QuickNotes
Science summaries from fRI Research

Predator–prey co-occurrence in harvest blocks: Implications for caribou and forestry

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Forest harvesting affects ungulate prey species and their predators, with cascading impacts on other species, including threatened woodland caribou. The increase in forage availability in harvest blocks can change the abundance and distribution of ungulates (deer, elk, and moose), leading to changes in the abundance and distribution of their predators (bears, cougars, and wolves), and contributing to unsustainable caribou mortality rates. Long-term solutions for caribou recovery will require habitat restoration and adaptive management to reduce the abundance and distribution of ungulates and predators within caribou ranges.

We investigated the attributes of harvest blocks associated with the highest occupancy and/or co-occurrence of ungulates and predators, with the goal of providing practical information for best forest management practices to limit the distribution and overlap of ungulates and shared predators in managed forests within caribou ranges.

Key Findings

- Occupancy of deer and moose in harvest blocks was higher in summer than in winter.
- Occupancy of deer, elk, moose, and bears was linked to specific forage species (e.g., willow, fireweed, rose) and silviculture practices (e.g., planting) applied in harvest blocks as well as to increased deciduous forest and forest age in the surrounding area.
- Black bear and grizzly bear occupancy was higher in harvest blocks where white-tailed deer and mule deer were present, and bear-deer co-occurrence was influenced by site-specific silviculture practices and surrounding anthropogenic disturbance.

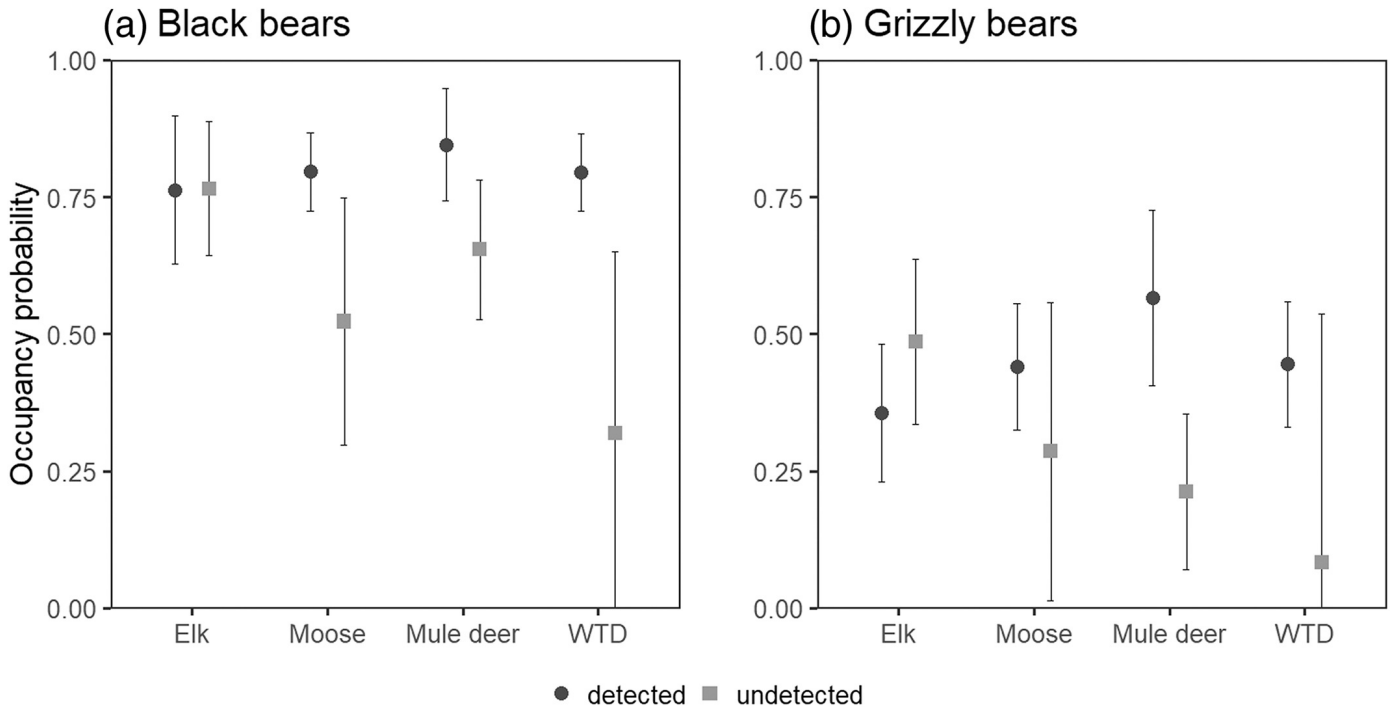
For more information on project, contact Dr. Laura Finnegan: lfinnegan@friresearch.ca

Methods

We set up cameras and collected vegetation data in harvest blocks during 2018 – 2020 in four west-central Alberta caribou ranges (Little Smoky, A La Peche, Redrock Prairie Creek, Narraway). We used single and multi-species occupancy modeling to investigate what characteristics in and around harvest blocks (forage, forest stand characteristics, surrounding habitat, surrounding anthropogenic disturbance, and silviculture practices) influenced the occupancy and co-occurrence of ungulates (elk, moose, mule deer, and white-tailed deer) and predators (black bear, cougar, grizzly bear, and wolf) in harvest blocks.

Conclusions

Our results indicate that within the context of landscape-level planning, silviculture practices used to control forage availability could reduce the use of harvest blocks by primary prey, with the potential to influence the distribution of primary prey and predators within caribou ranges. Future caribou recovery efforts may also consider the roles of deer and bears in caribou predation risk.



Mean and 90% confidence intervals for two predators occurring in a harvest block when prey were detected or undetected. WTD = white-tailed deer.

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