SOME ELEMENTS OF SUBSISTENCE LAND AND RESOURCE
USE WITHIN THE RANGE OF THE PORCUPINE
HERD IN ALASKA

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North Alaskan and Canadian ecosystems are facing an increasingly rapid pace of industrial exploration and development. In Arctic Alaska, vast areas of what has heretofore been largely wilderness (such as National Petroleum Reserve-Alaska, Prudhoe Bay Uplands and Arctic National Wildlife Range) are currently slated for intensive seismic exploration for oil and gas and eventual development leases. Concern for the fish and wildlife resources present in this part of the Arctic and the well being of those who depend on these resources in the areas of proposed action, is shared by government agencies, private interests and the public.

Because of its international status, and because of the dependency of people within its range upon the herd, the Porcupine Caribou herd has received a fair amount of attention of late. In the last two years an international caribou convention between the U.S. and Canada has been proposed. Its major purpose was to ensure conservation of the migratory Porcupine Caribou Herd and their environment. The action was considered necessary because of special management problems associated with migratory wildlife populations and the changing industrial, economic and social conditions in the North. Interest in this approach has been expressed by native and environmental organizations, but to date no final action has been taken by the two governments.

With passage of the Alaska Lands Act in late 1980, part of the range of the Porcupine Caribou herd—the calving grounds—was opened to seismic oil and gas exploration, and future industrial development is likely in the area if
significant resource finds are made. This federal action contains provisions, however, for the study of the Porcupine Caribou herd with special emphasis on assessing the environmental impact of exploration and development of the coastal plain of the Arctic National Wildlife Refuge prior to any action.

Other factors also identified as potentially impacting the land are the eastward expansion of the Prudhoe Bay oil and gas field, oil and gas exploration and development in the Beaufort Sea (along the entire coast of the Arctic National Wildlife Refuge), hard rock mineral exploration throughout northeast Alaska, regional economic growth, and village population growth in the region. Assuring that individual and cumulative effects of the above-mentioned factors stay within ecologically and socially acceptable levels poses a major challenge to Federal, State and private land and resource managers.

In order to provide managers with much needed information on subsistence and related human ecological dimensions within the range of Porcupine Caribou herd in Alaska, the Alaska Department of Fish and Game, Division of Subsistence, last fall fielded an in depth and long term study in northeast Alaska. The overall study objective is to provide information and data on subsistence land and resource use in the region, with special emphasis on caribou, for comprehensive land and resource management planning purposes. By developing detailed information on the significance of the caribou to the communities in the area, we hope to actively participate in and contribute to ongoing management and planning processes both inside and outside our department. As members of the Porcupine Caribou Technical Committee, for instance, we recognize the importance of international cooperation in the management of the herd and its range.

Another important objective of our study is to employ ethical data collection methods. We are seeking ways of ensuring confidentiality of personal data and are actively involving local land and resource experts in carrying out the study as well as in reviewing and criticizing results. Local Fish and
Game Advisory Committees, tribal and village councils, the North Slope Borough, Gwicha-Gwich'in-Ginkhye and Tanana Chiefs Conference are also significant coordination points that we have considered necessary in order to assure local and regional understanding and cooperation in our study.

Two problem areas lie at the heart of our investigation. The first element of our research is subsistence land use documentation which we have defined as the need to describe village and regional caribou hunting areas. The first task is to develop the geographic dimensions over time (using the same basic approach as did Milton Freeman in describing Inuit land use and occupancy in Canada) in order to establish the baseline. Yearly village and regional use patterns are then described over time in order to establish a measure of variability from year to year.

Initial research efforts have been geared to the villages of Kaktovik and Arctic Village as they are the most frequent users of the Porcupine Caribou herd based on existing documentation.

Additional information components in the land use element include an inventory of traditional and contemporary subsistence use sites associated with caribou harvest. Geographic and other significant place names in Inupiaq and Gwich'in as well as data on travel routes and the types of transportation used in caribou hunting are recorded. Finally, we aim to describe by village and as a region those areas of special cultural or economic significance to caribou hunting, so that maps similar to the critical habitat maps used to protect special wildlife areas can be produced.

The basic unit of analysis we use in our study is the individual caribou hunter in each village, but our information will be portrayed in community and regional form. Our goal is to approximate total coverage in each village studied for development of the baseline information. Participant observation, structured mapping sessions and informal interviews are the basic methods used in
collecting this information.

The second problem area studied is resource use, defined as the need to describe the contemporary significance of caribou in the village and regional resource complex. Study components here include: village characteristics (demography, settlement history and pattern, macro-economics and available services); the annual cycle of caribou harvest activities; cultural, economic and nutritional importance of the harvest; harvest strategies including variables affecting harvest, (e.g. ecological, economic and cultural parameters, harvest methodologies and regulatory effects); and characteristics of the harvested caribou (such as sex, age, physical condition, as well as location taken and source - whether Porcupine herd or from say Central Arctic herd). The basic methods used to obtain this information are participant observation and loosely structured individual household interviews. Again we strive for complete coverage in each community studied.

The Kaktovik and Arctic Village projects were started up last fall and are now into their second field season. Information gathering activities are progressing well and we have received encouraging support at all levels. We anticipate that much of the baseline information will be completed by spring of 1982 and that the second phase of the project - the year to year monitoring of land and resource use components can then be started up in order to produce the long-term trend information and provide the basis for evaluating land conversion impacts in northeastern Alaska.

Kaktovik Project Status. The village of Kaktovik is located on Barter Island in the Beaufort Sea, at 70° north latitude and 143° west longitude, approximately 400 miles northeast of Fairbanks. It is the easternmost village in the North Slope Borough, only 70 miles from the Canadian border. Barter Island, only a few hundred feet offshore, is part of the barrier island system that extends along the Beaufort Sea coast. To the north is the Arctic Ocean, ice covered for
nearly 10 months out of the year, and to the south the coastal plain, backed up by the Brooks Range some 60 miles away. Barter Island has been an important trading center for centuries according to archaeologists - hence the island's name. The village site has been in use since the early 1920's but it was not until the early 1950's that a school was built and a permanent population became firmly established. Construction of a DEW-line facility on Barter Island during the late 1940's and early 1950's undoubtedly exercised some influence on the establishment of the village, but little information is available on this relationship. In fact the ethnographic, ethnohistoric and archaeological record is very poor for the eastern Alaska Arctic as a whole. Glimpses of the subsistence way of life in Kaktovik can be gleaned from the works of the anthropologist Norman Chance, whose studies focused on cultural change among north Alaskan Eskimos during the early 1960's. Recently the North Slope Borough staff compiled a rudimentary subsistence profile of the village and also started compiling a Traditional Land Use Inventory for the Kaktovik area. Both are valuable documents clearly indicating the abundance of cultural sites in the Kaktovik area and thus the long term subsistence use of the northeast Arctic by the Kaktovingniut, but neither product is at this time comprehensive.

The village population, predominately Inupiaq, is estimated at 175. Modest wage earning opportunities mostly associated with seasonal construction emphasize the importance of subsistence activities and resources harvested to the economic and social wellbeing of the community. A great variety of species are harvested but of primary importance are Char and Whitefish, Bowhead Whales, sheep and caribou. Fish are caught nearly year round, while Bowhead Whales are harvested only during fall in the open but fogfilled Beaufort Sea. Sheep are hunted mainly in fall and spring some 60 miles to the south in the Brooks Range and caribou are harvested nearly year round, with July/August as the recent peak harvest periods.
During the ice-free season (July-Sept.) most subsistence activities are confined to the coastal area from Demarcation Point in the east to the Staines River to the west; whereas during snow season people range inland, deep into the Brooks Range as well as east to the Aichilik River and west to the Shaviovik River not far from Prudhoe Bay.

Kaktovik subsistence harvest of caribou is not restricted to animals from the Porcupine herd, at times of the year animals from the Central Arctic herd appear to be an important source of harvest; this may be significant in terms of subsistence caribou for as the Prudhoe Bay oil field continues to expand eastward it is likely that Kaktovik subsistence hunters will be impacted, first perhaps positively as caribou are displaced further eastward along the coast, but in the long run probably negatively as calving habitat is lost and regulatory restrictions are imposed to restrict access to industrial development areas.

Lastly it is clear that quality human ecological data are important to the Arctic National Wildlife Refuge land and resource planning studies, for clearly this information lends additional weight to arguments that seismic exploration and industrial development must, if it is allowed to occur, be balanced carefully against already existing values on the land.

**Arctic Village Project Status.** Arctic Village is a Neetsaii Gwich'in Athapaskan village of approximately 125 persons located at 145° west longitude, 68° north latitude. It is situated near the edge of the boreal forest on the Chandalar River in a mountainous region of the eastern Brooks Range. Documentation of the Neetsaii Gwich'in people goes back to the 1930's when Robert McKennan spent time among those also known as the Chandalar Kutchin. Subsequent work by Hadleigh-West in the early 1960's and others in the 1970's have provided us with a useful baseline of subsistence land and resource use over time.
The annual cycle of activities in Arctic Village still largely revolves around the harvest of fish and wildlife resources. Wage-earning opportunities have recently been expanded by the construction of an enlarged airport in the village and by a few other seasonal employment opportunities. Caribou, however, appear to retain a significant position as a primary source of protein in household diets. Moose, fish, Dall sheep, waterfowl and small mammals also appear to be important sources of food.

Caribou are often available to residents of Arctic Village from August to April. There are years, however, when they are virtually absent from the vicinity of the village or when they are available for only a short period of time. Fall hunting is generally conducted on surrounding ridgetops or based from hunting camps established at or near Old John Lake. Access is generally on foot or by boat, although all-terrain-vehicles and aircraft are occasionally used to reach hunting camps. When available in winter, caribou are generally taken wherever encountered, usually through the use of snowmachines. In falltime bulls are selected for their fat content; after September and the beginning of the rut, cows are selected. In spring--generally from March through April--bulls are once again considered desirable. In years when caribou are not available in any significant numbers, Moose, Dall sheep and fish are often reported to be taken in larger numbers to compensate.

Harvests of caribou by Arctic Village residents vary considerably and methods for assessing overall take are poorly developed. Generally, however, harvest estimates have ranged from less than 10 in 1979-80, to approximately 1000 in 1972-73. Harvests in 1980-81 consisted of approximately 500-600 animals. Often harvests include those taken by relatives in other villages of the Yukon Flats region.

Arctic Village residents report the persistence of certain "customary laws" which influence harvest methods, strategies and sharing patterns. Caribou
and other fish and wildlife resources are widely shared with other village residents; caribou are often bartered with relatives in other villages such as Fort Yukon and Venetie for such things as King Salmon and Moose meat.

It is of interest to note that in March of 1981 the village council of Arctic Village instituted a series of rules restricting harvest of caribou by local residents and by relatives and guests from other villages. Residents of Arctic Village, for example, were restricted to taking 5 caribou of either sex per person. Additionally, rules regarding care of the meat and avoidance of waste—which reportedly are based upon customary laws of long-standing—were reiterated. Preliminary reports indicate that village council members have taken it upon themselves to enforce these rules on several occasions.

In general it appears that village discussions pertaining to the enactment of an international convention on migratory caribou has had a positive spin-off in terms of educating local residents about the broad range of factors influencing the Porcupine herd—including the effects of habitat modification and human harvest. Village residents in the Gwich'in Athapaskan communities of the Yukon Flats, as well as the Indian communities of the northern Yukon Territory have expressed strong reservations about potential oil development in the calving ground of the Porcupine herd.

In summary, we feel that the need for developing human ecological data regarding the use of the Porcupine Caribou herd in Alaska is evident. Documentation of subsistence use is necessary to address both allocation issues—where resources must be allocated among users—and also for questions regarding access to those resources as where oil development might affect the availability of resources to those users. Such data are essential in developing a long term, comprehensive research and management program for fish and wildlife resources.

Secondly, human ecological data of this type must be of high quality and subject to rigorous scrutiny. Methodologies, moreover, must be developed
and carried out with important ethical considerations in mind. Guarantees of the confidentiality of data must be developed and research designs outlining study objectives and methodologies must be explicit and subject to review by local residents themselves.

Finally, long-term conservation of the resource and the opportunity for continued subsistence utilization require that users of the resource be actively involved in a substantive manner in research and management. Involvement of local users opens the door for communication regarding the full range of impacts affecting a given resource and the need for management controls to ensure its long-term viability. Similarly, increased sensitivity to local knowledge by fish and wildlife researchers and managers--for example, learning more about customary law-ways already in place--can lead to greater appreciation for the needs of those whose wellbeing may still be tied largely to the utilization of wild resources. Such appreciation, we believe, will ultimately lead to a more realistic and workable management regime for the protection of the resource.