HERMOSA DATA ANALYSIS UNIT E - 30

ELK MANAGEMENT PLAN

GAME MANAGEMENT UNITS 74, 741

DIVISION OF WILDLIFE

151 E. 16th ST.

DURANGO, CO 81301

JUNE 1996

1. DAU PLANS AND WILDLIFE MANAGEMENT BY OBJECTIVES

The growing human demand for a finite wildlife resource dictates wise management of Colorado's resources. The Division of Wildlife employs a management by objectives approach to big game populations. The Division's Strategic Plan provides direction and broad objectives for the Division to meet a system of policies, objectives and management plans such as the Data Analysis Unit Plan, and directs the actions the Division takes to meet the legislative and Commission mandates.

Data analysis units (DAUs) are used to manage herds of big game animals. The DAUs are generally geographically discrete and for the most part contain discrete big game populations. The Data Analysis Unit plans are designed to support and accomplish the objective of the Strategic Plan and meet the public's objectives for big game. The DAU plan establishes the short and long term herd objectives. The objective approach is the guiding direction to a long term cycle of information collection, information analysis and decision making. One of the products of this process is hunting seasons for big game.

Figure 1. Colorado's Objective Cycle of Big Game Management and Harvest (Adapted from Conolly in Wallmo 1981. pp.263).

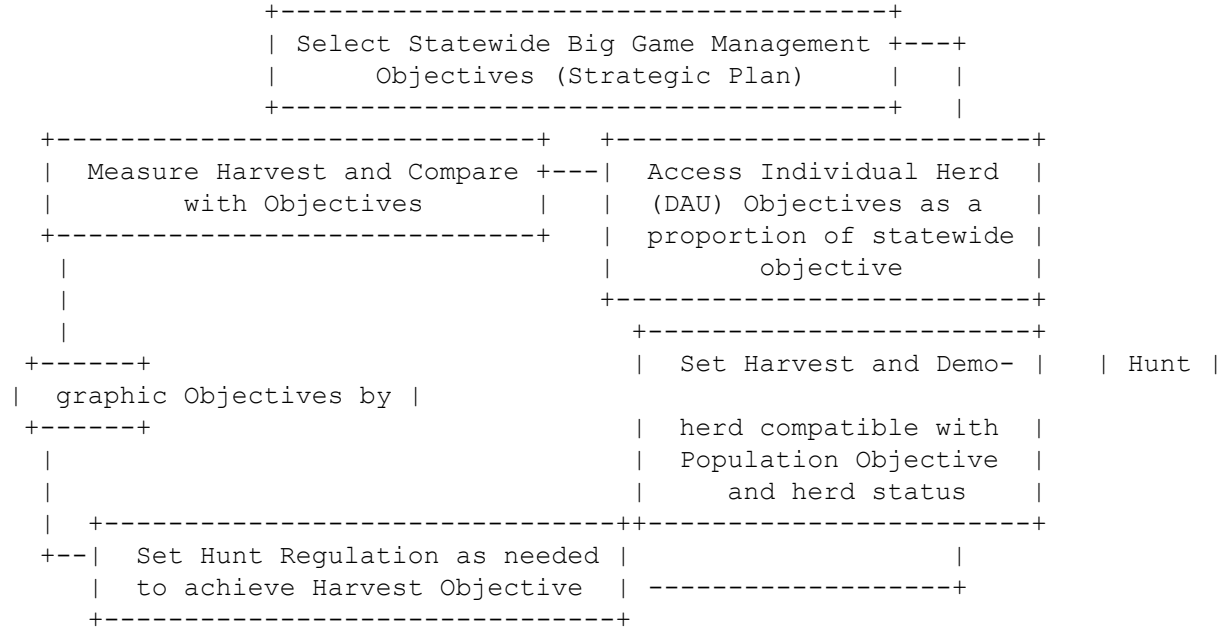

Figure 1 depicts the planning cycle involved in the management of big game populations. The DAU plan process is designed to incorporate public demands, habitat capabilities and herd capabilities into a management scheme for the big game herds. The public, sportsmen, federal land use agencies, landowners and agricultural interests are involved in the determination of the plan objectives through goals, public meetings, comments on draft plans and the Colorado Wildlife Commission.

2. DESCRIPTION OF THE DATA ANALYSIS UNIT

Data Analysis Unit (DAU) E-30 is located in the southwest corner of the state in LaPlata and San Juan counties, immediately west of Durango. The DAU contains Game Management Units 74, and 741. The area encompassed by the DAU is approximately 976 square miles and includes LaPlata county from the Colorado/New Mexico border on the southern end to the northern county line and from the western county line east to the Animas River. The northern section of the DAU lies in San Juan county and follows the county's western and northern boarder to the Animas river on the east (Figure 2).

Dominant geographical features are the La Plata mountains on the west that rise to 12,500 feet, the Animas River valley on the east, and the Red Mesa/Fort Lewis Mesa area to the south.

The climate is what is termed a highland or mountain climate, characterized by cool springs and autumns, warm summers and moderately cold winters. Precipitation in Durango averages 18.1 inches per year and is well distributed throughout the year. Snowfall averages 63 inches per year, falling October through April. At higher elevations, snowfall increases greatly, and Purgatory Ski Area receives approximately 250 inches of snow a year.

Nearly one-half of the Unit is public land under the control of the U.S.Forest Service (about 36%) and the Bureau of Land Management (5%) and other Government agencies (4%). The remainder is private land (35%) which is mostly along Highways 160 and 550 and the Animas and La Plata Rivers, and Southern Ute Indian Reservation lands (19%) which is completely south of Highway 160.

Vegetative types range from high alpine meadow types above 12,000 feet elevation, spruce/fir stands above 10,000 feet, shrubland communities of oakbrush and serviceberry occur down to approximately 7000 feet, and sagebrush and agricultural fields primarily occur below 8000 feet.

Elk winter range generally includes all of Game Management Unit 741, and the part of Game Management Unit 74 within three miles of Highway 160, a corridor along the Animas River four miles wide north to Hermosa, and a large part of the Junction Creek and Hermosa Creek watersheds. This includes approximately 618 square miles, or 58% of the DAU (Figure 2, Table 3). Severe winter range, where most of the elk are concentrated in severe winters (for example, the winter of 92-93) is a narrow corridor approximately two miles wide along the Animas River from Hermosa south to the State line, covering approximately 28 square miles (3% of DAU, Figure 2, Table 3). Elk winter concentrations during normal winters are centered around the Bodo and Perrins Peak State Wildlife Areas and along the Animas River (Figure 2).

Elk movements are initiated by increasing activity on public lands associated with hunting seasons, increasing snow cover, and decreasing forage availability. Movements generally begin in mid-October and continue until January, and are in a southerly direction towards Red Mesa, and east towards the Animas River.

Severe effects of increasing development are being seen along the Animas River north of Durango and are causing elk to winter near subdivisions, on golf courses, and along Highway 550 and other roadways. This area, as noted previously, is identified as elk winter range and severe winter range. Additional development is occurring along Highway 160 west of Durango and on Red Mesa, which are also elk wintering areas. Less impact from development is occurring on other wintering areas and summer areas, but cumulative impacts from continuing development will almost certainly appear in the future.

3. HERD MANAGEMENT HISTORY

3.1 Post-hunt population size

Elk numbers in the Hermosa DAU increased from around 3600 elk in 1980, to a high of 5600 in 1987, and back down to an estimated 3100 elk following the 1994 hunting season.

3.2 Post-hunt herd composition

Post-Hunt calf:cow ratios averaged 50 calves per 100 cows from 1978 to 1985. From 1986 to 1994 the calf:cow ratios averaged 43:100. Antler point restrictions (APR) were implemented in 1986 for the first two regular rifle seasons. Bull:cow ratios from 1978 to 1985 averaged 10:100. From 1986 to 1994, bull:cow ratios averaged 16:100 (Table 1).

Table 1. Summary of aerial composition counts, DAU E-30

YEAR	Bulls/100 cows	Calves/100 cows	bulls/cows/calves counted
1978	13.9	47.9	80/573/275
1979	9.9	53.0	31/312/166

1980	no count		
1981	no count		
1982	10.3	53.1	66/640/340
1983	no count		
1984	5.5	50.3	45/821/413
1985	9.8	47.9	38/386/185
1986	9.9	47.4	68/655/325
1987	12.6	29.2	56/445/130
1988	22.5	32.8	119/527/173
1989	13.7	40.4	66/526/212
1990	17.6	43.2	156/887/383
1991	24.4	51.7	164/673/348
1992	22.1	52.8	256/1157/611
1993	12.0	42.4	115/957/406
1994	7.7	45.2	61/792/358
Avg.	13.7	45.5	

3.3 Harvest

From 1972 to 1985 the total elk harvest in the Hermosa DAU fluctuated from a low of 353 in 1974 to a high of 750 in 1972. During this time the antlered harvest ranged from 291 to 514 and antlerless harvest ranged from 42 to 301. The mean success rate from 1970 to 1985 was 21% (Table 2).

From 1986 to 1994 the total elk harvest ranged from a low of 467 in 1987 to a high of 1461 in 1992. The antlered harvest ranged from 265 bulls in 1987 to 832 in 1992, and the antlerless harvest increased from 180 in 1988 to 629 in 1992. The mean success rate increased to 26%.

3.4 Hunting Pressure.

From 1972 through 1985, the number of hunters in the DAU fluctuated from a low of 1774 in 1972 to a high of 2985 in 1983 (Table 2). In 1986, the first year of antler point restrictions for the first two rifle seasons, the number of hunters dropped to 2163. However, with a high bull:cow ratio, a fairly high success rate, and the ability to take a spike bull in the third season, the number of hunters increased to 4885 in 1992 (Table 2).

TABLE 2
Hermosa Elk DAU Harvest, Hunters, Percent Success, and Recreational Days of Hunting, 1972-94.

YEAR	TOTAL BULLS	TOTAL ANTLER-LESS	TOTAL HARVEST	TOTAL HUNTERS	PERCENT SUCCESS
1972	449	301	750	2275	33
1973	309	140	449	2542	18
1974	291	42	333	2024	16
1975	299	61	360	1881	19
1976	383	62	439	1979	22
1977	397	64	461	1754	26
1978	472	57	529	2586	20
1979	326	51	377	2082	18
1980	310	63	373	2125	18
1981	455	64	519	2167	24
1982	448	65	513	2640	19
1983	418	130	548	2985	18
1984	514	229	743	2797	27
1985	314	212	526	2382	22
1986	315	230	545	2163	25
1987	265	202	467	2353	20
1988	428	180	608	2567	24
1989	523	410	933	3172	29
1990	656	622	1278	3867	33
1991	665	704	1369	4402	31
1992	832	629	1461	4885	30
1993	429	499	928	4706	20
1994	439	460	899	4027	22
AVERAGE	431.7	228.0	659.5	2759.6	

4. CURRENT HERD MANAGEMENT STATUS

4.1 The 1994 post-hunt population estimate for the Hermosa DAU was approximately 3146 animals. This is above the long term objective of 2850. The

current herd model shows that after a high population of 5600 elk in 1988, the herd has been reduced, and with current harvest, will fall below the long-term objective in 1996. Elk inventory and modelling procedures have become more refined in recent years, and current models probably more closely reflect actual herd status than older models did. In addition, elk were believed to be more sensitive to high harvest than now seems to be the case, and harvest rates have increased from 11% of the population in 1985 to 21% in 1993. Table 2 and Figure 7 indicate an increase in the antlerless harvest in 1989, with 1990 antlerless harvest being nearly 350% of the 1988 harvest. Figure 6 illustrates the results of this attempt to reduce the total population as a decline in the total population from 1989 to the present.

The long term post-hunt sex ratio objective is 16 bulls per 100 cows. The 1994 post-hunt sex ratio was ABOUT 8 bulls per 100 cows. Prior to 1986 when antler point restrictions were implemented in the first two regular rifle seasons, the average bull:cow ratio from 1980-1985 was about 10.

4.2 Current Management Problems

During the last eight years the main management problem has been to reduce the herd population while maintaining a bull elk population close to objective. This is diffucult in a DAU with unlimited bull elk licenses and no antler point restrictions in the third combined season. The population is now close to objective in total numbers but below objective in bull:cow ratios. Some small adjustments in cow elk license numbers should maintain the herd close to the objective population.

A second management problem, but one that is more difficult for the Division of Wildlife to deal with, is the loss of winter range and severe winter range to subdivision, commercial, and gas well development. Solutions to this problem must involve the La Plata County Planning Department and the County Commisioners. Specific distribution and population problems, such as an increasing resident herd in the southernt part of the DAU and continuing loss of herd wintering areas to development need to be addressed.

5. HABITAT RESOURCES

5.1 Public Lands. The amount of winter and particularly severe winter range is the limiting factor in the Hermosa DAU. There are a total of 395,520 acres of winter range in the DAU, of which only 72,320 (18%) acres are on publicly administered lands. Only 3% of the DAU (17,920 acres) is severe winter range, 46% of which is publicly administered lands (Figure 2, Table 3).
Figure 8 graphically explains that most of the DAU is under public ownership. Most of the winter and severe winter ranges, however, occur on private and Reservation lands. This means that a great deal of habitat improvement on public lands will have limited benefit because the elk will still be wintering on private and Reservation lands. Some improvements will help to shift wintering elk from private to public ranges, but most of the elk will remain on the private lands.

TABLE 3
Land ownership and elk winter, severe winter, and winter

concentration range areas. All calculations are in square miles and numbers and percentages have been rounded.

		WINTER RANGE	WINTER CONCENTRATION	SEVERE WINTER RANGE	DAU E-30
	PRIVATE	312 50%	20 49%	12 43%	346 32%
	SLB	16 3%	2 5%	1 4%	18 2%
	INDIAN	178 29%	0	2 7%	178 17%
PRIVATE ACCESS SUBTOTAL		506 82%	22 54%	15 54%	542 51%
	BLM	17 3%	3 7%	2 7%	57 5%
	BOR	6 1%	3 7%	3 11%	6 <1%
	USFS	76 12%	3 7%	4 14%	452 42%
	CDOW	14 2%	10 24%	4 14%	14 1%
PUBLIC ACCESS SUBTOTAL		113 18%	19 45%	13 46%	529 49%
DAU E-30 TOTAL		618 58%	41 4%	28 3%	1071 100%

5.2 Private Lands. A total of 323,200 acres (82%) of elk winter range, and 9600 acres (54%) of severe winter range occur on private lands within the DAU (Table 3). Elk/livestock forage conflicts are minimal in the Hermosa DAU, and no forage damage claims have been submitted in the recent past, but some damage to growing alfalfa, beans, and oats does occur in the southwest part of the DAU. Although submitted game damage claims may be minimal in this area, there are conflicts with elk that are not covered by the game damage regulations so the landowner is not reimbursed for the lossess and this increases tensions between landowners and the Division of Wildlife.

6. ISSUES AND STRATEGIES

For nearly ten years, the Animas Valley elk herd, which partly originates from the Hermosa DAU, has been the topic of a great deal of discussion and debate.

Participants have included other State agencies, federal agencies, private corporations and partnerships, and many individuals. The issues now are about the same as then. Issues identified by these discussions and some strategies will be discussed individually.

Subdivision, commercial, and recreational development has been one of the most contentious issues, because of the direct removal of elk winter habitat, as well as the displacement of the elk that occurs. This is an issue that needs to be addressed by La Plata County, who controls land use in the County. The Division of Wildlife acts in only an advisory capacity in commenting on land use proposals. La Plata County will be invited to be involved in this herd planning process because of the impacts County land use decisions have on wildlife, as well as the fiscal and other impacts wildlife have on the County.

The development that has occurred has caused many of the other issues to develop. The displaced elk are often seen in large herds, and many people feel the total population may be too high. Those herds are forced into other areas, where they may cause damage to private property in the form of forage, fences, and haystacks. They also frequent areas close to Highway 550 north of Durango and regularly cross the highway, causing a public safety concern and increased roadkill problem.

Many alternatives to mitigate these issues have been addressed, and some have been attempted. Additional hunting permits have been issued to reduce the population. Fences have been erected to change the distribution of elk, and other fences have been removed or modified. Some landowners have tolerated the increased elk numbers and resulting damage, some have allowed hunters access to hunt elk, and the tolerance level of others have been met, or exceeded. The US Forest Service has used controlled burns to improve habitat, in an attempt to hold the elk longer on public lands. In some cases areas have been seeded or fertilized to improve habitat quality, and the Forest Service Travel Management plan has been examined to identify potential for reducing stress on the elk in an attempt to stop their movements. Campaigns to warn drivers of elk near the highway have been attempted, and reduced speed limits have been discussed. A private foundation was initiated in an attempt to improve habitat on public lands. Through all of this effort, the elk herd continued to grow until about 1988, and is now being reduced successfully. No evaluation has been made of all the various efforts, and it is difficult to identify which helped and which did not.

The remainder of the DAU has had few issues concerning elk until recently, when the number of elk in a resident herd increased in the southern half of the DAU, GMU 741. An early game damage dispersal hunt, with the cooperation of several landowners, was used in 1994 to help provide relief to the landowners from increasing game damage, distribute the elk, and to prevent the population from increasing. Preliminary results indicate good harvest (33% success) and general satisfaction of the landowners with dispersal of the elk.

7. DEVELOPMENT OF ALTERNATIVES

The main purpose of this DAU Plan is to determine the long term post-hunt population and herd composition objectives. Listed below are a few of the many possible alternatives that could be considered to accomplish these objectives.
The harvest levels necessary for each population and herd composition option were estimated using the POPII Computer Model and current cow:calf ratios of 45:100 postseason, current antlerless harvest success of 48% and bull harvest success of 21%. Population estimates are derived using computer model simulations that involve estimates 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.

Each alternative also includes a brief discussion of habitat management that may be necessary for that population level. Generally, the lower the population objective the lower the investment needs to be in habitat improvements. As the objective population increases, the larger the investment needs to be. Habitat management practices vary in labor intensity, costs, and life expectancy of the project. Individual practices that should be considered include prescribed fires, fertilization, seeding, water developments, fencing, timber management, travel management, range management, salting, and many others.

Game damage problems would probably decrease under the low population alternatives, and would increase with increasing population levels, and would probably exceed current levels at the highest population levels. Higher population levels, on the other hand, will also support a higher harvest by hunters, and the fiscal benefits to the county economies will increase. Based on economic models produced by consultants, resident elk hunters in 1994 contributed approximately $507,635, and nonresident elk hunters contributed approximately $1,073,220, to the economy of the counties in the Data Analysis Unit. A population objective that involves reducing the number of hunting licenses by 10% will also reduce the economic benefits to the counties involved by approximately 10%.

One other factor that should be considered strongly in determining new long range population objectives is forage production, range condition and trend, and forage allocation between various consumers. Unfortunately, the Bureau of Land Management and the US Forest Service-San Juan National Forest (the two major land management agencies in the DAU) are currently unable to provide that information.

7.1 Population objective

7.1.1 - 2800 elk This population is about 18% below the current population, and near the existing long term objective. This population is below 1980 population levels as currently shown in the POPII model. The current harvest strategy will continue through the 1996 season, and then the antlerless harvest would be sharply curtailed.

* negative fiscal impact on CDOW and La Plata County due to 40% reduction in antlerless licenses
* reduced game damage conflicts
* habitat improvement projects needed only for distribution problems
* reduced opportunity for sport harvest

7.1.2 - 3400 elk This objective reflects the estimated population after the 1994 hunting season. Harvest strategy will be changed for the 1996 season to reduce antlerless harvest to the levels of the late 1980's in order to maintain the resulting population.

* negative fiscal impact on CDOW and La Plata County due to 25% reduction in antlerless licenses
* current level of game damage conflicts
* habitat improvement projects needed to distribute elk in problem areas and to mitigate for habitat losses to other uses

7.1.3 - 4000 elk This objective reflects the population that occurred in the early 1980's and again in the early 1990's. Antlerless harvest would be reduced significantly to allow the population to increase once again to 4000, then be manageged to maintain that population.

* slight negative fiscal impact on CDOW and La Plata County due to 15% reduction in antlerless licenses
* increase in game damage conflicts
* habitat improvement projects needed in problem areas, to mitigate habitat losses to other uses, and to maintain healthy elk habitat

7.2 Post hunt herd composition

7.2.1- 12 bulls:100 cows This composition is approximately what is observed in the DAU presently so bull harvest could stay at present levels.

7.2.2- 16 bulls:100 cows This composition would require a reduced bull harvest, which would require changes in the Regulations made by the Wildlife Commission, to either 1) antler point restrictions in all three seasons, or 2) totally limit the antlered elk licenses available.

7.2.3- 20 bulls:100 cows This composition would require totally limited bull elk licenses, which are not part of the current seaason structure and therefore not possible until the Wildlife Commission considers a new season structure framework.

8. ALTERNATIVE SELECTION

The Division of Wildlife's recommended alternative is 3400 elk with a bull:cow ratio of 16:100. This population objective is close to our current population and an increase from the existing objective of 2850. This elk herd increased from an estimated 3250 in 1980 to over 5600 elk in 1988, and has since been reduced back down to an estimated 3150 after the 1994 hunting season. The Forest Service, BLM, sportsmen, landownerws, and the San Juan Habitat Partnership Program Committee all favor this new objective. The majority of the elk are yearlong residents in GMU 74, which is mostly public land, and in the view of the USFS, is certainly capable of sustaining this number of elk. GMU 741 has a relatively new and expanding resident elk herd which causes some game damage problems. This area needs attention from the DOW in antlerless license setting and gaining cooperation with landowners to maintain access for hunters. It also needs attention from the San Juan HPP

Committee to distribute the elk.

The proposed bull:cow ratio objective is above the observed average of 14:100. At public meetings held to discuss DAU Plans, there was strong public support for raising the bull:cow ratio, and specifically for adopting antler point restrictions for all seasons as the way to increase bull:cow ratios.

The Wildlife Commission adopted the population objective of 3400 and bull:cow ratio of 18:100 at their November 1995 meeting.