

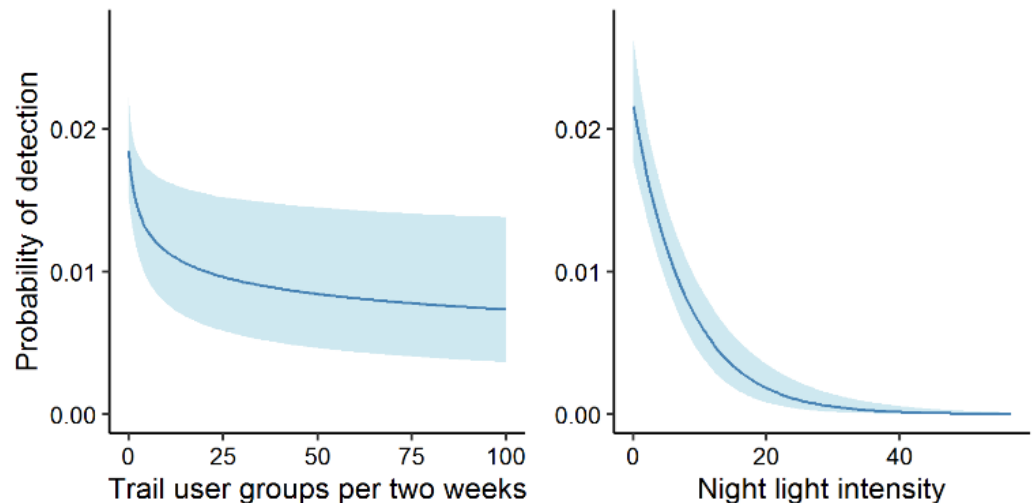
Recreation
negatively
impacts
wolverine habitat
use and density

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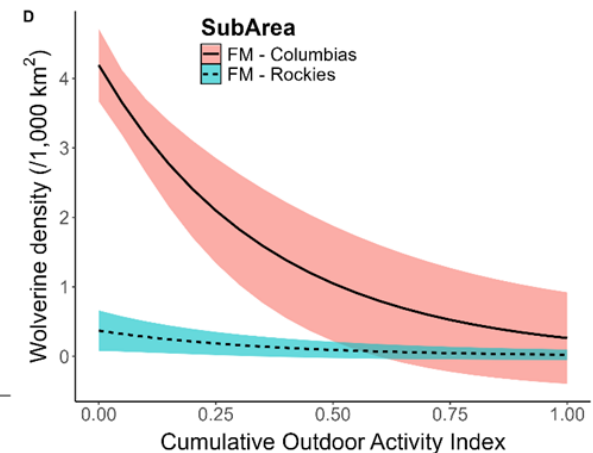
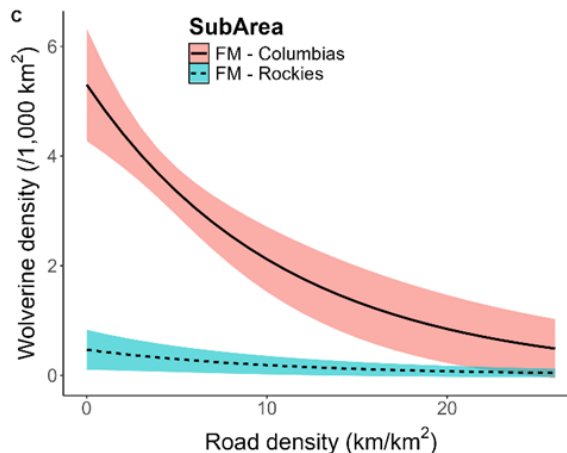
Recreation impacts wolverine habitat use

- Wolverine (*Gulo gulo*) detection probability (a measure of habitat use) declines as the number of user groups increases.
- As few as three to four user groups within a two-week period affect detection probability.
- This relationship is functional: The strongest impacts occur when recreational activity shifts from zero to low intensity, and the decline levels off at higher intensities.



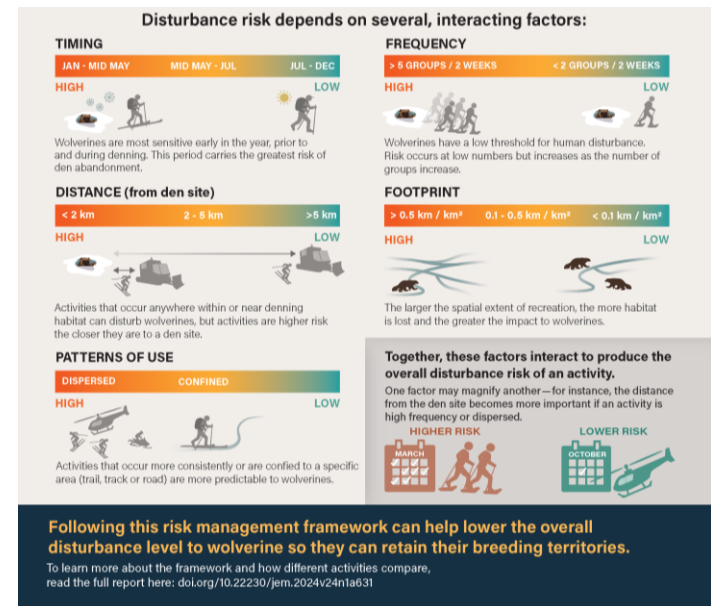
Recreation impacts wolverine density

- Wolverine population density declines with increasing recreational intensity.
- Effects are comparable in magnitude to those observed for road density.
- Recreational intensity was measured using a relative metric derived from the Strava Global Heatmap (“Cumulative Outdoor Activity Index”)



Mitigate recreation impacts on wolverines

- Prioritize protecting a 5 km radius around confirmed reproductive dens from unpredictable recreational activities between January and mid-May.
- Additional recreational activities should be concentrated in areas that already experience moderate to high levels of recreational intensity.



Barrueto et al. 2022;
 Hausleitner et al. 2024

References

- Barrueto, M. 2025, January. Effects of Human Activities and Natural Processes on Wolverine Populations. **PhD Thesis, University of Calgary, Calgary, Alberta**. Available from <https://hdl.handle.net/1880/120517>.
- Barrueto, M., Forshner, A., Whittington, J., Clevenger, A.P., and Musiani, M. 2022. Protection status, human disturbance, snow cover and trapping drive density of a declining wolverine population in the Canadian Rocky Mountains. **Sci. Rep.** doi:10.1038/s41598-022-21499-4.
- Hausleitner, D., Kortello, A., Barrueto, M., Harrower, W., and Krebs, J. 2024. Guidelines for winter recreation near wolverine dens in montane western North America. **J. Ecosyst. Manag.** **23**(1). doi:10.22230/jem.2023v24n1a631.