

RESEARCH BRIEF

A burning question: what are the implications of forest fires for woodland caribou?

The research outlined in this brief is not affiliated with the ARCKP and the content below provides a high-level summary of some of the key findings and discussion points. For full details, please view the full publication.

Summary

This research project, conducted by the University of Alberta and Alberta Biodiversity Monitoring Institute, analyzed the response of woodland caribou to burned landscapes. It also provides insight into the identification of disturbed habitat under federal recovery strategy guidelines. Specifically, the study examined how woodland caribou populations in Alberta use not only burns but also the unburned residual patches within these areas. These unburned residuals have typically not been considered by other studies. Researchers also assessed if burned habitat affected the survival of adult female caribou.

Key findings and implications to management

Approximately 50% of the burned areas identified in this study were comprised of unburned residuals. However, caribou were found to avoid both the burned and unburned areas, indicating they treat fires as one homogenous disturbance rather than a network of usable habitat. This suggests that even though unburned residual patches can maintain stand-level characteristics desirable to caribou, they become less functional caribou habitat due to the burned habitat around them. This fills a key knowledge gap related to the federal recovery strategy in that unburned residual patches should potentially not be considered separate from the larger burn complex when considering disturbance thresholds.

Findings also indicated that by avoiding burns caribou may be mitigating some of the negative effects that would be expected in these areas, such as a higher mortality rate from predation or starvation from a lack of lichen abundance. This suggests fire is not a primary contributor to declining caribou populations in Alberta. As such, the researchers recommend that the federal boreal caribou recovery strategy reconsider its current approach to disturbance assessment, which considers both fire and anthropogenic disturbances together. The authors note this may allow managers to focus more on the known negative anthropogenic disturbances.

Methods

Caribou data consisted of GPS radio-telemetry collar data collected between 1998-2017 from 201 adult females. Researchers mapped all fires ≤ 40 years within the home ranges of collared caribou, identified unburned residual patches and classified upland and lowland landcovers. Habitat selection was assessed by comparing the proportion of a caribou's seasonal GPS location within burned habitat to the proportion of burned habitat within the animal's home range. Adult female survival was assessed using a modelling technique designed to test the impact of burned habitat on the risk of mortality (e.g., size of burn, frequency of use, long-term vs short-term use).

Limitations or remaining uncertainties

Beyond the fires included in this study that were ≤ 40 years, the influence of fire age and severity on caribou response was not considered in this study. Furthermore, the significant anthropogenic disturbance in several of the study sites was also not examined in this study, presenting opportunities for future research.



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Research Theme

Use of burns and unburned residual patches by woodland boreal caribou in Alberta and the impact of burned habitat on survival of adult females.

Study Area

Six boreal woodland caribou ranges in northeastern Alberta: West Side Athabasca River (WSAR), East Side Athabasca River (ESAR), Richardson (RS), Cold Lake (CL), Slave Lake (SL), and Red Earth (RE).

Link to Full Article

<https://wildlife.onlinelibrary.wiley.com/doi/10.1002/jwmg.22111>

Additional Resources

Read more about the role of fire as a disturbance in [Edition 1 of The Exchange](#): sharing knowledge, inspiring solutions - arckp.firesearch.ca