



Miistakis
Institute

Mount Norquay Gondola Development Proposal: Wildlife Assessment

February 2019

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The views and opinions expressed in this report are those of the authors and do not necessarily reflect the position of those who attended the expert workshops.

Executive Summary

The Mount Norquay Lease Site and Access Road is located on the east slopes of Mount Norquay in the Bow Valley, AB, approximately 2 km north of the Town of Banff in the west end of the Cascade Wildlife Corridor. The Norquay Lease Site includes high quality habitat for a variety of wildlife species including grizzly bear, black bear, cougar, wolf, lynx, elk, bighorn sheep, mule deer, and white-tailed deer.

The Bow Valley in Banff National Park has been identified as a critical area for supporting healthy populations of large mammal species across the region. The co-occurrence of people and wildlife in the Bow Valley is especially problematic for wolves, cougars, and grizzly bears. These wide-ranging species are sensitive to human activity and occupy large areas to meet their needs for forage, shelter, and mates. Currently, animals move around the Banff townsite via several small-scale wildlife corridors that are constrained between infrastructure and the slopes of steep mountains. One of these corridors, the Cascade Wildlife Corridor, is located on the north side of the Trans-Canada Highway, and links wildlife habitat to the east and west of the Banff townsite. Parks Canada has invested in restoration in this corridor, resulting in improved connectivity for large mammals. The Norquay Access Road, a two-lane paved road that switchbacks up the southerly aspects of Mount Norquay from the Trans-Canada Highway, bisects 68 hectares of habitat. Use on the road by people may compromise the effectiveness of the Cascade Wildlife Corridor and undermine broader objectives to maintain or restore ecological integrity.

The Mount Norquay Ski Area Site Guidelines for Development and Use, completed in 2011, propose several mitigations to improve wildlife habitat use and connectivity. The site guidelines also consider a gondola from the Town of Banff to the ski area. The guidelines state that a gondola has *“the potential to enhance visitor experience, contribute to ecological integrity by significantly reducing human use in the Cascade Wildlife Corridor, and contribute to the community’s and park efforts to explore alternative mass transportation systems”* (Banff National Park, 2011).

The guidelines allow for changing of the Norquay Lease Site necessary for the gondola project as currently proposed, provided there is a “substantial environmental gain.” Parks Canada’s Site Management Guidelines for ski areas define an environmental gain “as a positive change in key ecological conditions (wildlife movement and habitat, wildlife mortality, sensitive species/areas and aquatic ecosystems) that leads to the restoration or the long-term certainty of maintaining ecological integrity.”

Norquay proposes to develop an all-season, high-alpine destination through the construction of a 4-Station gondola from the Banff Train Station to the summit of Mount Norquay. The gondola development proposal also includes the following initiatives:

- re-configuring the Norquay Lease Site by removing a portion of the lease at lower elevation, while expanding the lease at higher elevation;
- reducing on-mountain vehicle parking and buildings within sensitive subalpine habitat, including restoring upper parking lots to natural land cover;
- reducing traffic volume on the Norquay Access Road;
- adding 2,000 new parking stalls at the Banff Train Station adjacent to the Town of Banff; and
- restricting human use in the alpine to a fenced boardwalk system.

The Miistakis Institute, in partnership with Drs. Adam T. Ford and Tony Clevenger examined the potential for an environmental gain from the gondola development proposal using a combination of an expert workshop, a literature review, empirical modeling, and Analytical Hierarchy Process (AHP).

Methods

An expert workshop identified three conservation challenges to be addressed with modeling approaches:

1. Grizzly bear habitat use and movement;
2. Wolf and cougar movement; and
3. Bighorn sheep lambing habitat.

For empirical modeling, Resource Selection Function (RSF) models were developed to determine the seasonal distribution of three large carnivore species common in Banff National Park; grizzly bear, cougar, and wolf. The RSF models were used to create resistance surfaces to predict animal connectivity and to test impact treatments (10%, 50%, 90% adjustments, both positive and negative to resistance values) on movement in and around the Norquay Lease Site and Norquay Access Road. Resistance surfaces and focal nodes (eight nodes were placed around the edge of the study area in wildlife corridors and on either sides of road) were created using Circuitscape to determine how carnivores move around the landscape.

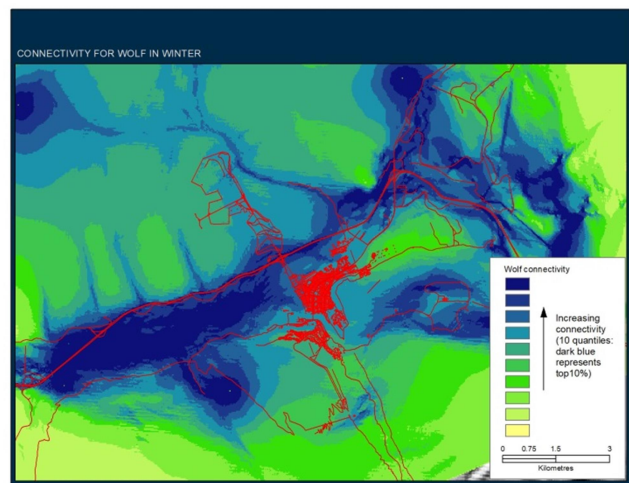
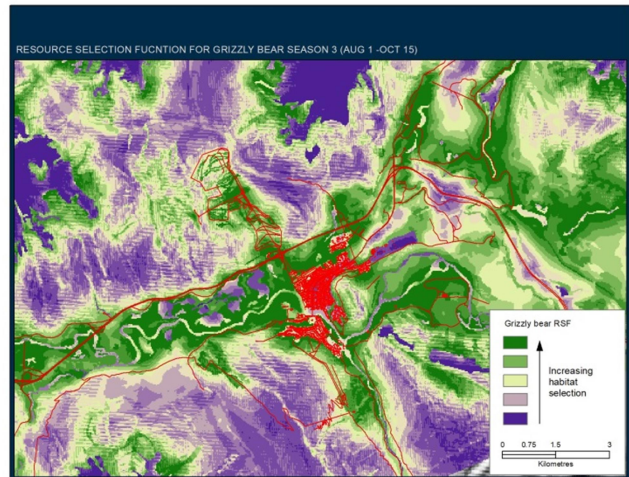
Bighorn sheep lambing habitat was modeled using variables identified in a literature review validated with existing known lambing sites from the Kananaskis Area.

An AHP was developed that included impacts, sources of impact and mitigations for grizzly bear, cougars, and wolves using information from the expert workshop and The Mount Norquay Ski Area Site Guidelines.

Results

Modeling results for grizzly bear habitat use and movement for grizzly bear, wolf, and cougar demonstrate:

- Norquay Lease Site and Norquay Access Road represent important habitat for grizzly bears in the Bow Valley during the summer and cougar in the winter (see example grizzly bear season 3 RSF on right).
- Cascade Wildlife Corridor provides important east west movement opportunities for wolf, cougar, and grizzly bear (see example connectivity for wolves in winter on right).
- Model treatment results indicate improving connectivity on the Norquay Lease Site did not show a strong impact for grizzly bear, cougar, and wolf movement around the broader Bow Valley landscape.
- Model treatment results demonstrate there is some opportunity for change to connectivity for grizzly bear, wolf, and cougar within the immediate Norquay Lease Site and Access Road if improvements greater than 50% can be achieved.



The modeling results did not demonstrate how to enhance habitat to achieve improvements to habitat use and connectivity. Instead experts prioritized mitigations relating to the proposed gondola development using the AHP process and found:

- Priority mitigation for grizzly bear is to restrict use on the Norquay Ski Hill during summer, followed by some type of treatment to the Norquay Access Road. Decommissioning of the Norquay Access Road had more significant benefits, but temporal closure to recreation and vehicles also rated high as a mitigation priority.
- Priority mitigation for improving wolf and cougar movement consists of implementing some type of treatment to the Norquay Access Road. Decommissioning of the Norquay Access Road had significant impacts, but temporal closure to recreation and vehicles also rated high as a mitigation priority. In addition, consideration of physical corridor improvements, such as an additional underpass at the base of the Norquay Access Road and Trans-Canada Highway along with restricting summer use of the Norquay Ski Hill also will contribute to improved wolf and cougar connectivity.

Bighorn sheep lambing habitat was considered in relation to new infrastructure (gondola and fenced boardwalk) and human activity in the alpine region. Lambs and ewes have been reported within the Norquay Via Ferrata area during monitoring by Mount Norquay staff and there is a historical record of lambing on Mount Norquay. Our modeling of key habitat features associated with lambing habitat suggests Mount Norquay has suitable conditions for lambing and that potential lambing habitat does not occur within a 150 m buffer of the gondola and boardwalk; however, it could occur within a 500m buffer of the development.

Summary of findings

Our modeling results indicate the potential for an environmental gain from the gondola development proposal for:

- **Grizzly bear and cougar habitat use on the Norquay Lease Site and Norquay Access Road**, if summer use on the Norquay Ski Hill is restricted and the Norquay Access Road is decommissioned or human activity (vehicles and recreation) is restricted temporarily to the extent feasible for public safety.
- **North/south connectivity for carnivore species**, if greater than 50% improvement can be achieved through habitat enhancements.
- **Carnivore east/west connectivity in the Cascade Wildlife Corridor**, if the Norquay Access Road is decommissioned or human activity (vehicle and recreation) is restricted temporarily to the extent feasible for public safety.

Our modeling results indicate there is potential for a negative impact from the gondola development proposal if bighorn sheep lamb in close proximity to the gondola terminus and fenced boardwalk. The location of bighorn sheep lambing sites is currently unknown; although there is strong evidence that lambing does occur on Mount Norquay.

As to the importance of the environmental gains, our results indicate:

- The Norquay Lease Site does not play an important role in broader landscape connectivity around the Bow Valley.
- The Cascade Wildlife Corridor does play an important role in broader east/west regional landscape connectivity around the Bow Valley and includes a portion of the Norquay Access Road.
- Grizzly bear habitat use on the Norquay Lease Site is an important localized benefit (localized because the Norquay Lease Site represents only a fraction of a female grizzly bear home range).
- Improved north/south movement opportunities for cougar, wolf, and grizzly bear to access habitat to the north of Mount Norquay is a potential localized benefit but requires habitat enhancements.
- There is more potential for the gondola development proposal to improve ecological conditions for carnivores than for the project to affect them negatively, i.e., the gondola development proposal provides better opportunities for carnivores than no change.

Recognizing movement opportunities are limited throughout the Bow Valley any opportunities for an environmental gain for sensitive carnivore species should be considered.

Lastly, due to lack of local information on how wildlife responds to alterations of their environment, we recommend Norquay create a long-term multi-species, wildlife monitoring program that will provide evidence-based data to inform management and adaptively manage measures used to mitigate potential impacts on Mt. Norquay.