Evaluation of Proposed Glencore Mine on Quintette Caribou Habitat

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Background:

The Quintette caribou herd is part of the Southern Mountain Caribou Population which is currently listed as Threatened in Canada. However, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has reassessed this herd as part of the Central Mountain Caribou population and classed them as Endangered in Canada. The Quintette herd is also part of the Peace Northern Caribou Plan (PNCP) which has an objective to halt ongoing population declines and recover caribou herds.

The Quintette caribou herd has been declining over the past decade, from at least 173 caribou in 2008 to 62 caribou in 2016. The decline in caribou is correlated with ongoing destruction of caribou habitat by industrial activities (Johnson et al. 2015). The current habitat condition is unsuitable to support self-sustaining caribou populations, and any further habitat destruction will exacerbate the situation. The province has initiated a wolf control program to prevent the ongoing decline and extirpation of the caribou, but it is recognized that this will not result in a self-sustaining caribou population unless habitat is allowed to recover.

The Quintette caribou population is composed of two primary subgroups, one group that winters on the Quintette/Roman mountain complex and a second larger group that uses the area north of the Wolverine River, especially the Mt. Speiker/Bullmoose complex. During the 2008 census, the Quintette/Roman area supported 41 caribou, the Speiker/Bullmoose complex contained 114 caribou, and there were 18 caribou in the mountains between those areas. By 2016, there were only 5 caribou seen on the Quintette/Roman block, 28 on the Speiker/Bullmoose block, and none on the mountains between those areas. Therefore almost all of the remaining Quintette caribou are now living north of the Wolverine River. The proposed Glencore mine on Bullmoose Mountain will likely only impact the subgroup of caribou the live north of the Wolverine, so our analysis only considered that area.

As part of the PNCP, the province has mapped core high elevation winter range (HEWR), high elevation summer range (HESR), low elevation winter range and matrix habitat. Maps were developed using radio-telemetry data to develop RSF habitat models that quantify habitat selection patterns.

Matrix habitat refers to areas adjacent to core habitat. Although caribou rarely use matrix habitat areas, those areas can sustain predator populations that then move into core habitat areas and kill caribou. The management objective for matrix habitat is to limit the abundance of wolves, and the early seral ungulates (moose, elk, deer) that sustain wolf numbers.

Analysis:

1. The Quintette caribou range, north of the Wolverine River, contains:

    i) 43,619 hectares of HEWR
    ii) 55,020 hectares of HESR (note, there is overlap between HEWR and HESR, they are not mutually exclusive.
    iii) 19,753 winter telemetry locations of caribou
    iv) 25,795 summer telemetry locations of caribou.

2. The footprint of the proposed Glencore mine would directly impact:

    i) 24 hectares of HEWR
    ii) 256 hectares of HESR
    iii) 21 winter telemetry locations
    iv) 0 summer telemetry locations

    Therefore, the direct impact on core habitat and telemetry locations would be <1%.

3. If the mine footprint is buffered by 500 m to represent the indirect effects and displacement reported for a variety of landscape disturbances, the mine would impact:

    i) 494 hectares of HEWR
    ii) 971 hectares of HESR
    iii) 113 winter telemetry points
    iv) 0 summer telemetry points

    That represents 1.3% of the HEWR and 1.7% of the HESR north of the Wolverine River, but it is <1% of the winter and summer telemetry locations.

4. If the mine footprint is buffered by 3000 m., to represent the level of displacement that has been reported for mining activity on caribou, the mine would impact:

    i) 3,328 hectares of HEWR
    ii) 4,186 hectares of HESR
    iii) 2276 winter telemetry points
    iv) 340 summer telemetry points.

That represents 8% of the HEWR and HESR north of the Wolverine. It also represents 11.5% of the winter telemetry locations but only 1.3% of the summer telemetry locations, indicating that this area has higher than proportional use in the winter.

5. Recent expansion of mining activity on the Quintette/Roman area appeared to result in that sub-group of caribou abandoning the entire high elevation habitat in winter and using lower elevations. Use of lower elevations increases the exposure of caribou to wolves, and may have been the cause of the major population decline in that sub-group. If a similar response occurred in the Speiker/Bullmoose sub-group, and the caribou abandoned the entire Bullmoose winter range area, this would constitute:

   i) 8,546 hectares of HEWR
   ii) 10,795 hectares of HESR
   iii) 5304 winter telemetry locations
   iv) 1020 summer telemetry locations

   That represents 19.6% of HEWR and HESR north of the Wolverine, and 26.8% of winter telemetry locations and 4% of summer telemetry locations, which again indicates the higher than proportional use of this area in winter.

Summary:

The footprint of the mine site would directly impact <1% of the HEWR, HESR, winter telemetry locations and summer telemetry locations for Quintette caribou north of the Wolverine River. However, the impacts of industrial disturbances usually have a wider impact due to displacement of caribou or increased risk of predation associated with improved predator access. Numerous caribou studies have reported displacement distances of about 500 m. Applying this buffer to the mine footprint indicates that between 1-2% of HEWR and HESR would be impacted. Several recent research papers have indicated that active mines can displace caribou by 2-4 km (Johnson et. al. 2015, Polfus et al. 2011, Weir et al. 2007). When the mine footprint is buffered by 3000 meters, it includes about 8% of the HEWR and HESR, and 11.5% of the winter telemetry locations. This indicates that the area if more heavily used by caribou in winter than the proportion of HEWR would suggest.

The worst case scenario would be if the mine disturbance resulted in the caribou completely abandoning the entire Bullmoose-Mt. Collier winter range area. That is what appeared to happen to the Quintette-Roman caribou when the TREND mine and Roman mine expansions occurred. If a similar response occurred on Bullmoose, it would represent an impact on 19.6% of the HEWR and HESR north of the Wolverine, and 26.8% of the winter telemetry locations.

Overall, the impact of the mine would be minimal if the impact was limited to the actual footprint. However, with the likelihood that the impacts would extend out beyond the actual footprint, the impacts increase, potentially up to a very serious loss of functional core habitat.

In addition to impacts on core habitat, the proposed mine would also be altering some of the matix habitat immediately adjacent to core habitat. At other restored mine sites, such as the Babcock pit, previously disturbed areas support large numbers of elk. Enhancement of elk immediately adjacent to the HEWR on Bullmoose Mountain would greatly increase the risk of predation to the caribou.

The current habitat condition for Quintette caribou is unable to support a self-sustaining caribou herd, necessitating a wolf control program to maintain the caribou herd. An objective to recover the herd to a self-sustaining condition would require the habitat condition to improve over time until the wolf control program is no longer needed. Any additional destruction of core habitat, including this mine proposal, is inconsistent with that objective.

References:

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