

QuickNotes

Science summaries from fRI Research

Managing Wellsites to Create More Habitat for Caribou

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Many, but not all types of anthropogenic disturbances in caribou ranges have been related to decline of the populations in Alberta. Wellsites are one of the few types of anthropogenic disturbances on the landscape whose impact on the functional habitat of caribou is unknown. We know that linear features (roads, pipelines and seismic lines), forest harvest blocks, and direct disturbance from human activity (and associated noise) lead to habitat disturbance and fragmentation. All of these constitute barriers to caribou movement, preventing or interfering with their access to resources.

In this study, our objectives were to assess the impacts of wellsites on caribou habitat selection, and to assess whether caribou habitat selection changed with the operational status of wells (drilling, producing, inactive).

Key Findings

- Caribou generally avoided wellsites.
- Caribou were more often closer to inactive wellsites than to wellsites with human activity (drilling or producing phase).
- Caribou avoided wellsites in the drilling phase by more than a kilometer.
- Caribou avoided inactive wellsites.

Methods

This study was completed within the Narraway and Redrock-Prairie Creek central mountain caribou population ranges located in west-central Alberta between Grande Cache and Grande Prairie. The study area includes the Grande Cache, Cutpick, Lynx, Kakwa, Palliser, Narraway, Netook, Chinook Ridge, and Wapiti oilfields. We used GPS locations from 23 caribou collected between 2007 and 2013 to assess caribou response to wellsite activity during winter (November–May).

We split wellsite activity into three phases: Firstly, the ‘drilling’ phase, which included site preparation and the period while the rig was on site. High noise levels generated by equipment and high levels of human presence are typical for this phase. Secondly, the ‘producing’ phase, where human presence is decreased to generally one site visit (or fewer) per day and the noise levels are generally lower, and, thirdly, the ‘inactive’ phase once production ceases and human presence and noise are very unlikely.

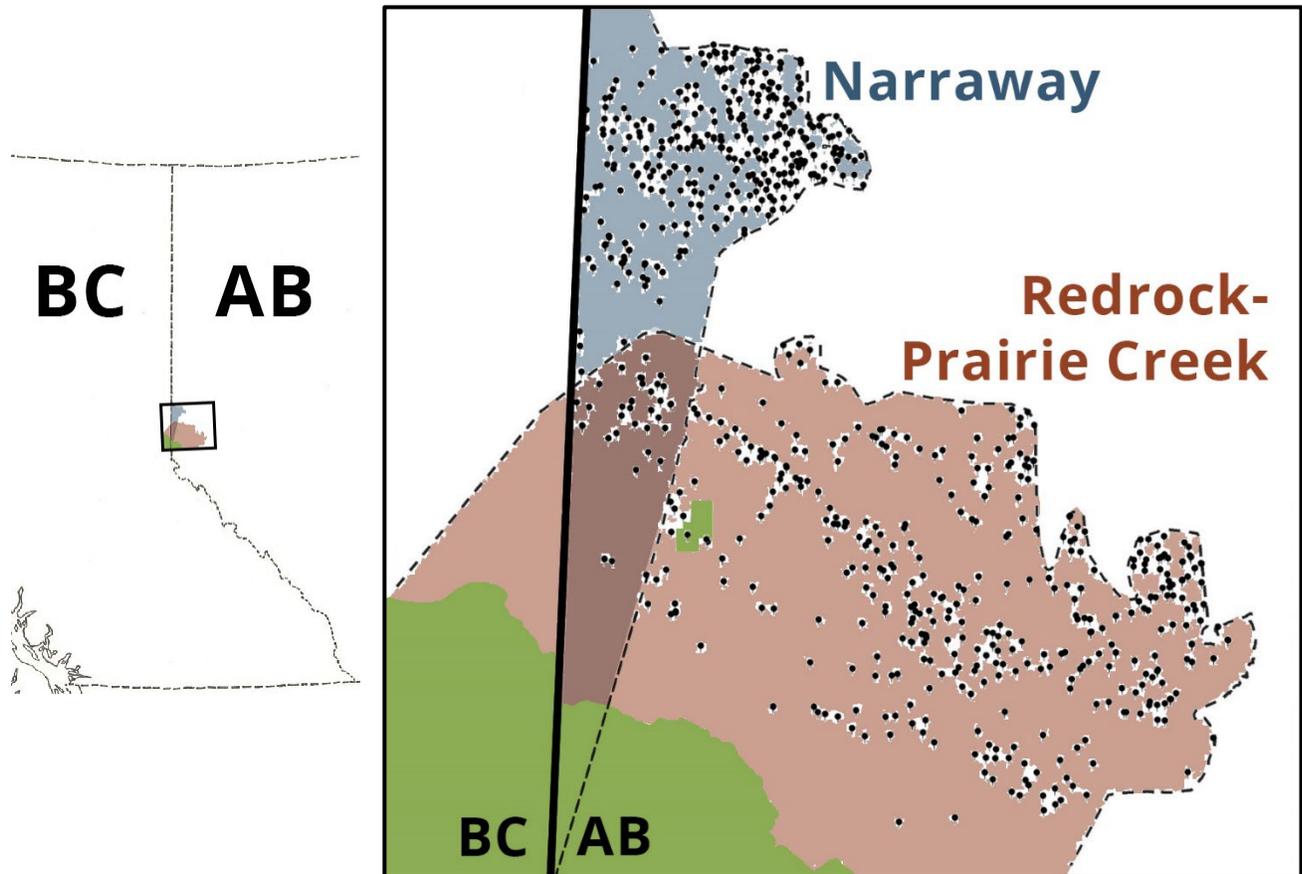
Conclusions

During the drilling phase, caribou are avoiding areas within 1km of wellsites. Avoidance lasts throughout the production phase, and persists even once wellsites are inactive, indicating that these wellsites were not reclaimed to a standard that made them functional habitat to caribou. Overall, our results indicate that wellsites reduce the habitat

available to caribou, which may have a negative effect on caribou reproduction and survival rates. Our results indicate that caribou might benefit from:

- 1) Seasonal timing restrictions – to reduce drilling activity and human presence around wellsites when caribou are using the area (in our case this applies to the winter months).
- 2) Reductions of human activity at wellsites – to reduce the direct avoidance of caribou of wellsites with higher human activity.
- 3) Reductions in the disturbance footprint – shared infrastructure and horizontal drilling will help to reduce habitat disturbance in caribou population ranges.

Effective reclamation – restore caribou habitat and reduce habitat fragmentation by ensuring reclamation of wellsites includes silviculture and reforestation and is coordinated at landscape-scales.



Our study area in west-central Alberta. Protected areas in green. Dots are wellsites.

The full paper, “Woodland caribou (*Rangifer tarandus*) avoid wellsite activity during winter” is available from Global Ecology and Conservation here: <https://doi.org/10.1016/j.gecco.2021.e01737>