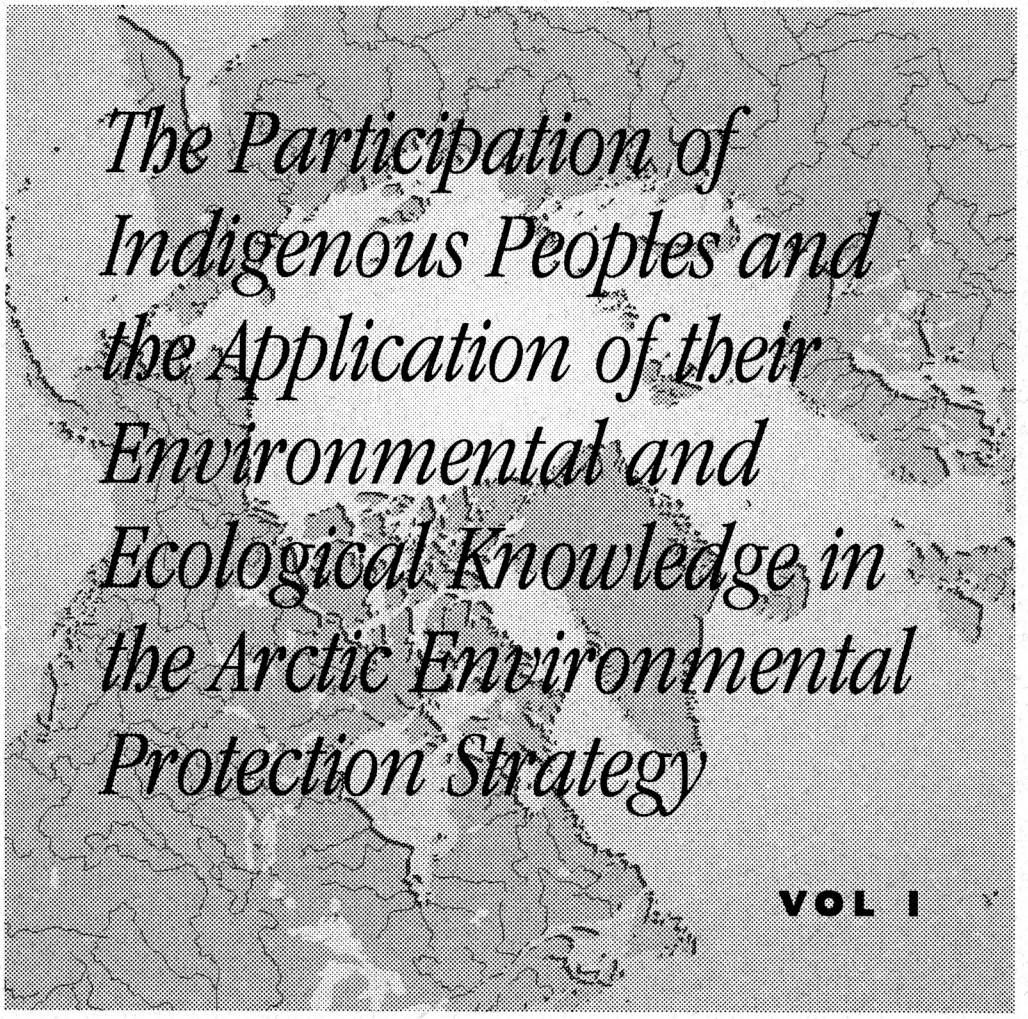
The Participation of Indigenous Peoples and the Application of their Environmental and Ecological Knowledge in the Arctic Environmental Protection Strategy
VOL I

THE PARTICIPATION OF INDIGENOUS PEOPLES AND THE APPLICATION OF THEIR ENVIRONMENTAL AND ECOLOGICAL KNOWLEDGE IN THE ARCTIC ENVIRONMENTAL PROTECTION STRATEGY

A Report on Findings

VOLUME I

Prepared by
The Inuit Circumpolar Conference

for Indian and Northern Affairs, Canada

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The views, conclusions and recommendations expressed herein are those of the authors and not necessarily those of the Government of Canada.

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CHAPTER I

"It is recognized that this Strategy, and its implementation, must incorporate the knowledge and culture of indigenous peoples. It is understood that the cultures and the continued existence of the indigenous peoples have been built on the sound stewardship of nature and its resources" [1]

1.1 Background and Objectives

In June 1991, a Declaration on the Protection of the Arctic Environment was signed by Ministers representing the eight countries that, in September 1989, first met to begin their participation in what is now commonly referred to as the Rovaniemi Process. This process was developed at the initiative of Finland and included Canada, Denmark, Iceland, Norway and Russia (formerly the USSR), Sweden and the United States. The Rovaniemi Process is concerned with the need for these eight countries to plan joint measures for the immediate and long-term protection of the Arctic environment.

By signing this Declaration, the countries adopted the Arctic Environmental Protection Strategy (AEPS). The AEPS establishes specific programs of action to combat pollution, prevent further degradation of the Arctic environment, and conserve Arctic flora and fauna. Although the AEPS mandate is intended to address major environmental issues on an international scale, it also recognizes this vast territory is the homeland for indigenous peoples and, as a consequence, the AEPS must be able to accommodate their concerns and encourage their participation. The objectives of the AEPS include the following:

> To provide for the protection, enhancement and restoration of the environmental quality and the sustainable utilization of natural resources, including their use by local populations and indigenous peoples in the Arctic; (objective ii)

> To recognize, and to the extent possible, seek to accommodate the traditional and cultural needs, values and practices of the indigenous peoples as determined by themselves, related to the protection of the Arctic environment; (objective iii)

The Inuit, Sami and the numerous groups that comprise the indigenous peoples of the Russian north are represented through their organizations as permanent observers to the AEPS, and are expecting to play an active role in many aspects of implementation. From the perspective of indigenous peoples, the AEPS represents a unique and very important opportunity to initiate major programs of research, environmental monitoring and other activities which will have long-term beneficial impacts on the circumpolar environment and, therefore, on their quality of life. To this extent the general principles and specific objectives of the AEPS are understood and appreciated by the many indigenous peoples that occupy the circumpolar region. Yet they feel very strongly that little has been done to include them in concrete and productive ways.

The potential role of indigenous peoples within the AEPS has been established by the frame of reference and objectives defined in the eight principles developed by the member countries to guide the implementation process. Although each of the eight principles have relevance for the particpation of indigenous peoples, five are most important and their implications are discussed in ***Annex 1.***

The challenge now is to give practical expression to the objectives, principles and commitments contained in the AEPS in relationship to the knowledge and participation of indigenous peoples. This report describes some of the underlying issues that must be addressed by the AEPS in relationship to the participation of indigenous peoples. In so doing, it will propose short and longer term plans of action for member countries to support and facilitate the effective participation of indigenous peoples in the implementation of the Arctic Environmental Protection Strategy.

The report is divided into four chapters. Chapter 1 sets out the background issues that gave rise to the participation of indigenous peoples in the AEPS. Chapter 2 describes the role and importance of indigenous environmental and ecological knowledge in terms of its potential application within the AEPS and discusses the ways in which the participation of indigenous peoples can best be facilitated. In Chapter 3 the research design and methodologies needed to develop a research program on indigenous knowledge are introduced. Chapter 4 presents three recommendations for Ministerial consideration.

Topics of special interest which have been drawn from the regional inventories or which provide additional information about particular issues raised in the report are presented in separate annexes. An extensive bibliography, representing the literature review on indigenous environmental and ecological knowledge and its applications is presented in Volume 2 of this report.

1.2 The AEPS and Commitments to Indigenous Peoples

The Inuit Circumpolar Conference (ICC) has taken the lead, on behalf of the Sami Council and the Association of the Peoples of the North (Russia) to ensure the participation of indigenous peoples. Since its inception the ICC has been committed to developing programs and policies aimed at promoting the participation of indigenous peoples and their environmental and ecological knowledge in resource management and sustainable development. The Inuit Regional Conservation Strategy was developed specifically around these objectives, and more recently, the Arctic Policy forms the basis for Inuit planning towards the sustainable and equitable development of their homelands. These intiatives are consistent with the principles and objectives that have been established by the AEPS and they can provide guidance for the building of cooperative and productive relationships.

The Inuit Regional Conservation Strategy (IRCS), developed by the Inuit Circumpolar Conference, is a long-term plan to promote sustainable and equitable development, wise management and environmental protection for the Inuit homelands. The implementation of the IRCS in Greenland, Alaska and Canada is discussed in ***Annex 2.***

The AEPS recognizes that one of the most important ways to involve indigenous peoples in the implementation process is through their knowledge about the environment and ecology of the circumpolar region. As well, it recognizes the interconnections between a healthy environment and the quality of life of indigenous peoples. Specifically the AEPS states that management, planning and development activities which may significantly affect the

Arctic ecosystems shall take into account the traditional knowledge of indigneous peoples and the results of scientific investigations. In addition the AEPS states that the health, social, economic and cultural needs and values of indigenous peoples shall be incorporated into all resource management, planning and development activities. Ways must now be found to incorporate these two commitments into the implementation process.

Much effort was involved, over a two-year period on the part of indigenous peoples and their organizations, to obtain these commitments from the member countries. This report makes the assumption that these commitments were accepted with the signing of the Declaration and that the AEPS is the product of a consensus among all the participants. More recent events, including the acceptance of similar provisions in Agenda 21 by the 1992 United Nations Conference on Environment and Development (UNCED) and the creation by The World Conservation Union (IUCN) of an Inter-Commission Task Force on Indigenous Peoples (1993) reinforce the international dimension and importance of the initiatives taken by the AEPS.

The Conservation of Arctic Flora and Fauna Working Group (CAFF), at its inaugural meeting in April 1992, attended by representatives from the Inuit Circumpolar Conference, the Dene Nation and the Métis Association of the Northwest Territories, undertook the responsibility for initiating the activities needed to develop an implementation program for the participation of indigenous peoples and the use of their knowledge in the AEPS as a whole, with particular emphasis on CAFF. Specifically, their 1992-93 Work Plan stated that:

> In order to achieve the goal of incorporating the knowledge and cultures of indigenous peoples of the Arctic in the Arctic Environmental Protection Strategy, and in its implementation, particularly with respect to conservation of Arctic flora and fauna, elaboration of traditional knowledge/indigenous ecological knowledge is required. This should include:
>
> > developing a process for collecting and integrating traditional ecological knowledge; and
> >
> > better defining and facilitating the participation of indigenous peoples.

It was agreed at that meeting that Canada, as lead country, together with the Inuit Circumpolar Conference, would take responsibility for the coordination of this work.

Funding was provided to the Inuit Circumpolar Conference by the Canadian government through the Department of Indian and Northern Affairs to prepare a proposal responding to the work plan of the Conservation of Arctic Flora and Fauna Working Group and to the needs of the AEPS as a whole. A project proposal entitled "The Application of the Ecological and Environmental Knowledge of Circumpolar Indigenous Peoples within the Arctic Environmental Protection Strategy" was submitted in September 1992. After the proposal was circulated among the member countries for comment, a contract was awarded to the ICC in November 1992. Work began immediately to develop an issues paper on the ecological and environmental knowledge of circumpolar indigenous peoples that would be used to guide the implementation of the Arctic Environmental Protection Strategy. The issues paper was organized around four objectives:

1. To review the situation in the circumpolar region with respect to the current status of indigenous knowledge and its use by indigenous peoples and western science for addressing issues related to conservation, sustainable resource use and sustainable development;

2. To conduct a literature review of relevant materials produced by indigenous peoples' organizations, government agencies, academia, and other groups, and to produce an annotated bibliography to help support the conclusions in the issues paper;

3. To identify the issues surrounding the content and use of the environmental and ecological knowledge of indigenous peoples and to discuss how to facilitate their participation in the AEPS;

4. To develop an appropriate action plan that will facilitate the involvement of indigenous peoples and their ecological and environmental knowledge within the AEPS and to recommend specific initiatives for the implementation of this action plan.

In order to achieve these objectives it was necessary to ensure the close cooperation and active participation of the Inuit and the Sami. Therefore, the Sami Council and the ICC, including a representative from Chukotka participated in, and approved, the work plan. A representative from the Sami region, and also one from each of Greenland, Canada, and Alaska were contracted to conduct regional inventories and prepare case studies. It was not possible to make contact and work directly with a representative from Russia. In an attempt to compensate for this unfortunate situation, the representative from Alaska, who has worked extensively in the Chukotka region, was able through his contacts to express some of their perspectives and concerns.

A special three-day workshop was held in late March 1993, in Copenhagen, with the indigenous representatives. This workshop provided an opportunity to review the results of their work and to discuss and debate the issues raised by each of the regional inventories. The results of this workshop formed the basis for the issues and recommendations developed in this report. Specifically, the workshop members identified the following points that need to be addressed within the framework of the AEPS:

1. The need for a concrete reaffirmation by the Arctic countries of their commitment to supporting the sustainable use of Arctic resources, particularly for the benefit of indigenous peoples, as a means of contributing to the continuing viability of their economies and the vitality of their cultures.

2. The need to provide the resources that indigenous peoples and their organizations require in order to permit their active and effective involvement in all planning and decision-making activities related to the AEPS.

3. The need to identify specific approaches and programs for communicating the knowledge held by indigenous peoples from primarily an oral basis into a format that can be understood and appreciated by non-indigenous scientists and researchers.

4. The need to identify specific approaches and programs that can present western science and information in a format that can be understood and appreciated by indigenous peoples.

5. The need for a common forum where indigenous and non-indigenous experts can have access to information from each of the circumpolar regions and where, together, they can engage in strategic planning related to the AEPS.

6. The need for a common forum, where indigenous and non-indigenous experts can meet, discuss and exchange ideas and information on issues related to the AEPS in the circumpolar region and where priorities and standards for research and the application and communication of results can be established cooperatively.

CHAPTER 2

"The objectives of the Arctic Environmental Protection Strategy are: ... To recognize and, to the extent possible, seek to accommodate the traditional and cultural needs, values and practices of the indigenous peoples as determined by themselves, related to the protection of the Arctic environment". [2]

2.1 The Problems and Context of Participation

The establishment of a more effective way of facilitating the participation of indigenous peoples, their organizations and their representatives in all activities associated with the design and implementation of the Arctic Environmental Protection Strategy, represents the primary objective of this report. In order to meet this objective, it is critical to first examine and understand the factors that have contributed to the continuing difficulties that both indigenous and non-indigenous groups encounter when trying to work together. Until these difficulties are resolved, discussions about indigenous participation will continue to divert attention away from other critical issues involving threats to the quality and sustainable development of the circumpolar environment and ecological systems.

The participation of indigenous peoples involves four primary issues. The first is based on the need to understand the concerns indigenous peoples have about the attitudes and activities that define scientific research, and about the processes by which information derived from this research is then used to solve problems that indigenous peoples consider to be important. The second is based on the need to accept the value and role of indigenous environmental and ecological knowledge, and to reach an understanding of the role played by the larger cultural system of which this information is but one part. The third issue is based on the need to design and carry out an actual research program within the AEPS that will enable information on environmental and ecological knowledge to be collected, analyzed and then applied for a variety of purposes. The fourth issue is based on the need to develop a system of joint participation that enables indigenous peoples to maintain control over their information, and encourages the pursuit of cooperative research and co-management within a framework that is sensitive to their cultures. These issues can only be addressed within a structure that allows for both independence and cooperation between all participants. Once this structure is established, the differing data

bases and cultural perceptions will be easier to reconcile so that programs can be developed to define and guide the day-to-day involvement of indigenous peoples in the implementation of the AEPS.

The information presented in this chapter has been drawn from formal and informal discussions with people involved in all aspects of the AEPS. These discussions explored the range of opinions, attitudes and concerns that both indigenous and non-indigenous representatives have regarding each other's role in the AEPS. In addition to information made available from discussions directly related to the AEPS, it was felt that valuable insights could be gained from describing the experiences of indigenous people who have been involved with similar types of programs in the circumpolar region. The indigenous representatives from all regions affected by the AEPS felt it was critical to have their perspective clearly explained. The material presented in this chapter therefore emphasizes the indigenous point of view and is expressed, whenever possible, through first person statements. Although almost all of these statements have been drawn from the Canadian experience, the indigenous representatives to the AEPS considered them to reflect the views and concerns held by indigenous groups throughout the circumpolar region. Ideas and information have also been drawn from academic research, especially on issues related to culture and to the role of information within cultural systems.

The information available from this review clearly indicates that there are misunderstandings between indigenous peoples and the scientific, administrative and political interests of the member countries represented in the AEPS. There is still resistance on the part of member countries to share the responsibility for planning and decision-making; there is still resistance and skepticism on the part of scientists and administrators concerning the role, content and utility of indigenous environmental and ecological knowledge; and there is still resistance on the part of many indigenous peoples about the value and accuracy of scientific information, and skepticism about the motives that underlie the scientific, political and bureaucratic processes associated with large-scale programs such as the AEPS.

The review and discussions also revealed that there are frustrations with the fact that there are no easy answers or quick solutions to the issues surrounding the participation of indigenous peoples in the AEPS. There are no indigenous-run offices or institutes of indigenous knowledge nor have educational programs yet been developed that would encourage a broad and more consistent understanding of this topic to be developed

within the circumpolar societies. One of the tasks of the AEPS is to assist this long-term process in a manner that will encourage but not direct the participation of indigenous peoples.

Unless these differences are overcome, they will slow down and further complicate the implementation of the AEPS, especially in regions where the rights of indigenous peoples have been formally recognized. This task, though difficult, is not impossible. Nor is it a task that must only be thought of as a responsibility of the AEPS. In all regions of the circumpolar world, indigenous peoples and their organizations are involved in other, equally important initiatives that call for a change in the relationships that define indigenous participation related to the protection and management of their territory. The AEPS is of particular significance, however, because of the importance and international scope of its mandate.

Indigenous peoples are optimistic that positive changes can be made and they consider the AEPS as an opportunity to strengthen their voice and their role in the formulation and carrying out of policies and programs related to the protection, management, sustainable use and development of the Arctic regions. With this in mind, indigenous peoples are certain that if the purpose of their participation is well understood, and if the potential value of their contribution is allowed to be realized, then the overall effectiveness of the implementation process will be enhanced without jeopardizing the interest or priorities which define the objectives of the member countries.

This optimism is tempered by the fact that the representatives of indigenous groups involved with the AEPS continue to express a sense of frustration when attempting to explain their perspectives and concerns. At the same time, representatives of the member countries express concerns that indigenous peoples are continually trying to politicize the process rather than focusing their attention on the real problems of environmental protection and sustainable development.

The reality of this concern on the part of representatives of the member countries is acknowledged in the comments made by indigenous peoples, but their explanation places the political perspective within a broader context. To them it is a question concerning the politics of participation. An Inuk representing his high Arctic community during preparations for environmental hearings made the following observation:

"We are always being accused of turning everything into politics. Well, in the North everything is politics, at least for now. If we talk about these baseline studies and about environmental impacts, it's part of politics and no one around this table can say that is something else. Everyone in this room has been sent here by the politicians. So why is it that we Inuit are always being accused of using politics when we try to get our opinions understood?" [3]

This observation was enlarged upon by the comments of another Inuk, who stated:

"We never understood what science was all about. But even a few years ago, we didn't understand much about government and politics either. Some things have changed and we have a better idea about government and we know how to hold our own in politics ... But I don't think anyone still has a clue what science really is." [4]

The situation that now exists would be relatively easy to correct if it were simply a question of communication between the different groups. Unfortunately, solutions involve far more than improving lines of communication, although this certainly has an important function. Long-term solutions require long-term commitments. There must be fundamental changes in attitudes as well as in practices, and the burden of responsibility must be shared by both indigenous and non-indigenous parties to the AEPS. Indigenous peoples cannot be expected to always be the ones who must adjust to a process that is most often superimposed from outside. They will have to continue articulating their concepts, perspectives and methods for contributing to the implementation process, with the exception that over time, the process will begin to reflect the perceptions of indigenous people and become more responsive to their needs and potential contribution.

Many individual scientists and researchers working in the circumpolar region over the years have developed positive and productive relationships with indigenous peoples and community authorities, and the preceding statements are in no way intended to diminish these relationships. It is fair to say, however, that they are the exception rather than the rule. The issue is to learn from these experiences and to then translate what is learned into policy and general practice.

There is no rapid solution and no rapid transition. The changes which need to be made must move beyond the generalities of the language and intentions so often stated by indigenous organizations, governments and outside interest groups. This language of intent, whether expressed by statements of principles or the listing of resolutions, has played a part in moving the issue of participation forward, but the next stage requires that more substance be added to the debate. It will require a great deal of thought, effort and flexibility by all parties to the AEPS. If this effort results in steps being taken towards a new or better structure for cooperation, mutual respect and tolerance, then that alone can serve as a true measure of success for the AEPS and as a touchstone for continuing progress.

2.2 Addressing the Role of Culture

One of the terms and concepts that is referred to over and over again during discussions on the relationship between the AEPS and the different societies that comprise the indigenous populations of the circumpolar region is that of culture. Although a major part of the agenda for the AEPS may fall outside of areas where indigenous peoples have expertise, there are many direct and indirect overlaps between the mandates of the AEPS and the needs, concerns and every day realities of indigenous peoples. It must be understood that much of the geographic area within which the AEPS programs will operate is the traditional homeland of the circumpolar indigenous peoples. It is where people live and have lived for generations and their cultural realities continue to be shaped by their territorial realities.

To help ensure the success of the AEPS, it is essential to develop a sensitivity to the cultural landscape of the circumpolar region. There should be no debate that references to culture are necessary and important. The situation within which the AEPS is

operating is not only international, but it is multi-cultural as well. The development of a cultural understanding requires a serious commitment, especially in programs within the AEPS where the background of participants is drawn primarily from the biological and physical sciences rather than from human geography, anthropology or other social sciences. There is often an expression of interest in making the effort that is required to understand what comprises cultural systems and defines cultural differences, and the broad mandate of the AEPS should provide the incentive.

Anthropologists and other social scientists have been arguing about and wrestling with the concept of culture for many years and there is a large body of literature on this subject. There is also an extensive literature on the cultural context of research and development programs. The implementation program of the AEPS should draw from this experience in order to assure its success. This is a legitimate and serious issue that requires all participants to the AEPS, including the indigenous participants, to personally and collectively make the efforts that are required to bridge the cultural divides. A statement by an Yup'ik from southwestern Alaska gives a precise and insightful summary:

> *"We do not dislike western civilization or white man. We simply treasure our young and our culture. It is our belief that both can live together side by side, but not necessarily eating out of the same bowl."* [5]

Concern over the need to recognize the importance of cultural diversity as an adaptive mechanism was consistently raised by the indigenous representatives during the workshop in Copenhagen. These representatives echoed the concerns of all indigenous peoples that maintaining cultural diversity is not the same thing as simply preserving cultures as museum exhibits. The cultures of the circumpolar region have survived for millennia because they were able to meet and adapt to demands placed on them by the environment and more recently by the outside world.

Recognition and protection of cultural diversity is becoming an important feature of sustainable development. The importance of addressing cultural differences is also now being recognized in guidelines for environmental impact assessment. This recognition has implications for cultural considerations that should be part of processes such as the AEPS. A useful statement on the underlying role of culture in situations similar to that

in which the AEPS is expected to operate, is available from the guidelines for environmental assessment developed for a proposed hydroelectric development in northern Québec. In this regard the project proponent is required to seriously consider:

> *"... Furthermore, each cultural group has its own conceptual and symbolic system that reflects the group's image of itself and of its communities, its environment and its past and future. Since this conceptual and symbolic system partly determines the group's reaction to change, it is an intrinsic element of the environment itself and must be thoroughly understood before the impacts of a development project can be assessed ... The Proponent must be particularly attentive to the conceptual and symbolic systems and knowledge of the (indigenous) populations affected."* [6]

2.3 Barriers to Indegenous Peoples' Participation

The relationship between indigenous peoples and science is complex and often controversial. It is complex because of the many ways in which science and research are now expressed in the North by a diverse number of organizations, each having their own objectives and serving a particular interest group. It is controversial because indigenous peoples are concerned about who actually controls research, and they question whether scientific studies are beneficial for their society, economy or environment.

In the past, indigenous peoples considered the work of scientists to be more of a curiosity than something that could have a direct impact on their life or livelihood. Indigenous peoples are now aware that research activity in their home territory represents part of a large western based scientific establishment and they understand that the findings and opinions of scientists are important parts of southern decision making. Indigenous peoples assume that science has the power to validate the opinions of outside

interests about circumpolar issues, and they feel that research is the forerunner of development, regulations or other types of change initiated from outside. Indigenous peoples must have an opportunity to develop a different type of association with research and with the scientific establishment that controls this research. The objective is not to establish an exclusive jurisdiction for indigenous peoples, but if real progress is to be made, the power base must be shared and the approach to research redefined.

The next few pages summarize the problems that create barriers to participation of indigenous peoples in research activities. Twelve years ago, a young Inuk archeologist wrote a perceptive summary of what constituted these barriers and he suggested how they could be overcome. Soon after, Daniel Weetaluktuk died in an accident while surveying beluga whales. This summary is presented in ***Annex 3***

Long-term solutions lie in the ability to resolve serious problems that trouble both indigenous peoples and southern scientists. This is a difficult but not impossible goal. Its achievement will take time and must proceed through stages. In the past decade, there have been important initiatives within the circumpolar region to encourage a redesign of science. It is important for the scientific, administrative and political representatives to the AEPS to understand the situation that now exists throughout the indigenous territory of the circumpolar region.

Today, one of the primary barriers that tends to separate indigenous peoples from the processes and activities that would benefit from their participation in programs such as the AEPS involves misunderstandings that, over time, have arisen from the collection and use of scientific information about their culture, environment or ecology by outside researchers. Conflicts and misunderstandings most often arise when research programs are carried out in indigenous peoples' communities or territories without consultation, without their involvement and, therefore, without reference to their concerns, knowledge and points of view. This has led to a climate of suspicion and often distrust in that indigenous peoples feel that information is both collected and applied in ways that will have negative consequences for them since they only serve the interest of the outside researchers or the agencies they represent.

The attitudes that now prevail throughout the indigenous communities of the circumpolar region are not representative of what indigenous peoples used to think. For example, the comments by an older Inuk when reflecting on earlier times had a note of both curiosity about and concern for the well-being of outsiders who came north to carry out studies:

> *"I could never understand why some people went to all the trouble to come north just to look around the land or to ask us questions. It seemed silly at the time but we kind of looked forward to visits by these people that we are now calling "scientists". We never called them that before. I don't think we called them anything.*
>
> *We usually liked them if they were friendly to us especially if they had some tobacco or different kinds of food. I can't remember any arguments with them. They never told us what they were doing and we never asked why they were here. Some seemed to be smart and others were pretty stupid and were lucky not to have killed themselves. There were never many of these people in the old days so it was an entertainment for us."* [7]

The opinions most Inuit and other indigenous peoples first had about scientists was that as long as they were not arrogant or caused any real problems they were tolerated and always looked after. In retrospect, however, many individuals are beginning to view the activities of these earlier researchers from a different perspective. An Inuk from another community likened the coming of researchers to the coming of spring and his comments have an edge of resentment:

> *"First, the snow started to leave the land and then water would come on top of the ice. When this happened we knew the whales would*

come north in the sea and the geese would fly over the land. Then we knew there would usually be a scientist or two to dig around or to ask us questions. They would stay about as long as the geese except we never liked to see the geese leave." [8]

Another Inuk reflected on how his attitudes towards researchers has changed:

"We never bothered to call the people that came north (to do studies) anything in particular. If they had a name that was easy for us to pronounce, we called them by their name but we usually gave them a nickname like "cross-eyed", or something like that trying to make it kind of funny. We also knew that some of them were trying to find out about the land, and some were interested in animals but the ones we saw most were always asking us questions about the way we lived and these guys sometimes would collect "stuff" that belonged to our ancestors. I didn't think much about it long ago but it was really the same as stealing from us. That is what I think now." [9]

In recent years, research done in the indigenous communities or their territory throughout the circumpolar region has become more controversial. It is now often viewed as involving specific objectives and activities that enable outsiders to extract knowledge and information about their territory for the use and benefit of outside interests. When asked what the word scientist meant, an Inuk commented that they used to call scientists "people who asked questions" but now he thinks they were really more like "spies" :

"I don't want to see any more southern researchers coming in to bother our people and steal the information so they can sell it in the south. In my own experience they can lie about why they are here and say anything to keep us quiet. They don't keep their promises about helping us and we don't really need them because they didn't even pay for all of the information we gave them. They take advantage of us just like we were children and use our knowledge to become big shots in the south." [10]

This concern with researchers was reinforced in the comment by another Inuk who stated:

"When people came here to ask us questions about our life or wanted us to take them on the land to find out about animals or anything else, we never refused to help. I myself would tell them what I knew. We just gave them anything they asked for even if it did not make us very happy. At that time we never had the power to say no. Even if they were friendly we were still a bit afraid of them. Sometimes they pushed us so hard that we would just tell them something so they would not get mad. They hardly ever paid us in those days but we worked anyway and said thank you if we got cigarettes or tea." [11]

These comments were by an elder, but his son, who is forty, was even stronger in his interpretation :

"For many years now, every [outsider] that wants to study about our land comes to ask my father for his knowledge. They just stole everything from him this way because he was afraid to say no. They can ask some real stupid questions so it was hard for my father to give good answers. When he talked they only listened to what they wanted to hear and always used that information to put lots of money in their own pocket. My father never got anything except some people (researchers) would promise to help him but never did. They just used his knowledge to make themselves important. That's the way it always was, but now he doesn't want to speak with these people anymore." [12]

This situation has resulted in a perception indigenous peoples have that many methods used in scientific study are inappropriate and consequently the findings are considered at best to be incomplete. They feel that their questioning of expertise is justified on the basis of their own observations and experience with researchers. Over time these perceptions have lead to a fear of information, and this in turn has grown, in some situations at least, into a generalized dismissal of all western scientific work and of the value of the information that results from this work. This attitude is clearly articulated in the following comments:

"I don't trust anything that these people (engineers) have to say because they have made mistake after mistake and have been completely wrong. They are supposed to be experts so they did not even listen to what we had to say. Now we have proved them wrong and they don't even admit it, and we have to wait another year (for our new airstrip) because of their mistakes. We

don't have Inuit engineers yet, but we do have Inuit scientists who know about this land of ours. They should have listened to our people and then helped with their special knowledge following our advice." [13]

Another Inuk commented that:

"It is nothing to them (researchers) to come here and to study our resources and to create all kinds of misconceptions about what is going on up here. They were here to count animals and they refused to let me take them to where the animals were because they had figured out what to do before they came north. People will read their basis report and the next thing we know is there will be regulations on our hunting. ....This problem will keep on happening because we don't have any way to criticize what researchers have written. Even if we have a chance to see what was said, there is no power to change it." [14]

Indigenous peoples have obviously had many encounters with what they consider to be "bad scientific judgment". This reinforces their attitude that research and the "experts" that carry it out can have a negative impact on the essential decisions, projects or programs that directly affect life within their communities or region.

Statements about incompetence do not always refer to a lack of research skills, but most often to a lack of understanding outsiders have about the problems to be studied and consequently how best to apply their skills to meet the needs of indigenous peoples. Indigenous peoples have, as well, become very apprehensive about accumulating information in places or in ways that are not easily accessible to understanding and decision- making within local communities. Coupled closely with this concern is the perception that just to be guaranteed access to information sources does not guarantee an equal ability to utilize these resources in the best possible way. The problem is not only of

accumulating information, but one of doing so in a manner that makes it of direct use to indigenous peoples. It is felt that as long as the mentality of information selection, collection and presentation is "western", its ultimate use will remain "western". The mere translation of these documents into indigenous languages is no solution.

It is this type of situation where the utilization of indigenous expertise within a framework of indigenous-controlled research projects can be effective for building trust in the value and potential of science. Closely aligned to this point of view is the concern with participation in all phases of research. Only through the selection of research priorities that allows for cooperative efforts, will an indigenous scientific community evolve that includes both indigenous expertise and acquired western scientific skills and procedures. Without a cooperative approach, decisions will remain totally under the control of outside interests. Under these conditions indigenous peoples feel that problems can be better understood, the need for further information can be determined and the applications of information can be evaluated. With these comments in mind, the implementation of the AEPS must help to bring about change.

The AEPS is being put forward at a time when a new phase in the history of relationships between indigenous peoples, researchers, science and information is beginning to emerge. Although the situation may no longer be viewed from such negative perspectives as the ones identified above, there are still deeply held concerns about how to gain more effective control over both research and information. It is here that the development of a far-sighted approach by the AEPS to the participation of indigenous peoples will have lasting, positive consequences.

The Dene Cultural Institute has devoted considerable attention to research on Dene environmental and ecological knowledge. It has also investigated how Dene manage their resources through cultural practices. Methodologies for data collection and protocols for research which could have wide application in the circumpolar region have been developed. The work of the Institute is described in ***Annex 4*** *.*

A recent statement by an Inuk who has been involved for many years in the effort to improve relationships between research and indigenous peoples, stated that:

"We as Inuit are still concerned about research that is done in our territory, and we are not yet satisfied with what is happening. We also know that we need research to be done but not always by outsiders. We have chosen to improve our lives as Inuit and science will help us do this and also provide our people with more choices and opportunities.

In the past we were very upset with not having any control over the researchers who came north. Just because we are now saying that we need research it does not mean there is an open season for every researcher from the south. We want our own people to do much of this work with help from outside."

The same individual then noted that:

"We want research but with strings attached. Like doing studies that the north needs and doing them with Inuit. We can't give you any Ph.D.'s just yet, but we can give you people just as smart. We have started our own research training program but the pay-offs from these and from our school system are not immediate. Southern researchers will just have to be patient and learn to accept more on our terms. This does not mean that their work will suffer it will just be much different. In the long run, it will be much better for southern researchers to cooperate with us because we can help them get the job done." [15]

Indigenous peoples are re-evaluating their need for information, but this does not mean that all of the problems related to the collection and use of information can be easily solved. These signs of changing attitudes about research and science are still placed within a cultural context that will continue to reflect a different point of view on the nature of expertise, knowledge and the use of information. These differences need not impede the development of scientific work but they reflect substantive values of substance that continue to give a special identity to indigenous cultures.

> *"In our culture when a person grows wise and has knowledge we just call him a thinker and that means he is usually an elder. We don't bother with words like scientist and biologist and professor, because they do not represent what we mean by knowledge."* [16]

> *"In the north, the Inuit do not try to use their knowledge to become more important than someone else... There are people here in my community who are really brilliant but they do not boast about it or try to confuse people with words... One of the big differences between our knowledge and yours is that the individual does not try to use his knowledge like a profession."* [17]

> *"The idea of being an expert is very complicated, especially when being an expert is your business. No one has a monopoly on knowledge and a good teacher is one whose knowledge is stable enough to let the knowledge of another continue to exist. That's why good teachers are very rare. My father is an expert but also a good teacher because he knows where there is room for doubt. This type of person can accumulate knowledge*

and put it into practice for our society. All of this work must have the touch of the people. Even work like looking at the ground and studying it, cannot succeed if it does not have the touch of the people." [18]

Resolving the various concerns that indigenous peoples have about the development of scientific based information must be addressed through both policy and programs. This begins with reformulating the principles and guidelines within which research will be carried out and involves the process of consultation and the development of appropriate techniques for identifying problems that indigenous peoples wish to see resolved. But the most important step that must be taken is to assure that indigenous environmental and ecological knowledge becomes an information system that carries its own validity and recognition. A large effort is now underway in certain areas within the circumpolar region, as well as in other parts of the world, to establish these information systems and to set standards for their use.

2.4 Understanding Indigenous Knowledge

Discussions that have taken place with non-indigenous people concerning the utilization of indigenous environmental and ecological knowledge in the AEPS give a clear indication that there are importance differences of opinion, or levels of understanding, about the content, relevance and applications of this knowledge base. It is obvious from these discussions, however, that very few of the individuals with scientific or administrative responsibilities have had any direct experience with either the collection or use of information which represents indigenous knowledge. Indigenous peoples, on the other hand, argue that their knowledge, once understood and made explicit, can play an important role in many of the activities that will be carried out under the AEPS. They also argue that the value of indigenous knowledge will be enhanced and the range of applications expanded when it can be used in conjunction with information derived from western science. The question should not be one of "who knows best" when discussing the relative merits of these two information systems, but rather how to use both systems in a way that will maximize an understanding of the environment and ecosystems

of this vast area. Both types of information are valid; both can yield insights and understandings; and both have different capacities and limitations that must be acknowledged and respected.

Representatives from the scientific and administrative communities have expressed doubts as to whether or not this point of view is valid. They point out that questions dealing with international pollution and degradation of the Arctic environment are so technical that they fall out of the range of indigenous knowledge. Furthermore, the more localized problems which may be better understood and resolved with the assistance of indigenous knowledge are best addressed by scientists using indigenous knowledge, rather than by the indigenous peoples themselves.

Closely associated with the argument by indigenous peoples supporting the need to recognize the existence of, and to establish a role for, their knowledge within the AEPS, is the other point that this knowledge base is itself part of an age old system of beliefs, values and practices that together define important inter-relationships between indigenous peoples and the environment. Since this system is considered an essential element for the way in which indigenous peoples have managed their resources over long periods of time, it too must have its potential role that is recognized in the implementation of the AEPS.

Unfortunately, when discussed in relationship to the AEPS and similar processes, many of the references to indigenous knowledge and to its cultural context are often expressed in the form of very general statements of principle or in a language that often tends to complicate and sometimes over-dramatize what is meant by either indigenous knowledge or by the cultural context of this knowledge. This lack of precision or clarification has led to further confusion and sometimes to a rejection of the legitimate values and ideas underlying indigenous knowledge. The meaning of indigenous knowledge is not easy to grasp since the content, structure and cultural context of this knowledge itself is large and complex. Nevertheless, attempts must be made to simplify some of the language and ideas that have grown up around this topic. It is felt that this objective can be accomplished in a way that does not compromise the real nature of indigenous knowledge and its cultural context.

A recognition of indigenous knowledge and of culturally-based management practices is quickly emerging as a "new" field of study. It is a frequent subject for seminars and workshops, it is the subject of legal questions based on indigenous knowledge as

intellectual property, and it is again emerging as an area of academic research. Certain perceptions about indigenous knowledge have attracted the imagination of the general public, especially in areas such as human rights, indigenous medicines or alternative ideologies. The range of interest and approaches to indigenous knowledge is illustrated in the annotated bibliography that is presented in Volume 2. This bibliography emphasizes recent work for the circumpolar region, but it also refers to materials describing similar types of activities or issues from other indigenous peoples. Although the environmental, cultural and political settings of indigenous knowledge may be very different from place to place, there is nonetheless an amazing similarity in the questions being asked and the concerns being raised.

All of this activity may be important for advancing an undertstanding of indigenous knowledge and cultural practices related to management, but caution must be exercised in order to avoid a situation where indigenous peoples lose control over the objectives and the benefits of this work. Indigenous peoples are expressing a growing interest in the preservation of their knowledge while at the same time recognizing that this knowledge is far more than just an expression of their cultural heritage. It has the capacity for solving a whole new range of problems that they must now confront. As a consequence they are eager to develop programs both to preserve their intellectual heritage and to develop the expansion of their knowledge for use in today's world. At the same time indigenous groups express a fear that environmental and ecological knowledge will soon become yet another aspect of their culture that will be taken over and exploited according to the needs or motivations of academics, consultants or other outside interest groups. This concern is justified since indigenous knowledge has become the focus of much effort by non-indigenous groups for purposes that may lie outside those felt to be important by indigenous peoples themselves. In commenting on this type of possible exploitation, an Inuk stated:

> *"Down south, scientists may sometimes leave to go to another country to make more money or to do interesting work and they call this brain drain. Up here it is a different kind of brain drain, it is a real drain. Researchers come here to drain off what we know and then they leave. They*

use notebooks and tape recorders, but if a bucket would work they would use that because it would be easier." [19]

A more suspicious view on the economic motivation for collecting indigenous knowledge is also commonly held:

"When people come here and ask us questions about our knowledge they just take everything we tell them and sell it for lots of money. I think most of those people get rich doing this." [20]

And finally, an Inupiaq from Alaska has a more cynical interpretation:

"The worst thing to happen is when the researchers start trying to make their work look like it is relevant to us Inuit. That's why we are now getting invited to all these conferences. They want us to participate but really we have nothing to say because we have nothing to do with this type of thing in the first place. I can't tell you how boring it is to sit all day when you are supposed to listen to what other people think your culture is all about. It's mistake after mistake, but we really don't say much. Probably that's because none of us are really bothering to listen ... These conferences are completely self-centered and they really have nothing to do with us in terms of the things we want to discuss and work on." [21]

The work of outside groups in the field of indigenous knowledge should not be discouraged as long as it is carried out within the framework of research ethics that have been developed by many indigenous groups. This work can produce valuable information and insights that will be useful for indigenous peoples. Nevertheless, it is fundamentally

different from and should not be confused with, research carried out within the framework of programs such as the AEPS which much have active and direct involvement of indigenous peoples and their organizations.

It has already been noted that care must be taken to ensure that the rights of indigenous peoples concerning the collection and use of their own knowledge will not be appropriated by outsiders who are pursuing this area of study. Care must also be taken to make sure that the current level of interest does not simply end as a brief fad based on the present "superstar" status of indigenous knowledge. This fear is strong in the mind of many indigenous groups who felt that the interest shown in their concerns and objectives prior to the Rio Summit were quickly forgotten once the "show" was over. The emphasis must be placed on long-term goals that are met by long-term work.

Scientific groups are beginning to show more interest in working directly with the knowledge of indigenous peoples throughout the circumpolar region.

The Norwegian Man and the Biosphere (MAB) Committee recognized the need to develop an understanding of indigenous cultures and societies as an important link in the process of resource management in Scandinavia. At the local level, the Sami College is developing educational programs built around the need to re-introduce students to Sami knowledge. These initiatives are discussed in ***Annex 3.***

The guiding purpose of the AEPS with respect to their commitment to indigenous knowledge must reflect two objectives. The first is to assist indigenous peoples and their organizations in building an information base that is useful for addressing problems of conservation, management and sustainable use and development and for ensuring that any data banks that are established within this process stay under the direct control of indigenous peoples. The second objective is to help develop the expertise of indigenous peoples to use their knowledge alone or integrated with that of western science in order to solve problems and plan for the future. In so doing, the work of the AEPS will result in a valuable contribution towards the preservation of the cultural heritage of indigenous peoples in the circumpolar region. Many examples of work designed to meet these objectives have been undertaken by indigenous groups themselves or in cooperation with other research programs.

With these various factors to consider, it is often very difficult to form an opinion about what the current level of activity related to indigenous knowledge actually means and where it is leading. This must be particularly true for individuals who are not familiar with this topic and who are now expected to consider how to incorporate the complex, and often politically sensitive issues, into the formal structure of the AEPS. It is hoped that the information and explanations provided in this chapter can give needed clarification to the relevant issues and their implications. It cannot be expected that everyone involved with the AEPS must accept indigenous knowledge without raising questions or calling for further demonstration of its utility. If indigenous knowledge is to have long-term validity, it must be for reasons other than its acceptance as an article of faith. In the long run, this attitude is as dangerous for the proper development of indigenous knowledge as it is for that of western science.

2.5 Indigenous Knowledge: Terms and Meanings

The term "indigenous knowledge", seems to be confusing to both non-indigenous and indigenous people alike. Even though indigenous peoples have generally accepted the use of this term, they are not really sure of its meaning and they wonder why it has suddenly been "discovered" by outsiders.

> *"As indigenous peoples we are amazed at the excitement the existence of indigenous knowledge seems to have created. We have always known we have it."* [22]

Or as another person stated when being asked a question about his "indigenous knowledge":

> *"Indigenous knowledge, what's that mean anyway. I am an Inuk and my knowledge is from my experience as an Inuk. It's not indigenous it's mine."* [23]

Therefore, it is important to begin this discussion by asking what does this term really mean, how can it be applied and why is it quickly coming into such popular usage? There are many ideas about what indigenous knowledge is, or at least what people think it should be. These ideas vary widely and no satisfactory definitions have yet been put forward. In the long run, this is a healthy situation because it should be the indigenous peoples themselves that have the right to describe what indigenous knowledge means and how it is integrated into their cultural system.

> *"What many of the southern scientists fail to understand, even those who have worked here a long time and are fully accepted in what they do, is how the knowledge Inuit have is really connected to our culture. They may not be exactly the same thing but they almost are. The attitude we have will not keep us from being good researchers. What I am saying is that Inuit have always thought in a very ecological way about everything, not just ecology. When we think of something or discover a new fact, we also think of all the interconnections between that fact and everything else. And so it is with our science: it is going to be connected to everything within our culture. If scientists have trouble with this idea, I think they should take time to understand it better. I think we have something important to teach them that will make them much better researchers and help them solve problems more easily."* [24]

One of the problems that arise when trying to understand descriptions of indigenous knowledge is that the language used to explain many of its characteristics and underlying concepts, has tended to complicate its meaning. In some instances this has led to doubts about its credibility. The potential of indigenous knowledge can easily be trivialized if claims about its value cannot be supported by evidence. On the other hand, knowledge that occurs as a product of western science or thinking has the appearance of

being firmly established and reliable. Since science originates entirely from within a written tradition, it has always carried with it the power of its own explanation. Although these explanations have created a widely accepted trust in its value, science has not by any means been accepted or understood by the indigenous societies whose knowledge base is grounded in an oral tradition and whose opinion of science is most often formed only through direct contact with field workers.

Unfortunately, the situation that now exists constantly requires the indigenous peoples to define and justify their knowledge systems and to offer "proof" of its value, usually in comparison to information generated from scientific research. This creates a climate of tension, and using the bureaucratic jargon of the day, "an unlevel playing field" when viewed from the perspective of indigenous peoples. It is, therefore, a question of power. The indigenous peoples must continually explain while the representatives of the member countries and the scientific community sit in judgment. There is a growing consensus among indigenous peoples that they are no longer prepared to engage in a debate of this type. They consider it to be unproductive and to foster political confrontations rather than encouraging serious and productive work to get underway.

The first task is to determine how to move on from an acceptance of general principles to the development of actual information. Fortunately, as demonstrated in the bibliographic survey accompanying this report, enough work has now been carried out to confirm that this can be accomplished and that there are well tested methodologies and procedures that can be used for this purpose. It is clear from projects that are being carried out in the Arctic that indigenous knowledge does exist. It can be collected, analyzed and presented as information in a way that is useful both to indigenous peoples and to western scientists. This work has also shown how to use this information for solving problems dealing with conservation, management, and sustainable use of northern resources. This work has also illustrated that time is required if the ultimate goal is to obtain interesting and reliable information.

Before discussing the specifics on how to proceed, a few more cautionary statements must be made. When considering the terminology to be used it should be pointed out that the use of the term "indigenous knowledge" represents a compromise. In the past, terms such as "traditional", "folk" "ethno", "local", "community-based" "customary", or "heritage" were widely used in academic literature. New terms such as

"intellectual property" and "common property" must now be added to this list. None of these terms fully represent, the social and political complexities within which these knowledge systems operate.

Discussions which took place during the preparation of this report suggest that some indigenous peoples and groups feel most of the terms used to describe their knowledge seriously misrepresent their own point of view about the scope, content and value of what they know. They feel that some terms relegate their knowledge to an "intellectual artifact" while other terms are considered to be derogatory. "Traditional", for example, was thought by some to give the idea of "pushing their knowledge into the past", thus denying its relevance as a dynamic system that will continue to change and develop. In this regard one Inuk noted that traditional knowledge:

> *".... Sounds the same as some type of handicraft that we make and then sell to tourists."* [25]

Another Inuk commented that:

> *" ... if the words traditional Inuit knowledge are supposed to include everything we know about everything, it looks to me as though we probably don't know too much. I've never heard about everything down south simply referred to as white man's knowledge."* [26]

The terms "ethno" and "folk" when linked to a description of Inuit knowledge brought out an even stronger reaction:

> *".... in the south experts are allowed to talk about how animals behave and they call it science or biology or something like that. But when we use our own knowledge to describe how animals*

behave, it can never be science, just ethno or something or other ... that attitude is a real put-down to the value of our knowledge." [27]

It is likely that it will take time for the terminology used to describe indigenous knowledge to become more standardized. In the process of carrying out studies involving the collection of indigenous knowledge, researchers have been reminded on more than one occasion that the eventual terminology and meaning will have to come from within the indigenous world itself. In fact researchers were also reminded, sometimes quite harshly by indigenous peoples, that the absence of a definition is a problem for outsiders and not for themselves.

Therefore, the question that needs to be asked is whether or not it is possible or appropriate to suggest a working definition of indigenous knowledge for the purposes of the AEPS. Discussions with the indigenous representatives indicated that although this task would be difficult, it would be useful for giving some guidance to the implementation program and would help launch cooperative research. The working definition presented below is drawn from the experiences gained from research carried out with Inuit. It is the result of discussions about the content and importance of their knowledge. This definition, however, should be considered as a starting point and not as a final statement.

A Working Definition

Indigenous knowledge as expressed within the framework of a more specific data base, is comprised of information and concepts about the environment and ecology that are known, but usually not formally recorded by individuals who belong to a particular cultural group that has occupied an identifiable territory over a long period of time.

It includes facts, concepts and theories about the characteristics which describe the objects, events, behaviours and interconnections that comprise both the animate and inanimate environments of indigenous peoples.

The various types of information and concepts that define an individual's knowledge have been developed through that person's observations of, experiences with, and explanations about the physical environment and living resources that characterize the territory in which they live.

The content and extent of knowledge varies from individual to individual and there can be a specialization in expertise. This knowledge is commonly shared between individuals, which encourages an exchange and critique of both facts and ideas at any one point in time; and it is transferred from one generation to the next through the oral tradition thus enabling the knowledge base of indigenous societies to be transmitted and expanded over time.

The phenomena that make up systems of indigenous knowledge can be described in terms of the locations, movements or other factors that comprise their spatial patterns and in terms of the timing, sequence of events or other changes that define the temporal patterns, cycles or trends.

Indigenous knowledge takes account of relative abundance and changes in this abundance, but it does not necessarily deal with absolute numbers. Even though indigenous knowledge is not quantitative in nature, it does not mean that it is not precise. In fact, the need to be precise is one of the primary identifying elements of this knowledge base.

All of this information is organized around concepts and perceptions that are constantly being shaped and reshaped by the intellectual culture of indigenous peoples, and its content and meaning is best expressed within the context of indigenous language systems.

Indigenous knowledge, through the use of language, has the capacity to reveal those elements that are considered real and objective, but it also has the capacity to provide explanations about causality and give validity to the world of natural phenomena in a way that is consistent with systems of belief and which characterizes the world view of a each indigenous society.

CHAPTER 3

"Management, planning and development activities which may significantly affect the Arctic ecosystems shall ... take into account the results of scientific investigations and the traditional knowledge of indigenous peoples" [28]

3.1 Creating Systems of Information

It was explained in Chapter 2 why indigenous peoples of the circumpolar region have very serious concerns about the way in which data has been collected in their territories for use outside the region. At the present time, it is much easier for outsiders to have access to information about a particular indigenous group and their territory than it is for the members of the group itself. This reality, at first simply a cause for concern, has now grown into a call by indigenous peoples to change the situation. One of the most essential priorities that they identify is to establish their own capacity to create and utilize information systems. More than ever before, indigenous peoples recognize their need for reliable information to understand issues, solve problems and make decisions.

> *"There are many ways to be poor but in today's world, not having the right kind of information represents a certain kind of poverty. As long as outsiders decide what is important and are in a position to ask all of the questions, we will never be able to solve our own problems. Without information we are nothing at all and have no power to understand things or to change our life. If Inuit society is to develop we must be able to collect and use information according to our own terms. If we continue to lose information the age of computers will overwhelm us."* [29]

An important objective for the implementation of the AEPS in relationship to its mandate for encouraging the participation of indigenous peoples, is to support the development of information systems on indigenous environmental and ecological knowledge. This objective must be approached in a manner which will respect the need for indigenous peoples to direct and exercise control over the process. It must also give direction to other opportunities now being pursued by indigenous peoples such as the development of the need to protect cultural heritage, to foster the development of specialized research expertise, to create educational materials and priorities, and to pursue the possible economic development potential linked to a research capacity. In order to assure that these general objectives can be met, a carefully worded protocol and guidelines for research will be required at the outset of this work.

The development of information systems will have to represent these different objectives and reflect the differing expectations for each of the indigenous groups, but certain general concerns are held in common. The need for information and the building of both research programs and data bases to support this need have been under discussion in parts of the circumpolar region since the early 1970's and several important initiatives have been undertaken.

The first attempt to establish a formal data base using indigenous knowledge took place in Alaska under the auspices of the North Slope Borough. They developed a program on coastal zone management that was designed to incorporate indigenous land use and ecological knowledge. This program was innovative because of its emphasis on establishing an organized data base and because it represented an early attempt to utilize computers for processing geographic information and making maps.

In Canada, the importance but certainly not the full potential, of indigenous environmental and ecological knowledge began to be widely recognized in the early 1970's. This recognition emerged during the large-scale research projects that were designed to obtain the data required for documenting indigenous land use and occupancy throughout the entire Canadian Arctic. Although these studies were necessary to support the land claim process, their statement of objectives recognized the longer-term significance and inherent value of this type of data for a wide range of applications. In 1973, the planning for the first of three major land use and occupancy studies was begun and served as the foundation for the methodologies, design and execution of all future land use and occupancy research in Canada, including the introduction of computer-based analysis.

These studies also represented another important turning point because they were the first to be designed and carried out under the control and direction of indigenous organizations.

The experiences in Greenland have a long history grounded in the keeping of precise records about harvesting and land use activity coupled with a much more intensive and long-term program of research on many aspects of the physical, biological and cultural environments of the entire region. In the last several years, there has been a particular effort to undertake the work needed for data bases drawn from indigenous knowledge. There are also individual efforts by Inuit to identify and explain long term patterns of resource trends and changes.

Indigenous peoples are proposing that this process be continued through the establishment of circumpolar-wide research program to collect, analyze and apply indigenous environmental and ecological information. The AEPS has the important advantage of being able to move this process forward by incorporating methodologies and research techniques that have already been developed and have proven successful. At the same time this research should provide an opportunity to re-examine and improve the methodologies and procedures needed to collect and process indigenous environmental and ecological knowledge. The information in this Chapter discusses how this can be accomplished, and it identifies the key components for a program of research.

Three primary types of research activities based on indigenous land use and ecological knowledge are now being carried out in the circumpolar region and these will most likely be incorporated into the implementation process of the AEPS. The first are research activities that can benefit from informal relationships with indigenous peoples and which may include seeking their skills, knowledge and expertise. The second type of research involves formal, yet specific studies on a particular species or issues. This requires a more precise methodology that defines the approach of the study in relationship to indigenous knowledge. The third type of research calls for the development of comprehensive data bases on all aspects of indigenous environmental and ecological knowledge. These long-term programs must be structured around a very particular type of methodology for collecting information on a wide variety of topics and usually over a large area.

Essential to these three types of research is the use and creation of maps as a means for collecting information and communicating ideas, the production of written documentation to support these maps, and the use of tape recorders to preserve the transmission of information from an oral tradition. It must be realized that the amount of information collected can be overwhelming and the design of studies must be prepared to handle the quantity and complexity of the data. This quantity of information could not have been handled in a satisfactory manner prior to the development of computer systems that can process geographic information. For that reason, the research designs call for computer-based data processing. For example, a study of indigenous knowledge for the common eider in eastern Hudson Bay involved 37 interviews that required 131 hours of recorded interview time. Fourteen categories of maps were developed representing a composite of approximately 60 base maps depicting 28 categories of information (see Nakashima 1988).

Data bases, under the direction of indigenous peoples and their organizations, support the effective participation by indigenous peoples in the direction of research and management. Over the past 17 years, the Inuit of Nunavik have developed a data base integrating land use, indigenous knowledge, wildlife research and cultural studies. This program is described in ***Annex 6.***

When large-scale data bases are developed such as that in Nunavik, the amount of primary information is staggering. The population of approximately 6,000 Inuit in Nunavik live in 14 communities and the methodology called for the careful selection of individuals to be interviewed. Some 355 interviews were completed for the land use work and 163 interviews for the ecological knowledge work. This produced a total of 2400 field maps, 300 hours of recorded interviews with 4 to 30 pages of text per interview. The collection of the basic data is just the beginning. All the maps must then be transcribed for digitization and all the interviews must be produced in written form and both must then be incorporated into a computerized data base. Each land use map and accompanying recorded interview, could include over 40 categories of information. In addition there is a need to record all of the other information on archeological sites, places names and other cultural or historical phenomena.

The design of research on indigenous environmental and ecological knowledge for the circumpolar area research will have to consider how to accommodate these massive data bases within the AEPS research program including the type of system to be used to process the information. This program should focus on establishing a data base comprised of "hard data", meaning specific information about the what, where, when and how of the environmental and ecological understanding. This approach does not ignore the more complex cultural realities, but it makes an assumption that these realities will automatically emerge or be expressed through the fact that this information is being identified, interpreted and explained by indigenous peoples themselves. Experience in other areas has shown that the cultural context will constantly be expressed because it is part of the knowledge itself. With this in mind the methodology is designed to progress from the identification of clearly observed facts, based on questions of what, where and when, to discussions of associations based on questions about how, and finally to explanations based on questions of why.

3.2 A Research Project

The design of a research project for the collection of environmental and ecological data which is derived from indigenous knowledge is a major undertaking with long term implications. This section of the Chapter identifies the most important elements that should be considered in the research project. A research project of this type should be designed around the following objectives:

1. To create a series of land use maps with supporting text that will establish the territorial limits under study and the patterns of settlement, land use and movements over time based on individual and family life histories;

2. To establish through maps and descriptive text a systematic inventory based on indigenous knowledge of the marine, fresh-water, and terrestrial resources and their habitats in all seasons and to describe cycles and trends over time;

3. To locate and describe geographical patterns and other biological and ecological characteristics or inter-relationships that comprise indigenous knowledge about a species, a species group or a selected geographic region;

4. To locate and describe the marine, land and freshwater environments, including transition stages between environmental zones for all seasons of the year;

5. To establish the cultural and linguistic factors that are required to identify, describe and explain the various categories of information that will be derived from points 2, 3 and 4 above;

6. To locate and describe other relevant cultural features of the landscape that are linked to the occupation of a particular territory over time, such as archeological sites and place names.

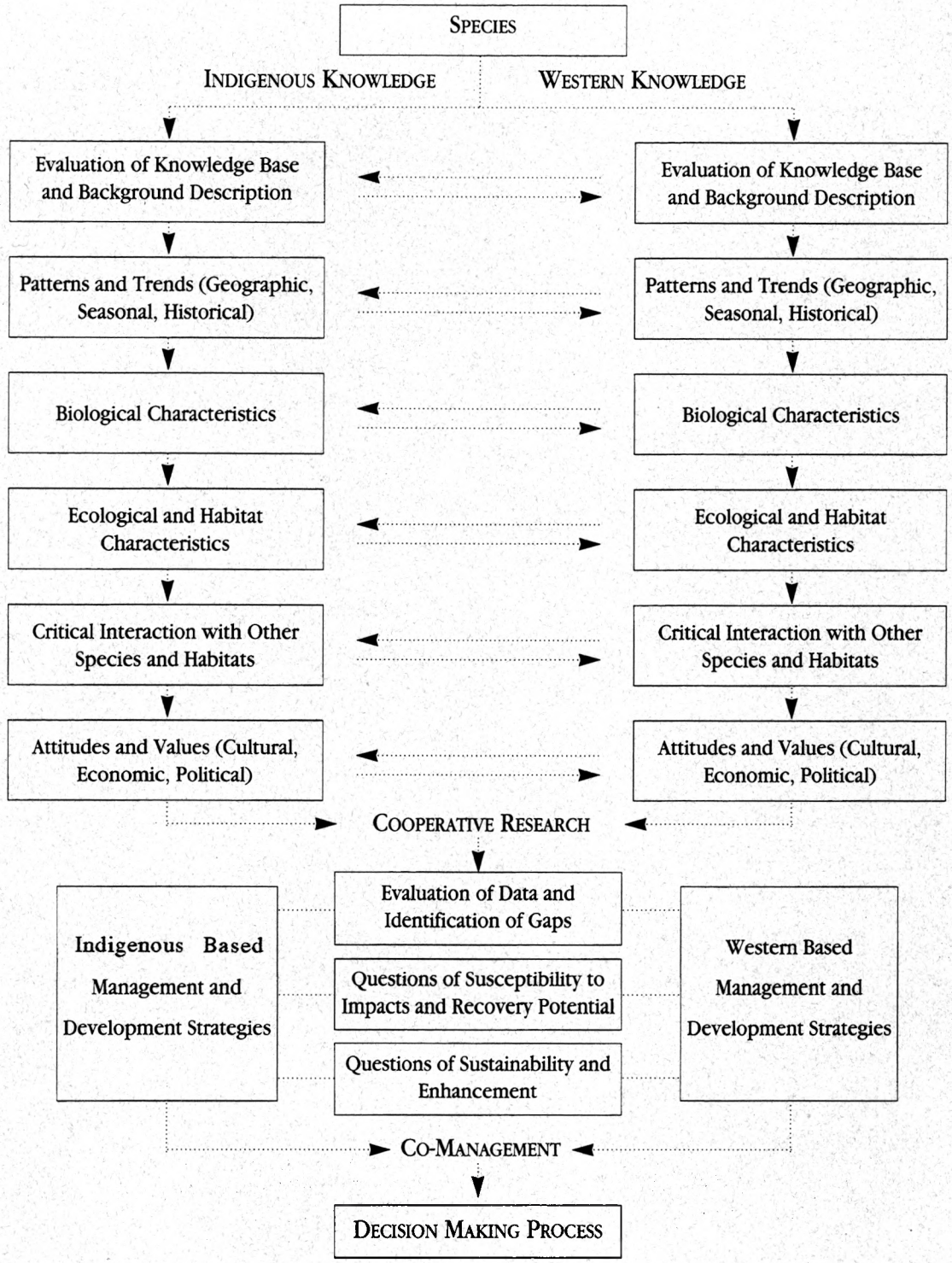
The general units of information and the potential integration of these units needed to meet objectives 3, 4 and 5 are illustrated on Figure 1. The same type of units can be established for the environmental and cultural objectives, but these areas do not call necessarily call for a possible linkage between indigenous and western knowledge. There can, however, be valuable exchanges concerning research techniques and interpretations. This Figure identifies six units of information that can be described from a perspective of both indigenous knowledge and western science. When collecting data for these six units from the indigenous population, care must be taken throughout the interview process to ensure that their knowledge is not mixed or confused with the environmental and ecological information derived from the western-based scientific perspectives.

It is important, from a cultural perspective, to maintain this separation and not to create an assumption that indigenous information is "correct" simply because it "matches" that of western science. Work in other areas has found that the information describing specific places, events, timing and types of behaviors is very exact, whereas the explanation as to why, or what things may mean can be significantly different from explanations of western science. The existence of differing

The Joint (Greenland/Canada) Commission on Conservation and Managment of Beluga and Narwhal has recognized that management of whales should focus on local and cultural needs rather than international politics. It initiated a study in west Greenland to collect and analyze Inuit knowledge of these two species of whales. This study is discussed in ***Annex 7.***

Figure 1

Integrating Indigenous and Western Knowledge



explanations, however, can have importance for establishing real discussions about the interpretation of information or the validity of observations or other research techniques. It is here that cooperative research and co-management come into play.

The Alaskan Eskimo Whaling Commission (AEWC) is a successful example of how indigenous peoples, when provided with political support and adequate resources, can regulate their harvesting, inform and improve research and effectively manage an important wildlife resource. The AEWC is discussed in ***Annex 8.***

The six boxes in Figure 1 representing categories of data have been defined through work with indigenous peoples and they have been selected because they are considered to represent real categories of information that are understood by indigenous peoples. Each of these categories can be sub-divided into many specific sub-units and these too would be identified through the consultation process leading to the development of a research design. The field guide for interviewing must specify what the various units and sub-units are. Cooperative research is based on two types of associations.The first type attempts where possible to integrate or seek associations between information that represents each of the data units for indigenous knowledge and western knowledge. The second type is that which simply brings western researchers together with indigenous peoples to design and carry out a research project. Such a project may or may not involve an attempt to integrate information, but it certainly attempts to develop a methodology that is appropriate to the needs and perspectives of each group. Once data is gathered, it is then evaluated and gaps or problems with the data base can be identified. From there, it is possible to begin asking questions concerning the interpretation of the information. Examples drawn from questions now being raised by indigenous peoples involve the susceptibility of resources to impacts, their recovery potential or questions of resource sustainability and enhancement. When all of this information is utilized within the framework of the indigenous society or western-based institutions, certain conclusions are reached which can then be merged through co-management.

3.3 Stages of Research

A research program on the collection, processing and application of indigenous environment and ecological knowledge can be divided into six stages of activity which creates four general categories of primary information. The stages of research are: the design of the study; consultation; the design of a field guide for the research; the collection and processing of data; the review and verification of information and findings; and the application of the findings themselves. The four categories of information are: land use data; environmental and ecological data; occupancy data; and information on the larger cultural setting, including the language which expresses environmental and ecological knowledge.

Designing A Study: A research committee should be formed to design and oversee all phases of work for studies to collect and document indigenous knowledge. This research committee would be responsible for establishing the methodology, creating the consultation process and for developing a detailed study design. It is assumed that in doing this, the research committee will closely adhere to the methodology, objectives and procedures that have been devised for this type of project in other areas. An essential task of this committee will be to include in their earliest discussions of methodology and project design the views, priorities and conditions of the indigenous population with whom they are working.

The committee should be comprised of members from all participating groups and have representatives from the communities and region where the study will take place. All questions relating to methods, data collection, data analysis and presentation of findings will be included under the mandate of the research committee. The research committee will also be responsible for establishing and implementing codes of conduct. The basic foundation for cooperative research and indigenous peoples' participation begins with this committee and it will maintain responsibility throughout the program of work.

The Consultation Process: In today's world no project or program involving the interests of indigenous peoples in the circumpolar region can succeed unless it is built around an effective consultation process. Consultation within the framework of the AEPS is cross-cultural, often cross-language and international. It is, as well, an activity that must be carried out in stages and which requires specialized expertise at least at the planning stage. Consultation is not the same as negotiations and it certainly should not be built around the need to sell an idea.

Consultation is listening and being listened to. It must encourage a free exchange of information and points of view; allow for a discussion of all possibilities, options and problems rather than to simply inform about decisions already made; it must be able to incorporate new ideas and perspectives. Consultation is both a "bottom up" and "top down" process. It is a process that takes time and it must be grounded in a language that is understandable and through the use of communication techniques that are well planned and of information that is relevant and interesting.

Consultation begins by discussing concerns or points of view that will give shape and definition to a research project. This is then followed by five other steps. These are consultation for: setting research priorities; defining principles and study objectives; identifying the study components and procedures for data collection and analysis; providing guidance for interpreting and drawing conclusions from the information; reaching conclusions and then applying the information. Consultation does not stop when a project begins. At that point it becomes one of the primary means by which the work of the project as defined in the study design is continually monitored so that activities may be adjusted and unexpected problems resolved.

Establishing Ethical Guidelines: All research and related activities for indigenous peoples participation in the AEPS, must be carried out within a framework of ethical guidelines. These guidelines should be developed through consultation and they should reflect an understanding of the principles set out in other sets of guidelines that have been established for this purpose.

A large number of guidelines have been developed over the last 20 years which defined rules and provided instructions concerning the responsibilities that researchers had with respect to the treatment of, and communication with, indigenous peoples. Since that time the situation and attitudes have changed and a new set of guidelines have had to be developed around a different set of principles. These principles must recognize the need for the full participation of indigenous peoples at all stages of the research process and they must reflect the growing concern that indigenous peoples have about the political implications of research projects that are carried out on their territories and about the way information gained from this research is used. To this end, guidelines must now address the serious issue of control over information without jeopardizing a fundamental principle which is for all participants to have access to data and information.

Methodological Guidelines: The design of an appropriate methodology is the starting point for a comprehensive research program on indigenous environmental and ecological knowledge. Although every indigenous society within the circumpolar region has its own particularities to consider, a well-designed methodology can easily be adapted to accommodate the special features and attitudes that define each cultural group. It is now possible to develop, in a reasonably short period of time, a methodology that will be able to guide projects relating to the collection and use of indigenous environmental and ecological knowledge within the framework of the AEPS. This methodology should reflect the research requirements and procedures that are necessary to obtain good information and be able to incorporate and respect the equally valid requirements for indigenous participation in, and control over either longer-term research projects or more particular studies pertaining to special topics related to culture.

The methodological guidelines that are now being developed are not unique to the circumpolar region nor to the AEPS. A review of methodologies for indigenous environmental and ecological knowledge projects that range from the Sahel of Africa to the jungles of the Amazon, give an indication that there is a convergence of ideas about what constitutes an appropriate methodology for this type of work. Indigenous peoples now expect to have control over any type of research that probes their culture and knowledge and must, therefore, have an active voice in the setting of objectives and in the design of procedures that are incorporated within these new methodologies (see Indigenous Knowledge & Development Monitor.1993).

Preparing a Field Guide: The development of a field guide is essential for explaining the project to both the researchers and the participants. The field guide should outline the major factors that must be understood by the researchers and explained to the community as part of the consultation process. This will start with the need for and objectives of the research; it will specify in detail the methods and procedures used for collecting and processing information; it will identify the particular units or types of information that comprise the broader categories created by the study design; and it will indicate the rights, responsibilities and ethical principles that must be respected and adhered to throughout the project.

A field guide cannot be totally comprehensive. It helps for setting out a framework and direction to the vast amount of work that is entailed in interview based data collection, but it will never be able to anticipate all of the questions that may be raised during the course of project. In the long run, therefore, it is the attitudes and skills of the interviewers that make a successful project.

The Interview: The methodologies that have been developed for this type of work have drawn on the social sciences, but because of the nature of the data, they must incorporate procedures that are part of the biological and ecological sciences. The interview process must be reviewed and modified by indigenous peoples and tested in field situations. All methods and procedures involved with the collection of this information depend on a combination of formal interviewing and structured conversation. It may be a process that can benefit from the use of formal questionnaires for certain aspects of the work, but the interview remains central. The approach must be designed to superimpose a structure on the interview process that will provide order and consistency without sacrificing flexibility.

Interviewers must be well trained and be extremely sensitive to the difficulties individuals often encounter during the early stages of an interview when they are asked to "explain" what they "know" about the physical and ecological environment of their territory. The systematic recording of this type of information is not a simple procedure, since individuals often do not realize the extent and complexity of what they really know. The interviewer begins the process by asking the participants to think about their knowledge and its meaning. Only then can they begin to reveal facts, concepts, and explanations contained in their knowledge system. The interview is a procedure which treats the individual as an expert and which provides a way of transferring information and thought processes from an oral tradition to maps, audio tapes and written notes.

The methodology used to collect indigenous knowledge is usually based on two types of interviews. The first is the individual interview. Each participant is asked to provide specific information on for example, seasonal patterns of land use and to then explain environmental or ecological factors that underlie a pattern of land use. This approach allows for a close association to be established between an individual's land-use patterns and the ecological or environmental conditions that influence the activities that comprise these patterns. It also encourages participants to identify and explain certain types of changes in activities or patterns that have occurred over time. Although the individual interviews contribute important ecological and environmental information,

they cannot be systematic in their approach to this aspect of knowledge since the interview focuses on land use and on an individual perspective of environmental and ecological factors related to the land use. The second type of interview is designed to obtain much more complete and coherent information on environment and ecology. Experience has shown that this can only be done as part of a group interview. Experience has also shown that the members of the interview group have to be carefully selected by the community since their expertise is based on specialized knowledge about particular species, about other ecological or environmental phenomena or about selected geographic areas.

Procedures for the group interviews include identifying individuals who have special interest in, and knowledge concerning, a particular ecological or environmental topic or region. These individuals are brought together for a series of group discussions which usually begin with specific questions about resources or environment, though the objective is to use these questions to stimulate conversation between participants, and not between an individual participant and the interviewer. Discussions must always be in the language preferred by the group, and the complexity of the topics and liveliness of these discussions mean that translation would be slow and might interfere with the process. Consequently the information from these group interviews should be carefully recorded for translation at a later time. Even though the information is recorded, it is important that a facilitator oversees the placing of information on the maps and to generally keep the process on track. Throughout the interview there should be written notes and comments since these are of great value when transcribing the tapes.

Data Collection and Processing: Techniques of data collection are an essential part of the methodology and interviews but the way in which data is collected is also closely linked to techniques for processing information. The use of the map is essential and the way in which information is recorded onto maps forms a key element of the methods used. Not all environmental, ecological, land use or related information, however, can be placed on maps, consequently other types of data recording are needed. This will include a structured form of note taking based on categories and techniques defined in the field guide. A system for making map notations is essential. There are many possibilities about the type of maps to be used and about their scale. For the most part, mapping will need more than one scale. In Nunavik, a 1:500,000 map was used for land use and 1:250,000 for ecological and archeological information. For areas of intensive use, or when discussing particular resources, 1:50,000 were preferred. Very general patterns over large areas are best developed at 1:1,000,000. Questions about using a standard base map

with acetate overlay, or a copy of paper base maps depends on user preference, but it will always be necessary to "construct" a base map to assure proper territorial coverage.The choice of map type must consider problems of use and storage.

Once information is recorded, it should be processed through the use of computer systems that are designed to handle geographic information. Although there are many technical possibilities, including both hardware and software, care must be taken to assure that the research program is not technology driven, and that the technology selected can be made accessible to local communities. As the development of computerized geographic information systems expands, it is important to stress compatibility of these systems so that information can be transferred from region to region. The written texts should also be computer processed according to well established techniques and formats. The questions of appropriate computer technology are important but the speed of development has simplified the technological problems associated with using computers to process geographic information.

The material gathered during both the individual and group interviews is then reviewed, often consolidated and then placed onto a new set of maps. After this, a second, third, and often fourth round of group discussions and mapping will probably take place to put forward additional questions, to clarify contradictions, and generally obtain more information. These group discussions are guided by procedures and techniques which are laid out in the field guide designed to inform interviewers and to standardize, to some extent, the interview process. Maps are a fundamental tool for recording information, but since many elements of the ecological and environmental knowledge data base cannot easily be transcribed onto a map, written and recorded descriptions have become equally essential elements for collecting indigenous knowledge. Computerized geographic information systems and now multi-media technology have greatly improved the opportunities to rapidly convert the information developed from the interviews into usable information.

Review and Verification: In the past, questions have been raised about the validity, consistency and at times, honesty of the information collected through an interview process. Although these factors may be of concern to the AEPS, the methodology has focused attention on dealing with these issues. For research of this type one of the primary methods for validating the information is a process of community review and verification. It begins with a second round of interviewing as described in the previous section. One of the frequently encountered problems is that information is collected

from individuals or small groups and is then assembled into larger patterns by the researchers. Thus it is important for the more limited individual pieces of information to be viewed as part of the larger and more comprehensive "picture". The verification process provides a chance for individuals and groups to reconsider their own information as it is or in light of the larger patterns. The verification process also provides an opportunity for indigenous peoples to comment on findings, identify gaps and make corrections.

Application of Findings: It is not possible to identify all of the specific applications that may arise once information has been collected, processed, verified and presented. Certain applications will be defined by the original objectives of the AEPS work, and these must be adhered to as closely as possible. But it is obvious that the process of data collection and verification itself will suggest, especially to the communities, a whole new range of possible applications. The most important principle that must be respected in this final stage of work is that which deals with the establishment of data banks and therefore with ensuring that indigenous peoples themselves do not lose control over their ability to access and make use of their own knowledge and related information.

3.4 Categories of Information

It is obvious that many categories of information can and will be developed through research on indigenous environmental and ecological knowledge. The following categories, however, have shown themselves to be relevant for almost all good research that has now been carried out by indigenous peoples or through cooperative research. The information is stored as written text, on tape and, as illustrated at the end of the section on various types of maps. The maps that are presented here have all been generated by computers with the exception of Figure 8.

Land Use Information: This information base forms one of the primary elements that defines the relationship between a cultural system of a particular group and their territory. It includes the specific details of where, when and for what species indigenous peoples hunt, fish and gather at the present time and during earlier time periods. Land use information is an expression of a cultural group's environmental and ecological

knowledge and it can be used to identify changes and trends in resource patterns and availability. The types and patterns that define land use activities are best described through the use of maps and supporting written text.

Maps enable each individual to define the geographical locations of land use by species and season for predetermined periods to time.Figure 2 illustrates a land use map that is made up of a composite of individual hunter lines. When information from individual maps is combined, then larger geographic patterns showing the areas and, if required, intensity of use for various combinations of species, seasons, and time periods can be established. Figure 3 illustrates a composite pattern for two sample species based on a generalized outer boundary. A sample of the written interview accompanies these maps. The pattern that is formed by a composite land use map essentially defines the boundary for the "information" environment of a particular indigenous group.

Environmental and Ecological Knowledge: This information base includes what indigenous peoples know and the concepts they have, about their physical environment and ecological systems. It includes an identification and description of the components that make up the physical and ecological systems, the linkages between these components, and the particular characteristics of the components of their behaviors. It establishes the environment and ecosystems that underlie the patterns of land use, and it recognizes the fact that knowledge is a critical factor that both leads to, and results from land use. Environmental and ecological knowledge is developed through a series of interviews with groups of hunters having specialized expertise. It encompasses elements such as knowledge about the biology and ecology of the resource base; the components and seasonal characteristics of the physical environment; and the understanding indigenous peoples have about the integration between the environment and ecology of the area in which they live. It will bring out facts as well as concepts and thus deal with analyses of why and how, not simply questions of where and when.

Figure 4 represents a generalized example of beluga whale ecology for a large region. Figure 5, on the other hand, illustrates ecological knowledge for a particular species and area at a larger scale. An appropriately designed geographic information system that is supported by a well developed data base can move from a generalized overview to greater and greater levels of detail. It should be possible, therefore, to select any one particular area shown on Figure 5 and have even more data represented on yet again a larger scale. Figure 5 also illustrates the potential for using color to represent and expand the range of data that can be presented on an ecological map. The development

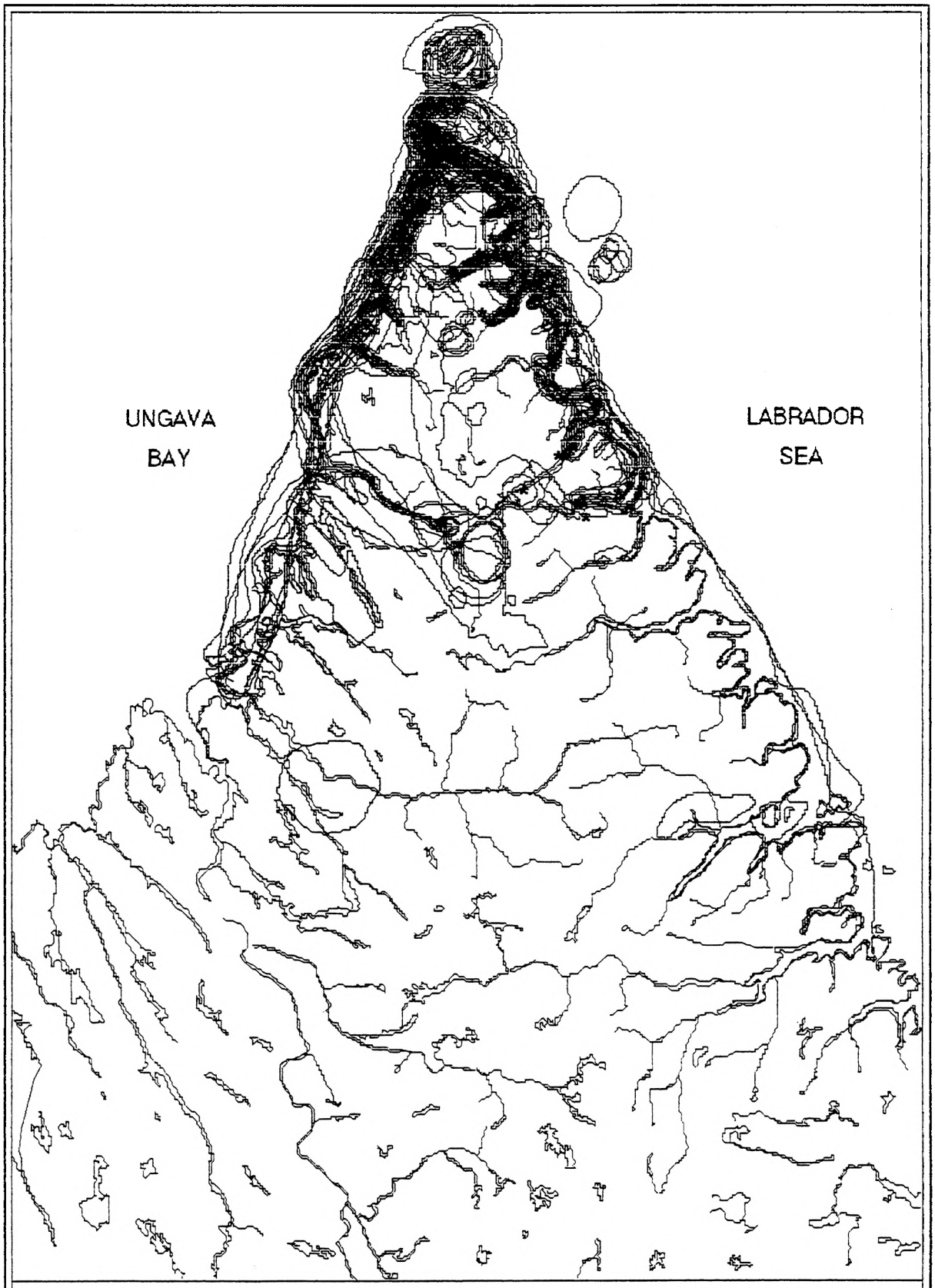
of these maps requires the develop of symbol banks and other graphic tools. When using geographic information systems, data can be arranged so that review, analysis and integration of information can be done on computer screens. Figure 6 illustrates the relationship of resources to the environment as defined through indigenous knowledge. between indigenous ecological knowledge and environmental knowledge. The complexity of information and they way it is expressed on one particular interview is illustrated in the written text that follows Figure 6.

Occupancy Information: This information base is essential for establishing the first level information about the cultural practices that are directly related to land use and environmental and ecological knowledge. It is this information that establishes a social and historical context that is absolutely critical for understanding land use and ecological knowledge. It includes systematic data on life histories, settlement patterns, social and family relationships, place names,burial grounds, cultural sites and travel routes. Occupancy addresses the reality that land use is part of a larger social, economic and cultural system, that includes both tangible and intangible elements, activities and benefits. As such, it recognizes the importance of indigenous peoples' attitudes and concerns about specific places and territory. It is this information that creates a sense of attachment and belonging which is so essential for understanding the relationships between indigenous peoples and the territories in which they live. Figure 7 illustrates a generalized pattern of some of these important cultural elements. Figure 8 is a family map that when combined with maps of other individual families creates the cultural landscape of a territory as defined by land use and occupancy patterns.

Culture and Language: The fourth category of information describes those elements of culture that are not part of a mapping and specific data gathering process. This type of information is essential for meeting the needs and objectives of the AEPS. It will provide an important dimension to understanding the larger cultural milieu within which this entire information and knowledge system operates and which has, therefore, a profound influence on how indigenous knowledge is understood, transmitted and used within the culture itself. At one level this information represents reasonably descriptive aspects of the culture such as skills, technologies, seasonal cycles and social customs and behaviors. It also addresses questions of attitudes, values and beliefs. Throughout this category of information is the question of language and its appropriate utilization when interpreting the environmental and ecological knowledge information base.

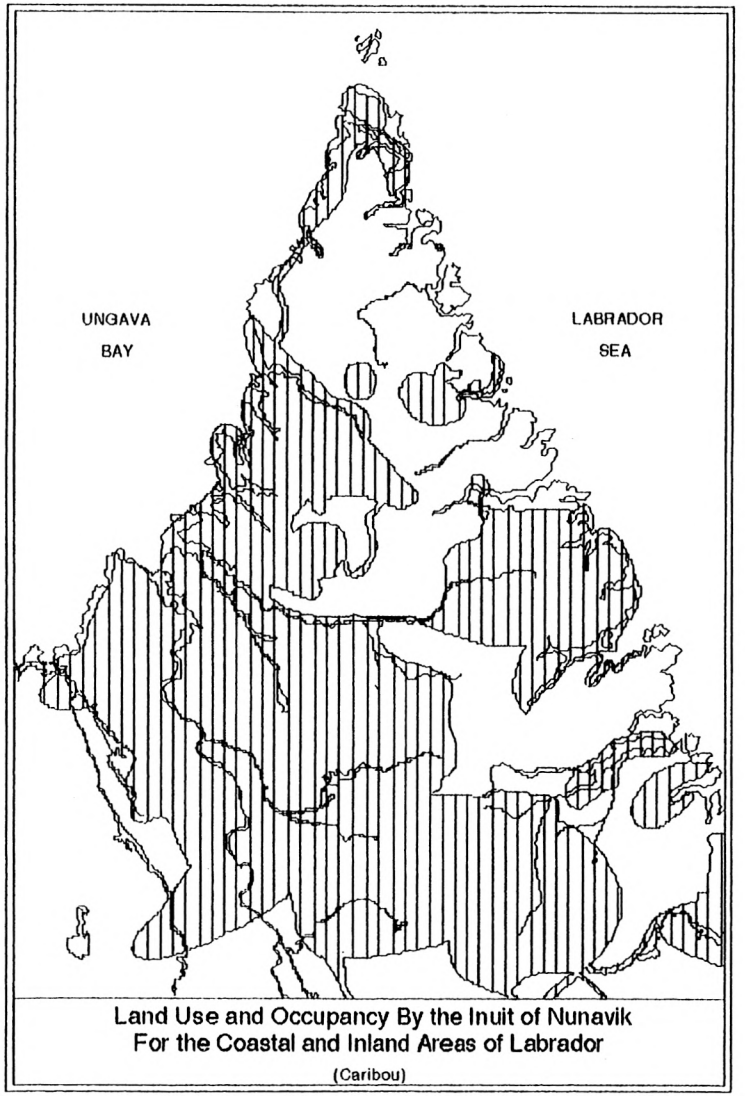
The units of information discussed above, along with the methods and procedures that are required to design and carry out the research represent a description of the current status of research that is under the direction and control of indigenous peoples. In comparison to the long history of research that represents western science, the time frame for developing indigenous expertise and information systems has been very short. What must be remembered and appreciated, however, is that the time frame of the expertise and information that is represented in this type of research is grounded in centuries of observation, living with and seeking explanations about the natural world.

Figure 2



Generalized Land Use Patterns, all Species and Seasons,
Individual hunter lines for Killiniq Inuit from Nunavik:
1930 - 1962; 1962 - 1975

Approx. 1:1,510,000


UNGAVA
BAY
LABRADOR
SEA
Land Use and Occupancy By the Inuit of Nunavik
For the Coastal and Inland Areas of Labrador
(Caribou)
APPROX. 1:883,130

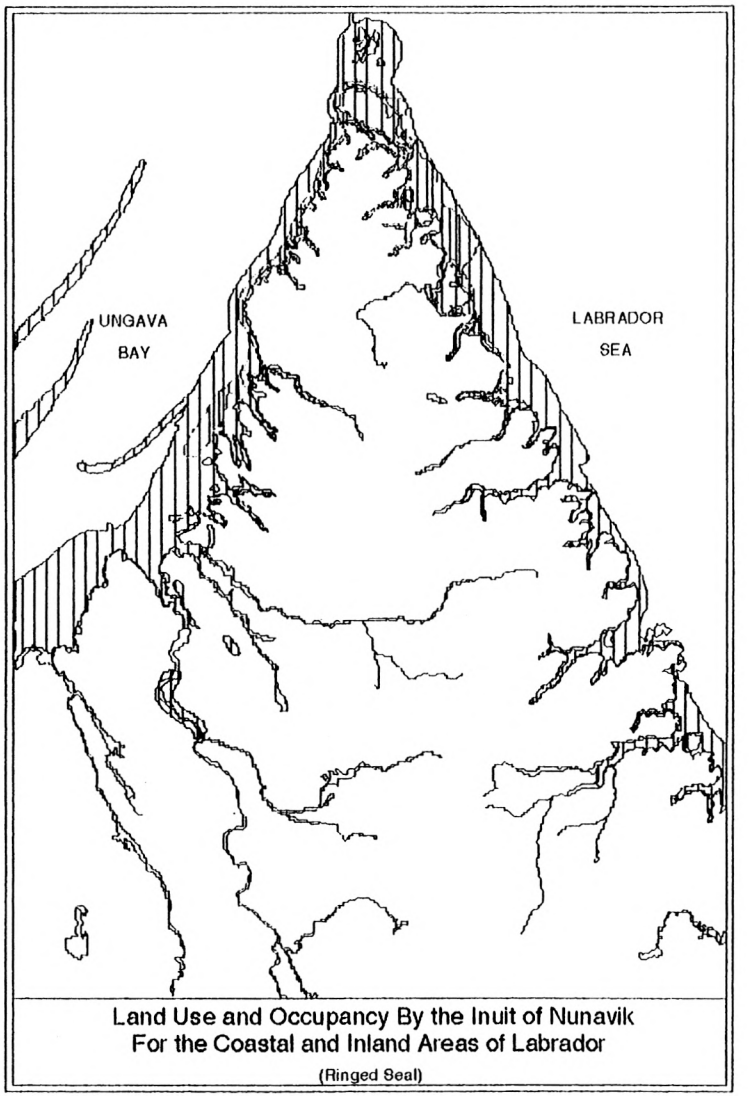
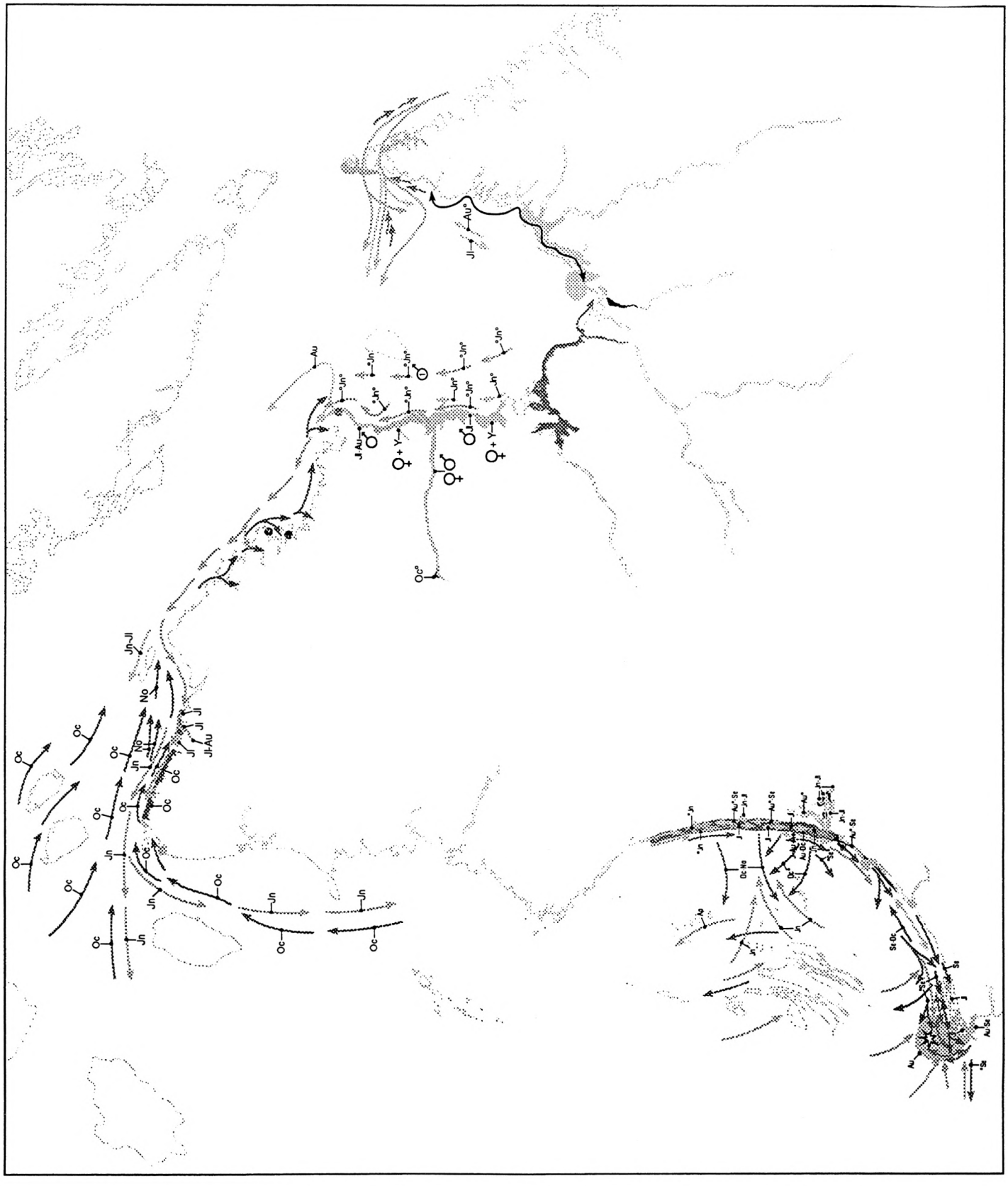

UNGAVA
BAY
LABRADOR
SEA
Land Use and Occupancy By the Inuit of Nunavik
For the Coastal and Inland Areas of Labrador
(Ringed Seal)
APPROX. 1:883,130

Figure 3

Figure 4



INUIT ECOLOGICAL KNOWLEDGE

Bearded Seal

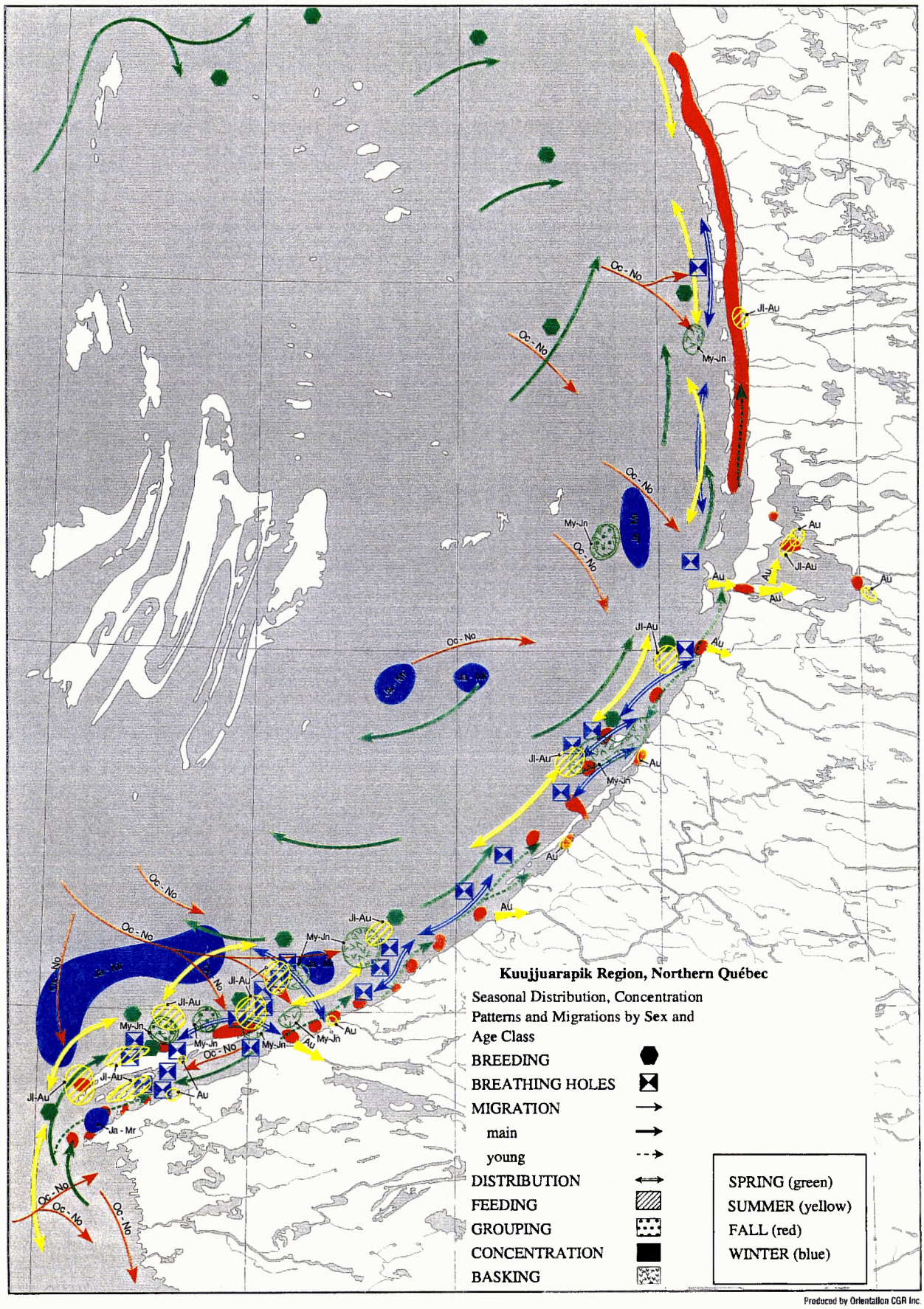


Figure 6

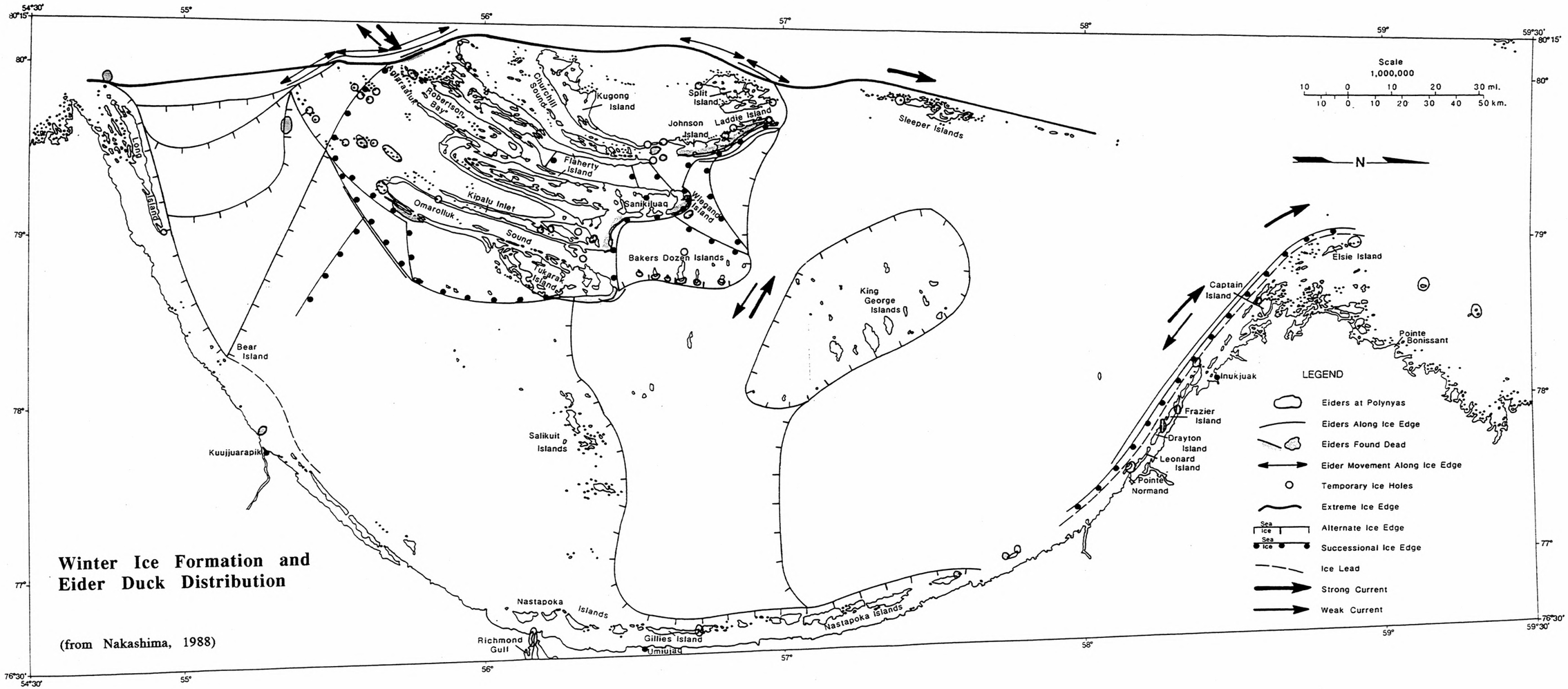
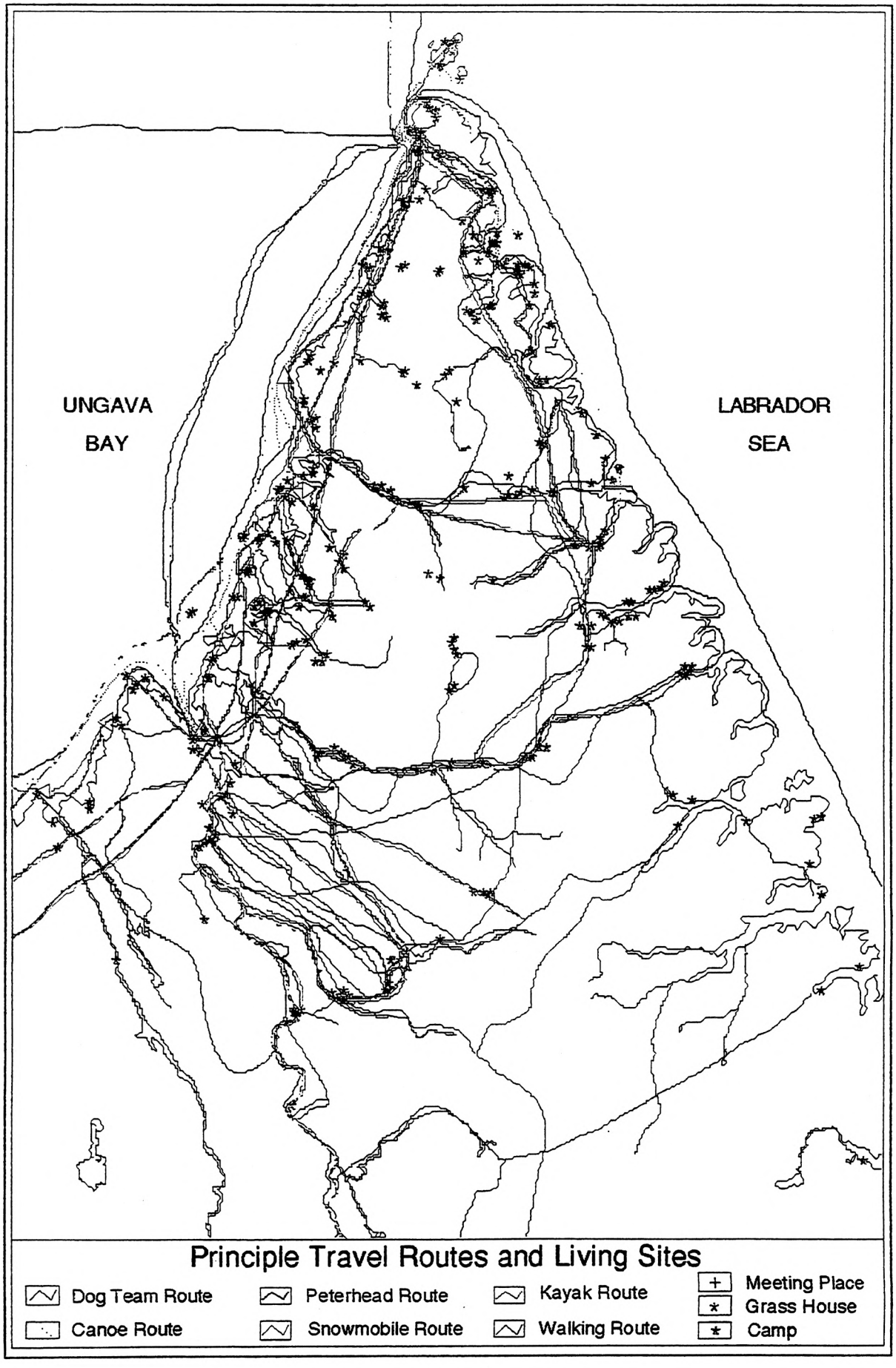

Scale
1,000,000
10 0 10 20 30 mi.
10 0 10 20 30 40 50 km.
N
LEGEND
Eiders at Polynyas
Eiders Along Ice Edge
Eiders Found Dead
Eider Movement Along Ice Edge
Temporary Ice Holes
Extreme Ice Edge
Alternate Ice Edge
Successional Ice Edge
Ice Lead
Strong Current
Weak Current
Sea Ice
Sea Ice
Winter Ice Formation and
Eider Duck Distribution
(from Nakashima, 1988)
Bear Island
Kuujjuarapik
Salikuit Islands
Nastapoka Islands
Richmond Gulf
Gillies Island
Umiujaq
Kugong Island
Split Island
Johnson Island
Laddie Island
Sleeper Islands
Flaherty Island
Sanikiluaq
Wiegand Island
Bakers Dozen Islands
Kipalu Inlet
Omarolluk Sound
Tukarak Island
King George Islands
Elsie Island
Captain Island
Pointe Bonissant
Inukjuak
Frazier Island
Drayton Island
Leonard Island
Pointe Normand
Nastapoka Islands
54°30'
55°
56°
57°
58°
59°
59°30'
80°15'
80°
79°
78°
77°
76°30'

Figure 7


UNGAVA
BAY
LABRADOR
SEA
Principle Travel Routes and Living Sites
Dog Team Route
Canoe Route
Peterhead Route
Snowmobile Route
Kayak Route
Walking Route
Meeting Place
Grass House
Camp
Approx. 1:1,510,000

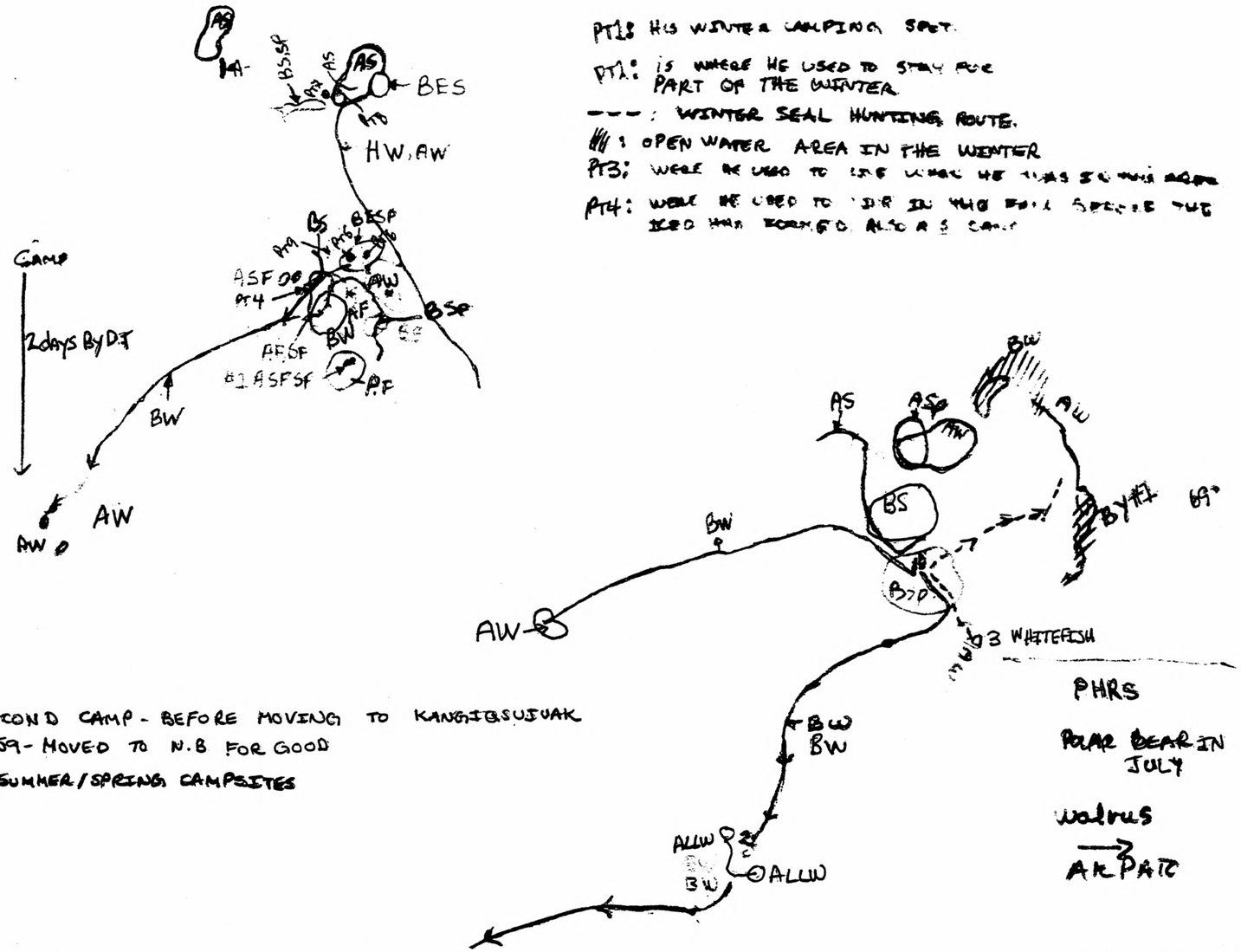
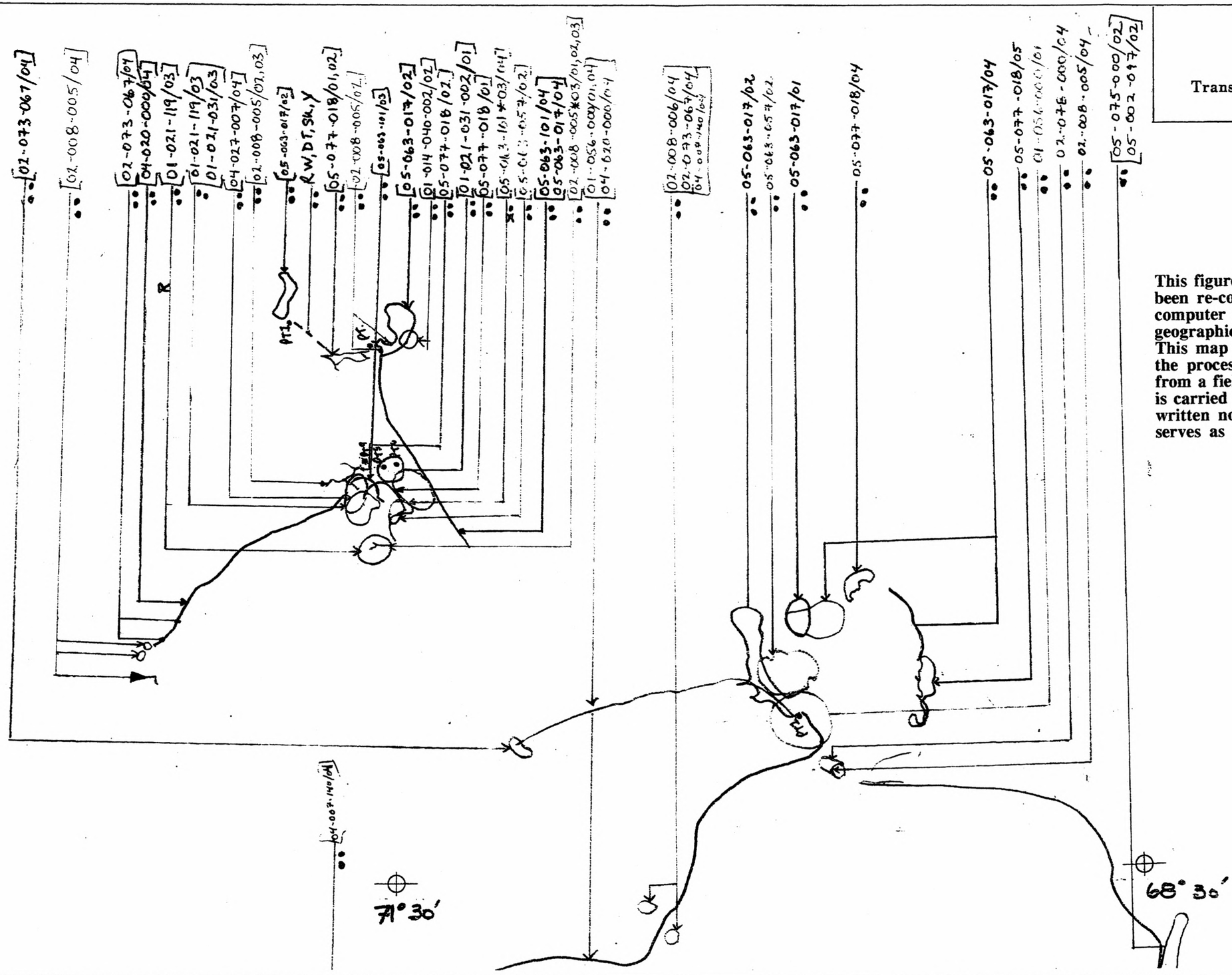


Figure 8

This figure represents the notations that are required to collect individual land use information. The mapping was done on clear acetate at a scale of 1:500,000. All notations were color-coded.

Figure 8.1

Transcribed Ready for Digitizing



This figure represents map 8 that has been re-coded for digitizing and computer processing as part of a geographic information data base. This map is also color-coded and the process of transferring information from a field map to a transcribed map is carried out with reference to the written notes so that this process serves as a review and verification.

CHAPTER 4

"Emphasizing our responsibility to protect and preserve the Arctic environment and recognizing the special relationship of the indigenous peoples and local populations to the Arctic and their unique contribution to the protection of the Arctic environment" [30]

4.1 Introduction

The preceding chapters and discussions have provided the background and context for the following recommendations concerning the participation of indigenous peoples and the application of their environmental and ecological knowledge in the AEPS. The actions proposed have been organized to respond directly to the mandates for this project, namely the need to develop a process for collecting and integrating indigenous environmental and ecological knowledge, and facilitating the participation of indigenous peoples. The steps for implementation and the recommendations have been reviewed and approved by the organizations representing indigenous peoples in the AEPS and have also been reviewed by the Senior Arctic Officials. They call for both short and longer term commitments from governments and indigenous peoples and their organizations, to work towards the common objectives of effective participation of indigenous peoples based on mutual respect, sharing in responsibilities for planning and implementation, and reinforcing and supporting the cultures and economies of indigenous peoples.

It is important to clarify that indigenous environmental and ecological knowledge not be simply considered as a research topic within the implementation process. It is a body of knowledge in its own right and a means of communication and decision-making that reflects who indigenous peoples are and the world view that they hold. It is dynamic, evolving and varies from region to region, place to place, from individual to individual. Any discussion about indigenous knowledge must deal with and reflect the realities of history and cultural diversity that exist within the circumpolar region and worldwide. Concepts and techniques for harvesting and resource management differ widely in detail and complexity. What is common, however, is that they do exist and that they are fundamentally different from many of the concepts and techniques employed by industrialized societies and western science.

This report does not discuss how indigenous environmental and ecological knowledge can be documented and utilized independently of indigenous peoples themselves. What it addresses is how to create the opportunity for knowledgeable indigenous peoples to participate in planning and decisions related to the development of strategies and programs for the sustainable use, development and conservation of the circumpolar region in order to ensure that these reflect their priorities, needs and perspectives. Of course, information is part of this process, and the recommendations that follow will deal with practical ways and means of collecting, managing and communicating indigenous peoples' information in a format that can be used by all participants in the AEPS.

It is also important to clarify that the circumpolar indigenous peoples do not view support and efforts to record environmental and ecological information and concepts merely as "salvage" operations. At the same time, indigenous peoples recognize that with the death of elders and the consequences of changes in land use, economic activity and the influence of new technologies, there is a direct and sometimes abrupt loss of knowledge related to the land and resources. Much of what is associated with environmental and ecological knowledge is related to the language and skills needed and acquired to understand and communicate the intricacies of the environment in order to earn a living from the land. Indigenous peoples draw much of their identity and cultural integrity from their relationship with the land and its resources. The dramatic changes that Inuit and Sami cultures have undergone in recent history have served to undermine their identity and cultural integrity. Therefore, support for the documentation, recording and use of information from indigenous peoples in tangible ways should also be viewed as part of an effort to re-vitalize and re-establish respect for and a broader understanding of language and land/resource based skills within indigenous communities and societies themselves.

Finally, it is critical that concrete steps are taken to support and encourage the sustainable use of wildlife resources by indigenous peoples of the circumpolar region. They continue to express the desire to ensure that the sustainable exploitation of wildlife resources remains a part of their cultures and economies. If active use of the land disappears over time, so will the knowledge that is required to support an understanding of the intricacies of the environment and the skills required to effectively use living resources. The signatories to the AEPS have taken on a responsibility to ensure that the sustainable use of living resources remains a viable option for indigenous peoples.

The AEPS cannot be expected to bear the responsibility for changing both attitudes and ways of working throughout the circumpolar region. Nor is it necessary to develop a program that would be directed to the entire range or potential of indigenous knowledge. What it can and must do, however, is to express a voice of understanding and serve as a scientific forum endorsed by the member countries for recognizing these larger-scale and longer-term needs. The immediate responsibility is for the AEPS to initiate and actively support a well-organized program of work which will result in the development of a substantial body of data on the environment and ecology of selected Arctic regions that is drawn from indigenous knowledge. In so doing, the implementation of the AEPS will play an important role in enlarging the available data base and extending the potential uses of indigenous environmental and ecological knowledge.

4.2 Support for Sustainable Use

The research and discussions which took place during the course of the project revealed a dilemma that, if not addressed, could undermine some of the most basic objectives and principles upon which the AEPS is built. We recognize that the following discussion is very sensitive and politicized. It is not brought forward here to confront the present politics. It is an attempt to show that unless the issues surrounding sustainable use of living resources are de-politicized, hunting and gathering as a way of life will continue to be undermined economically and culturally, with the result that knowledge of the land and resources will deteriorate.

Indigenous environmental and ecological knowledge in the circumpolar region is directly related to activities and the skills developed in ways which permit people - men, women and children equally - to live from the land and the sea. It is also the practical and abstract expression of their understandings about the operation of the physical and spiritual world. When these activities are curtailed, or worse, characterized as unacceptable or irresponsible within the world at large, the consequences include not only serious economic impacts, but erosion of confidence in the culture and the knowledge and skills necessary to support these activities.

Indigenous peoples of the circumpolar region are deeply concerned about the very tangible and measurable negative economic and cultural impacts resulting from the activities of groups who seek to halt the sustainable use of the Arctic's renewable

resources. These concerns were very much an issue during the discussions leading to the AEPS. Indigenous peoples were very encouraged by the strong support given in the AEPS to the need for protection, enhancement and restoration of the sustainable utilization of natural resources.

There exists ample evidence that the European ban on sealskin products and pressures to reduce or eliminate whaling, for example, have had serious economic impacts on many indigenous peoples and local communities in the circumpolar region. What is less understood and certainly not quantified, are the immediate and long-term impacts on the ability of indigenous peoples to maintain, develop and transmit the knowledge, information and skills required to harvest and manage these species. The limitations that these sanctions have imposed add to the already very high cost of hunting and decrease its viability as an economic option. Moving hunters off the land and sea results in an almost immediate loss of associated knowledge because it is not actively passed on to the younger generation since it has lost much of its utility. The context may persist in the form of stories, but the crucial details and its expression in day-to-day life are missing.

The AEPS has confronted this dilemma by recognizing the strong connection between culture and sustainable use. The preamble to the mandate of the Conservation of Arctic Flora and Fauna Program Area states:

> The health of Arctic flora and fauna is a key concern of the Arctic countries. These flora and fauna assume special significance in this region since they are an essential factor helping define the culture and survival of the people living there.

For their part, indigenous peoples of the circumpolar region clearly desire and recognize the need to participate in the world economy and western society. At the same time they prefer to maintain an attachment to the environment, resources and the traditions which define their cultures. The wise use of living resources, including the ability to earn a living, remains an important part of the vision indigenous peoples have for the future.

It is therefore recommended that:

The Ministers issue a statement from this meeting reaffirming their commitment to the sustainable use of natural resources by the indigenous peoples of the circumpolar region and that this reaffirmation be included in any Ministerial agreement resulting from this meeting.

It is further recommended that a special working group of the AEPS with the Inuit Circumpolar Conference, the Sami Council and the Association of the Peoples of the North (Russia) be created with a mandate to address how the member countries, individually and collectively, can initiate programs of support aimed at the revitalization of economies based on the sustainable use of living resources in the circumpolar region.

4.3 A Circumpolar Mapping Project

The need for indigenous peoples to propose practical ways and means for providing information and materials which can begin to reflect the breadth and depth of their environmental and ecological knowledge is at the core of this discussion. There is a need to produce and draw this information into the continuing implementation efforts of the AEPS. As one of the regional representatives stated at our working session,

> *"Whether we like it or not, we have to have something to put down on the table to talk around. We are always being told that indigenous knowledge has no methodology. Mapping is a way for us to demonstrate that through the process of long-term observation we have registered, retained and analyzed information and developed a very complex set of relational data".* [31]

Experiences from various regions in the circumpolar area have shown that the mapping of indigenous land use patterns and their environmental and ecological knowledge is a very successful and productive way of moving information from an oral tradition

into a format that can be understood by western scientists and researchers. Maps somehow create the possibility for communication. Visual representation of information through the written word is not possible at this stage in the history of most indigenous peoples. Even verbatim transcription often comes across as static and lacking in substance. Maps, however, as stand alone materials or when used as a catalyst for stimulating ideas and animating discussions are invaluable.

Of particular interest are projects which have been undertaken in Greenland and Alaska through The Inuit Regional Conservation Strategy (IRCS), the important work of the North Slope Borough and in Nunavik (northern Quebec). In Nunavik, the Makivik Corporation has been systematically documenting land use and ecological knowledge for 17 years. All of the information has been entered into a geographic information system and the information is regularly used to help address the many needs of Nunavik. The information system is also continually updated around specific needs such as the impact assessment of particular development projects and programs for the commercial exploitation of resources. It represents the most complete and consistent set of information on indigenous land use and ecological knowledge available in the circumpolar region. It has also overcome technical and methodological problems associated with integration into a computerized information management system.

Baseline data, in the form of past and present patterns of land use is the first level of information that is required in order to develop either policy or programs concerned with planning and management. The integration between land use, harvesting and ecological information is essential for any decisions that involve the sustainable development or conservation of lands and resources. This information exists, in many differing forms, for areas scattered throughout the circumpolar region. There is much to be learned about the Arctic environment and its resources. Information generated from the mapping project would serve to fill many important data gaps. Indigenous peoples possess detailed year-round knowledge of wildlife and the environment which can provide insights into the deficiencies of scientific knowledge available for the Arctic.

As a result of the land claims process, Canada has likely the most comprehensive and current coverage. However, there has been much important work done in other regions. but there have never been a systematic attempt to interpret and standardize the information and to consolidate all of the diverse efforts. This task should be undertaken alongside any efforts to collect new information. Indigenous organizations can make an important contribution by providing information on projects that have been undertaken by communities and individuals.

The basic assumption underlying the argument that mapping is an appropriate and necessary technique for documenting the environmental and ecological knowledge of indigenous peoples is that their patterns of land and water use exist in function of certain ecological and environmental conditions that allow for productive harvesting on a seasonal basis, year after year. It also assumes that shifts occur in these patterns as a result of changing conditions, all of which must be understood as being part of a broad view of ecological and environmental conditions on the one hand, and very specific, localized information on the other.

Indigenous knowledge of ecological and environmental systems derives primarily from observations and utilization which, over time, have lead to the development of a system of classification and explanation. In the circumpolar region, indigenous peoples are hunters and gatherers. If they stop hunting, the chain of observation and learning will start to break down. Keen observation skills and the interpretation of observed information, over time, have formed an understanding of their environment. For both individuals and groups, the understanding is spatially bounded by patterns of land use.

A circumpolar land use and ecological knowledge mapping project would provide the following types of information from the perspective of indigenous peoples:

1. Through the use of maps and descriptive text, a systematic inventory on a seasonal basis of biological resources and the marine, freshwater and terrestrial environments that provide the habitat for these resources.

2. Produce a classification of biological resources including the type, names and other characteristics of the species harvested by indigenous peoples.

3. Determine the geographical areas of concentration, the seasonal patterns of concentration and distribution and the migration routes and associated life cycle activities.

4. Establish a description of the resource areas and establish the observed relationships between species and between species and habitats.

5. Provide a description of observed changes over time, including changes in distribution, abundance and behaviour and to discuss and record perceived causes of these changes.

6. Provide a cultural geography through identification and description of place names, travel routes, living sites, etc.

The product of this effort would be a functioning geographic information system which would permit layering with information from other information management systems. This mapping effort should be combined with training programs to ensure that indigenous peoples themselves begin developing the necessary technical expertise to handle data processing. Furthermore, interpretation and analysis of information must follow the protocols developed during the research phases of the work and be kept well grounded at the community level. It is extremely important that technical innovations do not separate the community level people from the decision-making process.

Interviewing of individual indigenous peoples yields very detailed information at the 'micro' level. By developing a circumpolar-wide program, information at the 'macro' level will emerge. This would create a platform from which detailed, more localized work can be developed as specific issues and problems emerge. It would provide direction and consistency in methodologies for the research and analysis, and in the reporting format. It would also create a set of baseline information representing long-term and year-round information, unlike much scientific information which is short-term and generally representative of the summer months.

In the case of Nunavik the process of mapping sought to involve as many indigenous persons as possible in the information gathering process in order to create a base line of information. This process itself, however, revealed those individuals who are considered to have expertise in relation to particular areas or particular species. More detailed work and interviewing then takes place with these individuals to further develop the information. This creates a network of expertise which can be used for consultation and development of research, management, planning and educational programs to benefit the AEPS as a whole.

The expansion of this type of mapping program to the entire circumpolar region, would be a very concrete step towards involving indigenous peoples and their knowledge in the implementation of the AEPS. Preliminary discussions on such a program have already taken place at the May 25-27, 1993 Working Group for the Conservation of Arctic Flora and Fauna (CAFF). The Working Group has acknowledged the importance of such an initiative by taking a decision to support the development of a pilot project in a selected area in its 1993-94 work plan. While the pilot project will be limited geographically, it

is the intention that all indigenous regions be involved in the planning in order to ensure that decisions taken for the design of the pilot project are applicable, to the extent possible, to the circumpolar region as a whole.

It is therefore recommended that:

> ***National governments support the concept of an indigenous peoples' land use and ecological mapping project and associated information systems to be undertaken by indigenous peoples in the circumpolar region. To this end, the Ministers acknowledge that the decision of the CAFF Working Group to support the development of an international pilot project is an important first step.***
>
> ***Further the Ministers recognize the efforts that have been undertaken in their countries and agree to encourage further work.***

4.4 A Special Program Area for the Participation of Indigenous Peoples

The research undertaken in the preparation of this report has identified a number of issues related to the effective participation of indigenous peoples. These are as follows: the need for improved capacity building; the lack of ways and means to coordinate activities and combine efforts for improved efficiency and productivity; the need for a forum where indigenous peoples can feel comfortable engaging in strategic planning among themselves and with western scientists and researchers; and the need to control information.

There are three indigenous organizations with observer status who participate in the administration of the AEPS and its program areas. Whatever support is given to these organizations to effectively participate must not be confused with the support that is required to meet the commitments to involve indigenous peoples and their knowledge in the implementation process.

In recent years, indigenous peoples' environmental and ecological knowledge and their experiences with sustainable use and sustainable development have attracted much attention nationally and internationally. Indigenous peoples figured very prominently in the 1992 Earth Summit. The experience gained negotiating the AEPS proved instrumental for ensuring that some of the indigenous peoples' concerns were reflected in the final conference documents: Agenda 21, the Convention on Biodiversity and the Forest Principles.

Chapter 26 of Agenda 21 recognizes the need to enhance capacity-building for indigenous peoples. Among the recommendations is a call for programs to support the sustainable self-development of indigenous peoples and their communities; the strengthening of research and education programs aimed at achieving a better understanding of indigenous peoples' knowledge and management experiences; and increasing the efficiency of indigenous peoples' resource management systems. It further recommends the establishment of arrangements to strengthen the active participation of indigenous peoples in the national formulation of policies, laws and programs related to resource-management and their initiation of proposals for such policies and programs. The Convention on Biodiversity, just recently signed by the United States, also addresses the issue of indigenous knowledge and the need to promote its wider application while recognizing that indigenous peoples must control this process.

Few of these activities can occur without proper support and coordination. For the circumpolar region, the AEPS provides the context and is the appropriate instrument at this time for facilitating support and coordination. Indigenous knowledge programs and centres are proliferating. Our research has identified over 30 such initiatives worldwide. A recent issue of the Indigenous Knowledge & Development Monitor, contains an article which states:

> *"...Research is generating more and more data showing the relevance of indigenous knowledge for sustainable development. These data, however, must be systematically shared with fellow researchers and with practitioners, and research efforts can be stepped up further. Active networking is needed if we are to make the most of this still largely untapped resource".*

The objectives of these programs and centres are multiple. They include national and international networking, information exchange, documentation of indigenous knowledge, research, designing educational material, the establishment of documentation facilities and programs for technology transfer. A feature of most of these existing or emerging institutions, however, is that they are organized around academic/research objectives or those of aid-granting and development assistance agencies.

A special program area organized around the objectives and under the direction of indigenous peoples would serve the vital function of providing a forum where indigenous peoples could set common directions and standards for research on indigenous knowledge, develop appropriate information management systems, establish methods for communication with local communities on all matters related to the AEPS, develop educational materials and training opportunities and permit indigenous and non-indigenous scientists and experts to meet, discuss and exchange ideas and information on issues related to the AEPS and the needs of the circumpolar region.

The alternative of seeking to reinforce participation of indigenous peoples in the existing program areas was thoroughly discussed at the Copenhagen Workshop. It was felt that any improvements in these program areas would not solve the need for a mechanism to facilitate coordination among indigenous peoples and their organizations; would segment indigenous peoples' concerns into areas of work that for them are neither logical nor understandable; and finally that indigenous peoples' concerns and perpsectives would carry more force and authority if they were being generated through a recognized program area with a clear mandate to connect with existing program areas. Consultation within indigenous peoples' organizations reinforced these conclusions.

It was determined, therefore, that a mechanism to permit circumpolar indigenous peoples to organize nationally and internationally for the purpose of effectively contributing to the success of the AEPS was needed. Networking capabilities and institutional support exist for non-indigenous scientists, researchers and government personnel. Indigenous peoples should be provided with similar opportunities. The creation of this special program area for indigenous participation supported by a secretariat which would liaise with Senior Arctic Officials and the other program areas is seen by indigenous peoples as a way to ensure that their concerns and contributions are not artificially compartmentalized by the mandates of the other program areas. While it is obvious that

contributions and participation are required under each program area, at the same time there is a need for, and a benefit from, indigenous peoples' involvement in planning with regards to the AEPS as a whole.

It is therefore recommended that:

The Ministers support the creation of a special program area within the AEPS to address all issues related to the participation of indigenous peoples, supported by a secretariat. This special program area would serve such vital functions as planning, communications, research, and education as well as facilitating coordination with existing program areas and implementation efforts.

ANNEXES

AEPS Principles and Indigenous Peoples

A role for indigenous peoples can be established within the frame of reference and intent of the eight principles developed to guide the programs that will be established through the AEPS. Five principles, however, are most relevant. The following comments reflect the various ways in which indigenous peoples view their role in relationship to these principles.

Principle 1 states that management, planning and development activities shall provide for the conservation, sustainable utilization and protection of Arctic ecosystems and natural resources for the benefit and enjoyment of present and future generations, including indigenous peoples.

Throughout the circumpolar area, indigenous peoples continue to rely on the harvest of biological resources to support their cultures and economies. Although there have been significant changes in technology, settlement patterns and lifestyles, reliance on local resources has not deteriorated. A quantitative measure of the value obtained from the sustainable utilization of resources is available from the many harvest studies that have been carried out in the circumpolar region. New programs are also being developed in many regions which will broaden the use of local resources towards the goal of economic self-sufficiency. From this perpective of continuing dependency on the harvesting of local resources, coupled with the introduction of new programs, it is obvious that indigenous peoples are supportive of management when carried out within a framework of substainbility. Concerns still remain, however, as to the use of indigenous knowledge and the building of local expertise.

Principle 3 states that management, planning and development activities which may significantly affect the Arctic ecosystems shall: be based on assessments of possible impacts including cumulative impacts; provide for the maintenance of ecological systems and biodiversity; be compatible with sustainable utilization; and, account for the results of scientific investigations and traditional knowledge.

These four undertakings reflect concerns that have a long history in the relationship between indigenous peoples and governments. Impact assessment processes are now widely applied in much of the circumpolar region and are considered by indigenous peoples as having the potential to reflect their concerns and values in environmental protection. The importance of biodiversity is not questioned, but indigenous peoples point out that biodiversity cannot be separated from an equally valid need to maintain cultural diversity. Cultural diversity within the circumpolar region reflects, in part , the particular ways in which different cultural groups have been able to utilize Arctic ecosystems in a sustainable way over long periods of time. Finally, indigenous peoples welcome the opportunity to utilize their environmental and ecological knowledge in management and planning, but they insist on remaining in control of its documentation and use.

Principle 5 states that consideration of the health, social, economic and cultural needs and values of indigenous peoples shall be incorporated into management, planning and development activities.

This principle has meaning for indigenous peples from two perspectives. The first is that is impossible to incorporate these considerations and values in any meaningful way without the full involvement of indigenous peoples themselves. The time is past when policies and decisions on these topics can be made on behalf of indigneous peoples. The second is that the approach taken by indigenous peoples is grounded in cultural traditions that are significantly different from those of western cultures. Although cultural differences can sometimes cause confusion and misunderstanding when people are attempting to work together in the development of programs, respect for cultural differences is a prerequisite for cooperation.

Principle 6 states that the development of a network of protected areas shall be encouraged and promoted with due regard for the needs of indigenous peoples.

This principle recognizes that although plans related to the management and protection of the Arctic environment and biological resources may require the designation of specific geographic areas, indigenous knowledge and values, especially in terms of their perceptions of changes over time, must be part of the planning process. They also caution that establishing protected areas may not be the most realistic way for managing resources or protecting the habitats and other critical areas that support the resource system.

Principle 8 states that mutual cooperation, including the use, transfer and/or trade, of the most effective and appropriate technology to protect the environment, shall be promoted and developed.

Indigenous peoples have developed many appropriate technologies over time for the efficient harvesting and management of resources. Efforts should be made to re-examine indigenous technologies and methods of management in light of the planning principles which are being established around sustainable development. Indigenous groups have also made significant advances in the design of research methodologies and information processing systems that could be transferred to other research areas or group.

Sources:

Arctic Environmental Protection Stragegy . 1991. Rovaniemi.
Discussions held at the March 1993 Workshop held in Copenhagen with the regional representatives.

The Inuit Regional Conservation Strategy

The Inuit Regional Conservation Strategy (IRCS) represents a long-term plan of the Inuit Circumpolar Conference for sustainable development in the Arctic. It provides both framework and a process for developing an environmental strategy by and for Inuit. The objective is to promote sustainable and equitable development, wise management and environmental protection for the Inuit homelands. This strategy will also provide a mechanism for cooperation among Inuit organizations at the community and regional levels, as well as a mechanism for promoting the cooperation of governments in the circumpolar region. The IRCS is designed to draw on the value of indigenous knowledge, as well as on the most recent scientific information. It is a strategy for gaining broader recognition of and support for, Inuit rights to protect the environment and to develop sustainably, for both the living and non-living resources of the Arctic.

In 1986, the Inuit Circumpolar Conference adopted a Framework Document for the IRCS and in 1987 an international coordinator was selected. With the support of the Kalaallit Nunaanni Aalisartut Piniartullu Katuuffiat (KNAPK) and Home Rule Government, work began first in Greenland with a priority on the development of a data base on indigenous knowledge for the region. The first phase of the development of this data base addressed the utilization of living resources. The study recognized that ultimately this information must be linked with other data bases developed by national and international bodies. Two Greenlanders were engaged to run this project.

Local experts, for particular species, types of hunting and environmental conditions were appointed in each of the municipalities of Greenland to work with the project team. While all of the interviewing and fieldwork has been completed, the final reports for each municipality, as well as the national report for Greenland are still in preparation. They will contain information on geographical features, land use and occupancy, occurrence and

availability of individual plant and wildlife species, environmental and ecological information, historical and current harvest data, and a discussion of trends in animal populations in relation to harvesting and environmental factors. It is still hoped to build this data into a computerized geographic information system.

In Alaska, work began in 1991 to prepare a report and manual detailing the nature of subsistence use in Nome and Kotzebue. The subsistence debate rose to new heights in 1991-92 and the IRCS Steering Committee in Alaska chose to develop a project that could provide concrete information and shed light on the issues involved in the debate. Land use maps were developed as the core of the data base. As the Inuit of Alaska continue to build the case for more control over management of subsistence, the maps provide a growing body of hard evidence to support those claims. Interviews were also conducted to obtain detailed information on species harvested by the Inuit. Future plans now include moving the project into other communities and developing a system for computerization. It should be pointed out that Alaska was the first area in the circumpolar region to recognize the value of computers in the mapping of indigneous peoples' land use and ecological information.

The Canadian experience has been somewhat different. As a consequence of land claim settlements and their implementation requirements, some of the Inuit groups had already begun the development of land use and environmental knowledge data bases, notably the Inuit of Nunavik and the Inuvialuit. The Canadian office of the ICC has devoted much of its efforts, therefore, attempting to ensure that the IRCS would be recognized and implemented at the international level through work with the AEPS, the IUCN and the 1992 United Nations Conference on Environment and Development.

The IRCS was awarded the Global 500 Award by the United Nations Environmental Program in 1989 for "outstanding achievements in the protection and improvement of the environment ... and for environmental management of part of the Arctic circumpolar region, an area of 2.5 million square miles ... an example of the World Conservation Strategy in Action."

Sources:

Inuit Circumpolar Conference. 1986. *Towards an Inuit Regional Conservation Strategy.* Kotzebue.

Inuit Circumpolar Conference. 1989. *Status Report on the Inuit Regional Conservation Strategy.* Sisimuit.

Inuit Circumpolar Conference.1993. *Inuit Regional Conservation Strategy Implementation Efforts in Northwest Alaska 1991-1993.* Anchorage.

Jakobsen, A. 1993. Regional Report for Greenland, prepared in connection with the project on the Application of the Ecological and Environmental Knowledge of Circumpolar Indigenous Peoples within the AEPS.

Inuit and Science: Understanding the Problem

Science is becoming very important in the north and the Inuit must become involved in all levels of research or be left even further behind. This includes carrying out our own studies; working more cooperatively with scientists from the south; developing training programs and school curriculums in science; and collecting and utilizing our own knowledge and understanding of our culture and environment. It must also include the political aspects of science so that Inuit can gain a stronger voice in controlling the type of problems that are to be studied, determining the best way to do these studies, and to make sure that Inuit receive a fair share of research funds.

There are many problems that confront the Inuit of northern Québec when they attempt to understand research and to take their own initiative for doing studies. While the research in the Canadian Arctic has intensified considerably during the last decade and shows no sign of letting up, the Inuit in the meantime have been little more than casual observers wondering what is happening in their back yard or waterfront.

All too often, the Inuit of the Canadian Arctic have been victims of indifference, arrogance, and off-hand information from researchers representing southern institutions. These people have long taken the Canadian Arctic and Inuit for granted, to be done with as they please and to get what they can out of it. As a result, the Inuit have become very conscious about the impact of research and of the scientists that carry it out.

Even if there is no direct damage done to the environment or to the people themselves by research there can be a severe impact on the peace of mind of the people who have used a very personal territory over countless generations and who continue to do so. The impact of research on the environment and on the peace of mind of the individuals is now a major concern ...A lot of suspicion, resentment, and misunderstanding can be

gradually done away with if only researchers would take time to explain their activities to Inuit and to accept Inuit advice and direction. Then the Inuit will not start at an unfair position as they usually do trying to adopt the southern tried and proven methods which they never even heard of before. This kind of common sense ethical and moral behavior, is necessary if research is going to be successful from both the Inuit and scientific point of view. Once this begins to happen older Inuit will not be scared to let their children learn more about scientific work and to receive training. As long as some Inuit see scientists as kind of an enemy, then they will be reluctant to encourage their children to become researchers in their own land.

These problems will have to be solved if everyone is to be cooperative and benefit to the maximum from northern research. The native people have been and continue to be poorly represented in decision making and any other input into changing the way northern science is organized .... It is good for scientists to come north and to tell what they are going to do, but it would be better if they came north and asked the people what they wanted and then help establish real programs for helping. Also just inviting Inuit to go to conferences here and there does not solve the problem because that is not the way Inuit communicate and it is just using our attendance as a token, although for some of us it could be useful.

Policies concerned with northern research have been made by different levels of government and by other research groups for many years. The Inuit have never had much to say in these policies, despite the fact that they are most affected by them. Many recommendations for the North are popping out regularly from various "expert" consultants from the South. A few of these recommendations are sound and may work in the North, but others are ridiculous. Most of the policies, even very good ones like the I.B.P. code of ethics, simply tell scientists how to treat Inuit. They do not provide a means that will enable Inuit to actually take over their own research and to carry out studies that they think are the most important ... Because some of these changes are imminent, they may as well be accepted by the agencies dealing with science, even if at first, they are reluctant to do so. It should be understood that such changes would not digress to the point of being overly unfair to southern interests. Things will have to be worked out so they are fair to everyone.

Inuit Knowledge and Working with Scientists

In Arctic research one of the most neglected aspects is the knowledge of living Inuit. Southern scientists tend to rely on previous investigations of other scientists before and after they do field work. Disciplines like geology and other earth sciences are justified in not totally engaging Inuit knowledge, which is limited for certain fields.

But in the human sciences of anthropology, archaeology and in the natural sciences of biology and zoology, Inuit have very definite knowledge. Which is often not known or seriously sought after by social and wildlife scientists .... The Inuit knowledge and expertise of the Arctic environment can be used for the planning, execution and analysis of research for these disciplines and gave better results for every one concerned. The time has come when Inuit feel that their knowledge of the environment should be of use for research so that this knowledge can be used to make more balanced decisions that could have far reaching effects on Inuit. Consequently it is no surprise that the Inuit want to influence these decisions. It is at this level that Inuit feel their knowledge will be used properly.

What would also be ideal is a classification of Inuit knowledge for their own and others to use as reference for research or for cultural fulfillment. As Inuit have long been one of this nation's aboriginal nations they must be able to maintain a cultural identity based on their knowledge and not just on customs that outsiders think are different.

A good example is in fields like prehistory and interpretation of site function, certain adult and old-timers are always ready to make helpful comments if they are asked. But since there usually is no provision for this aspect of research in the project design, these people are left out of the process. Otherwise they could have contributed significantly to interpretations of the northern region. Some pre historians may ask a few casual questions to casual Inuit standbys or visitors, which both sides may be too casual about. But sometime it is better to be casual in the Arctic than being too formal. However, some Inuit as I have experienced over the years, do like to discuss and contribute to their prehistory and to other research. Telling me of how they had seen such and such a site and that they would like me to investigate and make comments back to them. They are eager to state their opinion and like to be taken seriously, even if they are partly wrong in some of their interpretations.

In wildlife and natural science the Inuit have even a stronger feeling about the importance of their knowledge. This has developed from their intimate hunter-hunted relationships with Arctic wildlife. They also have intimate knowledge about the environment in all seasons of the year and there is an important general every day knowledge of other non-huntable resources that they have respect for.

Today, the most utilized Inuit knowledge and expertise is local logistics and game food procurement for scientists. They are being asked to be guides and to show scientists where to go and how to get places safely. Some scientific parties have treated their guides very well and made them feel welcome. This usually created an interest by Inuit about the work.

A partial solution to help solve the problem of utilizing Inuit knowledge is for scientists themselves to learn to respect the quality of what Inuit know about the environment and wildlife. This first step can then be followed by a program that will make sure this important source of knowledge is not lost when elders grow to old to remember correctly and younger students will learn the wisdom from the past knowledge and feel comfortable with it. After this second step, it will then be necessary to make certain that research is designed to use this information and to link it together with southern scientific knowledge.

Some Inuit knowledge of the land is unsurpassable. For most Inuit, many studies done in the North are not difficult to understand but they are often boring because the Inuit are only told what to do and they are not encouraged to ask questions about the methods used by the scientists. The Inuit are also never informed about what happens after scientists leave the field to go South and carry out the analysis. This is where the most crucial aspect of scientific interpretation happens because it is in the lab that researchers work as detectives, putting small clues and known facts together. The Inuit will never be able to participate in this part of scientific studies if they are not allowed to gain training in the work of laboratories .... It is easily possible for young Inuit to do this and still be Inuit.

It takes time for people to adapt to new ways and ideas and I myself have learned this lesson from my own Inuit assistants. Only patience and understanding can help to solve some of these problems. It would be a great step forward if field schools are opened for research not just in archaeology but in biology and other northern area sciences, by willing scientists.

Even if some Inuit can understand what is happening, they seldom have an opportunity to only talk about it with the researchers. They are almost never given any real written literature that they can understand about research objectives and techniques to be used. Scientists seem to write for Inuit as if they expected them to know all of the terms and concepts or they write documents that sound like they are talking to small children. No one has really taken time to think seriously about how to communicate best.

Inuit like to have their advice taken seriously; to them, it is necessary and valid. They would also like to have some say in setting the research priorities, and in the selection of problems to be studied ....Time and again, the Inuit have witnessed various scientists doing a study that seemed useless, even foolish or senseless to Inuit, because they are not told why the study is important or how it should be carried out. Even if it is a study that would not directly include Inuit interests, it would make sense if some of the scientists made even one little practical gesture in the eyes of the local people.... Even if the scientists are simply nice and practice hospitality with Inuit to explain why they are making a study, and what it may mean, this would help. Practicality counts in the Arctic, and being courteous also counts for the reasons that one never knows when there will be situations that require assistance between the Inuit and the scientists.

Defensive and Positive Research

What the above statements boils down to is "defensive research" and "positive research". "Defensive research" is when southern needs and methods are resisting the Inuit desires and needs. This becomes "positive research" when Inuit are given a fair consideration in developing their own research and when there is an understanding of the Inuit need.

A new method of research design aimed at encouraging, including and supporting Inuit chances to get into the scientific community without totally giving up their own ways and ideas must come about. This of course does not mean deterioration of the research quality as southern parties are often worried about. It would give the northern perception of southern people a much wider scope and a fuller understanding, at least for those who have enough of a broad mind to grasp it.

It may be difficult for some to consciously accept the Inuit being scientists, and carrying research out by themselves. But this reality has to be accepted if the Inuit understanding and perception of the northern world is to be incorporated into the research process.

It is only fitting that the Inuit should be given a fair and full chance to further their knowledge and expertise of the northern world in more scientific terms but without loosing their cultural identity.

Source:

This text is taken from writings of the late Daniel Weetaluktuk, an archeologist living and working in Inukjuaq, northern Québec. Daniel died in 1981 while participating in a study of beluga whales at the estuary of the Nastapoka River.

The Dene Cultural Institute

The Dene Cultural Institute has for many years been actively involved in issues related to indigenous or "traditional" knowledge. In 1987, a large gathering of Dene met to discuss issues related to the protection of their culture and this led to the formation of the Dene Cultural Institute. Environmental knowledge was chosen as the first major research project for two reasons: because of the central role that the land plays in Dene culture, and because certain elements of this knowledge base were seen to be quickly disappearing with the passing of Dene elders.

The newly created Institute began its research with a pilot project in August 1989. The objective was to design a research methodology to document "traditional" environmental knowledge, to develop an understanding of the environmental knowledge still possessed by Dene and to establish how this knowledge has been used to govern their use of the land and its resources. To achieve these objectives, four basic questions were asked:

1. What kinds of traditional environmental knowledge do the Dene still possess and how was this knowledge used to survive and to live in harmony with the natural environment?

2. What are the practices and beliefs that are essential to Dene resource management, and how are they similar or different from those of Euro-Canadian society or other indigenous cultures?

3. To what extent is a "traditional" Dene system of resource management still in existence today?

4. Is there more than one system of resource management operating today and, if so, what are the social, cultural, economic and environmental factors that define them?

One of the most important findings of the pilot project was the recognition that documenting and interpreting traditional environmental knowledge is a difficult task. It identified the methodology for interviews that were culturally appropriate and it established proper procedures for the conduct of participatory community research.

The research was able to identify important types of environmental knowledge possessed by elders and to describe some of the practices and beliefs that are essential to a traditional system of management. It demonstrated that traditional environmental knowledge consists of many details on all components of the natural environment and combines ecology and ideology within a single intellectural framework. In the Dene system of resource management, animals are meant to be used by man. This use is marked by different practices and taboos which serve to guarantee the perpetuity of the animals. Every family has a particular animal with which they have a special relationship, and these relationships imply certain conservation measures.

The pilot project was followed by a workshop, hosted by the Dene Cultural Institute in 1990. it brought together indigenous and non-indigenous researchers from Africa, southeast Asia, the south Pacific, South America, Europe and northern Canada.

The work of the Dene Cultural Institute has influenced government initiatives and policies in the Northwest Territories of Canada. The Government of the Northwest Territories created a Traditional Knowledge Working Group which produced a report in 1991 which it is hoped will soon become part of the policy and planning process.

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Johnson, Martha (ed.) 1992 *Lore: Capturing Traditional Environmental Knowledge.* Dene Cultural Institute and the International Development Research Centre. Hay River.

Gilday, C.1993. *Dene Case Study, Indigenous Peoples and Strategies for Sustainability.* IUCN Inter-Commission Task Force on Indigenous Peoples.

Efforts in Northern Scandinavia to Involve Sami and their Knowledge in Research and Management

Local techniques and traditional management of natural resources and especially practices based on the use of knowledge acquired by indigenous populations about the interaction between man and nature, have not yet been the subject of serious study in Norway or in the rest of northern Scandinavia. Scientific groups, however, are beginning to show more of an interest in working with the knowledge of indigenous peoples. Indigenous environmental knowledge has been widely used in the management of domesticated reindeer and probably in the organization of inshore fisheries. Certainly, when communicating with reindeer herders, knowledge about the resources and traditional practices has been an indispensable tool.

The Norwegian Man and the Biosphere (MAB) Committee has been involved in leading some of these new initiatives. They have concentrated on two main issues: a comparative study of the problem of overgrazing in Finnmark and in the African Sahel region, and a study of the crises in the fishing industry in the Barents Sea and its repercussions on coastal populations. The MAB Committee has focused on existing indigenous ecological knowledge, and this approach has gained a reputation over the last few years, both by the local and central administration and by social scientists and biologists.

The perspective of these groups is that proper natural resource management necessarily implies restrictions on human and economic activities, not only to protect the resources from depletion, but also to ensure that local cultures and social structures survive. Hence the need for a comprehensive understanding of native cultures and society. Indigenous knowledge becomes a key word. It contains an economic and social aspect much needed in a sound natural resources management.

MAB has supported projects concerning Sami knowledge about the natural environment and the ecosystem, the utilization of indigenous ecological knowledge in the study of bionomics, indigenous knowledge and restocking of common fisheries resources, and educational projects at the Sami College in Kautokeino. All of these projects have shown that indigenous environmental knowledge is not immediately available for use in studies. The close link between knowledge, social values and social connections has created a set of rules determining who will be in possession of such knowledge. Scientists gathering information must be aware of these rules.

The Sami College has recently introduced a special program aimed at reintroducing students to elements of indigenous knowledge. The program requires that students learn interviewing techniques, gather information and explore ways how this information may be combined with western science. The program has just begun and it is too early to evaluate its progress.

Some very interesting work has been done on the relationship between language and culture. The Sami language has a wide range of expressions relating to a complex variety of activities. The vocabulary is alive today and the great variety of expressions has its roots in the old hunting cultures. Projects to document reindeer herding terminology and Sami idiomatic expressions have contributed to a better understanding of this relationship. Sami expressions and terminology have now found their way into academic programs in biology and ecology

In Norway, some innovative changes are taking place in the administration of resource management. At the end of the 1980's, some municipalities were given authority over certain aspects of wildlife and resource management. The objective was to test the local administration's ability to manage local resources and to test different forms of environmental management strategies. The municipality of Kautokeino, where Sami are in a majority, were included in the test program. In the past, most decisions had been taken by a distant central administration unacquainted with local and traditional use of resources. This new program has been so successful that most Norwegian municipalities now have their own environment protection office.

(translation from Norweigan)

Source:

Solbakken, Jan Idar. 1993. Regional Report for the Sami Region, prepared in connection with the project on the Application of the Ecological and Environmental Knowledge of Circumpolar Indigenous Peoples within the AEPS.

The Development of a Data Base for Nunavik

In order to effectively implement the James Bay and Northern Quebec Agreement, the Inuit of Nunavik required access to, and control over reliable information about the territory, resources, culture and economy of Nunavik. To guarantee the availability of an information base of this type, Makivik Corporation (which represents the Inuit of Nunavik) made a decision to establish and fund a Research Department to address four objectives:

1. Identify the research needs and priorities of the Nunavik Inuit and develop a relevant and effective program of studies;

2. Establish a set of principles and guidelines which would govern Inuit participation in all phases of research and recognize both the intrinsic value as well as the scientific importance of Inuit knowledge to the future success of northern science and research;

3. Encourage Inuit participation in scientific work through programs of training and education, and foster the exchange of knowledge and skills through the development of a cooperative working relationship between Inuit and non-native researchers;

4. Establish a data base and expertise within Makivik Corporation which could be used to inform decision-makers, help in the formulation of policies and programs, and assist Inuit communities and their organizations.

Many different types of studies have been carried out since the Research Department was founded 17 years ago. Land use research is conducted to gather, review and continually update the information needed to build a geographical data base on past and current land use patterns for the entire land and offshore territory of Nunavik. This

project provides the opportunity to create a permanent set of maps and supporting text for the vast amount of land use information that, prior to this study, had never been systematically documented. Inuit environmental and ecological research involves the systematic collection of information about the environment, ecology and resources of their territory. This study also provides the opportunity to create a permanent record of this critical intellectual heritage and has helped to demonstrate the existence of an indigneous knowledge base within Inuit culture which is derived from long-term observations and experiences with all aspects of the environment.

These studies are supported by specific wildlife research projects. They serve to incorporate scientific research procedures and at the same time encourage Inuit perspectives and techniques in all phases of work which is essential if the findings are to be accepted by the Inuit. The Research Department recognized that all research involving the Inuit has some level of cultural content and that the research process itself results in information concerning the social and cultural attitudes and beliefs of Inuit. It, therefore, carried out research on culture history and archeology which were incorporated into the Nunavik data base. One of the most important areas of application, but which is also a topic of research, is that of planning and impact assessment. In order to guide the growth and development of the region the Department produces community based management plans and is directly involved in environmental and social impact assessment linked to specific projects. Research centres were established in two northern communities and training programs were integrated with all work.

All data produced through the Inuit land use and ecological mapping projects and, where compatible, information from the other research programs has been processed on a computer system devloped specifically for these purposes. It was anticipated that huge amount of data would be collected once these projects began and that the work involved in analyzing, correcting and updating could be overwhelming without the assistance of computer technology, particularly a geographic information system. A Macintosh system using MicroStation software for mapping and Oracle software for the data base was selected as the most appropriate technology. This analytical system is now supported by a Macintosh Quadra 900 for the production of finished maps and graphics.

The long-term goal for the use of this geographic information system is to develop its content and potential in a way that will facilitate its use as a primary data bank for use throughout Nunavik. Under the continuing direction of Makivik Corporation, the system

will be used to maintain and expand the data base and to apply the information to the many applications that are required for the social, economic and political development of Nunavik.

Source:

Makivik Corporation. (1992). "The Makivik Research Department", in *The Inuit of Nunavik Statement of Claim to Labrador.* Montréal.

Documenting Inuit Knowledge to Improve Management in Greenland

In 1992 the Greenland Hunters' and Fishermen's Association, the Greenland Home Rule authorities and the Inuit Circumpolar Conference launched a project to collect and analyze Inuit knowledge of the distribution, biology and hunting of beluga and narwhal. This project was carried out in the Disko Bay, Uummannaq, Upernavik and Avanersuaq districts of Greenland. A total of 139 beluga hunters and 131 narwhal hunters were interviewed from November 1992 to February 1993.

The study was initiated at the request of the Joint (Greenland/Canada) Commission on Conservation and Management of Beluga and Narwhal. The Commission, whose mandate is to prepare recommendations concerning research and management, felt it was important to establish a new balance by reducing the current domination by western science in the development of management regimes. This would be accomplished by promoting and supporting local awareness and participation, as well as by ensuring that management focuses on local and cultural needs rather than international politics.

The results reveal that Inuit hunters in Greenland possess a considerable knowledge of the distribution and aspects of the biology of beluga and narwhal. The knowledge and information contributed by the hunters was primarily qualitative in nature, but has, to the extent possible, been tabulated for quantification, in order to compare when possible with scientific data. The study gives an overview of the seasonal utilization of the animals, and the hunting methods and technology applied. It also provides fairly consistent information concerning the distribution and migration of belugas and narwhals which supplements and updates existing information from other sources.

The large number of hunters willing to participate in the survey, and their efforts to respond to the sometimes difficult and sensitive questions is evidence, in itself, of the keen interest and concern that the hunters hold for the animals. Only a small portion of the information possessed by hunters is presented in the report. The questionnaires were designed to focus on specific elements of hunters' knowledge.

Analysis of the results of the interviews showed that the information pertaining to the distribution patterns of beluga and narwhal is more readily obtained from the hunters. Knowledge of the biology of the animals, on the other hand, is more difficult to obtain. Even though the hunters may be interested in certain aspects of the biology of the animals, this knowledge is less vital than knowing where, when, and how to hunt them. When discussing qualitative information, hunters were more hesitant to generalize or to make any firm conclusions based solely on their own experience. It is important, therefore, not to extract this information from its original context and try to quantify it.

The present study does not provide clear conclusions which facilitate coordination with scientific data, but it does show that this is not a problem purely rooted in the methodology or in the difference between qualitative and quantitative information. It derives from the fact that hunters and scientists organize their observations differently. Hunters' observations are more loosely organized in informal and flexible systems, whereas the scientists structure and evaluate their observations in terms of repeatability and comparability. Hunters do not necessarily collect specific observations to answer specific questions. What is important for improving management, however, is that hunters may in some cases collectively evaluate opinions based on observations if there is a motivation to do so.

This project is an important contribution to the process of determining strategies to facilitate the integration of local knowledge with western science in management regimes, rather than a documentation of the overall knowledge base of the Inuit hunters of Greenland.

Source:

Thomsen, Marianne Lykke. 1993. *Local Knowledge of the Distribution, Biology, and Hunting of Beluga and Narwhal: A Survey among Inuit Hunters in West and North Greenland.* KNAPK, Greenland Home Rule Government, Inuit Circumpolar Conference, Nuuk.

Alaskan Eskimo Whaling Commission

In 1981, the Alaskan Eskimo Whaling Commission (AEWC) and the National Oceanic and Atmospheric Administration (NOAA) signed a cooperative agreement that delegated the authority for management of the Eskimo bowhead whale harvest. This agreement is seen as one of the most successful resource management agreements where indigenous peoples are given authority to monitor, manage, enforce and conduct research on bowhead whales. The objectives of the AEWC are:

1. To preserve and enhance the bowhead whale, including its habitat;

2. To protect Eskimo subsistence whaling;

3. To protect and enhance Eskimo culture, traditions and activities associated with bowhead whales and bowhead whaling.

4. To undertake research and educational activities related to bowhead whales.

The International Whaling Commission (IWC) first tried to ban subsistence bowhead whaling in 1977 by citing very low population estimates, (between 600 and 1800 animals). The Eskimo whalers argued that from their personal observations, they could not agree with the estimates being provided by the scientific community. They formed the AEWC to battle the IWC and others attempting to ban their whaling activities. While the United States did not formally object to the IWC's 1977 decision to ban to whaling, NOAA responded by proposing a compromise in the form of a quota including those animals struck but not landed.

After several years of strained relations between the whalers, managers and the IWC featuring lawsuits from the whalers and criminal investigations by the Federal government, the AEWC and NOAA signed a cooperative agreement whereby responsibility for managing

Eskimo whaling was delegated to the AEWC. This, coupled with the results of new research efforts supported by the AEWC which increased the estimates of the total population to approximately 7500 whales, has led to a program of management based on the needs of the whaling communities in relation to total sustainable yield.

The effectiveness of the AEWC's management relies primarily upon four things. First, the whalers themselves administer the management regimes. With the exception of quota setting, there is no outsider/insider conflict. Second, the quota attempts to reflect the communities' need for whales. Third, whaling is a communal activity with a strong traditional basis. The pressure to cooperate may be stronger than when hunting other species. Fourth, the goals of the AEWC have always been clear and the battle with an outside authority has helped the whalers focus and form a cohesive group.

Most people involved with the work of the AEWC would agree that it has proved the merits of cooperative management. It has fulfilled the purpose for which it was established, and has provided far more effective management than any outside agency could have done. As such, it can provide a model for similar programs within the AEPS.

The AEWC demonstrates that indigenous peoples are capable of sound resource management, improvement of equipment used for whaling, improvement of population estimates and sponsoring biological research for a better understanding of the species. As stated by Mr. Burton Rexford, Chairman of the AEWC, ..."I would like to say that managing our subsistence resources has worked very well, as indicated by the history and present status of the AEWC. We must have the authority and responsibility of regulating our resources in regions that we represent. It can't work any other way".

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FOOTNOTES

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