

part of western ecosystem when we lost the buffalo. This would have put thousands of acres of rangeland into a stagnant and very unnatural situation except for one saving grace: we substituted domestic livestock for the buffalo.

Today our ranges are in better shape than they have been for a long time. Once again we are establishing a

balance between the grass and the grazer. Making seasonal use of the range (and rotating pastures, not staying overlong in any one area), with a reasonable number of livestock, we are simulating an earlier era when these lands were seasonally and rotationally grazed by the wandering herds of mountain buffalo.

## Impact of Elk in Catron County, New Mexico

James M. Jackson

In 1909 the last Merriam's elk, native to the Gila Forest was reported killed by a commercial hunter, and that species of elk became extinct. In 1936 the first 25 head of exotic Rocky Mountain elk were introduced on the Gila National Forest (Marston, 1990). Since 1936 the elk herd has increased to levels that are now creating conflict over the concept of multiple use and could threaten the habitat. How many livestock and elk can the Gila National Forest and the adjoining BLM and private lands sustain?

A BLM news release states that "the improving trend in rangeland condition is reflected by the large increases in wildlife populations since 1960. Elk, for example, have increased almost 800 percent, from 18,278 in 1960 to 142,870 in 1988." (Zilicar, 1990). Estimates of the increase in the elk herd in the West, are from less than 100,000 in 1930 to about 600,000 in 1987 on all the Federal Lands (Thomas, 1990). The New Mexico Department of Game & Fish has increased elk hunting licenses on public lands by 47% from 9,500 to 14,000 over the past five years. "Given a chance, elk have done well..." (NM Dept. of Game & Fish, 1989).

The utilization of the forage by livestock and elk may differ, but they often eat the same grasses and browse. As a result, both have to be managed to protect the natural resources. A few years ago on the Yellowstone Park, it has been estimated that 25% or 3,125 elk starved to death (winter kill) out of about 12,500 animals (Lemke & Singer, 1989). Before those animals died, what negative impact did they have on their habitat and how long will it take the range to recover with the continued pressure of the remaining animals?

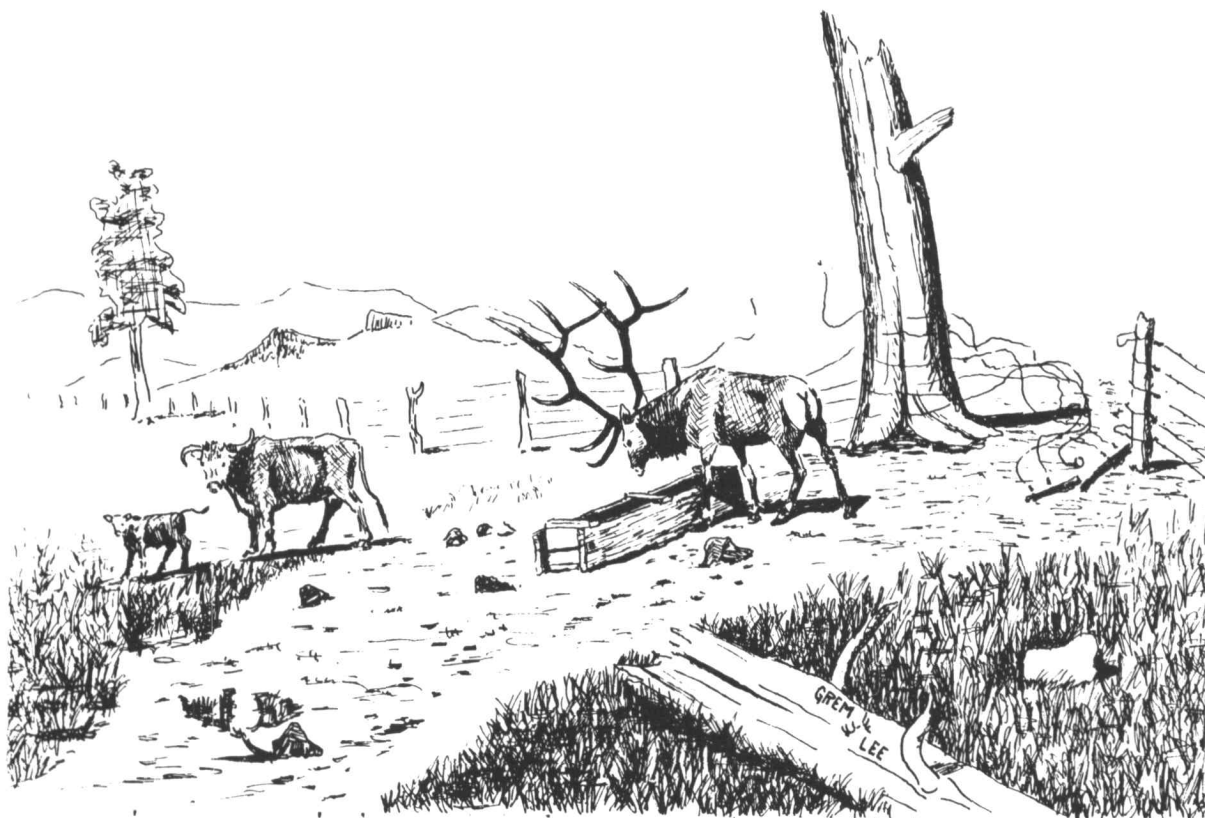
A study by the Colorado Division of Wildlife on the impact of elk winter grazing on livestock production over the past three years showed that "elk grazing during the winter influenced the performance of cattle during spring"

in direct relationship to various elk densities. "The birth weights of the calves of the cattle tended to decline relative to elk density," as well as effecting the conception rates of the cows (Hobbs & Baker, 1989). There can be no question that the density of elk impacts livestock.

Catron County consists of almost 4.5 million acres with about 2,800 people. Fifty percent of the land is controlled by the U.S. Forest Service; 13% by the BLM; 12% by the State of New Mexico; and only 25% private, much of that surrounded by Federal agencies. Because so much of the County is controlled by Federal agencies, the policies and management of the Federal lands has a tremendous effect on the economy and quality of life of the people. A Western New Mexico University study states that "much of the rural economy is dependent upon commodity production with a heavy dependence upon public resources....Elk hunting is very popular in Catron County; however recreation hunting is a nonbase industry with most of the economic benefits accruing outside the County. The total hunting impact on Catron County was approximately \$600,000 while statewide the impact was \$1.6 million for the 1988 Catron County elk hunt. The reason for the difference is that hunters and outdoor recreationists in general, purchase most of their supplies and equipment outside the County, mainly in the urban centers of New Mexico. The local impact in Catron County of cattle from public land ranches for 1988 was \$18.8 million" (Thal 1990).

### Background and Procedure

For the past few years the ranchers of Catron County have noted an increase in elk numbers. There has been a noticeable increase in depredation by elk on improved and irrigated pastures on deeded acres. There have also been observations of much greater utilization of the public lands by elk, as well as expansion of their range. The intent of the survey was to create a data base from the livestock industry, that in conjunction with the elk herd



*Drawing by Grem Lee of Apache Creek*

estimates of the Forest Service and New Mexico Game & Fish, would give a better approximation of the size of the herd.

A questionnaire was sent to the permittees on the various allotments by the Catron County Farm and Livestock Bureau. After the due date, a telephone call was made to those Forest permittees that failed to respond. The numbers of elk are based on actual counts; estimates; and tied to telephone conversations or comments in the survey, estimates with a strong potential of accuracy.

On community allotments in which more than one permittee answered, the numbers were averaged for that area. Because some of the responses had low-high estimates for the Forest Districts, the low elk numbers were added up, and then the high numbers. The low and high numbers were then added and averaged to represent the

high elk estimates for the District. The possibility of movement between allotments and of an individual elk being counted twice was taken into account by taking the final high estimate and dividing that figure by a factor of 2 to represent the final low estimate of each Forest District. Table 1 shows the results broken down by the Forest Districts for which there was a response. It is important to understand that the data do not represent the total elk numbers on the Gila Forest because 5 Ranger Districts were not surveyed in depth: the Black Range, Silver City, Beaverhead, Wilderness, and Mimbres. The elk on the BLM, State, and private lands were also not surveyed.

**Summary**

It is evident to me, based on the survey of the four Forest districts out of the nine on the Gila, that the

**Table 1. Elk census results.**

Period	Forest Districts				Totals of four districts
	Quemado	Luna	Reserve	Glenwood	
Winter— Nov. 1 to Feb 28	Low - High 1,030 - 2,060	Low - High 600 - 1,200	Low - High 1720 - 3,440	Low - High 420 - 830	Low - High 3,770 - 7,530
Spring— March 1 to April 30	1,020 - 2,030	750 - 1,510	3,380 - 6,760	430 - 860	5,580 - 11,160
Early Summer— May 1 to June 30	1,030 - 2,050	680 - 1,350	3,500 - 6,990	360 - 710	5,570 - 11,100
Late Summer— July 1 to Oct 30	1,040 - 2,080	740 - 1,490	3,630 - 7,250	250 - 510	5,660 - 11,330

number of elk has reached or exceeded the amount called for in the Forest plan of 7,523 animals (EIS Gila NF Plan, 1985). There is a high probability that the other Districts combined would have a minimum of 2,000 extra elk, which, added to the low total figure of 5,660 animals from the surveyed areas, would represent the total elk allotted by the Forest Plan for 1996.

The Quemado Ranger District has made an effort over the last three years by aerial surveys in cooperation with New Mexico Game & Fish, and by various other means to estimate elk hunters. The Forest personnel independently estimate the elk numbers on the Quemado District to be from 975 to 1,200 animals. I find the proximity of their estimates to the low numbers in the allottees' survey as encouraging in relation to accuracy. I also believe that further evidence of the downward bias of the allottees' survey is from the Arizona Game and Fish Dept. operational plan, which states that the Escudilla herd of 300–450 adult animals in Arizona has most of its winter range in New Mexico (Arizona Game and Fish 1990). The low numbers in the survey from the Luna District do not show this fact, which leads me to believe that actual elk numbers must be, at least, between the low-high figures.

#### **RECOMMENDATIONS by Order of Priority**

1) It is time to stabilize the elk herd on the Gila Forest by means of antlerless hunts. "Since bull elk do not reach their maximum antler development until they are 7–10 years of age (Wolfe 1982), the relatively high harvest rates on public lands greatly reduce the percentage of trophy bulls in most herds..." (Wolfe 1985). By stabilizing the herd and even decreasing the density of elk, it will lower juvenile mortality, increase conception rates, reduce the effects of disease, and improve overall herd health. Cow hunts will partially be compensated for by increased survival rates as well as reducing pressure on bulls and allowing more trophy animals to develop. The number of elk is a concern because it is directly related to the concept of density-dependent population regulation (Wolfe 1985) as well as carrying capacity.

2) Accurate population estimates are almost impossible to get on elk at a reasonable cost. For example, the Arizona Pinetop Region gives population numbers that vary from the low of 6,820 animals to the high of 10,230 (Arizona Game & Fish Dept. 1990). In a study done on the 480,000 acres of Vermejo Park, after 213 hours of actual counting time over 10 years, the low-high varies by 35% or in 1985 5,700 plus or minus 3,100 animals (Wolfe 1985). There will never be a clear cut figure that shows the Forest Service that elk numbers have reached the planned amount. Instead, those numbers will probably vary from 5,040 to 10,006. Those advocacy groups favoring elk will pick the low number, and those that want to see elk controlled or reduced will pick the high number.

The main reason there is concern about the elk population is related to the capacity of the habitat. The most reasonable method for coming up with the impact of elk is by utilization studies. The Gila National Forest has already recognized this and started a program. Some

ranchers have started programs either by themselves, by independent consultants, or with the help of the New Mexico Range Improvement Task Force. The Bureau of Land Management, New Mexico Game and Fish, or some other group may also do some studies. It is important to have a consensus of method so that all data collected can be relevant to each other.

3) Identify those public lands and private lands that are suffering depredation by elk to an amount that drastic economic hardship is created. An attempt should be made by all involved groups to seek this information.

4) Start a program to collar some cow elk in such a manner that they can be identified. In Arizona they have been able to determine various herds in different territories with radio collars over a two-year period. This program would give needed information on elk movements, allowing the New Mexico Game & Fish to better manage hunts and to control those herds creating the greatest conflicts. When the animals are captured, blood tests should be taken to check for disease within the elk herd such as brucellosis that can be spread to livestock.

5) More aerial elk surveys should be done to help in the collar program of pinpointing the various elk herds and their movements. This work would help in creating a better handle on the herd dynamics by means of bull:cow:-calf:yearling ratios as well as giving another method of estimating elk numbers.

6) Increase the elk cow hunts to stabilize, or if necessary to reduce, the elk herd in those areas suffering heavy impacts based on the information collected with the earlier recommendations. The increase of revenue to the New Mexico Game and Fish should allow a reduction in elk bulk licenses in order to manage in the direction of quality trophy hunts on the Gila.

7) The New Mexico Game and Fish should consider a permanent program of giving hunting licenses to individuals holding grazing Forest or BLM Allotments. This could serve as a source for range improvements that benefit both livestock and wildlife. The fees received by the rancher must be used for habitat improvement and would also serve as compensation for maintaining, and in some cases ownership, of such range improvements as water facilities and fences. This system would also decrease the conflicts between wildlife and livestock by creating a sense of self interest by the livestock industry in the health of the elk herd. It would also help the outfitters in the area by increasing the available source of elk licenses.

8) Habitat and water improvements must be planned in the true sense of multiple use. The timber industry in cutting various areas, can create early, mid, and late seral sites that benefit elk and livestock, and create the variability of habitats that all animals require. The Sikes Act monies must be integrated in the multiple use concept. The idea of developing water or creating range improvements and then fencing them solely for wildlife only exacerbates the polarity of interest groups. As an example, should water that is created by range funds, or water that

is privately owned, be fenced to keep out wildlife?

9) All water developments funded by the Sikes Act on the Gila watershed in the Gila Forest must be cleared by the New Mexico Engineer. The Supreme Court decision in Arizona vs. California (1964) as well as the Colorado River Basin Project Act of 1968 requires that the New Mexico State Engineer be involved. The Gila National Forest must also be in full compliance with the Supreme Court decision United States vs. New Mexico, 438 U.S. 696, 57 L. Ed. 2d 1052 (La. 1978) in how any water is allocated.

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