FINAL

Middle Park Deer Data Analysis Unit (DAU) D-9
Mule Deer Management Plan
Game Management Units 18, 181, 27, 28, 37, and 371

Prepared for

Colorado Division of Wildlife

By

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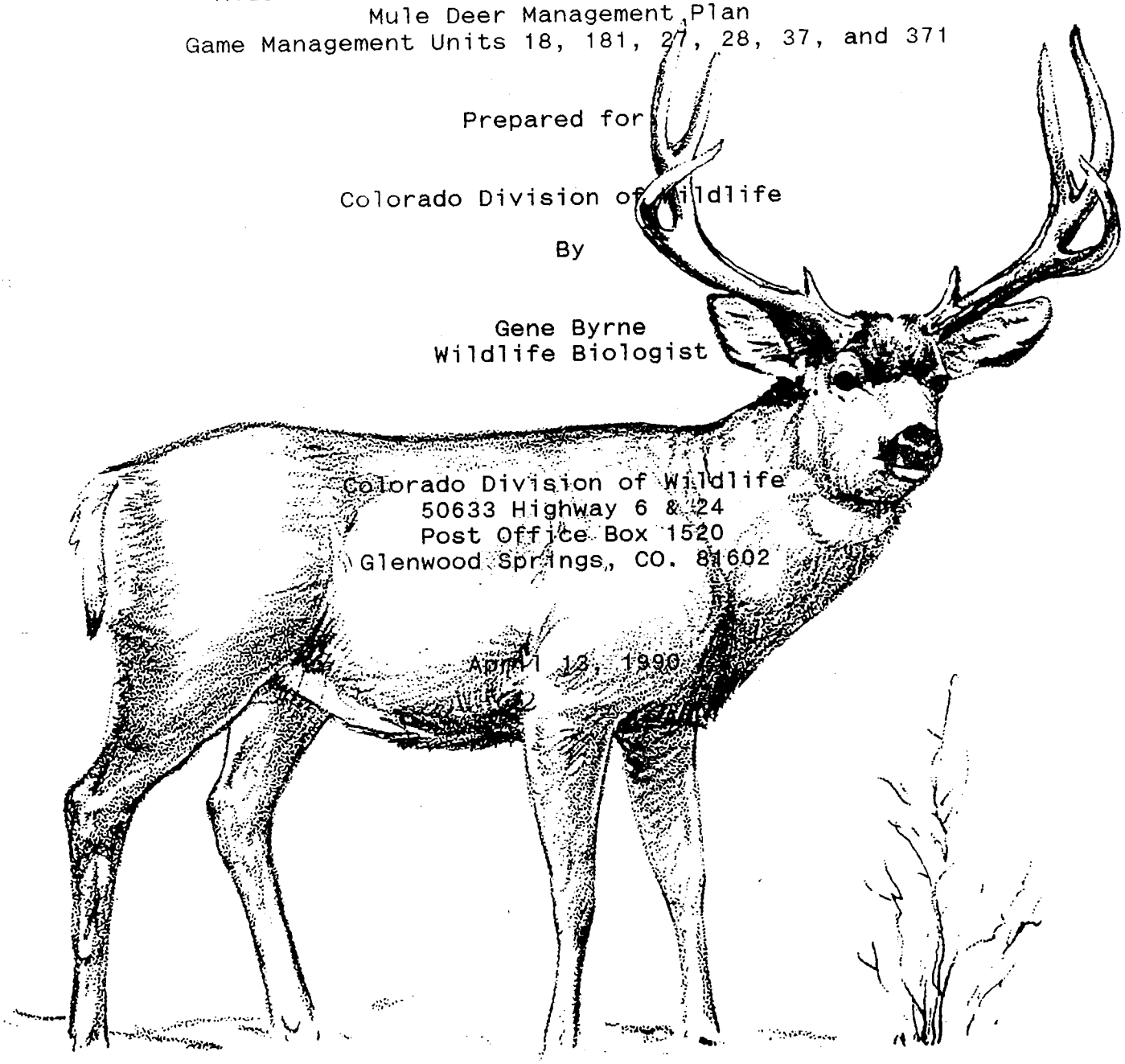


DAU Plan Summary

DAU: D-9 (Middle Park Mule Deer)

GMUs: 18, 181, 27, 28, 37, and 371

Current Population Estimate: 12,300 (Post-Season 1988)

Old Population Objective : 12,300

New Population Objective : 10,500

Percent Change: 15% decrease

Changes from current objective/management (if any):

Past attempts to maintain this population at high levels (12,300 to 14,000) have been unsuccessful. The new objective should produce a smaller deer herd that is healthier and more productive, has a higher survival rate during severe winters, has a less severe impact on winter ranges, and should produce increased antlered and antlerless harvest compared to higher populations. The quadrat census flown in Jan. 1990 produced an extremely low population estimate of 6,417 ±1,989 mule deer. We feel this estimate is lower than the current population due to poor counting conditions and unusual animal distribution caused by the extremely mild winter conditions. Our best estimate of the 1989 post-hunt population, based on a computer simulation model which uses various information such as harvest data, classification counts, and estimates of winter mortality, is 11,000 mule deer.

Describe significant issues raised during public involvement sessions and how the plan addresses those issues:

A major issue was the controversy concerning the decrease in population objective from 12,300 to 10,500 animals. Many of the public equate a higher deer population with more deer in the harvest, which does not follow the principles of managing populations for maximum sustained yield (MSY). Additional issues were low buck/doe ratios and problems with competition with elk on winter ranges. We feel that the smaller deer herd will be more productive and have better survival, which will produce more bucks. The decrease in population objectives for both deer and elk herds in Middle Park will decrease competition between the two species.

Income to the DOW and the local economy would be most stable with the preferred alternative. The number of hunting licenses sold would probably not be as great as in some years with alternatives with greater population sizes.

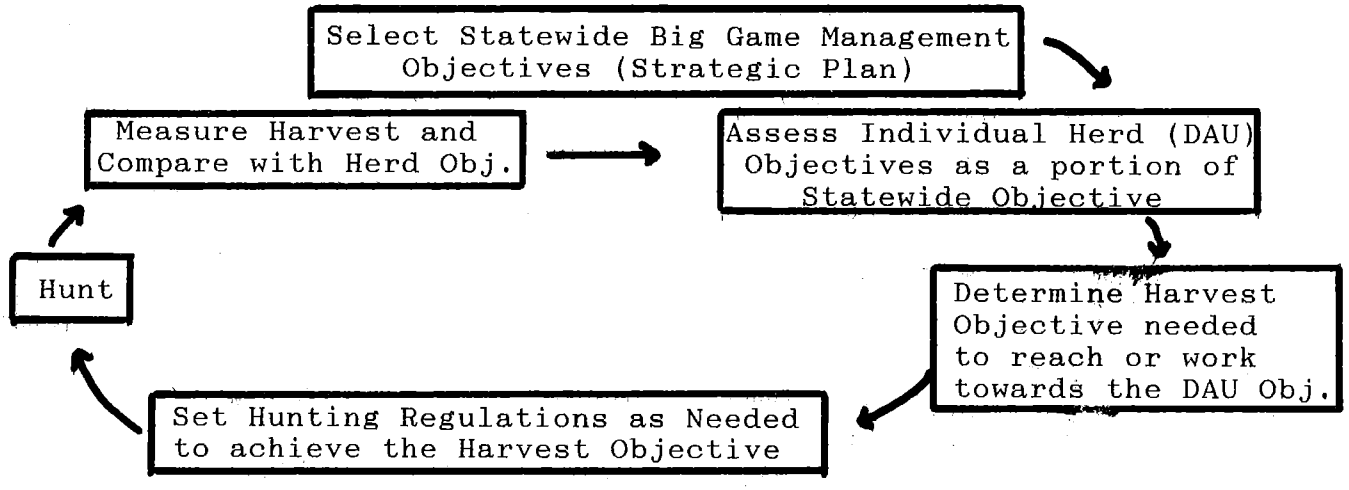
Introduction and Purpose

Historically, big game seasons were set either as a result of tradition or political whims. Often the seasons that resulted little resembled what was actually going on with big game populations or habitat. To a lesser degree, the setting of big game hunting seasons are still traditional and political, however, in Colorado things have changed. The various publics such as U. S. Forest Service, Bureau of Land Management, sportsmen, guide and outfitters, ranchers and Chambers of Commerce all have a vital interest in the size and composition of the the various big game herds. The Colorado Division of Wildlife is accountable to all of these groups to maintain the state's big game herds at population levels that have been through a public review process and approved by the Colorado Wildlife Commission.

Each individual herd of deer, elk and antelope is referred to as a Data Analysis Unit (DAU). Normally each DAU is composed of several game management units (GMU) but in some cases only one GMU makes up a DAU. The DAU boundaries are drawn so that they approximate an individual herd unit where most of the animals are born, raised and die with as little ingress or egress from other herds as possible.

The DAU plan deals with two primary decisions - how many animals should the DAU contain, and to a lesser extent, what should be the desired sex ratio (number of males per 100 females)? These numbers are then referred to as the DAU population and composition objective. Secondarily, the DAU Plan collects and organizes most of the important management data for a particular herd into one utilitarian planning document; determines DAU issues through a public scoping process; identifies alternative solutions to the issues and problems determined in this process; and selects the preferred alternative. The DAU plan process is designed to examine the public desires and biological herd capabilities and determine what is an appropriate balance. The public is involved in the determination of these goals by way of public meetings and comments to the Colorado Wildlife Commission. The herd objectives are usually set for a five year period.

The herd population objective drives the most important decisions in the annual big game season setting process - how many animals needed to be harvested to maintain or work toward the population objective. The objective management approach is an annual long term cycle of information collection, information analysis and decision making that culminates each year in a hunting season (see the diagram below.) The cyclic objective setting approach is designed to key the decision making process to the collection and analysis of information. It also focuses the decision makers, the Wildlife Commission, on "what it is we want."



Description of the Data Analysis Unit

Location

The Middle Park Deer DAU (D-9) is located in northwest 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 Eagle's Nest Wilderness divide.

The DAU comprises all of what is commonly known as Middle Park and includes all of Grand and Summit Counties and a small portion of Routt County. The DAU contains all of the headwaters of the Colorado River above Gore Canyon and all of the Blue River and Williams Fork drainages. Major towns include Hot Sulphur, Granby, Kremmling, Fraser, Silverthorne, Frisco, Dillon and Breckenridge. See Map 1 for map of the Middle Park Deer DAU D-9.

Physiography -

Topography - Middle Park is fairly unique in one respect compared to other large mountain parks in Colorado such as North Park and South Park - it has a very mountainous interior. These mountains, such as Wolford and Junction Butte, provide excellent southern exposure for critical big game winter range. The whole Park is a large basin surrounded on all sides by high mountain ranges with one drainage leaving the valley - the Colorado River through the rugged Gore Canyon. Middle Park has numerous peaks in excess of 13,000 feet. Most of these peaks are along the Continental Divide and in the Gore Range. The highest peak is 14,270 ft. Gray's Peak south of Loveland Pass. During the winter, big game animals become trapped in the park by Gore Canyon and cannot migrate out of the valley once the winter snows force them down to the valley floor. The valley floor at Kremmling is 7,300 feet in elevation, which makes it a very high winter range compared to other mule deer winter ranges in Colorado.

Climate - Middle Park area's climate is characterized by long, cold winters and short cool summers with low to moderate precipitation. The valley floor receives the least precipitation while the quantity increases with elevation. Local topography also determines the amount of moisture. The Kremmling area lies in the "rain shadow" of the Gore Range and receives about 11 inches of moisture per year while the Grand Lake area traps the clouds against the Continental Divide, and this area receives approximately 20 inches of precipitation per year. Most of the moisture comes as snow during the period of October to late April. Up to 20 feet of snowfall can occur during the winter in the high country. The deep snow forces deer and elk to winter in the lower elevation on south facing or wind blown slopes where less snow accumulates. Temperatures range from highs in the upper 90 degree F. range to lows in the minus 50 below zero F. During the middle of winter low temperatures in minus 20's F. are quite common. The town of Fraser is consistently one of the coldest spots in the lower 48 United States and is known as the "Ice Box of the Nation."

Vegetation - The vegetation in the Middle Park area can be categorized into five broad types - cropland, wetland/riparian, rangeland, forest land and alpine:

Croplands are found at the lower elevations and consist of irrigated hay meadows and terraces that have been re-seeded to more desirable forage plants. Most of the hay ground is "native hay" consisting of Timothy, Smooth Broome, American Sloughgrass with some sedges and rushes.

Wetland/riparian vegetation are found along the river bottoms and irrigated meadows. Some of the best riparian habitat is along the Colorado River between the town of Granby and Kremmling. This area is dominated by Narrowleaf Cottonwood and willow. The riparian habitat is one of the smallest 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, mountain shrub and native grasslands. The sagebrush type is the most common rangeland in Middle Park. The primary species is mountain big sagebrush (Atremisia tridentata vaseyana). Sagebrush dominates most of the drier, lower elevation sites that are well drained. Mountain shrub is found on the moister sites of the lower elevation primarily on northern slopes. This plant community is not widely represented in Middle Park but provides important wildlife food and cover. Mountain mahogany and serviceberry are two main species that make up the mountain shrub type. Native grasslands are found in two different areas. Low elevation grasslands occur on windswept sites with poorly developed soils that cannot support sagebrush. Higher elevation grasslands occur on the more level sites in forested areas and are comprised of large bunchgrasses such as Thurber fescue, wildrye, needlegrass and brome grasses.

Forest lands in Middle Park are comprised of four major types - Pinyon-Juniper, Lodgepole Pine, Aspen, and Spruce-Fir. Pinyon-Juniper is found on the dry, lower elevation slopes such as Cedar Ridge west of Williams Fork Reservoir. They provide important cover and low quality forage for wintering deer. Lodgepole Pine is found throughout the mountainous areas between 8,000 -10,000 feet. Because of the dense overstory this habitat type provides little forage for deer but is important for cover. Aspen is found throughout Middle Park at nearly all elevations. This habitat type provides some very high quality forage and cover for deer and elk. On some sites aspen is the climax species; on other sites it is a transitional species that occurs for only a relatively short period of time after a disturbance, such as fire. The Spruce-Fir type occurs in the higher elevations, usually from 10,000 feet to the alpine. This habitat provides excellent summer cover for deer and elk. Douglas Fir, Pondersoa Pine and Limber Pine coniferous forest types also occur to a lesser extent in Middle Park.

Alpine sites occur in the very high elevations, usually above 11,500 feet. The alpine is characterized by the absence of trees. Short grasses and numerous species of forbes make up the vegetation. This habitat provides high quality deer forage areas primarily from July through early September.

Slope and aspect play a large role in determining vegetation type. For example some higher elevation sites with a southern exposure are dominated by sagebrush while the lower elevation areas with a more northern exposure can support aspen and coniferous forests due to the high moisture retention of the soils. This variation of vegetation types

scattered throughout Middle Park creates a highly desirable mosaic that is very beneficial to wildlife such as mule deer.

Land Status -

The Middle Park DAU is comprised of 2,393 sq. mi. of land - 56% (1,349 sq. mi.) National Forest System land; 25% (591 sq. mi.) private land; 9% (223 sq. mi.) Bureau of Land Management land; 3% (81 sq. mi.) State Land Board lands and DOW less than 1% (5 sq. mi.) (see Table 4 and Fig. 6). The DOW owns (fee title) the following properties in the DAU -

Name	County	Remarks
Hot Sulphur	Grand	1,173 A. deer and elk winter range
Junction Butte	Grand	1,468 A. deer and elk winter range
Pioneer Park	Grand	Picnic and Fishing Access
Blue River	Summit	Fishing Access
Eagles Nest	Summit	Fishing Access
Sutton	Summit	Fishing Access

DAU D-9 contains approximately 429 sq. mi. of mule deer winter range and 38 sq. mi. 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 snowpack is at the maximum. The bulk of the winter range occurs on private land (approximately 40%), followed by BLM land (approximately 30%), State Land Board lands (approximately 15%), National Forest System lands (approximately 10%) and DOW lands (approximately 5%).

Land Use -

The land use is varied and diverse in Middle Park. The main industries are skiing, ranching, lumber, mining, tourism and outdoor recreation from hunting, fishing, boating and sight seeing. The skiing is concentrated in two areas. Summit County with Copper Mountain, Breckenridge and Keystone resorts and the Winter Park area with two ski areas plus a small ski area outside of Granby. The ski areas have large base developments associated with offsite condominiums, homes and commercial facilities. The Summit County ski areas are destination resorts that cater to the four season approach by furnishing year around recreation opportunities that include golfing, horseback riding, fishing, boating and hiking etc.. Because of the close proximity to Denver, the Grand Lake and Dillon areas have been developed with numerous recreational homes and cabins. The large reservoirs such as Dillon, Granby and Green Mountain have also contributed to the large number of summer homes.

Ranching is a very large industry in Middle Park and is concentrated around the central portions of the park. The main crops that are raised are hay and cattle.

Lumber is a large industry centered around the Louisiana Pacific Co. plant in Kremmling. The plant is a major producer of particle board. Much of the lumber comes from private and public lands in the Middle Park area.

Mining is concentrated in the Williams Fork drainage with the huge Amax molybdenum mine ore processing plant.

There are many outstanding tourist attractions in Middle Park. Besides the ski areas and reservoirs that have already been mentioned, the area includes the western portion of Rocky Mountain National Park.

Hunting and fishing is big business in Middle Park. Hunters can take deer, elk, bear, bighorn sheep, mountain goat, blue grouse and sage grouse. Fishing is provided in several Gold Medal streams and six large reservoirs and numerous high lakes. The area also includes portions of three National Forest System wilderness areas and one proposed wilderness area that provides numerous areas for hiking and sight seeing.

Habitat Condition and Capability -

Public Lands

The National Forest Service has 55 grazing allotments occurring totally or partially in DAU D-9. Eighteen of the 55 allotments are vacant and not being used by domestic livestock at this time. The remaining 37 allotments provide 19,466 AUMs of forage for livestock, which is available on an annual basis. The period of utilization is variable, but primarily occurs from late June through September. Classes of livestock using these allotments include cattle, sheep, and horses.

The Bureau of Land Management has 83 allotments in the DAU. The allotments provide 14,800 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.

Public Land Wildlife/Livestock Conflict Areas

The land use agencies were asked to identify allotments where conflicts occur between livestock and wildlife. Examples of conflicts were listed as situations where wildlife had forced a change or delay in period of use on an allotment, or forage utilization by wildlife had caused a reduction in AUMs of forage available for livestock.

The Arapahoe National Forest has identified six allotments where a conflict occurs between livestock and big game. On the Muddy allotment, the conflict is between cattle and big game, resulting in damage to browse plants on winter ranges. As a result, livestock has been decreased to reduce competition. The conflict on the Beaver allotment is listed as a potential conflict, and is being corrected by prescribed burning to improve forage on winter range. The Dillon Ranger District has identified four allotments - Acorn Cr., Big Hole, Blue Ridge and Pioneer which appear to have a conflict with cattle use on big game winter range.

The Bureau of Land Management has not identified any allotments where conflicts are occurring between deer and livestock.

Private Lands

Habitat condition and capability on private land was not assessed in this plan.

Private Land Wildlife/Livestock Conflict Areas

Conflicts caused by mule deer seem to be non-existent compared to problems caused by elk on private lands. However, identification of specific areas where conflicts may occur on private land, and resolution of the conflicts, will be addressed in the prototype Habitat Partnership Program which will be implemented in this area.

Past Management History

Post-Hunt Population Size -

The DOW makes two independent estimates of the deer population in Middle Park. One estimate is from the quadrat census. This technique is based upon a random sampling system where an attempt is made to count all of the deer within randomly selected one square mile quadrats or sections. Approximately 16.4% of the total deer winter range in Middle Park is flown, usually in late January or early February. From 1968 - 1980 the census was conducted every year. Presently the census is conducted every 2-3 years. It's a well documented fact that it is not possible to count every individual deer. Most DOW biologists feel we are counting approximately 80 - 90% of the deer on the Middle Park quadrats. The results of the 16 years of data are summarized in Table 5 and Fig. 7.

The second method used to estimate population size is by computer modeling. This process uses a personal computer and a program called POP-II. Harvest figures are entered into the computer along with estimates for mortality, initial population size, sex ratio at birth and wounding loss. The model is then "run" numerous times until it "reasonably aligns" with the measured post-hunting season age and sex ratio data that is collected at least every other year in Middle Park. The results of the computer generated population estimates are summarized in Table No. 2. The DOW uses the computer population model as their main method for estimating population size for deer, elk and pronghorn antelope in Colorado. The quadrat census technique described above is used mainly as additional alignment data for the model.

The computer modeling data suggests that the Middle Park deer herd has declined since the 1950's and 1960's. The highest population estimate derived from the computer model was in 1961 when the DAU was estimated to contain 19,500 deer. The lowest population estimate was in 1970 (6,408 deer). The DOW has used different population objectives over the years. During the 1970's the population objective was approximately 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. The Middle Park Deer DAU averaged approximately 9,400 deer during the 1970's and 11,100 deer in the 1980's. The population increase in the 1980's was due primarily to the higher population objective. During the past 5 years (1984 - 1988) the post-hunt population has averaged 11,196 deer (see Table 1 and Fig 1).

Disclaimer -

Estimating population numbers of wild animals over large geographic areas is an extremely difficult and inexact science. Numerous 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 100% of the animals. In some cases less than 50% of the animals can be observed and counted. High-tech methods using infra-red sensing have also met with very limited success. The Colorado Division of Wildlife (DOW) recognizes this is a serious problem to our management. The DOW attempts to minimize this problem using the latest technology and inventory methodology that is available today. Most population estimates are derived using computer model simulations that involve estimations of 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 quadrat surveys. The DOW recognizes the limitations of the system and strives to do the best job with the resources available. If better information becomes available, such as new estimates of survival rates; wounding loss; sex ratio at birth; density estimates; or new modeling techniques and programs; the DOW reserves the right to use this new information and the new techniques. Making these changes may result in significant changes in the population size estimate and management strategies. It is recommended that the population estimates presented in this document be used only as an index or as trend data and not as a completely accurate attempt to enumerate all of the animals in the particular data analysis unit (DAU).

Post-Hunt Herd Composition -

The Middle Park Deer DAU is fortunate to have some of the most extensive inventory records for a deer herd in Colorado. The area was used as a mule deer research base during the 1960's and 1970's. Many of the present day inventory techniques that are still used today were originally pioneered in Middle Park. The first documented age and sex ratio data were collected during the 1967 post-hunt year. The data set indicates there has been a very dramatic decline in the sex ratio (buck to doe ratio) for the the herd since the winters of 1978-79 and 1983-84. From 1967 to 1978 the DOW conducted 26 different post-hunt age and sex ratio classifications and the sex ratio averaged 46 bucks/100 doe with a range of 43 to 71 bucks/100 doe. During the past 5 years, the DOW has conducted 4 age and sex ratio classifications and the deer herd has averaged 24 bucks/100 does with a range of 15 (in 1987) to 38 bucks (in 1983) /100 does. It is interesting to note that the present sex ratio is the lowest in documented history. This has occurred despite antler point regulations that began in 1986 and continue to the present. The regulations were designed to increase the buck to doe ratio and the number of mature bucks. Deer antler point regulations require hunters to harvest bucks with three points or more on one antler during the first and second combined rifle seasons. Other factors that may have contributed to the decline in sex ratio are long rifle deer seasons, presently 26 days lasting until mid-November when the bucks are more susceptible to hunting pressure; decreased fawn survival due to carrying too many deer on the limited winter ranges.

The post-hunt age ratio (fawn to doe ratio) has not changed as dramatically as the sex ratio. Since 1967 the DOW has conducted 26 age and sex ratio classifications and the average age ratio was 77 fawns/100 does (range 41 in 1970 to 92 in 1967). During the past 5 years the DOW has conducted 4 surveys and the age ratio averaged 78 fawns/100 does (range 71 (in 1986) to 88 in 1983). It is important to note that these

surveys were mostly conducted in early winter prior to the end of December. It is necessary to do this inventory before the bucks start to shed their antlers when sex and age can be readily determined (see Table 2 and Fig. 2).

Harvest History -

Since 1953, the average Middle Park deer harvest has been approximately 2,500 deer per year, 1,300 bucks and 1,200 antlerless (does and fawns). However, during the 1950's and 1960's the total harvest averaged 3,600 deer and during the 1970's and 1980's the harvest had dropped to approximately 1,400 per year or less than 40% of the 1950's and 1960's harvest. Another significant trend is the comparison of antlerless harvest compared to antlered harvest. In the 1950's and 1960's there were actually more antlerless animals (does and fawns) killed than bucks, averaging about 300 more antlerless per year than bucks. During the 1970's and 1980's the average number of bucks harvested per year exceeded the antlerless harvest by approximately 500 per year. From 1953 to 1988 there have been 45,993 bucks and 42,680 antlerless deer harvested for a total harvest of 88,683 deer. The maximum number of deer harvested in any one year was 5,503 in 1954 and the lowest number was 348 in 1971 when the entire state was bucks only hunting. See Table 1 and Fig. 1 for detailed analysis of the the harvest data.

Antlerless harvest is a function of the number of antlerless licenses issued. Since 1983, the DOW has issued the following number of antlerless licenses in the DAU:

	YEAR						
	1983	1984	1985	1986	1987	1988	1989
Total Licenses	3000	0	500	500	895	1340	200
Harvest	528	0	252	255	436	649	97
% Success	18%	0%	50%	51%	49%	48%	49%

Hunting Pressure -

Hunting pressure has remained very stable in Middle Park since 1953. The average number of deer hunters over this period has been approximately 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 was in 1966 with 9,987 hunters. During the past five years (1984 - 1988) the number of hunters has averaged 6,886.

Percent success has obviously declined with the decline in deer numbers and decline in harvest. The highest percent success was 78% in 1959 and the lowest was 10% in 1972. During the past five years the percent success has averaged 21%. See Table 1 and Fig. 1 for a summary of hunting pressure and percent success.

Mortality Data -

The 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. The DOW has been using wildlife management students from Colorado State University to walk the ridge and count every deer that passes between the

line of students or crosses Williams Fork reservoir. The dead deer count is conducted the following spring in mid-May. Some of the same students return and walk 17 permanent transects that are an average of 78 feet wide. All the transects together total 45.5 miles. This sample represents approximately 18.9% of the total area of Cedar Ridge. The count is then projected to estimate the total area by multiplying by 5.27. While the Cedar Ridge dead deer count is being conducted, other students walk the railroad tracks from Sulphur Gulch(east of Kremmling) to Byer's Canyon and count the dead deer hit by the railroad during the previous winter. Mortality is a function of winter severity. When winters are severe such as in 1964-65, 1979-80, 1983-84, 1985-86 and 1988-89 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. See Table 3 and Fig. 3, 4 & 5 for a summary of these three surveys.

Current Management Status

Current Objective -

The current population, sex and age ratio objective is 12,300 deer and 17 bucks/100 does and 69 fawns/100 does respectively.

Current Management Problems -

1. Limited Winter Range - Winter has always been a major limiting factor to Middle Park deer. The closed valley topography of Middle Park results in a very restricted and limited winter range. During light to normal winters the winter mortality rates probably don't exceed 15 - 20% of the total deer herd. However, in severe winters, the deer are severely concentrated in the valley floors on very limited south facing or wind swept slopes mostly in the area below Byer's Canyon. Competition for food is very severe and this results in a very high winter mortality, especially on fawns - sometimes as high as 85-95%. However, adult doe mortality during most severe winters is usually less than 30%.

2. Low Buck to Doe Ratios - Middle Park traditionally had a very high buck to doe ratio. However, since 1979 the ratio has declined noticeably. This could be a result of several factors. First, antlerless harvest has been reduced considerably since 1970 allowing the buck to doe ratio to decline. Second, the total number of deer in Middle Park has increased since the late 1970's and this could be causing some density dependent problems (too many deer for the available winter range) and increased winter mortality on fawns and bucks due to severe food competition on a very limited winter range. In this case the adult does are much better equipped to survive the severe winters. This is to the detriment of bucks, which are in poorer shape due to the rut and fawns, which normally

don't have the stored fat reserves to survive a severe winter. Third, antler point regulations that have been in effect since 1986 may have resulted in an increased illegal kill of spike and two-point deer that are shot and left by careless rifle deer hunter. Fourth, the present season structure of three combined seasons with 26 days of deer hunting pressure is an increase over the previous two combined seasons that allowed 16 days of hunting.

3. Competition with Elk - Elk numbers in Middle Park have steadily increased from almost no elk at the turn of the century to approximately 9,000 elk today. Since, 1979, elk numbers have remained fairly stable but are at a historical high for this century. Elk may have been forced to expand their historic winter ranges and move down to lower elevations where they have competed with deer on the limited winter ranges. Elk have more versatile food habits and are a stronger and more aggressive animal than deer. The resulting increase in elk has probably been to the detriment of deer.

Issues and Strategies

Issues -

During the scoping and issue identification session of the DAU Plan process, the DOW requested that each individual and/or agency review a matrix of issues and concerns (Table No. 5) that may involve the DAU. This matrix was considered only as **a place to start**, not as a complete list of all the possible issues. The DOW had simply listed some of the issues that have already been raised at similar public meetings. The public was asked to review this list of issues and place an "X" in the appropriate column if they agreed with the issue and felt that it was valid. The public was also asked to categorize the special interest group they best represented i.e. landowner, sportsmen, environmentalist, guide and outfitter, businessman, other, etc.. They were instructed to add any additional issues to the bottom of the pre-printed matrix.

Each issue was classified as one of three types: biological, political and social. Some of these issues could have been classified into several types or they could be classified as a different type. Biological issues deal primarily with matters that affect the population dynamics of the herd; the quantity and quality of the harvest potential; population size; and/or the habitat. Political issues deal primarily with matters that can be addressed through wildlife commission regulations and state or federal laws. Social issues deal primarily with attitudes, values and philosophies. These issues are usually abstract and can be changed or dealt with primarily through information and education programs, administrative changes, or law enforcement efforts.

The issues and concerns were reviewed by the DOW and were used to make recommendations for the preferred alternatives.

Strategies and Comments Concerning the Issues -

The following comments, made by the DOW, address specific issues cited in the issues and concerns survey (Table No. 5). They are

referenced in the "COM NO." (Comment Number) column of Table No. 5. Comments have not been made on philosophical or more opinion based issues.

Comment Number -

1. The DOW is presently conducting an intensive research study in the Maybell, CO area to determine the effect of elk winter grazing vs. spring cattle grazing. This research should be applicable to other species and areas. The DOW does recognize and confirm that intensive and concentrated use of forage plants by deer can cause deterioration.

2. During a severe winter, deer can move into yards, both in towns such as Kremmling and on ranches , and they can cause considerable problems. The DOW does not pay game damage for ornamental plants.

3. Increased elk herds have probably been to the detriment of deer in Middle Park due to competition on winter ranges.

4. The D-9 buck to doe ratios are at the lowest levels in documented history. The DOW hopes to correct this with changes in season structure, regulations and a lower population objective.

5. The DOW wishes to remove excess and problem deer in the DAU by targeting the specific deer that cause damage rather than broad reductions across the DAU.

6. The DOW feels there are too many deer presently in Middle Park for the available winter range. By having a lower population of deer, the DOW hopes to improve the survival and health of the herd and actually increase the hunter harvest.

7. The DOW does not perceive deer to be a major cause of game damage in Middle Park.

8. In the past, the DOW set herd objectives without much input from the public, Forest Service or the BLM. Today, using the DAU planning process, the DOW is attempting to achieve consent from these individuals and agencies that have an interest in the herd.

9. This practice is currently against the state law and/or DOW regulations.

10. It is the policy of the DOW that every legitimate damage claim should be paid and that DOW employees assist the claimants.

11. The DOW doesn't feel that hunters are any worse about littering, ruining public roads, etc. than other outdoor user groups such as campers, hikers and RV users.

12. The DOW perceives this as a real problem to our management and is attempting to solve it with programs such as Ranching for Wildlife, special private land only late hunts, etc..

13. The DOW recognizes that it doesn't provide much labor to solve game damage problems. The game damage program has been a cooperative approach where the DOW supplies materials and some delivery while the landowners provide the installation labor.

14. The DOW attempts to control the total number of deer in the DAU by designing seasons that will achieve or work toward the DAU population objective. Distribution problems should be solved with special game damage hunts that target the offending animals.

Alternative Development

Below are a few of the many possible alternatives that could be considered to accomplish the main purpose of the DAU Plan - to determine the population and herd composition objective. Additional alternatives can and will be considered based on the desires and input of the public and the land management agencies. The recommendations of the public and land management agencies concerning the population and sex ratio objectives are listed in Table 7 & 8 respectively.

Population Size -

1. Increase - 14,000 deer (14% Increase)
   Discussion -

   History of Alternative - This would return the management to the previous objective of the early 1980's through 1987. The DOW rejected this objective earlier because it appeared too high and difficult to reach. The last time the deer herd was close to or above this objective was in 1978 (15,275 deer) and 1983 (13,763). Both of these years preceded bad winters that caused the herd to plummet.

   Habitat Improvement - Considerable range improvements such as burning, fertilization and reduction in competition with elk and livestock would probably have to occur to be able to maintain and hold the population at this level.

   Game Damage - Game damage problems would be most common with this population alternative because of maximum competition for forage.

   Season Structure - The large population would provide maximum harvest potential during years following mild winters. However, fawn and buck survival would be low after a severe winter due to high mortality rates. This could and has produced a boom bust cycle of management where antlerless permits are cycled from none to several thousand.

   Survival Rates, Quantity and Quality of the Harvest - The potential for quality bucks and high buck to doe ratios will be limited with this alternative because of poorer nutrition and high fawn mortality rates. Total harvest would vary considerably. After several years of mild winter the harvest

potential could be great when the population would approach the management objective. However, the population would plummet following a severe winter and this would lower harvest potential for the following years.

Fiscal Impacts - Income to the DOW and local businesses would be maximized during years when the population was at the objective but would fall off considerably when the population crashed after a severe winter. The cost of game damage and habitat improvements would increase.

2. Hold - 12,300 deer (Status Quo)
Discussion -

History of Alternative - This is the present population objective since 1988. The DOW went to this objective in 1988 because it was approximately the average population size for the previous 5 - 10 years and it appeared to be more reasonable. The population would still exhibit some boom and bust cycles due to hard winters but not as severe as the "increase alternative".

Habitat Improvement - Habitat improvement projects and reduction in competition would still be required to consistently hold the population at this level, especially during severe winters.

Game Damage - Game damage problems from deer should be moderate under this alternative.

Season Framework - The present season framework could be maintained.

Survival Rates, Quantity and Quality of Harvest - Survival rates for fawns and bucks should also improve over alternative number 1 because of more forage being available during the critical winter period. This would provide more quality and quantity in the harvest. This alternative should allow a higher average antlerless harvest than alternative 1 because the population should be at the objective more often.

Fiscal Impacts - Income to the DOW and local businesses should remain high with this alternative because of high number of licenses, especially antlerless licenses. The population should exhibit less boom and bust cycles than alternative number 1 and should stabilize the economic return from this herd.

3. Decrease - 10,500 deer (15% decrease)
Discussion -

History of Alternative - This alternative was close to the DOW objective during most of the 1970's (10,000 deer). This objective was based on the normal carrying capacity of the winter range during a severe winter.

Habitat Improvement - Habitat improvement projects would still be required on some ranges, especially severe winter ranges. However, during a severe winter such as 1983-84, the serious problem with forage was the lack of availability rather than lack of forage, since most of the forage was covered with deep, wind packed snow and not available to the deer. This situation should be least severe with this alternative.

Game Damage - Deer game damage problems will be the least with this alternative.

Season Framework - The population decrease to 10,500 deer would be achieved by increasing the number of antlerless licenses for several years. When the objective of 10,500 deer was reached the antlerless harvest would be increased to hold the population at this level. This should not require a change in the present season structure.

Survival Rates, Quantity and Quality of Harvest - Survival rates would be the highest with this alternative because the maximum forage will be available. This alternative should provide the highest quality bucks and the highest sex ratio compared to the other two alternatives. The population would exhibit the least boom and bust cycle at this level because it would allow the maximum amount of forage and least amount of competition. This alternative would allow for a high antlerless harvest in most years and this would remain fairly constant since the population should fluctuate less. The antlerless harvest and total harvest could be less than the other two alternatives after 3 - 4 mild winters but would be more after a severe winter.

Fiscal Impacts - Income to the DOW and local businesses would be the most stable with this alternative. The number of hunting licenses sold would probably not be as great in some years compared to the other two alternatives.

Herd Composition (Buck Ratio) -

1. Increase - 30 Bucks /100 Doe (13 Bucks /100 Doe Increase)
   Discussion -

   Habitat Improvement and Game Damage - This alternative would not have any effect on the existing habitat, the need for more habitat improvement projects, or game damage problems.

   Season framework - The season structure would probably have to be changed to a more restrictive season to protect antlered deer. This could be accomplished by shortening the season length; closing the season earlier in November when the bucks are most susceptible to hunters; using "limited either-sex" licenses instead of "additional antlerless" licenses; or going to totally limited licenses. Antler point regulations have not

appeared to work since there apparently is a high illegal kill resulting from this regulation.

Survival Rates, Quantity and Quality of Harvest - Ultimately fewer bucks will be harvested under this alternative due to more loss from natural mortality than from hunter harvest. The quantity of the total harvest would be reduced since this alternative would require carrying more bucks in the population. This would require reducing the number of doe deer in the herd to maintain the population at the desired objective. This would in turn lower the number of fawns that are produced and lower the overall harvest potential for the herd. The quality of the harvest (trophy bucks) would improve due to high buck to doe ratios and more older, larger bucks being available for the hunters to harvest and observe.

Fiscal Impact - If totally limited licenses were used percent success would increase but total hunter numbers and recreation days would decrease. If shorter antlered seasons were used the percent success, recreational days and antlered harvest would decrease. Both of these alternatives would result in a drop in DOW and local income and economic benefits that are derived from this herd. Totally limited licenses would result in the largest drop.

2. Hold - 17 Bucks / 100 Doe (Maintain the Status Quo)
   Discussion -

   Habitat Improvement and Game Damage - This alternative would not have any effect on the habitat, the need for habitat improvement projects or game damage.

   Season framework - The season structure would not have to be changed.

   Survival Rates, Quantity and Quality of Harvest - These would not change - (status quo.)

   Fiscal Impact - This would not change from the status quo under this alternative.

3. Decrease - 10 Bucks /100 Doe (7 Bucks /100 Doe Decrease)
   Discussion -

   Habitat Improvement and Game Damage - This alternative would not have any effect on the habitat, the need for habitat improvement projects or game damage.

   Season framework - The season structure would probably have to be changed to a more liberal season to harvest more antlered deer. This could be accomplished by lengthening the seasons especially to allow a post-season when the bucks would be more vulnerable and available for harvest. Antler point regulations

should not be used to maximize the harvest potential on the bucks.

Survival Rates, Quantity and Quality of Harvest - Ultimately more bucks will be harvested under this alternative. This would result in fewer dying of natural mortality. The quantity of the total harvest would be increased considerably since this alternative would require carrying more adult females in the population. This would allow for an increase in the number of doe deer in the herd to maintain the population at the desired objective. This would in turn increase the number of fawns that are produced and increase the overall harvest potential for the herd. The quality of the harvest (trophy bucks) would decrease due to the low buck to doe ratios and fewer older, larger bucks being available for the hunters to harvest and observe. This would decrease hunter satisfaction due to the lack of "trophy animals."

Fiscal Impact - This alternative would increase percent success, total harvest and recreation days. In essence this alternative would allow for the highest harvest potential and would increase the number of hunters. This would increase DOW and local income and economic benefits that are derived from this herd.

Alternative Selection

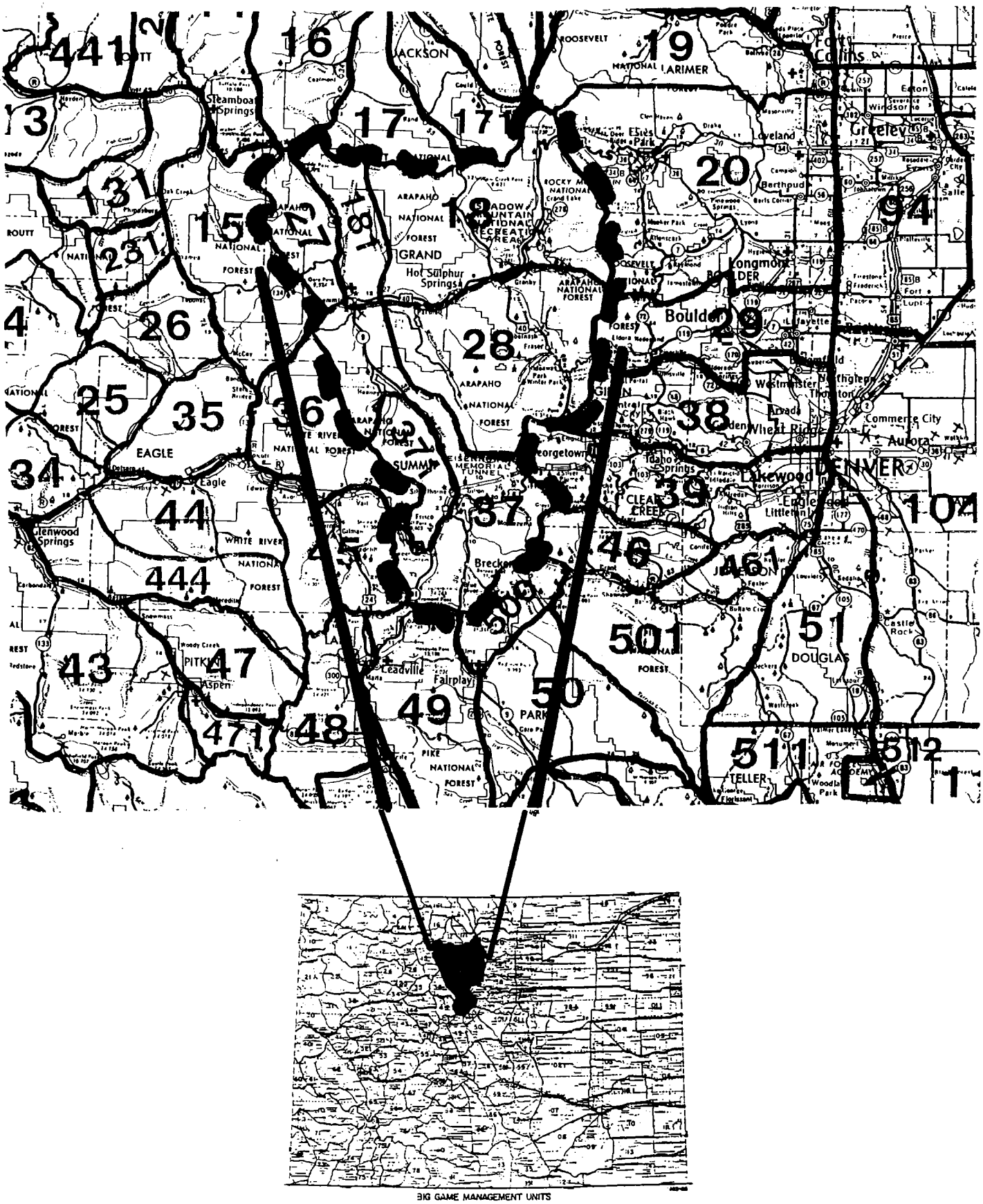
Preferred Alternative:

Population Objective No. 3: Decrease - 10,500 deer (15% decrease)

Sex Ratio Objective No. 1: Increase - 30 Bucks / 100 Does (13 Bucks/ 100 Doe increase)

Justification: The DOW feels past attempts to maintain a high deer population (i.e. 12,300 to 14,000) in Middle Park have not been successful. The winter range can support higher numbers of deer in light or normal winters but it appears that approximately once every 5 years a severe winter can cause the deer herd to plummet. The resulting winter loss impacts fawns the most, resulting in very low buck fawn recruitment to the yearling age class the following spring. This in turn can produce low buck to doe ratios. The objective of 10,500 deer is similar to our objectives in the early 1970's. This objective was based on extensive range studies that predicted this level to be compatible with high survival rates during severe winters. In the past this objective has produced an excellent antlered and antlerless harvest and extremely high buck ratios. By allowing the buck ratio to peak at approximately 30 bucks /100 does, the DOW should be able to increase the total harvest over the 1970's level. In essence this objective should produce a smaller deer herd in Middle Park that is healthier and more productive; that has a higher survival rate during severe winters; that will have less negative impact on winter range forage plants; and that should produce increased antlered and antlerless sustained harvest compared to the higher population alternatives.

Management Implementation: Presently, the Middle Park deer herd is still recovering from the devastating winter of 1988-89. If this alternative is selected, the DOW will allow the deer herd to increase to 10,500 deer and then will attempt to hold the population at this level by issuing the appropriate number of antlerless permits each year to reach or move toward this objective. The sex ratio objective of 30 bucks per 100 does can probably be achieved with the expected increased survival of fawns and increased harvest on does. The DOW may be able to maintain the desired sex ratio objective by varying the number of days of the buck hunting season. Antler point regulations could be used but past experience has shown that a high illegal kill can occur, making this counterproductive.



Map 1. Map showing the game management units that comprise the Middle Park Deer DAU (D-9) and its location within Colorado.

Table No. [1] . Middle Park deer (DAU D-9) game management units 18, 181, 27, 28, 37 & 371 showing post-hunting season population size, total hunters, total harvest, antlerless harvest and antlered harvest.

YEAR	POPULATION (POST-HUNT)	TOTAL HUNTERS	TOTAL HARVEST	ANTLERLESS HARVEST	ANTLERED HARVEST	% SUCCESS
1953	19,117	NA	2,506	1,083	1,423	NA
1954	16,764	8,920	5,503	2,428	3,075	62%
1955	16,501	6,685	3,788	1,631	2,157	57%
1956	15,570	5,985	4,274	2,812	1,462	71%
1957	16,236	4,246	2,793	1,486	1,307	66%
1958	17,682	4,105	2,274	1,416	858	55%
1959	17,618	4,477	3,490	1,990	1,500	78%
1960	18,759	3,793	2,547	1,422	1,125	67%
1961	19,500	4,275	2,665	1,326	1,339	62%
1962	18,431	5,896	4,285	2,395	1,890	73%
1963	15,686	6,612	4,679	2,725	1,954	71%
1964	14,375	7,587	4,940	2,667	2,273	65%
1965	15,309	6,100	2,507	1,587	920	41%
1966	12,265	9,987	5,290	3,196	2,094	53%
1967	11,009	7,073	3,494	1,883	1,611	49%
1968	11,026	5,757	2,237	1,172	1,065	39%
1969	8,580	7,528	4,321	2,554	1,767	57%
1970	6,408	7,439	2,097	1,216	881	28%
1971	7,158	1,686	348	0	348	21%
1972	8,549	3,405	356	0	356	10%
1973	8,568	5,159	1,771	715	1,056	34%
1974	7,886	7,289	1,933	825	1,108	27%
1975	8,832	6,191	1,043	408	635	17%
1976	9,807	5,626	947	248	699	17%
1977	13,539	4,660	1,114	291	823	24%
1978	15,275	5,878	2,047	675	1,372	35%
1979	7,735	6,717	1,754	737	1,017	26%
1980	8,570	5,409	698	80	618	13%
1981	9,967	5,800	1,278	30	1,248	22%
1982	12,886	6,065	1,347	59	1,288	22%
1983	13,763	7,545	3,170	1,770	1,400	42%
1984	9,607	5,089	1,011	59	952	20%
1985	10,638	6,121	1,381	318	1,063	23%
1986	11,503	7,562	1,295	311	984	17%
1987	11,933	7,341	1,367	436	931	19%
1988	12,299	8,316	2,123	729	1,394	26%
1989						
1990						
1991						
AVERAGE	12,760	5,960	2,463	1,186	1,278	41%
1950s	17,070	5,736	3,518	1,835	1,683	65%
1960s	14,494	6,461	3,697	2,093	1,604	58%
1970s	9,376	5,405	1,341	512	830	24%
1980s	11,241	6,583	1,519	421	1,098	23%
MIN	6,408	1,686	348	0	348	10%
MAX	19,500	9,987	5,503	3,196	3,075	78%

TABLE NO. 2. AGE AND SEX RATIO CLASSIFICATION FOR DEER IN THE MIDDLE PARK DAU (DAU D-9). ALL DATA IS FOR POST-HUNTING SEASON UNLESS OTHERWISE SPECIFIED.

YEAR	YOUNG 100 F	TOTAL MALES 100 F	YRLG MALES 100 F	SAMPLE SIZE	COMMENTS
1967	90	57		1,375	AERIAL
1967	92	37		906	GROUND
1968	85	53		1,169	AERIAL
1968	87	55		1,406	GROUND
1969	125	43		1,065	PRESEASON AERIAL
1969	77	45		1,045	AERIAL
1969	77	45		513	GROUND
1970	72	42		771	PRESEASON AERIAL
1970	41	45		1,460	GROUND
1971	71	49		91	PRESEASON AERIAL
1971	61	55		860	AERIAL
1971	67	71		927	GROUND
1972	88	72		264	PRESEASON AERIAL
OCT 72	88	71	43	527	PRESEASON SURVEY-MUDDY, BLUE AND TROUBLESOME SUB-UNITS
1972	78	52		1,595	AERIAL
1972	82	69	25	3,133	GROUND SURVEY
1973	78	53	18	1,595	HELICOPTER SURVEY
OCT 73	87	55	25	761	PRE-SEASON HELICOPTER SURVEY
1973	88	59	23	1,664	ALL GMUs, AERIAL
1974	75	49	14	1,417	ALL GMUs, AERIAL
1974	65	53		793	GROUND
1975	70	44	17	1,415	ALL GMUs, AERIAL
1975	47	55		723	GROUND
1976	80	43	19	1,241	ALL GMUs, AERIAL
1978	91	57	32	3,897	ALL GMUs, AERIAL
1979	69	35	17	2,705	ALL GMUs, AERIAL
1980	65	32	11	941	ALL GMUs, AERIAL
1981	89	27	15	1,958	ALL GMUs, AERIAL
1983	88	38	21	5,662	ALL GMUs EXCEPT 37/
1984	78	25	14	2,879	ALL GMUs, AERIAL
1986	71	19	11	2,196	ALL GMUs, AERIAL
1987	74	15	7	2,988	ALL GMUs, AERIAL

Table 3. Live deer and dead deer surveys for Cedar Ridge and the railroad surveys for the Middle Park Deer DAU (D-9) from 1955 - 1989.

YEAR COMPLETED	LIVE DEER (2)	LIVE DEER DATE	DEAD DEER (%)	R.R. DEAD DEER	DEAD DEER COUNT
1955	801				
1956					
1957	741			144	
1958	395		10.5	17	41
1959	566		5.1		29
1960	291		2.4		7
1961	308		1.0		3
1962	723		2.0		14
1963	604		1.0		6
1964	924		2.0	90	18
1965	1,123		49.1	384	551
1966	519		3.4	7	18
1967	717		19.9	132	143
1968	481		16.2	60	78
1969	596		4.5	52	27
1970	497		7.4	38	37
1971	340		6.2	9	21
1972	487		4.1	21	20
1973	464		6.9	136	32
1974	654		4.7	17	31
1975	447	2-15-75	5.8	26	26
1976	364		10.2	21	37
1977	298	2-26-77	12.4	13	37
1978	742		3.5	165	26
1979	1,083	2-17-79	25.3	324	274
1980	887	2-3-80	46.0	319	408
1981	190	2-21-81	13.7	25	26
1982	1,121	2-20-82	6.1	13	68
1983	817				
1984	1,017	2-25-84	55.6	191	565
1985	640	2-16-85		20	
1986	694		57.6	98	400
1987	549		11.4	9	63
1988	800	2-13-88	3.3	57	26
1989 (2)	850	1-24-89	55.1	195	468
1990					
NO. SURVEYS	34		30	27	30
AVERAGE	639.1		15.1	95.7	116.7
MIN	190		1.0	7	3
MAX	1123		57	384	565
STD. DEV.	245.8		17.8	105.0	171.7
2 Std. Dev.	491.7		35.6	210.1	343.5

1. All surveys were done late winter or early spring thus the 1987 data is for posthunt 1986 etc., any blanks represent years when surveys were not completed.
2. 1989 survey was an estimate based upon regression of pervious years Williams Fork Hi Density Quadrat data on Cedar Ridge live deer data.

Table 4. Land status for the Middle Park Deer DAU (D-9).

		GMU'S 18	181	27	28	37	371	TOTAL
USFS	SQ. MI.	359	29	67	398	348	149	1,349
USFS	%	55%	16%	34%	60%	66%	86%	56%
BLM	SQ. MI.	65	67	18	46	26	0	223
BLM	%	10%	37%	9%	7%	5%	0%	9%
SLB	SQ. MI.	7	22	41	7	5	0	81
SLB	%	1%	12%	21%	1%	1%	0%	3%
PRIVATE	SQ. MI.	78	64	71	212	142	24	591
PRIVATE	%	12%	35%	36%	32%	27%	14%	25%
NPS	SQ. MI.	143	0	0	0	0	0	143
NPS	%	22%	0%	0%	0%	0%	0%	6%
DOW	SQ. MI.	0	0	0	0	5	0	5
DOW	%	0%	0%	0%	0%	1%	0%	0%
TOTAL		652	182	196	663	527	173	2,393
%		27%	8%	8%	28%	22%	7%	100%

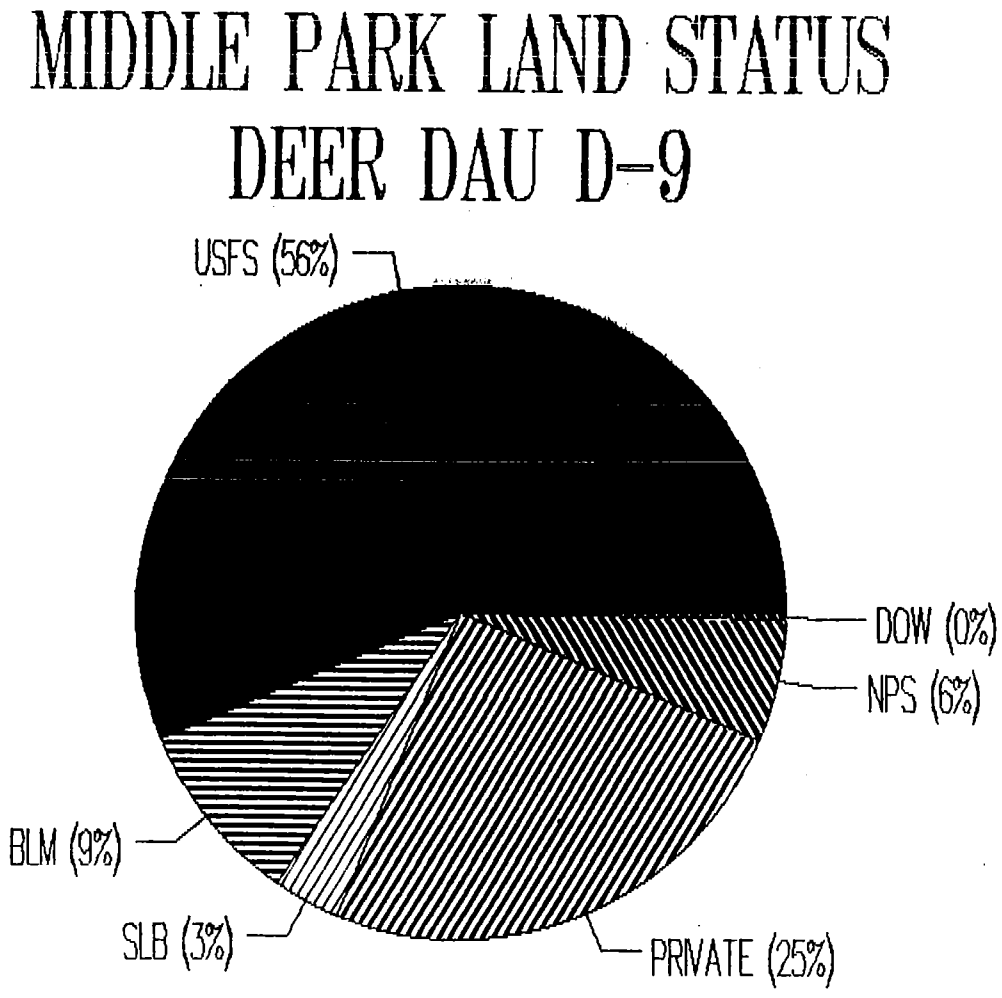


Figure 6. Graph of the land status for the Middle Park Deer DAU (D-9).

TABLE 5. ISSUES CONCERNING THE MIDDLE PARK DEER DAU MANAGEMENT PLAN (DAU D-9) BY TYPE AND GROUP OR INDIVIDUAL WHO RAISED THE ISSUE.

COM. NO.	NO.	TYPE	ISSUES	THE ISSUE IS A CONCERN OF THE FOLLOWING GROUPS - BLM	USFS	DOW	LANDOWNER	SPORTSMEN
Number of Respondents:							12	3
	1	BIOLOGICAL	Archery and muzzleloader hunters are harvesting too many trophy animals				5	1
	2	BIOLOGICAL	Archery and muzzleloader seasons are moving game down too early onto private land				2	1
1	3	BIOLOGICAL	Big game concentration are causing long term range damage to forage plants			X	4	1
	4	BIOLOGICAL	Coyotes are killing too many deer				1	1
3	5	BIOLOGICAL	Deer competition with elk and vice versa			X	3	3
1	6	BIOLOGICAL	Deer damage to forage plants - private lands				5	2
1	7	BIOLOGICAL	Deer damage to forage plants - public lands				4	
2	8	BIOLOGICAL	Deer damage to ornamental plants			X	2	
1	9	BIOLOGICAL	Heavy big game use of forage resources at critical times (early spring) causes significant damage				6	1
	10	BIOLOGICAL	Hunting season are too long				6	1
5	11	BIOLOGICAL	Hunting season should be designed to kill problem animals when and where they cause problems			X	7	2
4	12	BIOLOGICAL	Low Buck to doe ratio			X	6	2
	13	BIOLOGICAL	Not enough deer				4	2
4	14	BIOLOGICAL	Not enough quality bucks			X	4	2
7	15	BIOLOGICAL	The major damage problems are a result of too many big game animals				4	2
6	16	BIOLOGICAL	Too many deer			X		1
	17	POLITICAL	Cheap public grazing compensates some ranchers for wildlife on private land				1	3
7	18	POLITICAL	Deer damage to fences				5	2
7	19	POLITICAL	Deer damage to haystacks				4	2
	20	POLITICAL	DOW should allow ranchers to trap and sell big game in lieu of damage claims					1
	21	POLITICAL	DOW should allow ranchers to trap and sell big game to increase DOW revenue					1
	22	POLITICAL	DOW should pay more for game damage				7	1
	23	POLITICAL	Game Damage claim procedures are too cumbersome				6	1
	24	POLITICAL	Game problems should be resolved at the local level not the state level				8	1
8	25	POLITICAL	Lack of public input on herd population objectives				4	3
	26	POLITICAL	Land development projects can result in game damage problems		X	X	7	2

TABLE 5. ISSUES CONCERNING THE MIDDLE PARK DEER DAU MANAGEMENT PLAN (DAU D-9) BY TYPE AND GROUP OR INDIVIDUAL WHO RAISED THE ISSUE.

COM. NO.	NO.	TYPE	ISSUES	THE ISSUE IS A CONCERN OF THE FOLLOWING GROUPS - BLM	USFS	DOW	LANDOWNER	SPORTSMEN
Number of Respondents:							12	3
9	27	POLITICAL	Landowners should be able to collect game damage even if they don't allow a reasonable number of hunters				2	2
9	28	POLITICAL	Landowners should be eligible for game damage claims regardless of what they charge hunters				5	2
	29	POLITICAL	Landowners should be given free licenses				5	1
	31	POLITICAL	Landowners who make substantial money from hunting should not be able to collect game damage			X	2	1
9	32	SOCIAL	Deer hunters trespass on private lands			X	8	
	33	SOCIAL	DOW is not sensitive to agricultural needs				6	1
8	34	SOCIAL	DOW sets herd objective without consideration of habitat carrying capacity		X		4	1
10	35	SOCIAL	DOW should not pay for any game damage					2
8	36	SOCIAL	Federal land management agencies don't have much of a say in game management decisions		X	X	3	2
	37	SOCIAL	Game damage is a normal cost of business to ranchers				4	1
	38	SOCIAL	Hunters don't respect private landowner rights				9	2
	39	SOCIAL	Hunter's don't appreciate landowner contributions to deer herds			X	10	2
11	40	SOCIAL	Hunter's litter and ruin private lands, roads, fences				9	1
	41	SOCIAL	Hunter's litter and ruin public lands and roads			X	7	1
	42	SOCIAL	Lack of access to public lands		X	X	3	1
	44	SOCIAL	Landowners have right to manage own land			X	9	2
8	45	SOCIAL	Landowners resent having as much say in setting population objectives "as a man from New York"				8	1
	46	SOCIAL	Local DOW officers don't have enough say in local game management				7	1
	47	SOCIAL	More hunters on private land - more damage to private lands				7	1
12	48	SOCIAL	Some landowners charge high prices and preclude adequate antlerless harvest			X	4	1
9	49	SOCIAL	Some ranchers block access then collect game damage				2	2
13	50	SOCIAL	The DOW doesn't provide landowners with enough labor to assist with damage problems				8	1
14	51	SOCIAL	The state shouldn't dictate how many animals a rancher should support			X	9	2
	52	SOCIAL	Today's hunters are not as competent and effective as they used to be				4	
	Additional Issues and Concerns:							
	53		Illegal moose killings are a problem			X		
	54		Poor public land road closure compliance		X	X		

TABLE 5. ISSUES CONCERNING THE MIDDLE PARK DEER DAU MANAGEMENT PLAN (DAU D-9) BY TYPE AND GROUP OR INDIVIDUAL WHO RAISED THE ISSUE.

COM. NO.	NO.	TYPE	ISSUES	THE ISSUE IS A CONCERN OF THE FOLLOWING GROUPS - BLM	USFS	DOW	LANDOWNER	SPORTSMEN
Number of Respondents:							12	3
	55		Need stricter control of land development onn winter ranges			X		
	56		Close the deer season for one year				1	
	57		Early big game seasons conflict with other publis land users					
	58		Too many slob hunters					1

Table No. 6. Quadrat census data-mule deer in Middle Park, DAU D-9.

YEAR COMPLTD	POSTHUNT YEAR	STRATA MUDDY CREEK	BLUE RIVER	WILLIAMS FORK	TROUBLSME CREEK	GRANBY	TOTAL POP.	C. I. (+ or -)	LOWER CI	UPPER CI	DATE (START)
1968	67	4,101	4,074	843	1,622		10,640	2,879	7,761	13,519	1-5-68
1969	68	2,994	3,531	774	1,679	134	9,112	1,975	7,137	11,087	12-30-68
1970	69	1,429	3,290	271	1,910	306	7,206	1,881	5,325	9,087	1-5-70
1971	70	794	3,335	571	891	139	5,730	1,775	3,955	7,505	3-6-71
1972	71	1,002	2,259	742	1,404	22	5,429	1,913	3,516	7,342	1-4-72
1973	72	2,856	4,186	556	2,340	149	10,087	2,239	7,848	12,326	1-5-73
1974	73	2,272	4,663	622	1,897	216	9,670	2,566	7,104	12,236	1-10-74
1975	74	1,281	2,370	506	1,729	119	6,005	1,714	4,291	7,719	1-22-75
1976	75	893	1,824	402	1,455	103	4,677	1,181	3,496	5,858	1-7-76
1978	77	1,488	5,280	1,028	1,386	0	9,182	2,351	6,831	11,533	1-14-78
1979	78	3,137	5,414	1,361	1,955		11,867	3,912	7,955	15,779	1-19-79
1980	79	1,723	3,387	643	1,642		7,395	2,629	4,766	10,024	1-15-80
1982	81	2,950	3,220	1,089	2,381		9,640	2,871	6,769	12,511	1-14-82
1984	83	3,119	3,682	2,062	1,179		10,042	3,547	6,495	13,589	1-3-84
1985	84	2,205	2,407	814	1,780		7,206	1,748	5,458	8,954	1-11-85
1988	87	4,460	3,381	1,354	2,769		11,964	3,920	8,044	15,884	1-13-88
1989(2)	88			1,332							
1990	89										
1991	90										
1992	91										
1993	92										
AVG		2,294	3,519	881	1,751	132	8,491	2,444	6,047	10,935	
MIN		794	1,824	271	891	0	4,677	1,181	3,496	5,858	
MAX		4,460	5,414	2,062	2,769	306	11,964	3,920	8,044	15,884	
STD. DEV.		1,096	1,000	435	455	87	2,220	787	1,588	2,928	

1. All surveys were done in mid-winter usually January or February thus the 1988 count is for posthunt year 1987.
2. Only the Williams Fork quads were flown in 1988, in lieu of Cedar live count.

Table No. 7 . Population objective recommendations from the public and land management agencies.

I= INCREASE; D=DECREASE; H-HOLD; NUMBER= PERCENT

GROUP	DAU Number D-9 Deer	E-7 Gore Pass	E-8 Troublesome	E-13 Williams Fork	PH-36 Antelope
Landowner	I-15	D-15	D-15	D-15	I-15
Landowner	I-10	D-10	D-10	D-15	I-40
Landowner	I-40	H	H	D-10	I-50
Landowner				H	
Landowner	I	H	H	H	H
Landowner	H	D-35		D-30	
Landowner	1-15	D-30	D-30		I-10
Landowner	H		D-10	D-10	I
Landowner	H	D-50	D-50	D-50	H
Landowner	H	I	H	H	I
Landowner	I-15	D-30	D-30		I-10
Landowner	H	H	D	D-20-100	H
Landowner	I-20	D-50	D-50		D-15
Landowner	H	D	D	D	D
Landowner	H		H	H	I-30
Landowner	D	D	D	D	D
Landowner	H	D	D		H
Landowner		H			
Landowner		D-20			
Landowner		D-15			
Landowner		D-50			
Landowner		D-15			
Landowner		D-25			
Landowner		D-25			
Landowner		D-30			
MPSGA	H	D	D	D	D
MPSCS	H	D-40	D-40	D-50	D
MPWGA	I-25	D-50	D-50		D-25
Sportsman	I	H	H	H	I
Sportsman	I-02	H	D-03	D-05	I-90
Sportsman	H	H	H	H	I-25
Sportsman	H	I	I	I	I
Sportsman		H			
Businessman		I			
USFSHSS	H	H	H	H	I
USFS Routt	H	D-10-15	D-10-15	D-10-15	
RMNPS			D-50		
State Park		H			

Table No. 8 . Sex ratio objective recommendations from the public and the land management agencies.

I = INCREASE; H = HOLD; D = DECREASE; NUMBER = PERCENT

	DAU Number				
GROUP	D-9 Deer	E-7 Gore Pass	E-8 Troublesome	E-13 Williams Fork	PH-36 Antelope
Landowner	I-15	D-5	D-5	D-5	I-15
Landowner	I	I	I	I	I
Landowner	I-50	I	I	I-50	H
Landowner	I				H
Landowner				I-15	
Landowner	H	I-10		I-10	
Landowner	I-15	I-15	I-15		
Landowner	H	H	H	H	H
Landowner	H	I	H	H	I
Landowner	I-15	I-15	I-15		
Landowner	I-20	I-15	I-15		H
Landowner					
Landowner	I	I	I	I	I
Landowner	I		I	I	H
Landowner	H	I	I	I	D
Landowner		H			
Landowner		H			
Landowner		I-5			
Landowner		H			
Landowner		I-15			
Landowner		H			
Landowner		I-30			
Landowner		H			
MPSGA	H	I	I	D	D
MPSCS	I-30	I-10	I-10	I-10	D
MPWGA	I-10	I-10	I-15		H
Sportsman	I-100	I-100	I-100	I-100	H
Sportsman	H	H	H	H	H
Sportsman	I	I	I	I	I
Sportsman	H	D-4	D-4	D-2	I-10
Sportsman		H			
Businessman		I-10			
USFSHSS	I-10	I-5	I-5	I-10	
USFS Routt	H	H	H	H	
RMNPS			H		
State Park		H			

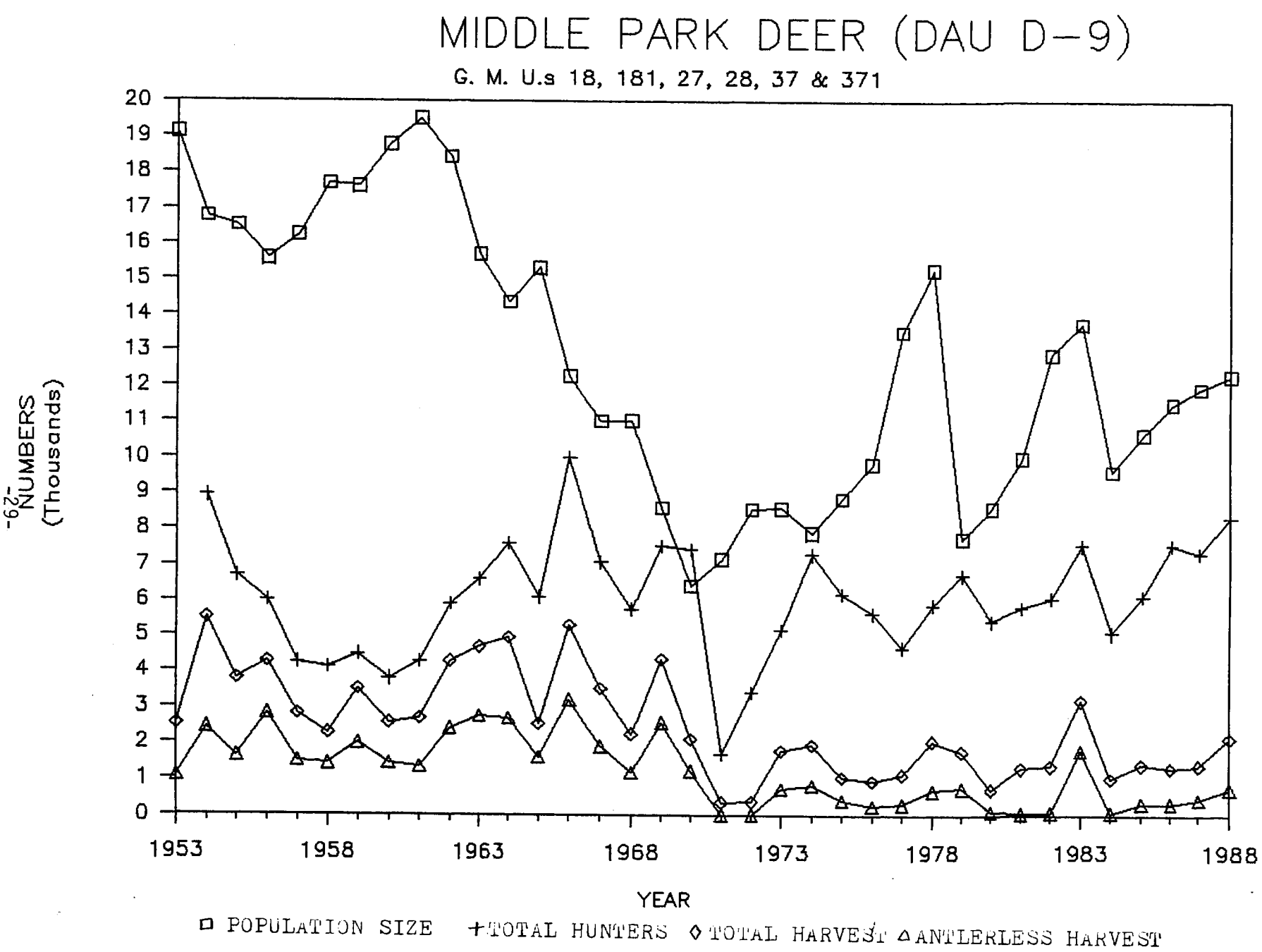


Figure 1. Graph of Middle Park Deer herd showing population, hunters, total harvest and antlerless harvest from 1953- 1988.

Middle Park Deer - Age & Sex Ratios

GMUs - 18, 181, 27, 28, 37 & 371 (D-9)

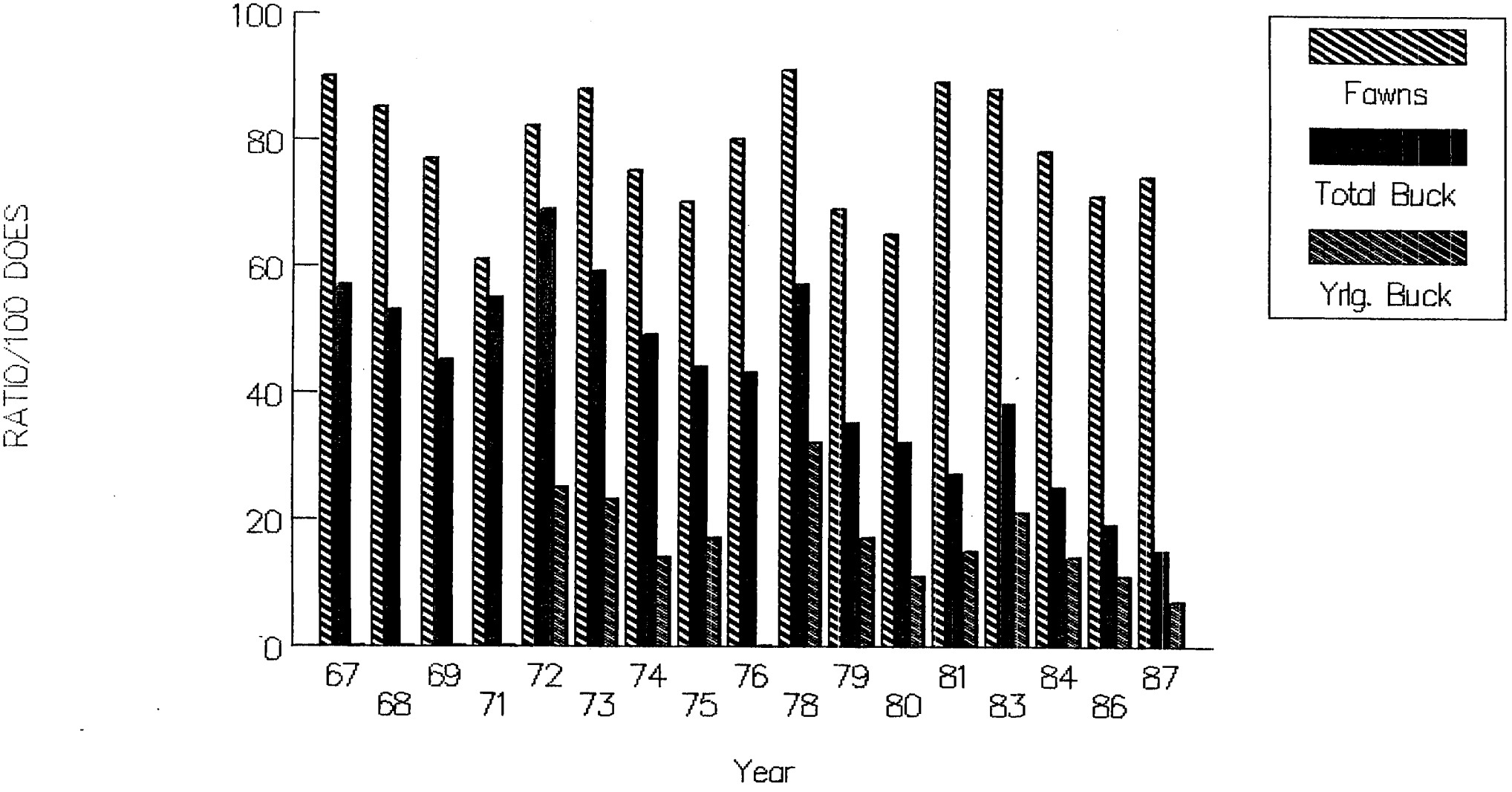


Figure 2. Graph showing posthunt age and sex ratios for mule deer in Middle Park (DAU D-9) from 1967 - 1987.

MIDDLE PARK DEER (DAU D-9)

CEDAR RIDGE LIVE DEER SURVEYS

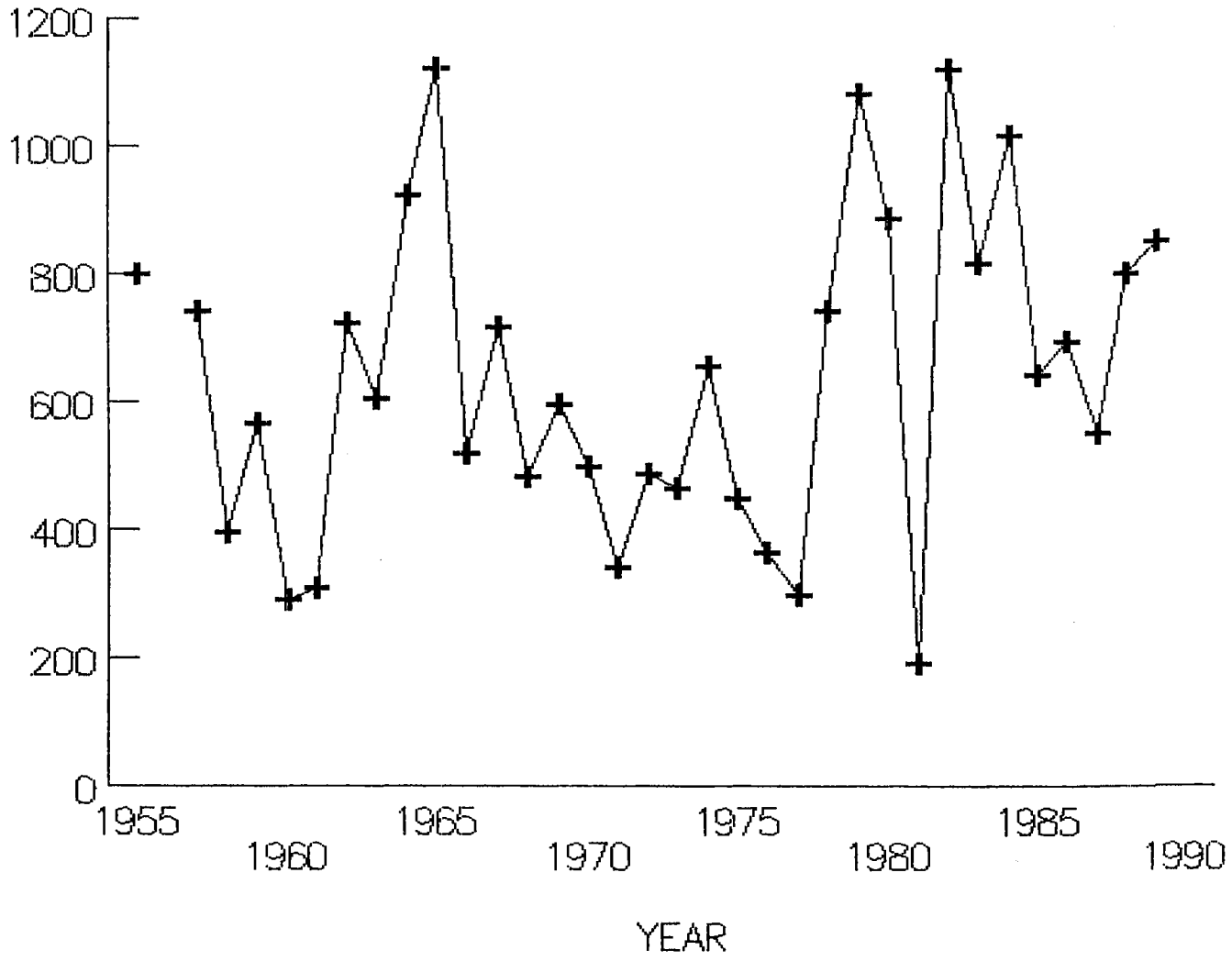


Figure 3. Graph of the Cedar Ridge live deer surveys in Middle Park (DAU D-9) from 1955 - 1989.

CEDAR RIDGE DEAD DEER SURVEYS

MIDDLE PARK DEER (DAU D-9)

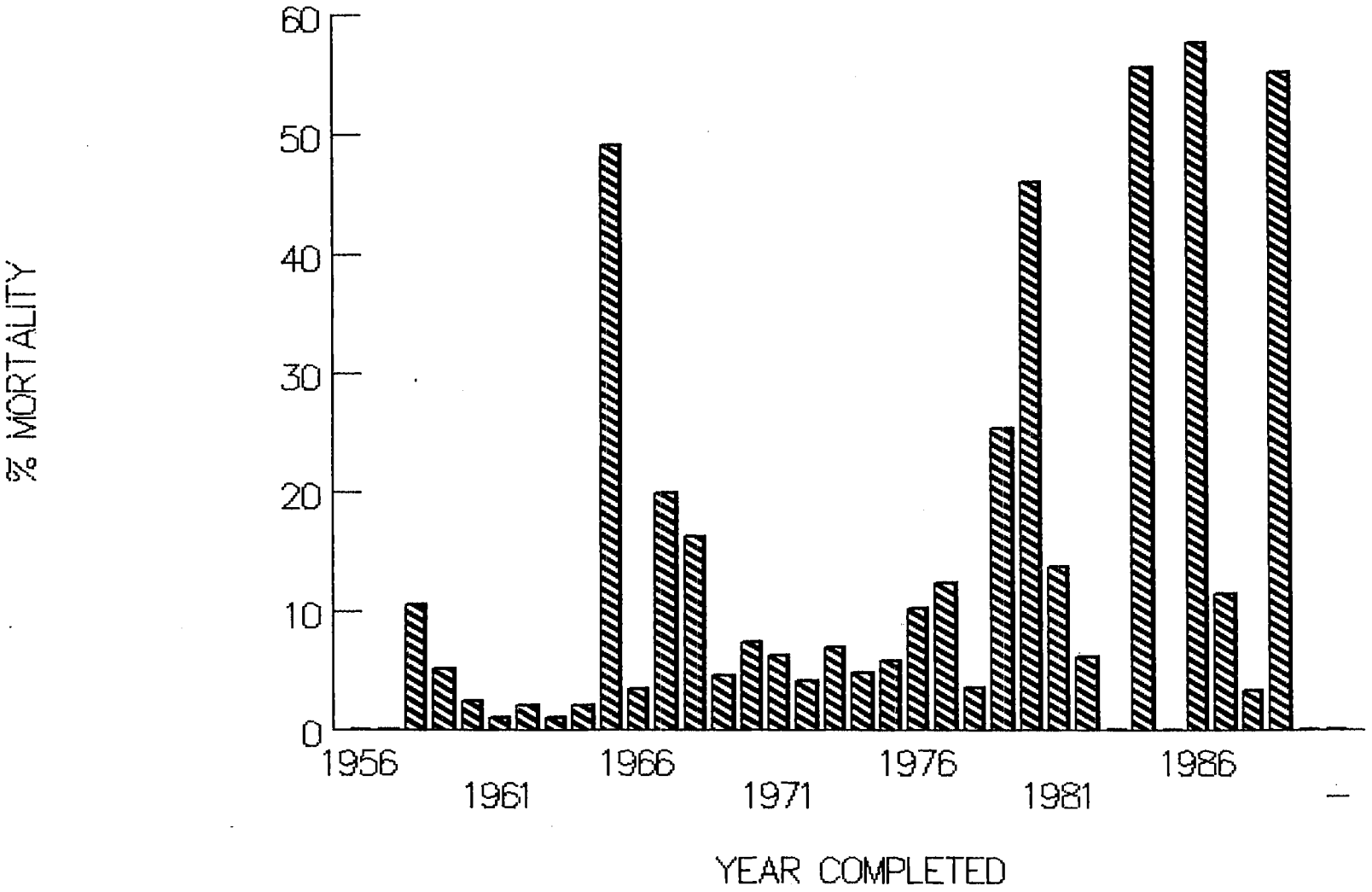


Figure 4. Graph of the Cedar Ridge dead deer survey in Middle Park (DAU D-9) from 1958- 1989.

RAILROAD MORTALITY

MIDDLE PARK DEER (DAU D-9)

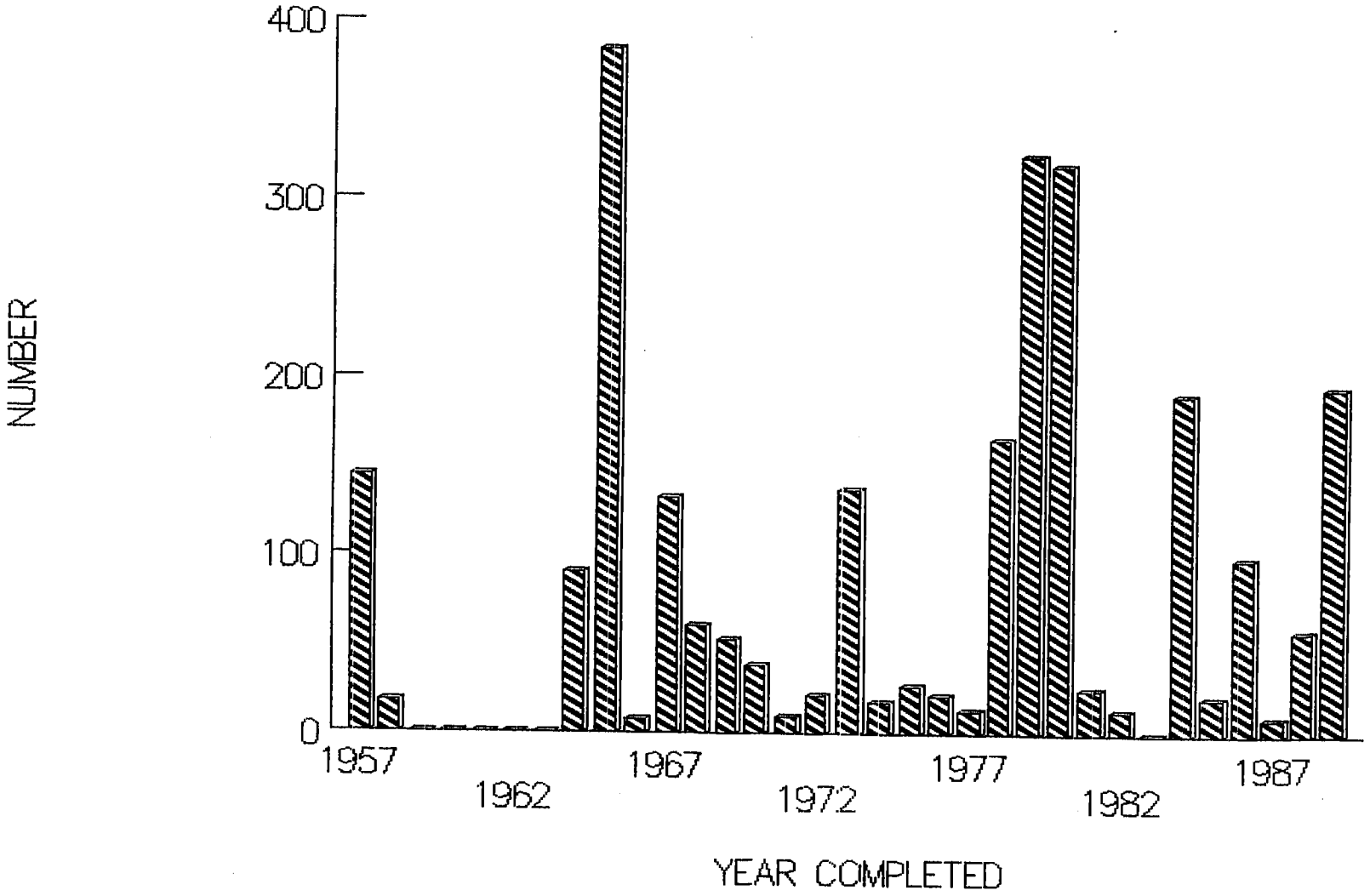


Figure 5. Graph of the railroad mortality from Sulphur Gulch to Byer's Canyon in Middle Park (DAU D-9) from 1957- 1989.