

# RESEARCH DEPARTMENT

A PROGRAM OF RESEARCH ON THE LOCATION,  
ECOLOGY AND NESTING POPULATION  
OF EIDER DUCKS  
IN THE INUIT TERRITORY  
OF NORTHERN QUEBEC

Submitted by:

William B. Kemp  
Makivik Corporation  
Research Department

June 1, 1979

AN UNSOLICITED PROPOSAL FOR THE  
DEPARTMENT OF SUPPLY AND SERVICES

Title: A PROGRAM OF RESEARCH ON THE LOCATION, ECOLOGY  
AND NESTING POPULATION OF EIDER DUCKS IN THE  
INUIT TERRITORY OF NORTHERN QUEBEC: A Research  
Project by the Inuit of Northern Quebec in  
Cooperation with Southern Scientific Personnel

Principal Investigators: William B. Kemp  
Research Department  
Makivik Corporation  
505 Dorchester Blvd.  
Montreal, Quebec  
(514) 871-1551

Joseph Angma  
Research Department  
Makivik Corporation  
Fort Chimo, Quebec  
(819) 964-2925

Douglas Nakashima  
Research Department  
Makivik Corporation  
Fort Chimo, Quebec  
(819) 964-2925

Period of Research: July 1, 1979 to March 30, 1980

MAKIVIK CORPORATION  
505 DORCHESTER BLVD. WEST  
MONTREAL QUEBEC

June 6, 1979

Dr. Benoit Jean, Director  
Program Branch  
Dept. of Supply and Services  
Science Centre  
2101 Place de Portage  
Phase III, 11 Laurier St.  
Hull, Quebec K1A 0S5

Dear Dr. Jean:

On November 11, 1975, the Inuit of northern Quebec signed the James Bay and Northern Quebec Agreement. The signing of this Agreement is an important turning point in the long history of the northern Quebec Inuit. The Agreement sets out new directions and it provides a means by which Inuit can gain better control over the decisions affecting their lives and through which they can create structures for establishing their own priorities. Economic and social development, local and regional government, education, health, environment and hunting, fishing, trapping are all part of a new regime. Together they create a new focus of activity and a renewed sense of purpose within the Inuit communities of northern Quebec.

A central point of the Agreement and of the negotiations which led to its signing involved the Inuit concern with the environment and biological resources of northern Quebec. The Inuit have long sustained themselves through the proper utilization of these resources and the Agreement reflects a continuing right to harvest coupled with the need to manage these resources into the future. Although new attitudes, needs and methods of exploitation are evolving, a continued utilization of local resources remains essential.

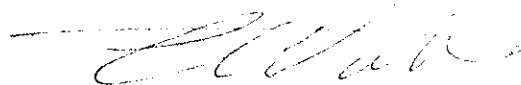
Several chapters of the Agreement are dedicated to environmental and resource issues. The Makivik Corporation has been willing to set aside monies to ensure that funds are available to fulfill all of its obligations under the Agreement. The time has come, however, for Inuit to take a more active role in

Dr. Benoit Jean  
6 JUNE 79  
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research leading to environmental planning and management. To this end, the Makivik Corporation has established and funded a Research Department that is mandated to carry out its own studies, to cooperate in joint research ventures, and to review and evaluate the research of other agencies. The work of this Department reflects the priorities and concerns of the communities.

The research proposal on eider ducks is an important first step towards the essential role Inuit must play in the formulation and conduct of research. The study set out in this proposal provides a framework within which cooperation between Native people and southern scientists can take place and it reflects the desire on the part of the Inuit communities of northern Quebec to have a more meaningful participation in northern research.

Yours truly,



C.W. Watt  
President

CWW:lb  
Attach(1)

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SUMMARY

## SUMMARY

The purpose of this research project is to improve the present state of knowledge about the eider duck population that is seasonally resident along the coastal zone of Quebec north of the 55th parallel. The study will have four main objectives:

1. To determine the abundance of eider ducks through a field census of selected areas.
  2. To describe the ecological characteristics of the eider ducks and to map their pattern of distribution, nesting sites and areas of concentration.
  3. To establish the pattern of Inuit utilization and the importance of the eider in the seasonal economy of the communities, and to gain insight into perceptions for managing the species.
  4. To review the findings from the census and the interviews, and prepare a report for the north and south with findings and conclusions.
- The work will be jointly carried out by Inuit and southern scientific personnel.
  - Research will begin on July 1 with the census of the eider ducks for selected areas along the coast. This phase will terminate at the end of the nesting season in late July.
  - The census has been preceded by a brief visit to all the communities in order to establish major areas of concentration and to explain the purpose of the forthcoming study.

- A flight over the entire area was made in July of 1978 by Canadian Wildlife Service personnel to gain a general idea of the location and concentration of the nesting population.
- Preliminary interviews and maps have been made for each community.
- The census will be followed by interviews in all the communities in order to describe in greater detail the ecological characteristics and economic importance of the species, to map harvesting patterns and to note changes in the current abundance or pattern of distribution as perceived by Inuit. This phase will be carried out from August to October 1979.
- Preliminary reports will be prepared from October 1979 to January 1980. The reports will be for the northern communities and for the southern scientific community. The report will be in Inuktitut, for the northern communities.
- The preliminary reports will be reviewed in the north and south in February.
- A final report will be submitted by March 30, 1980.



INTRODUCTION

## INTRODUCTION

The purpose of this research is to initiate a study on the eider duck populations (*Somateria mollissima*) which nest along the coastline, islands and inland lakes of Quebec north of the 55th parallel. The results of the study will provide information that is vital if the biological resource base of northern Quebec is to be properly evaluated and realistically managed. The study will be carried out by the Inuit of northern Quebec in cooperation with southern scientific personnel. The project is considered to be a positive advance in the manner in which northern research is conducted since it directly involves Inuit participation in the design and execution of the project and in the analysis and application of results.

The study is designed around two basic objectives. The first is to carry out a census and to gather critical information on the current numbers (abundance) and ecological characteristics of eider ducks and to note and evaluate changes in number, behaviour and habitat that have occurred over time. Results will be derived from a field count of the ducks in selected areas and from interviews in all the communities. The second and equally important objective of the research is to encourage the development of a framework for integrating the information base, scientific perspective and priorities held by Native people with those held by individuals that comprise the scientific community of southern Canada.

The creation of baseline information is important but the interpretation and application of findings becomes even more critical because of shared responsibility for policies, programs and administration of northern resources that exists between the Federal and Provincial governments and Native people as a result of the James Bay and Northern Quebec

Agreement. If Native people are to effectively carry out their role of advising governments on wildlife management decisions, and if this role is to be developed at a scientific rather than a political level, then it follows that there must be a conscious effort to develop a mutual understanding of the part played by science on the one hand and traditional Inuit concerns on the other.

In the past, there was little understanding and almost no participation by Inuit in northern research. Studies were conducted but the priorities of what should be studied were determined and controlled from outside of the Inuit system. The methods used to carry out studies seldom recognized the scientific expertise of the Inuit themselves and the results of the research projects were seldom explained to the Native communities or applied to problems that were of concern to the Inuit.

Inuit recognize the need to undertake studies that provide accurate data for understanding the characteristics of, and changes in, wildlife resources. Unfortunately, the Inuit are affected by problems or conflicts that may arise when decisions about what to study are made without consultation and when research findings are applied to the management of wildlife without reference to Inuit concerns, knowledge and points of view. Conflicts are in part caused by scientists' general disregard for the quality and organization of Inuit knowledge. Such attitudes on the part of scientists are countered by the Inuit perception that many methods used in scientific studies are inappropriate. The period of observation is too limited and often not well located. Therefore, the findings are considered, at best, incomplete. Some recent studies and comments on northern research indicate signs of change.

The question is not one of establishing an exclusive

jurisdiction for Inuit but rather one of establishing the most appropriate association between Inuit and the scientific community. It is felt that the highest quality of scientific study can emerge when the mandate is broadened to include the knowledge, abilities, concerns and priorities of the people who must live from the harvest of wildlife resources.

The eider duck is an appropriate resource with which to begin such a new process. First, it is a resource whose range, numbers and characteristics are poorly documented for northern Quebec and there is no clear indication of the level of "health" of the species within the area. The Migratory Birds Division of the Canadian Wildlife Service has expressed a desire to obtain adequate information on the northern Quebec populations of eider ducks. These concerns have been specifically stated at the Coordinating Committee meetings. The comments are on record in the minutes of these meetings.

Meetings have also been held between the Migratory Birds Division of the Canadian Wildlife Service and the Northern Quebec Inuit Association to review various problems and research needs for eider ducks and other species of waterfowl. Dr. Austin Reed, Dr. F.G. Cooch and Dr. Hugh Boyd in particular, have expressed a need for more complete baseline information.

A second factor to be considered is the continuing importance of the eider duck in the economy of northern Quebec. Archeological evidence coupled with documentation from the historical records clearly illustrates the importance of this species to the seasonal economy. It is a source of meat and eggs and also of down. Today, the eider duck continues to be an important species for the harvesting economy of northern Quebec and the down is still locally collected

and used in handmade clothing and bedding. At present, there is also a small commercial sale of eider down through the Inuit cooperative in several communities.

The current importance of eider ducks to the Inuit that live in the coastal villages is indicated by the results from a quantitative study of harvest levels that is being conducted throughout the area over a seven year period beginning in 1975. Figures for the first year of this study are now available and provide an indication of current patterns of eider duck utilization. For the 1974-75 harvest season, 76 percent of the hunters reported a harvest of eider duck for an approximate total of 15,000 ducks or 25,200 pounds of edible weight. In addition, a total of approximately 111,300 eggs were collected for a total edible weight of 25,600 pounds. Although meat and eggs from eider ducks only contribute approximately 2 percent to the total food supply it is nevertheless important as a source of protein and variety in the diet.

In summary, the eider duck has been selected for this project because it is considered to be important to both Native people and to southern resource managers. The Quebec Regional Office of the Migratory Birds Division of the Canadian Wildlife Service has stated its concern about the need for better information from northern Quebec through its representative on the Coordinating Committee for Hunting, Fishing and Trapping. They have also used this forum to establish communication with the Inuit representatives, and they recognize the need to develop new approaches and more creative working relationships with Native hunters in northern Quebec. The acquisition of a better information base would also appear to be essential to the work on migratory birds with respect to management and policy that is being carried out by Canadian Wildlife personnel in Ottawa.

The James Bay and Northern Quebec Agreement has established a special working group on waterfowl and migratory birds which is primarily a group with scientific interests and which has both Federal government and Native representation. The information gained from this study and the approach used, will be of value to the deliberations of both the Coordinating Committee and the Waterfowl Working Group. The Inuit have also expressed a continued interest in the eider duck and have reacted to, and commented on, discussions in the Coordinating Committee and the Waterfowl Working Group.

Specific discussions between Inuit and government biologists about the eider duck took place on February 8, and 9, 1978 with subsequent meetings in April and November of 1978 and again in April of 1979. The end result of these meetings was the presentation of a small grant of \$6,000 to the Inuit of northern Quebec to carry out a preliminary mapping project on the nesting areas of eider ducks and to discuss the possibilities for, and attitudes about, more specific scientific studies to determine the actual numbers of eider ducks and their relative abundance within northern Quebec. The Canadian Wildlife Service has also carried out a preliminary survey of eider ducks in the study area. This involved an air reconnaissance of the entire coastline of the study area. It was designed to familiarize Canadian Wildlife Service biologists with the distribution of eider duck nesting sites, and to establish some comparative insights on the relative significance of nesting locations. Concentrations were noted, but a specific census of the population was not undertaken. Together, the preliminary interviews and the survey provided a basis for the following study design.

## THE RESEARCH PROPOSAL

## I. A GENERAL FRAMEWORK: PURPOSE, APPROACH AND RELEVANCE

The purpose of this proposal is to describe the problem, approach and the importance of the expected findings for a field research project on the eider duck populations that next throughout the coastal region of Quebec north of the 55th parallel. The study will be carried out by Inuit of northern Quebec in cooperation with southern scientific personnel. The sharing of expertise between native hunters and southern biologists in all phases of the research project will provide a unique opportunity to set new and important directions in the selection, design, conduct and application of northern research.

The study is designed around two basic objectives. The primary objective is to gather critical information on the past and present day numbers or relative abundance of eider ducks; to adequately describe the ecological characteristics and habitat of the nesting population throughout its seasonal residence in northern Quebec; to produce a series of maps of distribution and other behavioural characteristics that involve the utilization of habitat and territory; to determine the pattern and methods of harvesting and the economic importance of eider duck in the seasonal economy of northern Quebec and finally; to determine changes in abundance, behaviour, habitat and utilization that have occurred over time.

The second objective of this project is to establish a framework for biological research in northern Quebec that will encourage a sensitive yet productive sharing of ideas, knowledge, techniques, skills, priorities and controls between Native people and southern scientists.



In the past few years there has been a gradual recognition by the scientific community of the vast amount of organized knowledge about the environment and its resources that has been accumulated by Inuit hunters. Some recent studies have been developed around this expertise by outside non-native scientists. The intention of this study is to create a better integration of the traditional knowledge of the Inuit with scientific methods of counting, sampling and projecting. It is hoped that this process will encourage the Inuit to participate critically in a wider range of scientific studies and to strengthen their ability to evaluate and apply the results of studies.

## II. SPECIFIC OBJECTIVES AND DATA COLLECTION

This section will provide details on the type of information to be collected and on the methods and approach to be used for the fieldwork and data analysis. This section is divided into two parts. The first explains the data to be derived from the interviews and it briefly outlines the field methods to be used. The second part outlines the census procedure and field methods needed to carry out such a census. Specific decisions will be made when the communication with C.W.S. personnel is established.

### II.1. INTERVIEWS

#### Inuit Ecological Perspective

Fieldwork will be carried out in all the Inuit communities. Specific data will be gathered on the following topics:

1. The classification of eider ducks, including the type and names of ducks recognized by Inuit and the relationship of eiders to other duck populations.

2. The collection of detailed information on Inuit knowledge of the eider duck nesting areas and on the seasonal patterns of eider duck behaviour and distribution and use of feeding areas.
3. The determination of geographical areas of concentration, the seasonal pattern of concentration and the migration routes and associated use areas.
4. The description of the characteristics of nesting areas, their persistence over time and the micro features of nesting patterns and environmental influences.
5. The recording of recognized or perceived changes in distribution, abundance and behaviour, and notes on perceived causes of these changes.
6. The establishment of the relationship to other birds, especially seagulls, and to other predators.

#### Mapping Perspective

The information described above will be placed on a series of maps and aerial photographs. The maps will also include land use patterns associated with eider duck harvesting, egg collection and the collection of eider down from nesting sites.

#### Investing Perspective

Fieldwork will be carried out in the same communities in order to clarify the utilization of eider ducks for meat,

eggs and down. This will include:

1. The review of harvest study data especially the harvest of eggs and the clarification of harvest levels for ducks and eggs.
2. The establishment of the importance of eider ducks in the local diet and their level of consumption.
3. The determination of the collection and use of eider down. The method and the time of collection, location of collecting sites and estimate of total amounts for personal and commercial use will be established.
4. The estimation of the commercial value of eider down and its importance to community economy.
5. The contribution of eider duck meat and eggs to the diet and the economics of harvesting.

#### Management Perspective

Work will include discussions on the ideas and the approach to management as perceived by Inuit with a view to ascertain the following:

1. The determination of the perceptions on management past and present.
2. The description of the traditional patterns of harvesting and of the mechanisms for management and conservation.
3. The discussion of problems in harvesting and the "development" of a preferred approach and methods for management.

## Field Methods

The field methods used in this study have been developed over the past four years and involve what is now becoming a standard set of techniques for collecting Inuit knowledge of northern resources and land use patterns. Information will be derived from individual and group interviews. Data will be recorded on a series of maps at a scale of 1:250,000 and air photos. The verbal support of the mapped data will be presented through a series of written documents.

Through discussions in the communities the major eider duck harvesters will be identified. These individuals will be interviewed and the results of these interviews will be recorded on 1:250,000 scale maps, except for areas of intensive use where 1:50,000 will be used, if available. When provided in association with the mapping, verbal data will be recorded in written form. Additional data and perspectives will be recorded on cassette tapes.

Past experience has shown that ecological information and perspectives on historical and current conditions of the resource base is best derived from controlled group interviews. The size of the groups will vary in each community, as will the duration of the meetings. Practice has shown that at least two meetings, plus a session to review the data are most productive.

A record of harvest levels for meat and eggs can be derived from the results of the Inuit Harvest Study. During the collection of the 1979 harvest data special attention will be paid to eider ducks. Particular attention will be paid to the collection of eider down. Records of purchases can be obtained from the Cooperatives and a general assessment of personal use will be established. Economic costs and

benefits of eider duck harvesting will be evaluated according to methods developed in recent socio-economic baseline studies in northern communities.

## 11.2. FIELD CENSUS

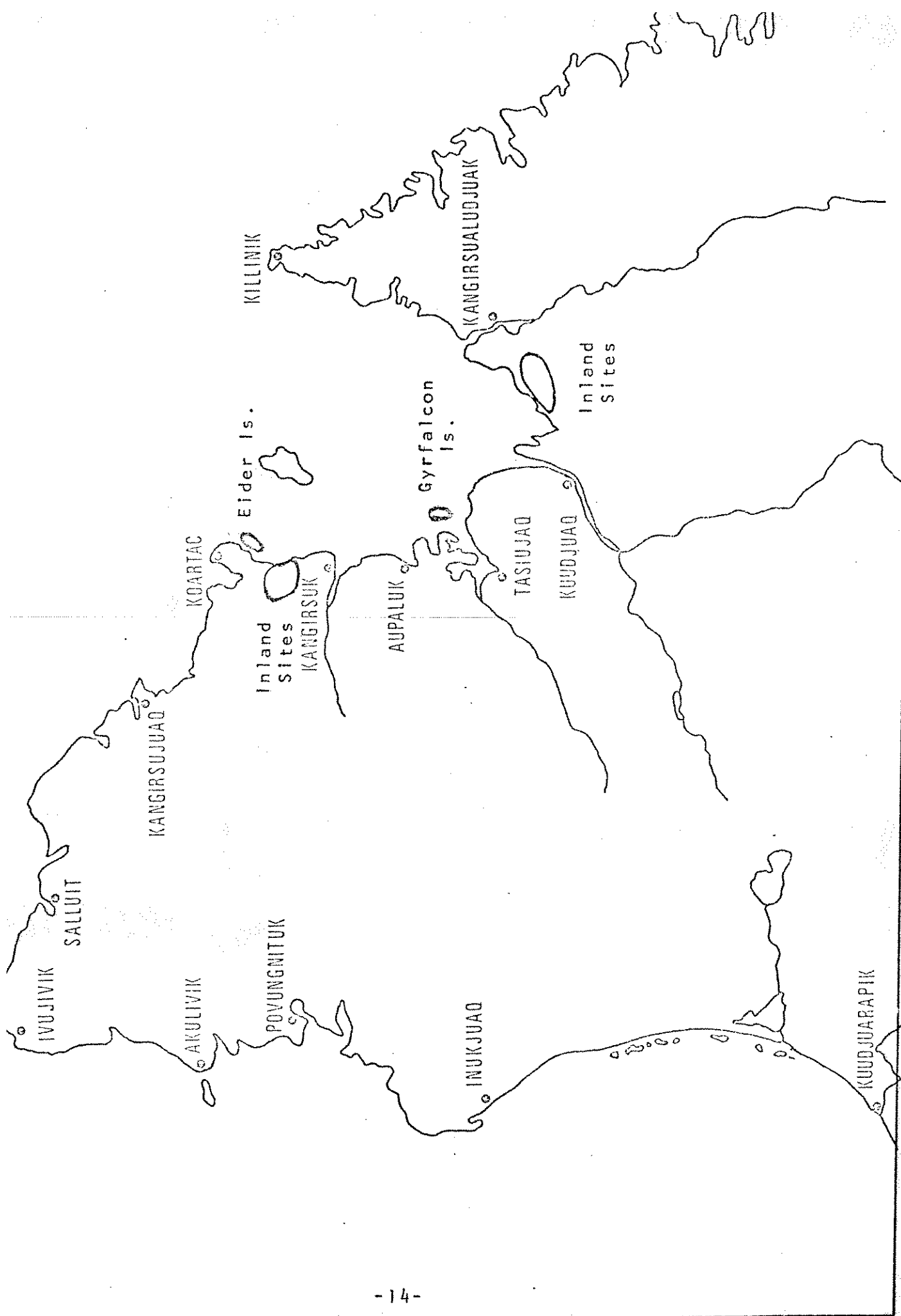
### Purpose of Census

It is proposed to carry out a census of the nesting population of the eider duck, in order to ascertain specific data on abundance of this species. Some earlier figures are available from a count carried out in the mid 1950's and again in the early 1960's in the Payne Bay area. In July of 1978 Canadian Wildlife Service biologists were able to establish some general areas of concentration with preliminary estimates of numbers. This in turn allowed for a very tentative comparison with the earlier figures to be made.

The census in 1979 will enable a more precise estimate of the nesting population for selected areas to be established. From these figures an attempt will be made to determine estimated levels for the entire area. Some attempt will be made to establish the importance of inland nesting sites.

### Selection of Sites

At present, two primary areas have been selected for the census, both along the coast of Ungava Bay. Additional sites for counting will be selected from the Hudson Strait area in the vicinity of Wakeham Bay, and along the Hudson Bay coast in the vicinity of Inukjuak. The primary focus will be on the Eider Islands that are located on the Ungava Bay coast between Payne Bay and Koartak. The second primary area is the Gyr Falcon Islands that are near the community



of Leaf Bay. These two areas have been selected because of the intensive concentrations that occur and because there are some earlier data for comparative purposes.

The selection of census sites near Wakeham Bay and Inukjuak will provide sampling across a wider range of habitat and in areas of varying concentrations.

One point that has been raised in the preliminary interviews is that there is an apparent shift in some zones to a more inland nesting area, bordering freshwater lakes. Attention will be paid to this and, if possible, two inland areas, one inland from Kayak Bay near Payne Bay and one inland area from the coast between Fort Chimo and George River will be visited.

#### Field Methods

The methods used in this research will include two basic steps. The first involves the selection of particular islands among groups of islands, on which the specific counts will be made. The second involves the method of counting on each of these islands. It is impossible to reach every island because of time and travel restrictions. Easy access via helicopter has been considered, but Inuit are unanimous in their concern over disturbance of the nesting ducks. Thus a helicopter will be used to position the survey party, but travel will be by canoe using native hunters. Once on an island, an attempt will be made to count every nest, and no traverses will be set out, except to grid the island for the count. Some limited use of photos from the air for later counting and sex determination will be included, but not to replace the ground survey.

The need to establish an evaluation of areas with or without nesting concentrations will be necessary in order to establish the territory used for projection from the census figures.

MANAGEMENT AND BUDGET



## MANAGEMENT AND BUDGET

The scientific aspects of the project on eider ducks will be managed by the Research Department of Makivik, and the accounting will be managed by the Finance Department. A system to account for grants has already been established and is in operation. All expenses will be reviewed and monthly statements will be issued on research expenses.

BUDGET

July 1, 1979 - March 30, 1980

I. Salary

1. Field Research Director 8 months at \$1,200	9,600
2. Field Assistant 8 months at \$800	6,400
3. Cartographic Assistance 2 months at \$1,800	3,600
4. Translation 150 hours at \$15	2,250

II. Travel and Accommodation

1. Northern Travel Chimo-Sugluk (return) \$490 x 4	1,960
Great Whale-Akulivik (return) \$230 x 4	920
2. Montreal-Fort Chimo (return) \$350 x 4	1,400
3. Montreal-Great Whale (return) \$286 x 3	858
4. Northern Accommodation 40 days x \$20 x 2	1,600
5. Southern Accommodation 15 days x \$35 x 2	1,050

III. Field Census

1. Helicopter Rental 6 days x \$1,200	7,200
2. Canoe Rental 20 days x \$70	1,400
500 gal. of gas x \$2.00	1,000
3. Guides' Salary 20 days x \$50 x 2	2,000
4. Field Supplies and Food	1,000

Continued .....



RESUMES

CURRICULUM VITAE

William B. Kemp

1. Personal

Born September 23, 1936 - Cincinnati, Ohio  
Landed immigrant - Canada

2. Education

B.A. (1959) Miami University, Oxford, Ohio  
M.A. (1963) Michigan State University, East Lansing,  
Michigan  
Ph.D. Michigan State University, (in preparation)

3. Teaching Experience

1973 - 1978 McGill University, Assistant Professor  
1970 - 1973 McGill University, Lecturer  
1964 - 1970 State University of New York at  
Binghamton, Instructor  
1964 Michigan State University, Assistant  
Instructor

4. Present Position

Director, Makivik Research Department, Makivik  
Corporation.

5. Research Funding

1977	Hydro-Québec, Koksoak/Caniapiscau Fishing Study (1976-1980)
1976	Polar Gas, Resolute Bay Social Economic Baseline Study
1975 - 1981	Northern Québec Native Harvesting Research
1975	D.I.A.N.D., Naskapi Band Council, Social Economic Baseline of Schefferville, Québec
1975	D.I.A.N.D., Productivity of Inuit Camps
1974	McGill University, Northern Science
1974	Inuit Land Use and Occupancy Research
1973	Parcs Canada, Archaeological Research
1973	Canadian Wildlife Service, Fund for Animal Welfare
1973	McGill University, Northern Science
1972	International Biological Program, Human Adaptability Project
1972	National Museum of Canada
1972	National Advisory Committee for Geographical Research
1971	McGill University, Northern Research
1970	McGill University, Social Science Research Fund
1970	Research Foundation, State University of New York
1970	National Museum of Canada
1968	National Museum of Canada
1966 - 1967	National Museum of Canada
1964	Department of Indian Affairs and Northern Development
1963	Department of Indian Affairs and Northern Development

Funding ranged from \$700. to \$91,000. for a total of \$335,200

6. Major Field Research

- 1977 Koksoak fishing intensity and catch
- 1976 - 1977 Social economic research, Resolute Bay, N.W.T.
- 1975 - 1977 Research to establish present levels of native harvesting in northern Québec
- 1974 Field research, Inuit Land Use and Occupancy Project, central and south Baffin Island (D.I.A.N.D.)
- 1973 Field research, archaeological inventory and survey, Davis Strait from Padloping Island to Home Bay, N.W.T. (Parcs Canada)
- 1972 Field research, cultural evolution and changing economic adaptation, southern Baffin Island Inuit, Middle Savage Islands to Markham Bay—(National Museum of Canada)
- 1971 Field research on resource harvesting and calorie potential of native foods, southern Baffin Island (McGill University Social Science)
- 1970 Field research on economic change and energy adaptation, southern Baffin Island Inuit, Lake Harbour, Cape Tanfield, N.W.T. (National Museum of Canada)
- 1966 - 1968 Collection of quantitative data on economic behaviour and community energetics from southeastern Baffin Island (National Museum of Canada)
- 1966 Field research on process of economic development and cultural change, Fort Chimo and Payne Bay, Québec (D.I.A.N.D.)
- 1965 Field research on process of economic development and cultural change, Fort Chimo, Québec (D.I.A.N.D.)
- 1964 Field research on village adaptation and economic development, Payne Bay and Koartak, Québec (D.I.A.N.D.)
- 1963 Field research on economic development and ecological adaptation, Koartak, Payne Bay and the west coast of Ungava Bay, Québec (D.I.A.N.D.)

Major Field Research Cont'd.....

- 1963            Field director, southern Baffin Island,  
archaeological project on Pre-Dorset  
Eskimo (National Science Foundation)
- 1962            Assistant director, Michigan State University  
and National Museum of Canada archaeological  
investigation of cultural adaptation (stability  
and change) on southern Baffin Island  
(National Science Foundation)
- 1961            Field reconnaissance by canoe from Lake  
Athabaska to Coppermine River and Coronation  
Gulf

7. Directed Field Research

From 1970 to the present, 11 major field research projects involving graduate and undergraduate students have been carried out under my direction. All individuals have received all or most of their funding from my grants. To date, a total of at least \$91,000. has been directed to my students for field research.

8. Publications

- 1976            "Inuit Land Use and Occupancy", 3 vols.,  
Milton Freeman and Associates, D.I.A.N.D.,  
(Ottawa).
- 1976            "Research to Establish Present Levels of  
Harvesting by Native Peoples of Northern  
Quebec: A Report on the Harvests by the Inuit  
of Northern Quebec", The Native Harvesting  
Research Committee, (Montreal).
- 1975            "The Harvest Level and Food Potential for  
All-native Inuit Camps", final report,  
Northern Science Research Group, D.I.A.N.D.,  
(Ottawa).
- 1975            "Energy, Behaviour and Thule Adaptation",  
to be published in the Mercury Series,  
National Museum of Canada, (Ottawa).
- 1974            "Energy Flow in Inuit Communities: Theory  
Models and Measurement, in Energy Flow in  
Human Communities: Proceedings of a  
Workshop, P.L. Jamison and S.M. Friedman (eds.)  
University Park, pp. 35-41.



Publications Cont'd.....

- 1974 "The Baffin Land Eskimo", to be published in the Handbook of American Indians, Smithsonian Institute, (Washington, D.C.)
- 1973 "The Archaeology and Early History of Davis Strait from Padloping Island to Nedlusiak Fiord", Vols. I, II, III, Report to Parcs Canada
- 1971 "Energy Flow in a Hunting Society", Scientific American, Vol. 224, No. 3, pp. 104-115. See also Scientific American books: Energy: Horgensen, J.G. (ed), Biology and Culture in Modern Perspective and North American Archaeology
- 1967-1972 "The Evolution of Inuit Adaptation, Southern Baffin Island", report to the National Museum of Canada of Baffin Island Research

9. Symposium - (Invited Participant with Paper)

- 1977 Canadian Archaeological Association, invited participant, paper entitled "Modern Inuit and the Reconstruction of Thule Adaptation", Ottawa
- 1976 Organizer, Northern Demography Workshop Nos. I and II, sponsored by D.I.A.N.D.
- 1975 The Institute of Ecology, Energy Flow Workshop II, invited speaker, Energy Flow and Culture Change, University of Florida,
- 1974 American Association for the Advancement of Science, invited speaker, Energy Flow and Culture Change, San Francisco
- 1974 Social Science Research Council, N.Y.C., invited participant in workshop on Energy Flow in Non-industrial Human Communities.
- 1973 International Biological Program, invited participant in conference on Man in the Ecosystem, Annapolis, Maryland

Symposium Cont'd.....

1972 School of American Research, advanced Seminar, invited participant in seminar on Prehistory of the Canadian Eskimo, Santa Fe, New Mexico

1970 - 1972 International Biological Program, working seminars, Winnipeg and Toronto

10. Major Committees and Associated Work

1. Standing Committee for Northern Demography Workshop
2. Chairman of the Native Harvesting Research Committee, a committee established under the James Bay and Northern Québec Agreement to oversee the Research to Establish Present Levels of Native Harvesting
3. Advisor to the Inuit members on the Coordinating Committee for Hunting, Fishing and Trapping established under the James Bay and Northern Québec Agreement
4. Waterfowl Working Table a joint Native and Government committee responsible for amending the existing legislation pertaining to migratory birds in Canada

11. Professional Addresses (from September 1970)

- 1974 - 1976 Loyola campus of Concordia University, Inuit Land and Culture
- 1974 L'université de Laval, seminar on Northern Studies and Research
- 1973 State University of New York, Department of Anthropology and Archaeology Society
- 1973 Pennsylvania State University, Graduate Faculty Seminar
- 1973 University of Massachusetts, North Adams, Canadian American Cultural Exchange Commission
- 1973 York University, Toronto, Faculty of Environmental Design
- 1972 L'université de Montréal, Seminar on Archaeological Theory and Methods
- 1972 Columbia University, N.Y.C., Human Ecology Seminar Series.

Professional Addresses Cont'd.....

- 1971 Hartwick College, N.Y., Man and  
Environment Program
- 1971 Roberson Museum, Binghamton, N.Y.,  
Festival of Canada Seminars

12. Graduate Work

(a) Completed Degrees

Greg Mayes, M.A., Mass Communication and Eskimo Adaptation  
in the Canadian Arctic, 1972

Jennifer Vestey, M.A., Igloolik Eskimo Settlement and  
Migration 1900-1970, 1973

(b) Current Work

Sarah Gaunt, M.A., Eskimo Camp Relocation and the Hunting  
Economy

Steve Behnke, M.A., Land Conflict on Alaska's North Slope  
as Related to Canadian Land Claims

John Thompson, M.A., Economics of Marginal Farming, Leeds  
County, Ontario

Marc Hammond, Ph.D., Work, Energetics and Economics of  
Naskapi Adaptations

Greg Mayes, Ph.D., Impact of Governmental Decisions on  
the Economy and Land Use of Pangnirtung, N.W.T.

Ron Duffy, Ph.D., The Impact of Population Growth on  
Programs of Development in the Eastern  
Canadian Arctic

George Wenzel, Ph.D., The Changing Cultural Adaptation of  
the Clyde River Eskimo

RESUME

Name: Joseph Angma

Birthdate: December 17, 1979

Address: Fort Chimo, Quebec

Experience:

1977 - present	Researcher, Research Department, Makivik Corporation, Fort Chimo Quebec Member of the James Bay and Northern Quebec Coordinating Committee on Hunting, Fishing and Trapping
1975-1977	Field Director, "Research to Establish Present Levels of Native Harvesting" in northern Quebec
1971-1975	Inuit hunter, Payne Bay Quebec
1969-1971	Research Assistant to Dr. Keith Ronald, Dept. of Biology, Harp Seal Project, University of Guelph, Guelph, Ontario

Resume

Name: Douglas J. Nakashima

Birthdate: May 24, 1955

Address: 4628 Melrose Ave., Montreal, Quebec

Education:

1977 B.Sc. McGill University, Major in  
Biology

Experience:

July 1978 - present      Researcher, Research Department  
Makivik Corporation, Fort Chimo

Jan. 1978 - June 1978      Researcher, for Professor Peter  
Grant, McGill University, Dept.  
of Biology, at the Charles Darwin  
Research Station, Galapagos Islands.  
Evolutionary studies of Galapagos  
finches - feeding behaviour

Jan. 1977 - June 1977      Researcher, for Professor Peter  
Grant, McGill University, Dept.,  
of Biology, at the Charles Darwin  
Research Station, Galapagos Islands.  
Evolutionary studies of Galapagos  
finches - breeding behaviour

May 1976 - Aug. 1976      Research Assistant, Sable Island,  
Nova Scotia, for a graduate student  
from Dalhousie University.  
Breeding behaviour of ipswich  
sparrows

May 1975 - Aug. 1975      Research Assistant, Schefferville,  
Quebec, McGill Subarctic Research  
Laboratory. Comparative study of  
the decomposer compartment on burned  
over spruce lichen woodland

Experience Continued

May 1974 - Aug. 1974

Research Assistant, Long Point Bird Observatory, Lake Erie, Ontario, for a graduate student from the University of Toronto. Study of morphological variations in garter snakes.

May 1973 - Aug. 1973

Research Assistant, Long Point Bird Observatory, Lake Erie, Ontario. Study of breeding bird populations in various habitats on Long Point.

RESUME

Name: Edward Tukiapik

Birthdate: July 31, 1958

Address: Fort Chimo, Quebec

Experience:

1977 - present

Researcher, Research Department,  
Makivik Corporation, Fort Chimo.  
Involved in the Research to Establish  
Present Levels of Native Harvesting,  
and a study of the Koksoak River  
Fishery. Preliminary investigations  
for the Eider Duck Survey.

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