Mountain Goats and Winter Recreation November 17, 2011

Summary

Mountain goats need protection from disruption and displacement in their winter feeding areas by motorized and non-motorized recreationists in British Columbia. The province has an obligation to maintain the current population of mountain goats, to conserve high quality goat habitat and to prevent human activities that may adversely affect the goats.

Background

The mountains of British Columbia are at the centre of the world's population of mountain goats. The total number of mountain goats in the world is estimated at 110,000 and over half of all mountain goats live in British Columbia. Mountain goats are the ungulates that best symbolize our wild alpine places.

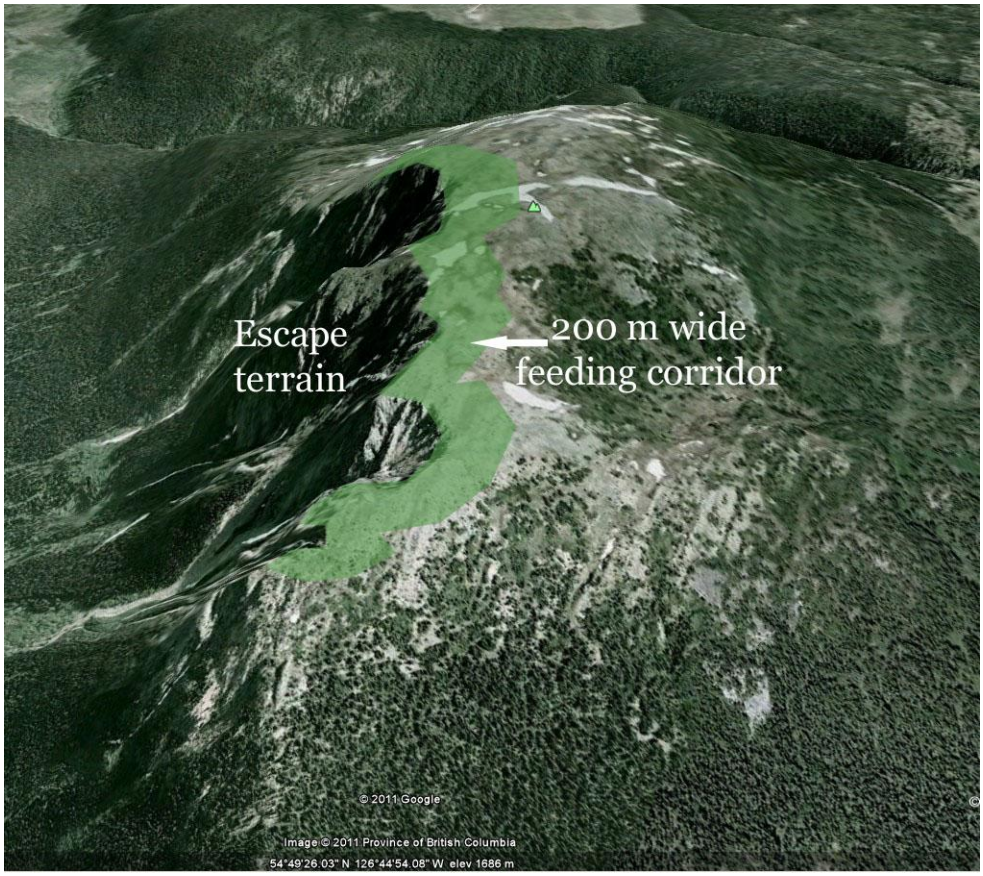
Prior to 1940, mountain goats escaped interference from humans by living high on mountain ridges above the reach of everyone but the hardiest hiker or skier. Since then, extensive logging and mining roads make access to prime mountain goat habitat easy year-round.

Forty years ago, snowmobiles were underpowered and unable to reach goat winter terrain. Since then, improvements in engine power, traction and suspensions enable snowmobiles to climb onto ridges and rocky summits at or above the preferred home range of mountain goats in winter, disrupting the goats in their feeding corridor.

Feeding corridor

Mountain goats prefer to feed in alpine meadows no more than 100 m from steep cliffs. If a predator approaches, the goats flee to terrain steep enough that the predator cannot follow. Occasionally goats will feed up to 400 m from rocky escape terrain but doing so exposes the goats to a greater risk of predation from wolves and wolverines in winter. The prime winter feeding area for goats is a narrow corridor 200 m wide on ridge tops parallel to escape terrain cliffs. Any feed in meadows beyond the narrow feeding corridor is beyond the safety of the escape terrain and may be unavailable to the goats.

In winter, mountain goats depend on wind to scour the snow from the feeding corridor. There may be six feet (182 cm) of accumulated snow but wind will often reduce the actual snow depth to 18 inches(45 cm) or less, shallow enough for goats to paw for dry grasses, forbs and lichens.



Mountain goat feeding corridor (light green) on a small mountain

Restricted travel

Mountain goats conserve energy in winter by restricting their travel. The winter feeding area for a herd of goats may be as small as 8 hectares. The food value of dry grasses and lichens in winter is low so goats depend on body fat accumulated in summer and autumn to survive winter. Loss of body fat in late winter can result in starvation and mortality can exceed 50% of the herd in a severe winter. Travelling through deep powder snow takes a lot of energy and can reduce body fat so restricting travel in winter helps goats survive until green-up in spring.

Snowmobiles

Snowmobile operators seek out high ridges for the view. Snowmobiles may displace mountain goats by traveling a ridge along the same area that forms the narrow feeding corridor for mountain goats.

Mountain goats can sometimes hear snowmobiles and smell exhaust before they see the machines. The goats will then move out of sight into escape terrain. In that case, snowmobile operators may never see the goats they are displacing and may never know their effect on the health of the herd. If the goats do not hear an approaching snowmobile, they risk being "caught" unable to reach escape terrain in time. Snowmobiles often travel more than 40 kph, ten times the walking speed of a goat. An encounter with snowmobiles can cause alarm responses in goats. Repeated alarm responses can result in lower resistance to stress and disease.

Mountain goats can become habituated to human activity but exposure must be gradual and low stress. The high speed and noise of snowmobiles prevents goats from becoming habituated to the machines.

Frequent snowmobile traffic can disrupt the goats from feeding or bedding down in the narrow feeding corridor. The goats may stay in the cliffs nearby where feed may be scarce and lower quality. Or the goats may choose to abandon their home range and move to a new feeding area. Any extended travel in deep snow to a new feeding area involves increased energy output and a reduction of stored body fat necessary for survival until spring. Travel can also expose the goats to avalanche hazards and a greater risk of predation.

Each year, snowmobiles travel to more remote areas. We anticipate that the use of snowmobiles within prime mountain goat habitat on high ridges will steadily increase in the coming decade, along with extensive displacement of mountain goats.

Backcountry skiers

Skiers or snowshoe users alone or in small groups are less likely to interfere with or to displace mountain goats from their home range in winter for the following reasons. Backcountry skiers prefer deep snow slopes and valley bottoms that goats avoid. The travelling speed of a skier or snowshoe user is much less than a snowmobile. Goats have more time to spot an approaching human on foot and to move away without experiencing an alarm response.

Mountain goats may not see humans on foot as a direct threat as long as the humans are below the goats. Mountain goats will often stand still and stare at an approaching human, then move upslope and resume feeding. Frequent traffic by skiers and a large number of individuals could displace goats but generally the displacement effect is less than for motorized recreation.

Unseen effects

Best practices for snowmobile operators would be to spot goats at a distance, stop and leave the area but it is not practical to rely on snowmobile operators to see mountain goats in time. In fact, the operator may never see the goats he or she is affecting. The effects of displacement of goats by a snowmobile may continue for weeks or months if the goats are forced to abandon a favoured feeding corridor for a feeding corridor with lower quality feed. And once the displacement happens, there is no remedial action anyone can take to fix the disruption.

For all these reasons, the best remedy for government is to be pro-active and prohibit motorized and non-motorized winter recreation in specific mountain goat winter habitat by creating buffer zones. The mountain goats can then feed and rest at leisure to best survive the harsh conditions and poor quality feed during winter.

Recommendations

We recommend that specific mountain goat winter habitat areas be designated by agency staff in all areas of British Columbia used by recreationists in winter. The areas should be verified by aerial or on-the-ground inspection to ensure that mountain goats do use the area during winter and to avoid establishing buffer zones in areas not used by mountain goats.

We recommend a new British Columbia regulation to establish a 500m buffer zone to exclude motorized recreation and a 100m buffer zone to exclude non-motorized recreation from designated mountain goat winter habitat each year from November 1 to May 30.

Our recommendation is similar to that made in the *Management Plan for the Mountain Goat in British Columbia, 2010, BC Ministry of Environment*. Our recommendation goes one step further with establishment of an enforceable regulation.

Conclusion

Pro-active protection of mountain goats in winter is necessary to reduce the seen and unseen effects of a rapidly growing winter alpine recreation sector.

We have a 3-minute long video showing the effect of snowmobiles on mountain goats on a local mountain available at http://www.youtube.com/watch?v=OnzdCap1thM&context=C363e9f5ADOEgsToPDskKYHhlL3jQq99WJbhv5UEll

References:

BC Ministry of Environment, 2010, *Management Plan for the Mountain Goat in British Columbia*.

Festa-Bianchet, Marco, Cote, Steeve D., 2008, Island Press, *Mountain Goats Ecology, Behavior and Conservation of an Alpine Ungulate*.