

## BACKGROUND

In the literature, research shows that light to moderate, short-duration grazing may be beneficial for rangeland health. However it has also been shown that *heavy, continuous grazing* of native rangelands may contribute to the decline grassland health by:

- Reducing native bunchgrasses and forbs
- Exposing bare mineral soil, allowing weedy species to invade
- Decreasing the amount of soil organic carbon and soil nutrients

The research compares three grazing strategies and an untreated control:

### Management-Intensive Grazing (MiG) (short duration, mob grazing)

- Requires high levels of labour and capital inputs
- Cattle are moved regularly into fresh rested areas with the goal of maximizing forage quality and quantity

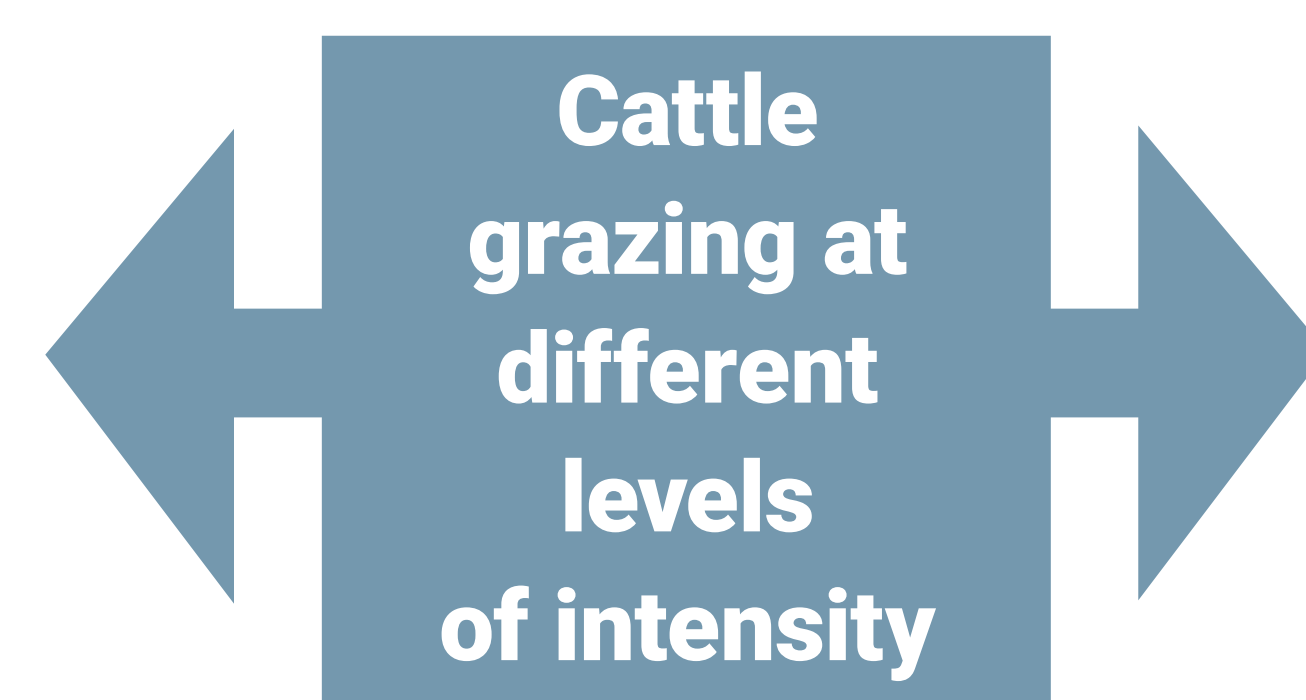
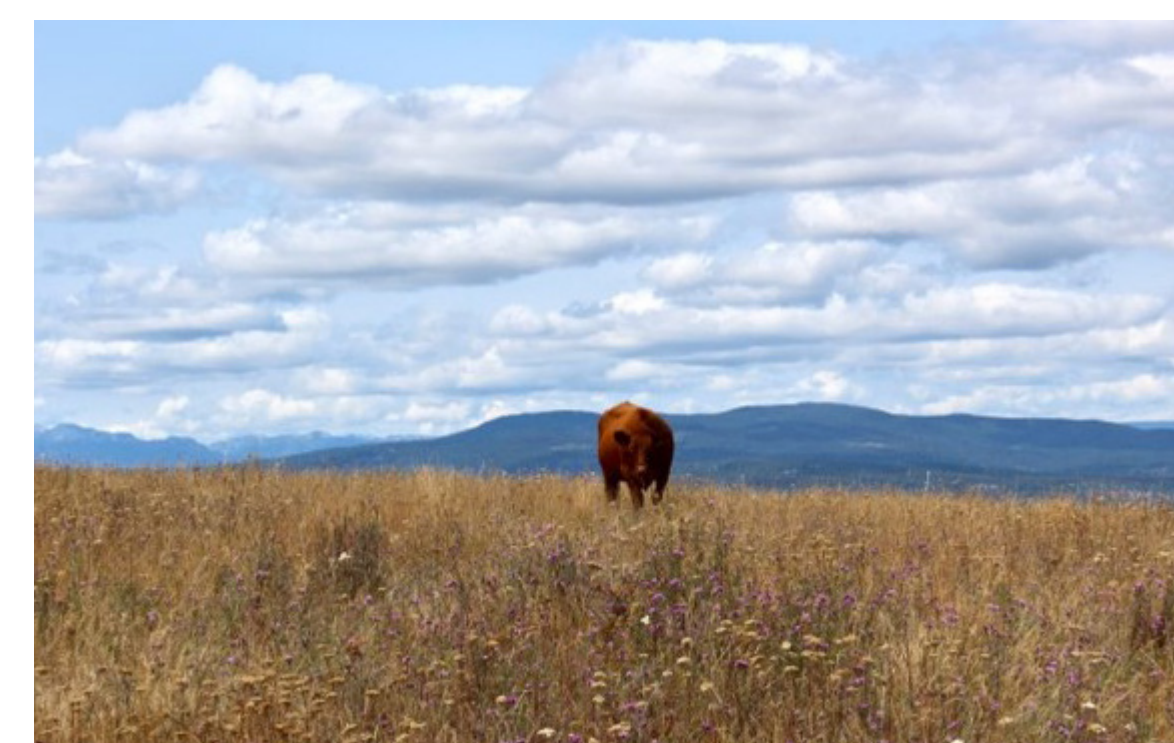
### Extensive Grazing (continuous, traditional grazing)

- Requires relatively low labour and capital inputs
- Characterized by a large area per animal

### Targeted Grazing (prescribed, short-duration grazing)

- Considered to be a form of MiG
- Focus shifts from cattle production to vegetation management

### An Untreated Control



Spotted knapweed (*Centaurea stoebe* ssp. *micranthos*) is a noxious invasive weed found throughout BC's Southern Interior. A single plant can produce up to 1,000 seeds annually.



An exclusion cage which prevents cattle or wildlife from grazing within it. Exclusion cages provide valuable information on grazing utilization rates.

## STUDY LOCATION

This research is located in Drum Lake Pasture, approximately 3 km north of the Laurie Guichon Memorial Grasslands Interpretative Site (LGMGIS). The site is infested with spotted knapweed, which can reduce forage yields and decrease biodiversity.

## GRAZING TRIAL

Six cattle grazing treatment enclosures (50 m x 50 m) and two ungrazed control enclosures were established and will be monitored over two years. The targeted grazing trial occurs in late July to correspond with spotted knapweed's bud to early flowering stage; the idea is to target the plant before it produces seed.

## ANTICIPATED RESULTS

With more intensive management practices (targeted and MiG), we expect to see healthier rangelands.

- Increased levels of soil organic carbon
- Increased forage quality and quantity
- Decreased weed abundance
- Increased biodiversity



Extensive Grazing	Targeted Grazing
Mid-September 1 cow-calf pair 10 days	Late July 10 cow-calf pairs 1 day
Control	Management-Intensive Grazing (MiG)
Ungrazed enclosure	Mid-September 10 cow-calf pairs 1 day

Experimental design of the grazing trials.

## RESEARCH GOALS

To test **MiG**, **Extensive** grazing and **Targeted** grazing for their ability to:

- Reduce the abundance of **spotted knapweed**
- Sequester **soil organic carbon**
- Increase **forage** quality and quantity
- Increase plant community **diversity**

A secondary goal is to encourage **rangeland restoration** by testing the addition of a **native seed mixture** post-grazing for its ability to:

- Increase native plant **biodiversity**
- Decrease abundance of **invasive plants**
- Increase **forage production**



## PLANT RESPONSE TO GRAZING

By Sarah Bayliff, TRU Undergraduate Research Assistant

## BACKGROUND

Plants are resilient organisms that are capable of adapting to disturbances, such as grazing. Grazing can change the structure and composition of plant communities, as well as individual plant characteristics. This four-month long project compared plant community structure and several characteristics between plants within grazed grasslands, exclusion cages, and a historically ungrazed range reference area (RRA).

## RESULTS

Grazed spotted knapweed was significantly shorter in grazed areas, suggesting it was successfully grazed by the cattle and may prove to be a useful tool in its control.

Grazed areas showed significantly higher biodiversity than the ungrazed RRAs, suggesting that proper grazing techniques can increase plant biodiversity

Grasses in the ungrazed RRA had a significantly higher number of stems than grasses in other treatments, suggesting grasses respond to grazing by lowering the number of stems produced.



A quadrat frame used to measure % plant cover.

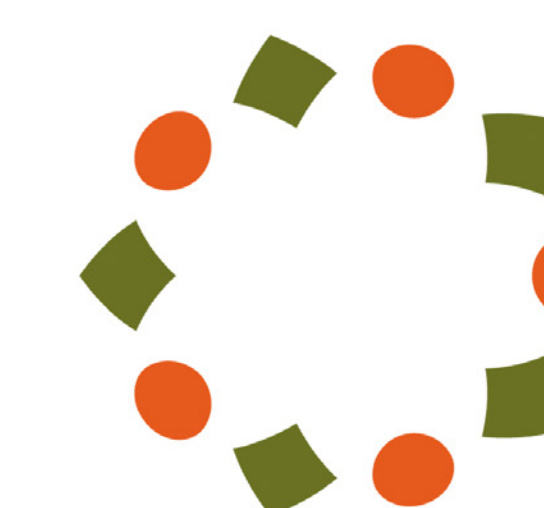
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Nicola Watershed  
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