The James Bay and Northern Quebec Native Harvesting Research Project: The Basis for Establishing Guaranteed Levels of Harvesting by the Native Peoples of Northern Quebec

Prepared by

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Revised version of a paper prepared for the "Workshop on the Establishment and Implementation of the Guaranteed Levels of Harvesting", Quebec City, March 19 and 20, 1980, at the request of Environment Canada and the Cree Regional Authority. The views expressed in this paper are those of the author and are not necessarily the views of the Cree Regional Authority, Environment Canada, or the James Bay and Northern Quebec Native Harvesting Research Committee.

I - Introduction - Origins of the Principle of Priority to Native Harvesting and of the Guaranteed Harvest Level Concept

Throughout the court case taken against James Bay Hydroelectric Project and throughout the negotiation of the James Bay and Northern Quebec Agreement (JBNQA), the Native people of northern Quebec, Cree and Inuit, had two major objectives: to exercise greater control over the administration of their own affairs; to protect and assure the continuation of hunting, fishing and trapping activities which are central to their economy, society and culture. The latter objective led to a series of provisions in the JBNQA including: a hunting fishing and trapping regime, an environmental and social protection regime, an income security program and hunters support programs, a trappers association, a remedial works program, and others.

While hunting fishing and trapping are important to all Native peoples in Canada, it may be hard to appreciate how important these activities are to the Native people of northern Quebec. I can give here but five quick indications from Cree data:

1. Approximately 60 percent of all able bodied men, or 50 percent of all Cree men over 18 years of age, are primarily active as hunters as opposed to being wage laborers or welfare recipients. Nearly all men hunt, but this percentage indicates those for whom hunting is their major productive activity.

2. These men spend approximately an average of 210 days, or 7 months a year, outside the settlements in hunting and related activities.

3. The wildlife they harvest is conservatively estimated to produce about 2,000,000 pounds of food a year, worth possibly $4,500,000 - $5,000,000.

4. This food probably provides nutritionally, 100 percent of protein requirements, of everyone in the Cree communities, 50 to 100 percent of most micronutrient requirements, and 35 to 45 percent of caloric requirements for the entire Cree population.

5. Finally the basic system of cultural beliefs and values, which are based on the relationship between men and animals and God is continuing to be maintained and passed on to new generations.

A primary concern of the Native peoples was therefore to continue a viable hunting way of life, and the topic of this workshop, guaranteed harvest levels, must be examined in this light.

One of the problem areas for Cree and Inuit hunters is the maintenance of the animal populations on which their hunting activity depends. Such maintenance involves regulating their own hunting activities, and I and other researchers have, in recent years, demonstrated some of the means by which Cree hunters and fishermen do this. And, we have demonstrated that their methods are effective, although not without problems, which require revisions and adaptations.

Such maintenance of the wildlife populations also involves regulating the impacts of development projects and regulating the harvests taken by sports hunters and fishermen. Regulating impacts of development projects is primarily covered by the environmental and social protection regime, although there is a clear role for the hunting, fishing and trapping regime in that process. Regulating the harvests of wildlife is primarily a concern of the hunting, fishing, and trapping regime.

One aspect of this regulation is the application of the principle of conservation to all resource uses - Native and non-Native. Another aspect is a rational means of regulating competitive use between Native users and sports users and others.

Here the guiding principle is the priority of Native use, as incorporated into the principle of conservation. This principle of priority gives recognition to the fact that both Native and sport users have rights to the resource, but it gives a clear priority to Native people.

The principle priority applies to the entire operation of the hunting, fishing and trapping regime, and its effects are found in subsidiary principles, such as the principle of a minimum of regulation of Native harvesting, and the principles that the impacts of all proposed regulations on Native activities, societies and economies, be considered. To give this principle clarity, it was operationalized, in several principles, including through the concept of the guaranteed allocation of harvests.

The guaranteed harvest level is in fact a principle or proceedure for allocation of permissible harvests or quotas. The guarantee is not a guarantee of actual harvests, but rather a guarantee of allocations of permissible harvests between Native and non-Native users. The guaranteed level of allocation is based on the present levels of harvesting of wildlife by the Native people, as defined below. When the permissible harvest is below this level the Native people are allocated the entire permissible harvest and no other uses are permitted. The permissible harvest will be less in this case than the actual level of the guaranteed allocation, but the Native people are guaranteed all of the permissible harvest. When the permissible harvest is above the guaranteed allocation, the Native people are guaranteed at least the guaranteed level, and the permissible harvest above this level is then allocated between the Native and non-Native users. This allocation is guided by two principles:
1. the priority of Native harvesting as incorporated into the principle of conservation, and the principle that when permissible harvests exceed the guaranteed level, at least some of the surplus must be allocated to sport hunters. The texts say that these allocations shall be based on need, and they should be based on the discussions and recommendations of the Coordinating Committee on Hunting, Fishing and Trapping (CC-HFT).

Several different kinds of guarantees were discussed during negotiations - a per capita guarantee, a percentage of the harvest guarantee, and a guaranteed level based on present harvest levels. The first was unacceptable to the governments. The third appeared attractive to Native people because it assured that when game populations declined, whether due to natural population cycles, or impacts of development, or improperly managed hunting (sport or native), sport hunting would be cut off before the Native harvesting. This would minimize possible shortages of food in the Native communities, and it would minimize the danger to peoples health and to their social and cultural integrity. However, this principle of a minimum guaranteed allocation was only acceptable to the Native people if allocations between Natives and sportsmen over and above the minimum level were based on need, and on priority for Native harvesting. This proved acceptable to all parties, including both governments, subject to the condition that allocations over the minimum guaranteed level always provide at least some allocation to sport users.

II - Need for the Native Harvesting Research Project

The principle of a guaranteed allocation of permissible harvests which respects "present levels" of wildlife harvests by Native people requires a determination of the present levels. The NHR study was set up to meet this need.

All the parties to the JBNQ negotiations, Native, governmental, and corporate agreed that the existing data was not sufficient to be used to establish present harvest levels by all the Native people of northern Quebec, for all the species requiring guarantees, and new research was needed. The Native parties insisted that the guarantees not be based on unsystematic and unscientific opinions or guesses, but on reliable data on actual harvests.

The idea of a joint research project was put forward as an alternative to each party gathering its own data. It was proposed for several reasons:

1. It was felt that if the parties could agree on the methods and means for conducting a joint project to establish what the present harvesting levels were, this would avoid some of the disagreements that could occur when the levels were to be set. Each party would not arrive with its own figures, arrived at by different methodologies and presented in different formats, which would lead to minute and unproductive disagreements.

2. A joint study would be better funded, would have more resources and personnel available, and would assure cooperation of all parties and expertise.

3. Furthermore, a joint study would avoid four or more separate studies, which would surely lead to non-cooperation among overtaxed informants.

4. Finally, a joint study would reduce the financial costs to each party, and lead to the most effective use of funds. Therefore an agreement on a joint study was reached and was incorporated into the JBNQA. The JBNQA states that guaranteed levels "shall be established by negotiations... and shall be based principally upon the results of the Research to Establish Present Levels of Native Harvesting", now known as the Native Harvesting Research Project. The study was mandated in its terms of reference to establish the present levels of Native harvesting for all guarantees related to the Section 24 of the James Bay Agreement.

Specifically, the study group was instructed to undertake the needed new research, and to examine all existing data on wildlife harvests by Native people, and then to report back to the parties its overall results and conclusions. It was therefore intended that the final report of the

NHR project would consider all available data, and would provide the essential basis for the negotiated establishment of the guaranteed levels. No further data on wildlife harvests by Native people should be required. The NHR results would be the basis for negotiation of guarantees, but the results were not automatically to become the guarantees because: they had to be subject to review by each party at a higher level than the technical representatives on the NHR committee; and, in the case of waterfowl, additional data on the sports harvests were needed to calculate the percentage guarantees specified in the agreement.

Thus, it was intended that the parties would work out most of their differences at a technical level in the NHR Committee, and that all parties would be bound to respect the NHR results because of their agreement to the Terms of Reference of the study, their active participation in its implementation, and commitment to its funding.

III - Descriptive Outline of the Native Harvesting Research Organization

Specific terms of reference, approved by all parties to the JBNQ negotiations, guide the NHRC. The project is undertaken by a joint NHR Committee, comprised of five representatives - one appointed by each of: Inuit, Cree, Canada, Quebec, and the James Bay Corporations. This Committee is responsible for its own internal organization and it has operated to date on a consensual basis. It is mandated to organize and direct the research, and is responsible for all matters relating to the research program, design, interpretation, and reporting. It also oversees the administration of the project. It is responsible to the CC-HFT established pursuant to section 24 of the JBNQA.

Two full-time administrators are employed, one for the Inuit part of the project, one for the Cree. Since the first year of the study separate administrative structures have been maintained for the Cree and Inuit portions of the research.

The administrators are responsible for day to day operation of the project, including recruitment of staff, assignment of responsibilities, coordination of activities in the field, preparation and organization of committee meetings, and financial liason. The administrators supervise a staff of assistant administrators, senior and junior interviewers, research assistants, computer and statistical advisors and contractors, and secretarial staff. In total, a staff of about 5 full-time people and 40 part-time or temporary people work on the research in any year, not counting NHR committee members. The project maintains offices, or has office space, in Montreal, Fort Chimo and Val d'Or, and has access to some community space in each Native village. Establishing proceedural and operational rules took several years, and a series of operating manuals have been prepared for: field work; data processing; deciding on and processing outside requests for data; and, financial operations.

Financial supervision is provided by the secretary to the CC-HFT, and financial administration is provided by the JBDC which acts as the legal agent for the NHRC.

Funding is provided by the groups represented on the research committee. Separate Cree and Inuit budgets have been prepared and approved as part of the Terms of Reference. Twenty-five percent of each of the Cree and Inuit budgets is provided by Canada, 25 percent by Quebec, 25 percent jointly by the three James Bay Corporations (James Bay Development Corporation, James Bay Energy Corporation and Hydro-Quebec - $8\frac{1}{3}$ percent each), and 25 percent of each budget is paid for by the respective native party - CRA or Makivik.

Costs vary somewhat from year to year, from about $200,000 to $80,000 per year. In total $1,016,571 was budgeted to be spent over some six years for the study, but this total does not include negotiating costs for setting up the project, nor the costs of negotiating guaranteed levels.

The project began operations in March, 1975 and will be completed in 1981-82. The initial reports of results, for use in establishing the interim guaranteed levels were completed and submitted to the CC-HFT in the spring of 1976. The work up to and including these reports is known as Phase I of the project. The results of this initial year were used to plan the successive years of work, and to draft a revised terms of reference for the remainder of the study, known as Phase II. It is expected that a final report on Phases I and II of the Cree study will be completed late in 1980, and that the final Inuit report will be ready a little more than a year later.

IV - Descriptive Outline of the Methodology for Data Collection and Projection of Harvests

The population under study includes the Cree and Inuit peoples of Northern Quebec, including 6,100 Cree in 8 communities, and 3,100 Inuit in 12 communities. Data has not been gathered from the dissident Inuit communities of Inuvik and Povungnituk, nor from about one-half of Sugluk, where the dissident population does not wish to cooperate with any organization or activity arising from the JBNQA.

The Terms of Reference direct that data be gathered on the basis of the resident population of adult men, 18 years of age or over. In order to limit the total number of interviews needed, only adult males were asked to report harvest data. They are instructed to include in their reports the harvests of women and juveniles in their household. In order to clearly identify the people being reported for, and to prevent double counting of harvests, all research instruments include a series of about 15 preliminary questions to identify those included. The questions are based on the structure of Native social organization.

During Phase I, in order to keep the number of interviews limited, the Cree study planned to cover a one-third sample of the adult men, with a realizable objective of 25 percent coverage. The Inuit on the other hand sought to interview all hunters, with an objective of 75% coverage. Both studies exceeded their objectives.

Results of the Cree study, however, convinced the committee members that a one-third coverage was not adequate, because in certain communities some important species, such as big game and sea mammals, are harvested by only a limited percentage of hunters, and projections from small samples were less reliable than other estimates. In Phase II, therefore, the Cree and Inuit portions of the study seek to interview all hunters, with a realizable target of 75 percent coverage.

Adult males who did no hunting whatsoever during a year due to illness, old age, or being away at school, and whose households did none, are identified as non-hunters, and are not interviewed, nor considered in statistical projections. The remainder of the men are called "potential hunters". During Phase II of the study an average of about 1025 adult Cree have been interviewed per year, and about 600 Inuit. This is 76 percent of the Cree potential hunters, and 89 percent of Inuit potential hunters.

Data is being gathered in this study on the "present" harvests by Native hunters over a seven year period. In the case of the Cree these are the seven years from 1972-73 to 1978-79, each year beginning July 1 and ending June 30. In the case of the Inuit data will cover 1973-74, 1974-75, and the calendar years 1976 to 1980. Phase I included the first 3 years of Cree data and the first 2 years of Inuit data, Phase II the balance.

During Phase I, data was collected from questionnaires, during Phase II, from calendars, diaries and questionnaires. The research instruments were carefully and extensively designed to take Native concepts and activity patterns into account. They were organized so that the species

and species groups for which harvests were requested matched Native conceptions of the animal world, so that species which are harvested together were grouped together in questionnaires and so that the spatial and temporal units used in questions were culturally appropriate. Questions and formats were extensively pretested with senior interviewers, in training sessions among themselves, in test sessions with community leaders, and in pre-tests in natural field conditions. In general two months were spent designing, testing and revising all research instruments, and constant improvements have been added as further experience has accumulated.

Extensive training has been given to interviewers, and those who have built up considerable experience are retained from year to year whenever possible. Interviewing is conducted entirely by Native staff, and generally in the Native languages, Cree and Inuktitut. Extensive work with interviewers was done on translations during pretesting, to properly phrase and translate questions so as to minimize ambiguity, and insure uniformity from one community to another. In addition to field staff Native peoples have at various times filled administrative positions at all levels during the project.

In the Cree study one senior interviewer is appointed in each village, and they are assisted by junior interviewers in the larger villages. Interviewing is conducted when the most people are in the villages, in summer and fall. In the Inuit study two teams of interviewers are organized, one visiting communities on the Hudson's Bay coast, one Ungava Bay coastal communities. Interviewing is done when most people are in the villages, in fall (Phase I) or winter (Phase II).

During Phase I of the study questionnaires alone were used, which depended therefore on informant recall of the harvests. In Phase II a more immediate system of recording harvests has been developed. A calendar or diary is distributed to each hunter for the year, in which

he may record his harvests as they occur and as frequently as he likes. This is often done daily or weekly, and separate pages by month are intended to assure harvests are at least recorded monthly. More frequent reporting appears to be usual. Diaries are written in Cree, English and French, calendars in Inuktitut and English. Hunters may complete them in the Native languages, and many do.

This system was designed to reduce dependence on recall of harvests some months after the activity took place. Interviewers are available regularly, or periodically in the villages to answer questions and check calendar/diaries. Once a year the Cree hunter is interviewed and the data from the diary is transferred to a simplified questionnaire for further processing. The diaries are collected as well. For the Inuit the calendar itself is checked and collected for data processing each year. In the Cree communities about 60 percent of the most active hunters use the diaries, and about 45 percent of all interviewees. The remainder either keep and use their own personal records or prefer to keep harvests in memory.

The number of species and species groups on which data could be collected was extensively discussed during initial discussions and was constantly reduced during the initial planning of the study. This was done in order to limit costs, and to avoid such high levels of informant fatique that informant cooperation could be endangered. In some cases a culturally appropriate grouping of several species is used - eg. ducks, or loons - without distinguishing among the distinct species. What is included in such categories is carefully explained to hunters using Native terms. Despite efforts to reduce the lists, data is being gathered on a total of 48 species or species groups. These were retained because they were either actually or possibly of sport or commercial interest, because they were major components of the Native diet, or because they were subject to special management regimes. The Inuit study gathers data on 37 species or species groups, the Cree study on 32.

There is data from both areas on a total of 21 species or species groups. In addition, some space is available for hunters to write in other harvests in their diaries or calendars, so some data is available on other species, as well as on duck eggs in the Inuit areas.

While it was the objective to gather data on each of these species and species groups for a seven year period, this had to be modified during Phase I of the study. In that phase hunters were asked to recall their harvests for 3 years in the case of the Cree, and 2 years in the case of the Inuit. While this was feasible for important species caught in limited numbers, interviewees generally could not recall harvests of less important species, or for species caught in large numbers for more than one year back. In the case of fish and small game hunters said they could not give exact harvests for even one year, but most agreed they could give an approximation to the correct number.

Cree hunters were therefore only asked for fish and small game harvests for one year back, and for waterfowl harvests for two years back. Inuit hunters were only asked for waterfowl, small game and fish for one year back. As a result data on fish and small game are only available for 5 years for Cree, and 6 for Inuit, and data on waterfowl are only available for six years for the Inuit and the Cree.

Harvest data is tabulated and analysed for some species and species groups by season and by geographical unit. The seasonal breakdowns were used, in part, to help make informant reporting more accurate. The Cree and Inuit studies record waterfowl harvests by spring and fall seasons, and fish harvests by a three season classification - summer/fall, winter, and spring.

Both the Cree and Inuit studies record most data by a two zone system. A "near" zone, or zone 1, is defined in both cases as the area of intensive use near the settlement, and generally accessible on day trips from the village. In the case of the Cree, the near zone was redefined

for phase II so as to include all the coast. The "away" zone, or zone 2 includes all other areas harvested. In the case of the Cree, the system of traplines makes it possible to identify the areas generally used by hunters from a given community, and to map these as the away area. Most away harvests occur within these community boundaries in the Cree area. For the Cree study, big game harvests are mapped by the community areas, so as to reduce any ambiguity of locations of away harvests. In the Inuit study the away area is not geographically defined for individual communities. Some additional data has been gathered from Cree hunters in diaries on harvests by trapline, and by specific waterbodies, but the use of diaries by only a part of the hunters makes use of this data problematic. An assessment of its usefulness is being made by the NHR committee.

The data collected from hunters is processed by computer. The harvests reported by interviewed hunters are totalled and used to make projections of the total harvest of each species or species group taken during a year by the hunters from each Native community. In addition projections are made for each zone, and for each season. The projections are made by taking the average harvest made by reporting hunters and multiplying by the total number of potential hunters. In the case of the Cree the reporting hunters in Phase II are stratified by whether or not they are intensive hunters, which is defined as being a beneficiary of the Income Security Program for Cree Hunters Trappers and Fishermen (ISP). Those on ISP are called "intensive hunters", those not, "active hunters". Separate projections are made for each group, and then added. This is done because the Cree hunters population is known from Phase I to include a group of hunters with relatively limited harvests, and a group with more substantial harvests. The stratification reduces skewing due to over or under representation of hunters from either group.

Because Phase II of the Inuit and of the Cree study achieve interview coverage of about 90 and 75 percent of the potential hunter population respectively, the projection only increases the reported harvests by about one-quarter to one-tenth of the totals actually reported. Thus most of the total projected was actually reported.

In the course of data processing a large number of checks and verifications are run to clean data, increase its consistency and assure it has a high degree of reliability. Computer cards are verified, questionnaire question sequences are checked for response consistency, large harvests are successively checked internally and in the field. In addition the data is used to calculate a number of variables which are used to check the plausibility of the data, and check its comparability from year to year and with other studies. These include harvest per hunter, harvest per hunter per unit of time hunting, food produced per individual in the population, and the relation of fur bearers harvested for fur pelts sold.

In addition to these essentially internal checks, results of the study are also compared with results of other studies on the geographical distribution of species, and on Native harvest levels, with government statistics and records, and with observations made by independent researchers. Results are also reported back to the Native organizations and communities for comments and corrections, and this has proved to be a valuable check on results.

The most important of the reliability checks are those that relate to checks of the reliability of the original data and of the projection methods. The reliability of the original data has been checked by means of a number of small but carefully controllable comparisons between NHR gathered data and other existing data or observations. In one case, it was possible to compare the reports of NHR interviewees with reports made by exactly the same interviewees in two earlier studies of essentially the same waterfowl harvests taken in the fall of 1973. The first study was done two months after the end of the hunt by the Canadian Wildlife Service, the second was done one to four months after that by the Grand Council of the Crees (of Quebec). The third was Phase I of the NHR study, done a year and a half after the end of the hunt. For the most important goose species,

and excluding cases of ambiguous wording, the Native Harvesting Research Committee concluded that the numbers seemed to indicate "a trend towards recalling less Canada Geese with increasing time since the actual hunt." (NHRC, 1976a:I, 120-121). That is, reported harvests of Canada geese declined from the first to the last study for 9 of the 11 hunters and they declined for the group as a whole. This is also significant because if one assumes that the reports are influenced by the informants self-interest in the study results, whether this happens consciously or unconsciously, then the reported harvests should have risen from the first to the last study. The first was conducted by a government which could limit harvests if reports were too high. The second was conducted by the Cree themselves in order to demonstrate that the Cree depended on wildlife and to show why they opposed the James Bay Hydro-electric Project, and it was intended for use in the courts or in negotiations. The third was conducted by the NHRC in order to establish permanent guaranteed harvest allocation levels. The pattern of reports of Canada geese is not consistent with the assumption of unreliable reporting due to the self-interest of respondents, but rather that reliability may be influenced by the conservativeness of responses when respondents are asked to recall harvests under conditions where precise recall is increasingly difficult. Similar kinds of checks have been and will be run wherever possible.

An alternative check involves comparing NHR results with direct observations of independent observers. Opportunities for such observations are rare because they require direct participation in hunting camp life or in hunting trips. Nevertheless, such data has been available on one occasion, and may be possible in two or three more cases before the study is completed. In the one case reported to date, information on the average harvests of fishermen derived from a field study in which a limited number of Cree fishermen's catches were monitored by observation, were used to estimate the community-wide harvest during the season in

which the monitoring occurred. These estimates, as well as other measures, were compared to the NHR estimates and measures, and the study indicated that the NHR estimate of the fish catch "appeared to be reliable, or perhaps on the conservative side" (Berkes in NHRC, 1976a:I, 330-331).

These data, along with comments from the Native villages, indicate that harvests reported to the NHR project by hunters are not inflated, and may indeed be conservative. This is the most important conclusion to be drawn to date from the reliability checks of the original data.

Another series of checks run by the NHRC concerns the assumptions in the projection methods used. Here the initial choice of an estimator was based on a series of tests of different formula. Since actual coverage of the population varied from 70 to 90 percent overall, the first 70 percent of the interviews by date completed were used to estimate the total harvest reported in all interviews, using different estimators. The simulation was then repeated with the percentage of the interviews used being varied. The simulation indicated that the proportional projection was the superior estimator (NHRC, 1978: 67-69). Some further checks on this usage by means of intensive follow-up studies are being considered by the NHR Committee during the final phases of its work. The results will appear in Committee reports.

The NHR Committee publishes extensive reports and statistics on its research and the results thereof. Two publications summarized the Phase I results, and a series of interim reports have been and are being prepared on Phase II yearly results. Some efforts are also made to communicate results to the Native organizations and communities through visits and use of radio broadcasts, and the use of written material in the Native languages is now being considered.

At the end of the Cree and Inuit portions of the research project final reports will be prepared on each portion. These will synthesize the data for all years, provide an overall account of the research study, evaluate the reliability of the data, and provide data summaries for the negotiation process. As indicated above, the Cree report should be available late in 1980, the Inuit report more than a year later.

V - Summary - Distinctive Features of the Native Harvesting Study

By way of a summary/conclusion I will point out several of the distinctive aspects of NHR study:

1. The joint nature of the funding, control and staffing.

2. The high level of Native participation and representation, at all levels in the organization, and at all phases of the work, from conception to final report preparation.

3. The size of the population being studied and its geographical distribution.

4. Diversity of species studied and historical depth of study.

5. Methodological developments in data recording by informants, and in adaptation of research to participants conceptions and activities.

6. Integration of new with existing data.

7. Rigor of data gathering, processing and checking.