

have low water holding capacity so support only species that can complete their growth cycle before soil moisture is depleted and therefore have a low forage production potential. Adjacent sites that have deep, medium-textured wind-blown or glacial lake deposits will support productive stands of bluebunch wheatgrass because they have a higher water-holding capacity.

Certain forage management practices can be related to the different geologic materials and the soils developed on them. Grazing bluebunch wheatgrass during its critical boot to flowering period has been responsible for its depletion. This has allowed an increase of needle-and-thread grass, which has a lower forage productivity. Recovery of bluebunch wheatgrass may take decades, even when grazing pressure is reduced. Seeding these ranges to crested wheatgrass would be an alternative to reducing livestock usage. However, improved forage production could be expected only on the deeper medium-textured deposits with higher water-holding capacity.

Rough fescue on the upper grasslands deteriorates rapidly when subjected to grazing at critical periods. However, it also recovers in a few years when grazing pressure is reduced. Grazing management is a feasible alternative to seeding for improving forage production on these grasslands.

Increases in forage production from applications of nitrogen fertilizer are greatest on the middle and upper grasslands where moisture effectiveness is greatest. Increased production is also greatest on good condition stands well stocked with dominant native bluebunch wheatgrass and rough fescue or with introduced crested wheatgrass. Stands dominated by low-growing grasses, either because of depletion by grazing or because of coarse-textured or shallow soil material, show small forage increases to fertilizer application.

A wide variety of geologic materials were deposited in the Kamloops-Merritt area during the glacial period. Some of the preceding examples have illustrated how these materials, and the soils developed on them, are related to the grassland vegetation of the area and to certain forage management practices.

Suggested Reading

British Columbia Ministry of Environment. 1978. The Soil Landscapes of British Columbia. K.W.G. Valentine, P.N. Sprout, T.E. Baker and L.M. Lavkulich (eds.), B.C. Ministry of Environment, Resource Analysis Branch, Victoria, B.C. 197 pp.

British Columbia Ministry of Forests. 1982. Grassland Ecology and Classification. In Symposium proceedings June 1982, Kamloops, B.C., A.C. Nicholson, A. McLean and T.E. Baker (eds.), B.C. Ministry of Forests, Information Services Branch, Victoria, B.C. 353 pp.

Recognizing Range Readiness

Alfred H. Bawtree

During the early years of the range industry, in the intermountain region of the Pacific Northwest, horses and cattle grazed the grasslands year-long. After some severe winters in the late eighteen hundreds, it was accepted that hay was required for feeding of cattle during some winters. In the southern interior of British Columbia, turnout of cattle occurred when the snow melted or hay supplies ran out. Horses continued to graze year-round and cattle continued to graze the grasslands season-long until about the middle of this century. British Columbia is fortunate to have both grassland and forest range in most of the ranching country with very different growing periods. Bunch grasses may start growth early in March on the lower grasslands, whereas at higher elevations in the forest, the pinegrass doesn't start growth until May or June.

The science of range management has been developing through the twentieth century. Initially the objective was to develop management guidelines which would stop range deterioration and restore the range to its former productivity. **Two highly significant guidelines were developed: range utilization and range readiness.**

Rules-of-thumb were provided for the application of those two guidelines. **The rule-of-thumb for range utilization was take half and leave half.** The rule-of-thumb for range readiness was to allow six to eight inches of new growth on bunch grasses before grazing. By applying these rules, a gradual improvement in range condition took place. By 1960, most of the range deterioration in British Columbia had been stopped and since that time, considerable improvement has taken place. **Much of that improvement can be attributed to the rules-of-thumb regarding range readiness and utilization.**

Range readiness is a term frequently used by range managers. The SRM Range Term Glossary Committee (1974) has defined range readiness as the defined stage of plant growth at which grazing may begin under a specific management plan without permanent damage to vegetation or soil. This definition says range readiness takes into account the stage of plant growth, the management plan to be used, and the possibility of permanent damage to vegetation and soil. It does not consider economics, nutritive value of the forage or animal requirements.

Should we continue to manage for range improvement? How much more range improvement can we

Editor's Note: A similar article, "Range Readiness," by Alfred H. Bawtree appeared in the March 1988 issue of *Beef* in B.C. Vol 2, No 5.

obtain? **Does the old rule-of-thumb for range readiness still apply?**

Obviously each piece of range needs to be examined for existing and potential productivity to determine if further improvement is practical or even possible. The delay of grazing until there was several inches of new growth was designed to prevent grazing throughout the growing season. Today, most of our ranges are not grazed season-long. Livestock are normally moved through a series of pastures in a rotation system so forage is able to grow through at least a portion of the season without any grazing.

Research has shown that grazing bunch grasses in the boot stage is more damaging than at any other stage of growth (McLean and Wikeem 1985). By delaying turnout on bunch grasses until there is six to eight inches of new growth, livestock are grazing at the most critical stage of growth. Studies at the Kamloops Research Station have shown that pinegrass responds similarly to bunch grasses (Stout and Quinton 1986). Grazing pinegrass early in the season during the rapid growth stage is less damaging than grazing it in July when growth is slowing down (Krueger and Bedunah 1988). **By following the old rule-of-thumb for range readiness, we may actually be damaging our range under today's grazing systems.**

Gerard Guichon has ranched in the Nicola Valley all his life. Guichon turns his cows out in March as soon as the snow is gone claiming the cows are a lot happier and calve easier on the range due to the green grass and exercise. He also claims there are fewer disease problems on the range.

These advantages more than offset the occasional calf lost by early spring storms. Guichon also stresses the importance of having plenty of grass from the previous year. One area of the ranch is reserved entirely from spring grazing and is fenced into several pastures which are grazed in rotation during the approximate three months spring grazing season. By removing the cattle from the spring range at the end of May, there is usually time for regrowth on even the last grazed pasture before summer dormancy occurs.

The Guichon ranch spring range has shown steady improvement for several decades under this management system. Dry cows may graze until the end of December in



Cows and calves entering a pasture in late March.



The end of the annual grazing period on crested wheatgrass in late April.

favorable years, reducing the feeding season to two or three months prior to calving. This system provides adequate nutrition all year with a distinct economic advantage over longer feeding systems.

Dr. Dee Quinton at the Agriculture Canada Range Research Station in Kamloops says: **"Range is not damaged by grazing it early but by the manner in which it is grazed."** Repeated grazing of grass plants during the growing season or pullout of plants can seriously damage the grass. The secret is to keep the grazing season short during the growing season. At least two pastures are required on grassland ranges for spring use before moving stock to the forest range in May or early June when



The author comparing standing crop on grazed and ungrazed plots after early spring grazing.

growth on pinegrass commences.

Both research and experience show we can maintain or improve our ranges with early spring grazing. Livestock should be moved into the forest as soon as rapid growth of pinegrass starts, soon after the snow is gone. When pinegrass is six to eight inches high, its growth slows down and the nutritive value is rapidly declining. **This is when maximum damage by grazing or clipping can occur.** Livestock should be on the highest elevation range available, or north slopes, by early July.

The definition of range readiness is adequate if the specific management plan is given proper recognition. With a good management plan the old rule-of-thumb should be forgotten. Economics, nutrition and range research all suggest we should graze the range early and for a short period to ensure regrowth is obtained.

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