MONITORING THE EFFICACY OF FUNCTIONAL RESTORATION OF LINEAR FEATURES FOR BOREAL WOODLAND CARIBOU

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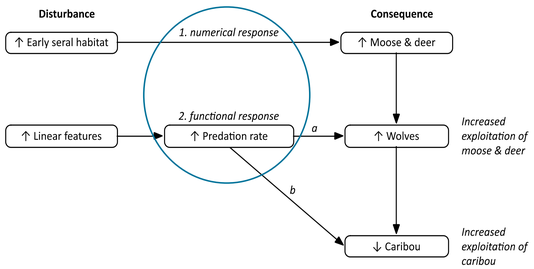
CONTEXT

Caribou population declines have been linked to the density of disturbances and predator-prey interactions in caribou ranges. Linear features negatively impact caribou through two primary processes related to predators:

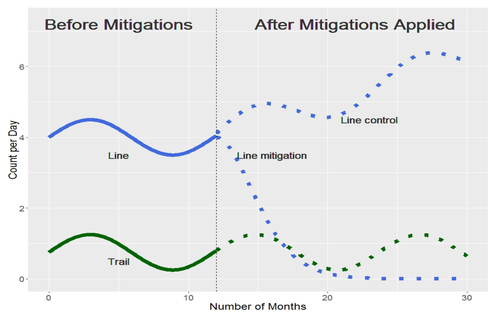
(1) Numerical response via apparent competition

(2) Functional response via facilitating predator movement and reducing spatial separation



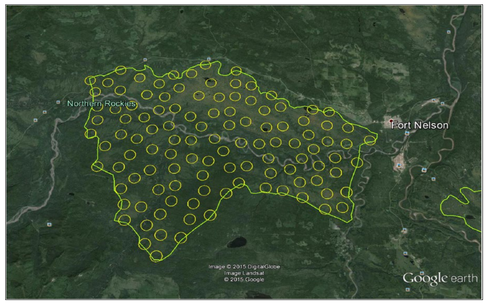
PURPOSE

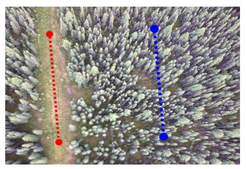
- Test whether linear restoration treatments can be used to functionally restore caribou range.
- Develop a monitoring design to measure mitigation success via animal use.

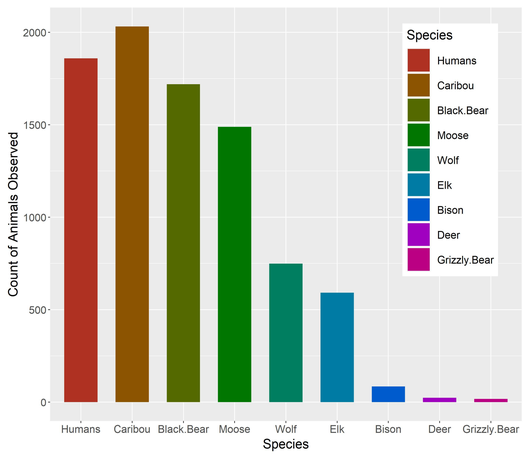


CAMERA MONITORING

- Simple random sample; camera monitoring sites separated by a minimum of 1 km.
- 100 camera monitoring sites deployed on nearest game trails and linear features to monitor animal use before, during, and after treatments were deployed.
- Paired vegetation plot and travel resistance data (70 m timed walk by a surveyor) collected on and adjacent to each camera monitoring site.
- Restoration treatments were deployed on linear features across a portion of the caribou range, including mounding, tree felling, and planting.
- 2.6 years of sampling; 83,131 camera monitoring days; 6,789 large mammals.

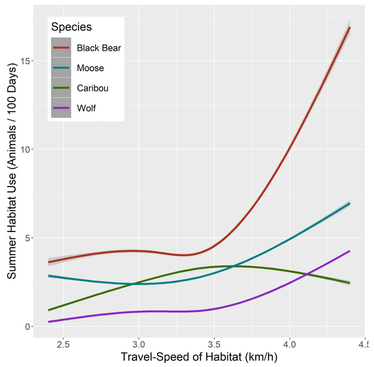


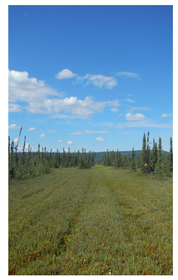


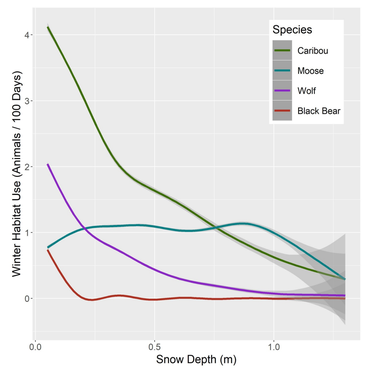


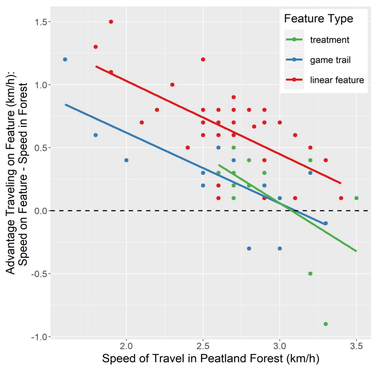
RESULTS

- Rates of animal use on linear features and game trails varied by speed of travel (timed walk data) and snow depth.
- Recreational snowmobiling created packed, shallower snow and increased the intensity of animal and human use.
- Restoration treatments reduced speed of travel and the intensity of animal and human use in peatland habitats.









IMPLICATIONS / NEXT STEPS

- Restoration practices that target travel mechanisms can be used to mitigate the effects of linear features on predator and prey species.
- Travel resistance metrics (e.g., timed walk) can be used to prioritize restoration where it will be most effective.
- Not all linear features have the same effect on the intensity of use by predators and prey.
- Restoration practices that target travel mechanisms (e.g., tree felling, access management) may be less expensive and intrusive to deploy than mechanical restoration (e.g., soil mounding).

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