

Enhancing Upland Rangelands to Mitigate Impact of Ungulate Grazing on Critical Watersheds

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SUMMARY

This study is being initiated at the request of the Wallowa County Cattleman's Association to address an on-going conflict over use of privately owned seasonal rangeland by wild ungulates. The Oregon Department of Fish and Wildlife will be the primary cooperating agency in the study. The study will also provide information of relevance to the Wallowa County Salmon Recovery Plan, and assist in defining methodology to enhance upland and stream habitat on grazed seasonal rangeland.

INTRODUCTION

The study location is Wallowa County of northeastern Oregon. Specific project areas are privately owned seasonal rangeland in the Big Sheep Creek drainage of the Imnaha River watershed, Chesnimnus Creek drainage of the Joseph Creek watershed, and Eden Bench of the Grande Ronde River watershed.

Seasonal rangeland uplands of the three drainages are grazed by wild and domestic ungulates. Generally, uplands are grazed by elk in late-winter/early spring prior to late-spring and summer use by cattle. Cattle and elk often graze the same upland areas during the fall. The problem as perceived by the landowners is late winter/early spring grazing by elk occurs at the time that soils and vegetation of upland plant communities are most susceptible to the destabilizing effects of ungulate grazing. Early season use of upland bunchgrass communities is also perceived as significantly decreasing summer forage production needed for optimal livestock production, often forcing the landowner to make less than optimal grazing management decisions.

Less than optimal grazing management decisions have the potential to affect stream habitat critical to other animal users, especially fish and aquatic animals. Suitable stream condition depends on conditions throughout the watershed, not just in the stream corridor itself. Impacts of over-grazing by ungulates may be manifested through declining ecological condition of upland vegetation and soils. This often leads to an increase in upland soil erosion, a decrease in upland soil water-holding capabilities, and an increase in water run-off. These processes associated with uplands influence the general health of the stream corridor and the maintenance of suitable spawning and rearing habitat for salmonid and other aquatic species. Improved grazing management strategies for ungulates on uplands, as well as directly in the stream corridors, presents opportunities to address ungulate grazing conflicts and reduce the potential for ungulate grazing impacts on uplands to be transferred to the stream corridor itself.

Study objectives are: 1) to enhance forage and improve animal distribution to mitigate the on-going conflict over use of privately owned seasonal rangeland by Rocky Mountain Elk

and 2) to implement ungulate grazing management strategies (timing and distribution of ungulate grazing, fertilizer applications, fencing, off-stream water development, etc.) for upland bunchgrass rangeland that will enhance fish spawning and rearing habitat in streams draining uplands in the watershed.

MATERIALS AND METHODS

Indicators of ecological stability monitored will include: 1) current vegetation composition and structure; 2) current vegetation yields under grazing by elk only, by cattle only, and by elk and cattle; 3) soil compaction and erosion; and 4) stream water quality.

In March, 1995, vegetation macro-plots (0.1 acre) will be established on the three high-intensity ungulate use areas. Between spring, 1995, and November, 1997, the following information will be obtained from the vegetation-soil macroplots between the onset of elk use in the spring, and the end of cattle use in the fall:

1. monthly recording of macroplot soil and vegetation attributes including evidence of animal trampling and soil compaction, seasonal development of vegetation, and soil stability;
2. yields of vegetation under the different ungulate grazing treatments will be determined from small exclosures established on each macroplot;
3. stream reaches potentially receiving run-off from the affected upland areas will be sampled at bi-weekly intervals between onset of elk grazing on the uplands and cessation of cattle grazing in the fall to determine water temperature, turbidity, oxygen, and pH as indicators of soil and vegetation instability in associated upland areas impacting stream condition.

DISCUSSION

The project will determine if the timing and intensity of current multi-ungulate grazing is adversely affecting stability of uplands in the watershed of streams containing critical salmon spawning and rearing habitat. This would involve ecological monitoring of ungulate grazing impacts on upland areas receiving high-intensity multi-ungulate grazing, and monitoring of upland grazing impacts on stream condition.

Recommendations for long-term mitigation needed to maintain ecological stability of grazed bunchgrass uplands will be made. These will include an assessment of the ecological and economic feasibility of using periodic application of short-term treatments, a reduction in wild ungulate grazing by reducing ungulate numbers and/or changing distribution and behavior, and adopting management strategies for one or both ungulate species that maintain upland ecosystem stability.

Monitoring will continue during and after treatment application to obtain information for analyzing treatment success. Success will be determined by measuring the response of soils and vegetation in the macroplots to the treatment(s).