks in the population, as well as the most mature, large antlered bucks. To reach this level, only minor reductions in buck harvest could be expected. Currently the observed and modeled ratios are already in this range, so under present assumptions antlered harvest could remain unchanged. If a reduction in antlered harvest was needed to sustain this ratio it would impact hunting opportunity, however, hunters that did draw would experience fewer other hunters and see more mature animals. Fourth season buck hunting opportunities would remain available and possibly increase. CWD prevalence in tested bucks could well be highest under this 3rd option.

Preferred Alternative - Population Objective

The CDOW recommends population objective Alternative # 2, which calls for maintaining the herd at the current population levels of 10,500 – 12,500 deer. Antlerless hunting opportunities will continue to exist at current levels, although slight variations will be made on a year to year basis depending on observed population size, weather, and other factors.

Preferred Alternative - Sex Ratio Objective

The CDOW sex ratio objective recommendation is Alternative #2, 30 - 35 bucks: 100 does. While D-9 has averaged close to 40 bucks: 100 does over the past 10 years, Middle Park is prone to severe winters and high hunter harvest with correct weather conditions. Buck: doe ratios in D-9 could be drastically altered within a year or two if both of these conditions exist. Alternative # 2 would provide for a balance between hunter opportunity and the chance of harvesting a quality 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 the 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, the CDOW uses a "management by objective" approach (Figure 1). Big game populations are managed to achieve population and sex ratio objectives established for Data Analysis Units.

DAUs provide the framework to manage individual herds of big game animals. DAUs are generally discrete geographically, and attempt to identify 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. The fact that DAU plans are reviewed and revised on a 5-10 year basis provides assurances against the often-dynamic fluctuations experienced by Colorado's big game herds. Changes in land development, public attitudes, hunter success, hunter access, research results, disease prevalence, and game damage may all contribute new information needed when reviewing or revising a DAU plan. The CDOW strives to maintain a tight link between the inclusion of 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. The resultant computer population projection is then compared to the herd objective, and a harvest calculated to align the population with the herd objective.

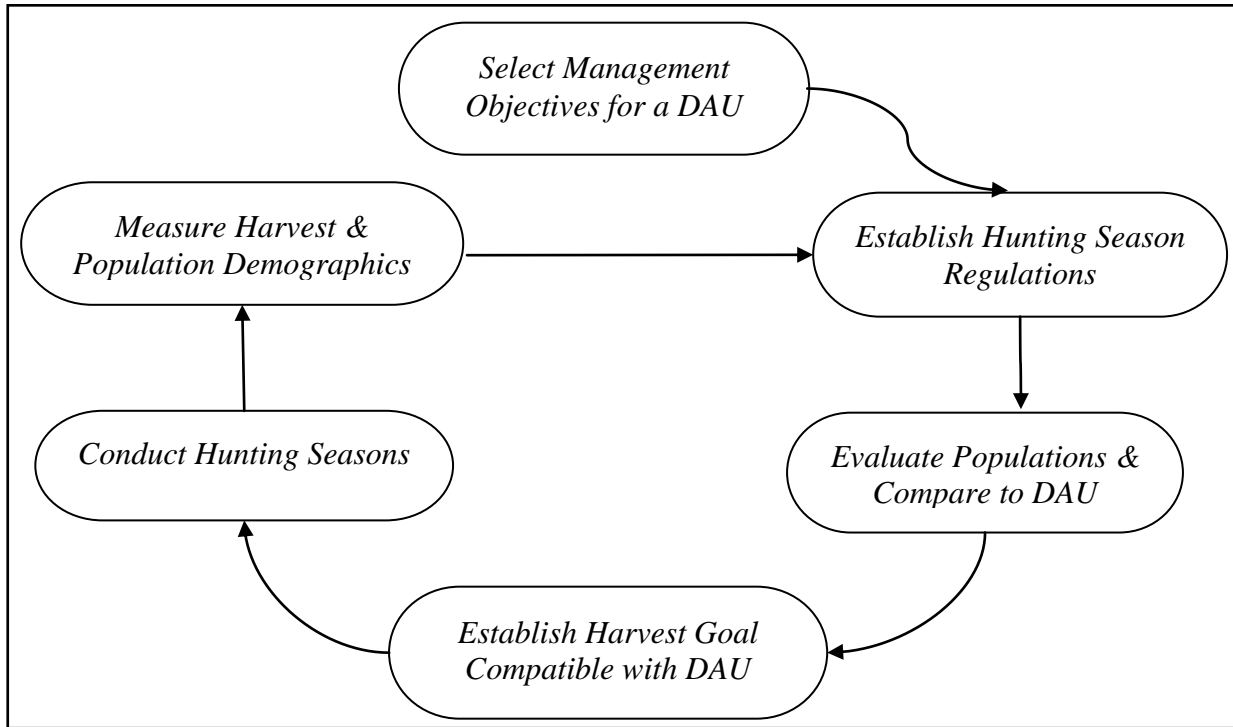
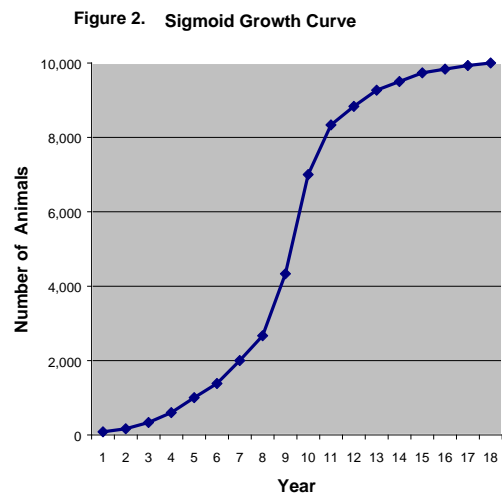


Figure 1. Management by objective process that CDOW uses to manage big game populations on a DAU basis.

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 "sigmoid growth curve" or "S" 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

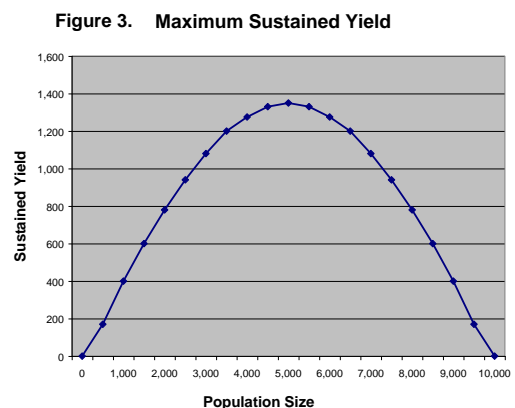


survival rate. During this phase, food, cover, water and space are not limiting factors. Also, during this phase, animals such as white-tailed deer have been known to successfully breed at six months of age and produce a live fawn on their first birthday; older does have been known to produce 3-4 fawns 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 "hunnable surplus." The animals in the population would be in relatively poor condition and when a severe winter or other catastrophic event occurs, a large die-off 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 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



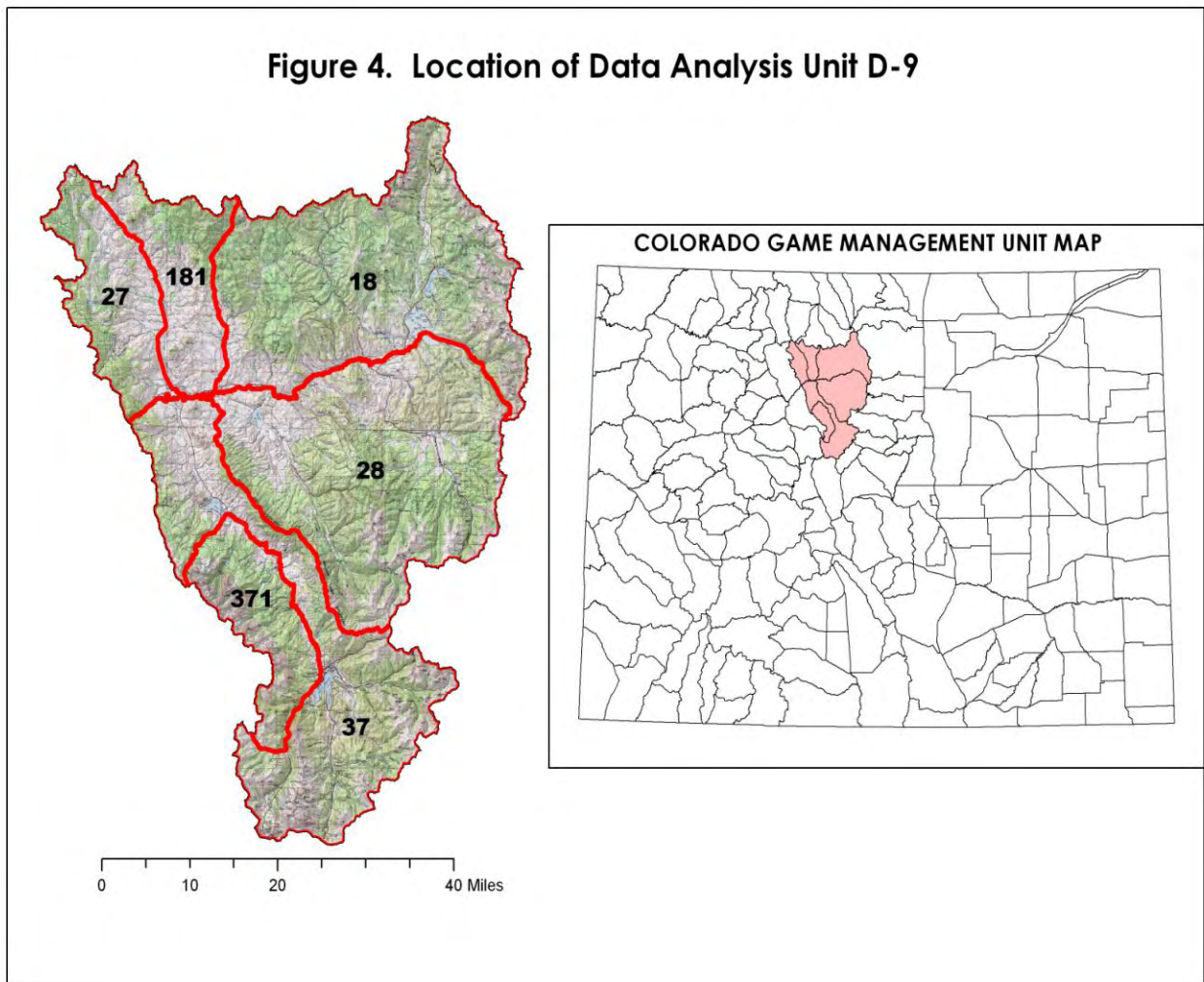
number of deer each year with 3,000 or 7,000 deer in the population. This phenomenon occurs since the population of 3,000 deer has a much higher survival and reproductive rate compared to the population of 7,000 deer. However, at the 3,000 deer level, there will be less game damage, less resource degradation, and fewer watchable wildlife opportunities.

III. DESCRIPTION OF DATA ANALYSIS UNIT

Location

The Middle Park Deer DAU (D-9) is located in north-central Colorado and consists of GMUs 18, 181, 27, 28, 37 and 371. It is bounded on the north, east and south by the Continental Divide, and on the west by the Gore Range and Eagles Nest Wilderness Divide.

This DAU takes in all of the geographical feature known as Middle Park, and includes all of Summit County, most of Grand County, and a small portion of Routt County. Major towns include Hot Sulphur Springs, Granby, Kremmling, Fraser, Grand Lake, Silverthorne, Frisco, Dillon and Breckenridge. U.S. Highway 40 from Berthoud Pass to Rabbit Ears Pass, and Interstate 70 from the Eisenhower Tunnel to Vail Pass transverse the DAU. The DAU includes the headwaters of the upper Colorado River. Other major drainages include the Fraser River, the Williams Fork, Troublesome Creek, Muddy Creek, and the Blue River



Physiography

Topography - Middle Park is a large basin surrounded on all sides by high mountain ranges. Elevations reach 14,270 feet above sea level on Grays Peak near Loveland Pass. The Gore Range and Tenmile Range both have peaks reaching more than 13,000 feet in elevation, as does the Continental Divide. All the natural surface drainage for this area funnels through Gore Canyon, downstream from Kremmling. Middle Park is unique as an inter-mountain park in two respects. It does not have the level interior characteristic of other large mountain parks in Colorado, such as North Park and South Park, and it lies west of the Continental Divide.

Once snow accumulation forces big game down to the valley floor in the winter, the animals become trapped in the park by Gore Canyon and they are unable to migrate out of the valley. The valley floor at Kremmling is 7,300 feet in elevation, making it very high compared to other mule deer winter ranges in Colorado. Interior mountains, such as Wolford and Junction Butte, provide excellent southern exposure for critical big game winter range.

Climate - Weather in Middle Park varies greatly depending on location and altitude. In general, the climate is cold and the majority of annual precipitation falls as snow. Drought years occur with some regularity. When there is no wind during the winter, cold air becomes trapped by the surrounding mountains, causing extreme temperature inversions. During the middle of winter, low temperatures in the minus 20-degree Fahrenheit range are to be expected, and can drop much further. Readings down to minus 64-degrees F have been recorded in Kremmling.

The summer growing season is extremely short and variable. Snow showers may even strike higher elevations in the summer. Lower elevations may have daytime temperatures reaching into the 90-degree Fahrenheit range; however, valleys become significantly cooler than uplands during the night as colder air settles. Local topography also affects the amount and type of moisture. Kremmling lies in the "rain shadow" of the Gore Range and only averages about 11 inches of moisture per year; whereas at Grand Lake and Fraser, where prevailing winds push clouds up against the Continental Divide, average precipitation is approximately 20 inches. Thunderstorms may occur almost daily during the summer along the Continental Divide.

Most of the moisture that falls in the area comes during the period of October to late April. Snow blankets the area during the winter and accumulations of 30" are typical for the 9,000-10,000 foot level. Deer and elk move to lower elevations as snow accumulates, seeking out south facing or wind-blown slopes. At high elevations upwards of 20 feet of snow can fall over the course of winter. In the valleys, sunny winter days and/or windy conditions causes snow to disappear on some slopes.

Vegetation - Vegetation in Middle Park can be categorized into five broad types – cropland, wetland/riparian, rangeland, forestland and alpine. The variety of vegetation types scattered throughout Middle Park creates a highly desirable mosaic that is very beneficial to wildlife such as mule deer. However, plant communities at lower elevations have been extensively modified by agriculture and are increasingly being disturbed by intensive human use.

- Croplands consist of irrigated hay meadows and terraces that have been re-seeded to more desirable forage plants. Most hay ground is "native hay", consisting of Timothy and Smooth Broome, with some sedges and rushes. Some hay meadows

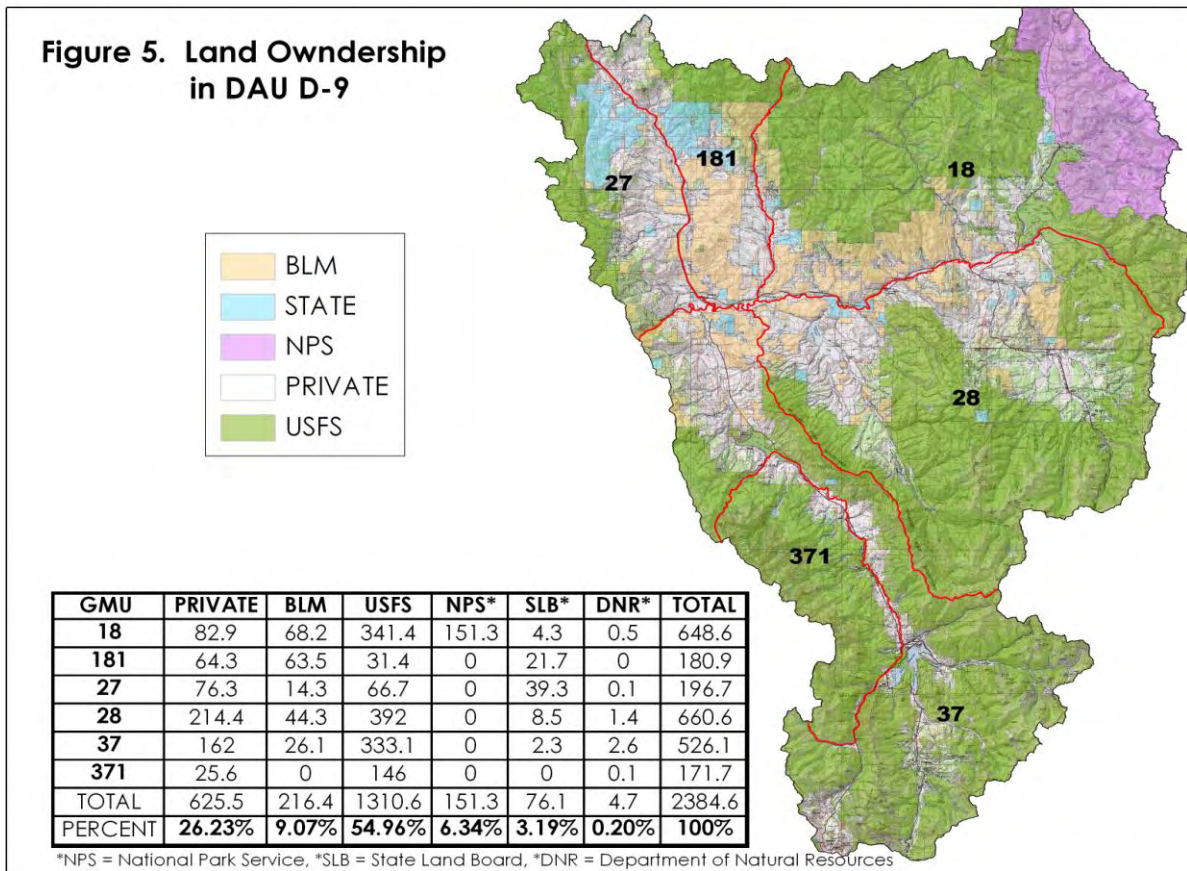
have been seeded to alfalfa. Truck crops such as broccoli, spinach, lettuce, asparagus and peas are grown just north of Granby.

- Wetlands and Transition Riparian occur along the river bottoms and irrigated meadows. Some of the best riparian habitat is along the Colorado River between the towns of Granby and Kremmling. This area is dominated by narrow leaf cottonwood and willow. The riparian habitat is one of the least represented vegetative types in Middle Park, but it is extremely valuable as wildlife habitat. It supports the greatest abundance and diversity of wildlife.
- Rangelands consist of Sagebrush Steppe, Mountain Shrub and grassland communities. The sagebrush community is by far the most common rangeland in Middle Park at elevations up to 9,000 feet. It is found on drier non-agricultural areas on the valley floors and the lower hills. Mountain Shrub, consisting of big sagebrush mixed with serviceberry, chokecherry and antelope bitterbrush, is found on better soils at lower elevations. This plant community is not widely represented in Middle Park but provides important wildlife food and cover. Both Sagebrush Steppe and Mountain Shrub have grass and forb understories, making them suitable for rangeland. Bluebunch wheatgrass is prominent in these vegetative types under good range conditions. Native grasslands are found in two different sites. Mountain meadows, consisting of grasses, forbs and some shrubs, occur at higher elevations in association with lodgepole, aspen and spruce-fir forest types. Low elevation grasslands occur on windswept sites with poorly developed soils incapable of supporting sagebrush.
- Forestlands in Middle Park can be subdivided into four major types: pinyon-juniper, lodgepole pine, aspen and spruce-fir.
 1. Pinyon-juniper woodlands are found on the dry, lower elevation slopes such as Cedar Ridge, west of Williams Fork Reservoir. “P-J” provides important cover along with low quality forage for wintering deer.
 2. Lodgepole pine is the most widely distributed forest type. This species typically occurs in even-aged stands at elevations between 7,500 feet and 10,500 feet. Due to the dense overstory, this habitat type typically provides little forage for deer, but is important from the standpoint of cover. At higher elevations, Engelmann spruce and subalpine fir regularly occur in uneven-aged stands. This habitat provides excellent summer cover for deer and elk.
 3. Aspen stands usually are found in areas with better soil moisture, or in areas of less severe exposure at elevations up to 10,500 feet. The understory in aspen typically consists of vigorous herbaceous growth, shrubbery and emerging conifers. This forest type is attractive to a variety of wildlife and provides important cover and forage for big game animals. 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.

4. Douglas-fir, ponderosa pine and limber pine forest types also occur in Middle Park, but to a lesser extent.
- As temperature and winds become more extreme with increasing altitude, Engelmann spruce and subalpine fir become stunted, eventually giving way to forbs, grasses and sedges. Low growing plants are typically nestled among lichen-covered rocks. This is the Alpine community, or tundra, which usually occur above 11,000 feet in elevation. In those protected areas blanketed by snow during the winter, and kept moist by melting snow banks during the summer, thickets of bog birch and willows can exist. Alpine sites can provide high quality deer forage from July through early September.

Land Status

Land Ownership - The DAU covers a total of 2,385 square miles. More than half of this area is administered by the USDA Forest Service (USFS) and one quarter of the land area is in private ownership. The Bureau of Land Management (BLM) and the National Park Service (NPS) are responsible for managing most of the remaining land within the DAU. The State of Colorado (State Land Board and DOW) administers 3½ percent of the land area in the DAU (see figure 3.) The Junction Butte and Hot Sulphur Springs State Wildlife Areas, along with portions of the Kemp-Breeze SWA, are managed to provide winter habitat for deer and elk.



Land Use - The main industries in this part of the state are recreation and tourism, ranching, mining, and logging. Highly developed mountain communities occur in the areas surrounding Winter Park, Grand Lake, and Dillon/Silverthorne. The Sulphur Ranger District of the Arapaho/Roosevelt National Forest, the Parks Ranger District of the Medicine Bow/Routt N.F., the Dillon Ranger District of the White River N.F., the Kremmling Resource Area of the BLM, and Rocky Mountain National Park administer federal lands within the DAU. Recreation, livestock grazing and wildlife production are the predominant uses of USFS and BLM lands, with timber harvest occurring in areas where there are suitable forest products; other activities such as right-of-way administration, mineral production, watershed protection and cultural resource protection are common to the two agencies. The mission of the NPS is to preserve ecosystems and scenery, along with natural and historic objects for future generations.

Skiing and snowmobiling are both popular wintertime activities. There are five major downhill ski areas, along with one smaller resort. In addition, Devil's Thumb Ranch Resort and Snow Mountain Ranch (YMCA of the Rockies) cater to cross-country skiers. Major ski areas have large base developments associated with offsite condominiums, homes and commercial facilities. The Town of Grand Lake strives to maintain a reputation of being the snowmobile capital of Colorado. Summit County ski areas are destination resorts which furnish year-round recreation opportunities including golfing, horseback riding, fishing, boating and hiking. Because of their proximity to Denver, the Grand Lake and Dillon areas, along with the Fraser Valley, have been developed with numerous recreational homes and cabins.

Grand and Summit counties are also popular destinations for summer recreationists, with numerous campgrounds, dude ranches, and other resorts. Rocky Mountain National Park receives more than 3,000,000 visitors per year. Reservoirs built to divert water to East Slope metropolitan areas provide good fishing, along with opportunities for recreational boating. The USFS administers the Arapaho National Recreation Area which takes in Lake Granby and Shadow Mountain Reservoir and associated developed recreation sites. Rafting companies offer trips down the Colorado River, and local rivers also provide opportunities for kayaking. All, or portions, of Byers Peak, Eagle Nest, Ptarmigan Peak, Indian Peaks, Never Summer, and Vasquez Peak Wilderness Areas are located within the DAU. The Bowen Gulch Protection Area, administered by the USFS, is also within the DAU.

Hunters can take deer, elk, bear, pronghorn antelope, bighorn sheep, mountain goat, mountain lion, blue grouse and sage grouse in Middle Park. Good fishing is provided in several Gold Medal streams, seven large reservoirs and numerous high lakes. Hunters and anglers make substantial contributions to local economies. An economic impact statement completed in 2008 estimated that the total annual impact of all hunting and fishing in DAU would have been close to \$101 million, factoring in both direct expenditures and the multiplier effect of dollars recirculating in the economy (Pickton and Sikorowski 2008). People who take trips to observe and photograph wildlife also buy gas, groceries and other supplies, substantially impacting both destination areas and retailers along travel routes.

Most of the molybdenum used in North America is produced in this part of Colorado. Climax Mine recently re-opened north of Leadville. Ore mined in Clear Creek County is transported via underground conveyer belt to be processed at the Henderson Mill on the Williams Fork drainage.

Besides providing recreational opportunity, undeveloped lands in the DAU are also utilized to raise livestock. Most livestock operations are cow-calf enterprises. Most livestock

are pastured on USFS or BLM allotments during summer months. Private lands are used for hay production and winter/spring pasture.

Commercial logging has been recently rekindled due to the spreading pine beetle situation spreading throughout much of the DAU. Salvage logging and logging for pellet plants are currently in the heaviest demand.

Habitat Condition and Capability

Public Lands - The USFS has grazing allotments occurring totally or partially within DAU D-9. The period of utilization is variable, but primarily occurs from late June through September. Classes of livestock using these allotments include cattle and horses.

The BLM currently has 79 active allotments in the DAU and 6 inactive allotments. The active allotments provide 10,717 AUMs of forage for livestock, with use occurring primarily in the spring and fall, although some use occurs in summer and winter. The class of livestock using these allotments is almost exclusively cattle and horses.

Wildlife/livestock Conflict Areas - Public Lands - Land use agencies were asked for input on areas where there may be conflicts between livestock and big game. Conflicts might be where wildlife had forced a change or delay in period of use on an allotment, or where forage utilization by wildlife had caused a reduction in AUMs of forage available for livestock.

Sulphur Ranger District, Parks Ranger District and the Kremmling Resource Area of the BLM have not identified any allotments where deer are causing conflicts with livestock. Dillon Ranger District is concerned that the year-round use by livestock and wildlife on allotments along Blue Ridge (GMU 37) could be having detrimental impacts on the vegetation.

Wildlife/livestock Conflict Areas - Private Lands - Conflicts caused by deer on private lands are very minor when compared to those caused by elk. Identification of specific areas where conflicts do occur, and resolution of any conflicts, will be best handled by the Middle Park Habitat Partnership Committee.

The main problems currently caused by deer occur in and around towns and other human habitations. Deer damage ornamental trees and shrubs, eat garden plants and ravage bird feeders. Around Kremmling, the increasing presence of deer over the last five years may have attracted mountain lions.

IV. 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

DOW makes two independent estimates of the deer population in Middle Park. One estimate is derived from a quadrat census. This technique is based upon a stratified random sampling system where observers in a helicopter attempt to count all of the deer within selected one square mile sections or quadrats. Approximately 17% of the total deer winter range in Middle Park is surveyed, usually in late January. From 1968-80 the census was conducted every year. More recently, quadrat counts have been conducted sporadically, usually every 2-3 years. The fact that it is not possible to count every individual deer is well documented. It is likely that only 80-90% of the deer on the Middle Park quadrats are counted. Other sources of error occur during years when distribution is less than ideal, and all the deer are not on normal winter range, or when lack of early snows delays quadrat counts until after mid-January – these circumstances produce even greater underestimates of the population.

The second method used to estimate the deer population size in the DAU uses a computer modeling process. Starting in the early 1970s, The CDOW used a computer modeling program called ONE POP. In the early 1980s, The CDOW switched to a personal computer program based program called POP II. After 1999, the DOW 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-9 model, the biological parameters (i.e., juvenile and adult survival, and wounding loss) for input were constrained to reflect values obtained from field measurements of deer populations in Middle Park from 1999-2008. 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 CDOW uses computer population models as their primary method for estimating population size for deer, elk and pronghorn antelope in Colorado and for setting permit numbers. The quadrat census technique described above is used mainly to help align output from the model. The results of the computer-generated population estimates versus the quadrat counts are summarized in Figure 6.

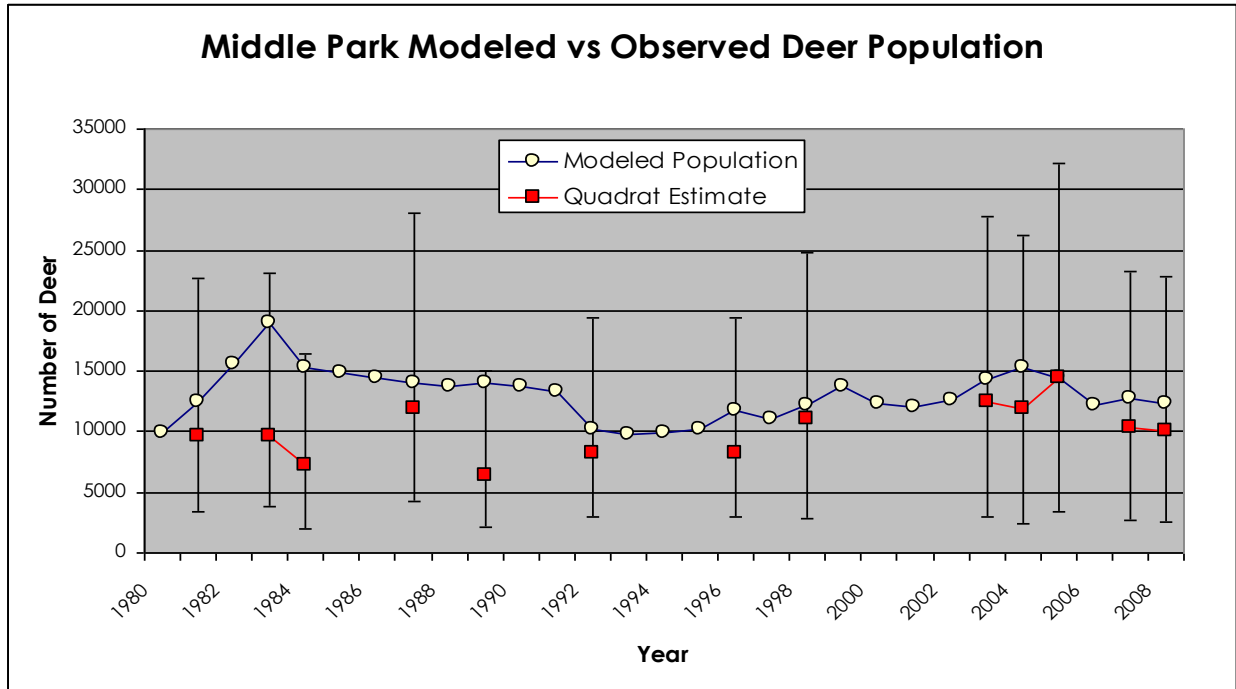


Figure 6. Middle Park Modeled versus Quadrat Observed Deer Populations

The Middle Park deer herd has fluctuated in size since the 1950's and 1960's. The highest population estimate derived from computer models was in 1961 when the population estimate exceeded 19,000 deer, while the lowest population estimate was post hunt in 1970 at 6,440 deer.

DOW has had different population objectives for DAU D-9 over the years. During the 1970's, the population objective remained around 10,000 deer, and during most of the 1980's the objective was 14,000 deer. In 1987 the population objective was lowered to 12,300 and then lowered again in 1989 to 10,500 deer where it has remained. Over the last 30 years, the estimated post hunt deer population has averaged between 10,000 to 15,000 deer.

Post-Hunt Herd Composition

In Middle Park, managers are fortunate to have some of the most extensive inventory records for a deer herd in Colorado. This area was used as a mule deer research base during the 1960's and 1970's. Many of the present day inventory techniques still being used today were originally developed and refined in Middle Park. The first documented age and sex ratio data were collected after the hunting season in 1967.

Buck Ratios - The complete data set indicates there has been a fluctuation in the sex ratio (buck to doe ratio) for the herd since the winters of 1978-79 and 1983-84, when the sex ratio averaged 46 bucks: 100 does. (See figure 7). When the three combined season structure went into effect in 1986, the deer herd averaged slightly over 19 bucks: 100 does, with a range of 14 bucks: 100 does to 30 bucks: 100 does in the mid-1990s. These low ratios occurred despite the antler point restrictions in effect 1986- 91, and the three-day buck season from 1992-94. Factors contributing to this decline are the long rifle deer seasons – at one point 26 days lasting until mid-November, when bucks are more susceptible to hunting pressure – and decreased fawn

production/survival. Buck numbers showed moderated increases from the low point in 1989 to 1998, and then dramatically increased after totally limited buck hunting went into effect in 1999. The observed buck to doe ratios are displayed in Figure 7 below.

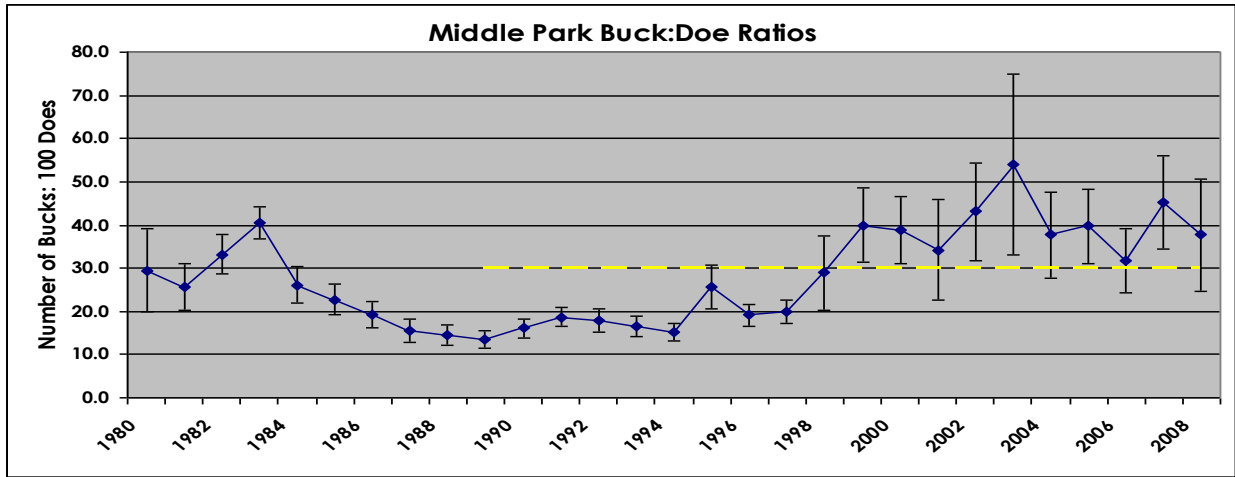


Figure 7. Observed buck:doe ratios in DAU D-9, 1980-2008. The bars indicate the 95% confidence interval around the field estimate of the buck:doe ratios. The dashed yellow line indicates the 1989 sex ratio objective of 30 bucks: 100 does.

Yearling Buck Ratios - Biologists like to 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. It is relatively easy to identify yearling buck deer during an age and sex classification survey by their distinctive antler size and configuration; they usually have small spikes or two-point antlers. Also, it is assumed that for every yearling buck, there is also a yearling doe deer.

Since 1980 the yearling bucks have averaged 13 yearling bucks: 100 does, ranging from 7 to 24 (Figure 8). The dips that occurred were probably directly related to severe winters the previous year. These years are most notable in 1984 and 1987, following the severe winters of 1983 and 2001. The 10-year average from 1999-2008 is 16 yearling bucks: 100 does.

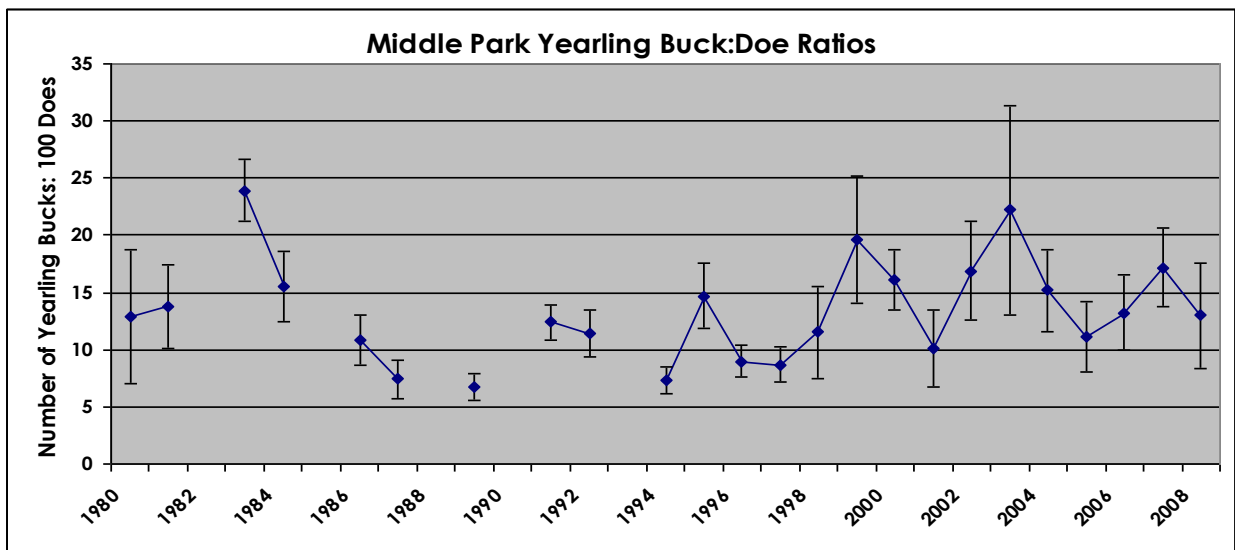


Figure 8. Observed yearling buck:doe ratios in DAU D-8, 1980-2008. The bars indicate the 95% confidence interval around the field estimate of the yearling buck:doe ratios.

Fawn Ratios - Post hunt age ratios are measured at the same time as sex ratios – early in the winter. They give some indication of reproductive success but may not accurately reflect recruitment into the population (*i.e.*, those animals surviving to one year of age), since significant mortality can occur between the time of the counts and May. The post hunt age ratio (fawn to doe ratio) has not changed as dramatically as the sex ratio, but has dropped nevertheless. For managers, this decline is actually a greater cause for concern than the drop in sex ratios. Since 1967 DOW has conducted 26 aerial age and sex ratio classifications; the average age ratio since 1980 has been 67 fawns:100 does, with a range of 41 to 93. Over the last 10 years, post-season sex ratios have averaged 63 fawns:100 does, with a range of 44 to 80. In recent years, there has been a widely varied fluctuation fawns: 100 does in the post-season population. The decline is much more pronounced in certain years (See figure 9). The cause of these fluctuations has not been determined, and may never be; it is a complex problem involving numerous factors. Declines in the quantity and quality of habitat are undoubtedly involved to some extent, predation may be a factor, as may be competition from elk. Research at Little Hills Research Station near Meeker indicates that density-dependent factors may be partially controlling deer populations. Because of this latter possibility, there is a real risk in trying to carry too many deer on the limited winter range in Middle Park.

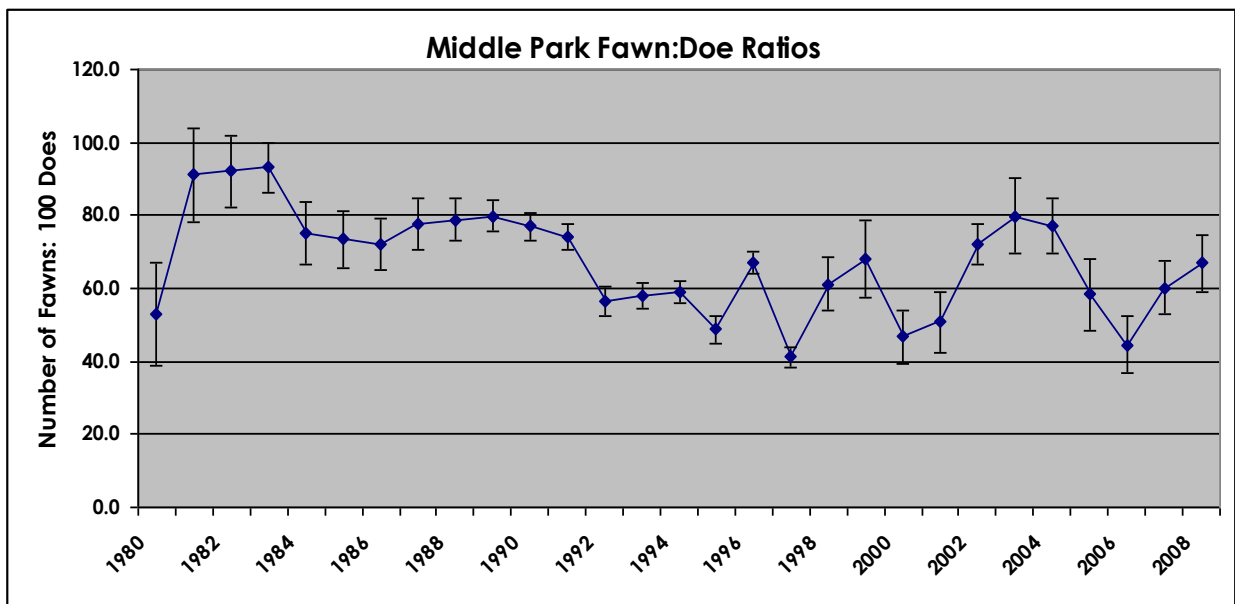


Figure 9. Observed fawn:doe ratios in DAU D-9, 1980-2008. The bars indicate the 95% confidence interval around the field estimate of the fawn:doe ratios.

Other Management Activities in DAU D-9

Middle Park Mule Deer Survival Study - In 1998, Middle Park was selected as the third study site for intensive herd monitoring in the state. In November of that year, 50 fawns were radio-collared, along with 40 does. Radio collars are equipped with mortality sensors that change the signal pulse rate when no movement has occurred for 4 hours. These radio-collared animals are being monitored throughout the winter to assess survival rates and determine cause of mortality, whenever possible. Fasteners made of surgical tubing on fawn collars deteriorate in

ultraviolet light, ensuring that the collars will drop off in the summer before they become too constrictive, also allowing them to be reused.

The survival study serves three main purposes: 1. to allow managers to more accurately determine survival rates for both the juvenile and adult doe segment of the Middle Park deer herd, and 2. to allow managers to examine cause-specific mortality factors within the Middle Park deer herd, and 3. to closely examine movement habits and migration patterns of the herd.

Adult Survival - Over the past ten years of the study, the doe survival estimate has fluctuated between a low of 76% survival (2004) to a high of 93% survival (2001). The 10 year average doe survival in the D-9 herd is 84%.

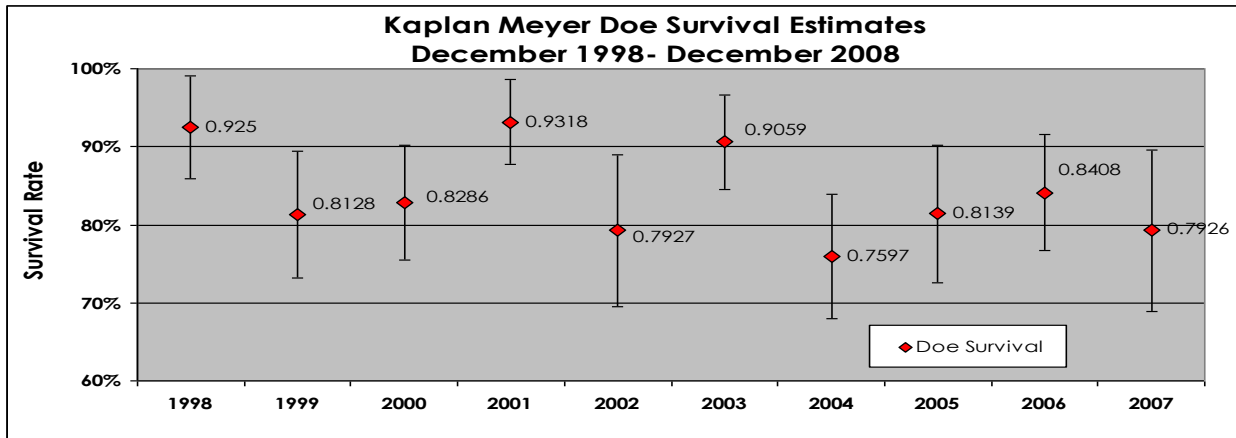


Figure 10. Adult doe survival estimates 1998-2008 observed in the Middle Park Deer herd via radio-collared survival study. The bars indicate the 95% confidence interval around the estimate of the doe survival.

Fawn Survival – Juvenile survival varies much more considerably with the severity of the winter, along with other factors. The lowest fawn survival measured was 33% (2008), while the highest was 88% (2003). The 10 year average fawn survival is 69%.

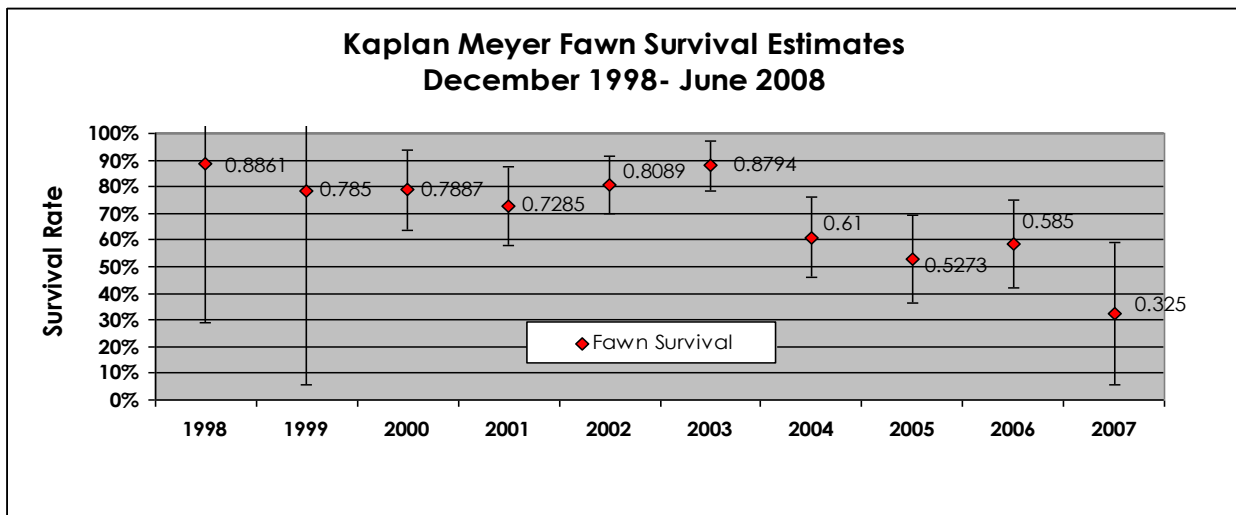


Figure 11. Juvenile deer survival estimates 1998-2008 observed in the Middle Park Deer herd via radio-collared survival study. The bars indicate the 95% confidence interval around the estimate of the fawn survival.

Adult Cause-Specific Mortality – A benefit to the Middle Park Deer Survival Study is that, with timely inspection, different mortality factors can be distinguished, giving managers an accurate picture of influential factors on the population as a whole. Over the past 10 years, radio-collars have measured over 1000 doe years. This is due to the fact that adult radio collars stay on the animal until the doe dies or the battery on the collar dies. Up until the summer of 2007, there were two adult deer with working radio collars that were put on during the first year of the study. The oldest recorded age of a doe was 14+ years, from one of the two aforementioned deer. Hunting harvest is not included in the cause-specific mortality because it can be influenced by license number fluctuations set every year. Figure 12 below shows the percentage breakdown of adult deer mortality factors over the span of the survival study. Note that “Undetermined” accounts for the largest percent of adult mortalities. This is due to the fact that many of the collared does in the study die in the summer (Figure 12) and decompose more quickly than the winter. The leading cause of know mortality for adult doe deer in Middle Park is road kill. It is important to note that throughout the Study, almost 88% of all collared deer have survived until the radio collar has stopped working.

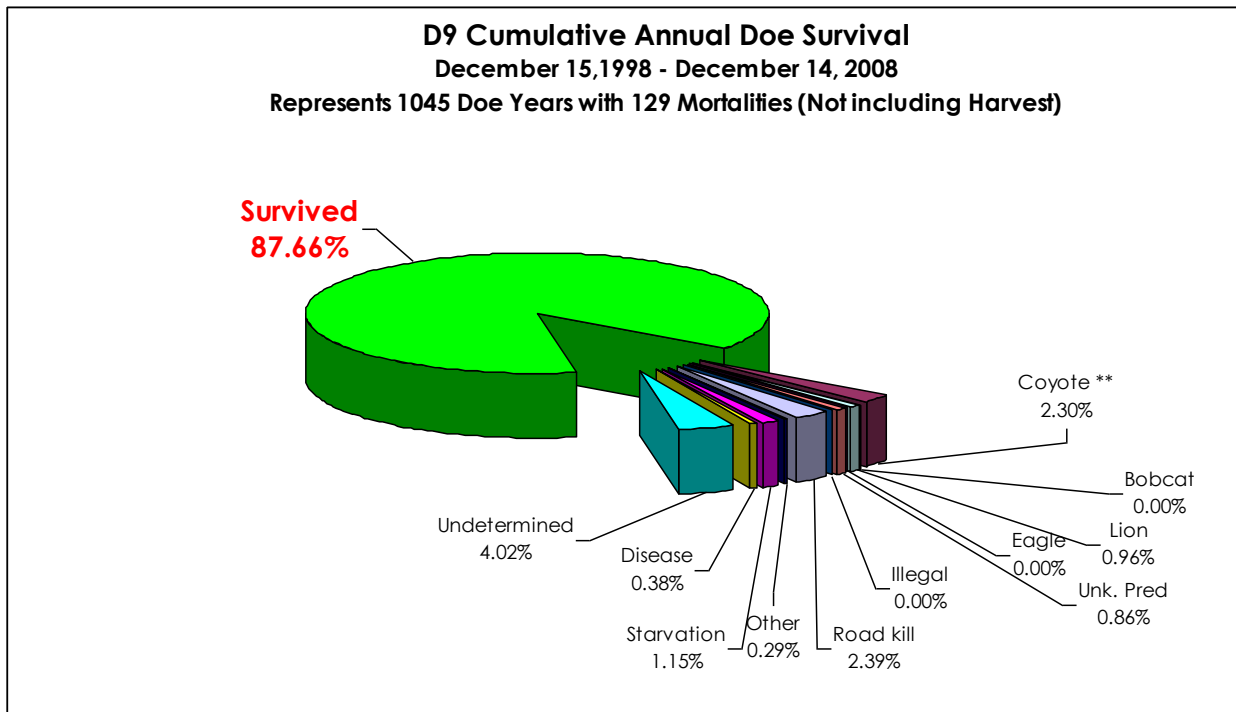


Figure 12. Percentage break-down of mortality causes in adult doe deer for D-9, 1998-2008. **Includes suspected, probable, and confirmed cases.

Juvenile Cause-Specific Mortality – Like the adult segment of the population, juvenile (fawn) mule deer are collared on an annual basis as well. Fawn survival is measured from December of the year collared through the following June. This is due to the fact that fawns must be fitted with special drop-off radio collars so as not to interfere with growth, and previous studies have shown a drastic decrease in mortality rates once deer reach 1 year of age. Figure 13 shows the percentage breakdown of fawn mortality factors in D-9. Coyote predation accounts for 12% of all measured fawn mortality in Middle Park. It is worthwhile to note, as in coyote predation on does, that this included all suspected, probable, and confirmed cases. From

previous research done in Axial Basin, a suspected case is noted when just the radio-collar is found with no other evidence in the area. A probably coyote mortality is noted when coyote sign is present, as well as indications of a struggle. A confirmed coyote case is noted when there is sufficient evidence: this can include factors such as neck hemorrhaging, a kill trail with hair and blood, or other indisputable evidence. Almost 5% of the fawn mortality is recorded as undetermined due to decomposition or insufficient evidence to classify the kill. Starvation, road kill, lion predation, and other predation are the other leading causes of fawn mortality. It is important to note that 70% of the collared D-9 fawns survive until the radio-collar drops off.

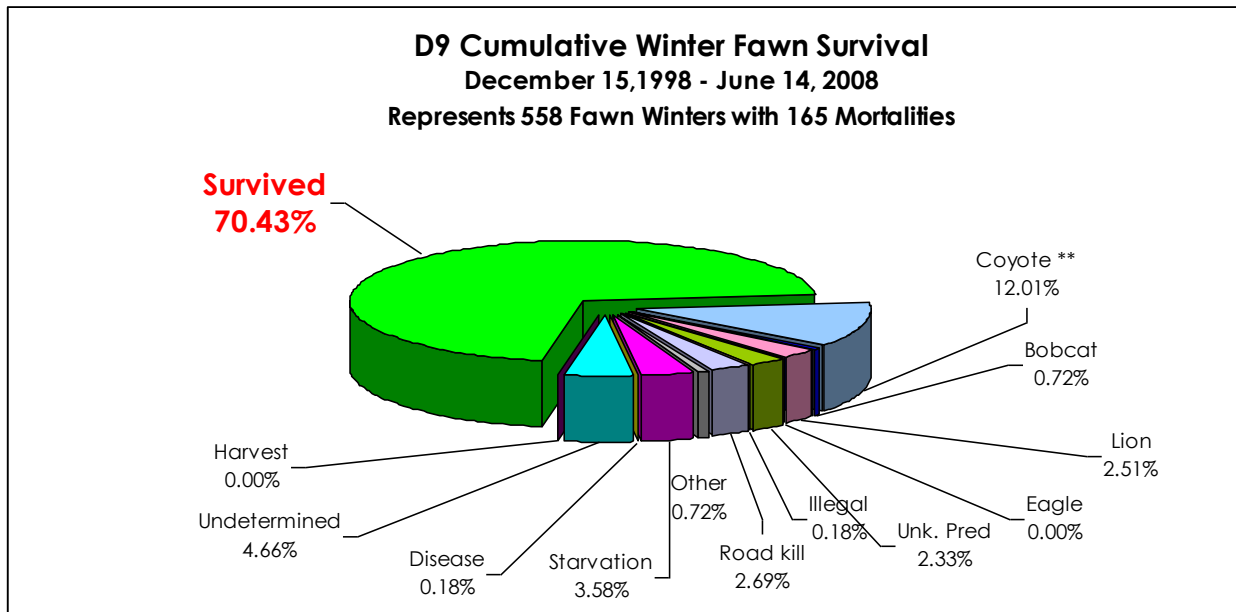


Figure 13. Percentage break-down of mortality causes in juvenile deer for D-9, 1998-2008. **Includes suspected, probable, and confirmed cases.

Timing of Mortalities – Along with survival estimates and cause-specific mortality, the survival study has allowed managers to collect other pertinent data such as the timing of adult and juvenile mortalities. Figure 14 shows this data depicted graphically, including harvest mortality. Doe deer tend to die more frequently in the hunting seasons (October) and during the spring (March and April). This may be attributed to the fact that adult female deer are more susceptible to road kill, predation, or a number of other factors because they are more stressed after carrying a fawn throughout the winter. Fawn mortality occurs more often in the winter months (January, February, and March) perhaps due to inexperience with surviving Middle Park winters. It is important to note that once a fawn reaches 1 year of age (June 15 for survival study purposes), it is then classified as an adult until the fawn collar drops off. This explains why there is no juvenile mortality data for the Middle Park Study from June 15 through December 15.

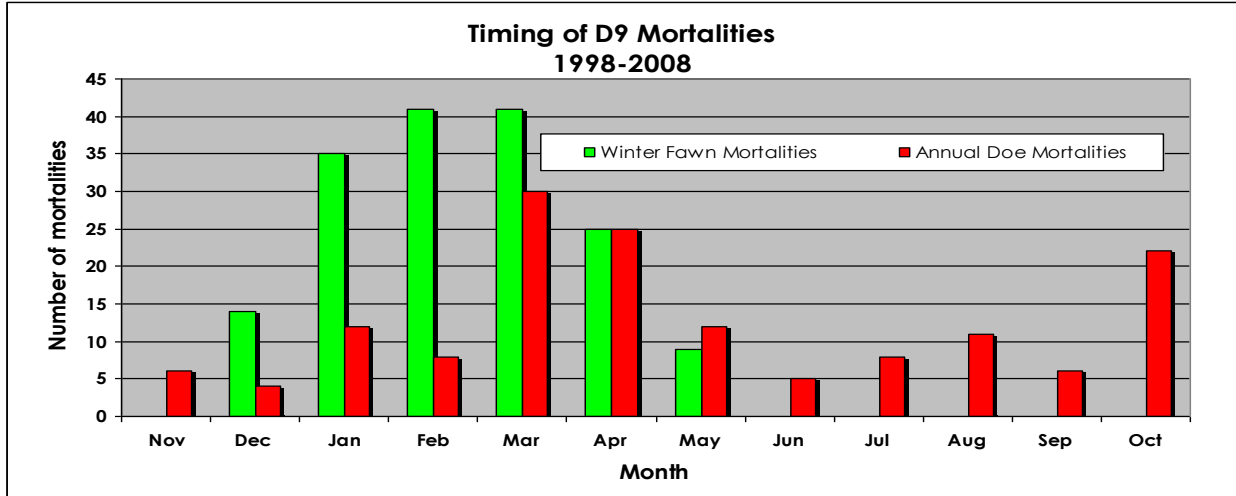


Figure 14. Timing of D-9 collared deer mortalities.

Cedar Ridge and Railroad Mortality - DOW has been conducting a population ground census and mortality estimate on Cedar Ridge west of Williams Fork Reservoir in GMU 28 since the mid-1950's. The live deer count is normally conducted in February and involves volunteers walking the ridge and counting every deer that passes through the line or crosses Williams Fork River. The dead deer count consists of transects on Cedar Ridge that are walked the following spring in mid-May. While the Cedar Ridge dead deer count is being conducted, other volunteers walk the railroad tracks from Sulphur Gulch (east of Kremmling) to Byer's Canyon and count carcasses of deer killed on the railroad during the previous winter. Mortality is a function of winter severity. When winters are severe such as in 1964-65, 1978-79, 1983-84, 1985-86, 1988-89 and 2007-08 the winter mortality can exceed 45% of the total deer herd. The railroad mortality shows similar trends during these same severe winters, sometimes exceeding 300 deer. The railroad kills more deer during the severe winters because deep snow forces deer to the lowest portions of the winter range along the valley floor, where they concentrate along the railroad tracks.

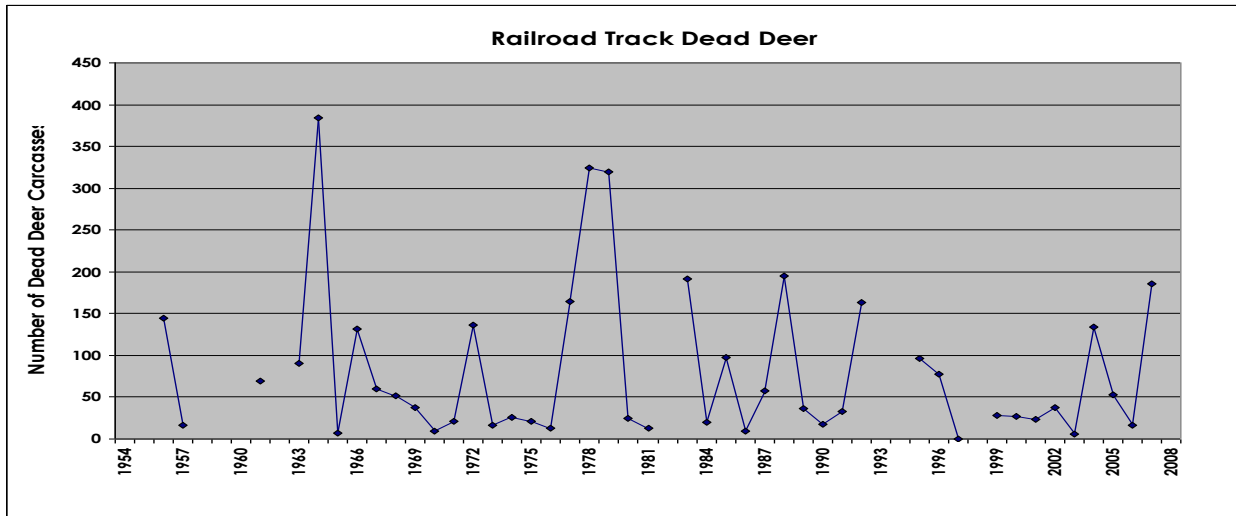


Figure 15. Number of annual spring dead deer carcasses counted along a segment of railroad tracks in D-9.

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, hunters were 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 an 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 spread increasing hunter pressure. While elk herds have generally been on the increase 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 (APR) were approved statewide, limiting harvest of bucks to those with three points or more on one antler. While APR worked well for elk, by delaying the kill one year, bucks did not show the same antler growth response as bull elk, and APR 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 of a 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 2000, the DOW 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 doe deer licenses, the DAU needs to be within a minimum of 0-10% of the population objective. To qualify for the limited 4th season buck deer hunt, the DAU has to average more than 25 bucks:100 does for the previous three years and be at or above the long-term sex ratio objective.

Total Harvest – The total deer harvest (bucks, does, and fawns) is a crude estimation of population performance over time. Since 1954, deer harvest in Middle Park has averaged approximately 2,123 deer per year, or slightly more than 1,100 antlered (bucks) and 900 antlerless (does and fawns). During the 1950's and 1960's, however, the total harvest averaged 3,700 deer, and beginning in the 1970's and running to present, the harvest dropped to an average

of less than 1,500 deer per year, or less than 40% of the harvest in the 1950's and 1960's. Harvest data is summarized in figure 15.

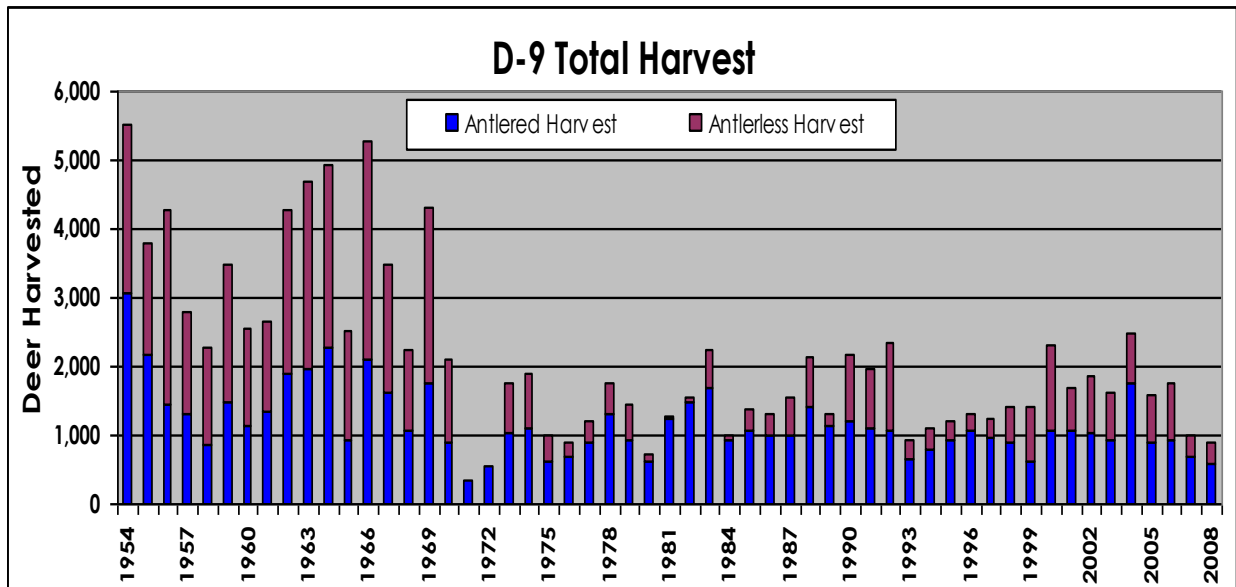


Figure 16. Total harvest of deer in DAU D-9, 1954-2008.

Buck Harvest – Until 1999, buck licenses were sold over-the-counter (unlimited). Since 1999, the DOW has maintained limited buck licenses. Since 1954, the buck harvest has averaged 1,174 bucks per year with a peak of 3,075 in 1954 and a low of 350 in 1971 (Figure 16).

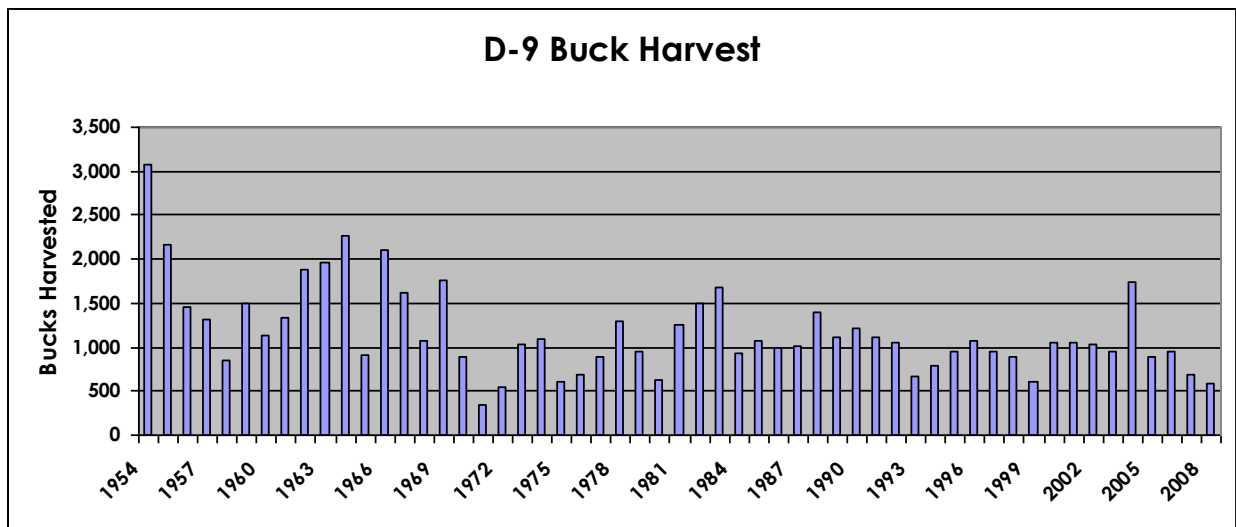


Figure 17. Harvest of antlered deer in DAU D-9, 1954-2008.

Antlerless Harvest - Limited antlerless licenses have been available throughout all years except 1971-72 and 1984, due to the previous severe winter (the graph shows an antlerless harvest in 1984 because male fawns are considered antlerless). Since 1954, the antlerless harvest has averaged 950 deer per year with a peak of 3,166 in 1966 and a low of 0 in 1971 and 1972 (Figure 17).

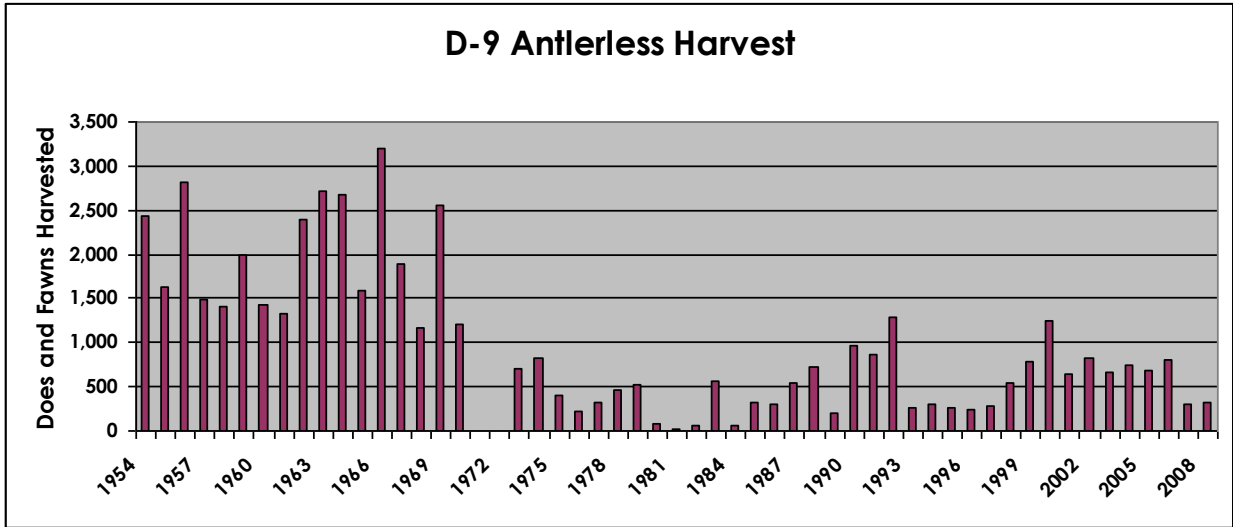


Figure 18. Harvest of antlerless deer in DAU D-9, 1954-2008.

Hunting Pressure

Total hunting pressure has remained very stable in Middle Park since 1954. The average number of deer hunters over this period has been about 6,000 hunters per year. The lowest number was 1,686 in 1971 when the state was restricted to statewide bucks only hunting. The highest number of hunters occurred in 1966 with 9,987 hunters. During the period 1999-2008 the number of hunters averaged 5,095.

Percent success has obviously had to drop with declines in deer numbers and harvest. The highest percent success was 78% in 1959 and the lowest was 13% in 1980. During the period 1999-2008 overall success averaged 32% (Figure 18).

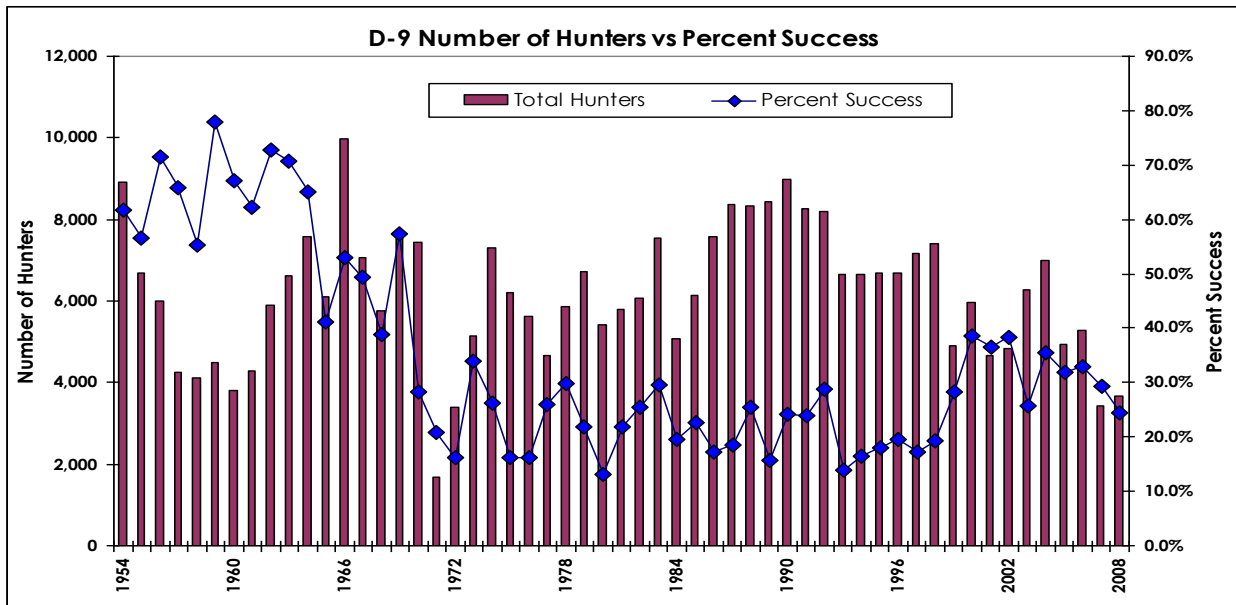


Figure 19. Total number of deer hunters based on license sales and percent success in DAU D-9, 1954-2008.

V. CURRENT MANAGEMENT STATUS

Current Objectives

Population Objective = 10,500 deer
Sex ratio Objective = 30 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 either-sex license quotas 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 on winter ranges.

Current Management Problems

Limited Winter Range - Only a limited amount of habitat is available to support deer, elk and pronghorn during the winter. More and more winter habitat is converted to housing and associated development every year; this loss is especially pronounced in eastern Grand County and the Blue River Valley in Summit County. Parts of the deer winter range are now also being used by elk. In light to normal winters, the mortality rate probably does not exceed 15%-20% of the total deer herd. However, in severe winters deer become concentrated in the floor of the valley on a few south facing or wind swept slopes, mostly in the area downstream from Byers Canyon. Competition for food is intense and this results in very high winter mortality, especially in fawns where losses can reach 70-80%. However, adult doe mortality during severe winters is usually less than 30%. It should be noted that mortality rates for deer are much higher than for elk, moose or pronghorn antelope. Nature has also equipped deer with the potential for high productivity under favorable conditions, enabling populations to recover in a few short years.

Competition with Elk - Elk numbers in Middle Park gradually increased from virtually nothing at the turn of the century to peak numbers in recent years. Today, DOW believes the elk population has dropped off somewhat, but prehunt numbers still are at 9,000 or more, although all of these elk don't spend the winter in Middle Park. During this population increase, elk have expanded their historic winter ranges, moving to lower elevations where they compete with deer on the limited winter ranges. Elk are stronger and more aggressive than deer, and have more diverse food habits. They are also more mobile than deer during the winter and search widely for food. In all likelihood, the increase in elk has been detrimental to the deer herd. Some conversion of sagebrush habitat to grasslands has also occurred, and this would tend to favor elk.

Habitat Condition - In addition to the loss of habitat to human development, overall habitat condition in D-9 may have declined (for deer) over the last several decades. Sagebrush stands are tending to become more decadent and forbs are being lost in the understory. Large blocks of sagebrush on private lands have been sprayed with herbicide to increase grass production for livestock. Long-term soil erosion has caused fertility to decline, and some riparian systems may be deteriorating. The combined effects of these are bound to be having some effect on deer.

Road Kills - Traffic on local highways and county roads has increased tremendously this decade. Road kills now occur at all times of the year. The winter of 2007-2008 resulted in a higher road kill mortality than previously seen. High numbers of deer and elk are also killed along the railroad during bad winters.

White-tailed deer invasion - Fewer than 200 whitetails presently occur in D-9. These are mainly confined to riparian habitat along the Colorado and Blue Rivers and are believed to have descended from North Park or Front Range immigrants arriving in the mid-1960's. Possible negative impacts from white-tails on the native mule deer population have been raised as an issue from time to time. Concerns relate primarily to hybridization and disease transmission. Whitetails serve as an intermediary host for Meningeal worm (*Parelapostromyces tenuis*), which is highly pathogenic in moose, mule deer and possibly elk. Immigrating white-tailed deer could also introduce some form of Epizootic Hemorrhagic Disease.

Chronic Wasting Disease - Captive deer from the Fort Collins research facility were held at the Junction Butte station in the past. Interchange of elk from Estes Park to portions of GMUs 18 and 28 is also known to occur. From time to time deer exhibiting symptoms of CWD have been reported in Middle Park. During the winter of 1996-97, heads from approximately 20 road-killed deer were submitted to the lab for testing. Starting in the 1998 hunting season hunters harvesting deer in GMUs in the DAU were required to submit heads for CWD testing. It wasn't until 2001 that CWD was confirmed in the DAU, but prevalence rates for the disease have remained extremely low. The latest information based on a rolling average from the years 2005 through 2007 and approximately 250 heads submitted per year shows that CWD prevalence rates in D9 are approximately 1%.

Mountain Pine Beetle – Grand and Summit Counties are currently experiencing an extensive mountain pine beetle infestation that is growing on an annual basis. Some drainages in the DAU such as the Williams Fork and Willow Creek have estimates of upwards of 75% or greater lodgepole pine mortality. The US Forest service notes:

The mountain pine beetle, *Dendroctonus ponderosae* Hopkins, is a member of a group of beetles known as bark beetles. Except when adults emerge and attack new trees, the mountain pine beetle completes its life cycle under the bark.

The beetle attacks and kills lodgepole, ponderosa, sugar, and western white pines. Outbreaks frequently develop in lodgepole pine stands that contain well-distributed, large-diameter trees or in dense stands of pole-sized ponderosa pine. When outbreaks are extensive, millions of trees may be killed each year. Periodic losses of high-value, mature sugar and western white pines are less widespread but also serious.

During epidemics, widespread tree mortality alters the forest ecosystem. Often, beetles have almost totally depleted commercial pine forests and, in some cases, have converted valuable forests to less desirable timber species, such as subalpine fir. Sometimes, forested areas are converted to grass and shrubs. The profusion of beetle-killed trees can change wildlife species composition and distribution by altering hiding and thermal cover and by impeding movement. Tree mortality may increase the water

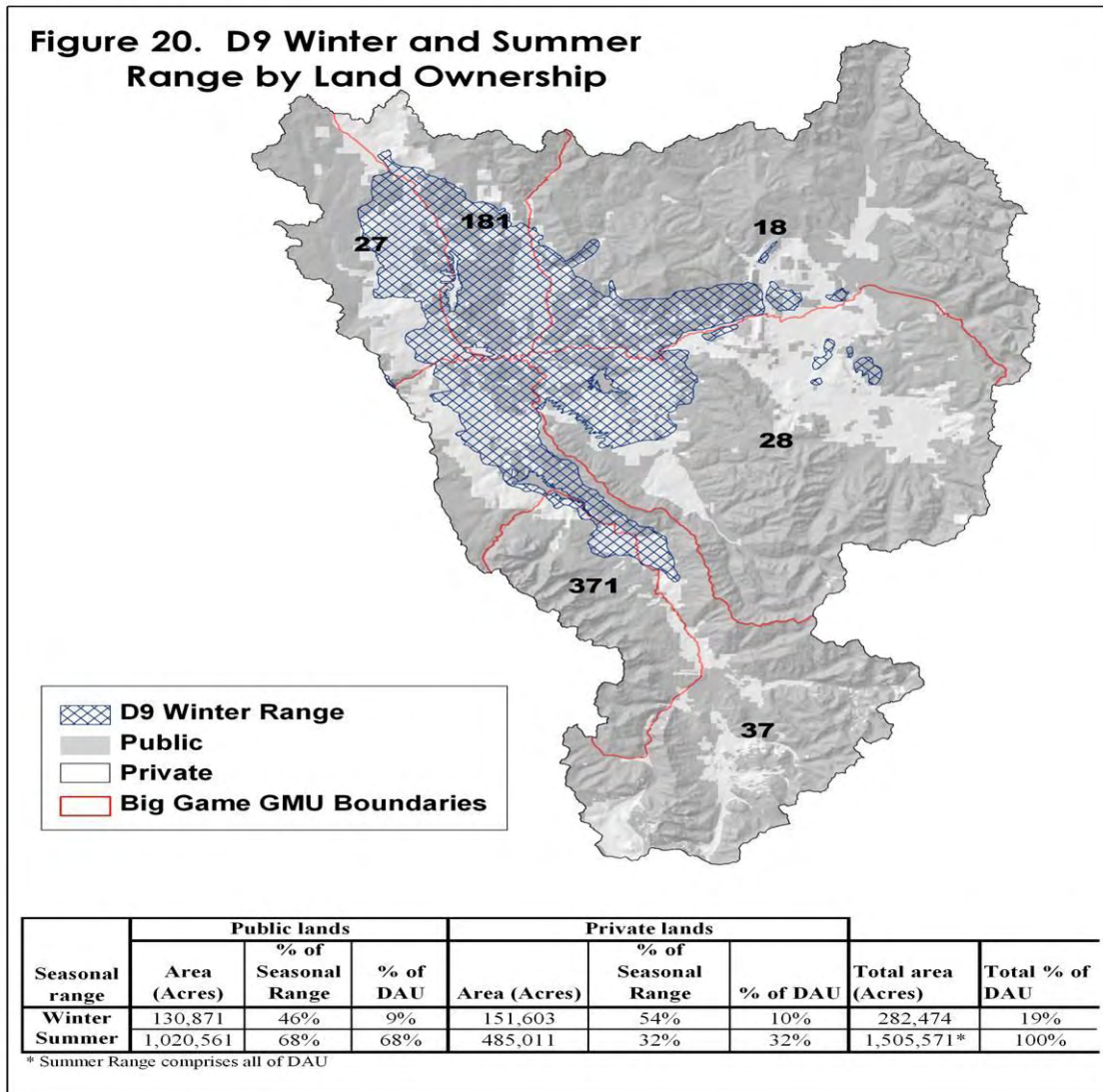
yield for several years following an infestation. Moreover, the dead trees left after epidemics are a source of fuel that will, in time, burn unless removed. (Amman 1990)

While there is a great deal of information on the effects of the mountain pine beetle on forest health, little is known about the effects of this infestation on wild ungulate populations. Current speculation suggests that as more trees die and pine needles and trees begin to fall, this may lead to an increase in forest understory growth thus providing forage in previously barren areas for deer and elk both. Managers have already seen evidence of understory flourishings, which may lead to a shift in both deer and elk distribution. The CDOW is aware of the situation and will continue to monitor the pine beetle infestation and the potential re-distribution of the D9 herd.

VI. HABITAT RESOURCE

Habitat Distribution

The distribution of mule deer seasonal ranges between public and private lands in the DAU are shown in Figure 19. The lower elevations that deer use as winter range comprise one-fifth of the DAU's area (282,474 acres). Of this winter range, 54% is on private land and 46% is on public. Summer range is approximately 2/3 public and 1/3 private. It is worthwhile to note that D9 summer range encompasses the entire DAU (1,505,571 acres), while winter range only accounts for 19% of the DAU.



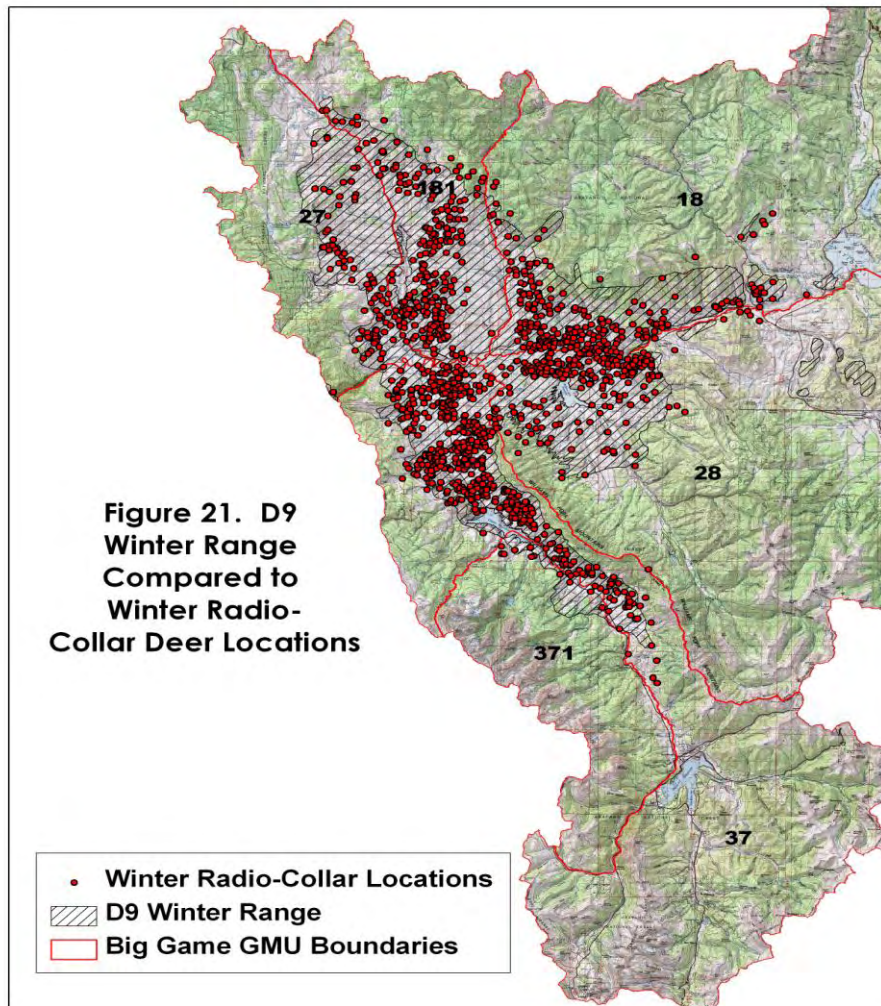
Major wintering areas for deer include: GMU 18 – the lower reaches of all the creeks that drain into the Colorado River from west of Granby to Troublesome Creek; GMU 181 – the lower 2/3rds of the entire GMU; GMU 27 – the lower reaches of all the creeks that drain into Muddy Creek from Hill Creek to the Colorado River; GMU 28 – the northeastern corner of the GMU; GMU 37 – the lower Blue River drainage from Green Mountain Reservoir south. Very few deer, if any, winter in GMU 371. In fact, these deer are forced out of the GMU by the deep snow and

migrate to GMU 37 via the Blue River corridor. Deer use winter ranges from about December 1 to May 15 depending on weather and temperature conditions.

DAU D-9 contains 23,259 acres 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 73,352 acres 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.

Winter Range Determination

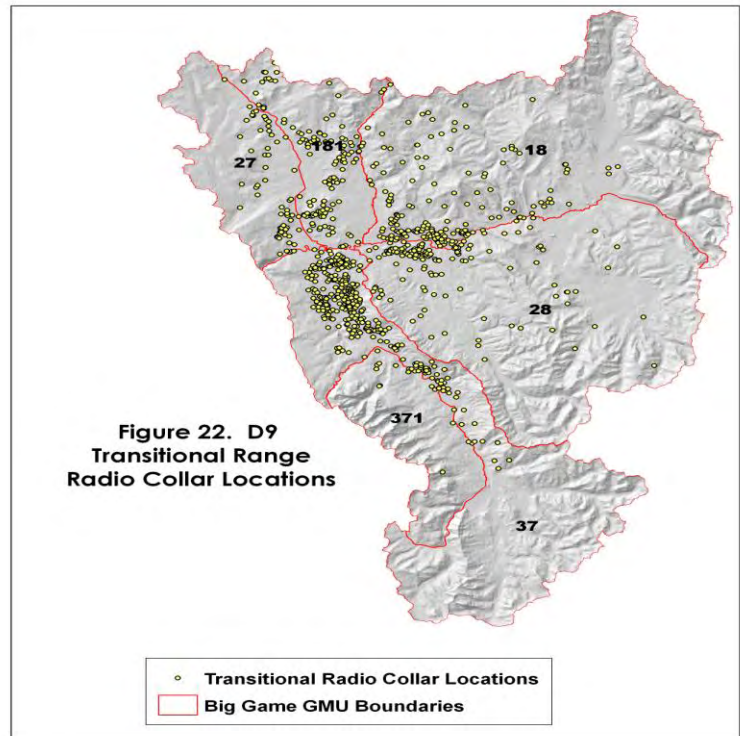
While the Middle Park Mule Deer Survival Study was originally designed to more closely monitor deer survival and cause specific mortality, it has also allowed managers to gain valuable insight into deer movement and habitat usage within D9. Aside from monitoring for mortality signals, all radio-collared animals are located aurally once every winter, around the middle of February. Over 1700 data points have been collected, which has helped more accurately define mule deer winter range (Figure 21).



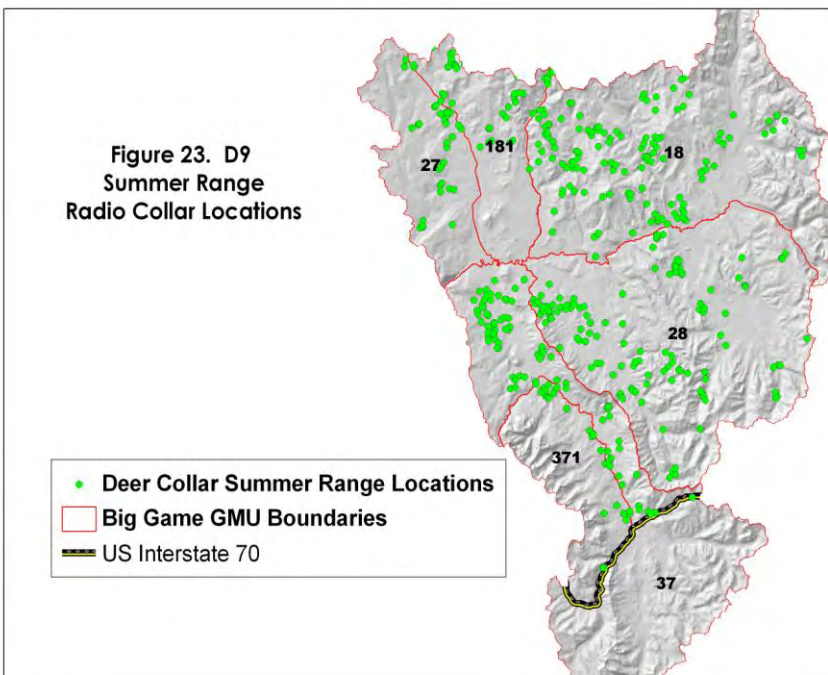
Transitional Range

Radio-collared deer are located either towards the end of May, or the beginning of November to determine transitional ranges and migrational patterns (Figure 22).

These locations can vary widely from year to year due to weather patterns and snow accumulation. Certain individual deer may elect to remain close to winter range longer into the spring certain years, and leave earlier during other years.



Summer Range



Summer range locations are recorded in later July to early August. This is to ensure that all deer have finished their full seasonal migration. Not depicted here is the fact that some deer do migrate further north into North Park (Jackson County), but a majority of the radio-collared deer remain in Grand and Summit Counties. An interesting note is that, to date, no collared deer has ever been recorded east of the Continental Divide or south of Interstate 70.

Habitat Condition and Capability

As described above in the Current Management section, mule deer winter range is limited in D9. While there are some relatively large contiguous blocks of suitable winter habitat, some of these areas are in poor condition due to senescence and succession of plant communities that have resulted from fire suppression.

A variety of small-scale habitat improvement projects have been completed throughout the DAU over the past decade, mostly benefiting winter range. The Bureau of Land Management has Dixie harrow and brush beating treatments over pockets of sagebrush, private landowners have carried out mosaic-type treatments via similar methods on stagnant blocks of sagebrush. The CDOW has completed fertilization and re-seeding projects. All of these projects have benefited the winter range habitat condition for the big game herd in Middle Park.

In contrast to winter range, summer range habitat is vast and overall healthy. While much is not known about the effects of mountain pine beetle on the expanses of lodgepole pine forest in the DAU, deer don't often use these areas for foraging, but instead for escape and thermal cover in the summer. If forest understory flourishes in areas of lodgepole pine die-offs, the forage component of these summer range areas will increase dramatically.

Game Damage Conflicts

Game damage due to deer is not a major problem in the DAU.

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 with officials from local BLM and Forest Service offices to solicit input regarding deer and elk management in their Resource Areas. Input from the Middle Park HPP committee was also sought in a meeting on May 28, 2009, as well as input from both Grand and Summit County Commissioners. These issues and concerns were noted and incorporated into this plan.

In an effort to solicit recommendations on the goals and objectives of the DAU plan from the interested public, the CDOW held open public meetings in Kremmling, Granby, and Silverthorne on June 15, 16, and 22, 2009. 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. In addition, the Draft DAU plan and questionnaire were made available via the internet from June 15, 2009 to July 16, 2009. Issues and concerns were noted during the meetings and from the questionnaires and were incorporated into this plan.

Issue Identification

The main issues raised by the agencies and committee surveyed were loss of deer habitat and mountain pine beetle impacts.

Both the US Forest Service Sulphur District and Dillon District, along with the Summit and Grand County Commissioners supported maintaining the current deer population numbers. The Middle Park HPP Committee and the US BLM supported increasing both deer population numbers and buck: doe ratios. The USFS Sulphur District and Summit County Commissioners deferred to the DOW for appropriate buck: doe numbers, whereas the USFS Dillon District supported increasing buck: doe ratios and the Grand County Commissioners supported maintaining the current buck: doe ratios.

Surveys were returned by 6 individuals. All six respondents indicated they were representing hunters and sportsmen, five were residents and one was a non-resident. All respondents were most interested in hunting and seeing deer. The major concerns were deer/vehicle collisions, loss of deer habitat, and winter starvation. Sixty six percent desired to see an increase in the deer population and an increase in the sex ratio. Most respondents (83%) favored decreasing or eliminating antlerless hunting, and reducing buck tags. Sixty six percent of the respondents indicated that hunting in D9 was either good or very good.

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**
8,500-10,500 deer; 10,500-12,500 deer; 12,500-14,500 deer
- **Sex Ratio Objective Alternatives**
25-30 bucks:100 does; 30-35 bucks:100 does; 35-40 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, quality of the habitat, game damage conflicts, and available licenses. The current deer population is believed to be below the habitat's carrying capacity.

Alternative 1: 8,500-10,500 deer:

This alternative would result in a 23% decrease in the population size of this herd from current population (12,300 deer) and would encompass a range slightly lower than the current population objective (10,500 deer). Initially, antlerless license numbers would increase. As the population declines and approaches the population objective, harvest may need to be reduced to stabilize the population size. While the chances of drawing a license would generally be higher, the chances of successfully harvesting a deer would be lower because fewer deer would be available. License sales would be increased until the new population objective is achieved, at which time license numbers would be reduced. This could reduce income to local communities and to the CDOW.

Alternative 2: 10,500-12,500 deer:

This alternative would maintain the current population size of this herd and allow it to fluctuate in size comparable to the past decade. Antlerless license numbers would remain similar to the current license quotas or might need to be slightly increased to stabilize the population at the current size. License-drawing success and harvest success would be similar to recent levels. With sustained harvest close to current levels, license sales will continue to be a benefit to the local economies and to the CDOW, but will be lower than in the early 2000s.

Alternative 3: 12,500-14,500 deer:

This alternative would increase the current population by 10% and would be almost 30% higher than the current objective. Because of winter range loss and decadent winter range conditions, habitat improvement projects would be required to consistently hold the population at this increased size, especially during severe winters. Because of continued loss of native winter range in the DAU, remaining habitat would likely deteriorate. Deer would be in poor body condition due to competition. Game damage problems would likely increase.

License numbers would be reduced to allow the population to increase. Late seasons might be necessary to mitigate game damage problems on private lands and in areas of the winter range where high deer concentrations are affecting overused winter ranges. The population would be less productive at this high 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 will 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: 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 on the habitat, the need for habitat improvement projects or game damage.

Alternative 1: 25-30 bucks: 100 does:

This alternative would reduce the current observed sex ratio by close to 30% and would represent a minor decrease in the current sex ratio objective. Buck licenses available in the 2nd, 3rd, and 4th seasons would be increased in the short term. 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 recreation days. Because of increased license sales and number of hunters, there would be a beneficial fiscal impact to local communities, as well as guides, outfitters, meat processing facilities, and other hunting-dependent businesses.

Alternative 2: 30-35 bucks: 100 does:

This alternative would maintain the sex ratio at current levels and would be a slight increase from the current objective. 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: 35-40 bucks: 100 does:

This alternative would encompass the current observed sex ratio and would be almost a 25% increase from the current objective. Buck licenses in 2nd, 3rd, and 4th seasons would be comparable to recent license allocations. The opportunity to draw a buck license would remain consistent with current odds, and more bucks would survive to maturity, so those hunters who draw a buck license would have more opportunity to harvest a quality buck.

IX. CDOW Recommended Objectives

Recommended DAU Population Objective: Alternative 2: 10,500-12,500

Recommended DAU Sex Ratio Objective: Alternative 2: 30-35 bucks: 100 does

Justification and Rationale:

Population Objective: The recommended population objective of 10,500-12,500 deer is in line with the current objective and current observed population size. CDOW believes that the present population objective represents an adequate balance of deer numbers to available habitat. Maintaining the population objective at 10,500-12,500 deer would allow a reasonable number of licenses (antlered and antler less) to be issued in most years. Exceptions will be after bad winters when the populations could drop below the objective. When a bad winter occurs, a population at lower density should have more resiliency and should recover more quickly, which was observed after the winter of 2007-2008. This population objective should maintain or increase hunter harvest; reduce resource damage and help improve the range condition and trend; and reduce conflicts with landowners.

Sex Ratio: The recommended sex ratio objective of 30-35 bucks: 100 does is in line with the current objective of 30 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. While the last 10 year buck: doe ratio has averaged close to 40 bucks: 100 does, the sex ratio can be radically altered in Middle Park due to the propensity for severe winters combined with high hunter harvest. While past public opinion surveys have indicated that most hunters wanted the opportunity to hunt and see more and larger bucks, a sex ratio objective of 30-35 bucks: 100 does will strike a balance between opportunity to draw a license and chances of harvesting a large buck.

X. LITERATURE CITED

- Amman, G., M. McGregor, and R. Dolph, Jr. Reprinted 1990. Forest Insect and Disease Leaflet – Mountain Pine Beetle. Leaflet 2.
- Pickton, T., and L. Sikorowski. 2008. The Economic Impacts of Hunting, Fishing and Wildlife Watching in Colorado. BB&C Research and Consulting. 22 pp.
- White, G.C., and B.C. Lubow. 2002. Fitting population models to multiple sources of observed data. *Journal of Wildlife Management* 66:300-309.

XII. Appendices



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



In Reply Refer To:
6521 (CON020)

JUN 23 2009

Justin Martens
Terrestrial Biologist
Colorado Division of Wildlife
P.O. Box 216
Hot Sulphur Springs, Colorado 80451

Dear Mr. Martens:

The Bureau of Land Management (BLM) in Kremmling has reviewed the draft Data Analysis Unit (DAU) plan for D-9 and attended a presentation at the Middle Park HPP committee's May meeting on the deer population objectives. The BLM has been asked to send a letter of support for one alternative in order to move forward in the planning process. The BLM Kremmling Field Office would like to recommend the following deer population and sex-ratio objectives:

- 12500-14000 for the deer population objective (Alternative 3) and
- 35-40 for the buck to doe ratio (Alternative 3).

Thank you for the opportunity to provide comments for the DAU management plan for deer in the Middle Park (D-9) herd. If you have any questions, please feel free to contact Megan McGuire at 970-725-3028.

Sincerely,

David Stout
Field Manager



United States
Department of
Agriculture

Forest
Service

Sulphur
Ranger District

9 Ten Mile Drive
P.O. Box 10
Granby, CO 80446
Voice: (970) 887-4100 TDD: (970) 887-4101
Web: www.fs.fed.us/r2/arnf
Fax: (970) 887-4102

File Code: 2640

Date: June 15, 2009

Justin Martens
Colorado Division of Wildlife
PO Box 216
Hot Sulphur Springs, CO 80451

Dear Justin:


After reviewing the Draft D-9 Data Analysis Unit Plan for GMUs 18, 181, 27, 28, 37 and 371, I have the following comments about deer management alternatives in Middle Park and, specifically, on the Sulphur Ranger District.

I support Alternative 2: maintaining the deer herd at the current population range of 10,500 to 12,500 deer. Management problems discussed in Part V. of the plan clearly explain potential limiting factors for healthy deer populations in Middle Park. Current deer population size appears compatible with available quantity and quality of winter range. Because of the limited amount of deer winter range on the Sulphur District and threats to rangelands throughout Middle Park, I am concerned that winter habitat will not sustain a larger deer population (Alternative 3) without impacts to rangeland health.

I do not have concerns about the buck:doe ratio, other than to defer to the CDOW for the proper ratio for overall herd health and productivity.

Thanks for asking for input, and for explaining the DAU update process and alternatives to my staff at our annual coordination meeting.

Sincerely,


CRAIG A. MAGWIRE
District Ranger



Caring for the Land and Serving People

Printed on Recycled Paper





United States
Department of
Agriculture

Forest
Service

White River
National
Forest

Dillon Ranger District
P.O. Box 620
680 Blue River Parkway
Silverthorne, CO 80498
(970) 468-5400
FAX (970) 468-7735

File Code: 2620-1
Date: August 10, 2009

Lyle Sidener
Area Wildlife Manager
Colorado Division of Wildlife
P.O. Box 216
Hot Sulphur Springs, CO 80451

Dear Mr. Sidener

Thank you for meeting with my staff to present the alternatives for the Middle Park Deer Herd Management Plan. The presentation was very informative and we would like to make our recommendations as explained below.

The population objective we would support is Alternative 2 with a population objective of 10,500 to 12,500 deer in the DAU. We recommend this objective over the higher population alternative due to the lack of knowledge of how the lodgepole pine die-off will affect habitat. It is suspected that summer ranges will be better due to shrub, grass and forb growth in the lodgepole areas in the short term but we also do not want a high population that would affect recovery of the lodgepole pine forests.

We would also recommend that the buck doe ratio should be alternative 3, 35-40 bucks per 100 does. This would give a quality hunting experience to the hunters who draw a license.

The District Biologist on the Dillon Ranger District has spent time over the last five years evaluating the mule deer winter ranges on the district and has come to the conclusion that the winter ranges are in a healthy condition. There has been some prescribed burning of sagebrush in the Green Mountain area in the last 20 years that has created some diversity of age class in the sagebrush stands. At the current time, we feel that the relatively small area of winter range on the Dillon Ranger District does not need any additional renovation or restoration at this time. In addition, the White River National Forest is preparing a proposal for sagebrush habitat renovation on the entire Forest and will be completing NEPA on proposal in the next year. The NEPA would be a programmatic document that would allow us to do treatments in the sagebrush habitat on the Forest with review of localized effects of treatments. Having this document should make it easier to authorize treatments such as fertilization in short time frames.

We would like to update you on some on going projects that although they may not directly affect mule deer could effect how elk may use winter ranges. We are actively logging a 3,300 acre lodgepole pine salvage project around Dillon Reservoir, Frey Gulch and the Wilderndest areas. We expect this to create some areas of additional winter forage for elk. We are also finalizing the decision on a 1,000 acre WUI treatment from Wilderndest north to the Sierra



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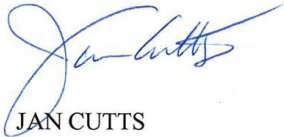
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Bosque sub division with the treatment being a maximum 600 foot wide fuels treatment along the Forest Service private land boundary around the subdivisions. This WUI treatment is also in elk winter range with minor deer winter use. We are in the final stages of a draft EA for the Lower Blue project which is a salvage logging project in lodgepole pine in the Spring Creek, Ute Pass, Harrington Creek, Maryland Creek and Acorn Creek areas. All of these areas are in or near elk winter range and may provide additional winter elk forage and may slightly reduce elk/mule deer competition in the Green Mountain area.

If you have any questions please feel free to contact Vernon Phinney at (970) 262-3491 or Ashley Nettles at (970) 262-3457 at the Dillon Ranger District.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jan Cutts", written in a cursive style.

JAN CUTTS
District Ranger



OFFICE OF THE COUNTY MANAGER

970-453-2561
fax 970-453-3535

Post Office Box 68
208 East Lincoln Avenue
Breckenridge, Colorado 80424

July 27, 2009

Lyle Sidener
Colorado Division of Wildlife
Hot Sulphur Springs Service Center
P.O. Box 216
Hot Sulphur Springs, CO 80451

Re: Middle Park Deer DAU (D-9)

Dear Lyle,

On behalf of the Summit County Board of Commissioners (BOCC) I want to thank you for your very thorough and informative presentation at our June 16th meeting. This correspondence is in response to your request for input on the 3 long-term objective alternatives on post-hunt population size and buck to doe ratios discussed at the meeting and detailed in the written material that was provided.

Based on your presentation and after receiving only one other public comment on this issue the BOCC supports the following alternatives.

- **Post Hunt Population :**
The BOCC supports Alternative #2, maintenance of the herd at current population levels within a range of 12,500 to 14,500. We understand this range slightly exceeds the population objective for D-9 established in 1989 (10,500) but based on the statistics collected by the Colorado Division of Wildlife (CDOW) and other indicators presented at our meeting also understand that the deer herd has been healthy at this level.
- **Post Hunt Buck: Doe Ratio:**
The BOCC saw only a slight difference between alternatives #2 and #3 and liked the balance of hunting opportunity and body/antler size offered under #2 but the greater number of mature, large antlered and possibly larger fourth season buck hunting opportunities of #3. The BOCC support either alternative.

The BOCC received some comment that the elk population in D-9 may be too high and creating an impact on the mule deer population. This concern seems inconsistent given the very positive information you presented on herd size, buck/doe and fawn/doe ratios. Nonetheless it would be helpful to understand the CDOW's consideration of total elk populations in relation to goals, deer/elk population ratios and competition for winter habitat.

Thank you again for your presentation and please do not hesitate to contact me if you have questions.

Sincerely,


Gary Martinez
County Manager



BOARD OF COMMISSIONERS

JAMES L. NEWBERRY
District I, Winter Park 80482
NANCY STUART
District II, Granby 80446
GARY BUMGARNER
District III, Kremmling, 80459

E-Mail: grndcty1@co.grand.co.us
PHONE: 970/725-3347
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LURLINE UNDERBRINK CURRAN
County Manager
ANTHONY J. DICOLA
County Attorney

July 28, 2009

Justin Martens
Division of Wildlife
P.O. Box 216
Hot Sulphur Springs, Co 80451-0216

Re: Mule Deer Quotas

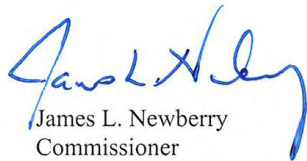
Dear Mr. Martens:

The Grand County Board of County Commissioners would like to go on record supporting the D.O.W.'s recommendation for the population objective for Mule Deer to be 10,500 - 12,500 with a sex ratio of 30-35 bucks per 100 does.

Thank you for the opportunity to comment.

Sincerely,


Nancy Stuart
Chairman


James L. Newberry
Commissioner


Gary Bumgarner
Commissioner

NS:ke

June 12, 2009

Justin Martens
PO Box 216
Hot Sulphur Springs, CO 80451

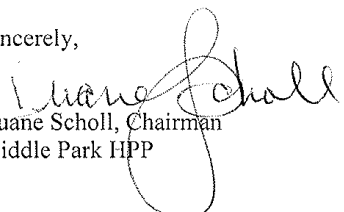
Dear Justin:

The Colorado Division of Wildlife made a presentation at the Middle Park HPP committee's May meeting on the deer population objectives for DAU D-9. The Middle Park HPP committee was asked to send a letter of recommendation for deer population objectives and sex-ratio objectives to be included in the Appendices of the finalized DAU plan. The committee would like to recommend the following:

- 12500-14000 for the deer population objective and
- 35-40 for the buck to doe ratio.

The committee understands that these figures are based on winter capacity levels. If you have any questions, please feel free to contact me at 970-725-3471.

Sincerely,


Duane Scholl, Chairman
Middle Park HPP

OPPORTUNITY FOR PUBLIC COMMENT



DEER MANAGEMENT

In the Middle Park Area
COLORADO

Data Analysis Unit D-9
(Game Management Units 18,181,27,28,37, and 371)

The entire DRAFT DAU D-9 Deer Management Plan can be found on the web at:

<http://wildlife.state.co.us/Hunting/BigGame/>

The Colorado Division of Wildlife is interested in your opinions about deer management in the Middle Park Area. The results of this effort will help wildlife managers prepare deer management plans for this area. This questionnaire is your opportunity to provide input on the management of deer in Game Management Units 18,181,27,28,37, and 371.

Colorado Division of Wildlife
Hot Sulphur Springs Service Center
P.O. Box 216
Hot Sulphur Springs, CO 80451

June 2009

Dear Interested Citizen:

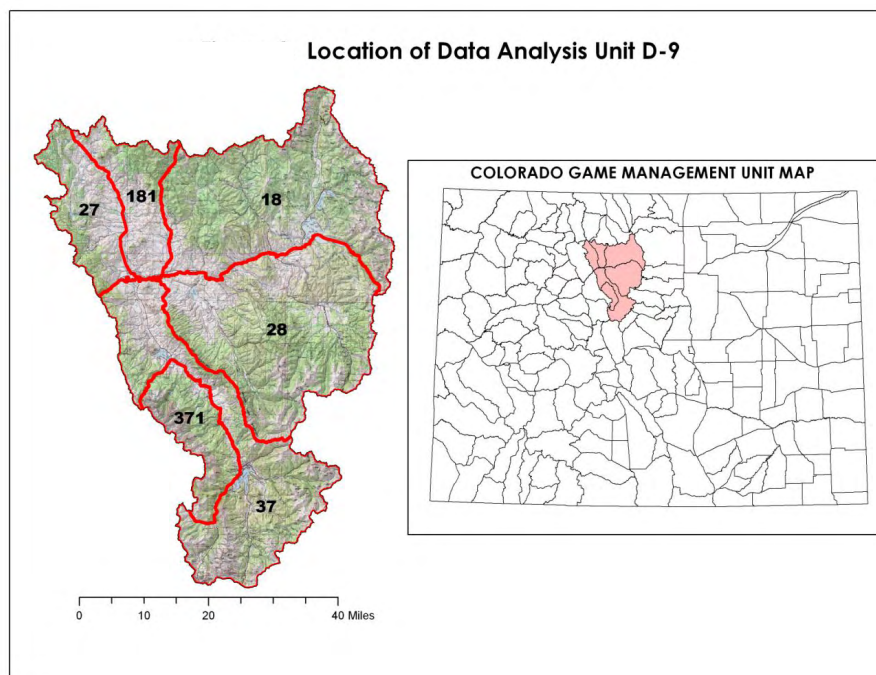
The Colorado Division of Wildlife (CDOW) is interested in your opinions about elk in the Middle Park Area, including Game Management Units (GMU) 18,181,27,28,37, and 371. Wildlife managers have begun the process of updating the deer management plan for this area, which will affect future harvest strategies and license setting.

In Colorado, big game populations are managed for a specific geographic area, which we call a Data Analysis Unit (DAU). A DAU generally includes several GMU's. In this case, the Middle Park DAU includes GMU's 18,181,27,28,37, and 371. The purpose of the DAU plan is to determine: 1) how many deer the DAU should support, and 2) what sex ratio (number of bucks per 100 does) the herd be managed for.

The DAU planning process attempts to balance biological considerations with public preference. An appropriate balance is sought and reflected in the deer herd objectives (population size and sex ratio). Annual hunting seasons are then designed with the intent of keeping the population at or near the selected herd objectives.

Your input is an important part of the DAU planning process. The information you provide will help develop CDOW's recommendation for deer herd objectives (population size and sex ratio) in the Middle Park area. Our recommendation will then be incorporated into the DAU plan, which will be reviewed, and ultimately approved, by the Colorado Wildlife Commission. Please be assured that your responses will remain confidential. **Surveys must be returned to the CDOW Hot Sulphur Springs Service Center by July 15, 2009.**

First, please examine the map and written description of the areas designated as Data Analysis Unit D-9, Game Management Units 18,181,27,28,37, and 371, located in North Central Colorado, then go to Question 1.



Description of DAU D-9: The Middle Park Deer DAU (D-9) is located in north-central Colorado and consists of GMUs 18, 181, 27, 28, 37 and 371. It is bounded on the north, east and south by the Continental Divide, and on the west by the Gore Range and Eagles Nest Wilderness Divide.

This DAU takes in all of the geographical feature known as Middle Park, and includes all of Summit County, most of Grand County, and a small portion of Routt County. Major towns include Hot Sulphur Springs, Granby, Kremmling, Fraser, Grand Lake, Silverthorne, Frisco, Dillon and Breckenridge. U.S. Highway 40 from Berthoud Pass to Rabbit Ears Pass, and Interstate 70 from the Eisenhower Tunnel to Vail Pass transverse the DAU. The DAU includes the headwaters of the upper Colorado River. Other major drainages include the Fraser River, the Williams Fork, Troublesome Creek, Muddy Creek, and the Blue River.

BACKGROUND INFORMATION

Respondent answers are in **highlighted yellow**.

1) Are you a resident of Colorado?

5 Yes
1 No

2) Do you live in GMU's 18, 181, 27, 28, 37 and 371?

3 Yes If yes, how many years and in what GMU? **42 Total Years**
3 No

3) Do you own or lease property in GMU's 18, 181, 27, 28, 37 and 371?

5 Yes If yes, how many years and in what GMU? 50 Years _____ GMU
1 No

4) During the last 12 months, have you participated in outdoor recreational activities other than hunting (e.g., camping, backpacking, snowmobiling, etc.) in GMU's 18, 181, 27, 28, 37 and 371?

4 Yes
1 No

5) Which group(s) best represent your interests in deer management in GMU's 18, 181, 27, 28, 37 and 371?

(Check all that apply)

- A) Rancher/Farmer
- B) Business owner
- C) Landowner
- D) Guide/Outfitter
- 6 E) Hunter/Sportsperson
- H) Environmental/Conservation
- 1 I) Other, please explain **Wildlife Watching**

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. _____

PEOPLE AND DEER

1) Please indicate how interested you are in doing each of the following. Respondents answer in **yellow**.

	No Interest		Very Interested		
Watching or photographing deer.....	1	2	3(2)	4(2)	5(2)
Hunting deer.....	1	2	3	4	5(6)

Seeing deer.....	1	2	3(1)	4(1)	5(4)
Learning more about deer management.....	1	2	3(1)	4(3)	5(2)
Providing input for decisions regarding deer management.....	1	2	3	4(3)	5(3)

2) Please indicate how concerned you are about each of the following in GMU's 18, 181, 27, 28, 37 and 371. (Circle one number for each item).

	No Concern		Very Concerned		
A) Deer/Vehicle collisions.....	1	2(1)	3(1)	4(3)	5(1)
B) Economic losses to ranchers/farmers from deer damage to rangeland, crops, or fences.....	1	2(2)	3(2)	4(2)	5
C) Damage to homeowners' trees, shrubs, and gardens caused by deer.....	1(3)	2	3(1)	4(2)	5
D) Predation on the deer population by coyotes, bears and mountain lions.....	1(2)	2	3(2)	4	5(2)
E) Loss of deer habitat due to increased human population & development.....	1	2	3(2)	4	5(4)
F) Potential starvation of deer during the winter.....	1	2	3	4(2)	5(4)
G) Deer spreading disease to pets, livestock, or humans.....	1(3)	2(1)	3(2)	4	5
H) Deer competing with livestock for forage.....	1(3)	2(2)	3(1)	4	5
I) Potential competition between elk and deer for habitat.....	1	2	3(3)	4(2)	5(1)
J) Revenue that deer hunting provides local business.	1	2(1)	3(3)	4(1)	5(1)

3) Have you been personally affected by any of the concerns listed in Question 2 in GMU's 18, 181, 27, 28, 37 and 371?

2 Yes If yes, circle one: A B C D E F G H I or J
3 No

4) How do you personally feel about deer in GMU's 18, 181, 27, 28, 37 and 371? (Check ONE)

 I do not enjoy the presence of deer in GMU's 18, 181, 27, 28, 37 and 371, AND regard them as a nuisance.

1 I enjoy the presence of deer in GMU's 18, 181, 27, 28, 37 and 371, BUT worry about the problems they may cause.

- 5 I enjoy the presence of deer in GMU's 18, 181, 27, 28, 37 and 371 AND do not worry about the problems they may cause.
- I have no particular feelings about deer in GMU's 18, 181, 27, 28, 37 and 371.

DEER MANAGEMENT

1) How would you like the deer population in GMU's 18, 181, 27, 28, 37 and 371 to change, if at all?
 Decrease slightly to moderately (10-25%)

- 1 No Change
- 4 Increase slightly to moderately (10-25%)
- 1 Don't know

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	Slightly	Very	Don't
Important	Important	Important	Know
		<u>3</u>	<u>2</u>
			<u>1</u>

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)

	Strongly	No	Opinion	Support	Support
	<u>Oppose</u>	<u>Oppose</u>	<u>Opinion</u>	<u>Support</u>	<u>Support</u>
Either sex licenses.....	<u>1</u>	<u>2</u>	<u>3(1)</u>	<u>4</u>	<u>5</u>
Additional doe tags.....	<u>1</u>	<u>2</u>	<u>3(1)</u>	<u>4</u>	<u>5</u>

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 decrease deer numbers? (Circle one number for each item)

	Strongly	No	Opinion	Support	Support
	<u>Oppose</u>	<u>Oppose</u>	<u>Opinion</u>	<u>Support</u>	<u>Support</u>
Decrease or eliminate antlerless licenses.....	<u>1</u>	<u>2</u>	<u>3(1)</u>	<u>4(2)</u>	<u>5(1)</u>
Reduce antlerless and buck tags.....	<u>1</u>	<u>2</u>	<u>3(1)</u>	<u>4(2)</u>	<u>5(2)</u>

3) How would you like the number of buck deer in GMU's 18, 181, 27, 28, 37 and 371 to change, if at all?

- 1 Decrease slightly (25-30 bucks per 100 does)
- No Change (30-35 bucks per 100 does)
- 4 Increase slightly (35-40 bucks per 100 does)
- Don't know

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

	Strongly Oppose	Oppose	No Opinion	Support	Strongly Support
Fewer buck licenses.....	1(1)	2	3	4(2)	5(1)
Eliminate 4 th season buck hunting.....	1(2)	2(2)	3	4	5
Increased doe harvest.....	1(1)	2	3	4(3)	5
More restricted motorized access during hunting season.....	1(1)	2	3	4(2)	5(1)

DEER HUNTING

1) Have you ever hunted deer in Colorado?
6 Yes If yes, how many years? **139 Total Years**
 ___ No

2) Have you ever hunted deer in GMU's 18, 181, 27, 28, 37 and 371?
5 Yes
1 No

3) Overall, how satisfied have you been with your deer hunting experience(s) in GMU's 18, 181, 27, 28, 37 and 371 in the last 5 years? (Circle ONE)

Very Dissatisfied	Slightly Dissatisfied	Neutral	Slightly Satisfied	Very Satisfied
1(1)	2	3	4(3)	5(1)

4) Overall, to what extent have you felt crowded by other hunters while deer hunting in GMU's 18, 181, 27, 28, 37 and 371? (Circle ONE)

Extremely Crowded	Moderately Crowded	Slightly Crowded	Not at all Crowded
1(1)	2(1)	3(2)	4(1)

5) Rank the following items from 1 to 5 in the order that they would most likely improve your deer hunting experience in GMU's 18, 181, 27, 28, 37 and 371. (1=most likely to improve, 5=least likely to improve) Do not use any number more than once.

11533 Less hunter crowding

23445 Higher hunter success rate

15351 Less motorized vehicle access

12122 Seeing more mature bucks

54214 Seeing more deer

6) Overall, how would you rate the quality of deer hunting opportunities available in GMU's 18, 181, 27, 28, 37 and 371? (Circle ONE)

Poor(1) Fair Good(3) Very Good(1) Excellent No Opinion(1)

7) Which ONE factor is the MOST important to you when deer hunting in GMU's 18, 181, 27, 28, 37 and 371? (Check ONE)

2 Not seeing other hunters

1 Obtaining game meat

2 Harvesting a trophy deer

WRITTEN COMMENTS:

1. I do not hunt deer in D9. However, I do spend several days per year wildlife watching in Units 27, 181, and 37. The wildlife I primarily watch in these units are deer during winter, spring, and summer. I enjoy seeing both sexes, however, I particularly enjoy spotting mature males during the winter months. I hunt deer in neighboring Units 15 and 36. Although I enjoy all of Colorado wildlife nothing is as special to me as seeing a large mature Mule Deer buck. I have spent approximately 10 days on average per year over the last 3 years wildlife watching in D9.
2. Flexibility in the management. Mother nature rules: the weather, the fires and feed available, hunting pressure due to weather and feed.
3. I am a non-resident, seasonal home owner in Unit 37. I bought the land to be able to hunt on my property and adjacent national forest. My most important issues is to be able to draw a non-resident license each year. Thanks.
4. I feel quite strongly that the amount of motorized vehicle access in Unit 37 as well as the inadequate manpower for ethical and vehicular regulation has had a significant impact on the presence of deer on public land during the rifle seasons as well as the quality of hunting opportunities on these public lands. I also feel that this has had an impact on winter mortality rates as the ability of unsuccessful hunters to harass and stress wildlife as the wildlife prepares for winter in largely unchecked. I have witnessed party hunting as well as the use of vehicles to chase animals during 3rd and 4th season hunts. Has the DOW ever considered the use/employment of seasonal enforcement officers? Another suggestion (which I'm sure is hotly contested) would be further restrictions on vehicular access for able-bodies (non-handicapped) hunters.
5. Please do not close down any more roads! The Forest Service has bulldozed and ripped up more roads than all the hunters have in the last 30 years. There is NO reason to close a road and destroy the property 10 times worse than any hunters, fishermen, or recreationalist. They obliterate them so its impassible to even walk on them. Being marked closed is just find. I am a disabled veteran 70% from the Vietnam War, the way they [USFS] destroy public property now is terrible. I have no problem walking a closed road in the dark with a $\frac{1}{4}$ elk in my pack at my age I'd like to walk on a closed road that is just that. "closed" not

ripped up. Like a bomb or minefield detonation. The elk population is way out of control and the only way we are going to see bucks like we use to have is the give hunters MORE access to get the elk and thin them out. I think the DOW needs MORE experienced officers in hunting and fishing not more in numbers but more with a hunting and fishing background in their early years. So they can use it to keep the Forest Service in check. You have to give the public some more access to kill off more elk and give the deer a chance to come back. ALL of my good deer spots I've found in the last 30 years now only hold elk. I think the elk being the big kids on the block have forced the deer out. Reduce the elk population to what it was in the early 80s late 70s give the deer a chance. P.S. I think a good portion of our over crowding during hunting season is a lack of any of the old roads and pull offs people used to camp in and hunt from are closed. The only place left to camp is on the main road. Tell the USFS its public property and the public CAN use it.