

Concepts Concerning Forage Allocation to Livestock and Big Game

Jerry L. Holechek

Forage allocation for domestic livestock and big game animals has long been a controversial problem. Many early beliefs and solutions to this problem were based on intuitive reasoning rather than experimental evidence. In the past very few range and wildlife managers have recognized the value of common use grazing of livestock and big game. It was thought a reduction in numbers for any herbivore species would improve forage conditions for the other. Prior to the 1970's, most government agencies were allocating forage to different grazing animals on the basis of direct exchange ratios. Recent studies on food and habitat preferences of domestic and big game animals have shown this to be a poor system of forage allocation.

Three possible interactions—food, space, and social—exist between domestic and big game animals on most rangelands. The most critical interaction area is food, but competition can exist only under the following three conditions:

- Domestic and big game animals are using the same area.
- Forage plants are in short supply
- Both domestic and big game animals are using the same forage plants.

In order to interpret and relieve possible forage competition problems between domestic livestock and big game animals, the following information must be determined:

- The key forage plants for both species.
- The degree of use on key specie.
- The ability of wild herbivores to switch to other foods.
- Key areas where dual use occurs.
- Repeatability of dual use on key areas from year to year.

Once this information has been obtained, definite management programs for different areas can be formulated. It is important to recognize that it is the amount of overlap in different animal diets on given areas that determines the potential for competition. Degree of use is also important since a plant species that is not consumed under moderate grazing may be fully utilized under heavy grazing. Maintenance and improvement of the forage resource should always be a primary consideration when forage is allocated to different animals.

There are six important concepts that can be of much value in forage allocations to different animals.

- 1) Animals with the broadest food habit adaptability tend to be the most successful under restricted forage availability. This is because they can regulate their diet to what is available.
- 2) Large ruminants have the ability to substantially alter their food habits. These animals have a large rumen volume to body weight ratio. Therefore, quantity is

more important than quality. This is why elk can out-compete deer when the two animals share the same winter range.

- 3) Severe disturbances can force animals to use forage or habitats not normally used. These disturbances are generally climatic such as drought, cold, snow, flood, etc.
- 4) Forage availability to animals prior to critical periods may be more important than availability of forage during the critical period. This is because the animals can go for long periods (30 days) with little forage intake if they have high body fat reserves.
- 5) Population size can alter animal habitat use. When populations expand because of low mortality or high natality to the limit of their range, some animals are forced into marginal habitats which would not normally be occupied. This increases the potential for competition.
- 6) Grazing a range by only one species of animal tends to cause a trend away from one type of vegetation to another. A vegetation trend which results from one species is usually undesirable for the animal causing the trend. Therefore common use generally results in much higher animal and vegetation productivity than single use.

It must be emphasized that under proper livestock grazing there are few localities where competition exists between big game animals and domestic livestock. Available research shows deer and antelope are very compatible with cattle and sheep when stocking rates are moderate. Elk and cattle are less compatible because of similarity of food habits. However this is minimized by the fact they usually use



Photo courtesy of Phil Zwank

Pronghorn antelope, such as the male shown above near Roswell, New Mexico, compete very little with cattle for forage because they prefer different forage species.



Photo courtesy of Phil Zwank

Mountain valleys, as portrayed above in northern New Mexico with cow elk, are often critical areas for forage allocation because they are used by domestic livestock in summer and elk in winter.

different areas during most of the year and they seldom use the same area at the same time. In the critical period during the winter, game animals such as deer and elk concentrate in lower areas which often receive heavy livestock use. These are the areas where forage allocation is critical. On key big game winter ranges that belong to the public, the author believes management should be primarily for game rather than livestock. This, however, does not mean that livestock grazing must be eliminated from these ranges. Recent studies have shown both cattle and sheep can be used as a tool to improve forage quantity and quality on deer and elk winter ranges. Where private lands are critical wintering areas, wildlife departments should purchase land to maintain big game herds and prevent property damage. Range improvement practices such as fertilization, reseeding, brush control and burning can be applied to these management units to increase forage production. In a few cases where only winter range is limited and little potential exists to provide natural forage, winter feeding may have value. Big game and livestock numbers should always be

regulated so the forage resource is maintained or enhanced.

Most management agencies and ranchers now recognize that common use grazing of big game and livestock can be beneficial to both the animals and ranges involved. Recent research concerning habitat and forage preferences of big game and livestock species is being generally applied when forage allocations are made. The problem with present forage allocation practices is that they usually fail to take into account the fact that the range forage resource is a highly variable commodity from one year to another. Once it becomes recognized that range animal numbers must be adjusted to forage availability on a yearly basis, rapid range improvement may be possible. A second problem is that there is often considerable public resistance to reducing big game animal populations on overgrazed winter ranges. This problem can be solved only by improved and expanded public information and education programs.

In conclusion, I leave you with one catch word for allocating forage to livestock and big game—*moderation*.●

OPENING—Extension range specialist, MSU. Will work with Montana livestock producers in the area of range and grazing management in disseminating research information and encouraging its application. Applicants will be expected to have training or experience in livestock production, range renovation and improvements, plant control, range nutrition and grazing systems. This includes working with producer groups and university research and Extension staff. Qualifications: Experience and/or training in range management and range nutrition; Extension expe-

rience preferred; Ph.D. in range science or related field, M.S. in these fields may be considered; willingness to travel and a desire to work with people. Submit detailed vitae including education, experience and professional activities, a listing of publications including articles in popular agricultural media, four names of people who can be contacted for references, transcripts of academic work and a letter of application, prior to Sept. 1 to: Allen Nelson, Personnel and Training Officer, Montana Cooperative Extension Service, 101 Taylor Hall, Bozeman, Mont. 59717, 994-3403.