

A Cooperative Industry - Government Woodland Caribou Research Program in Northeastern Alberta

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Abstract: Rapid development of large scale logging and increasingly intensive petroleum exploration and development in northeastern Alberta prompted the establishment of a cooperative research program to investigate various aspects of woodland caribou (*Rangifer tarandus caribou*) biology. The ultimate goal of the program is to develop an effective plan that will ensure the long term survival of caribou while allowing for renewable and non-renewable resource development. There are three parts to the program. Part I began early in 1991 and makes use of conventional radio telemetry as a means of recording various parameters of general caribou biology. The study area encompasses approximately 4000 km² of low relief, boreal mixed-wood forest. Preliminary results from 2500 radio locations (involving 50 individuals) indicate that woodland caribou inhabiting the study area are non-migratory and are strongly associated with some of the more scarce peatland forest types present in the area. Investigations to document the basic biology and ecology will continue for another two years. Part II began in early 1993 as a part of a two-year investigation into the disturbance effects of petroleum exploration and development on caribou movements and behaviour. One objective of this study is to develop a predictive model useful in determining the cumulative effects of varying intensities of disturbance on caribou. Part III began in early 1994 with a proposed three-year investigation to determine the mechanism of spatial and temporal separation of caribou and moose in the study area. These relationships may indicate the means by which caribou minimize the impact of wolf predation on their populations in northeastern Alberta. Results will be applied to industrial land use and specifically to large scale forest harvesting planned for the area. The research program is supported through cooperative funding contributed by 24 petroleum companies, 1 forest company, 2 peat companies and the Alberta Departments of Environmental Protection and Energy. The research aspect of the program has been developed and implemented by staff of the University of Alberta, Alberta-Pacific Forest Industries, the Alberta Fish and Wildlife and Forest Services and the Alberta Environmental Centre. The program also incorporates a public information and liaison function. Newsletters, information videos, brochures and public consultation are the means used to accomplish this task.

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Introduction

In the 1970's, considerable concern was expressed across North America about declining woodland caribou (*Rangifer tarandus caribou*) numbers and distribution (Bergerud, 1974 and others). Agricultural and industrial encroachment along with human settlement gradually encroached on caribou range in the north-eastern United States and in Canadian provinces along the southern boreal forest fringe to the Rockies.

Trends in woodland caribou populations in the remainder of their range vary across their distribution in accordance with a variety of factors. Speculation that Alberta caribou have suffered a significant decline in their occupied range over the past 50 years is an issue currently being debated. (Bradshaw & Hebert, 1994). However, recent large

scale commitments of wood to the forest industry and oil and gas to the petroleum industry has placed this species in a very vulnerable position.

In west-central Alberta during the late 1970s and early 1980s, considerable effort was made to investigate a declining population of caribou (mainly the mountain ecotype). Logging was resulting in deterioration of the winter range of these animals. Wolf predation, native hunting, poaching and high-way vehicle collision were implicated in a steady decline of these caribou (Edmonds, 1986).

Although woodland caribou status in Alberta overall was poorly documented at that time, the concern generated by the study resulted in a closure of recreational hunting in 1981 and the development of restrictive industrial land use regulations relative to caribou range.

These restrictions were modelled after general knowledge of ungulate biology and energetics. The emphasis was aimed primarily at minimizing exposure of caribou to disturbance or other factors which potentially increased mortality during mid and late winter.

Industrial operators found the land use restrictions onerous and considerable conflict resulted. Attempts have recently been made to resolve the conflict through the establishment of regional industry/ government working groups.

The following outlines the development of the group working in northeastern Alberta.

Development of the Northeast Region Standing Committee on Caribou

Northeast Alberta is an area of relatively flat boreal mixed-wood forest, much of which is occupied by woodland caribou. Alberta government land use restrictions on occupied range were aimed largely at minimizing potential adverse effects on caribou by actions of the petroleum exploration and development industry. Restrictions related primarily to industrial access and timing with the intent of reducing caribou exposure to hunting or harassment and to disturbance which potentially cost caribou increased energy drain in late winter. As well, there was an effort to prevent improvement of predator (wolf) efficiency via limiting seismograph line clearing or snow packing during winter.

Efforts by industry to comply with these restrictions lead to considerable conflict with regulatory agencies. The conflict lead to much discussion between government and industry. A decision was eventually reached to approach the problem through local cooperative working groups. As a result, the North East Region Standing Committee on Caribou (NERSC) was initiated in mid-1991 as an attempt to address the conflict in the northeastern part of the province. The committee originally consisted of members of several petroleum companies, one forestry company and staff representing the government regulatory agencies. The objective was to illicit a better understanding of restrictions and foster a cooperative approach to addressing the integration of caribou needs and industrial objectives.

NERSC was originally and still is co-chaired by a member each from government and from industry.

Very early in its evolution (fall 1991) it was learned that flexibility in land use regulations would not be possible until further information was known about caribou in the region. It was decided therefore that NERSC would act as facilitator for caribou research designed to answer the questions required

to assure the long term survival of caribou as well as integrate industrial activity on caribou range.

Funding to initiate research originally resulted from direct participant donations of dollars, facilities and staff time. The Alberta Fish and Wildlife Service's Wildlife Trust Fund is used as the bank for the project.

From its beginning in mid-1991 to the present, NERSC has continued to evolve with additional membership and the development of sub-committees for funding, public information and liaison, provincial coordination in addition to caribou research.

NERSC has produced two videos and a brochure, describing NERSC and its research program. Periodic newsletters are produced with a mailing list of 200.

The NERSC program is presently funded by a combination of industry donations of dollars, equipment and facilities; government input in the form of aircraft rental, staff time, equipment and facilities; and the University of Alberta in the form of student, student support and equipment. Donations and funds have been supplemented by significant grants from the Alberta Recreation, Parks and Wildlife Foundation and the Canada-Alberta Partnership Agreement in Forestry. Total NERSC funding to date is approximately \$450,000 which includes an assessment of non-monetary contribution values. We anticipate funding sufficient to complete the program will be available.

As in any major research program, information useful for management application does not materialize until well into the program. This year however, we expect the findings to date will be sufficient to make preliminary adjustments to regulations affecting industry. A sub-committee to review this issue was recently established and recommendation will be submitted by mid-1994.

The NERSC Research Program

The NERSC research program has three basic components. The initial thrust was designed to investigate the basic biology and ecology of caribou in northeastern Alberta. Radio telemetry was the primary tool used.

Since field work began in early 1992, radio tracking, aerial census for numbers and recruitment, mortality retrieval, as well as vegetation and habitat information on an Arcinfo Geographic Information System (GIS) is providing an increasingly clearer picture of caribou numbers, distribution, seasonal movements, habitat preference, mortality and recruitment rate of these animals. Our GIS is presently working with about 3000 radio locations (from a total of 57 radio-collared animals), detailed

access mapping and several vegetative/habitat mapping parameters including a detailed forest-peatland classification. Thus far, our caribou are relatively sedentary within general wetland complexes and show very significant preferences for specific treed-bog habitat types.

Density, mortality and recruitment rates determined to date are indicative of a stable or slowly declining population (although our sample sizes are still relatively small). The picture will improve, as we plan this aspect of the program to continue for another two seasons.

The second aspect of the NERSC Program is an investigation of the effects on caribou of industry-caused sensory disturbance. Monitoring caribou reaction in the form of behaviour and distance moved from simulated seismic explosions is the main mechanism of this study. This two year investigation will be completed in mid-1994. Results of the study will allow the development of a model to predict the probability of caribou encountering disturbance factors. This will be useful in establishing limits for specific industrial activity conducted on critical caribou range.

We will be reviewing the results of these two programs in the near future to determine how we might modify the access and timing restrictions presently imposed on industrial operators.

The third aspect of the program is designed to investigate the complex relationship between caribou and moose relative to wolf predation. The literature indicates that spatial and/or temporal overlap of range by caribou and moose exposes caribou to wolf predation which may be the primary factor limiting caribou population growth (Bergerud & Elliot, 1986; Seip, 1990). Understanding this relationship is critical in the design of large scale habitat disturbances such as the logging planned by Alberta Pacific Forest Industries which has rights to much of the timber in northeastern Alberta.

Field work on this aspect began in late 1993 with the selection of a suitable study area. Radio collaring of caribou was completed in early 1994. Moose and wolves will be captured as conditions allow.

The subsequent field work, data collection and analysis will be conducted largely by students from the University of Alberta, Department of Zoology and Animal Science. It is anticipated that this investigation will be completed in 1997.

Results will hopefully clarify the antipredator strategies used by caribou in northeast Alberta and will be applied to industrial land use regulations with particular emphasis on forest cutting design to maximize caribou survival over the long term.

NERSC As A Cooperative Program

The success of NERSC as a effective, cooperative government-industry research program is a result of genuine commitment of its members and very hard work by many involved in the planning, research, funding and the public information effort.

The establishment of a working group such as NERSC first requires a strong will on the part of senior government regulators to rely on a cooperative approach to problem solving by affected stakeholders. It then requires a few key persons in both government and industry who can instill confidence in all involved stakeholders. The subsequent building of trust and commitment requires demonstrated progress toward problem solving and considerable feed-back to assure that serious efforts are being made. Incorporation of a public information system is also essential to assure acceptance and accountability beyond the direct stakeholders.

An important and essential element involved in the success of NERSC is the extent of funding and the diversity of funding sources. It has been demonstrated that project funding is easier to obtain if stakeholders are seen to be financial contributors, partly as an indicator of support for their expressed concerns and commitment to problem solving. The leverage value of stakeholder contributions in expanding the "pot" is very substantial and should not be underestimated. It is therefore very useful to orchestrate funding efforts around the cooperative theme.

The ultimate objective of NERSC is to facilitate the development of specific management programs which will effectively address the needs of caribou while integrating resource extraction to the extent possible. Whether this is possible on a large scale and will meet the long term goals is open to speculation. However without an organization like NERSC, the long term survival of woodland caribou in the northeastern Alberta boreal forest would be much less probable.

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- Alberta Lands and Forest Service
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University of Alberta

- Department of Zoology and Animal Science

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