Hermosa Deer Management Plan
Data Analysis Unit D-52

Game Management Units
74 and 741

Amendment to the Plan Approved
by the Colorado Wildlife Commission
August 1996

FINAL DRAFT 8/13/01

San Juan Basin Service Center
Colorado Division of Wildlife
151 E. 16th St.
Durango, CO 81301

Executive Summary
DAU Plan D-52
Hermosa Deer Herd

1. This is an amendment to a DAU Plan for this deer herd approved by the Wildlife Commission in 1996.

2. Population Objective

   A. For the 1996 Plan- 10,000 deer, at that time the population was approximately 10,400 deer. The public seemed content with the "current population" and game damage complaints were insignificant. The population had slowly been reduced to that level for several years by annually adjusting antlerless harvest. Since 1996, the population has continued to be been maintained at approximately 10,000, but the public has grown dissatisfied with the "current population."
   B. The recommendation in the 2001 Plan is a population objective of 11,500, an increase of approximately 15% from current population estimates.

3. Sex Ratio objective

   A. For the 1996 Plan- 18 bucks:100 does post season. At that time buck licenses were unlimited in number, and there was very little opportunity to manage for anything besides "quality" management requiring a significant reduction in buck licenses, or "maximum sustained yield" and unlimited buck licenses. Approximately 70% of the deer harvest in this DAU occurs in GMU 741, which is nearly 98% private land or Southern Ute Indian Reservation. The landowners have regulated buck harvest by the extensive use of outfitters or tresspass fees. Since that time, the public, hunters, the Division of Wildlife, and the Wildlife Commission have become more concerned about deer populations and buck:doe ratios, and licenses have become limited for all units and all seasons. Hunters have not applied for the number of licenses available, and even though success rates have increased significantly, the buck ratio has also increased significantly to 26:100 does. Buck hunters are very satisfied because of high success rates and better quality bucks, and so far hunters have limited their own numbers and the CDOW has not limited hunter numbers.
   B. The recommendation in the 2001 Plan is a sex ratio objective of 26 bucks:100 does, the current observed ratio.

4. Public Involvement and Plan Development- Informal discussions have occurred over the last 1 year with members of organized hunting groups and public hunters. In late May, a survey was mailed to 200 deer hunters that hunted in the San Juan Basin, 200 elk hunters, 200 agricultural producers, and members of the local outfitters chapter. In June, a draft management plan was prepared and circulated to CDOW Area personnel and Terrestrial Section supervisors. By late July, the survey return rate was very close to 50%, and there was support for increasing the population and sex ratio objectives among

each group and all respondents combined. In late July, public meetings (open house format) were conducted in Durango and Pagosa Springs and a "Final" draft management plan was available for public review. Even though these meetings were poorly attended, there was unanimous consent for increasing the objectives. The San Juan Basin Habitat Partnership Program Committee has endorsed the Plan amendment and recommendations. In July and August the BLM and USFS wildlife biologists have been consulted and have given their concurrence. No formal or informal opposition has been found or is expected.

This Plan is an update and amendment to a previous plan prepared in June 1996 and accepted by the Colorado Wildlife Commission in August 1996. Due to different deer management strategies adopted by the Colorado Division of Wildlife (CDOW) and the Wildlife Commission in the interim, and due to changing socio-political environment and deer biology and modeling information, CDOW personnel and some members of the public feel new management objectives are necessary. This document will briefly summarize some of these changes and update information from the 1996 plan, but only supplements the previous plan.

In 1996-1998, the hunting public and CDOW personnel became very aware of a perceived decrease in the mule deer population of western Colorado and most of the western United States. Many management and research studies have been initiated to identify causes and solutions in Idaho, Montana, Utah, and Colorado by state wildlife agencies, universities, and private groups. Several seminars, symposia, and workshops have been conducted on predators and predator management, deer biology/management and inventory methods. In 1999, this controversy entered the political arena in Colorado, and a report to the Colorado legislature was prepared (Declining Mule Deer Populations in Colorado: Reasons and Responses, A Report to the Colorado Legislature, November 1999, prepared by R. Bruce Gill with contributing authors). Possible explanations were: 1) decreases in amounts and quality of critical deer habitats, 2) competition with elk and other grazing livestock, 3) diseases, 4) predators, and 5) hunting. Almost exactly 20 years previous, a similar concern was expressed and reaction occurred resulting in a symposium of western states in Logan, Utah in 1976. In addition to the previous causes of the decline, this raises the possibility of long term cycles in deer populations or long term climatic changes.

Although a great deal of money has been invested in addressing the decline and responding to public critique/criticism, as well as personnel time diverted and safety compromised, we can now benefit from a great deal of current data. Because of evaluations that have occurred, the CDOW should be assured that they are using the best inventory techniques available and incorporating the best models to derive the best population estimates available.

WHY CHANGE THE EXISTING PLAN?

Responses to this attention have precipitated significant changes in Colorado's mule deer management that suggest changes to local deer management plans. Among those changes are:

1) totally limited buck deer licenses- this change occurred in 1999, and was incorporated into a new 5 year hunting season structure for 2000-2004. Between 1995and 1999, buck licenses were unlimited in number and available statewide for nearly all units and for 2 rifle seasons, the third season was limited in number but still statewide. Prior to 1995, unlimited statewide buck licenses were the general rule, and were the rule in the San Juan deer herd area. The philosophy taken in 1999 for the Hermosa deer herd was to manage the 2 GMU's very differently because:
    a) the buck:doe ratio was far below the established objective of 18:100,

b) the population was near the objective of 10,000,
c) there is no indication of a significant decline in this population,
d) and average hunter success rates were low in GMU 74 (19%) and high in GMU 741 (52%),
e) the 2 units have very different land ownership patterns (74 is primarily public land, 741 is primarily private or Southern Ute Reservation)
f) the 2 units have very different deer distribution patterns (74 is mostly summer range, 741 has a resident herd and is the winter range for GMU 74 deer)
g) the 2 units have very different hunter patterns because of land ownership and deer distribution patterns

2) deer survival studies were initiated in 3 areas of Colorado, 1 of which is relatively close and in similar habitat (the Uncompahgre Plateau). Results of this particular study, and the other studies in general, should be applicable to the San Juan deer herd and should provide survival estimates to be used in population models.
3) Deer predation studies are being conducted in Idaho and Utah, and causes of death in Colorado's survival studies are being identified when possible. These studies will help to identify which predator (coyote, bear, mountain lion, etc.) is responsible for predation throughout various life stages of deer. Decisions would still have to be made whether this predation is suppressing the deer population, whether direct management action is desired, and if so, what action using what tools.
4) Colorado has changed computer modeling practices that now uses "simple" spreadsheet models rather than "sophisticated" stochastic models. The new approach uses the data that are actually collected and "weights" those data based on their precision. Therefore, harvest by sex and age class, winter mortality by 2 age classes (in some cases bucks can be separated from adult does), post-season age and sex ratios from inventories, and wounding loss by age and sex class are the input variables. The more sophisticated model called for data that was not available (sex /age/season specific mortality rates, age specific reproductive rates, etc.) and reasonable approximations were used. During the transition from one system to the other, both models are being used.
5) There is strong public support for increasing the deer population, and strong support for a higher proportion of bucks in the population, with a few bucks "escaping" hunting season and developing into quality bucks.

HOW DO THESE CHANGES AFFECT THE POPULATION AND RATIOS?

Totally Limited Buck Licenses – The 2 Game Management Units (GMU's) in the DAU have had different management strategies. GMU 74 has not had a planned doe harvest in many years, resulting in the only antlerless harvest being from "either-sex" archery or state-wide muzzleloader licenses. GMU 741, on the other hand, has had a variety of seasons and licenses to harvest antlerless deer, regular antlerless until 1991, either sex deer regular seasons through 1998, antlerless regular season through 2001. There have also been Private Land Only antlerless licenses for several years to make an incentive for hunters to harvest a doe deer. Table 1 shows the average number of antlered and antlerless licenses by GMU and DAU before and after buck licenses became totally

limited in 1999 and since 1999. In 1999, the number of antlered deer licenses was kept exactly the same as the 1995-1998 average in GMU 741, but it was reduced by 25% in GMU 74. The supply still far exceeded the demand, and the number of licenses authorized was further reduced in 2000-2001. The number of actual buck hunters after licenses became totally limited was 35-61% of the number before. **The current post-hunt buck:doe ratio is 28.6:100 does, as compared to the existing long term objective of 18:100. The buck ratio is projected to remain stable with current buck hunter numbers and harvest.** The current buck ratio is much more acceptable to hunters and the general public (see following section on survey results) and can be maintained without cutting licenses anymore.

Table 1. Average number of hunters and licenses 1995-1998 and 1999-2001, Data Analysis Unit 30. Antlered licenses were unlimited in number 1996-1998.

		GMU 74	GMU 741	Post-season buck:doe ratio
1995-1998	Either Sex and Antlerless	0	650	14.1 bucks:100 does
	Antlered Hunters[1]	1236	790	
	Total	1236	1440	
1999-2001	Either Sex and Antlerless	0	674	29.6 bucks:100 does
	Antlered Licenses	662	797	
	Antlered Hunters[2]	430	479	
	Total	430	1153	

1- Antlered hunters is rifle hunters only
2- Based on 2 years, 1999-2000

Deer Survival/Mortality Studies- Five separate survival studies are being conducted in Colorado, 1 on fawns from birth to 6 months of age, 4 on fawns from 6 moths to 1 year and adults over 1 year old, and 1 study of buck survival. The cause of death of all mortalities is determined whenever possible. The data from these studies are preliminary and have not been fully analyzed and published, therefore it must be treated as preliminary results. Annual fawn survival (0-12 months of age) has varied from 21-42%. Fawn winter survival (6-12 months) has varied from 51-74% on the Uncompahgre, and up to 92% in Middle Park. Adult doe survival has varied from 81-91% on the Uncompahgre and 82-100% elsewhere. Buck survival (with a smaller sample size and shorter period of time) has been 69-100% for yearling bucks and 81% for 2 year-old bucks. Most of these studies have been conducted during relatively mild winters, but survival rates are much higher than a previous study in northwest Colorado in the 1980's found (fawns 5-38% with a mean of 22%+/- 5.6%, adult does 83%+/- 3%). The

population studied in northwest Colorado was believed to be close to carrying capacity, possibly accounting for lower survival of fawns through the winter. In addition, that study spanned the winter of 1983-84, a notoriously bad winter in Colorado when only 5% of the fawns survived.

The impact of these studies on population models can be profound, and tends to increase the deer population because survival rates are higher than those previously used. The Hermosa DAU deer model incorporated these changes without large changes, but doe hunting has been increased in response to keep the population near the objective. In 1996, fawn survival rates used in the model were about 60% (which is the average used currently) and doe survival was 85-87% (also the range used now). **The current population is approximately 9854, and projected to be 9748 after the 2001 hunting season, with the current long term objective of 10,000.**

Causes of Mortality and Predation Studies- Causes of mortality are identified in the current studies whenever possible. On the Uncompahgre Plateau through 4 years of study, 32 does and 157 fawns have died. The list includes roadkills (3), accident/trauma (3), disease/emaciation (41), poached (2), coyote predation (61), feline predation (28), other predation (16), and unknown (35).

Utah and Idaho have been conducting studies to determine whether deer populations increase when coyote, bear, and puma populations are targeted by USDA/Wildlife Services personnel and/or sport harvest. These studies are also on-going and data are not complete, but the patterns appear to be very unclear, with deer populations and fawn:doe ratios increasing with predator control and without control, and decreasing with predator control and without control.

A summary of predator/prey and predator control studies was recently published (see Ballard 2001). In brief, this summary found that if: 1) predator populations are suppressing prey, 2) prey populations are below carrying capacity, and 3) control work is conducted very intensively in a confined area, then prey populations may be expected to increase. This control work would need to continue indefinitely. Lacking the 3 criteria above, control work has not been effective, even in the short term. Given the predation observed on the Uncompahgre Plateau (and all of the other mortality observed), that deer population has increased in the last 3 years. Predators do not appear to be suppressing the population. If predator control was conducted, the deer saved from the jaws of a predator may succumb to some other mortality factor, as was observed in northwest Colorado in the 1980's. Criteria 2 is being analyzed in a new study on the Uncompahgre Plateau, to try to determine whether food is the limiting factor. Criteria 3 may be the most difficult to handle, politically, biologically, and financially. **Predator control is being argued at the State Legislature and Wildlife Commission level, and therefore is beyond the scope of this DAU Plan.**

Public Support for Increasing the Deer Population- In preparation for this update to the existing DAU Plan, a nonscientific survey was mailed to 200 deer hunters, 200 elk hunters, 200 landowners on a USDA/Natural Resources Conservation Service list, and

members of the Southwest Colorado Outfitters Association. The lists of hunters were obtained from limited license holders in 2000 that hunted in these DAU's. The USDA/NRCS list is their newsletter mailing list. The survey was for DAU D-30 (San Juan) and D-52 (Hermosa), and respondents could identify one or both DAU's they were most interested in. Only selected questions are summarized below and in Table 2. Return rate with self addressed stamped envelopes was about 48% (285 valid returns to date). Rather than analyzing the data by the source of the mailing list, they were analyzed on how respondents identified themselves, as in Table 2.

Respondents in all categories wanted an increase in the deer population, ranging from a 7% increase desired by ranchers/farmers and landowners to a 13% increase desired by sportspeople/hunters.

Table 2. Number of responses in survey by self-identified category regarding desired deer population. Totals are greater than 285 responses because more than 1 category could be chosen.

Desired Deer Population	Rancher /Farmer	Landowner	Hunter/ Sportsperson	Total
Large Decrease (down 50%	7	4	6	17
Moderate Decrease (down 30%)	4	3	11	18
Slight Decrease (down 15%)	12	10	10	32
No Change	33	17	48	98
Slight Increase (up 15%)	22	15	37	74
Moderate Increase (up 30%)	26	15	59	100
Large Increase (up 50%)	8	5	21	34
Average Weighted Response	Increase 7%	Increase 7%	Increase 13%	Increase 11%

Respondents indicating a desired increase in the deer population had stronger feelings (between "moderately important" and "very important") than those indicating no change or a decrease (both between "slightly important" and "moderately important").

When asked how they would like the buck:doe ratio to be in the future as related to where it is currently (27.1 bucks:100 does), **the majority still wanted a slight increase to something between 25 and 30**. Only 4 respondents wanted a large decrease (15:100), 8 wanted a slight decrease (20:100), 117 no change, 71 wanted a slight increase (30:100), and 45 a large increase (35:100).

Updates of 1996 DAU Plan- Tables 3 and 4 are updated from the 1996 DAU Plan. The buck:doe ratio has been consistent in the 14-15 per 100 doe range until the last 2 years, reflecting the reduced buck harvest in 1999 and 2000. Productivity of this herd has remained quite strong throughout this 20 year period, as reflected in the post-season fawn:doe ratio. This might partially explain why a significant population decline has not been observed while other herds have declined. The total number of deer counted per year has also remained fairly stable (1993-2000) with nearly constant inventory time, further suggesting a stable population.

Table 3. Summary of aerial composition counts, DAU D-52, 1985-2000

YEAR (post-hunt)	Bucks/100 does	Fawns/100 does	Total deer counted
1985	13.5	48.0	2090
1986	13.7	79.0	1700
1987	13.1	49.8	955
1988	15.6	55.0	1684
1989	12.8	44.5	1965
1990	15.5	60.4	1200
1991	13.7	57.0	1235
1992	17.6	63.7	999
1993	13.9	58.6	1350
1994	14.4	52.3	1352
1995	13.8	54.4	1487
1996	14.0	62.3	716
1997	11.4	57.3	1151
1998	17.3	68.2	1107
1999	30.6	63.0	1202
2000	27.1	50.3	818

Table 4. Harvest, hunter numbers, and success rate in D-52, 1972-2000.

YEAR	Antlered Harvest	Antlerless Harvest	Total Harvest	Total Hunters	Success Rate (%)
1972	883	0	883	1759	50
1973	897	400	1297	2606	50
1974	1002	15	1017	2555	40
1975	435	0	435	1505	29
1976	555	0	555	1421	39
1977	656	0	656	1622	40
1978	994	12	1006	2410	42
1979	663	0	663	2024	33
1980	598	39	640	2121	30
1981	804	20	824	2413	34
1982	721	37	758	1671	45
1983	883	92	975	2757	35
1984	713	84	797	1937	41
1985	761	216	977	2388	41
1986	854	334	1188	2877	41
1987	707	331	1038	2852	36
1988	1066	304	1370	3398	40
1989	1133	543	1676	3803	44
1990	1076	717	1793	4250	42
1991	1101	774	1875	4475	42
1992	913	458	1371	2159	43
1993	947	325	1272	3120	41
1994	944	290	1234	3060	40
1995	938	366	1304	3502	37
1996	874	329	1203	2990	40
1997	626	365	991	2822	35
1998	637	249	886	2961	30
1999	430	360	790	1632	48
2000	535	278	813	1594	51

ALTERNATIVES FOR FUTURE OBJECTIVES

Population objective-

1. Maintain the population objective at 10,000- no strong support for this alternative has been found

2. Increase the population objective 10%, to 11,000- this is the preferred alternative of ranchers/farmers/landowners in the survey

3. Increase the population objective 15%, to 11,500- This is the preferred alternative of most survey respondents

Buck:doe ratio objective-

1. Maintain the current buck:doe ratio of 18:100 by keeping the license numbers at current levels and selling as leftovers whatever licenses are not taken in the drawing

2. Increase the buck:doe ratio objective to where it currently is, 26:100, by keeping buck hunter numbers slightly higher than they have been the last 2 years. This is the alternative favored by the majority of respondents in the survey.

3. Increase the buck:doe ratio objective to 30:100, by further cutting buck licenses approximately 40% for several more years.

4. Increase the buck:doe ratio objective to 35:100, declare the DAU a "quality management area" within the constraints adopted by the Wildlife Commission in the 5 Year Season Structure Process. This alternative has little public support.

RECOMMENDATION

The population objective of 11,500 will be achieved by a very slight reduction in antlerless harvest in GMU 741 and maintaining buck only hunting in GMU 74. Either-sex deer licenses are being used in GMU 741 in the 2001 hunting season and will be continued if sufficient antlerless harvest occurs without increasing the buck harvest. These licenses were very popular with landowners in the early 1990's while harvesting an adequate number of antlerless deer to stabilize the population.

The post-season buck:doe ratio objective will be 26-30:100. This ratio will be achieved by maintaining the current buck harvest for several years while the population is allowed to grow slightly, at which time buck-only and either-sex deer license numbers will be adjusted. In the near future, this DAU may meet the criteria to have a very limited number of buck licenses in the 4th season. These licenses and subsequent harvest will be used to help maintain the buck:doe ratio in the 26-30 range.

A fawn:doe ratio of 60-65 is desired, where the average from 1985-2000 was 57.7. Current deer research may provide clues of how to manipulate this ratio where no methods currently exist.