## Ungulate occurrence in forest harvest blocks is influenced by forage availability, surrounding habitat, and silviculture practices

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In Canada, the young forests created by harvesting have shifted the distribution and abundance of deer, elk, and moose. A consequence is unsustainable caribou predation by shared predators like bears, cougars, and wolves. Long-term caribou recovery requires management to reduce ungulate prey species within caribou ranges. Silviculture practices applied after forest harvesting directly affect the amount of forage available in harvested areas, and therefore can influence ungulate distribution.

We used cameras, silviculture data, habitat and disturbance data, and detailed vegetation data collected at harvest blocks to investigate deer, elk, and moose occurrence in harvest blocks. Our goal was to determine how harvest block characteristics and specific treatments of site preparation, planting, and stand tending influence ungulate use of harvest blocks.

### Key findings

- Elk, moose, and white-tailed deer occurrence was higher in harvest blocks with greater availability of specific forage species (e.g., deciduous saplings, Canadian reedgrass, willow, and horsetails).
- Mule deer and white-tailed deer occurrence was lower in blocks with higher planting densities of lodgepole pine.
- Mule deer occurrence was also lower in blocks that had been stand tended.
- Deer, elk, and moose occurrence was higher in summer than winter.
- Deer, elk, and moose occurrence was higher in younger blocks.
- In summer, elk were detected at 39% of sites, mule deer at 49%, moose at 84%, and white-tailed deer at 91% of sites.
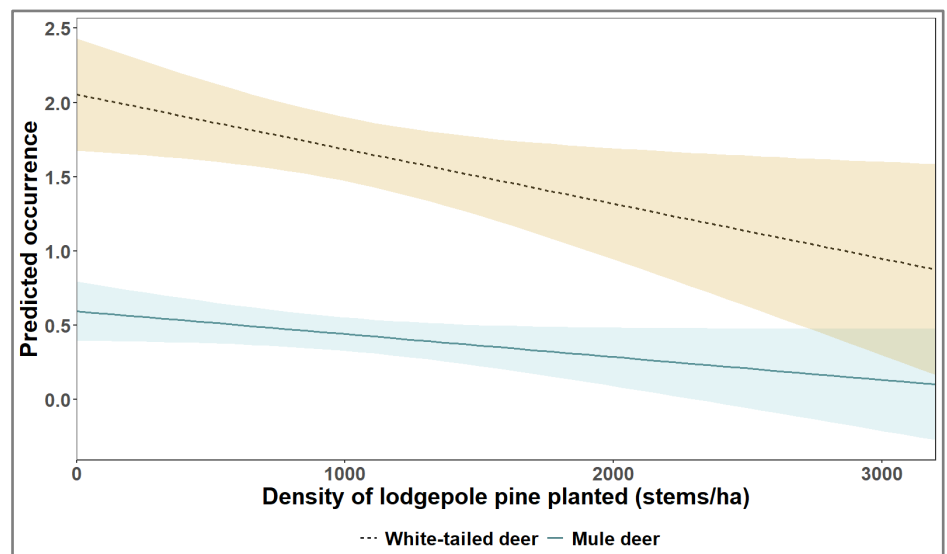
## Methods

We set up cameras and collected vegetation data in 117 harvest blocks during 2018 – 2020 in four west-central Alberta caribou ranges (Little Smoky, A La Peche, Redrock Prairie Creek, Narraway). We worked with forestry partners to assemble detailed silviculture datasets describing harvest block age, block size and shape, site preparation, planting, and stand tending methods.

We used generalized linear models to investigate which characteristics in and around harvest blocks (forage, forest stand characteristics, surrounding habitat, surrounding anthropogenic disturbance, and silviculture practices) influenced the occurrence of elk, moose, mule deer, and white-tailed deer in harvest blocks.

## Conclusions

Our results indicate that silviculture practices such as higher planting densities and controlling specific forage species could reduce the use of harvest blocks by primary prey, with the potential to reduce the risk to caribou of predation.

## Related

Read the full paper here: https://besjournals.onlinelibrary.wiley.com/doi/10.1002/2688-8319.12226

A related analysis confirmed that predator occupancy increased in harvest blocks where prey species were present: https://friresearch.ca/publications/predator-prey-co-occurrence-in-harvest-blocks-implications-for-caribou-and-forestry-quick-note

Read the full paper for the related analysis here: https://conbio.onlinelibrary.wiley.com/doi/10.1111/csp2.12847



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