



## Porcupine Caribou Management Board

Box 31723, Whitehorse, Yukon Y1A 6L3

Phone: (867) 633.4780 • Fax: (867) 393.3904 • Email: pcmb@taiga.net

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September 26, 2007

Fall 2007 Disposition Public Notice and Review  
Government of Yukon, Department of Energy, Mines and Resources  
Oil and Gas Management Branch  
Suite 300, 211 Main Street  
Whitehorse, Yukon Y1A 2B2

To Whom It May Concern:

### **Re: Fall 2007 Oil and Gas Rights Disposition Review**

As in the Spring Disposition Review, the Porcupine Caribou Management Board (PCMB) would like to address all the Requests for Posting in this one single letter rather than addressing them separately. Because the RFPs under consideration are in the winter range of the herd, our comments will be strikingly similar to the submissions we made to you in the spring review.

You will recall that the PCMB supports responsible development, but the Board is concerned about the cumulative effects of much development on the herd's winter range. Oil and gas exploration activity is expanding on winter range of the herd. Last spring saw some 13 dispositions of oil and gas rights being awarded in Eagle Plains, an important part of the herd's winter range. Northern Cross alone now holds over 506,759 hectares in the Eagle Plain Basin alone. The Peel region, the area affected by the current RFPs, is also an important part of the herd's winter range. Over the years, many hectares of the herd's winter range have also been altered by wildfire, and it can take decades before the burnt portion of the habitat will be able to support the caribou. The traffic associated with the Mackenzie Gas Pipeline, presuming it proceeds, will likely affect the herd's winter range in many ways, in the coming years. The PCMB is concerned about the cumulative effects of all these factors on the herd and its habitat. Loss of habitat is a key factor contributing to population decline of many species that are now listed as species at risk in Canada.

We would like to emphasize that the herd's population has been declining slowly but steadily for over a decade. In 1989, the population was around 178,000. The population today might be as low as 110,000. In addition, the Board believes the herd's population decrease might exceed the rate of decline experienced by this herd in the past. The herd is not as resilient as it might be if the population was higher.

As you know, the herd's declining population is sufficient concern that the Board is working with all the caribou herd's user groups to develop a harvest management strategy as one means of protecting the herd. Last year the Gwich'in Tribal Council voluntarily imposed hunting closures on its own citizens, and it has done so again for this year. In the coming weeks, the caribou user groups will be meeting to develop further harvest management options. If the traditional caribou users are being asked to alter the harvesting activities they have practiced for centuries, the Board would recommend that other activities in the range of the herd, including proposed petroleum exploration activities, need to be altered or even avoided for the good of the Porcupine Caribou Herd.

The direct impacts of human activity (such as loss of habitat) combined with indirect activities (such as displacing caribou from their habitat) could seriously affect the wellbeing of the herd. And we will remind you that when the herd is not thriving, the First Nation communities that have used the caribou for centuries also suffer. The Porcupine Caribou Herd connects the community members to each other and to the earth. Continuing Porcupine Caribou traditions is critical for healthy communities in the herd's range.

***Increased human industrial activity, and associated increased human population in the herd's range will pose a disturbance for the Porcupine Caribou Herd as a result of:***

1. Increased levels of traffic,
2. Increased recreational activity,
3. Increased caribou harvesting interests along the Dempster Highway by people employed directly or indirectly by petroleum development related projects,
4. Increased habitat fragmentation,
5. Increased risk of wildland fire,
6. Increased risk from invasive species,
7. Cumulative impacts of a combination of the above.

## **1. Increased levels of traffic**

Although we cannot be sure exactly how the developments will be accessed, we should anticipate increased traffic to the project sites and to the communities near the developments.

### **(a) Direct loss of caribou due to road-kills or injuries**

Increased activity related to the projects will bring an increase in the number of roads as well as increased use of existing roads. Information on vehicles colliding with caribou is largely anecdotal, although patrolling Conservation Officers record incidents as they encounter them. There are unsubstantiated reports of larger vehicles such as tractor-trailers hitting and killing many caribou at a time. These types of incidents are disturbing to hear about, but can exaggerate the magnitude of the problem. In 1999, Department of Highways personnel working along the Dempster Highway estimated the number of caribou killed in vehicle collisions. In “typical” years where there are many caribou crossing the road and a large number of vehicles traveling the road, their estimate was about 100 caribou per year. Conservation Officers in the region think that the number of collisions recently is much less than it has been in the past. Reasons for this apparent reduction in incidents are unclear. However, it is intuitive that if more vehicles are present in the area, it is likely that more caribou will be hit by vehicles, especially if the snow is deep, because caribou may be reluctant to leave the road surface when approached by vehicles.

For many years, YTG and the PCMB have been aware of locals’ concerns regarding caribou mortality from vehicle collisions. Various options have been proposed to try and reduce the number of caribou killed, but none have been implemented. If the projects proceed, a decision will have to be made regarding best options for reducing collision risk. One common suggestion is to erect signs when caribou are near the road. Signage along the highway is discouraged for several reasons. First, signs, especially large ones, are sometimes viewed as visual litter. Along the Dempster Highway where not even power or phone lines are present, natural viewscapes are particularly valued. In addition, it has been our experience that we often need to provide a fair bit of background to an issue to make the message clear. Unfortunately, this results in a sign that can’t possibly be read by people traveling at highway speeds. Too much text usually means that travelers will not even read them. Another problem is that regular travelers will often stop noticing signs over time, including the wildlife alert signs.

The Yukon portion of the highway is almost 500 kilometers long and caribou may be found in any portion of that area during the fall and winter months. It has been proposed that portable alert signs with a striking or unique design be placed when caribou arrive in an area, and the signs would then be moved as the caribou distribution changes. This would be labor intensive, but perhaps the best option for on-the-ground warnings of the presence of caribou near the road.

Temporary flashing signs can deliver a short message such as “Caution: caribou crossing.”

A pamphlet outlining very general information may be useful to let inexperienced travelers know where and in what season caribou may typically be encountered and how to reduce the risk of hitting a caribou on the road. These pamphlets could be widely available to companies and individuals providing support services to the projects.

**(b) Reduced availability of habitat due to displacement of caribou from road corridors (avoidance behavior)**

At this time, we believe that hunting activities are relatively more disturbing to caribou than traffic along the highway. In 1998, the PCMB responded to this concern by recommending a hunting closure for one week in the fall. One-week hunting closures have been announced each year since that time.

Based on recent surveys, there is evidence that caribou avoid the immediate area of the highway (within five kilometers); however, it is thought that this avoidance is primarily in response to hunting, especially snow machine assisted hunting. During the one-week hunting closure, caribou can be present in very large numbers in the road corridor, but most disappear once hunting resumes. Vehicles do travel the highway during the closure. Many hunters and highway travelers report some avoidance of traffic by caribou, but these behaviors are of relatively low magnitude and short term, and caribou do eventually cross the road once the traffic has moved on. We are concerned that the frequency of vehicles may increase to the point where caribou will not have the opportunity to cross the road between encounters with vehicles. There may be confounding effects between hunting and traffic; caribou exposed to much hunting seem to be more wary of traffic and will react more strongly to a vehicle on the highway whether or not that vehicle is related to hunting.

Disruption to breeding activities is also a potential problem. Migration in the area of the Dempster Highway often coincides with the period of the rut in the fall. While the current levels of traffic do not appear to disrupt breeding, an increase in traffic may interfere with breeding activity.

In general, caribou tend to avoid human activity. The most recent *Rangifer Report* noted that “Around the mid 1980s, focus shifted to regional scale landscape ecology studies, reporting that reindeer and caribou reduced the use of areas within 5 km from infrastructure and human activity by 50-95%, depending on type of disturbance, landscape, season, sensitivity of herds, and sex and age distribution of animals.” (Ingunn, V. and C. Nellemann. 2007. *Impacts of human activity on reindeer and caribou: the matter of spatial and temporal scales*. The 14<sup>th</sup> Nordic Conference on Reindeer and Reindeer Husbandry Research. Vantaa, Finland. 20-22. March 2006).

In view of this information, it is possible that increased use of the Dempster Highway associated with exploration and development in the Peel region, and new accesses created pursuant to the Peel projects may displace caribou from this part of the winter range.

## **2. Increased recreational activity**

The Porcupine Caribou Herd is becoming famous worldwide, and people enjoy viewing caribou. Wildlife viewing activities are generally less disturbing to caribou than hunting activities. In many other areas where hunting activity does not occur (e.g., parks in northern B.C.), caribou seem to readily habituate to vehicles and people. In the past, PCMB members from the caribou user communities have discouraged territorial governments from promoting caribou viewing during the hunting closure. Frequently community members have stressed that “the point is to leave the caribou alone – leave them alone and undisturbed.” Despite this concern, many viewers are drawn to the highway to view and photograph caribou during the one-week closure, and Government of Yukon has made efforts not to promote caribou viewing but to manage the viewing activity that is ongoing. Hunters and viewers consider human viewing activities (i.e., vehicles and people in the field but no shooting) to be much less disturbing to caribou than hunting related activities.

As accesses to the Peel are developed for the oil and gas projects, they will likely bring with them increased viewing activity and increased hunting to that area.

## **3. Increased harvesting interests on caribou**

Harvest and issues around hunt management as a result of the access provided by the Dempster Highway is the most significant management issue for the herd at this time. For caribou in general, the consequences of additional road access into or through the winter range can be substantial. The potential of over-harvest and related issues is a concern, and hunting should be actively managed in these circumstances.

For Porcupine Caribou, the Dempster Highway provides important access to the herd by many user groups, including subsistence hunters. Land Claim Agreements in the Canadian range of the herd assure regional subsistence harvesters preferential access to caribou. Non-subsistence hunters, a small portion of Porcupine Caribou Herd users, are regulated, but regulations are considerably more lenient than for other smaller caribou herds in Yukon.

Harvest levels are not known with any precision, and because of this, it is not possible to do a full evaluation of the relative contribution of harvest to the documented population decline. As noted, however, we do believe that this herd has continued its decline since 2001 and the uncertainty around the herd status may mean we are coming to the point where we need to change the harvesting

regime. The PCMB has been leading an initiative to develop a Harvest Management Strategy for the herd in Canada.

Harvest by employees and support personnel for oil and gas projects in the Peel Region (assuming they qualify to hunt this herd) could represent an added burden to a herd that is already under considerable pressure. This additional harvest will need to be managed.

#### **4. Increased habitat fragmentation**

Access to project areas will increase habitat fragmentation. Whether all-season or winter-only roads are used, roads and trails fragment the habitat of the herd. Projects that require cutting seismic lines will fragment the landscape further still, even though modern practices tend to minimize this damage. This can affect herd movements, change how the herd uses the land, and provide predators easier access to the caribou.

With increased ATV and snow machine use for exploration as well as recreation, more tundra vegetation could be damaged by the machines, which in turn would deprive the caribou of vital forage that they need to survive the winter and reproduce in the spring. Damaged tundra can take several decades to rehabilitate, so increased snow machine use could potentially deprive the herd of important parts of its habitat for extended periods, and well outside the project areas.

It is the cumulative impacts of these many projects rather than whatever damage an individual project might cause that greatly concerns the Board.

#### **5. Increased risk of wildland fire**

While fire is a natural part of forest renewal in the boreal forest ecosystem, an increased incidence of fire caused by human activities, coupled with an increase in the occurrence of "fire weather" (hot, dry, windy conditions) that correspond with climate change (Arctic Climate Impact Assessment, 2005, Cambridge University Press, p 1042) would reduce the availability of older, mature forest habitats with their associated lichen groundcover [Smith et al (eds), Ecoregions of the Yukon Territory, PARC Technical Bulletin No. 04-01, 2004]. Caribou of the Porcupine Herd subsist on lichen in winter; landscape scale change that limits lichen cover at any given point in time on the winter range would have implications to the overall health of the herd. Increased human presence in the Peel project areas, coupled with the increase in traffic on the Dempster Highway associated with the projects, will likely increase the fire risk.

## 6. Increased risk from invasive species

There is increased potential for introduction of invasive species as a result of these projects, due to the increased use of the Dempster Highway and new road access in the Peel region. Even in situations in which no new roads are being built, traffic along the Dempster Highway will increase to accommodate these projects, and traffic will arrive from far away, increasing risk of introduction of invasive species. *Roads create a threat to biological diversity out of proportion to the relatively small habitat they displace* (Christen, D. & G. Matlack. 2006. The Role of Roadsides in Plant Invasions: a Demographic Approach. Conservation Biology 20: 385 – 391).

Increased Dempster Highway traffic requires more grading and road improvements, which affects the adjacent vegetation and makes it more vulnerable to invasive species. Road improvements and maintenance increase plant invasion (Gelbard & Belknap. 2003. Roads as Conduits for Exotic Plant Invasions in a Semiarid Landscape. Conservation Biology 17: 420-432). Roads are the primary conduit for introduction of invasive species. Increased traffic has been shown to facilitate the dispersal of exotic diseases and insects. Vehicles transport exotic species into uninfected areas (Gelbard, J.L. & J. Belknap, *ibid.*), and dispersal of biological agents such as root disease can affect ecosystems far from the road that facilitated access (Tomblike, S.C. & Bissell, C.A. 1999, Review of Ecological Effects of Roads on Terrestrial and Aquatic communities. Conservation biology 14: 18-30.).

In addition, roads alter habitats and stress native species, thus enabling exotic species to establish colonies along roads (Lavoie, C., et al, Submitted. How does common ragweed ... spread in Quebec? A historical analysis using herbarium records. Journal of Biogeography). Roads also facilitate invasion by acting as movement corridors, channeling population expansion and aiding dispersal (Christen & Matlack, *ibid.*). Moreover, dispersal of invasive species is enhanced by adhesion to vehicles, wind-funneling and preferential movement by animals along road corridors. Roadsides store exotic plant propagules for release during disturbance (Christen & Matlack, *ibid.*).

Roads fragment habitat, which promotes weedy species with high dispersal capacities over less mobile species. Some vertebrate and invertebrate species are inhibited by large road clearings. Invasive species cover was found to be three times greater along paved roads than along dirt tracks (Gelbard & Belknap, *ibid.*). Thus, invasive species have an ecosystem-wide impact: exotic vegetation affects bird and animal communities (Tomblike & Russell, *ibid.*).

Exotic species invasions are also expected to increase due to climate change. Changes in temperature and precipitation can alter resource availability and habitat suitability for exotic species that have previously been unable to establish themselves.

Southern Canadian provinces are dealing with major invasive species issues from which the Yukon has been protected due to both distance and climate. The combination of a warming climate and greater human activity in the Northern Yukon could therefore irreparably alter the environment with a proliferation of invasive species.

## 7. Cumulative impacts

Cumulative impacts are changes to the environment caused by an activity, combined with other past, present and future activities. In the case of the Porcupine Caribou Herd, cumulative impacts include not only the proposed projects in question, but also activities throughout the herd's range. We noted that the herd's population is declining, which means the herd might not be as resilient to cumulative impacts associated with petroleum exploration and development. Climate change effects may further reduce resilience of the Porcupine Caribou Herd and may alter their use of the landscape. The future range of the herd, given these changing conditions is unknown. Therefore, displacement of the herd as a result of these projects might be more damaging than we can anticipate today.

The cumulative effects of the projects could potentially affect lichen availability for the herd. Greater traffic volumes stir up increased dust in the area of the roadway, which can potentially reduce the production of lichen and increase the area affected by invasive species. Lichens are the main food for the Porcupine Caribou, and decreased availability and lowered quality of lichen in the area of the projects could impact the health of the herd. Coupled with caribou avoiding project areas, this change in the winter range could affect the herd's overwinter survival and productivity, and affect the caribou migration pattern. If the caribou are displaced from the area, they may end up in a "second-best" wintering range.

In summary, the PCMB is concerned about the projects introducing increased levels of traffic and increased recreational activity in the range of the herd. In addition, there could be increased harvesting interests. The increased human presence might contribute to the caribou avoiding portions of its range. Increased risk from wildland fires and from invasive species could potentially affect the habitat quality and availability. Finally, the cumulative effects of all the increased human activity could affect the herd's use of the range as well as the herd's productivity. ***While none of these effects in isolation might have a serious impact, cumulatively, and in combination with other effects in the range, the effects could potentially be serious, bearing in mind the herd's declining population.***

## ***Recommendations***

As we already noted, the PCMB supports responsible development. In the case of this review, the PCMB urges you to make recommendations that support the long-term conservation of the herd and its habitat. Where information is lacking or limited, we urge you to recommend a cautionary approach, and establish monitoring systems.

The PCMB makes the following recommendations:

- The Board recommends that approval of any activity in the area be delayed until the completion of the Peel Watershed Land Use Plan.
- A comprehensive, long-term monitoring program should be undertaken immediately in northern Yukon to assess the cumulative effects of human activity on ecosystems, with a specific focus to include the effects on the Porcupine Caribou Herd. This program should be designed to be consistent with the NWT Cumulative Effects Assessment and Management Strategy and Framework and with the NWT Cumulative Impact Monitoring Program. *At this time, no program in the Yukon monitors cumulative effects in the areas in question. Without good baseline information to assess cumulative effects, bodies such as YESAB will be limited in the information they have available to guide their decision making.*
- A comprehensive study should be undertaken to assess the effects of road construction and highway traffic on lichen and other vegetation.
- We urge you to include potential effects when you consider the dispositions in order to ensure the greatest habitat protection. YESAB is limited in its ability to consider all the factors that contribute to cumulative effects.

As a final note, we ask the Oil and Gas Branch to please err on the side of caution. It is far better to avoid harming the Porcupine Caribou Herd than to have to later restore the herd and its habitat. In addition, as we noted, First Nations are meeting to discuss imposing harvest restrictions on their own citizens to protect the herd. The *Porcupine Caribou Management Agreement* (signed by the First Nations and the governments of Canada, Yukon and Northwest Territories) commits to achieving the following objective (B.1) "To cooperatively manage, as a herd, the Porcupine Caribou and its habitat within Canada so as to ensure the conservation of the Herd with a view to providing for the ongoing subsistence needs of its users." In the context of this commitment, the Oil and Gas Branch of the Yukon Government is obliged to ensure its activities do not interfere with the First Nations' rights to subsistence hunting of the herd.

Thank you for considering our submission. If you have any questions, please do not hesitate to contact our office.

Sincerely,

A handwritten signature in black ink, appearing to read "Joe Tetlich". The signature is written in a cursive style with a large initial 'J'.

per: Joe Tetlich  
Chair