



LIVESTOCK GRAZING IN THE CASTLE'S FRONT RANGE CANYONS

By Reg Ernst

The following article is from a report sent by botanist Reg Ernst to government Land Management staff in November 2009. It discusses some of the implications of grazing on public land in the Castle region of southwest Alberta. He is still waiting for a reply from the government.

The Front Range canyons of the Castle are located in the sub-alpine and alpine sub-regions of the Rocky Mountain Natural Region. Because alpine and sub-alpine systems did not evolve under intensive, season-long grazing, they are particularly vulnerable to the damage caused by a disturbance against which they have little or no defence. Over many decades of cattle grazing, the plant communities along all of the grazed stream corridors and valley bottoms in the Castle area have been altered to a mix of non-native grasses, weeds and other invasive plants, and native forbs and shrubs. Some native grasses are still present but they are now just a minor component in the

community. Relatively pristine native plant communities are still present in areas away from the stream corridors (i.e. slopes) where cattle are reluctant to venture.

My view of the problems associated with cattle grazing in the upper sub-alpine and alpine natural regions follows.

A loss of native grass species

Non-native plant species are detrimental to native plant communities because they displace desirable native species and result in a loss of wildlife habitat. For example, rough fescue (*Festuca campestris*), the dominant native grass species on climax plant communities in the Front Range canyons, provides

nutritious winter forage for a variety of wildlife including elk and bighorn sheep. Conversely, tame forage species make very poor winter forage because they have very low nutritional value after they die back in mid to late summer.

Watershed damage

Weeds have poor soil-binding properties compared to native species. These non-native intruders increase soil erosion which degrades the watershed and damages fish habitat. Most of southern Alberta depends on healthy mountain watersheds to provide water for both the urban and agricultural communities.

Weeds

Noxious and other weeds are particularly damaging to native plant communities because they have little nutritional value, they are invasive and readily displace valuable native species, and because their inferior soil-binding properties allow erosion to occur.

Unfortunately, most cattle grazing in the Front Range canyons takes place along the narrow linear stream corridors. Riparian areas receive a disproportionate amount of use by cattle, degrading the streamside environment and the local fishery. The bare soil generated by trampling, hoof puncturing, and from the proliferation of trails along the stream corridor and into the adjoining forested areas, allows weeds to invade and increases soil erosion.

Cattle spread weeds both by “producing” bare soil and by physically transporting weed seeds to uninfected areas. Inputs of nutrient rich manure in high elevation systems is another invasive factor that is detrimental to native plant communities and aquatic systems.

Rare plants

A large proportion of the rare plants in the Castle area, such as yellow monkey flower (*Mimulus guttatus*), are found in

the upper sub-alpine and alpine natural regions. Grazing threatens these species because it increases the density and distribution of competitive non-native plants and because of the physical damage caused by hoof trampling, particularly along riparian habitats where cattle have a tendency to congregate.

Cost/benefits of grazing in the upper sub-alpine and alpine

As outlined above, there are many external costs associated with grazing in vulnerable natural systems such as the Front Range canyons. A further cost is the degraded experience people have when they recreate in these areas. Slip sliding around in wet, smelly cow manure certainly may spoil a hiking experience. Losing biological diversity is another cost that I do not think government factors into whatever cost/benefit calculations they make about the value of cattle grazing in such regions. I think a comprehensive cost/benefit analysis would show that the costs of cattle grazing in sensitive ecosystems far outweigh the benefits.

Looking ahead

Notwithstanding my concerns, I don't think prohibiting livestock grazing in

heavily impacted areas that have already undergone plant community changes would result in positive change. Sadly, it is likely those areas have crossed a threshold and have little likelihood of ever returning to the original climax plant community. All areas, however, should be managed to avoid causing further damage and to improve heavily impacted areas wherever possible.

Some grazing in the Castle area seems to be well managed while other areas are not; it probably has much to do with the attitude of the leaseholders. If leaseholders recognize that grazing on public lands is a privilege and not a right, I think we can work with them to try and mitigate some of the problems. Several years ago, we were able to resolve a problem with grazing in South Drywood canyon through cooperation with the leaseholder. Ideally, we can use that experience as a template to develop a suite of “best” (“least damaging” may be a better phrase) practices to affect positive changes in Yarrow and Spionkop canyons.

Recommendations to Provincial Land Managers

1. When calculating stocking rates, include only the area actually utilized



Volunteers pulling invasive weeds in the Front Range canyons of the Castle. PHOTO: E. KNOX

by the cattle. Including areas that cattle won't use (i.e. slopes and other areas away from the riparian corridor) inflates the number of Animal Unit Months (AUMs) available and leads to overgrazing in the areas they actually use.

2. Implement a long-term weed control plan. If weed control on any given area is treated as a one-time event, it may exacerbate the problem. Research has shown that one-time treatments of infestations can increase weed density because the disturbance caused by hand pulling and applying herbicide favoured the weedy species. If, instead, control is applied annually over several seasons it can eliminate the target weed species.

3. Review the grazing situation along the riparian corridor in Yarrow Canyon. The existing bare soil produced from cattle trampling along the stream corridor

and from the extensive trail system into the forested areas will inevitably lead to an increase in weeds and non-native plants. A review of season of use, class of livestock, or stocking rates may reveal how management of the area can be improved.

4. Fence off the upper portions of Spionkop Canyon and Yarrow Canyon to exclude cattle permanently from entering the upper sub-alpine and alpine areas in these canyons. Review other areas in the Castle to assess whether grazing is occurring in sensitive high elevation systems.

Summary

Over the past several decades, disturbance caused by human activities including livestock grazing has allowed non-native and weedy species to become established in the Front Range canyons.

Currently, these species are restricted mainly to the areas below the upper limit of cattle use. Appropriate stocking rates may help to limit further damage to this system but cattle must be excluded from the upper sub-alpine in order to protect those sensitive systems from undesirable changes. The current management goals for livestock grazing in the Castle should be to protect watersheds, conserve wildlife habitat, improve heavily impacted areas wherever possible, and protect high elevation sensitive systems from grazing. 🍄

Reg Ernst is a botanist who lives in Lethbridge. He plays an active role in acquainting AWA members with the wonders of the Castle area. He is reputed to be the person you will recognize as the one carrying Moss's Flora of Alberta under his arm.