

## EXECUTIVE SUMMARY

Woodland caribou (*Rangifer tarandus caribou*) boreal and southern mountain populations are designated as Threatened under Canada's Species at Risk Act [1] and Alberta's Wildlife Act [2]. Many tools will be used towards achieving self-sustaining caribou populations in Alberta including habitat restoration on seismic lines [3].

Seismic lines represent a significant contribution to disturbance in caribou habitat and because they are so prevalent, successfully re-establishing tree cover could increase undisturbed habitat more than other management tools [3]. Legacy seismic lines remain on the landscape for years, many requiring some type of intervention to become functional caribou habitat [3]. The challenge is that linear restoration is expensive. Restoration costs can range between \$8,000 and \$17,000 per kilometre depending on required treatments and the landscape characteristics of the ranges (e.g., remote locations, wet areas, etc.) [4].

This project is directly related to key public policy issues of biodiversity and habitat reclamation/restoration. Specifically, this project seeks to address key knowledge gaps in the effectiveness of the linear restoration on fens in achieving restoration goals of caribou habitat restoration and reduced predation risk. This research will benefit both industry and government, as they seek innovative and cost-effective solutions for restoring caribou habitat.

This project's results will help address knowledge gaps and aid in caribou recovery in Alberta and elsewhere in the boreal forest. If techniques for fen restoration are improved or opportunities for efficiencies are incorporated, the ability to scale up linear restoration projects is enhanced.

Monitoring has been ongoing in Algar since 2011. Monitoring data along with supporting field observations information suggest that treatments may not be successfully placing linear disturbance within fens on a trajectory to restoration within the time frame anticipated or desired. The project for 2021 analyzed this through the capture of high-resolution data and a deep dive analysis into confirming this trend could be observed at other sites within Algar and attempt to further our understanding the cause(s) and effects of it, thereby identifying strategies to improve fen restoration outcomes.

For this analysis, we are using the criteria outlined in the Draft Provincial Restoration and Establishment Framework for Legacy Seismic Lines in Alberta (the Framework) to assess the status of fen sites within Algar. Poor fens appear to be on track to meet the targets outlined in the Framework for stocking. The results of the survey aligned with previous ground-based sampling that fens can meet the framework criteria but are challenged on many sites. Stocking levels were on average at the target minimums however only 57% percent of the surveyed segments were achieving the Framework criteria. The difference between rich fens and poor fens was only marginal suggesting alternative criteria or treatments may need to be considered for fen sites in general. The biggest challenge appears to be the difference in success rates at different line segments. Some sites have little to no growth of trees while others are quite productive. Ensuring that the trees can be out of the water, have some structure to grow on, and are not overly outcompeted for light resources appear to all have an impact on site success. Further research in these areas may help improve fen site restoration prescriptions to achieve objectives.

Alternative requirements should be considered for linear restoration at fen sites. The Establishment Survey indicates acceptable success rates on some fen segments; however, it is still unclear why some sites are more successful than others. Restoration targets on rich fen sites might consider other vegetation criteria (not just trees) as indicators of site success.

The Algar Caribou Habitat Restoration Program continues to be a model example of collaboration and innovation in habitat recovery. It has provided a valuable case study with data and learnings that will inform future linear restoration projects and help achieve caribou habitat recovery objectives in Alberta.