

## Commentary: Conservation in the North — An Ecological Perspective

JOHN B. THEBERGE<sup>1</sup>

In terms of the physical capacity of northern Canada to support the activities of man, there are no limits in sight. Once there were limits, set by northern resources essential for life: the ebb and flow of wildlife cycles and shifting migration routes, and the success at killing by spear and rock fence and ambush. That was before the industrial age. Then, the human population in the Canadian north was sparse, estimated at only 34 000, consisting of 22 500 Eskimos and 11 500 Indians (Mooney, 1928), or 50 000 in total (Crowe, 1974), a density of only one person per 77-133 km<sup>2</sup> (30-44 mi<sup>2</sup>). Population limits were established by the immediate environment, no different in that regard from the populations of all other species that are interwoven as threads in the fabric of northern ecosystems.

That was before northern resources expanded to include oil and gas, iron ore, uranium, zinc, ivory carvings and Eskimo prints. It was before wants for these things in distant countries, or the rest of North America, spilled over to affect the north. These new resources coupled with surpluses outside the north in material goods such as food have changed a relatively closed system, in terms of basic resources to sustain human life, into an open system built upon imports and exports (Cowan, 1969). No longer are the limits either to human populations or to human activities in the north established directly, through immediate ecological factors; they are largely set indirectly, through distant economic factors. Supply and demand structures have replaced trophic structures, dollar flow has intervened upon caloric flow for all but a small portion of northerners. Thus, there is little apparent need to care if caribou herds or grizzly populations dwindle; they are largely irrelevant to the economic system.

Most anthropologists agree that in historic times, food supply was the principal ecological determinant of human population size (Crowe, 1974:23). But after 10 000 years or so of periodic starvation, or up to 50 000 years in eastern Beringia (Morlan, 1980), there was, at the time of European contact, little evidence of any broadly accepted tradition of husbanding or conserving food resources. Killing, with primitive weapons, more than could possibly be used as food in a particularly advantageous situation was often recorded (Stefansson, 1921:257). Such overkill became excessive with the efficient weaponry of the white man, documented extensively by Kelsall (1968:216-222) who concluded that "early examples of excessive and unnecessary slaughter of caribou are legion, and modern-day counterparts can be found for most."

Working against early man as a conserver was, in part, his ecological position. Man was primarily a co-predator with wolf and bear on ungulates, marine mammals and fish. Food resources were discontinuous in their distribution, and fluctuated in absolute abundance. Faced with an uncertain food supply, man, like the other predators, undoubtedly benefitted at times by fully exploiting opportunities to kill. Excessive slaughter may have been an extreme example of the widely-observed phenomenon in predators known as a functional response to increasing prey availability (Holling, 1965), but such an explanation is speculative.

Early man often failed to conserve, too, because he lacked the two prerequisites for conservation of resources: perception of the danger of over-exploitation, and an option to do something about it. Concerning the former, early man had no ability to count wildlife abundance except locally, and was mobile enough to overcome local depletion by moving. Concerning the latter, when the resource in question is absolute availability of food, there is no option. Anthropologists have not described any behavioural self-regulatory mechanism or tradition to adjust natality to the realities of food supply, such as exists in man's co-predator, the wolf (Allen, 1979:264, 399).

The two prerequisites for conservation did begin to emerge, however, in the early 1900s. These were transition years in the take-over by the open economic system. Apparent to all were the rapid declines of whales, muskoxen and caribou as the demands in Europe for baleen, whale oil and furs began to take their toll. And food options existed within the economic system; arctic foxes and muskrats could be metamorphosed into dried beans and canned ham. Under these conditions, conservation dawned in the north, with regulations to control the number of trading posts, reindeer introductions, legislation to prevent the export of caribou hides, and most significantly the establishment of game preserves, beginning with the Victoria Island Preserve in 1918 and including the vast Arctic Islands Preserve covering the entire Arctic Archipelago in 1926. In these preserves, only native people or Metis were allowed to hunt or trap.

But then the importance of immediate ecosystems increasingly gave way to the economic system, drawing native people into trade or making them wards of governments. The reserves were repealed one after another, beginning in 1948, ironically, when wildlife was switched from federal to territorial control in the Northwest Terri-

<sup>1</sup>Faculty of Environmental Studies and Dept. of Biology, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1

tories (Hunt, 1976). It did not matter anymore how many caribou there were in this new open economic system — at least at the political level.

Under the economic proprietorship of the north today, does conservation based upon ecological realities have any role to play? Conservation has been defined in the context of the Canadian north as a balance between four strategies: managed-use, protection, preservation and restoration (Naysmith, 1971). This definition at least conceptually provides a much broader framework for conservation than was necessary when immediate ecosystems sustained man. But has it provided a broader framework in practice? Has conservation, so defined, curbed to any great extent the influence of man upon northern resources?

Consider the first conservation strategy, managed-use. Livingston (1979) described the role of ecology as “technocratized” — “ecology used as a tool for ‘developers’ to go on doing what they have always done. The only difference is that ‘environmental impact is to be minimized to an acceptable level’.” New words — environmental impact analysis, biophysical land classification — and new roles for naturalists and ecologists — legal testimony, cross-examination — are part of the imposition of both an economic mode of quantification and a legal mode of weighing facts. Ritchie (1978) stated that ecologists have failed to meet his criteria of excellence in these respects, and thus that they should step aside, a viewpoint underlining the irrelevancy of their input in the eyes of the now dominant economic determinants of the northern future.

Technocratized ecology, despite Ritchie, does have a role to play in northern decision-making: it can plaster environmental band-aids on development projects, albeit sometimes important band-aids, maybe even splints. But ecological considerations, in such a role, are subservient to the economic system, as must be ecologists who practice their science *only* by conducting environmental impact assessments. Such might not be true if ecological considerations were viewed as having more importance in decision-making. But how can they be important if they detract from the goals of the “industrial state”, expressed by Galbraith (1972) as principally the maximization of corporate profits, gross national product and employment?

Livingston (1979) went on to ask, “What is minimal impact? What is acceptable impact? Acceptable to whom?” With the exception of the Berger Inquiry, one must search hard to find any case where ecological considerations were a major component of a land-use decision: not in the decision to build or even how to build the Dempster Highway, or the Alaska gas pipeline, or islands in the Beaufort Sea, or any others, despite millions of dollars spent on ecological research.

In 1977, while working under contract for the Yukon Wildlife Branch, I expressed a hope in a report to the Environmental Assessment and Review Panel which was deliberating on the proposed Alaska Highway gas pipe-

line: “One of the largest engineering projects in Canada’s history could logically be accompanied by a conceptual lead in environmental management. That lead should be to make the project as insignificant to the ecology of the land it traverses as is *possible*, rather than as is *acceptable* using some indefensible criteria of acceptance based on perceived political and socioeconomic ideas” (Yukon Wildlife Branch, 1977:3). That turned out to be only a hope. Foothills Pipeline Company has spent money, both to fund an independent inquiry by some leading scientists who formed the “Alaska Highway Pipeline Panel”, and to contribute to studies such as the potential impact of the pipeline on caribou. But then, in order to build test sections of pipeline, the company put a 100-man construction camp in the area of the major crossing place of the largest herd of mountain caribou in the vicinity of the pipeline in the Yukon, with full knowledge of the importance of this place to caribou, with the approval of the federal government’s Northern Pipeline Agency.

A hidden assumption has, by virtue of repeated exposure, become explicit: ecological concerns rarely ought to be considered significant enough to impede northern development.

“Protection”, as described by Naysmith (1971), involves legislation that protects some aspects of the environment, a more rigorous conservation strategy than policies of goodwill surrounding his “managed-use”. The Arctic Waters Pollution Prevention Act, Northern Inland Waters Act, and the Territorial Game Regulations all protect parts of northern ecosystems. These laws are the best part of the ecological appliqué, but if they are to be more than that, considerable expansion in legislation would be required. Legislation, rather than just policy, should buttress the Environmental Assessment and Review Process, both its implementation and conclusions. The territorial land-use permit system, to be really effective, needs a legal base to provide an expanded and more meaningful role for the federal and territorial resource agencies, now merely advisors to the economically-dominated Department of Indian Affairs and Northern Development. Mining should not be exempt from the land-use permit system in the Yukon. Legislation should require rehabilitation after both placer and hard-rock mining. Game laws should be set with more adequate manpower for research, monitoring and enforcement commensurate with the vastness of the north and increasing pressures on wildlife.

The mining, oil and gas industries often argue that existing environmental laws and policies can accommodate ecological concerns about development. While restrictions on tire sizes and hunting, on location of fuel caches, water crossings and garbage dumps can do a lot of good, they do not abolish the pressing need for preservation of land, another of Naysmith’s strategies. Here we face our greatest failing; our ecological appliqué is pitifully small considering that only here might we connect most directly with historic ecological systems that once controlled human welfare.

There is ample evidence that preservation has not been a priority in the programs of either the federal or territorial governments. The only recent achievement has been the establishment in 1972 of the three large national parks: Kluane, Nahanni and Auyuittuq. But where are any national wildlife areas in the north? The Canada Wildlife Act provides a vehicle for their establishment, yet there are none. Where are any territorial parks? Legislation exists in both territories, but it is unused except for campgrounds. Why are none of the 151 ecological sites identified north of 60° in the *International Biological Program* protected? What has happened to the five northern national parks proposed in 1978? Why are 15 out of 18 natural regions north of 60° as defined by Parks Canada still without parks? One hears excuses — native land claims must be settled, yet how much of a priority has been their settlement? In the last eight years, four Ministers of Indian and Northern Affairs have come and gone with no settlement. Exploration and development are not hindered by the failure to settle native land claims, yet by incrementally reducing wildlands each year, they both prejudice native land claims and reduce options for parks and reserves.

The problem is that preservation not only has no place in the economic system, it also apparently can hinder that system. Galbraith (1972:335) placed parks on his list of government services that do not contribute significantly to the goals of the industrial state and so have little political support. Recently, the Northwest Territorial Council voted unanimously against creation of any more national parks until Parks Canada "rejects the proposal to establish additional national parks based upon a policy which puts preservation first and enjoyment by people second" (Minutes, 1979). Leading up to this motion were statements by councillors such as: "Why can we not have a Banff Springs Hotel in Nahanni — that is the type of development we want to see in the Northwest Territories and that is the type of thing Parks Canada should be doing with the money available to them instead of going and gobbling up great chunks of land out in the wilderness".

The mineral industry's position on preservation has been stated many times. It was put most succinctly in hearings over the future of a proposed ecological reserve at Polar Bear Pass in the eastern High Arctic. In response to the question, "What you are saying is there should be no lands set aside that do not allow mineral exploration or development anywhere?", the vice president of Cominco responded, "The tip of Sicily is okay" (Transcript, 1980:93). He went on to explain that at no time could exploration be complete for any area because "relative values may not materialize for 10, 15, or 20 years."

The mineral industry often argues for multiple-use, in effect Naysmith's "managed-use", for all land in the north, denouncing such "single-uses" as parks and reserves as based upon "a narrow perception of the needs of people and the maintenance of ecological balance" (British Columbia and Yukon Chamber of Mines, 1981). Indeed,

wilderness preservation does cater to multiple-use, described later in this paper, but mining cannot be one of those uses, by definition of either "wilderness" or "preservation". The concept of multiple-use has validity as one strategy of conservation, but to promote it to replace preservation everywhere is still an attempt by the mining industry to stake political claim to the entire north.

Under economic proprietorship, only a shift in societal values will create an adequate place for preservation as a conservation strategy in the north. There are some compelling arguments for preservation, and some evidence of their growing acceptance. Foremost is "ecological ignorance", a reason put forward for conserving genetic variety which is one of the functions of land preservation (Cowan, 1966). Ecology is a relatively new science that has only begun to clarify homeostatic mechanisms in ecosystems, especially in the north. We do not even fully understand the causes of cycles of abundance, so prevalent in northern wildlife. That most basic northern ecological reality, which has received a lot of study (including my own Ph.D. research), is still the subject of competing hypotheses and scientific debate. Phenomena such as the cause of caribou declines in the last few decades are debated as to the relative significance of overkill or winter range deterioration (Bergerud, 1978). The role of diversity in maintaining stability in tundra ecosystems is unclear (Banfield, 1975). Even in basic estimates of numbers of animals, "confidence limits are so wide as to render the estimates virtually useless for management purposes . . . The present state of wildlife statistics is simply intolerable and makes a mockery of attempts to manage the resource" (Fuller, 1979).

For these reasons, ecologists are normally much slower getting to their feet than are industries' spokesmen to say that developments will have no detrimental ecological effects. Those who say this or that proposed development will have no adverse impact rarely do so by virtue of scientific support, but because they are not held accountable if they are wrong, and because of the ecological fact that impacts may not be immediate; ecosystems may partially adapt. Can those who said, even in legal testimony, that the Dempster Highway in the Yukon will have no adverse effect on the Porcupine caribou herd, tell us conclusively why the big herds of caribou no longer cross the Steese Highway or the Taylor Highway or the Denali Highway in Alaska? These herds have declined, and again the reasons are obscure.

Given these uncertainties about northern ecology, an intelligent measure of caution should be sufficient reason to place outside of the economic system representative areas of substantial enough size to be relatively self-sustaining. But, as long as economic opportunism shapes the north, the question, unfortunately, still will be asked, "at what cost?" Is a herd of 200 caribou worth 22 million dollars, the cost of re-routing the Alaska Highway gas pipeline to avoid them? Should an ecological preserve be

established knowing that inadvertently it might cost us a Pine Point mine? I answered 'yes' to both of those questions, put to me in public hearings, because we are witnessing the destruction of northern environments in "incidental increments" (Cowan, 1975). Besides, in my value system, to which I have as much right as does any industrial spokesman to his, northern wilderness does matter.

Surely it is a Canadian right to know that roadless areas exist where Dall sheep are in the hills, and a Canadian right to preserve a frontier. "Few countries in this world still have a frontier, a sense of a line separating civilization from wilderness, or the familiar from the mysterious" (Fuller, 1978). A wilderness frontier is a resource in itself, one deeply embedded in Canadian art and literature. Indeed, a wilderness frontier is part of the Canadian identity; once it is gone we will have lost a vital element of our heritage. We will all, no matter how urban, have become victims of a homogenizing world. Then nowhere in Canada will human endeavour be delimited by the immediate ecosystem, a critical measure of the degree to which a frontier exists.

There are more pragmatic reasons for preservation in the north. People worldwide are in the market to collect wilderness adventures, to see muskoxen in an arctic snowstorm, caribou streaming across the tundra, and a gyrfalcon swooping at incredible speed on a brood of ptarmigan chicks. If very carefully regulated, these recreational activities are an economic product of wilderness lands.

Subsistence living, too, is a pragmatic reason for preservation, and a lifestyle option supportable in a frontier within limits of the wildlife populations. Native peoples' leaders have said repeatedly that they want to preserve their traditional lifestyles and culture (Mercredi, 1978; Raddi, 1978).

One need not appreciate these values — aesthetic, scientific, practical — in order to agree to give them some room; one only need appreciate that some people hold them, and that the opportunity for both our generation and future generations to hold them should remain a Canadian option. This option requires only that the economic proprietors of the north agree to concede some land; "In some cases, it will be necessary to forego development to protect the valuable animals . . ." (Nelson, 1976). Even so, "the preservation of wilderness areas should be considered a contribution to, rather than a repudiation of, our technologically based civilization" (Berger, 1977).

Northern wilderness is becoming increasingly fragmented. Exploration levies heavy environmental costs; the north today is decked out with thousands of kilometres of seismic lines and tote roads. "A miner is no longer a quaint little fellow with a pick and a burrow" (Kauffmann, 1979:83). Today he drives D9 Cats across the tundra and builds islands in the Beaufort Sea, supported in all this by a huge government infrastructure, from "roads to resources" in the 1960s to the "need to know" incentives at present.

Undoubtedly we "need to know", but everywhere? And at any cost? Leopold's (1949) thought 30 years ago is even more relevant today: "Now we face the question whether a still higher standard of living is worth the cost of things natural, wild, and free."

Canadians like to think that we have achieved, or are close to achieving a "post-industrial society", where "problems are derived from affluence rather than poverty, from leisure rather than work, of a broadly social kind rather than economic" (Burton, 1972:54). In such a society we should be able to afford a plurality of values and direct the future of land in more ways than simply traditional economic opportunism. With one of the highest standards of living among the nations, it is impossible to believe that we must find every drop of oil and ounce of ore, that we are, in effect, still a developing nation desperate for economic growth. We have only begun to consider conserving and recycling.

In conclusion, the economic system has created a greater need for conservation than ever existed when immediate ecosystems regulated human populations and human endeavour in the north. Reasons include an expansion of what are considered resources, a shift from renewable (wildlife) to non-renewable (mineral) resources, and an increase in the importance of northern activities which extends well beyond the north. Thus, conservation has required the development of a broader definition which includes a number of strategies. The need to broaden this definition, brought on by the economic system, has not been matched by sufficient acceptance of the importance of ecological considerations to land management, philosophically or in practice. Preservation of our northern wilderness heritage, one of the conservation strategies, has especially suffered under the economic proprietorship of the north, despite compelling reasons not to ignore it.

Unless public values change, the future of the north will continue to be determined solely by economic opportunism rather than by any plurality of values. Unless we allow ecological realities to dictate once again the extent and amount of human activities in the north, in effect to curb and set strict limits on the economic system, then we will never have more than an ecological appliqué of virtually insignificant long-term consequences. If we squander our northern inheritance, the environment ultimately will impose sentence materially and spiritually, just as certainly as it set limits on human populations of old.

#### ACKNOWLEDGEMENTS

I appreciate the critical comments made by I. McTaggart Cowan, W. H. Fuller and J. G. Nelson. This paper forms part of the philosophical operational base of ongoing research to identi-

fy and promote the protection of environmentally significant areas in the Yukon<sup>1</sup>, directed by J. G. Nelson and myself and funded by the Donner Foundation and World Wildlife Fund.

## REFERENCES

- ALLEN, D.L. 1979. Wolves of the Minong, their vital role in a wild community. Boston: Houghton Mifflin. 499 p.
- BANFIELD, A.W.F. 1975. Are arctic ecosystems really fragile? In: Luick, J. P., Lent, P. C., Klein, D. R. and White, R. G. (eds.). Proceedings, First International Reindeer and Caribou Symposium, Fairbanks, Alaska. August 1972. Biological Papers of the University of Alaska. 546-551.
- BERGER, T.R. 1979. Synopsis of address to annual meeting, Arctic Institute of North America. Information North. Arctic Institute of North America, Calgary. Autumn issue.
- BERGERUD, A.T. 1978. Caribou. In: Schmidt, J.L. and Gilbert, D.L. (eds.). Big Game of North America. Harrisburg, Pennsylvania: Stackpole Press.
- British Columbia and Yukon Chamber of Mines. 1981. Anon. brief for annual conference of Canada's provincial ministers of mines, Halifax, Ont. 1980. Mining Review Jan./Feb. 1981: 39-47.
- BURTON, T. 1972. Natural Resource Policy in Canada, Issues and Perspectives. Toronto: McClelland and Stewart. 174 p.
- COWAN, I. McT. 1966. Management, response, and variety. In: Darling, F. F. and Milton, J. P. (eds.). Future Environments of North America. Garden City, New York: Natural History Press. 55-65.
- \_\_\_\_\_. 1975. Transcript of Mackenzie Valley Pipeline Inquiry, Yellowknife. Alwest Reporting Ltd., Burnaby, British Columbia. 47:6267.
- \_\_\_\_\_. 1969. Ecology and northern development. Arctic 22(1):3-12.
- CROWE, K.J. 1974. A History of the Original Peoples of Northern Canada. Montreal: McGill-Queen's Univ. Press. 226 p.
- FULLER, W.A. 1978. Concluding plenary session: Identifying the issues. In: Keith, R. F., and Wright, J. B. (eds.). Northern Transitions, Second National Workshop on People, Resources and the Environment North of 60°. Canadian Arctic Resources Committee, Ottawa. Vol. II. 447-452.
- \_\_\_\_\_. 1979. Of conservation and mysticism, democracy and things. Arctic 32(3):179-188.
- GALBRAITH, J.K. 1972. The New Industrial State. 2nd ed. New York: Mentor. 404 p.
- HOLLING, C.S. 1965. The functional response of predators to prey density and its role in mimicry and population regulation. Memoir Entomological Society of Canada. No. 45. 60 p.
- HUNT, C. 1976. The development and decline of northern conservation reserves. Contact 8(4):30-75.
- KAUFFMANN, J. Quoted in McPhee, J. 1979. Coming into the Country. New York: Bantam Books. 417 p.
- KELSALL, J.P. 1968. The Migratory Barren-Ground Caribou of Canada. Dept. of Indian Affairs and Northern Development, Ottawa. 340 p.
- LEOPOLD, A. 1949. A Sand County Almanac. Oxford University Press.
- LIVINGSTON, J.A. 1979. One man's celebration. Ontario Naturalist 19(3):9-14.
- MERCREDI, J. 1978. Metis Association of the Northwest Territories. In: Keith, R.F., and Wright, J.B. (eds.). Northern Transitions. Second National Workshop on People, Resources and the Environment North of 60°. Canadian Arctic Resources Committee, Ottawa. Vol. II. 103-104.
- Minutes. 1979. Council of the Northwest Territories, last session of the 8th Assembly, Jan. 31.
- MOONEY, J. 1928. Aboriginal population of America. Washington: Smithsonian Miscellaneous Collection 80(7):33.
- MORLAN, R.E. 1980. Taphonomy and archaeology in the upper Pleistocene of the northern Yukon Territory: a glimpse of the peopling of the new world. Archaeological Survey of Canada (Mercury Series) Paper No. 94. 398 p.
- NAYSMITH, J.K. 1971. Canada North — Man and the Land. Information Canada, Ottawa. 5 p.
- NELSON, J.G. 1976. The future role of conservation reserves in the Arctic. Contact 8(4):76-116.
- RADDI, S. 1978. Quoted in press release, Northern Yukon Land Withdrawal. July 6. Committee for Original Peoples Entitlement, Inuvik.
- RITCHIE, J.C. 1978. Northern fiction — northern homage. Arctic 31(2):69-74.
- STEFANSSON, V. 1921. The Friendly Arctic, The Story of Five Years in Polar Regions. New York: MacMillan Co. 784 p.
- Transcript. 1980. Meeting held by the interdepartmental working group on International Biological Program ecological sites, Sept. 24, 1980. Department of Indian and Northern Affairs, Ottawa. Vol. I. 222 p.
- Yukon Wildlife Branch. 1977. Alaska Highway Gas Line Project, Environmental Concerns and Recommendations. 159 p.

<sup>1</sup>The publication *Environmentally Significant Areas of the Yukon Territory*, edited by J.B. Theberge, J.G. Nelson and T. Fenge (1980), provides an identification and analysis of lands worthy of preservation-oriented management. It is available from Canadian Arctic Resources Committee (Research Monograph Four, Yukon Series) at 46 Elgin Street, Ottawa, Ontario, Canada K1P 5K6. 134 p. \$6.00.