

INTERACTION BETWEEN LIVESTOCK and WILDLIFE in the CYPRESS HILLS

INTRODUCTION

Landscapes found in the Cypress Hills are composed of unique plant communities. Wildlife and livestock share many of these landscapes and plant communities. Wildlife and livestock use these landscapes and plant communities to obtain food, shelter and water. Since their introduction, livestock grazing has played an important role in shaping these landscapes and plant communities. This provides an opportunity to use livestock grazing as tool to conserve the habitat of wildlife habitat, reduce some of society's anxiety and maintain an important industry.

LANDSCAPES and WILDLIFE

Over time, wind, water and ice have created the heterogeneous landscape found in the Cypress Hills. This landscape contains unique plant communities, due to variations in; aspect, slope, soils, moisture gradients and disturbance causing factors. Plant communities associated with the dry sites contain species associated with The Mixed Grass Prairie. Plant communities associated with the moist sites contain species associated with The Rescue Prairie. Plant communities associated with the colder and wetter sites contain White spruce, Lodge pole pine and Aspen. The diverse plant communities of the Cypress Hills support a wide variety of wildlife. Elk, Mule deer, White-tailed deer, Pronghorn, Moose and Wild Turkey are associated with the White spruce, Lodge pole pine and Aspen communities. The wildlife associated with the Rescue and Mixed-grass communities include: Elk, Mule deer, White-tailed deer, Pronghorn, Western Meadowlark, Savannah Sparrow and Sharp-tailed Grouse. The wildlife associated with the riparian include: Green-winged Teal, Lesser Scup, Tundra Swan, Marbled Godwit, Willet, American Goldfinch, Great Blue Heron, Yellow-headed Blackbird and Red Winged Blackbirds

INTERACTIONS BETWEEN SPECIES

The heterogeneous landscapes found in the Cypress Hills support a large variety of wildlife. Each species has developed its own unique strategy to obtain food, shelter and water. The presence of livestock has resulted in a certain degree of niche overlap between livestock and wildlife. This niche overlap will result in competition for resources between wildlife and livestock.

Elk versus Cattle

Throughout the year cattle are primarily grazers with the bulk of their diet (approximately 80 %) is grass. The remainder of their diet consist of sedges and Forbes. Browse (willow, aspen, etc.) makes up less than 10% of the diet of cattle. Elk on the other hand, alter their foraging strategies. From late fall the diet of elk is very similar to that of cattle. Approximately 80 % of their diet consists of grass. From late in the spring to early fall elk will consume primarily browse species. Cattle also differ from elk in terms of forage consumption. It has been estimated that the

daily forage consumption of a 1000 pound cow will vary between 2.5% and 2.7% of her body weight. This will not change much throughout the year. The daily forage consumption for elk (as a percentage of the animal's body weight) may vary between 2.0% and 3.0%. The lower amount is associated with winter diets and the higher forage consumption is associated with summer diets. Not only does this change reflect the changes in diet it also reflects a physiological change.

Conflicts between elk and cattle can occur. Some examples of conflicts between elk and cattle are: elk raiding forage crops that will be used for livestock winter feed, livestock overgrazing the winter range of elk and cattle utilising the same range from late fall to early spring.

Deer versus Cattle

On native range, the diet of deer (white-tailed deer, and mule deer) consists primarily of browse sedges and Forbes. Grass makes up a small portion of the deer's diet. Under normal circumstances there is a small amount of competition between deer and cattle for resources. Despite this there are instances when deer and cattle compete for resources. Examples of these conflicts include: deer raiding forage and grain crops or livestock over utilising landscapes, leading to a degradation of deer habitat.

Pronghorn versus Cattle

The diet of pronghorns consist primarily of Forbes and browse species. Grass forms a small part of the diet of pronghorn. On native prairie there is very little competition between pronghorn antelope and cattle for the use of resources. The only significant completion between livestock and pronghorn, takes place when pronghorn raid forage and grain crops or when livestock over utilise pronghorn winter habitat.

Cattle versus Ducks

Livestock grazing can influence the habitat of ducks in a number of ways. On upland sites, livestock grazing can increase the incidence of nest trampling and reduce the amount of cover (needed for nesting and moving the chicks from the nest to water). Grazing may also modify the vegetation found around the edges of sloughs and marshes. This will change the quantity and quality of forage available to the young birds. Livestock grazing can also impact on the amount of cover that is available to the hen and her brood.

GRAZING INTENSITY

The landscapes found in the Cypress Hills are composed of individual plant species and combinations of plant species. Each of these species will react differently to grazing, whether it be by livestock or wildlife. Each species will respond differently to grazing. This response will depend upon the grazing intensity and the plant's genetic capacity to tolerate a given grazing intensity. There are five factors that influence the grazing intensity an individual plant (or plant community) is exposed to. These factors are: amount of forage that is removed from a plant, timing of grazing, relative to the grazed plant's growth cycle, length of rest a plant is given before it is re-grazed and the number of times a plant is grazed.

The amount of forage that is removed from a plant. Grazing removes photosynthetic material (leaves, stems, etc.) from the plant. As more of this material is removed, the plant's ability to carry on photosynthesis diminishes. Reducing the plant's ability to carry on photosynthesis will reduce the vigour of that plant.

The timing of grazing, relative to the grazed plant's growth cycle. Grasses have periods during their growth cycle when they are the most sensitive to grazing. Grazing grasses during these sensitive periods will reduce the vigour of these plants.

The length of rest a plant is given before it is re-grazed. Following grazing, plants require a certain amount of time to restore their energy reserves, through photosynthesis. Preventing a plant from restoring its energy reserves will reduce the vigour of that plant.

The number of times a plant is grazed. As the frequency of grazing increases, the amount of photosynthetic material lost will increase, the chance that it will be grazed during a vulnerable period will increase and the plant will be given insufficient time to restore its energy. All of these conditions will result in loss of vigour and death.

The impact grazing has on the landscape and plant communities can be controlled by manipulating stocking rates (the size of the grazer, number of grazers and the length of grazing period) and animal distribution.

Stocking Rates

An important goal in range management is balancing forage demand with forage supplies, i.e., setting stocking rates. Stocking rate is the total animal demand for forage relative to the total forage supply over a specific period of time. Total forage demand is influenced by: the size of the grazer, number of grazers and the length of the grazing period. Total forage supply is influenced by the area of the grazing site and the productivity of the plant communities found on the landscape. The factors that influence stocking rates are: size of the grazer, number of the grazers, length of the grazing period (day, week, month, year, etc.), area of the grazing site (acres or hectares) and productivity of the plant community.

The size of the grazer. Large grazers will consume more forage than small grazers. Increasing the size of the grazer (and maintaining the number of grazers and keeping the length of grazing period constant), will increase forage demand. Increasing forage demand will increase the stocking rate.

The number of the grazers. A large herd will consume more forage than a small herd. Keeping the size of the grazer and length of grazing period constant, increasing the number of grazers will increase forage demand. Increasing forage demand will increase the stocking rate.

The length of the grazing period (day, week, month, year, etc.). As the length of the grazing period increases, the amount of forage consumed by the animal or herd of animals will also increase. Keeping the size of the grazer and the number of grazers constant, increasing the length of the grazing period will increase forage demand. Increasing forage demand will increase the stocking rate.

The area of the grazing site (acres or hectares). Increasing the size of the field will cause the forage supply to increase. An increase in the total available forage will cause the stocking rates to fall.

The productivity of the plant community. Plant communities that produce large

amounts of forage will sustain higher stocking rates than plant communities that produce lower amounts of forage.

Distribution

The even distribution of livestock and wildlife on a landscape is an important part of range management. Managing the distribution of wildlife and livestock controls; the number (and type) of animals grazing a specific site, where these animals graze, the amount of forage consumed at the grazing site, timing of grazing and the length of rest grazed areas receive.

The distribution of grazers (wildlife or livestock) over a landscape is uneven. This uneven distribution is due to: uneven topography, location of water, structure of the plant communities, location of plant communities and the animal's foraging behaviour. Due to their anatomical, physiological and behavioural differences; livestock; avoid steep slopes, stay close to water and limit their movement on a landscape. As consequence livestock may over utilise portions of the landscape. The uneven distribution of livestock can be remedied by using range management tools such as: herding, salting, fence building, developing new watering sites, prescribed burning, mowing or grazing.

SUMMARY

Range management is the art and science of manipulating scarce resources to generate the optimal combination of goods and services (wildlife, wildlife habitat, recreation, beef production, etc.), that society demands while maintaining the health of the range. Landscapes and plant communities of the Cypress Hills provide the resources for many of these activities. Livestock and wildlife are two of these goods and services. Livestock and wildlife share these landscapes and plant communities. Livestock grazing (as influenced by stocking rates and distribution) plays an important role in influencing the structure and function of these landscapes and plant communities. By employing sustainable stocking rates and even distribution patterns, livestock managers can use livestock to maintain the diverse landscapes and plant communities (along with the associated wildlife habitat, recreational opportunity, etc.) found in the Cypress Hills.