

## Barren Ground Caribou Co-Management in the Eastern Canadian Arctic: lessons for bushmeat management

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*Local communities have been involved in the conservation and management of caribou herds in the Canadian Arctic for 20 years. Attempts to address the bushmeat 'crisis' through management models would do well to consider this experience and draw lessons from it. This paper reviews the history of caribou co-management in the Canadian Arctic, looks at how it has evolved to satisfy both livelihoods and conservation goals, and discusses what this can tell us about the possibility of sustainable bushmeat management.*

### Policy Conclusions

- Basing policy decisions on perceived 'crises' instead of sound research can have adverse effects on both wildlife populations and local communities.
- Commitment to co-management depends on developing a climate of mutual respect. Local people will actively participate in conservation when they feel their own interests are protected by it.
- The collection of scientific data should be complemented by consultations with local resource users.
- Establishing the legitimacy of environmental claims is a pre-requisite for just and effective management of common property or open-access resources.
- Legitimate local claims on resources need the backing of law and the support of government if they are to withstand some external claims. Without this, local people will not be able to withstand the pressures that can lead to overexploitation or environmentally destructive development projects.
- Links between local subsistence economies and wider market economies do not have to be detrimental to either local people or wildlife populations if managed properly, and can generate significant income for local people.
- No solution will entirely eliminate all threats to wildlife sustainability. Claims for a risk-free solution should be treated with scepticism.

### Background

There has been local involvement in the conservation and management of barren ground caribou (*Rangifer tarandus groenlandicus*) in northern Canada for almost 20 years. Barren ground caribou are medium-sized members of the deer family whose range covers the tundra and taiga forests of the Canadian Arctic. They are a staple source of food for the indigenous peoples of northern Canada, including the Inuit, and the Dene, and Cree First Nations (See Box One). A significant proportion of the population is tied to the subsistence economy. Indigenous communities there have the highest birth rate of any group in Canada. Growing development pressures from mining and oil exploitation will make sustainable management of caribou herds more challenging in the future. As such, the situation in northern Canada has many parallels with other developing regions around the world where the need for sustainable wildlife management is great.

Concerns over the long term survival of caribou herds in the Eastern Canadian Arctic originally surfaced in the 1900s. With the introduction of guns in the late nineteenth century (and later snowmobiles in the second half of the twentieth century), the efficiency of indigenous hunters increased many fold. Concerns were first expressed by (non-indigenous) territorial administrators in the 1950s that the caribou herds were being over-harvested. Herd populations crashed on a number of occasions, most notably in the early 1950s, late 1970s and again in the late 1980s. In 1961, the Canadian federal government placed all barren ground caribou herds on the endangered species list. All herds were subsequently taken off the list in 1985 following the establishment of co-management arrangements (with the exception of the Arctic island herds of Peary caribou, a sub-species which continues to be classified as endangered). Initial conservation concerns derived partly from perceptions of Inuit vulnerability amongst territorial administrators. Some Inuit communities faced starvation after shifting caribou migration patterns left them unable to harvest enough meat to feed their families.

### **Box One: Indigenous Peoples in the Canadian North**

Indigenous peoples in the Canadian North fall into two categories: Inuit and First Nations. Both groups are descendants of those peoples who inhabited North America prior to European contact. Historically, Inuit lived on the tundra above the treeline whereas First Nations (also known as North American Indians) lived in all areas below the treeline. Today, Inuit and many First Nations have official 'status', which means they are recognised as indigenous by the Canadian government. With the exception of British Columbia, the majority of First Nations have treaties or land claims settlements which give them rights to land and other privileges within the Canadian federation. Indigenous rights to wildlife are protected by both these individual pieces of legislation and the Canadian constitution. Some groups, such as the Métis (mixed race communities that originate from the nineteenth century), do not have official status although their rights to wildlife are still asserted and recognised in some instances.

There are approximately 45,000 Inuit (Eskimo) living in the Canadian north. There are also communities of Dene and Cree First Nations, as well as Métis communities, which comprise a further 15,500 people. In addition to Inuit and First Nations, there are 32,000 non-indigenous Canadian living in the North as well.

The first attempt to involve local communities in response to these concerns came with the federal government's revival of a Caribou Management Group in the late 1970s. The group was remodeled from earlier management efforts with the aim of formally involving indigenous users in herd management. Inuit, Dene, Cree and Metis leaders had lobbied for increased involvement in such decisions for many years. In 1982, the Beverly and Qamanirjuaq Barren Ground Caribou Management Agreement (BQCMA) was signed between indigenous groups and the Canadian government. This agreement included the establishment of a co-management board for both the Beverly and Qamanirjuaq herds of barren ground caribou. The board's mandate included making recommendations to government officials on harvest levels, the allocation of harvests between jurisdictions, methods to encourage traditional users to participate in management programmes, the development and review of research proposals and the monitoring of caribou habitat. The board made decisions on a consensus basis and was obligated to hold consultative meetings throughout the communities under its jurisdiction.

Since 1982, indigenous users have actively participated in all aspects of conservation and management of the Beverly and Qamanirjuaq herds. This was the first co-management board of a major game species in North America. Its inclusive approach was replicated throughout the region for other caribou herds, as well as for other traditionally harvested species such as polar bear and beluga whale. Wildlife management boards were also created in northern Manitoba, northern Saskatchewan and the Northwest territories. This form of co-management was strengthened in 1993 with the signing of the Nunavut Agreement, a comprehensive document that included a land claim settlement and plans for a new territory with the Canadian federation. The Beverly and Qamanirjuaq Co-Management Board (BQCMB) was subsequently complemented by wildlife management institutions

created in 1999 when the Inuit-dominated Nunavut Territory came into existence. Its institutions have Inuit members equally represented from each region within the territory. The evolution of these co-management schemes in Nunavut has meant that local people play a role in the direct management of caribou and caribou habitat in the territory. Scientific expertise has been combined with the traditional knowledge of Inuit hunters to make informed conservation and management decisions that are respected throughout the territory. Because the board includes all stakeholders and operates transparently by meeting regularly throughout the region, its mandate and recommendations are understood and respected by indigenous and non-indigenous users alike.

#### **Effective Conservation through Local Management**

The caribou co-management arrangements are examples of effective conservation, addressing local livelihoods rights and needs, as well as the ecological realities of caribou herds and their habitats.

#### **Satisfying Local Livelihoods and Generating Income**

The success of caribou co-management schemes in the Eastern Canadian Arctic is founded on the fact that they account for the livelihood needs of the people who live there. The economic value of the annual subsistence caribou hunt, valued at approximately £4.7 million, makes caribou important source of food and animal products (BQCMB 2002). The price of food from southern Canada up to 2200 km away is so expensive that traditional food sources from hunting are economically preferable. This high dependence on food from traditional sources, including caribou, creates an economic incentive to manage and conserve the stocks, even in the face of other economic pressures.

Worries about the sustainability of community benefits from conservation are based on the perceived vulnerabilities of local economies to integration into wider market economies. Yet linkages with the larger economy can bring benefits and the negative impacts of development can be overcome. Commercial hunting of barren-ground caribou, both sport hunting and a small commercial harvest for food processing, has generated income for local communities. In the Northwest Territories, the total annual sport hunt for caribou equals £5.3 million, while in Nunavut it equals about £300,000, with approximately £200,000 staying in the territory (*Caribou News in Brief 2003*). In 1999, guided sport hunting in the Northwest Territories contributed approximately £1,380 per animal harvested to the local economy (Ashley 2000). Additional income is generated through market sales of fish and meat, as well as through jobs at a fish and meat processing plant in Rankin Inlet. In the case of Nunavut, the increased control of political structures allows for democratic accountability. This means that it is easier for First Nations and Inuit communities to manage their local economy in keeping with their traditional livelihoods, and participate in the wider market economy in a beneficial manner.

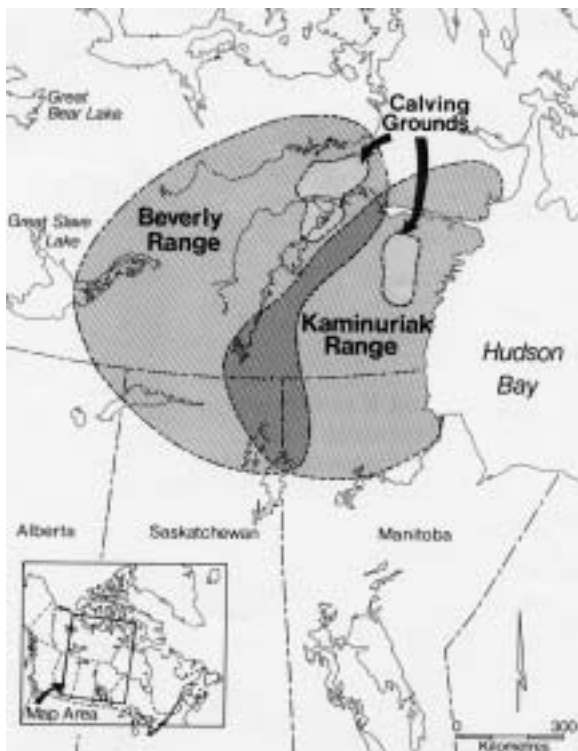
#### **Satisfying Ecological Criteria**

Since the appearance of the first co-management board in 1982, the impact of hunting on barren ground caribou populations has been closely monitored. The scheme has ensured that hunting quotas take account of herd size in any particular year. The BQCMB has established conservation goals in keeping both with user demand and sustainable herd size. Any decline below 150,000 in herd size is considered a crisis that would necessitate harvest limits and other conservation measures such as predator control. This has been linked with institutional structures that allow for meaningful and appropriate local participation. Despite a population crash in the late 1980s, of which the exact cause is

still unknown, today the two herds number approximately 775,000.

Effective conservation management such as this requires good research and data collection. Both the BQCMB and the territorial and provincial Wildlife Boards are responsible for recommending scientific research projects to government biologists. In Nunavut, this includes making provisions for wildlife harvesting surveys, aided by plans to have half-time community researchers in communities throughout the territory. Having this type of data

**Figure One: Ranges of the Beverly and Kaminuriak caribou herds and their calving grounds**



Map by G. W. Scotter, used with permission.

will go a long way toward evaluating the success of conservation and management efforts of all wildlife, not just caribou. As well, the ability of administrators in Nunavut to screen and control development means that they have the power to protect sensitive areas of caribou habitat such as calving grounds.

Minimising threats to sensitive species (such as those with low fecundity) within ecosystems is a good indicator of conservation effectiveness. Once, the biggest threat to caribou populations in the region was over-harvesting. Existing conservation and management structures appear to have worked in warding off this possibility. Similarly, experience from other co-management schemes in Nunavut and in the neighbouring land claim region of Inuvialuit indicates that when management systems are suitably participatory, local hunters voluntarily reduce their harvests of animals, even in the face of extreme hardship, when conservation demands it (Thorpe 1997). Other threats to the caribou herds include large-scale development that affects migration patterns and reproductive rates. Research done on herds in Alaska has shown that developments such as roads and oil pipelines have had a negative impact beyond their immediate location, particularly on females and the young. There is a good chance that some large-scale economic development, such as mining or oil production, will take place in the Nunavut region. Yet the mere presence of potential economic wealth does not have to translate into negative ecological impacts if there are adequate safeguards in place. In Nunavut, there are several institutions

that consider the potential impacts of development projects on the area's people and wildlife, including the Nunavut Planning Commission and the Nunavut Impact Review Board. There is also the possibility that well-managed development could provide much-needed resources for conservation efforts through direct funds or via taxation. Given that conservation managers of the Beverly and Qamanirjuaq herds cite the lack of resources as the greatest impediment to the successful collection of biological data, additional sources of funding can have a direct impact on the successful management and conservation of caribou herds.

### **Lessons for Bushmeat Management?**

The experiences of caribou co-management in the Canadian Arctic hold valuable lessons for other parts of the world:

#### **1. Crisis narratives and sound environmental management**

The biggest issue at the heart of the bushmeat 'crisis' is the sustainability of wild resources. Researchers have pointed out the vulnerable nature of some animal populations that could result in a crash in important bushmeat species. But in gathering their data, researchers do not always involve hunters themselves and are thus unable to draw on what longer-term knowledge they might have about the threatened species. For many years, disagreements persisted among biologists studying caribou in the Eastern Arctic over the impact that hunting was having on herd size (annual subsistence harvest is in the range of 16-20,000 animals) and how this compared with the 'natural dynamics' of the caribou population. Many of the worries of biologists in the 1960s and 1970s proved unfounded. Biologists overestimated the impact hunters were having on herd size ignoring arguments from indigenous hunters that scientifically derived population estimates were faulty. Improved population sampling techniques have been developed since that combine aerial assessments with ground level judgments from Inuit hunters. Biologists still cannot agree on the interplay of environmental determinants of caribou fitness, such as food availability (via the weather's affect on plant growth or snow cover on plant availability), grazing time (affected by densities of mosquito, nasal bot fly, and warble fly) or predation by wolves. But the BQCMB, as well as the other wildlife boards, ensures that indigenous knowledge of caribou behaviour and habitat, collectively representing thousands of years of history, contributes to sound management decisions. Combining this traditional knowledge with the best of science has given managers more complete information upon which to base decisions. Knowledge of local hunters should be factored into scientific information on the longer-term fluctuations of hunted animals.

#### **2. Local environmental management and external support**

The situation in Nunavut, while effective, initially required large sums of money from outside the territory. The budget for the BQCMB in 2001/02 was just over £41,000. Considering the area covered by the board, this was not a big amount. However, the Board receives significant institutional support from the Nunavut Territorial Government, among others. During the first five years of its existence, the federal government provided 95% of the £253 million annual budget for the Territorial Government (Vlessides 1999). Such management arrangements are therefore expensive. They must either be funded with sustained external support or subsidised with other significant forms of revenue generated locally. Removing this support may create pressures to generate cash revenues locally, which in turn may undermine sustainable harvests.

#### **3. Management arrangements and threat reduction**

The BQCMB faces difficult challenges as it works to carry out its mandate to ensure the sustainable management of the caribou herds. Between 1991 and 1998, five mining companies submitted

applications for mineral exploration in the Qamanirjuaq herd calving grounds. Hydroelectric power developments in Northern Manitoba threaten to change water levels and stream flow characteristics in caribou territory, which could seriously affect herd migration patterns. Roads from the south may bring with them more hunters. Pressures like these have not disappeared since the BQCMB was started. The mere existence of such management arrangements is no guarantee against future problems. However, once conservation institutions are well-established, it increases the likelihood that developments are scrutinised for their impacts on a critical resource like wildlife. This may apply, for instance, to new timber concessions in bushmeat range states.

#### **4. Determination of the legitimacy of environmental claims**

Ensuring local livelihood benefits requires the determination of who is local as well as a basis their legitimacy (Treseder *et al.* 1999). In the case of Inuit and caribou, local harvesting rights were recognised prior to the establishment of the comprehensive land claims process that led to the establishment of Nunavut Territory. Canadian law has long accorded recognition of the special status of indigenous peoples and in the face of legal challenges, has affirmed, their livelihood rights. International legal convention recognises livelihood rights for indigenous people, including those in bushmeat range states. But the boundary between 'indigenous' and 'non-indigenous' peoples is often blurred or controversial. The essential requirement is to have a process that clarifies the legitimacy of local environmental claims. In Nunavut, claims on caribou from outside the territory are small. For bushmeat range states, claims on either the income from bushmeat hunting or on the meat itself are not localised. Any process of determining the legitimacy of environmental claims in the bushmeat trade may need to factor in such questions as the "rights" of urban people to share in a sovereign national resource, either through taxes or with a portion of bushmeat harvested. Determining the legitimacy of arrangements requires consideration of equity issues.

#### **Conclusion: Local Management**

Many of the best wildlife management schemes are attempts to reflect a delicate balance between the rights and needs of local people and the need for long-term conservation. Historically, these schemes typically evolved in response to a number of local opposition to conservation measures. Such opposition is bound to continue. Much of the world's biodiversity lies outside existing protected areas. In 1990, there were over 8,000 protected areas worldwide yet this covered just 4% of the earth's surface. Creating new protected areas has been, and continues to be, both expensive and difficult. At the same time, through the science of ecology, biologists have developed an improved understanding of the dynamics of natural systems. In some cases it is simply unfeasible to provide protected areas for many plants and animals, either because they undergo succession or are migratory, or because their range is so large that it is impossible to set aside enough land. Barren ground caribou herds in northern Canada have a range of 700,000 sq. km, making it financially impossible (not to mention locally unpopular) to protect an area this large to the exclusion of human activity. As it stands, most protected areas or national parks have people within them. According to IUCN figures, 70% of protected areas worldwide are inhabited; in Latin America, this number rises to 86%. Too often, conservation through the establishment of parks and reserves has failed to address the very real livelihood impacts on people living in and around them. General encroachment, whether poaching, cutting fuelwood or collecting forest fruits and vegetables, is symptomatic of this failure, rather than the cause

it is usually assumed to be. Moreover, it is increasingly recognised that resource claims must be judged against cultural, economic and political rights, making some claims more legitimate than others. Finally, global warming means that in the coming years, whole ecosystems could change quite dramatically, in some cases moving beyond existing protected areas. These facts have resulted in a growing awareness that conservation needs to be approached on an ecosystem basis, and must involve the people who live within these ecosystems. When users have a direct interest in the sustainability of wildlife populations, their involvement in wildlife management contributes greatly to conservation effectiveness. Evidence from caribou co-management in Nunavut supports this and suggest that the involvement of local users in bushmeat management could go a long way towards ensuring the sustainability of key bushmeat species.

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