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fRI Research
Informing Land & Resource Management

Streams, Seismic Lines, & Pipelines Increase Caribou Predation Risk

Tracy McKay et al.

For years, we and other research groups have compiled indirect evidence that linear features are increasing predation risk for threatened caribou herds in Alberta. This includes associating seismic lines and pipelines with food that attracts predators and alternate prey, the occupancy of linear features by predators, and the movement rates of wolves on seismic lines.

By investigating the carcasses of dead caribou and determining cause of death, we now have direct proof that predation is indeed higher around certain linear features.

Key Findings

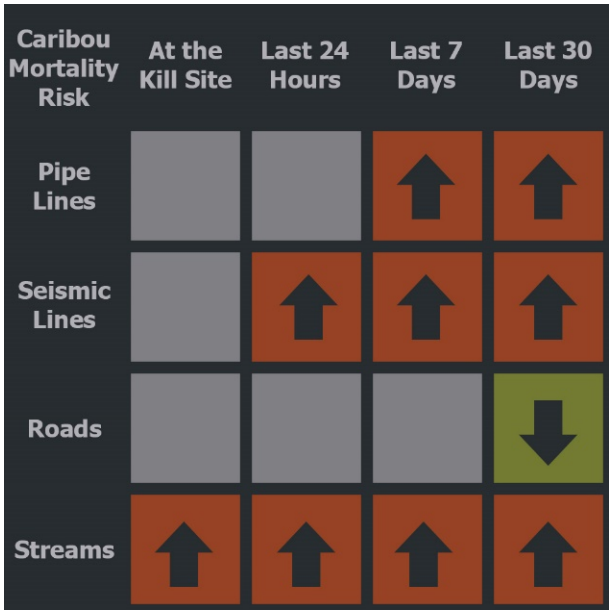
- We find direct evidence that seismic lines and pipelines increase caribou predation risk.
- Different linear features have different effects.

Methods

Thanks to Weyerhaeuser and the Government of Alberta, we have GPS collar data for two caribou herds. These collars sent a mortality alert when the caribou stopped moving, and the team raced out to reach the carcass and determine cause of death as quickly as possible, ideally within 72 hours.

The team investigated 37 mortality signals and found strong evidence of predation at 26. For 18 of those, we had sufficiently accurate mortality time and location data to include in our analysis.

By comparing where predated caribou had been relative to other members of the herd, both at the killsites and in the days and weeks prior to caribou being killed, we showed which landscape features increased the risk of predation.



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Results

The caribou that were killed spent more time near pipelines and seismic lines in the weeks prior to their deaths, compared to caribou that were not predated during the study period. We also found that risk increased around seismic lines in the 24 hours before predation.

Roads are more complicated, and increasing road density appeared to decrease predation risk. While some caribou in west-central Alberta are killed by vehicle collisions, human activity can also displace predators, reducing the risk of predation near roads. A future analysis looking at road activity levels could clarify these effects.

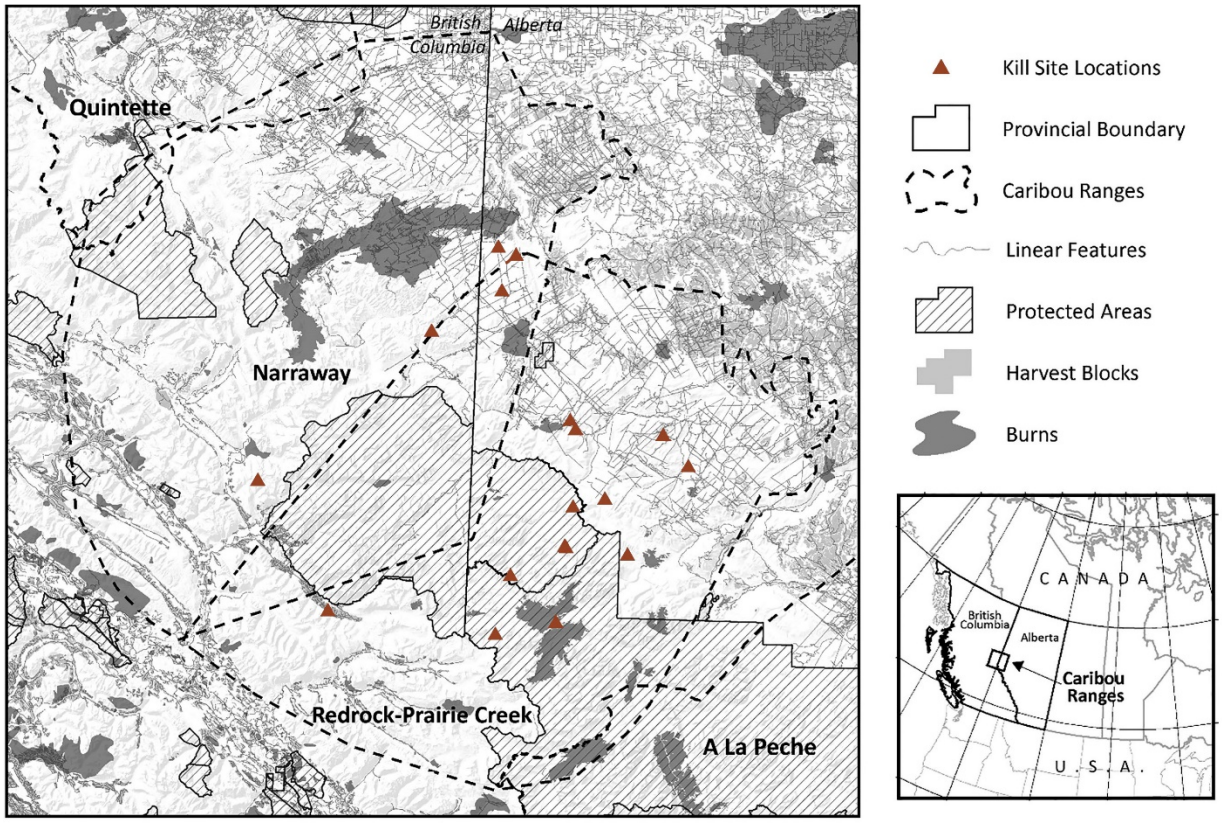
We also looked at natural features. Since predators are known to frequent streams, these areas are, unsurprisingly, higher risk for caribou. More unexpected was that alpine habitat did not seem to serve as high elevation refuge from predation. Avoiding wolves in the valleys may push caribou onto slopes used by grizzly bears.

Acknowledgements

Thanks to Weyerhaeuser and the Alberta Upstream Petroleum Research Fund and all the partners of the fRI Research Caribou Program.

Open Access Paper

McKay, TL, Pigeon, KE, Larsen, TA, Finnegan, LA. Close encounters of the fatal kind: Landscape features associated with central mountain caribou mortalities. Ecol Evol. 2021; 00: 1– 15. https://doi.org/10.1002/ece3.7190



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