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Development of Results-based Tourism Guidelines in British Columbia: Implications for Mountain Goat Management

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Abstract: Helicopter-supported recreation is expanding throughout British Columbia, Canada. In response to concerns regarding the potential effects of such activity on mountain goats (*Oreamnos amercianus*) and other wildlife, the BC Ministry of Environment convened the Tourism Wildlife Project Team in February 2004. Comprised of representatives from the tourism sector and government, the team was directed to develop user friendly, results-based guidelines for tourism on public land in British Columbia. A risk-based approach was adopted because comprehensive scientific/technical data are not available for many issues and are unlikely to become available in time to guide management strategies. The guidelines are organised according to activity category, ecosystem type, season, and outline results, desired behaviours, indicators, and limits. With respect to mountain goats, the guidelines recommend aircraft stay at distances sufficient to prevent changes to the behaviour of animals. They also recommend the use of topographic features and flight practices to ameliorate disturbance. This collaborative approach has a number of benefits, including better stakeholder buy-in compared to a regulatory approach, a focus on outcomes rather than inputs, increased support for adaptive management, and consideration of both scientific information and operational experience. However, this approach also accepts a higher management risk compared to more prescriptive approaches and its success depends on extensive monitoring.

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In 2004, the Northern Wild Sheep and Goat Council released a position statement expressing concerns related to the effects of helicopter activities on mountain goats and their habitats (Hurley 2004). In British Columbia, the provincial government's first attempt to develop guidelines to manage helicopter activity in relation to mountain goats met with resistance due to differences in opinion about

implementation and success in achieving desired results. In response, the province developed result-based guidelines. Herein we describe the collaborative development of guidelines, and the strengths and limitations of this approach.

Background

In 2001, the British Columbia Ministry of Environment published the

Interim Guidelines for Mitigating the Impacts of Commercial Backcountry Recreation on Wildlife in British Columbia (BC Ministry of Water, Land and Air Protection 2001). The guidelines provided a detailed review of current knowledge (including scientific and management literature, and professional opinion) regarding the effects of backcountry recreation activities on wildlife species. The document also outlined strategies to mitigate potential negative effects of tourism activities on wildlife and their ecosystems (Wilson and Hamilton 2005).

Stakeholder and public consultation on the Interim Guidelines began shortly after their release and resulted in diverse feedback. Though there was universal support for the wildlife conservation goal of the guidelines, there was substantial disagreement on the approach that should be used for achieving the goal. Environmental and recreation groups suggested the guidelines should be made into enforceable regulations, whereas the tourism sector promoted a non-regulatory “best environmental practices” approach that pertained to more than just wildlife and applied to all backcountry users, not just commercial backcountry recreation tenure holders (Brown 2001).

To address the opposing viewpoints, the BC Ministry of Environment convened the Tourism Wildlife Project Team (“the team”) in February 2004 - a collaborative tourism sector and government project team including representatives from the agency responsible for land tenure issuance in British Columbia (Ministry of Tourism, Sport and the Arts), the association representing helicopter/snowcat skiing operators (Helicat Canada), the Wilderness Tourism Association, and the Council of Tourism Associations. The team was charged with the development of user-friendly guidelines for use by

government decision-makers and tenured tourism operators. The mission, as set out in the Terms of Reference, was “to facilitate the collaborative development of a management framework for the stewardship of wildlife and ecosystems by the tourism sector operating on Crown Land in British Columbia” with a focus on tourism sector activities occurring on public land and the management of these activities as they relate to wildlife and ecosystem values.

Guideline framework

A strategy document placed the guidelines in the context of other policy tools available to manage tourism activities and their effect on wildlife and ecosystems. Management intent of the strategy was “to ensure that recreation activities in the backcountry do not compromise the current distribution of wildlife, the sustainability of their populations, or the integrity of their habitats” (Wilson and Hamilton 2005).

The strategy recognized three broad policy tools that can be applied to different management situations, depending on the ecological risk associated with a particular backcountry recreation activity:

Prohibition – activity not allowed in specific areas or during specific periods of the year. Examples include specific protected areas, parks, or special habitats where certain uses are prohibited by statute or other policies.

Limits on inputs – activity allowed but quotas applied to the number of users or their activities. Examples include setting limits on the number of users or the timing of use in a particular area to reduce ecological risk.

Limits on outcomes – activity allowed within the context of guidelines. The guidelines developed by the team apply this broad category of policy

tools by setting desired outcomes for specific values.

Application of the guidelines to a particular activity depends on the answers to the following nested questions: 1) should the activity be allowed in the context of associated ecological risks? If so, then 2) how should impacts be limited? The guidelines are organised according to activity category, ecosystem type, and season and are applied in the development of management plans by tourism operators. The guidelines specify Desired Results with respect to wildlife and their habitats and Desired Behaviours that outline the practices of users most likely to achieve desired conditions. Indicators are established that measure whether a desired condition is being achieved and limits are presented that set the upper and lower bounds around indicators.

The guidelines are web-based, enabling users to search by activity or ecosystem type (<http://www.env.gov.bc.ca/wld/BMP/bmpintro.html>; BC Ministry of Environment 2006)

Relevance to mountain goat management

In all cases, one of the Desired Behaviours is to stay at distances sufficient to prevent changes in the behaviour of animals. Results specified in the guidelines focus on minimizing physiological stress and avoiding displacement from preferred habitats. Indicators and limits are specified. Activity categories of primary concern to mountain goat management are aerial-supported recreation (e.g., helicopter and fixed-wing) (Table 1) and ground-based motorised recreation in the winter (Table 2) and snow-free periods (Table 3). The guidelines also specify special management of critical habitats such as mountain goat winter ranges (Table 4).

Aerial-related recreation. The guidelines specify a default 1.5 km horizontal (Côté 1996, Goldstein et al. 2005) and 500 m vertical separation from goats and goat habitat, although a single default distance may not meet the desired outcomes in all cases because multiple variables influence the behaviour of animals (Wilson and Shackleton 2001). Further, the guidelines specify no intentional “flight-seeing” or purposeful harassment of wildlife is to occur (Table 1).

Site-specific mitigation strategies consider such variables as local topography, adjusting flight paths, and drop off/ pick up points. Operators may reduce the potential effects of their activities on mountain goats by distributing aerial activities across the operating area so that identified habitat areas receive less use (particularly for landings and take-offs) relative to areas where the probability of interaction with mountain goats is lower. The use of regular, predictable flight paths is encouraged and using flight paths on the opposite side of the valley from known habitats is promoted as a means of reducing disturbance potential. The guidelines specify that operators should fly at distances from goat habitats sufficient to prevent changes to behaviour of animals (i.e. if they might be in the area but not visible). Normally, this is a minimum 1500 m horizontal separation, unless the flight path is separated from the habitat by geographic barriers. Where aircraft are within this default separation distance, they are to maintain maximum vertical separation from the areas (normally more than 500 m).

Additional mitigation strategies include flying aircraft in a way that reduces noise and ensures that animals are not surprised by sudden encounters (limiting rapid ascents/ descents which

increase helicopter rotor noise). Operators and management agencies are encouraged to have monitoring and feedback systems in place to show due diligence with respect to meeting the intent of this category. Operators are advised to employ established practices of BC's helicopter and snowcat skiing association (HeliCat Canada) such as using flight routes that do not directly overlap areas where animals are encountered regularly, and adjusting flight paths when animals are encountered inadvertently (BCHSSOA 2003).

Ground-based motorised recreation (winter and snow-free periods). Motorised recreation (such as the use of off road vehicles) is the primary concern for direct disturbance of mountain goats in winter (Table 2) and snow-free periods (Table 3). As for aerial-supported recreation, one of the desired behaviours for tourism operators is to stay at distances sufficient to prevent changes in the behaviour of animals. For motorised recreation, the guidelines specify a >500 m line-of-sight default setback from large mammals for motorized ground-based activities in open areas. Intentional wildlife viewing using motorised vehicles is prohibited.

Applying the guidelines to mountain goat habitats. Defining occupied mountain goat habitat is challenging because not all habitats are occupied at all times. In addition, goats are cryptic and often not easily seen during aerial surveys, and repeated surveys can result in disturbance. The guidelines distinguish between habitats consistently occupied and those identified by suitability modelling approaches. They specify 3 habitat categories. Occupied habitats are areas where animals are seen in the current season and/or animals consistently occupy year after year. The range is mapped as "occupied" or "high relative probability for encountering animals during winter".

These areas are to be avoided by helicopter operators. High probability/ potential habitats are areas where previous goat use is documented; operators are directed to minimize use (i.e. develop site specific mitigation strategies) within these areas and avoid animals when inadvertently encountered. Mapped but unverified (low suitability) habitats have no use restrictions; however, flights in these areas are to include cursory presence/ absence inventories. If animals are encountered, the classification of such areas immediately changes to Occupied.

In all cases, regular information exchange is encouraged so that the most current information guides development of site specific mitigation strategies.

Alternative strategies. Tourism operators may either adhere to all desired behaviours listed in the guidelines for the particular activity or activities that they are authorized to undertake or are applying for; or, they may propose alternative strategies to achieve the specified results. Alternative strategies must be included in the management plan submitted by the proponent where deviation is proposed from either the desired behaviours or the default distances specified in the guidelines. There must be a corresponding alternative strategy for all listed results if the operator decides not to adopt the desired behaviours or default distances specified in the guidelines for a particular activity or special management issue. Alternative strategies must include a suite of behaviours designed to achieve the listed result, monitoring and an adaptive plan to ensure results are being met, and sign-off by a qualified professional (i.e. a competent member of a certifying body with standards of practice and member accountability, for example, British Columbia College of Applied Biology).

Since the guidelines are intended to be result-based, they are subject to ongoing monitoring by provincial government agencies in cooperation with tourism industry associations to assess compliance of operators and effectiveness in achieving specified results. These guidelines also are intended to be periodically reviewed as new information comes available. Monitoring results, new science, and operational experience will be considered during future revisions, as per the principles of adaptive management (Salafsky et al. 2001).

Limitations of approach

The management intent is considerably broader than the original Interim Guidelines. However, the team identified some key challenges. The strategy originally was intended to apply to all backcountry recreation users. Commercial tourism operators tenured under the British Columbia *Land Act* embraced the approach, but opportunities to apply the guidelines to public recreational users or non-tenured recreation operators are limited. There is a need to test and refine indicators through monitoring programs. Such monitoring can be both time-consuming and expensive. It remains unclear if the proposed indicators are sensitive enough to provide meaningful results in the relatively short time needed to manage tourism operations.

Management recommendations

Based on the experience of BC's Tourism Wildlife Project Team in developing a results-based approach to tourism and wildlife, we offer the following recommendations relevant to mountain goats:

- Knowledge gaps need to be addressed through targeted research. Effectiveness of the 1500 m default

distances and alternate strategies developed and implemented by operators require further assessment;

- Monitoring approaches to test the effectiveness of proposed indicators and limits need further work;
- Collaborative monitoring of tenure issuance and compliance with the guidelines should occur; and,
- Training of tenured operators should be combined with public outreach to clubs and associations wherever sector organisation allows in order to communicate the intent of the guidelines and secure their broad application.

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Table 1. Guidelines related to direct disturbance of wildlife developed for commercial recreation tenure holders using aircraft in British Columbia.

Results	Desired behaviours	Indicators	Limits
<ul style="list-style-type: none"> • Minimize physiological and behavioural changes in animals associated with aircraft activity. • Minimize changes in habitat use resulting from aircraft activity. 	<ul style="list-style-type: none"> • Record wildlife encounters, actions taken, and responses of animals. • Obey all area closures. • Do not harass wildlife. • Focus activities in areas and times of the year when wildlife are least likely to be disturbed (seasonal closures might be necessary). • Take immediate action to increase separation distances when animals react to aircraft. • Use consistent flight paths, preferably in the center of valleys, or the valley side opposite key wildlife habitat. If key wildlife habitats are in the center, fly on one side of the valley rather than the center. • Stay at distances sufficient to prevent changes to the behaviour of animals (more than 500 m line-of-sight is the default). 	<ul style="list-style-type: none"> • Proportion of encounters resulting in an alarm response. • Population abundance and distribution trends of wildlife species. 	<ul style="list-style-type: none"> • No increase in rate of alarm responses over time caused by aircraft. • No harassment caused by aircraft. • No abandonment of habitats caused by aircraft.

Table 2. Guidelines related to direct disturbance of wildlife developed for commercial recreation tenure holders using ground-based motorized vehicles during winter in British Columbia.

Results	Desired Behaviours	Indicators	Limits
<ul style="list-style-type: none"> • Minimize physiological and behavioural disruption. • Minimize changes in habitat use. 	<ul style="list-style-type: none"> • Record wildlife encounters, actions taken, and responses of animals. • Remain on established trails or in areas of high visibility where no wildlife are present. • Obey all signs and area closures. • Do not harass wildlife. • Do not feed wildlife. • Do not handle wildlife. • Do not allow dogs to be at large and harass wildlife. • Pack out all garbage. • Turn off engine, remain on machine, and yield to wildlife on trails and roads. • Focus activities in areas where wildlife are least likely to be disturbed (seasonal closures might be necessary). • Stay at distances sufficient to prevent changes to the behaviour of animals (at least 500 m in open areas is the default for large mammals). 	<ul style="list-style-type: none"> • Proportion of encounters resulting in an alarm response. • Population abundance and distribution trends of wildlife species. 	<ul style="list-style-type: none"> • No increase in rate of alarm responses over time caused by motorized activities. • No harassment caused by motorized activities. • No abandonment of habitats caused by motorized activities.

Table 3. Guidelines related to direct disturbance of wildlife developed for commercial recreation tenure holders using ground-based motorized vehicles during the snow-free season in British Columbia.

Results	Desired Behaviours	Indicators	Limits
<ul style="list-style-type: none"> • Minimize physiological and behavioural disruption. • Minimize changes in habitat use. 	<ul style="list-style-type: none"> • Record wildlife encounters, actions taken and responses of animals. • Remain on established trails. • Obey all signs and area closures. • Do not harass wildlife. • Do not feed wildlife. • Do not handle wildlife. • Do not allow dogs to be at large and harass wildlife. • Pack out all garbage. • Yield to wildlife on trails and roads. • Turn off engine, remain on machine and yield to wildlife on trails and roads. • Focus activities in areas and times of year when wildlife are least likely to be disturbed (seasonal closures might be necessary). • Stay at distances sufficient to prevent changes to the behaviour of animals (at least 500 m in open areas is the default for large mammals). 	<ul style="list-style-type: none"> • Proportion of encounters resulting in an alarm response (movement by animals, usually to safer locations). • Population abundance and distribution trends of wildlife species. 	<ul style="list-style-type: none"> • No increase in rate of alarm responses over time caused by motorized vehicles. • No harassment caused by motorized vehicles. • No abandonment of habitats caused by motorized vehicles.

Table 4. Guidelines developed for commercial recreation tenure holders operating in and near mountain goat winter range habitat in British Columbia.

Results	Desired Behaviours	Indicators	Limits
<ul style="list-style-type: none"> • Minimize physiological or behavioural disruption of Mountain Goats. • Continued occupation of Mountain Goat winter ranges. 	<ul style="list-style-type: none"> • Do not land in identified Mountain Goat winter ranges . • No intentional “flight-seeing” of Mountain Goats/sheep. • Stay at distances sufficient to prevent changes to the behaviour of animals (more than 1500 m line-of-sight is the default). • Avoid occupied habitats where Mountain Goats/sheep have been seen in the current season and/or animals consistently occupy the area and the area is mapped as occupied. • Minimize use in areas of high probability or potential, where there is documented past use by Mountain Goats or sheep. • No behavioural restrictions apply in areas not considered Mountain Goat/sheep habitat, or where potential habitat is mapped with no verification of Mountain Goat/sheep use. 	<ul style="list-style-type: none"> • Continued occupancy of Mountain Goat winter ranges. 	<ul style="list-style-type: none"> • No harassment caused by aircraft. • No abandonment of Mountain Goat winter ranges caused by aircraft.

