

Comments Submitted By:

Andrea Kortello, MSc. R.P.Bio, Grylloblatta Ecological Consulting

Doris Hausleitner, MSc. R.P.Bio, Seepanee Ecological Consulting

We are responding to the Expression Of Interest (EOI) for Zincton. Seepanee Ecological Consulting and Grylloblatta Ecological Consulting conducted a five year inventory of wolverine populations in the West Kootenays to assess distribution and connectivity. Wolverine are listed under Schedule 1 of the federal Species at Risk Act and are blue-listed in British Columbia.

Habitat quality around the proposed resort is ranked high for wolverine (Lofroth and Krebs 2007) and our research detected a higher density of wolverine in the Goat range of the Central Selkirk Mountains, where the proposal is located, than any other mountain range we sampled, including the Valhalla, Kokanee, Purcells and Monashee ranges (Hausleitner and Kortello 2016).

Wolverine, especially female wolverine, are vulnerable to human disturbance from winter recreation (Krebs et al. 2007, Kortello et al. 2019). Heinemeyer et al. (2019) demonstrated that wolverine are displaced from suitable habitat by both motorized and non-motorized winter recreation, including backcountry skiing.

Under **Summary of existing environmental conditions**, the Zincton EOI states “no at-risk terrestrial or aquatic species were found”. This statement is misleading on many species accounts however we will focus here only on wolverine. Although no wolverine were detected using a genetic bait station study in 2014 in a single 3-month sampling period within the boundaries of the proposed resort per se, wolverine were detected directly adjacent to the area (data available from the BC Conservation Data Centre). One female wolverine was detected at two bait stations; 2 km from the boundary in the Kane Creek drainage (immediately west of the proposed area) and 5 km east of the area boundary, in the Davis Creek drainage. Male home ranges in the British Columbia interior vary between 340 km² - >2800 km² while female home ranges vary between 150 km² - 520 km² (Krebs and Lewis 2000). Hence, at minimum, the Zincton proposal would fragment this particular female’s home range and that of her mate. The impact of this disturbance cannot be considered negligible, given a very low estimated population of 160 wolverine in all of southeastern BC including the Rocky Mountain, Purcell and Selkirk ranges (Mowat et al. 2019).

Numerous independent anecdotal observations of wolverine tracks, wolverine and a female wolverine with kits in the Kane Creek drainage (collected as part of the Wolverinewatch.org citizen science database) also suggest that the Kane Creek drainage is important wolverine reproductive habitat. High levels of human activity in the area could be expected to displace wolverine from this habitat.

In addition to displacement from habitat, we also predict that the Zincton EOI will have impacts on wolverine population connectivity. Our research has demonstrated that wolverine in the Kokanee (south of Hwy 31A) and Goat (north of Hwy 31A) ranges are a single genetic

population (Hausleitner and Kortello 2016), and that the highway at its current traffic volume does not pose a detectable barrier to wolverine dispersal. It has been shown that wolverine avoid high traffic roads (Austin 1998) and that female wolverine genetic connectivity can be negatively impacted by high traffic highways even within protected areas (Sawaya et al. 2019). Anderson et al. (2006) estimated that barrier effects for carnivores, including wolverine, become apparent at daily annual traffic volumes of 2000-5000 vehicles per day and winter traffic volumes of 300-500 vehicles per day. Summer traffic volumes for Hwy 31A are currently approximately 500 vehicles per day (BC Ministry of Transportation Traffic Data). Although winter data is not available it is likely substantially less. The Zincton EOI proposes to facilitate 1500 skiers per day in winter, the only access to this along Hwy 31A. This substantial increase in traffic will certainly exceed predicted volume thresholds for barrier effects and likely impair North-South population connectivity, fragmenting and isolating habitat and exacerbating existing dispersal barriers.

It is facile to assume no impact on a species at risk because there are no detections within the drawn boundaries, particularly when said species have home ranges of greater than 300 km² and the recent occupancy study that was conducted in the area was not focused on this scale of impact. It is also facile to assume that the impacts of human recreation on species at risk from this proposal do not extend beyond the boundaries of the proposed tenure. Backcountry recreationists are unlikely to remain within lift accessed terrain, such activity is inherent in the nature of backcountry skiing. Lift access on the slopes of Whitewater Mountain and Mt. Brennan will certainly facilitate substantial increase human use in adjacent drainages and remote valleys, increasing the footprint considerably. These indirect impacts have not been addressed. Finally, there is no consideration of the impacts of increased traffic on Hwy 31A with respect to either loss of connectivity or wildlife road mortality.

We predict the Zincton EOI will have negative impacts on both wolverine habitat and habitat connectivity. Population level impacts are expected due to habitat fragmentation and loss of an important North-South movement corridor across highway 31A.

Thanks for your attention to this issue.

Andrea Kortello and Doris Hausleitner

Literature Cited:

Alexander, S.M., N.M. Waters and P.C. Paquet. 2005. Traffic volume and highway permeability for a mammalian community in the Canadian Rocky Mountains. *The Canadian Geographer* 49:321-331

Austin, M. 1998. Wolverine winter travel routes and response to transportation corridors in Kicking Horse Pass between Yoho and Banff National Parks. MSc. University of Calgary.

- Hausleitner, D, and A. Kortello. 2016. 2016 Field Season Report: Central Purcell Mountains. Prepared for Fish and Wildlife Compensation Program- Columbia, Ministry of Forests Land and Natural Resource Operations and Columbia Basin Trust. Nelson, B.C.
- Sawaya, M.A., Clevenger, A.P., and Schwartz, M.K. 2019. Demographic fragmentation of a protected wolverine population bisected by a major transportation corridor. *Biol. Conserv.* **236**: 616–625. doi:10.1016/j.biocon.2019.06.030.
- Heinemeyer, K., J. Squires, M. Hebblewhite, J. J. O’Keefe, J. D. Holbrook, and J. Copeland. 2019. Wolverines in winter: indirect habitat loss and functional responses to backcountry recreation. *Ecosphere* 10(2):e02611. 10.1002/ecs2.2611
<https://esajournals.onlinelibrary.wiley.com/doi/pdf/10.1002/ecs2.2611>
- Kortello, A. K., Hausleitner, D and Mowat, G. 2019. Mechanisms influencing the distribution of wolverine *Gulo gulo luscus* in the southern Columbia Mountains, Canada. *Wildlife Biology*.
<https://doi.org/10.2981/wlb.00480>
- Krebs, J. et al. 2007. Multiscale habitat use by wolverines in British Columbia Canada. *Journal of Wildlife Management* 71: 2180–2192. <https://www.jstor.org/stable/4496328>
- Krebs, J.A. and D. Lewis. 2000. Wolverine Ecology and Habitat Use in the Northern Columbia Mountains: Progress Report. L. M. Darling, editor. 2000. Proceedings of a Conference on the Biology and Management of Species and Habitats at Risk, Kamloops, B.C., 15 - 19 Feb., 1999. Volume Two. B.C. Ministry of Environment, Lands and Parks, Victoria, B.C. and University College of the Cariboo, Kamloops, B.C. 520 pp.
- Lofroth, E.C. and J. Krebs. 2007. The abundance and distribution of wolverine in British Columbia, Canada. *Journal of Wildlife Management* 71:2159-2169.
- Mowat, G., A. Clevenger, A. Kortello, D. Hausleitner, M. Barreto, L. Smit, C. Lamb, B. Dorsey, and P. Ott. 2019. The sustainability of wolverine trapping mortality in southern Canada. *Journal of Wildlife Management* 84: 213-226