

## September 29 @ 7 - Ecologically Based Weed management in Rangelands

**Rachel Whitehouse**

*MSc. Environmental Science Candidate, Thompson Rivers University*

*Centurea maculosa* (Spotted knapweed) spreads rapidly and displaces the native plants that are crucial to British Columbia grasslands. Traditional weed management focuses on killing the weeds rather than addressing the ecological process that allowed the invasive to establish. Our objective was to restore desirable perennial grasses to a knapweed invaded rangeland by investigating soil chemical properties after adding a wood ash amendment, herbicide effects and three different seed mixes. The research took place at the Laurie Guichon Memorial Grasslands Interpretive Site outside of Merritt, BC. The majority of the site is covered in 50% or greater of spotted knapweed. A split-plot experimental design was used to test different combinations of herbicide, wood ash concentration (0, 1 and 10 Mg ha<sup>-1</sup>) and seed treatments (Bluebunch wheatgrass/Sandberg's bluegrass, crested wheatgrass and intermediate wheatgrass). An ANOVA test with Tukey post hoc determined herbicide significantly lowered knapweed cover ( $p < 0.001$ ) while ash had no significant effect on knapweed cover. There were no significant results within seed treatments in the first year of the study; the second year had significant establishment in the native mix and intermediate wheatgrass. The ash amendment decreased the supply of NO<sub>3</sub><sup>-</sup> by at least half however this did not translate to a decrease in knapweed abundance as hypothesized. Where herbicide decreased knapweed cover to almost 0, it facilitated a 55 (±26)% percent increase of *Bromus tectorum* (cheatgrass). These results play an important role to help land managers make decisions on invaded western rangelands.