

**San Juan Basin Elk Herd
E-31 Data Analysis Unit Plan
Game Management Units 75, 751, 77, 771, and 78**



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November, 2006



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DAU E-31 (San Juan)

EXECUTIVE SUMMARY

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GMU's: 75, 751, 77, 771, and 78

Land Ownership: 30% Private, 12% Southern Ute Tribe, 55% USFS, 2% BLM, <1% State

Posthunt Population: Objective **13,000** 2005 Estimate **19,000** Recommended **17,000-21,000**

Posthunt Sex Ratio (Bulls/100 Cows): Objective: 18 2005 Observed: 15 2005 Modeled: 16 Recommended: 17-23

Figure 1. E-31 Posthunt Population Estimate

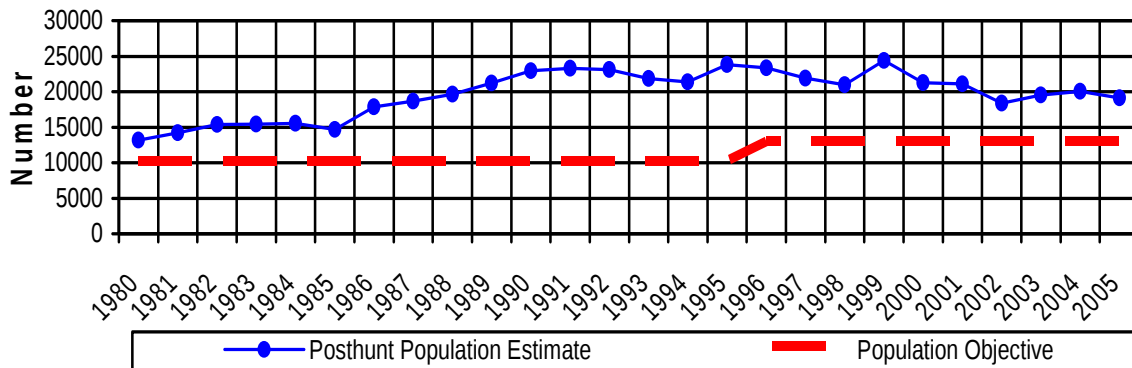


Figure 2. E-31 Harvest

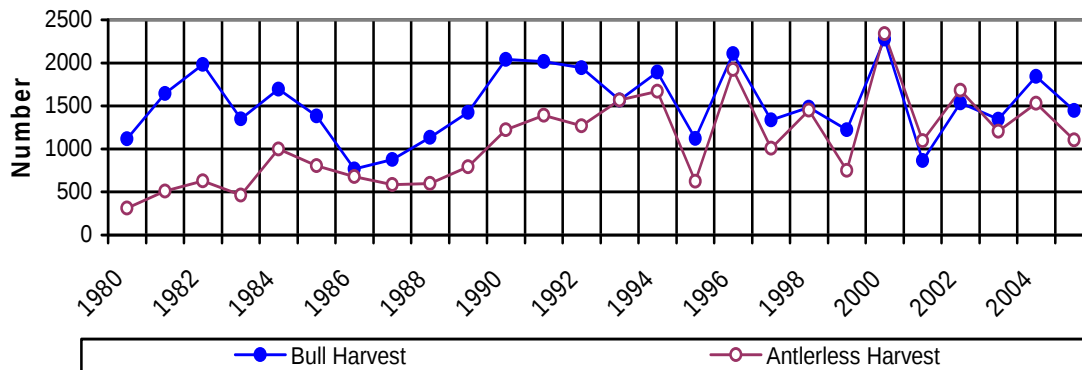
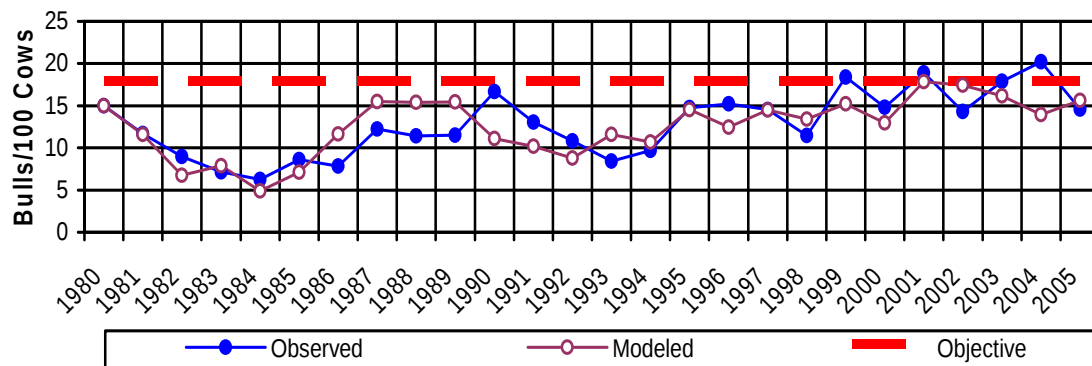


Figure 3. E-31 Posthunt Bulls/100 Cows



E-31 Background

Data Analysis Unit (DAU) E-31 is located in the SW corner of Colorado and contains Game Management Units 75, 751, 77, 771, and 78. The DAU is 2,800 square miles and includes portions of La Plata, San Juan, Hinsdale, Mineral, and Archuleta counties. The towns of Durango, Bayfield, Ignacio, Allison, and Pagosa Springs are included in E-31.

The current post hunt elk population objective is 13,000. The post-season elk population increased from about 13,000 in 1980 to approximately 24,000 in the 1990's and has been reduced to around 19,000 currently (Figure 1). Antlerless harvest has increased substantially since 1980 in an effort to achieve elk population objectives (Figure 2). Antlered and Antlerless harvests are currently nearly equal. The 2000-2005 average bull harvest is 1,550 and average cow harvest is 1,500. Calf cow ratios have averaged 42 calves per 100 cows over the last 25 years.

One of the goals of this DAU plan revision is to bring the population objective more in line with the number of elk that exist, and have existed, in the DAU.

DAU E-31 has been managed for recreational opportunity with over the counter bull elk licenses and a bull to cow ratio objective of 18. Bull to cow ratios averaged 13 bulls per 100 cows from 1980 to 2005 and 17 bulls per 100 cows from 2000 to 2005 (Figure 3).

E-31 Significant Issues

The current population objective of 13,000 was based on earlier population models that underestimated the population causing an unrealistically low population objective. New modeling techniques and biological information, such as using higher elk survival rates, will hopefully allow this DAU plan to set population objectives closer to the current population size.

Management of this elk herd is complicated by the fact that many elk migrate into private property, Southern Ute and Jicarilla Apache Tribal lands, and New Mexico. This results in incongruent harvest management and objectives across the herds range. The San Juan Interstate Wildlife Working Group works to address consistent management objectives.

Winter range is the limiting factor for this elk herd. Winter range is primarily privately owned (51%). The Southern Ute Tribe owns 20% and the remaining 28% of winter range is publicly managed. Land ownership differences between the west side of the DAU (Durango) and the east side (Pagosa Springs) also create management challenges. Harvest objectives are more difficult to achieve on the west end because of refuges created by development. Therefore, the eastern component of this herd has received a disproportionate amount of the DAU's harvest in order to meet harvest objectives.

E-31 Management Alternatives

Three post-season population objectives for E-31 are being proposed: 1. 13,000 to 17,000 2. 17,000 to 21,000 and 3. 21,000 to 25,000. Alternative number 1 would be result in continued reduction of the current herd size. Alternative number 2 is approximately how many elk there currently are. Alternative number 3 is approximately how many elk there were in the 1990's.

Alternatives for sex ratio objectives in E-31 include the status quo of limited 1st and 4th rifle season and over the counter bull licenses in archery, 2nd, and 3rd seasons or totally limited elk licenses which increase bull to cow ratios but decrease hunter opportunity. Totally limiting bull hunting is accomplished by the public nomination process for limited bull hunting approved by the Wildlife Commission in 2004.

Alternative number 2, 17,000 to 21,000 elk in the population and continued unlimited bull licenses in archery, 2nd rifle, and 3rd rifle are the preferred management objectives.

INTRODUCTION AND PURPOSE

The Colorado Division of Wildlife (CDOW) manages wildlife for the use, benefit and enjoyment of the people of the state in accordance with the CDOW's Strategic Plan and mandates from the Wildlife Commission and the Colorado Legislature. Colorado's wildlife resources require careful and increasingly intensive management to accommodate the many and varied public demands and growing impacts from people. To manage the state's big game populations, the CDOW uses a "management by objectives" approach (Figure 4). Big game populations are managed to achieve population and sex ratio objectives established for Data Analysis Units (DAU's). Each DAU generally represents a geographically discrete big game population. The DAU planning process establishes long term objectives that support and accomplish the broader objectives of the CDOW's Strategic Plan.

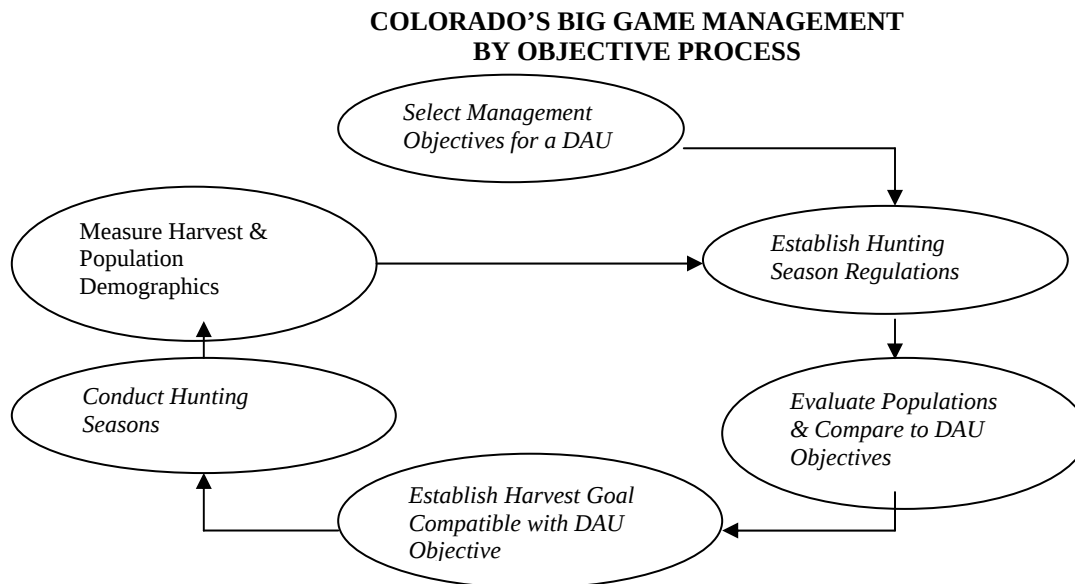


Figure 4. Management by objectives process used by the CDOW to manage big game populations on a DAU basis.

The DAU planning process incorporates public input, habitat capabilities, and herd considerations into management objectives for each of Colorado's big game herds. The general public, sportspersons, federal land management agencies, landowners, and agricultural interests are involved in determining DAU plan objectives through questionnaires, public meetings, comments on draft plans, and input to the Colorado Wildlife Commission. Limited license numbers and season recommendations result from this process.

Each DAU is managed to meet herd objectives that are established through the DAU planning process. The DAU plan establishes post-hunt herd objectives for the size and structure of the population. Once the Wildlife Commission has approved DAU objectives, they are compared with modeled population estimates. Model inputs include:

- Harvest estimates determined by hunter surveys
- Post-hunt sex and age ratios determined by aerial classifications
- Estimated wounding loss, illegal kill, and survival rates based on field observations and telemetry studies.

A computer model estimates the population's size and structure based on the most accurate information available at the time. The final step in the process is to calculate harvest recommendations that will align population estimates with the herd objectives.

Long term, 10 year, objectives are set for population size and bull to cow ratio during the DAU planning process. Population objectives influence, and are influenced by: current herd size, carrying capacity, antlerless harvest, reproduction and survival, viewing opportunity and hunter success. Bull to cow ratio objectives influence hunter opportunity, hunter density, bull harvest, trophy potential, and hunter success.

DESCRIPTION OF DAU E-31

Data Analysis Unit (DAU) E-31 is located in the southwest corner of Colorado and contains Game Management Units (GMU's) 75, 751, 77, 771, and 78 (Figure 5). The DAU is 2,800 mi² and includes portions of La Plata, San Juan, Hinsdale, Mineral, and Archuleta counties. E-31 is bounded on the north and east by the Continental Divide, on the south by the New Mexico state line, and on the west by the Animas River and contains the towns of Durango, Bayfield, Ignacio, Allison, and Pagosa Springs.

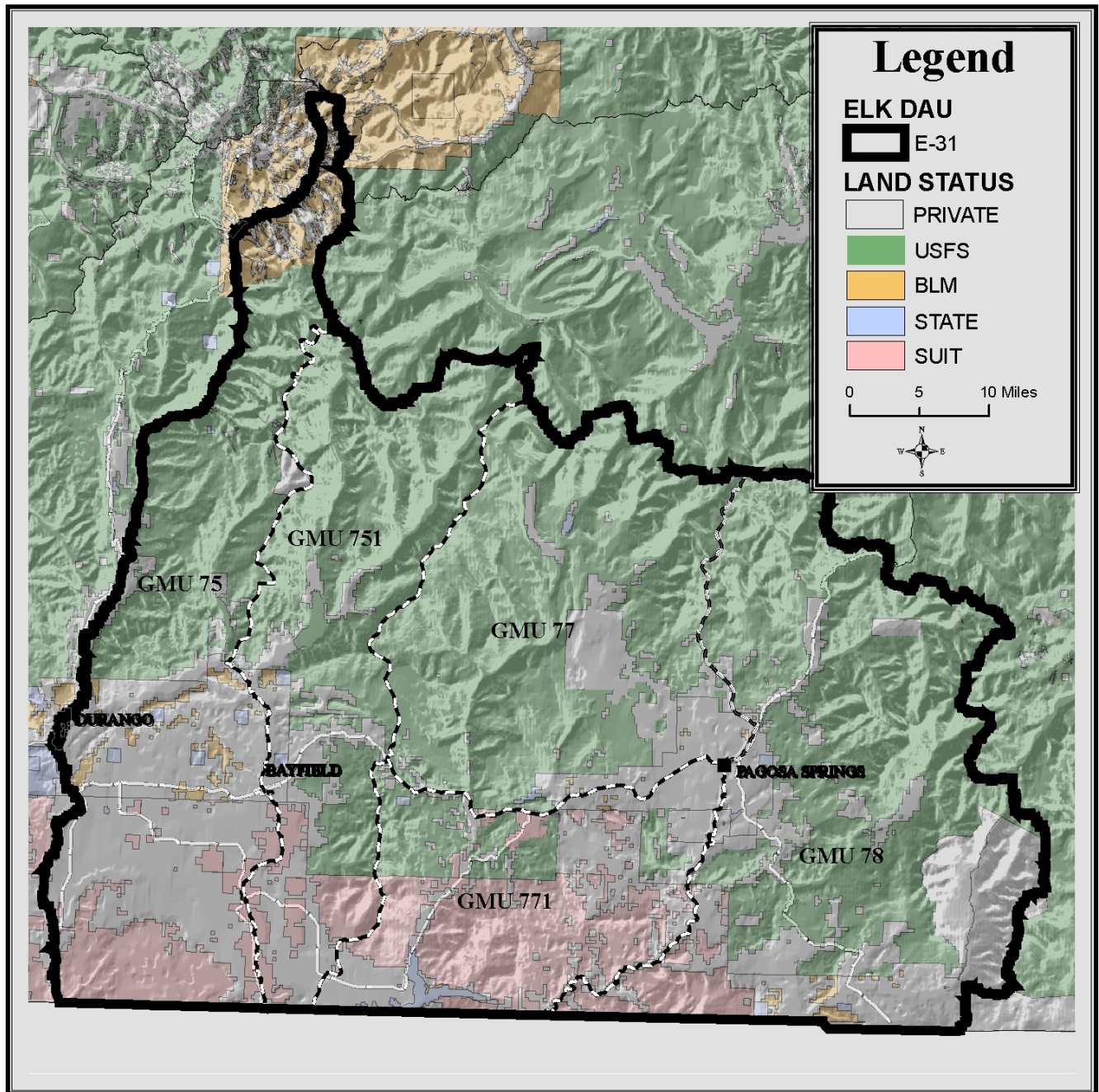


Figure 5. Figure shows DAU E-31 boundaries, GMU's, towns, and land ownership.

The climate is a highland or mountain climate, characterized by cool springs and falls, warm summers and moderately cold winters. Average precipitation and snowfall for Durango are 18.1 and 63 inches per year respectively. Snowfall increases dramatically moving to the east and toward the Continental Divide, approaching 250-300 inches per year. Vegetative types include: alpine over 12,000 feet elevation, spruce/fir stands down to 10,000 feet, oakbrush, serviceberry, and ponderosa pine above 7,000 feet, and pinyon/juniper/sagebrush and agricultural fields below 7,000 feet.

Land ownership is composed of U.S. Forest Service (55%), Bureau of Land Management (2%), private land (30%) and Southern Ute Tribal lands (12%). Elk migration is generally southerly in direction and winter range comprises approximately 46% of the DAU (1,300 mi²). The areas south of US Highway 160 and an area 4-6 miles north of US 160 are classified as winter range. Severe winter range, the area where most of the elk are concentrated in severe winters, covers 779 mi² (28% of the DAU) and includes most of the area south of US 160 and 1-3 miles north of US 160. Winter concentration areas are those areas where elk normally concentrate in a range of winter severities. These areas make up approximately 5% (135 mi²) of the DAU and occur in the Haystack Mountain, Sheep Cabin Creek, and Rio Blanco/San Juan River confluence areas.

Even in normal winters, the winter range of the elk herd extends onto Southern Ute Tribal Lands and into New Mexico, and during severe winters, many of the elk winter in New Mexico.

HERD MANAGEMENT HISTORY

Post-season Population Size

The primary goal of this DAU plan amendment is to increase the population objective to approximate the elk population size that exists, and has existed, in the DAU. The current post hunt elk population objective of 13,000 was established in 1996 and the previous population objective was 10,300 from 1980 (Figure 6). The estimated post-hunt elk population increased from about 13,000 in 1980 to approximately 24,000 in the 1990's and has been reduced to around 19,000 currently (Figure 6). Conservative herd management, with fewer antlerless licenses, in the 1970's and early 1980's allowed the herd to grow rapidly and exceed the population objective. Approximately 1/3 of this herd resides in the western portions of the DAU and 2/3 occupies the eastern portions of the DAU.

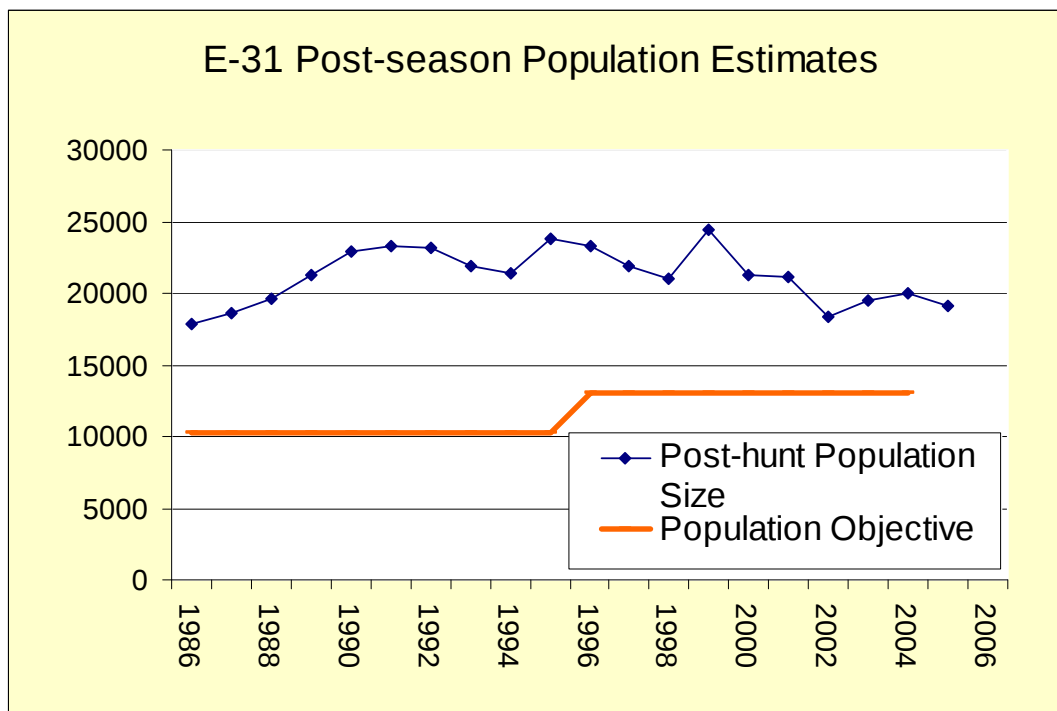


Figure 6. Post-season modeled population estimates and population objectives for E-31 from 1986 to 2005.

Post-season Herd Composition

Post-season calf ratio estimates, observed from aerial inventory, averaged 42 calves per 100 cows from 1986 to 2005 (range = 32 to 50) (Figure 7). A mean of 40 calves per 100 cows was observed over the last 5 years.

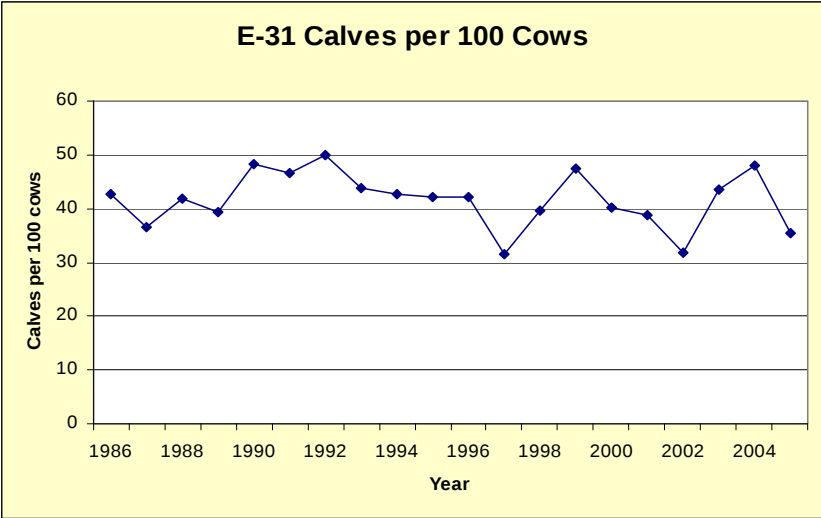


Figure 7. E-31 calf to cow ratio estimates from post-season helicopter inventory.

The bull harvest regime is for increased hunter opportunity with unlimited bull licenses in archery, 2nd season rifle, and 3rd season rifle. Post-season bull to cow ratio estimates are often low in E-31. This is clearly related to the unlimited nature of bull licenses but estimates may be biased low because not all potential wintering areas are flown and bull groups can be difficult to observe from the air in pinyon-juniper and ponderosa pine and oakbrush covered wintering areas. However, post-season bull to cow ratio estimates from aerial inventory have increased somewhat in recent years (Figure 8). This is likely resulting from changes in harvest management such as antler point restrictions in 1986, limited 1st and 4th rifle seasons, and increasing cow harvest. From 1986 to 2005, bull to cow ratios averaged 14 bulls per 100 cows (range = 8 in 1986 to 20 in 2004). The 10 and 5 year bull to cow ratio means are 16 and 17 respectively. All antlerless licenses are limited and set annually to meet population objectives.

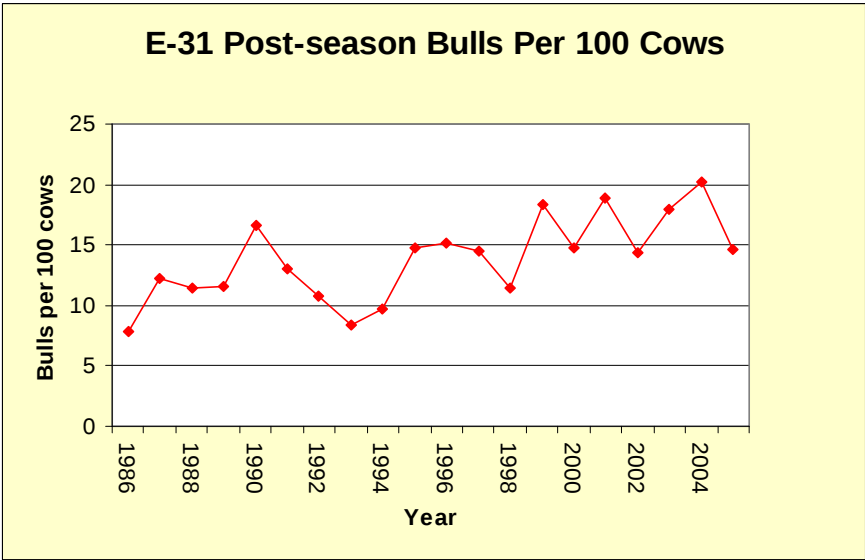


Figure 8. Post-season bull to cow ratios estimated from helicopter inventory from 1986 to 2005.

Harvest

Antlerless harvest has increased substantially since 1980 in an effort to achieve the elk population objectives (Figure 9). Antlered and antlerless harvests are currently nearly equal (Figure 9). The 2000-2005 average annual bull harvest is 1,550 and average annual cow harvest is 1,500. Annual changes in weather affect hunting success causing large fluctuations in harvest (Figure 9). Antlered harvest has ranged from 769 in 1986 to 2,275 in 2000 (mean 1,510 from 1980 to 2005) (Figure 9). Cow harvest has ranged from 278 in 1980 to 2,135 in 2000 (mean 955 from 1980 to 2005).

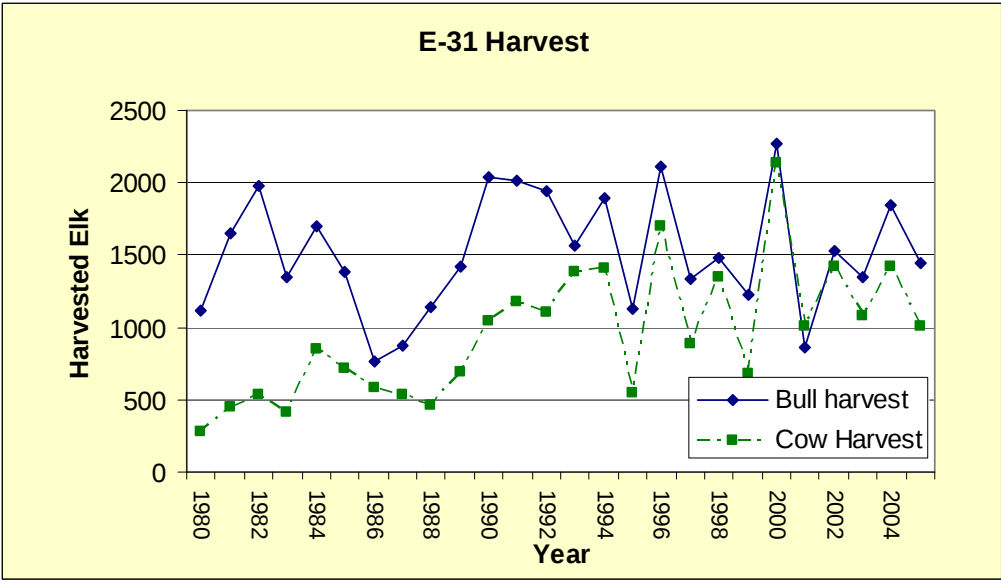


Figure 9. Bull and cow harvest estimates from E-31 from 1980 to 2005.

Hunters

This DAU attracts a significant number of elk hunters because of a large elk population and abundant public land access. A high proportion of these hunters are nonresidents because of its southern location in the state. From 1995 to 2005 the average annual number of elk hunters for all methods of take was 14,300 with an average success rate of 20.3%.

WINTER HABITAT RESOURCES

The amount of winter range is the limiting factor for this elk herd. Winter range is primarily privately owned (51%), the Southern Ute Tribe owns 20%, and the remaining 28% of winter range is publicly managed. Twenty-nine percent of the winter range and 15% of the severe winter range occur on public lands (Table 1).

The 2002 Missionary Ridge Fire was a 73,000 acre fire in DAU E-31. It removed canopy cover and regenerated aspen and oakbrush stands creating excellent elk forage. This vegetative change has improved harvest and decreased game damage by short-stopping elk migration both during hunting season and winter.

		Winter Range	Winter Concentration Range	Severe Winter Range	DAU E-31
	BLM	26 (2%)	6 (4%)	12 (1%)	63 (2%)
	BOR	2 (<1%)	0	2 (<1%)	8 (<1%)
	CDOW	1 (<1%)	0	1 (<1%)	2 (<1%)
	USFS	332 (26%)	25 (19%)	98 (13%)	1545 (55%)
Public Access Subtotal		361 (28%)	31 (23%)	113(15%)	1618 (58%)
	SUI Res.	264 (20%)	7 (5%)	183 (23%)	320 (12%)
	Private	663 (51%)	94 (70%)	480 (62%)	849 (30%)
	State	7 (<1%)	3 (2%)	3 (<1%)	8 (<1%)
Private Access Subtotal		934 (72%)	104 (77%)	666 (85%)	1177 (42%)
TOTAL	DAU E-31	1295 (46%)	135 5%	779 28%	2795 100%

TABLE 1. Land ownership and elk winter, winter concentration, and sever winter range areas in square miles.

Conflicts with Agriculture

Wildlife conflict areas are mostly south of US 160 and deal with winter ranges. Specific conflict areas are the Animas Valley, Grandview, Allison/Arboles, south of Bayfield, a few areas near Pagosa Springs, and the southern San Juan River. Conflicts on lower elevation agricultural lands are addressed with Private Land Only licenses and Distribution Management Licenses. Spring conflicts also occur as elk stay on private lands as they green up, and move onto higher elevation ranges later as they green up.

U.S. Forest Service employees have not reported conflicts with permittees at current or past elk population sizes. DAU planning has been discussed at the local Habitat Partnership Program committee and no significant concerns have been raised with current elk numbers.

CURRENT HERD STATUS , ISSUES, and STRATEGIES

Population Estimation and Population Objective Setting

Current DAU plan objectives (1996)

Population = 13,000

Sex Ratio = 18 bulls : 100 cows

Post-season 2005 estimates

Population = 19,000

Sex Ratio = 15 bulls : 100 cows

The primary goal of this DAU plan amendment is to increase the population objective to approximate the elk population that exists in the DAU. The current population objective of 13,000 was based on earlier population models that underestimated the population causing an unrealistically low population objective. The intent at the time (1996) was to manage for the existing population size. New modeling techniques and biological information, such as using higher elk survival rates, will hopefully allow this DAU plan amendment to set population objectives closer to the current population size. Estimating free-ranging ungulate populations in complex landscapes is challenging. E-31 is bordered on the north by E-34 which has limited bull hunting and complicates population estimation because of bull immigration. This DAU is also particularly problematic because it is a state line unit where animals migrate to, and are harvested in; Colorado on public then private, again on Southern Ute Tribal Lands and Jicarilla Apache Tribal Lands, and finally in New Mexico. This results in incongruent harvest management and objectives across the herd's range. The San Juan Interstate Wildlife Working Group works to address consistent management objectives and communication between these entities. This group has representatives from CDOW, New Mexico Game and Fish, public land management agencies, Southern Ute and Jicarilla Indian Nations, and sportspersons.

Development on Winter Range

Exurban development and energy development are occurring on much of the winter range in E-31. Managers and the public are increasingly concerned over cumulative and prolonged impacts disrupting migration corridors and decreasing quality and quantity of winter range. Development influences both carrying capacity and harvest management. Exurban development often creates refuges making harvest objectives in these areas difficult to achieve. Development is a DAU wide issue but it's a considerably larger problem in the western portions of the DAU. Moreover, La Plata County has the highest natural gas production in Colorado and production is currently increasing. Highway mortality is exacerbated by increased road density and human population. It is a concern for both herd welfare and human safety.

Harvest Management Challenges within the DAU

Land ownership differences between the west side of the DAU (Durango) and the east side (Pagosa Springs) also create management challenges. Harvest objectives are more difficult to achieve on the west end because of refuges created by exurban development whereas the eastern portions of the DAU have considerably more low elevation public lands. Therefore, the eastern component of this herd has received a disproportionate amount of the DAU's harvest in order to meet DAU harvest objectives. CDOW Wildlife Managers will continue to seek creative harvest strategies to facilitate harvest in the western portions of the DAU and reduce some antlerless harvest in the eastern portions of the DAU. The proposed population objective range allows for additional flexibility in elk harvest management and population size on the eastern and western portions of the DAU. Consequently, elk numbers on the western portions of the DAU can be maintained or reduced while numbers are allowed to increase on the eastern side of the DAU. Finally, a few ranches in the DAU function as refuges because of very limited hunting and create localized harvest management challenges.

Chronic Wasting Disease

Chronic Wasting Disease (CWD) is a neurological disease occurring in members of the cervid family including deer, elk, and moose. CWD has not been detected in or around DAU E-31. From 2002 to 2005, 517 E-31 elk have been tested for CWD and CDOW will continue surveillance for CWD. If CWD is detected in or around DAU E-31 managers may need to reevaluate management objectives if they are deemed incompatible with CWD risks.

Public Involvement

Public DAU planning meetings were conducted in Durango and Pagosa Springs. Meetings were well attended with 16 and 25 participants respectively. Basic questionnaires about population and sex ratio alternatives were handed out. This was not a random survey so results may not represent all interest groups or even represent specific interest groups adequately. Questionnaires do provide opinions of those able to attend the meetings. Of those questionnaires filled out at the meetings one (2%) respondent preferred alternative 1 to decrease the elk population, 24 (63%) preferred Alternative 2 to leave the elk population at its current size, and 13 (34%) preferred to increase the elk population. Seventeen (45%) respondents wanted to keep bull hunting unlimited and 21 (55%) preferred to go limited for bull hunting. Additionally, nine questionnaires were mailed from those that were unable to attend the meeting but wanted to provide input. Four preferred the status quo for population size and bull hunting and five preferred increasing the population size and going totally limited for bull hunting

ALTERNATIVE DEVELOPMENT

Population Objective Alternatives

Population objective alternatives were developed around the current population estimate. Ranges are presented in each alternative to allow for management flexibility to changing conditions or unknowns such as drought or disease. The following three population objective alternatives are being proposed.

Alternative 1. 13,000 to 17,000 elk post-season

Alternative 2. 17,000 to 21,000 elk post-season

Alternative 3. 21,000 to 25,000 elk post-season

Alternative number one would result in continued reduction of the current herd size. Alternative number two is approximately how many elk there currently are. Alternative number three is approximately how many elk there were in the 1990's.

Generally, the lower the population the lower the investment needs to be in habitat improvements. Likewise game damage will decrease with fewer elk. However, many game damage situations would persist even with drastic reductions in elk numbers and are best dealt with locally rather than on a DAU population scale.

Higher population objectives support a higher harvest by hunters, and the fiscal benefits to the local economy will increase. 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%.

Sex Ratio Alternatives

Alternatives 1 is the status quo of limited 1st and 4th rifle season and unlimited bull licenses in archery, 2nd rifle season, and 3rd rifle season and resulting in 17-23 bulls : 100 cows. Alternative 2 is totally limited elk licenses which would result in greater than 25 bulls per 100 cows; how much greater would depend on degree of limitation. Unlimited bull hunting provides more hunting opportunity and lower bull to cow ratios. Having totally limiting bull hunting results in higher bull to cow ratios with fewer hunters in the field. However, there is less opportunity to regularly participate. Limitation also displaces several thousand hunters to surrounding unlimited units.

Totally limiting bull hunting is accomplished by the public nomination process for limited bull hunting approved by the Wildlife Commission in 2004. Consequently, a goal of this DAU plan amendment is not to make the complex decision to go totally limited or stay with unlimited in select seasons. Elk DAU nomination instructions and forms were available at public DAU planning meetings. This DAU was nominated for limitation in 2004 but was not selected for limitation because of the management complexities of a state line unit outlined previously and other social and economic factors. There is still a reasonable amount of support among sportspersons for total limitation based off the questionnaires and discussions at the public meetings. Antlerless licenses will remain limited with both alternatives.

PREFERRED OBJECTIVE RECOMMENDATION

Current population levels generally are resulting in good hunting success and satisfaction without excessive conflicts with agriculture or concerns with range over-utilization from land and wildlife managers. The range around this population size allows managers flexibility to adjust elk populations to any changes that occur in these factors.

Preferred Post-season Population Objective = 17,000 - 21,000 elk post-season

Preferred Sex Ratio = 17-23 bulls per 100 cows