

***Healthy People, Healthy World:*
Preserving Aspects of Traditional Knowledge
and Improving its Application to Environmental Assessment**

by Tracey Inkpen

A Thesis
Submitted to the Faculty of Graduate Studies
in Partial Fulfillment of the Requirements for the Degree

Master of Natural Resources Management

Natural Resources Institute
University of Manitoba
Winnipeg, Manitoba

August 1999



National Library
of Canada

Acquisitions and
Bibliographic Services

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque nationale
du Canada

Acquisitions et
services bibliographiques

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file Votre référence

Our file Notre référence

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-45063-5

**THE UNIVERSITY OF MANITOBA
FACULTY OF GRADUATE STUDIES

COPYRIGHT PERMISSION PAGE**

**Healthy People, Healthy World:
Preserving Aspects of Traditional Knowledge and
Improving its Application to Environmental Assessment**

by

Tracey Inkpen

**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University
of Manitoba in partial fulfillment of the requirements of the degree
of
Master of Natural Resources Management**

Tracey Inkpen © 1999

Permission has been granted to the Library of The University of Manitoba to lend or sell copies of this thesis/practicum, to the National Library of Canada to microfilm this thesis/practicum and to lend or sell copies of the film, and to Dissertations Abstracts International to publish an abstract of this thesis/practicum.

The author reserves other publication rights, and neither this thesis/practicum nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

Abstract

This study documents the knowledge of bush medicine among the Innu people of Labrador, and considers how this and other forms of traditional knowledge (TK) may be used in decision-making processes, such as environmental impact assessment (EIA). Objectives of the study were: 1) To document Innu knowledge and use of the land, specifically knowledge of Innu bush medicine and its transmission, and propose ways to improve this transmission using the educational system; 2) To examine the EIA process and discuss steps to improve the inclusion of aboriginal knowledge in that process.

The study was carried out with the consent of the Innu Nation and the principal research techniques used were semi-structured interviews with key informants, participant observation, field trips, and plant collection. There were two main research components. One was the author's participation as a member of the research team documenting Innu ecological knowledge for presentation to the Voisey's Bay Nickel Mine Environmental Assessment Panel. This team research involved group and individual interviews. The experiences and observations during this process form the basis for the section on the inclusion of traditional knowledge in environmental assessment.

The second research component was the study on Innu ethnobotany. Various informants were questioned on their knowledge of bush medicine in the communities of Sheshatshiu and Utshimassit during and after completion of the first study.

The results of the ethnobotany component of the study showed that twenty-two plant species were used, representing twelve botanical families. Members of the Pinaceae family were the species most utilized by the Innu and the boughs and leaves were the plant parts most frequently employed in their traditional remedies. Teas and poultices were the most common preparation methods. In all, seventy-seven healing remedies were indicated by the informants to treat complaints in areas such as colds and fevers; cuts, burns, and skin irritations; joint and muscle pain and inflammation; gastrointestinal disorders; eye, ear and mouth problems; urinary problems; pregnancy and childcare; and mental and psychological stress.

Use of the formal educational system to preserve this and other forms of Innu knowledge was explored, including the introduction of Innu culture courses into the school curriculum and the production of educational material on bush medicine. Ways to facilitate interaction between elders and youth using the schools and other arenas were also examined. A technical report on the topic of bush medicine was prepared for Innu Nation for use in the schools.

The second objective of this research was fulfilled by the author's participation in the traditional knowledge survey for the Voisey's Bay Nickel Mine Assessment known as the Innu Ecological Knowledge Project. The theory surrounding this topic was examined and an evaluation was carried out of four previous panels that attempted to include traditional knowledge: the Berger Inquiry, the Assessment of Military Flying Activities in Labrador and Quebec, the North Central Project, and the Northwest Territories Diamond Mine Assessment. The strengths and weaknesses of the Voisey's Bay Nickel Mine Assessment and the Innu Ecological Knowledge Project in particular were analyzed. Strengths included the involvement of the Innu in drafting the Panel's Terms of Reference, the recognition of the value of aboriginal knowledge by the Panel in their Guidelines to the company, and the consideration given to social and cultural impacts in the Innu knowledge survey and the assessment itself. Weaknesses included the behavioural conflict evident between the parties, the lack of community education on the topics of mining and environmental assessments, and the limited time period allowed for the completion of such comprehensive studies. Potential measures to improve the inclusion of Innu people and their knowledge in future assessments have been identified. Examples of recommendations include the use of alternative dispute resolution techniques to address conflicts, earlier communication with and involvement of Innu people in the process, and legislative changes to the free-entry mineral regime in Newfoundland.

Acknowledgements

The author would like to thank the following people, without whom this thesis would never have been completed.

First of all, to the people of Sheshatshiu and Utshimassit for having the grace and goodwill to put up with the fumbling and ignorance of a stranger in their midst. The author went to these communities intending to learn about their world and ended up getting a new perspective on her own.

Thanks as well to the elders whose generous contribution of time and knowledge forms the backbone of this report. In this fast-changing world, their commitment and dedication to the ideals and practices of the past is truly admirable.

A big thank-you to the Andrew family of Utshimassit and the Gregoires in Sheshatshiu for opening their hearts and homes to the author during her stay. Special thanks to Mary Jane, Rose and Janet for their translation skills and companionship.

The author gratefully acknowledges the support and assistance of Innu Nation throughout the design and completion of this research. People who were especially generous with their time, assistance and good humour include: Daniel Ashini, Germaine Benuen, Larry Innes, Christine Cleghorn, Peter Armitage, and Jeannie Nuna.

Thanks as well to Dr. Daniel Clément for his support and assistance throughout the summer. His experiences, articles, and conversation were very informative and welcomed.

To her academic committee, she extends her deepest gratitude for their patience and support throughout this process. Thanks for making time in your busy lives for the author and her work. Special thanks:

To Dr. Fikret Berkes for helping refocus her initial grandiose ideas and see the value of a project in her home region, and for helping to contact the necessary people to obtain approval for the research.

To Dr. Robin Marles for his guidance with regards to the ethnobotany sections in this document and his attention to grammatical details (for which the author's mother also expresses her thanks!). His kindness and thoughtfulness over this past year was also much appreciated.

To Dr. David Punter for his refresher on the techniques and tools of plant collection prior to the research period.

And to Ms. Cristiana Seixas for sharing her own field experiences and for the time and effort she spent in reviewing drafts of this document. But most of all, for her friendship.

To the herbarium staff and botany department at the University of Manitoba for their assistance with the long process of plant identification upon the author's return from the field, especially: Dr. Bruce Ford, Dr. Elizabeth Punter, Dr. Jennifer Shay, and Richard Caners.

Thank you to the Northern Studies Training Program, Dr. Berkes' grant from the Social Sciences and Humanities Research Council, and the University of Manitoba Graduate Fellowship for providing the financial assistance to complete this research.

The author would also like to thank her aunt, Sue Powell, and her cousin, Terry Powell, for allowing her to stay with them at the beginning and end of her research period in Labrador.

Finally, the author sends her love and appreciation (a whole Hershey's bag full!) to her parents, Russell and Sharon Inkpen, whose love, faith, and support provides its own special form of healing.

Disclaimer

This document is for educational purposes only. Anyone interested in specific medicinal techniques is advised to consult with a knowledgeable elder prior to use. The author assumes no responsibility for any injury or death that results from improper use of the information contained in this report.

ABSTRACT.....	II
ACKNOWLEDGEMENTS.....	IV
DISCLAIMER.....	VI
LIST OF FIGURES.....	IX
LIST OF TABLES.....	IX
LIST OF PLATES.....	X
CHAPTER 1: INTRODUCTION.....	1
1.1 BACKGROUND AND ISSUE STATEMENT	1
1.2 PURPOSE	3
1.3 OBJECTIVES.....	3
1.4 SCOPE OF STUDY	3
1.5 METHODS.....	4
1.6 RESEARCH LIMITATIONS	6
CHAPTER 2: BACKGROUND LITERATURE REVIEW	9
2.1 STUDY AREA AND THE PEOPLE	9
2.1.1 <i>Labrador: The Biophysical Environment.....</i>	9
2.1.2 <i>The Innu.....</i>	13
2.2 TRADITIONAL ECOLOGICAL KNOWLEDGE AND LOCAL RESOURCE USE	17
2.2.1 <i>Defining Traditional Ecological Knowledge</i>	17
2.2.2 <i>Relationship between TEK and Western Science</i>	17
2.2.3 <i>The Foundation of Traditional Ecological Knowledge.....</i>	19
CHAPTER 3: METHODS	23
3.1 DOCUMENTATION OF BUSH MEDICINE KNOWLEDGE AND TRANSMISSION	23
3.2 INCLUDING ABORIGINAL KNOWLEDGE IN ENVIRONMENTAL ASSESSMENT	28
CHAPTER 4: MEDICAL ETHNOBOTANY OF THE INNU PEOPLE.....	31
4.1 ETHNOBOTANY: A LITERATURE REVIEW	31
4.1.1 <i>Historical Development of Ethnobotany.....</i>	31
4.1.2 <i>Contemporary Ethnobotanical Research.....</i>	33
4.2 REVIEW OF INNU BUSH MEDICINE	38
4.2.1 <i>Academic Research on Medical Ethnobotany of the Innu Culture.....</i>	38
4.2.2 <i>Previous Material on Bush Medicine Practices of the Labrador Innu</i>	41
4.3 TRADITIONAL BUSH MEDICINE OF THE LABRADOR INNU.....	43
4.3.1 <i>Plant Remedies of the Innu</i>	43
4.3.2 <i>Other Medicinal Techniques of the Innu.....</i>	58
4.4 INNU MEDICINE IN CONTEXT.....	60
4.4.1 <i>Differences Among the Innu of Labrador</i>	60
4.4.2 <i>Cross Canada Comparisons</i>	63
4.4.3 <i>Current and Future Significance of Innu Medicine.....</i>	67
4.5 INNU KNOWLEDGE TRANSMISSION AND THE EDUCATIONAL SYSTEM.....	70
4.5.1 <i>Historical Transmission of Bush Medicine Knowledge.....</i>	70
4.5.2 <i>Improving Knowledge Transmission Through the Educational System.....</i>	71

PLATES.....	77
CHAPTER 5: INTEGRATING TEK IN ENVIRONMENTAL IMPACT ASSESSMENT.....	83
5.1 THEORY AND PRACTICE	83
5.1.1 <i>Rationale and Theory of Including TEK in EIA</i>	83
5.1.2 <i>Theory in Practice: Case Studies of TEK in Environmental Assessment</i>	89
5.2 THE INNU ECOLOGICAL KNOWLEDGE PROJECT.....	100
5.2.1 <i>Background and Development of the Project</i>	100
5.2.2 <i>Project Setting</i>	103
5.2.3 <i>Methodology</i>	106
5.3 THE VOISEY'S BAY ASSESSMENT AND THE IEK PROJECT IN PERSPECTIVE.....	110
5.3.1 <i>Aboriginal Participation in the Voisey's Bay Assessment</i>	110
5.3.2 <i>Including TEK Through the Innu Ecological Knowledge Project</i>	116
5.4 SUGGESTIONS FOR IMPROVING INNU PARTICIPATION IN EIA	122
CHAPTER 6: SUMMARY AND RECOMMENDATIONS.....	129
REFERENCES.....	133
APPENDIX 1: PLANT SPECIMENS COLLECTED DURING RESEARCH PERIOD	141
APPENDIX 2: LIST OF INTERVIEW PARTICIPANTS	145
APPENDIX 3: INTERVIEW LIST AND SCHEDULE.....	147

List of Figures

Figure 1: Map of Labrador showing study areas and related sites	p5
Figure 2: Ecozones of Canada	p10
Figure 3: Ecoregions of Labrador	p11
Figure 4: Importance of various botanical families in Innu remedies	p47
Figure 5: Plants parts used by the Innu for traditional remedies	p48
Figure 6: Preferences among the Innu for different preparation and healing techniques	p48
Figure 7: The four levels of including indigenous knowledge in environmental impact assessment and management processes	p86

List of Tables

Table 1: Species identified as having medicinal value grouped by family	p44
Table 2: List of plants used in Innu medicine	p45

List of Plates

1. Balsam fir (*Abies balsamea*) p78
2. Labrador tea (*Ledum groenlandicum*) p79
3. Partridgeberry (*Vaccinium vitis-idaea*) p80
4. Involving Innu people in the research, such as the two translators/field assistants pictured here, was a particularly important aspect of the Innu Ecological Knowledge Project. p82
5. Elders such as this woman, who maintain traditional ties to the land and their way of life, are a valuable resource to anyone interested in learning about Innu knowledge of bush medicine. p82
6. Interaction between elders and scientists can help facilitate knowledge exchange, respect, and cooperation. Here, Innu elders meet with Voisey's Bay Nickel Company fisheries technicians during their visit to the mine site. p82
7. The familiarization and education of elders and community residents about development activities and technology is essential for them to be able to use their traditional knowledge to predict project impacts. These elders were given a brief overview of the procedure involved in drilling nickel cores while visiting the area. p82

Chapter 1: Introduction

1.1 Background and Issue Statement

The field of traditional knowledge is increasingly being acknowledged as an alternative and often complementary source of information to Western science. There is growing recognition of the importance of documenting and preserving this knowledge in order to understand its application to modern day problems and to ensure its availability to future generations (Barreiro 1992; Inglis 1993; Warren *et al.* 1995). As well, by recording this learning, many indigenous communities feel a renewed sense of ethnic identity and are able to affirm their right to autonomy and independence to an even greater extent (Healey 1993). In this way, investigation and research into traditional forms of knowledge can not only be enlightening for non-native researchers but can also contribute to community empowerment.

One important area of traditional knowledge is *ethnobotany* (Alcorn 1984; Cotton 1996). Part of this study will focus on this division of traditional knowledge "concerned with...plants used in subsistence, material culture and medicine, while considering this knowledge within its original spiritual and sociological context" (Cotton 1996). Within this division, the emphasis will be on the use of plants in traditional bush medicine, specifically that of the Innu people in Labrador. The term "bush medicine" refers to current and historical medicinal techniques and practices used by the Innu to treat disease and sickness, especially during country or "bush" travel. Several synonyms will also be used at various times throughout the thesis including "medical ethnobotany"

and “traditional medicine”. The related term “ethnopharmacology” which is prevalent in the literature is avoided for the most part due to its technical nature.

The importance of bush medicine as a life skill and the need to preserve this traditional knowledge have been identified as key priorities for the Innu (Penashue and Penashue 1998). Previous studies have examined the status of this knowledge among the related group known as the Montagnais of the Quebec North Shore (Clément 1990; Clément 1995). However, there has been little work with the Innu groups of Labrador. The precarious situation of traditional knowledge in several Labrador communities gives rise to a pressing need to collect and preserve this information. The research carried out for this study is intended to contribute to that process and assist the Innu in transmitting this traditional knowledge to subsequent generations.

In order to ensure that the value and use of bush medicine and other types of traditional knowledge continues to be recognized and valued it is essential that it is applied in a meaningful way to current issues and decision-making processes. The field of environmental impact assessment (EIA) is one area where the knowledge held by Innu elders and hunters could make a large contribution. In fact, the 1997 Delgamuukw court decision has made it obligatory for governments to at least consult with aboriginal groups regarding potential development activities on their traditional lands (Supreme Court of Canada 1997). In addition, the Independent Environmental Monitoring Agency of the BHP assessment recommended that a Federal policy be developed on the issue and also prescribed action on the part of aboriginal groups and developers to work together towards the goal of including traditional knowledge in environmental assessment and management (1999). However, there has been little progress achieved in any of these

areas. There are still no accepted guidelines on the topic and to date, most EIAs have not lived up to their promise of true integration of traditional ecological knowledge (TEK) in the process (Stevenson, 1996). As a result, this study will also consider ways in which the EIA process could be improved in order to enhance the inclusion and application of aboriginal knowledge to the decision-making process. The author's participation in the Innu Ecological Knowledge (IEK) Project of the Voisey's Bay Nickel Mine environmental assessment will be used as the basis for this examination and critique.

1.2 Purpose

The purpose of this study is to stimulate discussion and action on the preservation of certain aspects of traditional knowledge within Innu communities, as well as its inclusion in various decision-making processes, such as environmental impact assessment.

1.3 Objectives

The main objectives of this research are:

1. To document Innu knowledge and use of the land, specifically knowledge of Innu bush medicine and its transmission; and propose ways to improve this transmission using the educational system;
2. To examine the EIA process and discuss steps to improve the inclusion of aboriginal knowledge in that process.

1.4 Scope of Study

The study took place during the period from May 17-August 24, 1998, in the Labrador communities of Sheshatshiu and Utshimassit, also known as Davis Inlet.

Sheshatshiu is located on the shores of Lake Melville, 40 km northeast of Happy Valley-Goose Bay, and the community of Utshimassit lies on the northern coast of Labrador, 79 kilometres southeast of the Voisey's Bay Nickel mine site (Figure 1). Descriptions of the geography and demographics of these two communities will be presented in the following chapter. Although much of the general discussion and theory outlined in this thesis can be applied on a national scale, many of the specific details and recommendations of this analysis are relevant at the local or provincial levels only. In addition, some of the suggestions contained in the environmental assessment section of the thesis will apply specifically to mining developments, as this case study formed the basis for the evaluation and critique of the process.

1.5 Methods

A brief overview of the methods used during the research will be presented here. Further information on the research methods will be covered in a later chapter.

The research followed the principles of participatory research in incorporating community needs and priorities (Ryan and Robinson 1990). Research was conducted with the consent and collaboration of the Innu Nation in Labrador in order to provide for local participation and involvement and to reflect the communities' objectives on the topics of Innu medicine and other forms of traditional knowledge.

The primary research methods employed during the course of the investigation were semi-structured interviews with key informants, participant observation, plant collection and field surveys, and a comprehensive literature review (see Cotton 1996; Ohmagari and Berkes 1997).



Figure 1. Map of Labrador showing study areas and related sites.

The interviews were recorded on micro-cassette to ensure proper interpretation and understanding and maintain a permanent record. During the interview process, the practice of "informed consent" was utilized so that participants understood the nature of the study and its importance in helping to document Innu land use and to protect the Innu lifestyle.

Specimens of the medicinal plants discussed were collected to ensure proper identification and deposited at the University of Manitoba herbarium in Winnipeg. The full scientific names and families of the plant species discussed in this thesis can be found in Appendix I.

A deliverable consisting of a short technical report entitled "Plant Medicine of the Innu" (containing colour photocopies of the medicinal specimens collected over the summer) was produced from this study for the Innu Nation. Copies of all research results obtained, including tapes and transcripts, were deposited with the communities. Permission was obtained prior to publishing any results. Any part of the information considered sensitive or confidential will not be used in this thesis nor any future publications but will remain the sole property of the Innu Nation.

1.6 Research Limitations

The primary constraint during the research period was the author's lack of Innu language skills. This limited the ability for interaction and discussion with people in the two communities and also required the use of an interpreter for all interviews. Translation between the two languages sometimes resulted in misunderstandings that had an influence on the validity of the information gathered.

The author's lack of formal training in linguistics also had an impact on the research, especially in terms of the Innu plant names recorded in the ethnobotany section. Although she compensated for this limitation to some extent by relying on the transcriptions of Dr. Clément and standard Innu orthography from the literature, some of the names recorded, especially in Sheshatshiu, are based on the best efforts of the author herself. As a result, important dialect variations may not be properly represented.

An additional factor that had an impact on the research was the author's status in the communities. As a newcomer to the area, she knew very few people within the communities and had no knowledge of individuals or families with a specific interest and proficiency in the topic of bush medicine. Consequently, it was necessary to rely upon a small number of contacts within each community for the identification and introduction of interviewees. This meant that additional people with the potential to contribute to the subject might have been overlooked.

Related to this is the fact that the majority of the interviews conducted by the author were with women. As a result, a gender bias has been introduced into the study and most of the information obtained on plant medicines should be interpreted in light of this fact.

Of course, factors such as time and budget also hindered the author's attempts at in-depth research into the topics. The summer research period dictated by her academic program meant that the knowledge and information held by Innu people within the two communities could not be investigated with the thoroughness and attention it so richly deserved. Consequently, the results discussed in the following chapters, specifically

those related to Innu medicine, should be considered to represent only a brief introduction to the true knowledge and skills held by the Innu people.

Budget was the final limiting element of the research. This was particularly relevant in terms of those interviews conducted outside the context of the Innu Ecological Knowledge Project, which were on a charitable basis only. As a result, the information and opinions expressed in those interviews represent a smaller number of people. The discussion of transmission methods of bush medicine knowledge is particularly subject to that constraint as all of the relevant interviews were conducted with unpaid subjects.

Chapter 2: Background Literature Review

2.1 Study Area and The People

2.1.1 Labrador: The Biophysical Environment

According to the Ecological Stratification Working Group (1996), Labrador is composed of three distinct ecozones: Arctic Cordillera to the extreme north, a central region of Taiga Shield, and a small strip of Boreal Shield to the southeast. The community of Sheshatshiu falls within the Boreal Shield zone, but is closely surrounded by the Taiga Shield. Utshimassit is located entirely within the Taiga Shield on the northern coast of Labrador. Both of these areas contain similar, but distinct, landscape types and climatic conditions.

The Boreal Shield is the largest ecozone in Canada and extends from northern Saskatchewan in the west to Newfoundland in the east (Figure 2). However, in Labrador its distribution is limited to two narrow regions: an inland area to the southeast in the vicinity of Cartwright, and a second location surrounding Lake Melville and the community of Sheshatshiu (Figure 3).

Elevation in the Lake Melville area is close to sea level, with low rolling hills and numerous river valleys and small lakes. The climate ranges from a mean of 8.5°C in the summer to a mean of -13.5°C in the winter. Vegetation in the area is dominated by closed stands of conifers such as balsam fir (*Abies balsamea*) and black spruce (*Picea mariana*), and deciduous trees like white birch (*Betula papyrifera*) and trembling aspen (*Populus tremuloides*). Various types of lichens and shrubs are also extensively present. Wildlife includes waterfowl, small mammals such as beaver (*Castor canadensis*) and

TERRESTRIAL ECOZONES OF CANADA

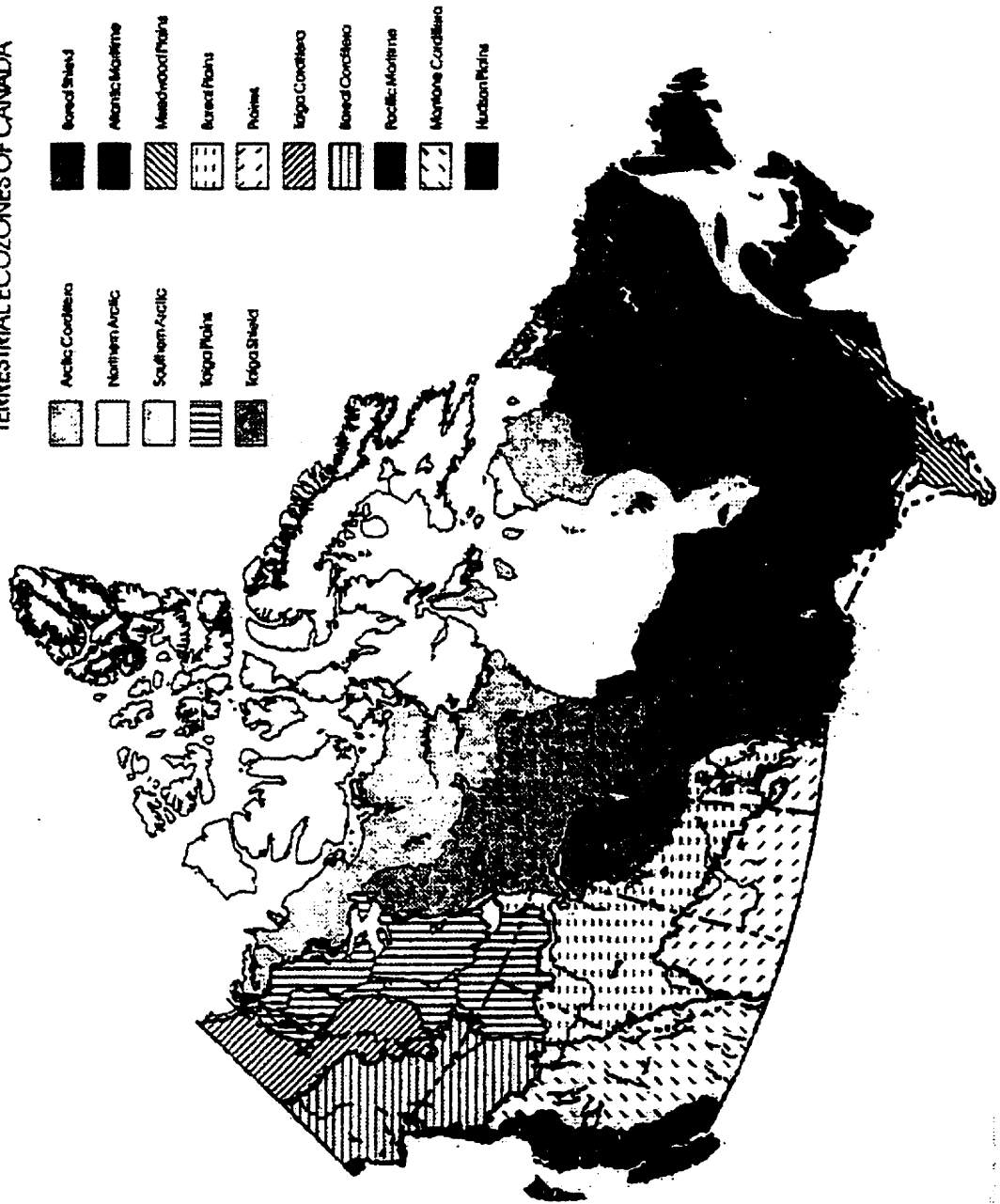


Figure 2. Ecozones of Canada (From the Ecological Stratification Working Group, 1996).



Figure 3. Ecoregions of Labrador (Adapted from the Ecological Stratification Working Group 1996).

muskrat (*Ondatra zibethicus*), and large ungulates like moose (*Alces alces*) and caribou (*Rangifer tarandus*) (Ecological Stratification Working Group 1996).

The eastern portion of the Taiga Shield extends from the edge of Hudson Bay across central Quebec and Labrador to the coast (Figure 2). This ecozone is characteristic of much of Labrador, including the areas that border the Lake Melville Plain and the coastal area surrounding Utshimassit (Figure 3). Mean temperatures in the

inland regions generally cover a greater range than the Lake Melville Plain, being slightly colder in the winter (-16.5°C) and warmer in the summer (10°C). The land around Lake Melville is a varying pattern of rocky hills and low wetlands, mixed with open tundra meadows and forest stands. Black spruce is the most common tree species in the area, sometimes mixed with white spruce (*Picea glauca*), tamarack (*Larix laricina*), and dwarf birch (*Betula nana*). Alders (*Alnus incana* ssp. *rugosa* and *Alnus viridis* ssp. *crispa*) are also prevalent along riverbanks and drainageways. White birch and willow (*Salix* spp.) occur in some transitional areas, while balsam fir is rare and restricted to moist, well-drained sites. Vegetation also includes numerous lichens, mosses, sedges, and plants such as Labrador tea (*Ledum groenlandicum*). These ecoregions are home to a variety of mammals including caribou, moose, black bear (*Ursus americanus*), red fox (*Vulpes vulpes*), and lynx (*Lynx canadensis*), as well as waterfowl and other birds (Ecological Stratification Working Group 1996).

The coastal ecoregion surrounding Utshimassit is composed of numerous islands, inlets, and exposed headlands. Sandy moraines are also common and extend inland along the fjords. Mean temperatures range from -13.5°C in the winter to 7° C during the relatively short summer. Vegetation is predominantly limited to mosses and lichens on the headlands while the valleys and coastal areas are dominated by mixed scrubland consisting of alders, dwarf birch, and Labrador tea. White spruce, black spruce, larch, and balsam fir are also present. The area contains important habitat for migrating birds and caribou as well as seal whelping areas (Ecological Stratification Working Group 1996).

In recent years, much of the land base of these Labrador ecoregions has been influenced by large-scale development activities, including mining, logging, and hydroelectric reservoirs. Despite these impacts, however, subsistence hunting, fishing, and trapping remain extremely important to many of the people inhabiting these areas, including the Innu.

2.1.2 The Innu

The native group known as the Innu lives in the eastern half of the Quebec-Labrador peninsula, an area they call *Nitassinan*. They are an Algonquin group, related to the Cree, Ojibwa, and Micmac. Historically referred to as the Montagnais-Naskapi by the French and British immigrants to North America, the Innu are re-identifying themselves in the language of their ancestors (Armitage 1997). The term “Innu” means “human being” or more poetically, “The People” (Armitage 1997; Mailhot 1997). Numbering approximately 16,000 people in all, the modern day Innu range from the North Shore of the Gulf of St. Lawrence to the northeastern coast of Labrador. In Labrador, they reside in two principal communities: Davis Inlet or Utshimassit to the north, with a population of about 500 people, and Sheshatshiu in the Lake Melville region, with a population of about 1000 (Armitage 1997).

The history of Innu culture in Labrador is a long one. Archaeologist Stephen Loring (in Wadden 1996) believes that the Innu are descendants of the ancient aboriginal group known as the Maritime Archaics. This society was one of the first to inhabit what is presently Labrador soon after the retreat of the last ice age, approximately 8000 years ago. In any case, there is evidence that the Innu have resided in Labrador for at least 2000 years (Wadden 1996).

The Innu have traditionally been nomadic hunter-gatherers, changing their location with the seasons and migratory patterns of the species they depended upon for food. Both Wadden (1996) and Mailhot (1997) point to past evidence that suggests the Innu may have relied upon coastal species like fish and seals until they were pushed inland hundreds of years ago by aggressive ancestors of the modern Inuit. As a result, the Innu came to depend heavily upon migrant caribou herds, a practice still in place today. These animal populations often fluctuate wildly, however, and this was responsible for hardship and starvation among the Innu in the past (Wadden 1996). Consequently, hunters who could predict the movements and behaviour of the caribou were greatly prized, and the Innu still place a high value on this “extensive knowledge of the land” (Mailhot 1997). As well, ethics such as food sharing and reciprocity were also developed in response to this demand for mutual cooperation and interdependence (Wadden 1996).

Wadden (1996) also notes that the Innu would trade at various times with other aboriginal cultures, including the Micmac, Iroquois, and Beothuk. This trading relationship was later extended to include Europeans, as evidenced by Mailhot (1997) in her descriptions of historical encounters between the Innu and Dutch at Lake Melville in the early 1700’s. Despite this contact, Armitage (1997) believes that the Europeans had “little adverse effect” on the lifestyle of the Innu in Labrador until the establishment of trading posts in the area during the 19th century.

According to Wadden (1996), it was at this time that the Innu came under increasing pressure from European traders attempting to make the Innu dependent upon materials like guns. As well, they would try to force the Innu to take time away from hunting essential species like caribou in order to obtain furs like beaver that were

commercially valuable. Some unscrupulous traders went so far as to refuse ammunition to the Innu unless they hunted what was demanded. This cruel practice led to mass death and starvation among the Innu during two particularly harsh winters. Armitage (1997) also cites increasing competition from settler fur trappers, the crash of fur prices during the 1930's, and a decrease in the caribou population as further factors that helped to erode the link between Innu people and their landscape, threatening their means of survival.

In spite of these pressures, however, the Innu clung tenaciously to their nomadic legacy and way of life. Throughout the first half of the 20th century, the Labrador Innu remained true to their cultural heritage and hunting traditions to a large extent. However, the monumental pressures of events such as World War II and the arrival of missionaries in the 1950's noted by Wadden (1996), and the negative effects of major industries such as mining and hydro (Armitage 1997), were simply too much for the Innu people. Faced with this social and environmental intrusion into their lives, many Innu were overcome by despair and gave in to settlement pressures from the Church and provincial government. As a result, Sheshatshiu and Utshimassit became permanent communities for a people used to basing their movements upon the cycles and temperament of the living earth.

Wadden (1996) believes that the settlement forced upon the Innu has had severe impacts upon their health and well being. Depression and alcoholism have become facts of life for many of the Innu living in these two communities. As well, suicide rates and health problems are well above the national average, and there is a large amount of violence and abuse present in the communities. All of these factors can be attributed to

the social breakdown that occurs when people are made to reject their own culture and told that their traditional way of life is not valuable or viable in the modern world.

The Innu people did not remain passive for long, however. Faced with the social and cultural disintegration that was occurring around them, they made a conscious choice to fight back and regain the lost threads of their heritage. Mailhot (1997) points to the creation of the political organisation known as the Innu Nation in the 1970's, and the production of the Innu flag as concrete steps being taken in their fight for recognition as a sovereign nation. Since 1982, Innu in the Labrador communities have been rejecting the condescending and ethnocentric terminology used by the dominant society in favour of their own language and identity, an important step in their bid for self-determination and independence.

The Innu are also aware of the need to heal themselves and their society, and Wadden (1996) emphasises the essential role the land itself plays in this healing process. Referred to in the Innu language as '*nutshimit*' it means much more than its simple 'bush country' translation in English. *Nutshimit* is the Innu homeland. It is where they are once again free to be themselves and to follow their traditional way of life, far from the prying eyes of the dominant society. In *nutshimit*, the Innu are able to regain the pride and self-sufficiency they once knew and to heal their wounded souls.

Related to this spiritual healing is the importance of maintaining contact with the land in order to retain the knowledge handed down from their ancestors. Many of the elders present in these communities have important skills and abilities to teach to the younger generation, but unless this knowledge is adequately passed on to the youth it will be lost forever. The urgency for this transmission becomes especially clear when one

considers the fact that almost 60% of the population in the communities is under the age of eighteen (Wadden 1996). In order to understand the significance of this potential loss, it is necessary to examine the scope of indigenous knowledge and its value not only to the Innu themselves but to society as a whole.

2.2 Traditional Ecological Knowledge and Local Resource Use

2.2.1 Defining Traditional Ecological Knowledge

Traditional Ecological Knowledge (TEK) has also been referred to as indigenous knowledge, aboriginal knowledge, or simply “knowledge of the land” (where ‘land’ is taken in the ecosystem context) (Berkes 1999a; Clément 1998). Due to the vague nature of the term, there is still no generally accepted definition. However, for the purposes of this thesis the term will be interpreted as: “a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment” (Berkes 1999a).

2.2.2 Relationship between TEK and Western Science

A variety of authors have commented on the inherent differences in the approaches and attitudes taken by followers of Western science and TEK. Berkes (1999a) and Mailhot (1993) both remark on a number of diametrically opposed elements between the two knowledge systems. For example, they note that TEK is based on qualitative, subjective data rather than quantitative, objective data; that TEK is accumulated by resource users in the general population instead of specialized researchers; and that TEK is based on accumulation of information on a localized area

over a long time period, while Western science tends to concentrate on data gathered on a large area over a shorter time span. However, both authors observe that there are also similarities between the two, especially in the sense of the mental processes involved, or as Berkes (1999a) puts it, the emphasis on “creating order out of disorder”.

The complementary nature of TEK and Western science raises the issue of the potential for cooperation and reciprocal learning between the two methods. Stevenson (1998) recognizes that scientists’ ability to accurately measure and monitor change is a very important quality in environmental management. However, he also notes that it is often traditional groups like the Inuit, who have experience with the particular ecosystems involved that are actually able to explain the reasons behind the changes being observed. Berkes (1999a) mentions the acceptance of TEK’s importance by the international community and its significance to practical problems of conservation, resource management, and development. Freeman (1992) discusses the potential role of TEK in supplying long-term base-line data for scientific investigations and highlights several case studies where it was actually superior to the scientific knowledge of the time. As well, he comments on the changes in attitude that are presently occurring in many disciplines leading to a more holistic and cyclical perspective of the universe. Traditional societies have always recognized the interrelationships present in the world, and as a result, they can be of help to modern scientists attempting to move towards this more comprehensive point of view.

Despite the potential for this cooperative learning, however, Mailhot (1993) observes that the power difference between the two systems of knowledge is very significant and that TEK is usually regarded with suspicion or outright derision by many

Western scientists. As well, even when TEK is incorporated into the management process, it is usually only the information that can be interpreted in a 'scientific' way (i.e. it makes sense to the Western managers) (Stevenson 1998). This is especially noticeable in environmental impact assessments where the incorporation of TEK has only recently been accepted as a necessary component (Johannes 1993; Stevenson 1996).

Numerous authors have noted the danger of taking this traditional knowledge out of context. Doubleday (1993) emphasizes the problems that can result when TEK is separated from its spiritual and cultural components. The rules and knowledge base that come along with TEK are extremely important in terms of their value to the management scheme. An inequitable distribution of power combined with this selective extraction of knowledge can lead to exploitation of both the resource and the traditional community itself. Her discussion of the abuse of medicinal plant knowledge by pharmaceutical companies is a classic example of the imbalance that can result during this process.

As a result, it is extremely important that all the aspects of TEK be considered in any application of this knowledge. However, few managers or scientists have any real appreciation of the integrative nature of TEK and the close linkage between its environmental and cultural elements. In order to better comprehend this relationship, it is necessary to examine the intellectual basis of TEK and the development of this knowledge within human systems.

2.2.3 The Foundation of Traditional Ecological Knowledge

Traditional Ecological Knowledge is believed to derive from two distinct fields: *ethnoscience* and *human ecology* (according to Berkes, 1999a). The first is concerned

with classifying plants and animals into various systems, the second with understanding the relationship between humans and their environment.

Hunn (1993) discusses the common practice for people around the world to distinguish between and identify different biological species. In addition, he notes that many of the classification systems are similar at the species level, that is, there is a close correlation between individuals recognized as species in both the scientific and traditional knowledge systems. Berkes (1999a) mentions the fact that it was initially this test of the robustness of the species concept that attracted biologists to the field of ethnoscience.

In practice, however, it is almost impossible to separate the way cultures view different species from their understanding of the relationship of that species to their daily life. This is emphasized by Hunn (1993) when he explains how various species may be either underdifferentiated or overdifferentiated, depending upon their perceived importance within the particular culture. Clément (1995) also acknowledges the role that cultural significance and use has on naming and classification systems among the Innu people.

In contrast to these utilitarian perspectives, however, anthropologists such as Berlin (1992) regard the classification systems of a culture to result out of curiosity or intellectual pursuits. This so-called *cognitive* perspective was also noted by Berlin *et al.* (1974) in their study of plant taxonomy of the Tzeltal Indians of Mexico. During this study, they noted that the name given to a particular species helped to communicate information about the plant to others in the society.

Regardless of the underlying basis for the organization however, any attempt to study classification systems must also consider cultural aspects of the communities

involved. The way people understand and relate to their environment is inextricably linked to their cultural background and worldview. Researchers wishing to understand the essence and justification for classification systems must be prepared to consider the role that culture plays in the arrangement. Therefore, the two fields of ethnoscience and human ecology are closely affiliated, and their combination in the study of traditional ecological knowledge requires that an interdisciplinary approach be adopted (Berkes 1999a).

As Hunn (1993) observes, however, ensuring that the researcher has specific knowledge of the native language is particularly important if an accurate and detailed study is to be achieved. In the absence of this bilingual ability, it is even more crucial that careful and conscientious research methods be followed at all times. Being informed about cultural factors such as gender differences, variations in dialect, and particular styles of communication (e.g. tall tales or myths) are also crucial to reliable research (Berkes 1999a).

In order to arrive at an accurate picture of the numerous interrelationships between a society and its surroundings, it is necessary to go beyond these simple linguistic provisions and examine the particular adaptations involved in the organization of a culture. Often, related “adaptive processes” can be discerned in various societies around the world and result in similar actions and institutional structures despite the local nature of the dependent information (Berkes 1999a). Examples of this include the common use of territoriality as a method of resource conservation around the world (Mailhot 1986; and Hrenchuk 1993), and the use of fire among Australian and North American indigenous peoples (Gadgil *et al.* 1993). As a result of these underlying

adaptive processes, conservation practices and management strategies of traditional systems can often be applied to far-off areas. Berkes (1999a) notes the increasing importance of this holistic approach of traditional societies to ecosystem management.

In addition to identifying the adaptive mechanisms of a society, however, Berkes (1999a) stresses the fact that human ecology is also concerned with placing these actions in context of the particular worldview of the culture. This includes an examination of the various spiritual beliefs of the community, and the placement of human beings within that worldview (i.e. whether humans are seen as separate from nature, as in much of Western society; or if they are considered inextricably linked to it, the dominant viewpoint of most traditional societies). The study of such metaphysical elements can be extremely complex to say the least.

As can be seen from the previous discussion, a comprehensive study of all traditional ecological knowledge of even a single community would involve many years of research. The basic elements of classification of species (ethnoscience) and the functional societal processes and concepts involved (human ecology) combine to form a truly staggering amount of information. Therefore, it is necessary for researchers to narrow the focus of the work being considered to involve only a particular sub-set of these elements. With this in mind, one portion of this research was restricted to the division of ethnoscience concerned with plants. This field is known as *ethnobotany*. The same task was accomplished in the Innu Ecological Knowledge Project by limiting the number of species discussed and restricting the geographical area involved.

Chapter 3: Methods

Fieldwork in Labrador commenced in mid-May of 1998 and terminated in late August of the same year. During these three months, a variety of research techniques were used in order to fulfill the objectives of this investigation. The information was subsequently analyzed and the technical report was produced for the Innu. The methods and techniques will be discussed for each of the objectives in turn to allow for a clear explanation of how each aspect of the study was carried out.

3.1 Documentation of Bush Medicine Knowledge and Transmission

Much of the field season was spent trying to determine the knowledge and attitudes of the Innu towards traditional bush medicine practices. As well, it was important to discover who is well versed in the knowledge and application of this custom. Consequently, participant observation, semi-structured interviews, and plant collection during field surveys were important research techniques.

Arrangements were made in each community for the author to obtain accommodations with a local family for the duration of the research period. As noted by Ohmagari (1996), it is important to try to reside with a well-respected family who can help with initial introductions and acceptance in the community. Both of the families that she stayed with in the two communities were generous enough to help with this important task. The author was introduced to friends and extended family members and invited to participate in various family and community activities. This helped to improve her recognition within the communities as well as facilitate understanding of the research topic.

Ohmagari (1996) also states that, if possible, efforts should be made to stay with a family that is active in the study topic, in this case the practice of bush medicine, as this would provide an original starting point and information base. Although none of the immediate family members currently practiced traditional medicine, some extended family members and friends were quite knowledgeable about the topic and were among the first people interviewed by the author.

The families with whom she stayed were also extremely important in terms of the interview process itself. During the research, it was essential for the author to work closely with local people as translators and research assistants to ensure that any questions and replies were properly understood and recorded. This working partnership also contributed to capacity building in the communities by training people in ethnobiological research methods to carry out further work in this field. In both communities, specific family members served as translators for the interviews and helped to direct the author on possible questions or topics to bring up for discussion. The age of the translators involved ranged from 23 –50 years of age. The older translators helped to ensure more accurate translation of key terms and phrases, especially in the transmission interviews, while involving a younger person in the process fulfilled the goal of capacity building and training.

Although official permission had already been given for the study, it was also important to gain the support and approval of the general population. With this in mind, the author attended various community events and activities in order to meet the local people and inform them of her presence in the community and the nature of her study. This seemed to make it easier to receive the cooperation and input of individuals when

they were later approached for interviews, as well as being entertaining and informative events in and of themselves.

One of the primary research methods employed throughout the field season was participant observation. During interviews, community events, and field surveys a “learning by doing” attitude was adopted. In this way, it was possible to gain direct experience with the practice of bush medicine. In addition, the technique helped to establish rapport with individuals and the community and also allowed a context for posing questions about the activity being undertaken. The author kept a journal throughout the field season in order to record her thoughts and experiences of each day.

Semi-structured interviews with the key informants identified by the community were also essential in order to learn about the past and current practice of bush medicine. Throughout the summer, nine people, seven women and two men, were interviewed on this subject. They ranged from 57 to 84 years of age, with the majority of the informants being over sixty. Specifics on the age and background of the informants are given in Appendix 2, although names are withheld for reasons of privacy. Appendix 3 contains an interview schedule outlining the date and length of each interview as well as the number of participants involved (up to five) and the topics covered. Some of these interviews took place within the context of discussions held during the Innu Ecological Knowledge Project. The author had received prior permission from the Innu Nation to use this Project as a forum for questioning informants on the topic of bush medicine due to her limited summer research period. The interviews carried out under this dual nature are identified in Appendix 3.

Although the focus of the interviews was aimed at medicinal plant knowledge and healing techniques, they were not formally structured in order to allow for better communication and information flow. These interviews helped to inform and educate the author about the basics of bush medicine among the Innu, as well as to identify priorities related to the practice. The interviews were tape recorded in order to ensure proper understanding and application of the knowledge and maintain a complete record that could be deposited with the communities. In all cases, however, the practice of informed consent was used to identify the nature and purpose of the study to the respondents, as well as to advise them of their right to participate or withdraw from the process at any time.

Field trips with the elders were important to identify various medicinal plant species and key habitat areas. Collection of the plant species used in bush medicine was also carried out, after receiving the approval and consent of the Innu Nation. The field trips took the form of short nature walks lasting anywhere from 30 minutes to several hours depending upon the desires and availability of the informants. Identification of key plant species and their potential uses helped to determine the scope of knowledge among the Innu, as well as their dependence upon certain plants in the wild.

During these field surveys, the plants used in bush medicine were collected and pressed according to standard botanical practices. Details on the habitat areas were noted and locations were determined using standard mapping techniques. Following the research period, in the fall of 1998, plants were identified by the author and herbarium staff at the University of Manitoba and deposited with the herbarium after proper mounting and labeling. Prior to each specimen being permanently deposited with the

University, however, colour photocopies were made for use in a technical report entitled “Plant Medicine of the Innu”. Copies of this report were sent to the Innu Nation offices in the communities of Utshimassit and Sheshatshiu.

The transmission of bush medicine knowledge among the Innu was also examined in this study. The hands-on experience gained through participant observation provided an important context for the author’s understanding of this conveyance. Discussions with five key informants, aged 39 to 84, covered their experience and learning of bush medicine. This enabled a general overview of transmission methods and teachers to be drawn, although it is important to remember the research limitations of gender and interview bias that were discussed earlier.

In order to preserve bush medicine and other forms of traditional knowledge for the future, it is necessary that this information be passed on to young Innu in the communities. In the past, this transmission tended to occur through direct observation and learning while children accompanied their parents on hunting trips in the bush. However, the settlement of the Innu in year-round communities and the decreasing number of families pursuing traditional livelihoods demand that alternate methods for delivering this knowledge must be found. The teaching of traditional practices within the school setting would seem to offer some hope of fulfilling that role. However, much of the current educational system is based on academic and theoretical teachings that have little to do with the traditional lifestyles and beliefs of the Innu people. As a result, ways of incorporating these traditional teachings within the education system must be found if this knowledge is to remain part of the Innu culture.

The current study proposes some of the steps that may be taken towards compiling this knowledge in the schools. With this in mind, the author visited classes in Sheshatshiu during May to talk with some teachers and students and gain their input on the use and value of this knowledge and how it can be taught in the schools. Unfortunately, school interruptions due to land claims processes and other community priorities, as well as time constraints, prevented the author from fulfilling her intentions in this area in either community. Consequently, the results discussed are limited from the student-teacher point of view. In an attempt to remedy this limitation to some extent, elders were questioned on this topic throughout the summer to determine barriers to be overcome and identify priorities from their perspective.

Some examination of current educational policies in the province of Newfoundland and Labrador was undertaken to highlight problem areas and explore the potential for change within the system. The author's own experiences growing up within the Province's educational system were also drawn upon in the examination of this topic.

3.2 Including Aboriginal Knowledge in Environmental Assessment

The primary techniques that were used by the author in order to fulfill this objective were participant observation and a comprehensive literature review. Her participation as a research assistant in the Innu Ecological Knowledge Project form the basis for the observations and critiques discussed in a following chapter. During this Project, the author participated in group and individual interviews designed to gather Innu knowledge relating to the Voisey's Bay area in Labrador and the potential impacts of the proposed mine development. As well, she was exposed to additional research techniques, including ethnocartography. The author's familiarization with the political climate

surrounding the Project and her interaction with executives from the Voisey's Bay Nickel Company over the summer were also instrumental in shaping her understanding and recommendations regarding the process.

Although the author was unable to attend the public hearings stage of the proceedings due to her academic commitments, she obtained copies of all relevant presentations and documents from the Canadian Environmental Assessment Agency in Ottawa. These included presentations from Innu Nation leaders, Innu elders, the final report and presentation of the IEK Project, documents and presentations by Voisey's Bay Nickel Company executives, and the assessment Panel's final report. In addition, she requested copies of material related to the Voisey's Bay development that pre-dated her participation in the process such as the Memorandum of Understanding signed by the two levels of government and the Inuit and Innu Nation. Through examination and critique of all these documents the author was able to trace the evolution of the development and pinpoint significant events that occurred during earlier stages and that had an impact on the entire process. Telephone interviews were also conducted with some Innu Nation staff in order to clarify certain points and fill in missing information.

In order to improve her awareness on the topic of environmental assessment in general and TEK's integration in particular, the author performed a literature review of the subject following her return to university in the fall. Relevant books, journals, and gray literature were reviewed in light of the author's experience and knowledge of the Voisey's Bay mining assessment and the IEK Project in particular.

In addition to this, she registered in a course on environmental impact assessment offered by her department. This course helped give the author an overview of the theory

related to this topic and introduced her to several important case studies in the area of aboriginal knowledge and environmental impact assessment that could be compared to her experiences during the summer.

Chapter 4: Medical Ethnobotany of the Innu People

4.1 Ethnobotany: A Literature Review

4.1.1 Historical Development of Ethnobotany

The term 'ethnobotany' was first coined by botanist John Harshberger at the University of Pennsylvania in 1895 (Davis 1995). Like traditional knowledge itself, the expression is still not subject to a universal definition. Various authors have emphasized either the utilitarian study of the plants themselves (Veilleux and King 1997), the interaction of plants with the culture (Turner 1995) or the "totality of the place of plants in a culture" (Ford quoted in Alcorn 1995).

Despite the controversy over its exact meaning, the practice itself has occurred for thousands of years. Davis (1995) notes that the observations of various explorers throughout history, as well as studies by early academics, such as those of Dioscorides in the first century, have all contributed to the growth and development of the discipline over time. However, Turner (1995) points out that much of this early documentation is incorrect or incomplete, especially in the case of explorers in North America. This was because of the lack of language skills, their unfamiliarity with the different types of plants being encountered, and the transient nature of the explorers' stay in any one area.

Throughout the 20th century, modern ethnobotany has attempted to overcome these limitations in a number of ways. Turner (1995) traces the way the field has broadened its outlook from simple classification and nomenclature to include the study of the perceived role of plants in cultures and ways in which they influence human development. Recognition of the importance of language skills and scientific

methodology as emphasized by Hunn (1993) has gone a long way towards promoting the acceptance of the discipline within the academic community. Turner (1995) notes that ethnobotany is no longer a “sideline” of other anthropological work but is actually the primary focus of many studies. She suggests that increasing cooperation between botanists, linguists and anthropologists has also facilitated the move towards greater accuracy and precision within the discipline. According to Alcorn (1995) modern ethnobotany has the following aims:

- 1) to document facts about plant use and management
- 2) to define, describe, and investigate ethnobotanical ‘roles’ and processes

Alcorn also notes that the use of plants in a culture is related to historical and environmental factors, and that, in turn, plants help to give structure to the human condition. Therefore, depending on the particular influences and surroundings of a community, the approach to the use and understanding of plants will differ. This results in the development of various systems of beliefs and management that could help in the quest for sustainability and balanced resource use. Alcorn (1995) also stresses the essential role ethnobotanical studies can play in documenting the negative results of some development activities to assist policymakers in avoiding these impacts in the future.

In recent years, there has been increasing acceptance of the importance of indigenous plant knowledge in helping to record new and alternative management systems and methods for defining our interaction with the natural world. Various attempts have been made to document the knowledge and beliefs of different cultural groups in order to access this body of information and ensure its availability to future resource managers.

4.1.2 Contemporary Ethnobotanical Research

The second half of the twentieth century has seen an enormous growth in the number of ethnobotanical studies. Societies around the world have been investigated to determine new uses and beliefs concerning plants. These studies have helped to highlight the various ways in which human beings view their surroundings and their place in the world.

Most ethnobotanical research has shown that there are three major categories of plant use: food, medicine, and materials. As well, in many cases, the knowledge and practices concerning plants varies among different age groups and along gender lines. In their study of plant use diversity in Gamboa, Brazil, Figuiereido *et al.* (1993) discovered over ninety different plant species being utilized by the island people. They found that the medicinal value of the plants was extremely important to the locals due to their reliance upon traditional healing practices. They also noted the important role women play in preparing herbal remedies and that individuals over the age of 40 seemed to have a greater knowledge of the medicinal uses of plants than the younger people. All of these facts could be related back to the different cultural roles and attitudes of the community.

A similar study on a neighbouring Brazilian island by Begossi *et al.* (1993) confirmed the variation in plant knowledge based on gender and age. As well, they showed that even though this particular island had switched from a dependence on agriculture to one on fishing, plants were still extremely important to the diet and culture of the local people.

The work of Canadian ethnobotanist Nancy Turner has helped to document the significant role plants play in the culture and lifestyle of many indigenous groups in

British Columbia. Her work with the Thompson Indians (Turner *et al.* 1990) showed the varying uses of plants in the diet, health and lifestyle of this group. In many cases, she discovered that the natives take a more holistic attitude towards plant use and do not commonly differentiate between their medicinal and nutritional values, possibly due to the concept of preventative methods. The use of teas as food and medicine, and the importance of plants in providing essential nutrients not available from animal food was also noted in her later work on traditional native diets (Kunlein and Turner 1991; Hopkinson *et al.* 1995).

Gottesfeld (1993) analyzed bush medicine of the Wet'suwet'en in British Columbia. The link between "foods" and "medicines" was also evident among this group. Teas were the most common forms of medicinal preparations, and the bark and roots of plants were the most utilized portions. Gottesfeld also noted threats to the preservation of this knowledge due to the diminishing rate of cultural transmission.

Marles *et al.* (1997) performed an ethnobotanical survey among native people of the Northwest boreal forest region, which stretches across Manitoba, Saskatchewan, and Alberta. The research involved Cree, Métis and Dene elders and examined their nutritional, technical, and medicinal uses of various forest plants. The final report contains a wealth of detail on the subject and helps to highlight the intense and diverse use by native peoples of their traditional lands.

Depending on its desired use at the time, studies have shown that either the whole plant is used or specific components like the stem, leaves, or flowers. Variations in the type and parts of the plant used are also contingent upon the particular culture and geographic region. The Thompson Indians tend to use whole plants and stems in their

medicinal remedies (Turner *et al.* 1990). In contrast, the woods Cree of Saskatchewan show a high reliance upon the roots and rhizomes of plants for their medicines (Leighton 1985). Leighton also noticed that the same plant could have a variety of purposes to different native groups, emphasizing the importance of culture in determining plant uses and values to the society.

Siegfried (1994) performed a general survey of traditional medicines of the Wabasca/Desmarais Cree in Northern Canada. She found that roots and rhizomes were the most important plant portions used and that the group showed similarities to the other groups in their preference of teas as the method of preparation. However, she also noted that much of the knowledge used in the past by the Wabasca/Desmarais Cree had been lost and that only a small group of individuals continued to practice the tradition.

Another study by Lamont (1977) of the Fisherman Lake Slave, a Northwest Territories Athabaskan group, shows similar trends in terms of the dependence on teas and food for preventative medicine. Again, roots and rhizomes appear to be among the most important plant parts used in their traditional remedies.

Cultural activities related to harvesting methods and seasons of plants have also been documented. Turner (1997) pointed to the precise gathering practices of many BC natives and their reliance upon ecological indicators to determine harvesting times and resource abundance. The time and effort expended by the Woods Cree on plant gathering is also noted by Leighton (1985), as well as the development of herbal specialists and precise procedural details for plant gathering. Siegfried (1994) and Marles *et al.* (1997) note the importance of rituals involving tobacco during medicinal plant collection by their respective groups. Gottesfeld (1993) observed different procedures that should be

followed by each gender when it comes to plant collection. In contrast to these groups, the Fisherman Lake Slave of Lamont's (1977) study gather plants as needed and do not emphasize drying or storage to the same extent.

In many cases, the care and consideration given to collecting plants relates to the beliefs and attitudes that the particular society holds about them. In traditional societies, plants often are associated with supernatural elements. The Hesquiat Indians of BC believe that plants have souls and are able to speak. Their determination of plant uses frequently originates from dreams or visions, and secrecy about the identity of plants used in medicines is believed to be essential if effective remedies are to be achieved (Turner and Efrat 1982). Leighton (1985) explains that the Woods Cree have precise techniques associated with plants from the time of gathering to their end use. Again, these procedures are related to their cultural beliefs, especially those concerning medicinal plants. Gottesfeld (1993) observed that the Wet'suwet'en use some plants in amulets to ward off illness and disease. Turner (1997) noted the concept of "interactive relationships" in indigenous societies, where the plant is believed to have the power to influence the life of the person using it. Plants are also very prevalent in the myths and stories of many of these cultural groups, which are also important ways of transmitting beliefs and knowledge about the values of certain plants. As a result, it can be seen that the role of plants in these traditional societies is very different from their largely inanimate character in the Western culture and belief system.

Around the world, there is an increasing recognition of the value and significance of learning about the many different uses of plants and cultural attitudes towards them. Even more than this, there is growing awareness of the threats to this knowledge and the

pressures that many traditional societies are undergoing. Montour (in Kuhnlein and Turner 1991) identifies three threats contributing to the diminishing use of plants in native societies: the loss of elders, the loss of culture, and the loss of healthy ecosystems. Hopkinson *et al.* (1995) note the reduction in cultural knowledge due to the death of elders from European disease epidemics, and the growth of modern technology and pharmaceuticals. The restriction of traditional land use patterns by the creation of reserves, and the influence of residential schools on reducing the knowledge, practices, and taste for traditional native foods are also discussed as threats to TEK. Turner (1995) points to the impact of this forced assimilation on the loss of knowledge about the use of plants in medicines as well. Zieba (1990) chronicles the effect of large hydroelectric developments and community relocations on the cultural and medicinal beliefs of Manitoba Cree.

The combined impact of these and other threats to traditional societies is resulting in the destruction of much of the knowledge, beliefs and cultural attitudes that have developed over thousands of years. Ethnobotanists are attempting not only to record this information before it is lost forever, but also to acknowledge the importance of differing cultures so that steps may be taken to help preserve them. However, Turner (1995) stresses the importance of including the active participation of the traditional communities in these studies and the need to encourage the initiation of research programs on ethnobotany by the aboriginal groups themselves. In this way, the cultural and scientific value of the knowledge and practices of these groups will not only be acknowledged by the larger society, but will also be appreciated by individuals belonging to the particular culture in question.

It is hoped that the author's research will help to contribute to this process in some way. However, it is first necessary to narrow the focus of the research even further to concentrate on the medicinal aspect of ethnobotany, specifically the knowledge and practice of bush medicine among the Innu.

4.2 Review of Innu Bush Medicine

4.2.1 Academic Research on Medical Ethnobotany of the Innu Culture

At the present time, no scholarly studies have been published pertaining to bush medicine knowledge and practice of the Labrador Innu. However, the work of Clément (1990) with the related Innu groups along the North Shore of Quebec gives some sense of general cultural attitudes and customs concerning bush medicine.

The Quebec Innu still refer to themselves by the French term Montagnais. They live along the North Shore of the St. Lawrence River in twelve communities stretching from La Romaine in the north to Pointe-Bleue in the south. However, as noted by Mailhot in her studies (1986; 1997), territorial hunting patterns and marriages result in an exchange of people between the different family groups and communities, including mixing with the Labrador Innu. Therefore, many of the cultural practices are repeated in different areas.

During his ethnobotanical study of the Mingan area, Clément (1990) tried to determine the classification of plants and habitat areas within the Montagnais culture. He noted their beliefs concerning the appearance of plants on the Earth and their relationship to the human and animal environment. Variations in some of the classification and mythology were registered between communities and among different individuals of the

same community, as well as between men and women. Explanations and descriptions of plant vegetative components were also recorded.

Although not concentrating specifically on bush medicine techniques, Clément's work does provide some description of the uses and beliefs about plants in herbal remedies. The types of plants used in medicine range from lichens to shrubs to trees, and the particular parts employed may include the bark, branches, leaves, or roots. In general, however, Clément found that the Montagnais in the region relied heavily upon various tree species in their herbal preparations, especially the bark and tips of the branches. The principal tree species used include balsam fir (*Abies balsamea*), poplar (*Populus balsamifera*), aspen (*Populus tremuloides*), white and black spruce (*Picea glauca* and *Picea mariana*), grey pine (*Pinus banksiana*), and cedar (*Thuja occidentalis*).

During his investigation, Clément (1990) found that the knowledge of the Montagnais concerning plant remedies for different ailments was extensive. They knew various plants that could be used to deal with common complaints like sore throats, headaches, fevers, coughs, diarrhea, and indigestion. In addition, they also distinguished herbal treatments that are important for healing wounds, burns or cuts that may result from accidents. In all cases, however, it is the names of the plants themselves that are identified for the particular concoction in question and not a specific medicinal title. For example, the common flu preparation involving willow bark does not have a different name when it is used by the Montagnais for this purpose but is simply referred to as "willow bark" and not "cold/flu medicine".

The Doctrine of Signatures, which states that a plant's physical appearance gives clues to its medicinal use, was also found to play a role in ethnomedicine of the

Montagnais (Chevalier 1996; Clément 1990). The particular ailment in question can often be related to the appearance of a certain type of plant used in the recovery process. Also, the Montagnais often associate certain plant components or preparation procedures with the particular body part affected by the malady. For example, fir resin excreted by the tree is used to treat conditions involving bodily excretions such as blood or mucus (Clément 1990).

Some tendency towards homeopathic beliefs was also noted, for example in relation to the hot or cold state of the patient and the use of corresponding hot or cold herbal compresses. In addition, certain plants are believed to help reheat the body, and these are often used by the Montagnais in the form of hot teas or decoctions in order to break a fever (Clément 1990). These inclinations are related to the homeopathic belief in letting “like cure like” and encouraging bodily actions rather than suppressing them (National Centre for Homeopathy 1999)

In general, Clément (1990) found that the taxonomy and classification system of the Montagnais was largely based upon how the plants were used within the culture. However, in the case of medicinal plants the system was found to be much more complex and fragmented. Plants could be classified according to their use for a particular ailment or according to other properties including taste, structure, and even colour. As a result, the close linkages that exist between the classification and use of plants and the cultural interpretations of the society in question are highlighted by his study.

4.2.2 Previous Material on Bush Medicine Practices of the Labrador Innu

Since no academic research along the lines of Clément's study has been carried out specifically with the Labrador Innu, knowledge about their use of plants in healing and beliefs concerning medicinal practices is limited. However, a workshop presentation and a video compilation helped to give some preliminary idea of the importance and scope of bush medicine used by the Innu.

In 1991, several video interviews with knowledgeable elders in the communities of Sheshatshiu and Utshimassit were carried out under the direction of Dr. Bernie Wiebe. In these interviews, Dr. Wiebe discusses traditional healing beliefs and practices with the elders and attempts to determine what impact Western medicine and the so-called "Grenfell system" of visiting doctors had upon Innu medicine. He found that Innu medicine consists of a range of elements including the use of plants, animals, rocks, sweatlodges, bleeding, and pressure techniques. The videos also present some evidence of ritual and spiritual techniques associated with some of these practices, for example the design of a cross on top of the blood removed from a person. The relationship between health and traditional foods was also explored in the interviews (Wiebe 1991).

Unfortunately, many of the tapes are difficult to understand due to poor sound quality. As well, most of the interviews were carried out in early spring when many of the plants were still under snow. As a result, many of the specific herbal practices referred to on the tapes cannot be relied upon as Dr. Wiebe usually attempted to identify the particular plant by common name and description only. Of course, accurate translation by an Innu person could help correct this problem, but again the poor sound quality on some tapes could limit this process. Nevertheless, there is some information

on the tapes that is useful in the context of the current study, as well as to Innu people interested in learning about traditional practices. However, to the author's knowledge, Dr. Wiebe did not publish his results in any written format and the videos remain the only documentation of his work. They are available for viewing in the Innu Nation office in Sheshatshiu.

At the Aboriginal Environmental Knowledge Workshop in North West River, Labrador, in August 1997, two elders, Pien and Lizette Penashue, discussed the use of various plant remedies and preparation techniques. Both the outer and inner bark of certain trees like larch (locally called juniper) are used in a decoction to treat coughs, to speed the healing of wounds and abrasions, and also to prevent infection. As well, Pien described the use of spruce boughs to treat colds and shivers in the wintertime. As a result, the importance of trees and the dependence upon the bark and boughs noted in Clément's study also seems to be prevalent among the Labrador Innu. However, other parts of the trees are also beneficial, such as the resin from fir trees that is used to treat a variety of ailments, including cuts and diarrhea.

The gender differences present in Montagnais communities in Quebec also seem to be echoed in Labrador. The different cultural roles played by women result in a concentration on pregnancy and child-rearing remedies, as discussed by Lizette Penashue during the presentation and many of the women elders in the videos (Penashue and Penashue 1998; Wiebe 1991).

The use of prayers and specific collection procedures was also explained by the Penashues as being important to the healing process, corresponding to the spiritual aspects of traditional knowledge. In addition, they made some reference to the need for

observation and practice on the land in order to ensure effective transmission of bush medicine knowledge. This learning is often a lifelong process, as expressed by the Penashues in reference to their own experience.

Unfortunately, changes in Innu lifestyle and land use are having significant impacts on the exposure of young people to topics such as traditional medicines. In addition, the increasing age of elders who remember the methods and customs of the past means that there is a great potential for this knowledge to be lost forever. Efforts to document and preserve it for the future must be taken immediately, as well as investigation into alternative ways of passing bush medicine knowledge on to the younger generation. The author's study was designed to contribute to both of these areas.

4.3 Traditional Bush Medicine of the Labrador Innu

4.3.1 Plant Remedies of the Innu

During the summer research period, seventy-three plant specimens were collected. Of these, forty-five specimens were identified as having medicinal value, representing twenty-two species and twelve botanical families in all. Innu names for all the plants collected by the author are shown in Appendix 1. Table 1 lists the families represented by the medicinal specimens collected. Details on the medicinal species and their particular uses are shown in Table 2.

In all, seventy-seven different remedies and medicinal techniques were discussed with the author during her research period. Despite the range of species and families used in Innu medicine, further analysis shows that certain species and families are much more important than others. For example, thirty-eight of the remedies identified by Innu informants (49.4%) come from just five species: white spruce (*Picea glauca*), balsam fir

Table 1. Species identified as having medicinal value grouped by family.

BOTANICAL FAMILY	SPECIES
Conifers:	
Cupressaceae	<i>Juniperus communis</i>
Pinaceae	<i>Abies balsamea</i> <i>Larix laricina</i> <i>Picea glauca</i> <i>Picea mariana</i>
Flowering plants:	
Betulaceae	<i>Alnus incana ssp. rugosa</i> <i>Alnus viridis ssp. crispa</i> <i>Betula papyrifera</i>
Empetraceae	<i>Empetrum nigrum</i>
Ericaceae	<i>Gaultheria hispidula</i> <i>Kalmia polifolia</i> <i>Ledum groenlandicum</i> <i>Vaccinium vitis-idaea</i>
Rosaceae	<i>Prunus pennsylvanica</i> <i>Sorbus decora</i>
Salicaceae	<i>Salix discolor</i>
Santalaceae	<i>Geocaulon lividum</i>
Lichens:	
Nephromataceae	<i>Nephroma sp.</i>
Mosses:	
Pottiaceae	<i>Tortula ruralis</i>
Sphagnaceae	<i>Sphagnum subsecundum</i> <i>Sphagnum warnstorffii</i>
Club mosses:	
Lycopodiaceae	<i>Lycopodium annotinum</i>

(*Abies balsamea*), larch (*Larix laricina*), Labrador tea (*Ledum groenlandicum*), and the dogberry tree (*Sorbus decora*). As well, certain families of plants are used much more extensively than others. Thirty of the reported remedies or 39.9% come from the family

Table 2. List of plants used in Innu medicine.

SCIENTIFIC NAME	INNU NAME(S)*	COMMON NAME(S)	PLANT PARTS USED	TREATMENT FOR
<i>Abies balsamea</i>	<i>innáshit</i>	balsam fir	boughs, inner bark, resin	colds, cuts, stomachache,
<i>Alnus incana ssp. rugosa</i>	<i>shakau (S)</i>	speckled alder	bark, leaves	childbirth pain
<i>Alnus viridis ssp. crispa</i>	<i>nash-shakau (U)</i> <i>kamishiuakat-shakau (U)</i>	mountain alder, green alder	branches and leaves	chest congestion and colds
<i>Betula papyrifera</i>	<i>ushkuai</i>	white birch	inner bark	extreme diarrhea
<i>Empetrum nigrum</i>	<i>ashshiminakashi</i>	black crowberry	roots	joint/muscle pain
<i>Gaultheria hispidula</i>	<i>pineu-minánakashi</i>	creeping snowberry	berries, leaves, stem	sores, eczema, halitosis
<i>Geocaulon lividum</i>	<i>atiguminánakashi (S)</i> <i>anikiminánakashi (U)</i>	Northern comandra	stem	body aches and pains
<i>Juniperus communis</i>	<i>kakatshiminakashi (U)</i>	ground juniper	boughs	diarrhea, flu, urinary trouble
<i>Kalmia polifolia</i>	<i>amu-nipisha</i>	bog laurel	flowers	sore throat
<i>Larix laricina</i>	<i>uátnanis (S)</i> <i>uáshinákan (U)</i>	larch, tamarack, juniper tree	boughs, inner bark	colds/flu, cuts, burns, joint pain
<i>Ledum groenlandicum</i>	<i>ikuta</i>	Labrador tea	leaves	sore throat, colds/flu, stomachache, urinary trouble
<i>Lycopodium annotinum</i>	<i>kakauat (S)</i> <i>kakauashit (U)</i>	stiff clubmoss	whole plant	urinary trouble, cuts
<i>Nephroma spp.</i>	<i>anikapagua (S)</i> <i>uapikun-uapitsheushkamik" (U)</i>	leaf lichen	whole plant	burns
<i>Picea glauca</i>	<i>minaiik"</i>	white spruce	boughs, inner bark, resin, cones	snowblindness, nausea, cuts, joint pain, sore throat
<i>Picea mariana</i>	<i>sheshatuku (S)</i> <i>inmeshit (U)</i>	black spruce	boughs, resin, immature cones	colds/cough, nausea, sores
<i>Picea spp.</i>	<i>kushkushkatuk" (S)</i> <i>uishitak" (U)</i>	rotten spruce wood	N/A	diaper rash

<i>Prunus pensylvanica</i>	<i>uiminána</i> (S)	pin cherry	leaves, berries, inner bark	stress, cough depression
<i>Salix discolor</i>	<i>uapineu-mitsima</i> (S) <i>shakau</i> (U)	pussy willow	leaves, inner bark	sore throat, pneumonia, labour
<i>Sorbus decora</i>	<i>mashtaminakashi</i>	dogberry tree, mountain ash	leaves, twigs, bark, berries	pneumonia, cough, sore throat, headache
<i>Sphagnum subsecundum</i>	<i>uishaushkamik</i> " (U)	peat moss	whole plant	skin boils, high blood pressure
<i>Sphagnum warnstorffii</i>	<i>massekushkamik</i> " (S) <i>shipeku-massekushkamik</i> " (U)	peat moss	whole plant	skin boils, arthritis, sore ears, baby's cough
<i>Tortula ruralis</i>	<i>nekau-massekushkamik</i> " (U)	hairy screw moss, sidewalk moss	whole plant	skin boils, joint pain
<i>Vaccinium vitis-idaea</i>	<i>uisháshiminakashi</i>	partridgeberry, mountain cranberry	berries	sore throat, mouth ulcers, teething

Note: in cases where the Innu name differs significantly between the communities both names are given; plants collected in only one of the communities are identified by the particular letter for that community; (S) designates the name given in Sheshatshiu, (U) designates the Utshimassit name

Pinaceae while only thirteen or 16.8% are of the Ericaceae family despite the fact that four species are used from each family. A breakdown of the percentage of remedies from each of the represented families is shown in Figure 4 and clearly demonstrates the dominance of the Pinaceae family in Innu medicine.

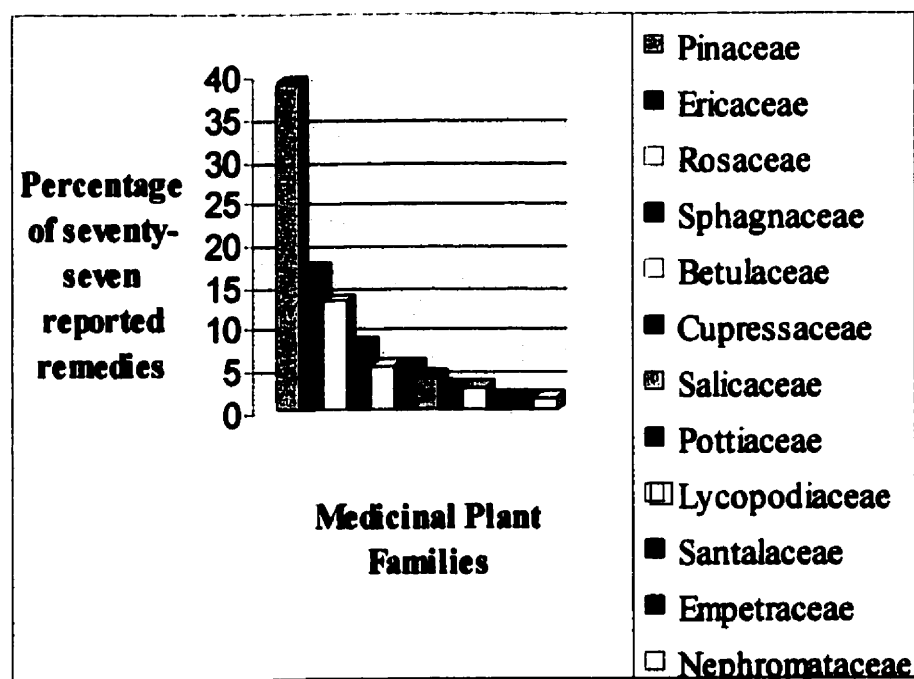


Figure 4. Importance of various botanical families in Innu medicine.

In addition to showing a preference for particular families and species, the Innu also favor certain parts of the plants over others. The boughs of conifers and the leaves of other species are used in 40.3% of their medicinal preparations. The use of the bark from various species was the next most popular option and the whole plant was used when it came to species such as *Sphagnum* and *Lycopodium*. Figure 5 highlights the most popular parts of the plants used by the Innu for their traditional medicine.

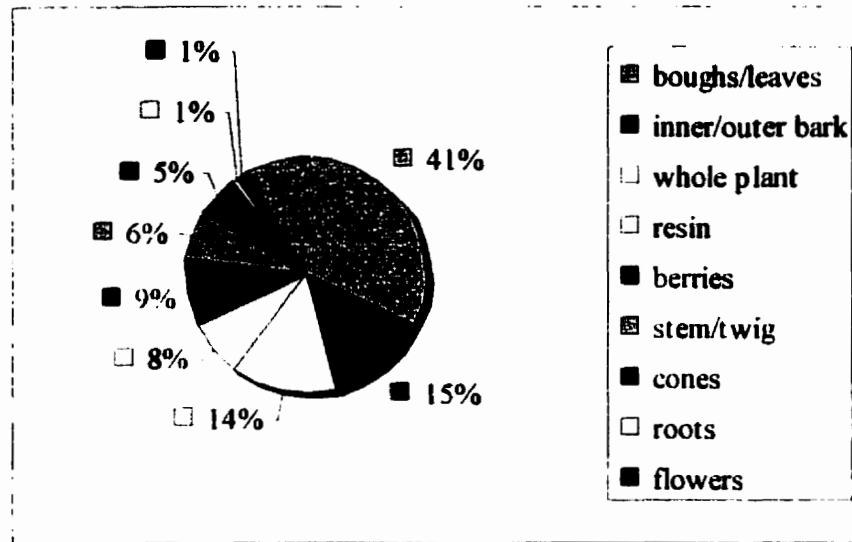


Figure 5. Plant parts used by the Innu for traditional remedies.

Examination of the preparation methods used for the various remedies also showed some interesting trends. When it comes to treating the ill, the Innu rely on teas and poultices for the vast majority of their medicinal concoctions. Of the seventy-three known preparation techniques, thirty-one or 42.5% consist of teas and another eighteen or 24.7% are poultices. A comparison of the Innu's reliance upon the different preparation methods is shown in Figure 6.

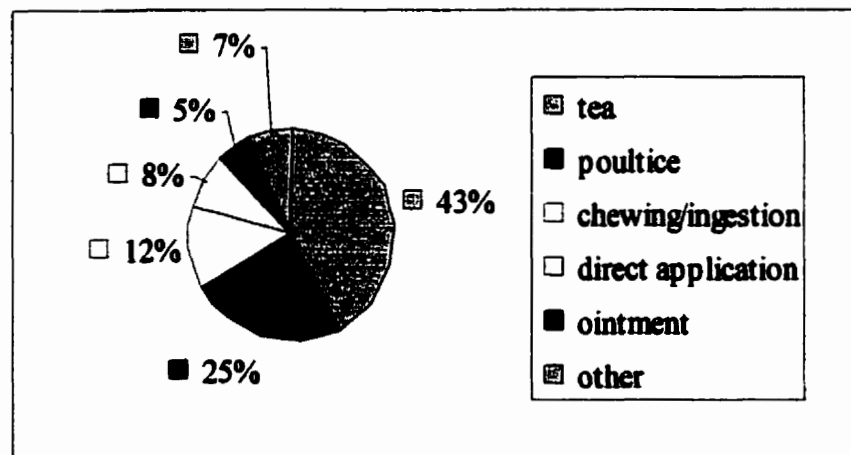


Figure 6. Preferences among the Innu for different preparation and healing techniques.

Although Innu medicine is certainly more complex than the remedies disclosed to the author during her summer research, informants offered no discussion of the possibility of combining various plants in healing mixtures. The majority of Innu medicine shared with the author concentrated on single plant remedies for the relief of common complaints such as colds, skin injuries, and joint pain. As noted earlier, white spruce, larch, balsam fir, Labrador tea, and the dogberry tree were the most prevalent species identified and were responsible for 49.4% of the remedies discussed. Among these five, white spruce and balsam fir were the most dominant species with each one representing 10.4% of the remedies. Larch and dogberry came next with 9.1% each, followed by Labrador tea at 7.8 %. However, these raw numbers can be misleading and Innu informants expressed their own viewpoints on the most important species used. Not surprisingly, balsam fir was recognized as a very useful tree and was mentioned quite often, especially by Innu living in or originally from, Sheshatshiu. One informant noted that the tree was “such a healer” and said she would “have nothing else to use for that medicine” if balsam fir was not available. She also explained that she had been using the tree for a long time and “would not be very happy” if it was damaged by development activities (Interview #2, Tape # 2). However, Utshimassit Innu placed a greater emphasis on medicine obtained from larch and categorized the tree as “*shutshimakuan*” or “strong, powerful medicine” (Interview #1, Tape # 3). The discussion of partridgeberries and their exceptional effectiveness at soothing a baby’s teething gums also highlights the difference between a plant’s perceived importance and its actual usage. This plant was mentioned by almost every informant, despite this specific remedy being its only real contribution to Innu medicine. Therefore the importance of a species is related not only to the number of medicinal applications it is used for but also how effective it is at healing. Specifics on the

use of all the plants identified and their preparation techniques, arranged by ailment, are described in detail in the following sections.

Flu, Colds, and Fevers

Due to their cold and hostile environment, sicknesses of this type are among the most common for the Innu. Therefore, it is no surprise that a large portion of the traditional medicine discussed was devoted to this topic. The range of plants mentioned is also indicative of the widespread nature of these types of ailments and the long-time experimentation with cures.

Conifers were mentioned most frequently as being useful medicines to cure colds and flu. Larch (*Larix laricina*), white spruce (*Picea glauca*), black spruce (*Picea mariana*), and balsam fir (*Abies balsamea*) were repeatedly emphasized as effective remedies. Almost all parts of the tree could be used, including the boughs (*tshishtapakunat*; *shitat*), inner bark (*uânâtsheshk'*), cones (*uâshkuetuī*), and resin (*petshuatuk*; *pitshu*). Teas or decoctions were the most common preparation methods. After drinking any of the hot drinks, it is considered important to stay warm in order to allow the medicines to work properly (Interview #1, Tape #8).

Larch boughs are boiled and the resulting tea is used to relieve a sore throat or fever (Interview #1, Tape #7). Tea from the boughs may also be used to restore the loss of appetite that may accompany some colds and flu, and it is also believed to be a general bodily cleanser for sickness (Interview # 1, Tape # 3).

A mixture containing boiled white spruce cones, seal fat and water can be used to treat pneumonia (*kashipiskat etakushinatshi*) (Interview #1, Tape #7). The inner bark of the tree is

also a useful remedy for a dry cough or extremely sore throat (Interview #1, Tape #7; Interview # 1, Tape # 6). In addition, it acts as an expectorant and helps to remove mucus and phlegm from the lungs. The inner bark is chewed like gum and then spat out after use. Several informants mentioned the importance of spitting the bark out, as the remedy is considered strong medicine and should not be swallowed (Interview # 1, Tape # 6; Interview # 1, Tape # 7).

Black spruce boughs are made into a tea that is used to cure coughs, colds, and chest pain (Interview #2, Tape #2; Interview # 1, Tape # 7).

Tea made from boiled balsam fir boughs is also used by the Innu to relieve cold symptoms. The inner bark is boiled for the same reason and also to alleviate cold shivers (Interview #2, Tape #2). Hot fir resin can be used to cure colds and pneumonia as well by loosening chest congestion and phlegm. It is applied to a piece of paper or a clean cloth and placed on the person's chest. However, if the patient is a small child or baby it is important to carefully monitor their reaction. As soon as it is possible to smell the resin on the baby's breath the cloth must be removed. Adults who wish to leave the remedy on for a couple of days may do so by lighting the resin first with a match and letting it burn for several seconds before applying (Interview # 1, Tape # 6; Interview # 1, Tape # 8).

In addition to conifer trees, various shrubs and other plants were also mentioned as being useful treatments for cold and fevers. Juniper twigs (*Juniperus communis*) can help relieve flu by being made into a tea similar to those of the conifers (Interview # 1, Tape # 4). Labrador tea (*Ledum groenlandicum*) is also effective in this capacity for curing sore throats, colds, or flu. The leaves may be chewed fresh, or boiled and made into tea (Interview # 1, Tape # 5). The hot leaves may also be applied directly to the throat as a poultice (Interview

#1, Tape #3). One informant also identified chewing bog laurel flowers (*Kalmia polifolia*) as an effective way to cure colds or a sore throat (Interview # 1, Tape # 3).

Some berries were also said to be especially helpful for alleviating the pain of a sore throat. Simply eating partridgeberries (*Vaccinium vitis-idaea*) or dogberries (*Sorbus decora*) can help to bring relief (Interview # 1, Tape # 3; Interview # 1, Tape # 4). Dogberries can also be boiled into a juice that the person drinks for the same purpose.

Other parts of the dogberry tree were also identified as being useful in this capacity. The leaves can be made into a tea useful for coughs, or a person can chew on a small twig of the tree (Interview # 1, Tape # 7). In addition, a decoction made of the bark acts as an expectorant when swallowed and removes yellow mucus and phlegm from the lungs (Interview # 1, Tape # 4).

Willow (*Salix discolor*) is another important plant for treating coughs and colds. The leaves are boiled and the mixture is gargled three times a day to help with a cough or sore throat (Interview # 1, Tape # 7; Interview # 1, Tape #8). The Innu also recognize the familiar preparation involving willow bark. The white inner bark is scraped off the plant and boiled until it turns into a dark molasses-like mixture. This is allowed to cool and is then applied on a paper or cloth to the person's chest for three or four days in order to treat colds or pneumonia (Interview # 1, Tape # 4; Interview #1, Tape # 8). Several informants also mentioned the potential for using the leaves and branches of green alder (*Alnus viridis* ssp. *crispa*) in the same way (Interview # 1, Tape # 3; Interview # 1, Tape # 4).

Cuts, Burns, and Skin Irritations

The possibility of sustaining cuts and burns through their traditional activities was also a fact of life to the Innu and many techniques were discussed for how to deal with these problems. Again, the four conifers mentioned in the previous section played an important role in the remedies mentioned to the author. Various mosses and lichens were also frequently identified as good options for the treatment of these conditions.

Larch twigs are cut up into pieces about four centimetres long and the outer bark is removed to reveal the sticky insides. These are then boiled in water, crushed, and applied directly to a cut or burn or mixed with some water or lard (Interview # 1, Tape #5; Interview # 1, Tape # 6; Interview # 1, Tape # 7; Interview # 1, Tape # 8). This preparation is especially useful for healing burns on children and for preventing cuts or scrapes from becoming infected. Skin boils are treated using the boiled inner bark of the tree wrapped in cloth and applied to the affected area (Interview # 1, Tape # 3).

The resin from several conifers, including white spruce, black spruce, and balsam fir can be applied directly to sores or cuts to stop bleeding and prevent infection (Interview # 1, Tape # 3; Interview # 1, Tape # 6). The inner bark of white spruce is also useful and is applied directly to a cut to stop bleeding (Interview # 1, Tape # 6). Fir resin can also be made into "Band-Aid" like strips to help stop bleeding and speed healing of cuts and wounds. The resin is boiled in water and allowed to cool slightly. Small strips of the cooled resin are cut and rubbed between the hands until they have the consistency of toffee. The strips are then cut into squares, applied to the cut, and left on for several days to ensure proper healing (Interview # 2, Tape # 8).

Two types of peat moss, *Sphagnum subsecundum* and *Sphagnum warnstorffii*, were consistently mentioned as effective cures for skin boils (Interview # 1, Tape # 3; Interview # 1, Tape # 4). The mosses are boiled in water and applied as a wet poultice to the area. Hairy screw moss (*Tortula ruralis*) was also said to be a potential substitute for peat moss, although it was not considered to be as effective.

Stiff clubmoss (*Lycopodium annotinum*) was also identified as being a useful treatment for healing cuts and wounds. The whole plant is heated with a bit of butter or lard and then ground up into a mixture that is wrapped in cloth and applied as a poultice. The leaf lichen *Nephroma* was used in a similar way for burns (Interview # 1, Tape # 8).

The leaves and stem of the tiny snowberry plant (*Gaultheria hispidula*) were also said to be useful medicines. The leaves are boiled and applied as a poultice to help with stubborn wounds that are not healing properly (Interview # 1, Tape # 7; Interview # 1, Tape # 8). One informant also alluded to the use of the plants' stem as a treatment for eczema (Interview # 1, Tape # 5).

Joint or Muscle Pain/Inflammations and Circulatory Disorders

Innu informants also discussed a variety of methods for treating arthritis, muscle strains, and inflammations. Most of the remedies were in the form of hot poultices or compresses.

Teas prepared from the boiled branches of larch, balsam fir, white spruce, or pin cherry are useful remedies for relieving the pain of aching joints and muscles (Interview #2, Tape #2; Interview # 1, Tape # 6). Alternatively, the twigs and needles of either larch or white spruce may be boiled and ground up for use in a poultice to soothe sore knees and other

swellings and inflammations (Interview # 1, Tape # 3; Interview # 1, Tape # 7; Interview # 1, Tape # 8). The poultice is reheated and reapplied as needed.

Bark from the dogberry tree is boiled and used in a compress to relieve general aches and pains of the body, including headaches (Interview # 1, Tape # 4). A tea from the boiled leaves was also mentioned as being useful for people experiencing heart pain (Interview # 1, Tape # 7; Interview # 1, Tape # 8).

Various smaller plants are also effective in relieving these conditions. Labrador tea leaves, black crowberry roots, and Northern comandra stem may all be boiled and used in poultices on any part of the body experiencing pain (Interview # 1, Tape # 6; Interview # 1, Tape # 7; Interview # 1, Tape # 8).

Mosses such as *Sphagnum subsecundum*, *Sphagnum warnstorffii*, and to a lesser extent, *Tortula ruralis*, are all useful as hot compresses for joint pain (Interview # 1, Tape # 3;). *S. warnstorffii* and *T. ruralis* are especially useful in relieving the pain of arthritis, while *S. subsecundum* was said to excel at the treatment of high blood pressure (Interview # 1, Tape # 3; Interview # 1, Tape # 8).

Gastrointestinal Disorders

Innu medicine also includes remedies to treat such common ailments as stomach cramps, nausea, and diarrhea (*shogute*).

The liquid from the boiled cones of white spruce is used to treat stomach upset and induce vomiting. Immature black spruce cones may also be used. They are boiled and mashed and then eaten to induce vomiting and relieve nausea and loss of appetite (Interview # 1, Tape # 7). They are also helpful in treating constipation (Interview # 1, Tape # 3). An

alternative method used for nausea is to drink the liquid of boiled black spruce cones (Interview # 1, Tape # 6).

Teas made from various plants can also be helpful in calming stomach pain and upset. Either the boughs or inner bark of the fir tree may be used to bring relief (Interview #2, Tape #2). Another remedy is a tea made from boiled Labrador tea leaves (Interview # 1, Tape # 7).

Two remedies for diarrhea were also mentioned. A mild case may be cured by boiling juniper twigs and drinking the tea that results (Interview # 1, Tape # 4). For a more severe or long-term case, the inner bark of white birch (*Betula papyrifera*) is used. It is scraped off the tree, cut up and boiled into a soothing tea (Interview # 1, Tape # 6; Interview # 1, Tape # 7; Interview # 1, Tape # 7; Interview # 1, Tape # 8).

Eye, Ear, or Mouth Problems

Several remedies were discussed for dealing with problems of this kind. Snowblindness and other forms of eye pain may be relieved with the use of white spruce. The boughs are boiled and may be used in a poultice to bring relief (Interview #1, Tape # 3). Another method is to place a towel over the head and use the boiling water containing the boughs as a steam bath (Interview #3, Tape #2).

Mouth sores or blisters are first drained with a needle and then a warm mashed mixture of partridgeberries (*Vaccinium vitis-idaea*) is applied to the affected area to bring relief (Interview # 1, Tape #7). This is especially good for teething babies (Interview # 1, Tape # 3; Interview # 1, Tape # 4; Interview # 1, Tape # 6). Another technique is to apply one of the fir resin “Band-Aids” described earlier (Interview # 2, Tape # 8).

Hygienic problems of the mouth (i.e. bad breath) can be averted by chewing on the leaves or berries of the snowberry plant (Interview # 1, Tape # 8).

Sore ears can be relieved through the use of *Sphagnum warnstorffii* (Interview # 1, Tape # 4).

Urinary Problems

Three plants were discussed as ways of alleviating urinary problems. All of the remedies involved the use of a hot tea. Juniper twigs and berries can be boiled into tea, as well as the leaves of the Labrador tea plant (Interview # 1, Tape # 4; Interview # 1, Tape # 7). Stiff clubmoss (*Lycopodium annotinum*) may also be used by boiling it first for 1-2 hours and then drinking the resulting liquid three times (Interview #1, Tape #3).

Pregnancy and Childcare

Various techniques were identified, mostly by female informants, for assisting with childbirth and infant care. The bark of willow can be boiled into a tea to help induce a difficult labour (Interview # 1, Tape # 5). After the child has been born, a tea from the bark or leaves of speckled alder (*Alnus incana* ssp. *rugosa*) is used to relieve any pain or soreness the mother may be feeling (Interview # 1, Tape # 7).

During the first months of infant development, several specific remedies are used to treat various conditions. The partridgeberries for teething discussed earlier are a well-known remedy still in use today (Interview # 1, Tape # 3; Interview # 1, Tape # 7; Interview # 2, Tape # 8). *Sphagnum warnstorffii* was also mentioned as being useful in treating a baby's cough, although the specific preparation method was not discussed (Interview # 1, Tape # 4).

Diaper rash is relieved using rotten spruce wood (Interview # 1, Tape # 3). Diapers themselves could be made using *Sphagnum warnstorffii* moss (Interview # 1, Tape # 3).

Mental and Psychological Problems

The pin cherry plant was specifically mentioned as being useful for relieving stress or depression. A tea made from the leaves may be used for this purpose (Interview # 2, Tape # 8). Even the simple act of carrying around the bright red berries of the plant was thought to have beneficial impacts on a person's mental state (Interview # 1, Tape # 7).

4.3.2 Other Medicinal Techniques of the Innu

Although plant use was the primary focus of the author's summer research, the Innu do not restrict themselves to plants for their traditional medicines. Animals and rocks are also used, as well as various healing techniques. However, none of these practices were directly observed, which limits the author's understanding. Nevertheless, brief outlines are given below.

Seal (*âtshuk^u*) is used to help relieve stomachache. The fat is heated until it melts and then allowed to cool. Ingesting a spoonful will get rid of the stomach pain (Interview # 1, Tape # 5).

Caribou (*atik^u*) is very useful for treating infected cuts and wounds (Interview # 2, Tape # 8). An inside portion of the caribou penis is applied to the infected area (Interview # 1, Tape # 6).

Beaver (*amisk^u*) is a very powerful medicine. Among other things, it is helpful in curing infected boils and cuts and may also be used to induce labour in a pregnant woman (Interview # 1, Tape # 2; Interview # 1, Tape # 6; Interview # 2, Tape # 8). A portion

identified as the beaver's testicles (*uishinaw-amishk*^u; possibly castoreum) was said to be the most useful part.

Another important animal in Innu medicine is the otter (*nitshuk*^u). It is very useful for curing sore, achy, or runny ears, especially in children (Interview # 2, Tape # 8). Two parts of the otter's body may be used, the scrotum or the tail fat. An inside portion of the scrotum may be applied directly to the child's ear, or fat from the tail can be heated up on the stove until it becomes a liquid (Interview # 1, Tape # 5; Interview # 1 Tape # 6). This liquid is then cooled and a few drops are placed in the ear.

Feces from a young male child was also mentioned as being a useful medicine. A small amount is applied to a sore tooth to cure a toothache. In the past, it was also applied to areas of the body where a person was experiencing "cancer" pain (*manitush*) in order to relieve the person's suffering (Interview # 1, Tape # 7).

Rocks are also used in Innu medicine. A flat type of rock (*akuapassimaun*) is useful for relieving various aches and pains. It is heated on the stove, wrapped up in a cloth, and applied to the painful area. This is especially useful for curing toothaches or stomachaches (Interview # 1, Tape # 6; Interview # 1, Tape # 7).

In addition to the use of specific plants or animals, Innu informants discussed other techniques and methods that could be used to promote and improve health. One of the male informants was experienced in the process of bloodletting in order to relieve pressure and cure illness. He also discussed the important role of the sweat lodge in improving spiritual and physical well-being and characterized it as their form of a "clinic" and noted that it was "really strong, powerful" (Interview # 1, Tape # 2). Another informant also mentioned the significant use of the sweat lodge in traditional medicine, especially by hunters (Interview # 2,

Tape # 8). The author also noted the continuing reliance upon the sweat lodge by Innu people during her stay in the two communities, although she was not invited to participate herself.

Several informants referred to the role that diet and exercise played in promoting the health of the Innu people. They attributed the Innu's strength and fitness in the past to the combination of daily exercise and good food sources such as caribou (Interview # 1, Tape # 5). The loss of their nomadic lifestyle and the ingestion of store bought foods were cited as reasons for the poor health and disease problems prevalent in the communities today (Interview # 2, Tape # 8).

4.4 Innu Medicine in Context

4.4.1 Differences Among the Innu of Labrador

The research gathered over the summer shows some differences that exist between the two communities in terms of the knowledge and emphasis placed on various components of Innu medicine. Of course, the most obvious contrast is in terms of the names used for some of the plant species shown in Table 2. In some cases, the name given for the same plant was vastly different depending on whether Utshimassit or Sheshatshiu informants were used, for example *sheshetuk*^u or *inneshit* for black spruce. Many of the plant names in Sheshatshiu appear to be closely related to those given by Clément (1990) for the Innu along the Quebec North Shore. This is probably due to the closer proximity of Sheshatshiu residents to the area, as well as their greater exposure to Innu from these areas through social travel networks. The relative isolation of Utshimassit residents in northern Labrador would result in fewer chances for them to adopt Sheshatshiu plant names or vice versa.

Of course some of the naming variations could also be reflecting more basic differences in terms of classification categories. Species not used by Innu of a particular

community could end up becoming underdifferentiated in the terminology and naming systems of that group. On the other hand, extensive use or knowledge of the varieties of one species could result in overdifferentiation. Some tendency towards either of these two possibilities was noted over the summer in terms of various flowers given the name *amunipisha* (literally “food of the bee”) as well as certain shrubs with the generic name *shakau*. An example of overdifferentiation appeared to exist in terms of *Sphagnum warnstorffii*, when two specimens were recognized as different types based in part on their colour and habitat (Interview # 1, Tape # 3; Interview # 1, Tape # 8). As well, different life stages of the same plant (for example *Gaultheria hispidula* with and without berries) were also classified independently of each other (Interview # 1, Tape # 8). Unfortunately, in the latter case the author’s lack of language skills prevented her from being able to determine the exact difference as the two names were very close (the version appearing in Table 2 and Appendix I is the name given by several informants and the one that appears in the literature). Despite these indications of various classification differences among the Innu, the author’s limited time period and lack of real ethnoclassification skills prevented her from examining the possibility further.

Some variation between the communities also existed in terms of the use and value given for specific plants. For example, *Empetrum nigrum* and *Nephroma*, both of which were considered to have no medicinal use by a group of elders in Utshimassit, had specific uses assigned to them by Sheshatshiu informants. On the other hand, elders in Sheshatshiu did not identify some of the applications of various trees to healing techniques mentioned by the Utshimassit Innu. The reason for these distinctions may be twofold. It is possible, and indeed probable, that not all of the knowledge held by a particular elder was shared with the

author during interviews and field surveys. The vast amounts of information held by some of these elders would probably mean that a discussion on one plant alone could last for hours. In light of this, the elders had a perfect right to limit the techniques and uses identified.

In addition, however, is the very real likelihood that knowledge of Innu medicine is as varied and diverse as the individuals themselves. This is especially relevant in light of the need for direct experience and observation of medicinal techniques outlined in the transmission section. Random chance and exposure to rare sicknesses would result in some elders having greater knowledge than others. The possibility of experimentation with various plants on the part of individuals to determine their medicinal uses could also result in greater or lesser experience and knowledge among the informants.

There also appear to be some differences among the two communities in terms of the value associated with some of the most important medicinal species. For example, although all of the conifer trees were considered very useful medicines, Utshimassit Innu appear to place a greater importance on the larch, while Sheshatshiu Innu refer quite frequently to the value placed upon the balsam fir tree. The reason for these differences may be partly cultural but may also have an underlying biological basis. For instance, balsam fir is not as abundant in the northern areas of Labrador. Therefore, it would not be as available for medicinal use and this could result in the Utshimassit Innu placing a greater emphasis on other tree species like larch that are more plentiful in their area.

The gender differences noted by Clément (1990) among the Quebec Innu also appear to exist in Labrador. Most of the informants regarded women as being the most knowledgeable about medicinal techniques. Of course, the female interview bias discussed earlier certainly may play a role in this observation. Nevertheless, during one interview, a

female informant identified a remedy for labour pain that was unknown to her husband (also a knowledgeable informant). As a result, some tendency towards these gender variations can be seen at least when it comes to the topic of pregnancy and childbirth.

4.4.2 Cross Canada Comparisons

The Innu medicine findings documented over the summer show both similarities and differences with native groups across the country. Of course, the most significant comparisons can be drawn between the Labrador Innu and the Montagnais of the Quebec North Shore. The common cultural background and social interaction between these two groups have resulted in medicinal practices that are almost identical in nature. The range in plant types and parts that Clément (1990) identifies among the Quebec Innu is also relevant to Labrador. Although the exact species used differ somewhat due to biological diversity and climate, the inclusion of everything from trees to lichens remains the same. As well, an identical preference for using the boughs of conifer trees such as fir and spruce can be seen among the two groups. Clément's work also shows evidence of women being the most knowledgeable informants regarding species and techniques in Innu medicine, and the results of the author's research would seem to agree.

Other groups related to the Innu, such as the Algonquin natives of southern Quebec and Ontario, also show distinct similarities in terms of their medicinal techniques and practices (Vogel 1970; Black 1973). There is a comparable dependence upon species like balsam fir, Labrador tea, and willow, and the use of plant portions such as the resin and the inner bark is also common. Of course the specific environments inhabited by the various groups result in differences in the exact techniques and remedies used. Black (1973) also points to the fact that European settlers may have had an influence on the native medicine of

those groups they came in contact with. Nevertheless, she notes that the degree of relationship between two different native groups can be reflected in their similar or differing use of the same plant species.

As one moves further West however, the differences become clearer. Although several of the more common uses of various plants, especially conifers, are similar to those discussed by Leighton (1985), Zieba (1990) and Marles *et al.* (1997) for the Prairie Provinces, there are many distinctions in terms of factors such as healing and gathering techniques. For example, the ritualistic use of tobacco during plant collection that is reported by these authors does not seem to apply to the Innu. The author questioned informants on this topic and was told that there were no specific rites associated with plant gathering. In the words of one informant "it's there, it's available, and [we] take it." (Interview # 1, Tape # 2). As well, the author observed Innu elders during field surveys and did not notice any particular techniques associated with plant removal. Of course, it is possible that there are other significant ceremonies or beliefs associated with the Innu healing process that were not shared.

Differences were also noted in regards to when exactly plants are gathered for medicines. With the exception of some species like Labrador tea, the Innu appear to collect plants from the field at the exact time they are needed and do not emphasize medicinal storage to the same degree as other native groups. The preservation and collection of important medicinal species is very important in some sections of the country. For example, Russell Willier, a Woods Cree healer in Northern Alberta, maintains a collection of dried medicinal plants at his home and makes a point of gathering species as his supply gets low. He has even attempted to grow important plants in his backyard so he will have immediate access to them. Cultural and spiritual elements are also associated with the storage and preservation of various

species, as in the case of the medicinal healing bundles that are passed on through families (Young *et al.* 1989). Leighton (1985) also notes that the Saskatchewan Cree obtain some important species not available in their area through trading networks.

In contrast, Innu informants stated that medicinal plants are gathered as needed and are not usually stored for future use. The only exception described was during past winters when Labrador tea was gathered, dried, and transported with them as they traveled, mainly due to the difficulty associated with finding the plant in deep snow (Interview 1, Tape #2). This lack of emphasis on medicinal plant storage is also reflected in a study of the Fisherman Lake Slave of the Northwest Territories (Lamont 1977).

The types of plants being used in medicinal preparations also vary across the country. Leighton (1985) identifies forbs as contributing to the majority of remedies employed by the Saskatchewan Woods Cree, while, as already noted, Innu medicine in both Labrador and Quebec relies heavily on various tree species, especially conifers. Different tree and shrubs play a large role in the traditional medicine of the Wet'suwet'en people on the northwest coast of British Columbia (Gottesfeld 1993).

In addition to differences in the types of plants used, there are also distinctions in the plant parts relied upon for medicinal remedies. As discussed previously, the Innu depend heavily upon conifer branches and the leaves of other species in their preparations. This is in contrast to Leighton's (1985) discussion of the importance of roots and stems to the Saskatchewan Cree. Roots and rhizomes were also described as being very important in the medicine of the Wet'suwet'en, the Fisherman Lake Slave, and the Wabasca/Desmarais Cree (Gottesfeld 1993; Lamont 1977; Siegfried 1994). The study by Turner *et al.* (1990) of the Thompson Indians in British Columbia also showed significant differences from the Innu.

Although their dependence upon leaves and branches is similar, the Thompson Indians also show a predisposition to the use of roots and “other underground parts” for 18% of their remedies. According to the author’s research, Innu use of roots for medicine is almost insignificant at only 1%. This could relate to the fact that roots in Labrador can be buried under snow or frozen in the hard ground for up to eight months of the year. As a result, they are not the most dependable source of medicine for the Innu and this could be why their use is limited. On the other hand, medicinal roots was not specifically investigated during this research and their use may be more frequent among the Innu than is reported here. In any case, climate and geography still appear to have had a strong influence on the development of native medicine among the different groups.

When it comes to preparation methods and techniques, however, there are similarities across the country. Most of the studies discussed identified teas as the principal form of healing treatment for their native group (Gottesfeld 1993; Lamont 1977; Leighton 1985; Siegfried 1994). This was also the case for the Innu, both in this study and that of Clément (1990). As a result, the interactive role of “foods” as “medicines” is highlighted in native belief systems throughout Canada.

Culture also plays a role in the process and there are some reports that cross-cultural exchanges are occurring. One Innu elder discussed the use of sweet grass and healing circles that was presently occurring in the communities and stated that this had not been a part of Innu traditions in the past. She believed that the participation of individuals in treatment programs elsewhere in Canada was resulting in the adoption of these techniques by some Innu people (Interview # 2, Tape # 8). As avenues for cultural interaction and communication increase, more examples of the exchange and adoption of various healing practices and beliefs

may occur and lead to an increase in these types of similarities. However, the geography and specific beliefs of each group will continue to play a role and influence the healing process.

4.4.3 Current and Future Significance of Innu Medicine

Changes in their lifestyle and activities over the past few decades have had a major impact on the health and well being of many Innu. One informant in particular went into great detail about the changes that have occurred in her health and lifestyle (Interview 2, Tape #8). She believed that the main reason for the decline in her health could be attributed to the lack of activity and changes in diet that she had experienced when she settled in the community.

“ I grew up in the country with my parents. My father, he was a hunting man, not a business man. My parents, they taught me everything...I learned from them.[...] even the medicines...all kinds of medicines that Innu use, plants, animals.[...] That's what I learned...and some people are still using it.[...] And we want to teach our kids our ways, Innu ways, Innu culture. We don't want to lose it.[...] We had good healthy food, animals and berries. That's all we would eat before. And now we have all kinds of disease, especially diabetes. Because we don't know very much about the food in the stores. We buy everything, you know, especially junk food. Before we never ate junk food. When I was growing up I never saw pop and chips and chocolate and candy. I never ate it before. But today, I am a diabetic. I don't know where that came from, diabetes, and I don't understand it very much. Sometimes I feel bad, I never did before. When I had healthy food, I wasn't sick. I never even had a bad cold or flu. I never had it before when I was in the country. But today, I've got so many diseases. I have all kinds, stress, you know. I'm just sick, sick in here (*taps chest*) sick at work and at home...

A long time ago, and I'm talking about my great-grandfather...they would travel everywhere in Quebec or in Labrador. They traveled, they never stayed, even in the summertime. And they never talked about syphilis, that disease. It's just when they got old people would die. And sometimes accidents, like drowning...I didn't see that, I can't remember that, that's my great-grandfather's story. The way I was, like I said before, I was born in the country....We never stayed long here in Sheshatshiu. Only two months then we'd go again. We were always moving, every day, just like exercise. We were very busy, we were doing all the things that our parents were doing. Because that's the way I learned from them.[...] Today we're using the plane. I don't feel like I'm in the country hey? I feel like a sports hunter. I have four kids. They're all

grown up now. They don't know my culture. Even some of them don't eat what I ate when I was young. The animals, the caribou and fish, the other animals that I ate. My grandchildren, they're lost. But I'm not lost. I still remember every day. I can remember."

The above quote helps to highlight the devastating changes the loss of a traditional lifestyle can have upon a person and her family.

Another informant also stated her view that the lack of traditional beliefs and activity were resulting in poor health among Innu people (as narrated by translator):

"...when she was young they never stopped. They'd go from dawn till dusk. Nobody walks anymore, that's why people are so sick. Also they don't respect the animals. They leave (caribou) bones lying around. They're not doing anything. I said she must have been poor and she laughed at me. She said they weren't poor, they were rich because they were healthy" (Interview #1, Tape #5).

In general, informants who maintained close ties to their traditional way of life and diet seemed to be in better health than those who did not. Several informants mentioned the fact that they did not consider themselves to be as healthy or as happy as they were when they spent most of their time in *nutshimit*, meaning "on the land". A renewal in the practice of Innu medicine and other land-based practices would increase a person's activity level and could lead to an improvement in their overall health.

However, many elders interviewed during the summer noted that the use and knowledge of traditional medicine among Innu in the communities were quickly disappearing. Most people now rely upon the local health clinics staffed with Western doctors and nurses to cure their ills. It was considered "easier" and more "feasible" just to go down to the clinic if a person was sick (Interview #3, Tape #1). However, several of the elders stated that they returned to using the traditional forms of medicine anytime they found the doctor's

prescriptions to be ineffective (Interview # 1, Tape # 6; Interview # 1, Tape # 2). Unless this knowledge continues to be passed on, however, the option is not going to be available to future generations of Innu.

The effort that is required in terms of gathering and preparing traditional plant remedies is also a factor, and many of the elders themselves admitted to being “too lazy” to put the exertion into the process that they had in previous years (Interview # 3, Tape # 1; Interview #1, Tape # 5). The increasing age and failing health of older Innu is resulting in an inability on their part to maintain their traditional practices. In other sections of the country, young apprentices are trained who assist the elders in the task of plant gathering (Young *et al.* 1989). However, this does not seem to be occurring to the same extent among the Innu. Young people have been cut off from traditional ways of life and beliefs and are not knowledgeable about the types of plants used in Innu medicine. As a result, elders are not able to practice their medicine to the same extent, nor are they able to pass on their knowledge to these young people so that the tradition may continue.

There are also threats to the plants themselves. Innu elders are noticing that the medicines are “not as strong” as they were in the past. The impact of pollution from industry and development activities is believed to be weakening the plants and contributing to a decrease in the effectiveness of their traditional remedies (Interview #2, Tape #8). This perception could result in a decline in the use of these plants and an overall reduction in the practice of Innu medicine.

The dominance of community clinics, the lack of traditional lifestyles, and the risk of polluted plants are all contributing to bring about the death of bush medicine. If drastic action is not taken on these fronts soon, the future of Innu medicine seems grim indeed.

4.5 Innu Knowledge Transmission and the Educational System

4.5.1 Historical Transmission of Bush Medicine Knowledge

Five elders, four women and one man, were interviewed regarding the methods and techniques by which they first learned about Innu medicine (see Appendix 3). In all cases, the primary teachers were their parents and grandparents, especially mothers and grandmothers. In addition, family gatherings during different times of the year also gave rise to opportunities to learn from extended relatives. Women were cited as the most frequent teachers, however, a female informant mentioned learning from her father as well, and the male informant stated he had learned some of his knowledge from both genders (Interview # 1, Tape # 2; Interview # 1, Tape # 6).

Direct observation of the actions and techniques of family members was the way all of the elders interviewed first began to learn about bush medicine. The close quarters of the tents used in country travel permitted children to observe and emulate the actions of adults most of the time. As well, whenever anyone in the tent came down with a cold or other type of sickness, the children were able to witness the specific treatment used firsthand. In this way, they familiarized themselves with what types of plants, animals or healing techniques were used for various ailments (Interview # 1, Tape # 5; Interview # 2, Tape # 8; Interview # 1, Tape # 6; Interview # 1, Tape # 2).

Later on in adolescence or young adulthood, they began to learn the preparation techniques of the specific remedies. These included information on gathering methods, boiling times and other pertinent facts on the topic. At first, they would assist their mother or grandmother in preparing and treating the sick person. The next step would be to attempt the

entire task themselves with assistance if required. Of course, some people were pushed in this direction faster than others out of necessity, as in the case of one elder who remembers having to make a remedy to treat her brother's cut leg while their parents were away (Interview # 1, Tape # 5). Although some elders could not remember the exact age at which they prepared their first medicine, the consensus seems to be at around fifteen or sixteen years of age.

The nature of Innu travel and social organization meant that parents and extended family often remained with their children even after marriage. This had positive implications for medicinal knowledge transmission due to the observational pattern of learning involved. Direct experience with a task was so important, in fact, that one elder stated during the interview that he would only discuss the medicines he had actually seen used as to do anything else would be "lying" (Interview # 1, Tape # 2). By having continued access to their parents' and grandparents' experience, younger people were able to improve and add to the information they possessed and build up a wealth of knowledge on the topic. However, as the Penashues noted in their presentation, learning Innu medicine is a life-long process and it is doubtful any one person is a source of all the knowledge that exists (Penashue and Penashue 1998).

4.5.2 Improving Knowledge Transmission Through the Educational System

The fact that many Innu do not travel out on the land to the extent that they did in the past is probably the greatest threat to bush medicine knowledge and preservation for the future. Elders discussed the reluctance among many families in the community to voyage into *nutshimit*. Obviously, this has great implications for a knowledge system based upon observation and learning by doing on the land. As noted in one interview on the topic: "People don't go in the country often now, and they don't stay in the country often. That's

why children can't learn, hey? Some children don't even want to go in the country." (Interview # 1, Tape # 7). If Innu bush medicine and other forms of traditional knowledge are to remain a valuable part of the culture, alternative ways must be found for ensuring interaction and communication between elders and young people in the communities.

The educational system is one area where that discussion and exposure to traditional practices can be facilitated. Indeed, some young people are already showing an interest in the topic as evidenced by the Heritage Fair project submitted by two Grade Five students at the Peenamini McKenzie School in Sheshatshiu. This project discusses the life of Innu people in the country and includes a number of medicinal practices used by the Innu during their travels (Ashini and Rich 1998). In addition, two Innu teachers at the school were interviewed and acknowledged that there were students interested in learning about traditional lifestyles and Innu culture (Interview # 1, Tape # 1; Interview # 2, Tape # 8). However, one of the teachers expressed the view that older students would not be as open to the subject because they were only interested in learning skills and subjects that could get them a job in the workforce (Interview # 2, Tape # 8).

The elders interviewed over the summer were of the opinion that Innu medicine can and should be taught in the schools. They believed that this was one of the ways to avoid losing this knowledge forever and they had a number of recommendations for how the lessons should be structured (Interview # 3, Tape # 1; Interview # 1, Tape # 2; Interview # 1, Tape # 5).

First of all, the majority of the elders expressed a willingness to be guest speakers in the classroom and introduce students to the topic. Although the interest of younger people was acknowledged, most elders expressed a preference for actively working with older

students around 14-15 years of age. It was believed that students of this age group would have a greater attention span and capacity for learning the knowledge than their younger colleagues (Interview # 1, Tape # 2; Interview # 1, Tape # 5; Interview # 1, Tape # 8).

In accordance with their own method of instruction, the elders stated that they would then want to take the students out on the land and show them the different plants and animals using in healing. These field trips would be a useful method for exposing the students to resource harvesting and help to place the knowledge in context (Interview # 1, Tape # 2; Interview # 1, Tape # 5; Interview # 1, Tape # 6).

Student surveillance and assistance with the preparation methods for the various remedies would also be important in order to stress the observation and personal experience aspects of the topic. The particulars of plant gathering and storage techniques, as well as boiling time and dosage amounts could also be taught at this time (Interview # 1, Tape # 5; Interview # 1, Tape # 8).

As noted in several interviews, however, simply being dropped on the land and remaining in one area for a short time is not considered adequate for the purposes of teaching young people and letting them truly experience Innu culture (Interview # 1, Tape # 5; Interview # 2, Tape # 8). Longer trips and expeditions to *nutshimit* would be required in order to ensure that students were able to grasp the complex nature of the subject and its value to Innu in the past. In addition, these extended field trips would help to give young Innu an appreciation for their land and way of life and hopefully stimulate some action on their part towards its future preservation.

In the absence of these field trips, school workshops on the topic of traditional Innu medicine could help to bring together elders and young people. They could improve

communication between the two groups and also facilitate the exchange of knowledge between interested students and knowledgeable elders. In this way, some students might be intrigued enough to pursue the subject outside of school. To that end, Innu Nation should also look into the possibility of organizing annual Heritage Fairs in each community that would serve to highlight Innu traditions and act as a focal point for young people wishing to learn about their culture.

While the oral tradition inherent in Innu culture is extremely important and should not be forgotten, there is also a need for books and other written materials in order to ensure that traditions like bush medicine survive. The rapid rate at which the knowledge and experience of elders is being lost requires immediate action. Although remaining true to the oral heritage of the Innu people would be preferable, it is essential that this wisdom and teaching be recorded in some form. By writing this information down and incorporating it into the school curriculum, a permanent record will exist that can later be returned to by Innu people interested in the topic of traditional medicine. The “Plant Medicine of the Innu” technical report produced by the author for this research should be used by teachers and students as an initial source of written material. Of course many of the subtle techniques and skills will be lost through this method so preference should be given to encouraging communication and knowledge transmission directly from elders to young people via the field trips and workshops already discussed.

Investigation should also be carried out into the possibility of students receiving school credit for courses on topics related to Innu culture. The author recalls being required to take a course entitled “Newfoundland Culture” during her years as a high school student in the Province. There have been Cree culture programs in James Bay, Quebec, for more than

20 years (Berkes pers. comm. 1999c). Consequently, there would seem to be no reason why similar courses could not be developed and approved that promotes the culture and traditions of the Innu people. In this way, students could receive the knowledge and training they desire in various Innu traditions while remaining in a school setting. Courses such as this could be especially beneficial in permitting students to take part in cultural activities, such as the spring duck hunt, that would normally be curtailed by their academic obligations.

There is also some support for these locally designed courses at a higher level in Newfoundland politics. The 1992 Royal Commission of Inquiry into the educational system of Newfoundland and Labrador came up with several recommendations that would seem to support this strategy (Government of Newfoundland and Labrador 1992). First of all, it proposed that individual schools and school boards should play a greater role in the development of local curriculum for their students. In addition, it recommended that curriculum should be adapted to suit the learning styles of Innu and Inuit children in order to allow for improved knowledge transmission. Finally, the Commission advocated the establishment of a Native Curriculum Committee made up of students, teachers, and educational specialists to develop and deliver local curricula suited to the needs and interests of Labrador native children. Although not all of these recommendations have been accepted or acted upon, they still provide teachers and parents in the communities of Sheshatshiu and Utshimassit with an initial bargaining position and a measure of support for their initiatives.

Another alternative would be for the Innu to attain complete control and jurisdiction over their community schools. In this way, they would be free to institute a school structure that would be sensitive to Innu concerns and values and reflect Innu priorities on the teaching of their children. The Innu are currently negotiating with the government towards achieving

this end, however, little progress has been made thus far. In the meantime, it is imperative that the Innu explore alternative techniques, such as those discussed above, in order to allow traditional values and knowledge on topics such as bush medicine to be passed on to their children.

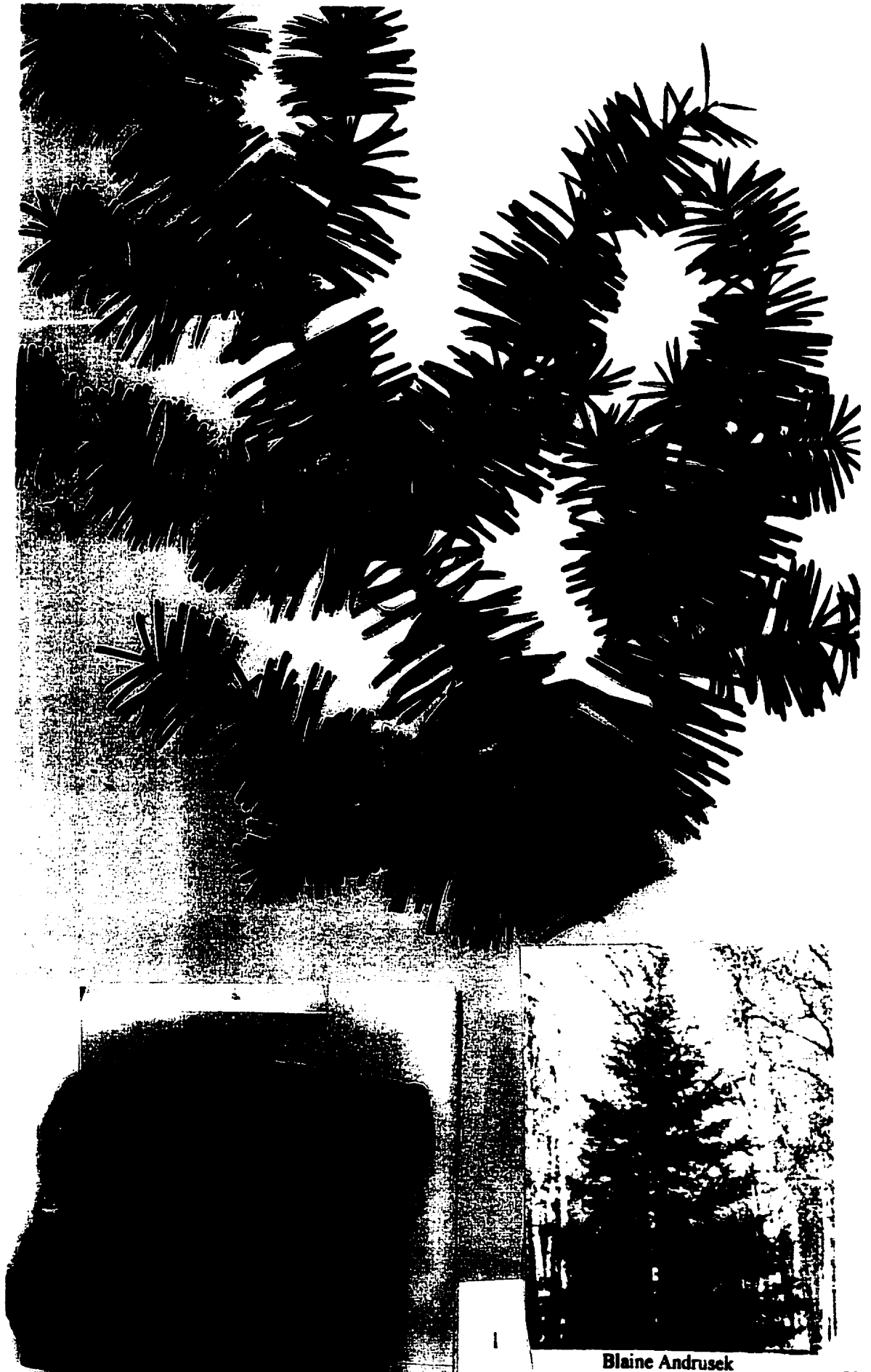
In order to observe and practice this learning, however, it is necessary to have access to a healthy ecosystem that will provide the plant materials. The importance of the land for teaching and as the source of medicines was emphasized by the Penashues and cited as an important reason why the Innu are often protesting industrial developments. The close relationship between the land and the Innu people means that they are not only attempting to protect a certain river or forest stand, but also an integral and important part of their heritage. However, their protests have not slowed down the rate of industrial development in the region. The second half of the 20th century has seen the increasing encroachment of large-scale industries into the Labrador wilderness. The impact of hydro-electric developments, low level flying and mining activities have all influenced the ability of the Innu to use their traditional land base. This in turn has serious repercussions for the cultural stability of the Innu and their capacity to transmit traditional knowledge about the land and bush medicine techniques. It also diminishes their ability to escape from the pressures of the modern world and return to *nutshimit* to heal themselves and renew their beliefs. The outcome of this is increased cultural disintegration and the loss of much of their traditional knowledge.

In an effort to combat these pressures and ensure the existence of a healthy land base that can be used by future generations for knowledge and cultural transmission, the Innu are now demanding to be given a voice in the decision-making processes that affect them. Among the most important of these processes is that of environmental impact assessment.

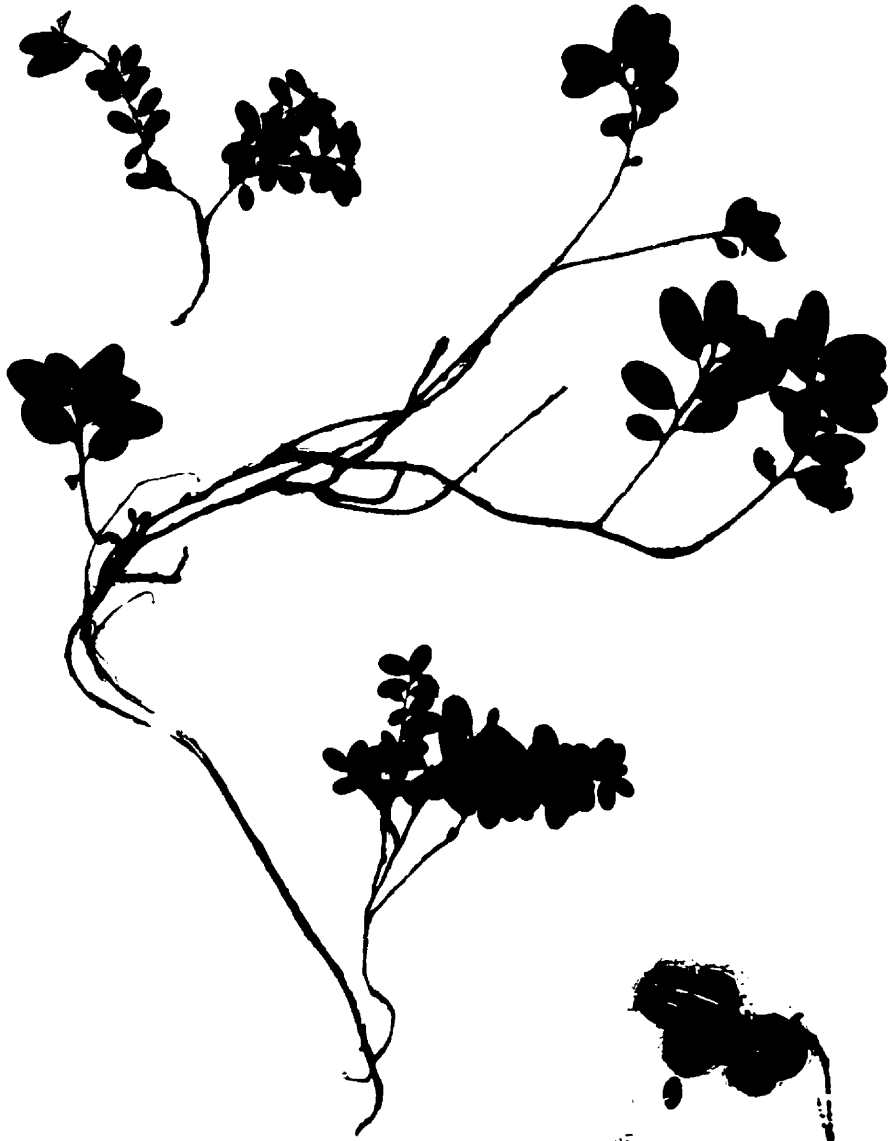
PLATES

1. **Plant Name:** *innashit* (Utshimassit)
innâsht (Sheshatshiu)
balsam fir
Scientific Name: *Abies balsamea* (L.) P. Mill.
Parts Used: boughs (*tshishtapakunat*; *shitat*)
inner bark (*uânâtsheshk^u*)
sap/resin (*petshuatuk*; *pitshu*)
Medicinal Use:
The boughs and inner bark are used to relieve colds, stomachaches, and sore legs. The sap or resin is used to prevent infection in cuts and skin sores. When heated, it may be used to help cure colds and pneumonia (*kashipiskat etakushinatshi*).
2. **Plant Name:** *mikuta* (Utshimassit)
ikuta (Sheshatshiu)
Labrador tea
Scientific Name: *Ledum groenlandicum* Oeder
Parts Used: leaves
Medicinal Use:
The leaves may be used boiled or fresh to treat a variety of ailments including stomach pain, sore throat, colds and flu, urinary difficulties, or muscle pain.
3. **Plant Names:** *uishâtshiminakashi*
mountain cranberry; partridgeberry; redberries
Scientific Name: *Vaccinium vitis-idaea* L.
Parts Used: berries (*mina*)
Medicinal Use:
The berries are especially useful for relieving mouth and gum problems, including blisters, sores, and teething gums. They may also be used to treat a sore throat.

(Excerpts from report prepared for Innu Nation entitled "Plant Medicine of the Innu", 1998)



Blaine Andrussek



2

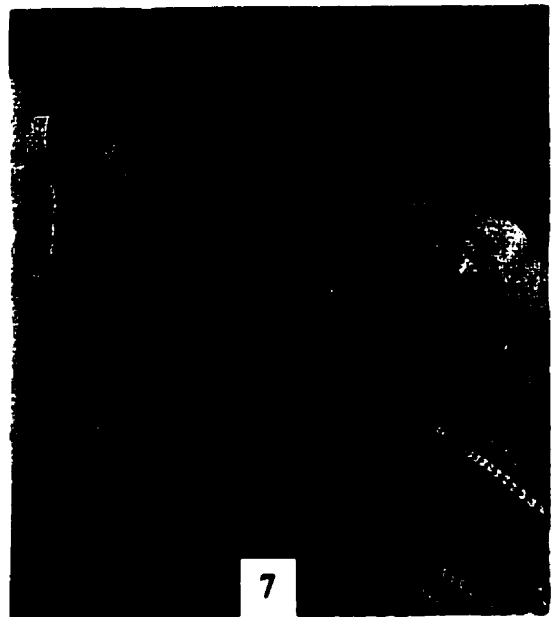
Robert R. Taylor

79

PLATES

4. Involving Innu people in the research, such as the two translators/field assistants pictured here, was a particularly important aspect of the Innu Ecological Knowledge Project.
5. Elders such as this woman, who maintain traditional ties to the land and their way of life, are a valuable resource to anyone interested in learning about Innu knowledge of bush medicine.
6. Interaction between elders and scientists can help facilitate knowledge exchange, respect, and cooperation. Here, Innu elders meet with Voisey's Bay Nickel Company fisheries technicians during their visit to the mine site.
7. The familiarization and education of elders and community residents about development activities and technology is essential for them to be able to use their traditional knowledge to predict project impacts. These elders were given a brief overview of the procedure involved in drilling nickel cores while visiting the area.

Photos: Tracey Inkpen



Chapter 5: Integrating TEK in Environmental Impact Assessment

Since the creation of EIA in the 1970s, the goal of including the knowledge of native elders and resource users in the process has been the subject of discussion and debate. A number of Panel reviews have attempted to include traditional knowledge with varying levels of success. In the following pages, a brief overview of the theory of including TEK in EIA will be presented. Next, four case studies of some of the more prominent attempts at integrating the two knowledge systems will be presented before turning to an examination of the Voisey's Bay EIA and the Innu Ecological Knowledge Project in particular.

5.1 Theory and Practice

5.1.1 Rationale and Theory of Including TEK in EIA

Various authors have discussed the need to incorporate TEK in environmental assessment from a number of perspectives. These range from arguments about the ability of TEK to provide baseline data in northern regions to the need for the full-fledged incorporation of the needs and values of aboriginal peoples in the decision-making processes that affect them.

Inglis (1998) highlights the results of several international conferences, including the Brundtland Report and the Rio Summit, that have emphasized the responsibility of nations to preserve the traditional knowledge of their indigenous peoples and its value in resource management and decision processes. Article 8j of the Convention on Biological Diversity states that countries should:

*“Subject to national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biodiversity and **promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the utilization of such knowledge, innovations and practices.**”* (emphasis added) (Canadian Biodiversity Working Group)

Applying traditional ecological knowledge and practices to the field of environmental impact assessment would seem to be a natural step towards fulfilling Canada’s obligations under this agreement.

On a national level, the decision handed down by the Supreme Court of Canada (1997) in the *Delgamuukw vs. British Columbia* ruling also has ramifications for the field of environmental assessment and land use. Justice J. McLachlin states in the ruling that:

*“...the fiduciary relationship between the Crown and aboriginal people may be satisfied by the involvement of aboriginal peoples in decisions taken with respect to their lands. There is always a duty of consultation and, **in most cases, the duty will be significantly deeper than mere consultation.**”* (emphasis added)

However, there are also more practical reasons for including aboriginal people and their knowledge in impact assessment. Many authors and scientists have recognized the important contribution TEK can make to improving the understanding of pre-existing conditions in an area. Sallenave (1994) notes the important role hunters, elders and other resource users can play in the collection and documentation of baseline data. He cites researchers such as Nakashima and Freeman who have found that involving knowledgeable aboriginal people as researchers often results in a reduction in the time and finances required for these studies. In addition, Sallenave emphasizes the need to consult with aboriginal

people in the identification of the Valued Ecosystem Components (VECs) to be examined during the assessment in order to ensure that all significant concerns are included.

Stevenson (1996), however, cautions against a danger that exists in documenting TEK for baseline studies. He notes the possibility for government and developers to take the traditional knowledge out of context or misinterpret it in a way that may actually harm aboriginal peoples. As well, he highlights the fact that the ecological knowledge of native peoples, far from being merely rooted in the past, is “contextual, dynamic, and forever being revised”. As a result, attempts to gather and document TEK for a particular project will not reflect the changing knowledge and understanding of aboriginal peoples over time and, as a result, would be of limited use in future assessments. Instead, Stevenson argues that the documentation of native concerns and values related to resource use and development should be of primary concern to people wishing to include indigenous knowledge in environmental assessment.

One of the limitations of many EIAs that has come under increasing criticism is the exclusion of social or cultural impacts in the assessment of a project or development (Sallenave 1994; Nikiforuk 1997). Sallenave notes that this “reductionist” viewpoint is inappropriately applied to the more holistic aboriginal outlook. In many northern communities, there is a fundamental relationship between people and their environment that cannot be divided easily. Environmental assessment in these areas must take this relationship into account, and the traditional knowledge of indigenous people in these communities can be of extreme importance in identifying the linkages that exist (Sallenave 1994).

There is also the issue of exactly how this knowledge should be included and what aspects of aboriginal peoples’ experience can and should be considered. Stevenson (1996)

outlines the varying components that make up the total knowledge base of indigenous people, including elements of traditional and nontraditional knowledge. Related to these different elements of aboriginal understanding are varying levels of incorporation of this knowledge within decision-making processes. Stevenson goes on to describe four levels for encompassing indigenous knowledge in the assessment process, ranging from inclusion of only the basic facts native people have about their environment, all the way to considering the entire extent of their knowledge and the context and worldview involved. Figure 7 outlines these four levels and their contributing elements as well as the interrelationships that are involved. Stevenson observes that no environmental assessment or co-management process has evolved beyond the second level, and very few even make it past the first.

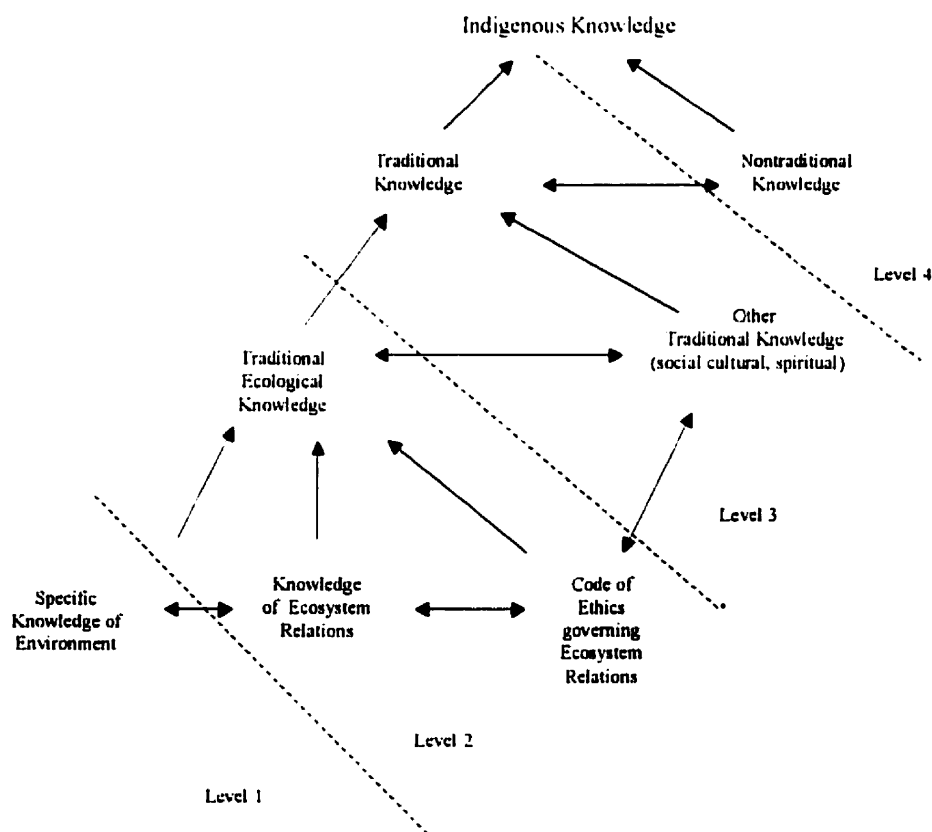


Figure 7. The four levels of including indigenous knowledge in environmental impact assessment and management processes (from Stevenson 1996, reproduced with permission).

The question of how exactly TEK and indigenous knowledge should be researched and documented is another cause for debate. Johannes (1993) outlines four essential perspectives that must be considered in any research attempting to document TEK for inclusion in environmental assessment or other resource planning decisions. The first element is taxonomic, that is, researchers must be familiar with the local names for various species. Secondly, a spatial perspective must be included, either through mapping or geographical information systems (GIS) analysis, in order to situate indigenous knowledge in the topographic area under discussion. Temporal factors are also essential to document changes in the area during various seasons and time periods. This would be especially relevant to biological events such as breeding and migration. Finally, a social perspective must be included in the research in order to examine the way that indigenous peoples perceive and utilize their natural environment. This final element is especially relevant in light of the close relationship between indigenous people and their environment discussed earlier.

Stevenson (1996) proposes a different outline for how aboriginal people and their knowledge should be included in the assessment process. He describes three phases that should be followed in order to ensure that the concerns, values, and knowledge of native peoples are adequately reflected in the end product. The first phase involves native people having input on the identification of valued ecosystem components through community consultation and direct communication with the developer. Next, partnerships should be formed between the developer and community representatives in order to discuss ways to mitigate project impacts on the VECs and share decision-making power. Finally, aboriginal people should be involved in the long-term monitoring and assessment of the project's

activities in order to ensure that the concerns and issues important to them continue to be addressed. Stevenson notes that aboriginal people are especially well suited to serve in this final capacity as their ecological knowledge and experiences from the past can help to determine whether a perceived change in environmental conditions is related to project impacts or natural variation.

A report for the Canadian International Development Agency and Environment Canada (Emery 1997) developed a set of guidelines for industry, government and aboriginal peoples attempting to include traditional knowledge in environmental assessment. It outlines specific steps for each group to follow in order to ensure participation and improve cooperation and teamwork during the process. The main recommendations are based on improving communication and mutual respect between the parties in order to establish a process that is rewarding and beneficial for all. However, the guidelines have yet to be tested in a practical sense to see if they will work in real world situations (Emery 1997).

Despite evidence on the value and justification for incorporating TEK in environmental assessment there remain criticisms and concerns related to the process. Sallenave (1994) notes the perceptual differences that may arise between what aboriginal people and developers consider a "significant" impact, as well as the need for difficult social and political policy changes in order to provide for TEK's inclusion in the assessment process. Behavioural conflicts of a personal or historical nature that exist between native groups and developers may also result in uncooperative and uncommunicative relationships that can limit the inclusion of aboriginal knowledge in the process (Dorcey quoted in Mitchell 1997; VBNC November 13, 1998). The attitudes and prejudices of government officials and scientists toward TEK have also been highlighted as being a source of friction and conflict

between the two sides (Johannes 1993; Sallenave 1994; Stevenson 1996). Finally, the spiritual and behavioural components of indigenous knowledge have also been emphasized as reasons why TEK should *not* be used in the rational and secular procedure of policy and political decision-making (Howard and Widdowson 1996).

Regardless of these criticisms, however, more and more environmental assessment Panels are attempting to include aboriginal knowledge and concerns in the process. These efforts range from requiring the developer to include traditional knowledge in their evaluation of the project's impacts to facilitating the presentation of aboriginal interests and considerations to the Panel. In the next section, four case studies will be discussed and examined in order to demonstrate the various successes and failures of these endeavours.

5.1.2 Theory in Practice: Case Studies of TEK in Environmental Assessment

The Berger Inquiry

In 1974, Justice Thomas Berger began an investigation into the proposed MacKenzie Valley Pipeline Project. The project aimed to construct an 1100 kilometre long natural gas pipeline stretching from Alaska across the Yukon to the MacKenzie Delta, through Alberta to the cities in the North American mid-continent. This was the first environmental assessment performed in the North and the first to include the voices and concerns of aboriginal peoples (Nikiforuk 1997). At the time, however, there were few rules or regulations governing the process of EA and Justice Berger was, to a large extent, free to carry out the process as he saw fit. In designing the inquiry he decided that if his report was to adequately reflect the concerns and interests of the North it was essential that he hear from those people who would be most directly affected by the project: the Inuit, Métis and Dene peoples who depended on the land for their way of life (Berger 1988).

During the next three years, Berger visited all 35 communities that would be impacted by the project and heard the testimony of over one thousand witnesses. He listened to scientists and other “experts”, to business people and to government officials, almost all of whom were telling him of the huge economic and social benefits to be realized from the project. In addition, however, he heard the eloquent testimony from native elders and hunters, from men and women concerned about the real impacts of this project upon the land and their communities (Berger 1988).

Throughout the process, Justice Berger was struck by the different viewpoints held between southern scientists and bureaucrats who saw the pipeline project as a way to bring progress and development to the Northern wilderness, and those of the aboriginal people who called this land home and saw this project and others like it as a real threat to their survival. The three year journey gave Berger a chance to discover the sights and sounds of the area for himself and come to his own understanding of the North and its peoples (Berger 1988). In the end, he recommended against construction of the project, especially in sensitive areas like the Northern Yukon where important caribou calving grounds existed. In addition, he advised government to settle land claims in the region in order to allow the native peoples to attain greater control over the area they called home (Berger 1988; Nikiforuk 1997).

Much more than a simple Panel report, Berger’s account had a great impact on the viewpoints and attitudes of southern Canadians and was “the means by which the nation examined the future of the North and of its peoples” (Berger 1988). It is still recognized as a model of excellence among environmental assessments and critics note that the “government...has yet to establish a coherent process that duplicates the spirit or integrity of Berger’s public review” (Nikiforuk 1997).

The Assessment of Military Flying Activities in Labrador and Quebec

In July, 1986, a seven-person Panel was appointed to consider a proposal by the Department of National Defence (DND) to make changes to its military flight patterns in areas of Labrador and Quebec. The assessment was in response to the upcoming termination of the Multinational Memorandum of Understanding (MMOU) between Canada and its Allies in 1996. Specifically, DND wished to more than double the number of low-level flights from 7000 to a maximum of 15,000 per year. The Panel's mandate was to examine the impacts of flying on the natural environment and public health and its socioeconomic effects on communities and resource harvesting activities (CEAA 1995).

During public consultations, there were significant differences of opinion noted by the Panel between those people who directly benefited from the project activities and those who did not. Many aboriginal groups were strongly opposed to the flight activities as they existed at the time and felt that the noise levels were having significant impacts upon the land and wildlife in the region. They repeatedly urged the Panel to require further investigation and study of the issue. However, the Panel decided to carry on with the assessment process in spite of the fact that it meant they would have to rely mainly upon surmise and conjecture about what the noise effects might be. This decision by the Panel was met with outrage by many aboriginal people and resulted in several native groups in the area officially withdrawing from the public hearings held in 1994 (CEAA 1995; Innu Nation Task Force on Mining Activities 1996; Innu Nation 1998).

In 1995, after almost ten years of examining the issues, the EIA Panel tabled its report. In the document, the Panel noted that the traditional land base of aboriginal groups like

the Innu has been reduced and negatively affected by previous actions such as the construction of the Smallwood Reservoir and the Trans Labrador highway (CEAA 1995). In addition, they remarked that the noise and invasion from the military jets are having further impacts on hunting and land use activities. The EA report acknowledged the fact that many native people, especially children, are reluctant to return to the land due to their fear of being overflowed by these supersonic machines. It observed this could have serious consequences for the use of traditional land, as well as for the social systems of exchange and territorial integrity that are at the heart of native cultures in the area. The contribution of harvesting activities to the health and well-being of aboriginal peoples and the important role this land use plays in transmitting knowledge to the young was also recognized by the Panel. It stated that there was a “significant cultural and religious importance associated with the use of the land that is unquantifiable in monetary terms” (CEAA 1995).

Despite these admissions, however, the Panel recommended an *increase* in the number of flights by military jets (CEAA 1995). This decision ignores any application of the ‘precautionary principle’ to the process as well as the testimony of many aboriginal hunters who stated the negative impacts they had noticed. The withdrawal of several native groups from the public hearings largely weighted the testimony heard by the Panel in favour of those who benefited from the project’s activities, a fact that was noted by the Panel but not remedied (CEAA 1995). In effect, the concerns and knowledge of aboriginal peoples were largely ignored in the Panel’s final decision, despite the potential impacts of the project. The result of this whole process has been a legacy of increased distrust, anger and despair among native peoples such as the Innu (Innu Nation Task Force on Mining Activities 1996). In the end, the Environmental Assessment of Military Activities in Labrador and Quebec was

considered by the aboriginal groups as being incomplete, biased, and lacking in integrity. It reflected badly on both the assessment process itself and the characters of the Panel that tabled the report and the Federal government that chose to accept it.

The North Central Project

The North Central Project was designed to fulfill the growing electricity needs of nine aboriginal communities in Northern Manitoba. These communities had first received diesel generated electricity in the 1960's but a growth in the population and the number of new buildings had increased the demand to the point where new supply alternatives became necessary (Manitoba Hydro 1993). The driving forces behind initial discussions of the project were the communities and it was only fair that their concerns and viewpoints be included once the process was in motion. Unfortunately, they were left out of the original discussions between government and Manitoba Hydro and had little chance to influence the proposal development (Federal-Provincial Environmental Assessment Panel 1992). In January 1992, the Provincial government and Manitoba Hydro, acting without community consultation, agreed on the construction of a 520 kilometre transmission line that would connect the communities to the provincial electricity grid. Initially, it seemed as though the North Central project would simply be another example of aboriginal people and local communities being informed of government and industry decisions after the fact.

All that changed with the appointment of the Environmental Assessment Panel in February of 1992. First of all, the membership of the Panel itself was very unique. For the first time in Canada, the majority of the Panel members were aboriginal. As well, it was the first time that the Chairperson of an EIA Panel had been a native (Federal-Provincial

Environmental Assessment Panel 1993). The familiarity of the Panel with the customs and language of the local people went a long way towards establishing trust and respect between its members and the communities.

However, the most important aspect of the North Central EIA was the emphasis placed upon the participation of people from the project communities. The establishment of the Guiding Principles set out by the Panel at their first meeting stressed the fact that the process would set a high level for public involvement (Federal-Provincial Environmental Assessment Panel 1993). By recognizing community and cultural concerns and having the assessment stages based in the northern communities, the Panel allowed the native people who would be directly impacted by the project activity to participate in a meaningful and substantial way. As well, the final principle stated that the Panel would place just as much importance on the process of the assessment and the interactions of the various parties as upon the final written report. Again, this reflected the high level of public involvement desired and allowed trust and relationship building to develop as part of the environmental assessment process (Federal-Provincial Environmental Assessment Panel 1993).

Prior to development of the Environmental Impact Statement (EIS) Guidelines, the Panel felt it was prudent to consult with people in the nine communities in order to receive their input and hear their concerns. In order for this consultation to be effective, however, it was necessary that the people be informed about the North Central project and the environmental review process itself. With this in mind, individuals were contacted in each of the communities to serve as liaison workers for the Panel. They were responsible for distributing information to local leaders and other residents to ensure that an adequate knowledge base existed in the communities to allow them to grasp the significance and

potential impacts of the project and express their concerns to the Panel. Several months after beginning this process, the Panel visited each of the communities and met with local leaders and residents to hear their concerns about the potential environmental, social, and economic impacts of the North Central project (Federal-Provincial Environmental Assessment Panel 1993).

Following these meetings, the Panel developed the Guidelines for what would be included in the Environmental Impact Statement (EIS) produced by Manitoba Hydro. By communicating directly with the local people and incorporating their concerns and views into the Guidelines document, the Panel was able to ensure that the EIS would focus on those issues of interest to community residents (Federal-Provincial Environmental Assessment Panel 1993). In fact, these issues ended up being significantly different from those initially identified by Hydro employees, emphasizing the usefulness and need for public involvement in all stages of the process (Henley 1999).

The EIS was released by Manitoba Hydro in April 1993. Unfortunately, it did not follow the high standards set by the Panel in including native concerns and knowledge. Gaps in data on the baseline environment had led Manitoba Hydro to attempt to fill in the information with traditional ecological knowledge of the community residents. Several community workshops had been initiated in an attempt to document TEK and report the findings to Manitoba Hydro for use in the EIS (Manitoba Hydro 1993). However, the proprietary nature of this knowledge as well as the initial mistrust that existed between the parties meant that these efforts were largely unsuccessful. In any case, the EIS seemed to depend mainly on scientific studies for its conclusions even in cases where it disagreed with

TEK, for example in the predicted impacts on moose and deer populations (Manitoba Hydro 1993; Elders Response to *Fur, Feathers and Transmission Lines* Report 1995)

Following the public release of the EIS, community liaison workers were again involved in notifying and educating residents. Public hearings were held in each of the nine communities and the high participation rate made it evident that the workers had done their job well (Federal-Provincial Environmental Assessment Panel 1993). Most of the presenters were either from community leadership organizations or were elders. There was a lack of young people and women attending the hearings and this raised some concerns among Panel members that their viewpoints were not heard and addressed during the process (Federal-Provincial Environmental Assessment Panel 1993). However, the Community Liaison Committees recommended by the Panel to monitor project impacts helped to rectify this initial lack of involvement by requiring representation by women and youth (Henley 1999).

The North Central EIA process is a testament to the benefits of involving affected communities early in the process. In fact, the efforts of the North Central Panel to receive community input went beyond EA requirements and set a new standard for public participation. As well, by mediating and assisting in the interaction and communication of the various players, the Panel helped to ensure that relationship building and trust *grew* during the process instead of being damaged by it. This in turn had beneficial repercussions for the environment, as communities were able to express their concerns about particularly sensitive local areas directly to Hydro employees, who then changed the transmission route to avoid those areas (Manitoba Hydro 1996b). As well, the cooperation during the EIA process also helped ensure positive interaction between the various groups during the monitoring activities

(Manitoba Hydro 1996a). In the end, it was this spirit of inclusion, cooperation, and communication that guaranteed the overall success of the project.

The NWT Diamond Mine

In December, 1994, a Panel was appointed to review the proposal by Broken Hill Proprietary Ltd. (BHP), an Australian company, to develop open-pit and underground mining for five diamond-bearing kimberlite pipes in the Lac de Gras region of the Northwest Territories. This area is located approximately 300 kilometres from Yellowknife and is subject to overlapping land claims from various native groups (CEAA 1996; Wismer 1996).

Many observers have noted the existence of huge economic and political pressure to allow the project to proceed. Berkes (1999b) suggests that this atmosphere resulted in a Federal strategy to ensure the quick and timely approval of the mine with a minimum of conflict. This strategy included community consultations, largely token in nature, and the appointments of an aboriginal person and an environmentalist to the assessment Panel. In this way, the government could be seen as promoting the integrity of the process, despite the fact that it allowed permits and licenses to be granted for mine construction before the assessment was even complete (Berkes 1999b; O'Reilly 1996).

Scoping hearings for the project were held in ten communities during a two month period in early 1995. Following these hearings, the Panel developed guidelines for the EIS that, among other things, required BHP to give "full and equal consideration" to traditional knowledge in its study of project impacts (CARC 1996). A scant two months later, in July, 1995, the company submitted the EIS to the Panel for public review. The short time frame involved raises questions regarding the seriousness of BHP's agreement to incorporate native

knowledge. In fact, CARC (1996) states that “Traditional knowledge research findings were limited to an overview of the literature, interviews with some of BHP’s own aboriginal employees, and preliminary issues identified by aboriginal organizations.” As a result, most people agree that the company failed in this important requirement.

Public hearings on the EIS and its contents were held in early 1996. However, the fact that the complete EIS was only available in English meant that it could not be assessed or studied by many elders or hunters in the communities. Even for those people who could read the report, the summer release date meant that they were probably out of the communities at the time and upon returning had a very limited period in which to review the document (Wisner 1996). The rushed nature of many of the public hearings and the whole assessment process in general was criticized by many participants, including BHP officials, who felt it did not allow for adequate discussion and contemplation of the issues (Berkes 1999b; CARC 1996; Wisner 1996).

Despite these concerns, the Panel carried on with the process and submitted its report and recommendations in June. The general nature of the recommendations and the Panel’s decision to ignore the significance of important factors such as land claims and cumulative impacts resulted in a high level of disappointment and anger among native groups and environmental organizations (CARC 1996). Some groups were so disillusioned with the whole process that they seriously considered the idea of initiating court litigation to resolve their concerns (O’Reilly 1996). Many concluded that the assessment of the project had been “neither rigorous, comprehensive, nor fair” (CARC 1996), and that the lack of adequate funding for the review had resulted in a “rushed and incomplete” process (Berkes 1999b).

Once again, the BHP assessment had repeated the dismal tale of money and manipulation coming ahead of environmental or native concerns.

Fortunately, the story did not end there. After reviewing the Panel report, the Minister of Indian Affairs and Northern Development decided that a conditional approval would be granted to the company, subject to a 60 day period during which “satisfactory progress” on several issues had to occur. These issues included the negotiation of an Environmental Agreement between the company, government, and aboriginal groups, and the arrangement of impact and benefit agreements (IBAs) between the company and affected native groups (O’Reilly 1996). Although the short time frame allowed by the Minister left many groups scrambling for resources, in the end the deadline helped to focus discussions and led to finalization and agreement between most parties (CIRL 1997). Aboriginal peoples were involved in designing the environmental agreement and also made recommendations to the Technical Advisory Committee (TAC) of the Northwest Territories Water Board regarding the water license acquired by the company. Many aboriginal groups expressed the view that the pressure to settle these issues at the outset may have prevented legal or protest action from occurring in the future. In addition, the Canadian Institute of Resources Law (1997) noted in its examination that the BHP review shifted the debate on consultation versus participation of affected groups in important decisions strongly towards the scenario of direct participation. However, they point out that most parties were more satisfied with the end result of the whole affair rather than the EA process itself. In essence, as O’Reilly (1996) states, the beneficial aspects of aboriginal participation and multi-stakeholder agreement that developed had been accomplished “despite the environmental assessment process” and not because of it.

5.2 The Innu Ecological Knowledge Project

The discussion will now turn to the Voisey's Bay environmental assessment and the attempt to include traditional knowledge through the Innu Ecological Knowledge Project, in which the author participated.

5.2.1 Background and Development of the Project

The guidelines of the Voisey's Bay Environmental Assessment Panel issued on June 20, 1997, required the proponent to "fully consider local aboriginal knowledge and expertise in preparing the EIS" (Section 3.1) (CEAA 1997b). Two general approaches were recommended to Voisey's Bay Nickel Company (VBNC) to carry out this task. First, aboriginal knowledge could be directly incorporated into the EIS through discussion and interaction with aboriginal communities. Alternatively, VBNC could facilitate the presentation of this knowledge to the Panel by the communities themselves.

Prior to the issuance of these guidelines, discussions had been taking place between VBNC and Innu Nation, and a number of studies had already been funded. In December, 1995, a study was initiated to document topics of concern related to the project in the communities of Utshimassit and Sheshatshiu. The final report was presented to the company in March 1996 and was entitled "**Ntesinan Nteshiniminan Nteniunan: *Between a Rock and a Hard Place***". This report outlined the concerns and issues being discussed in both communities and was one of the reference documents used by the Panel when it was preparing the EIS guidelines (Innu Nation Task Force on Mining Activities 1996; CEAA, 1997b).

Originally, Innu Nation and VBNC thought to allow the inclusion of aboriginal knowledge in the process through a series of six studies aimed at collecting information on different facets of the Innu lifestyle. These studies would look at areas such as community

profiles, Innu society and culture, subsistence and knowledge, land use, healing, and Innu ways of life and livelihood. However, following a meeting in Sheshatshiu in May, 1996, Innu Nation decided it was not satisfied with the approach, schedule, or level of funding for these initiatives and informed the company that further discussions would have to take place (VBNC 1998).

In February, 1997, Innu Nation and Voisey's Bay Nickel Company agreed on the funding for a socio-economic study that was to be completed by December 1997. As this study end date was *after* the projected submission date of the environmental impact statement, it was recognized that the information would not be available for inclusion in the report and would need to be presented separately to the Panel (VBNC 1998).

Soon after the socio-economic study began, controversy was raised over whether or not it was responsible for documenting traditional ecological knowledge as well. Voisey's Bay maintained that it was understood in the initial discussions that the study would focus on gathering the traditional knowledge of the Innu people in addition to documenting baseline socio-economic issues. However, Innu Nation disagreed with VBNC's perspective and insisted that the study was intended to focus solely on socio-economic factors (VBNC 1998; Christine Cleghorn pers. comm. 1999).

Innu Nation proposed a separate study to VBNC executives that would concentrate on gathering the knowledge Innu people had about the land and animals in Voisey's Bay and the potential impacts of the mine. This initial proposal was for a one year project that would examine the knowledge of elders and hunters during different times of the year. The proposed budget for this project was in the area of \$800,000 (VBNC 1998).

Voisey's Bay officials had a number of concerns with the proposal according to Christine Cleghorn (pers. comm. 1999), one of the Innu Nation negotiators for the project. First of all,

they were concerned that the Labrador Inuit Association (LIA) might demand additional funding of the same amount to carry out its own study. This did not turn out to be the case, however, and the LIA seemed content with the projects and workshops it had already participated in with VBNC. In addition, Ms. Cleghorn believes the company was concerned that the results of the study might be prejudicial towards the company's actions, especially considering the fact that some concerns had already been raised about the impacts of exploration activities on the Voisey's Bay area.

Discussions between Innu Nation and Voisey's Bay Nickel Company continued throughout the fall and into the winter of that year. The two sides could not agree on the funding or timeline of the study and tensions were strained between both parties. Finally, in March of 1998, feeling some pressure to settle the issue due to the public hearings looming in the fall, Innu Nation agreed to a scaled-down version of their initial proposal (Christine Cleghorn pers. com 1999). Instead of a year long study, the project would be completed over the course of the summer and the results would be presented to the Panel at public hearings in the fall. The total budget for the project decreased from the initial proposal of \$800,000 to only \$70, 000 (VBNC 1998).

On May 14, 1998, Innu Nation and Voisey's Bay Nickel Company signed a contract for completion of this project. The proposed objective was to "document Innu ecological knowledge and prepare for its presentation at the public hearings stage of the environmental assessment process". Innu Nation was responsible for hiring the study team and ensuring that the project was completed in time for the public hearings. However, in case of a delay in the project timeline, a clause in the contract that was inserted by VBNC officials ensured that Innu Nation could not use that occurrence as a reason to request a postponement of the public hearings.

Voisey's Bay Company was responsible for funding the project and it was agreed in the contract that this would satisfy its requirement by the Panel to facilitate the presentation of aboriginal knowledge at the public hearings (Innu Ecological Knowledge Project Agreement 1998).

The study that developed from the contract signed between Innu Nation and Voisey's Bay officials became known as the "Innu Ecological Knowledge Project". In the following pages, this project will be examined for the process and methodology it used to gather the traditional knowledge of the Innu people. Issues that were raised and obstacles that were encountered during the course of the project will also be discussed. The environmental impact assessments outlined earlier that attempted to include traditional ecological knowledge will be compared to the Voisey's Bay scenario. Finally, future guidelines and recommendations will be developed that will discuss how environmental assessments may be improved in order to ensure that aboriginal people have a voice in the process and that their knowledge and concerns are fully addressed and considered.

5.2.2 Project Setting

The main focus for the Innu Ecological Knowledge Project was the community of Utshimassit, also known as Davis Inlet, a northern community on the coast of Labrador. Utshimassit is a town of about 500 individuals, almost entirely made up of Innu people. As in many native communities in the North, the majority of the housing is substandard and most of the community is without running water or sewage. During certain periods of the spring and fall, the people of Utshimassit become virtual prisoners on their island as dangerous ice conditions during break-up and freeze-up prevent them from leaving. The only other way on or off the island is through the twin-engine plane service offered by Air Labrador. However,

tickets are expensive and the service is often unreliable during winter storms and foggy conditions.

The people of Utshimassit are currently in the process of relocating to a site on the mainland known as Natuashish or Sango Bay. It is hoped that this relocation will help to combat some of the social problems being experienced in the community. In addition, improvements in water and sewer systems should help alleviate some of the health problems currently being treated.

Along with trying to relocate an entire community and to heal some of the social problems of their fragmented society, the Innu people are also in the process of land claims negotiations with the Federal and Provincial governments. Almost the entire land base of Labrador is currently subject to claims by indigenous peoples. This includes the Voisey's Bay region, known as *Emish* to the Innu people, which is actually an area of overlapping claims from both the Innu and the Inuit people. The numerous rivers and lakes in the area were traditional fishing areas for the Innu and are still used today. In addition, the George River caribou herd migrates through Voisey's Bay and these are extremely important animals to the Innu people for both their cultural and nutritional value (Innu Nation 1998). Many people in Utshimassit feel that, with all the issues competing for their attention at the present time, they are simply unable to handle the additional burden of a mine and all its related impacts (Innu Nation 1996).

It was within this mix of social issues and concerns that the Innu Ecological Knowledge Project took place. The study team was initially composed of four individuals, with an additional member added soon after the project began. The senior researcher for the project was Dr. Daniel Clément, a Montreal based anthropologist with considerable experience among the Innu people of the Quebec North Shore. Since the early 1980's he has completed two major studies in the

area dealing with Innu knowledge of plants and animals (see Clément 1990, Clément 1995). Dr. Clément has considerable experience with Innu customs and is knowledgeable about many aspects of the culture. Although he is not completely fluent in Innu-Aimun, his past experience has made him quite familiar with many of the technical terms used by Innu elders and hunters during their discussions of plants and animals. This linguistic ability was extremely helpful during the interview process and also gained him the respect of many Innu elders.

Two Innu researchers were also hired to act as translators and field assistants during the course of the project. The first researcher was a forty-one year old male from the community of Sheshatshiu who had also lived in St. John's for close to a decade. His fluency in English and exposure to white customs and 'scientific' thought were helpful in translating key ideas and concepts between the two languages.

The second Innu researcher was a forty-eight year old male originally from Utshimassit, but who currently makes his home in Sheshatshiu. He is very knowledgeable about the land and animals and is respected within both communities for his hunting ability and congenial attitude. Although not as fluent in English as the first Innu researcher, his familiarity with hunting and fishing terms made him quite valuable throughout the project.

During the first official meeting of the research team, the possibility of documenting and presenting Innu knowledge of the *Emish* area in the form of a video was raised. After some discussion, it was agreed to hire another person to carry out this task. A thirty-eight year old woman from Utshimassit was hired to complete the video. She had been involved in the production of a video during the socio-economic study and is quite knowledgeable about video recording and production. The completed video entitled *Innuat Utashinimuaui* was presented to

the Panel at the public hearings and is available for purchase by contacting the Innu Nation office.

The author, a twenty-five year old female, was the final member of the research team, and contributed her organizational and botanical skills to the project. A previous degree in biology from the University of Prince Edward Island and the completion of one year of her Master's degree in Natural Resource Management at the University of Manitoba served as the basis for her knowledge and experience.

The timeline for the Innu Ecological Knowledge Project ran from June 5-July 24 and from September 7-15. The initial interview schedule and research documentation was completed during June and July, with cross-checking and data verification occurring in September. Due to her academic commitments, the author was unable to be present during the September time period and as a result, the observations and comments contained in the following pages will be drawn from her experiences during the summer research period.

5.2.3 Methodology

In order to document Innu ecological knowledge relating to the Voisey's Bay site, a variety of research methods were used. These included individual and group interviews, the use of maps and aerial photographs, and on-site visits and helicopter surveys of the area by the research team and community elders.

The main technique used throughout the research was to interview individual elders and hunters in the community of Utshimassit. Over the summer, individual interviews were conducted with six men (four elders, two hunters) and with five women (all elders). Two men and three women from these eleven informants were among those interviewed for the author's research on Innu medicine, as presented in Chapter 4. These key informants had been

identified in various ways, including the use of community lists, personal recommendations, or during the interview process itself. The questionnaire was developed by Dr. Clément based upon a similar survey used in one of his previous investigations on the Quebec North Shore. At that time, Innu research assistants had helped him to design the format and context of the questionnaire. As a result, the study was judged to be applicable to the current investigation. In order to ensure that the set of questions was properly understood, it was decided to provide a bilingual framework. The two Innu researchers assisted Dr. Clément in translating the questionnaire into Innu-Aimun for use in the interview process. The complete questionnaire used during the project is provided in the final report of the research team entitled "*Innuat Utashinimau: The Innu People's Rock*" (Clément 1998) available from the Innu Nation.

Prior to asking any specific questions regarding elders' knowledge of the *Emish* area, however, it became obvious that some preliminary work on placenames (toponyms) gathering would have to be carried out. This was due to the fact that many elders were unable to relate their knowledge to the National Topographic System maps being used by the research team. In addition, however, placenames are also an important indication of the use and value placed upon an area by a people. The numerous toponyms gathered during this study are evidence of the historical importance of the Voisey's Bay area to the Innu and its continuing relevance to their culture (Clément 1998).

As a starting point, placenames were compiled from previous studies and surveys in the area. These preliminary names were verified with elders during the interview process and served as useful reference points for situating the discussions that followed. In order to obtain unrecorded names for the area surrounding Utshimassit and Voisey's Bay, visualization techniques were used, such as imaginary canoe trips. Aerial photographs were of limited

value. The ability of some elders to at least partially read maps was also useful in this initial investigation.

Following the collection of placenames for the *Emish* area, elders were interviewed on various topics including their knowledge of plant and animal species and their habits, climatic conditions, geographical features, etc. In addition, elders were asked to relate observed or potential impacts of the mine development and related activities on any of these features. In many cases, elders were able to contribute specific information on many of these topics that had not been included or identified in the EIS produced by Voisey's Bay Nickel Company. As well, their knowledge of variations in migratory patterns and species distribution over time also stood in marked contrast to the simplistic accounts in the company's report (Clément 1998). A full outline of the results obtained during these interviews can be found in the project's final report.

In order to represent the data obtained from these interviews in spatial form, the placenames gathered previously were inscribed on the maps. Information regarding migration trails, den sites, fishing or hunting areas, etc. were all marked on the maps in relation to their approximate geographical area as identified by the local placenames. This geographical data was later digitized by Innu Nation employees and represented in GIS format for the final report to the Panel.

There were also several group interviews carried out over the summer with various elders. In most cases, these consisted of a maximum of two people both of whom had extensive knowledge on a particular topic. This allowed for cross-checking and verification of the subject while minimizing the total time required, an important factor due to the limited time span of the research.

During the summer, one large group interview took place during an on-site visit to the Voisey's Bay area. Eleven elders participated in this day long event. The morning hours were spent at a traditional Innu camping spot on the south coast of Voisey's Bay. At this time, elders discussed their knowledge of plants and traditional medicines. Specimens were collected to ensure proper identification. The elders also speculated about the effect the mine and related activities could have on these plants and their value as medicines for the Innu people. The morning also included a visit to the site of an important rock used by the Innu people as a dye for traditional handicrafts and clothing. (This rock was later identified as containing hematite, commonly known as ochre, historically used as a dye by many North American native groups.)

During the afternoon, elders were taken by helicopter to visit a drill site and the original exploration camp of Voisey's Bay Nickel Company. They were introduced to company officials and to fisheries biologists who were conducting a benthic survey of the nearby lake. Also at this time, the elders were taken to the current camp near Anaktalak Bay where they were shown drill core samples and taken on a tour of the site. Dr. Clément took advantage of this time period to discuss with the elders their impressions of the day's events and their general thoughts regarding the mining development. The complete transcript of this interview appears as an appendix in the final report.

In addition to this on-site visit, there was also one other return to Voisey's Bay with an elder. At this time, instead of using helicopters, the research team visited the area by boat. This allowed the team to gain a sense of the actual distances involved and an appreciation for a more traditional method of travel. During this visit, the team was able to gather more information on plant species as well as important hunting sites.

The four members of the original research team had also met with company officials and had a helicopter introduction to the VBNC mine site at the beginning of the summer. This helped to orient the team to the geographical area and introduce them to the company officials they would be dealing with during the research period.

5.3 The Voisey's Bay Assessment and the IEK Project in Perspective

5.3.1 Aboriginal Participation in the Voisey's Bay Assessment

In retrospect, the environmental assessment of the Voisey's Bay project did a fair job of including aboriginal knowledge and concerns in the process. Both the Labrador Inuit Association (LIA) and the Innu Nation, together with the Federal and Provincial governments, were responsible for drafting the Panel's Terms of Reference as outlined in the Memorandum of Understanding (MOU) (CEAA 1997a). In this document, the Panel was required to "give full consideration to traditional ecological knowledge whether presented orally or in writing". In actual fact, the EIS Guidelines issued by the Panel went beyond this instruction to require the proponent to "fully consider local **aboriginal knowledge** and expertise in preparing the EIS" (emphasis added). In this way, the Panel was attempting to ensure that the entire range of Inuit and Innu knowledge and concerns was recognized and not just those relating specifically to the land and ecosystem relationships. The Panel stated that it did not want to limit the potential contribution of the Innu and Inuit in the process simply to those aspects of their knowledge strictly defined as TEK (CEAA 1997b). As a result, the efforts of the Panel can be seen as helping to move the assessment further up the hierarchy of Stevenson's four knowledge inclusion levels discussed earlier (see Figure 7).

The fact that scoping sessions were held in the communities themselves is also a good sign of the Panel's attempt to include native knowledge. These hearings allowed the views

and concerns of native people to be expressed and incorporated in the EIS Guidelines issued to the company. However, there is some concern with the limited time that was allowed. The scoping sessions only lasted a month and a half, and the Panel was only present in most communities, for example Sheshatshiu and Utshimassit, for two days in total (CEAA 1999). This hardly seems adequate time to listen to all the views and concerns of the community members. Of even greater consequence is the requirement in the MOU stating that the Panel take no longer than 120 days to issue the completed EIS Guidelines, even with the preliminary scoping sessions involved (CEAA 1997 B). This does not seem to allow ample time for serious discussion with the various communities regarding the potential issues and impacts of the development.

Contrast this time period to that of the Berger Inquiry or the North Central EIA, both of which exemplify efforts to include native people. Justice Berger took over two years to meet with local people and discuss their concerns and values (Berger 1988). In Manitoba, the communities were given almost three months to educate themselves regarding the North Central project and the assessment process prior to even meeting with the Panel. In addition, the North Central Panel returned to the communities for input regarding the Draft EIS Guidelines after this initial period of consultation (Federal-Provincial Environmental Assessment Panel 1993).

The Voisey's Panel attempted to receive feedback on a set of guidelines that communities barely had time to digest. Although it did use background documents prepared by Innu Nation and the LIA in its development of these Guidelines (see for example, Innu Nation 1996), simply reading about these concerns should not be considered a substitute to hearing firsthand the vocal and often eloquent testimony of the people affected by these

developments. The author herself can attest to the power and passion for their land and their way of life expressed by some Innu men and women during the land claims hearings in June 1998. These same words transcribed in the summary document *Money Doesn't Last, The Land is Forever* (Innu Nation 1998a), although still powerful, simply do not resound as potently as they did hearing them in person. As a result, anyone desiring to comprehend the real importance placed upon various issues by the Innu people should allow enough time to hear their views firsthand. Although attempted, this was simply not done in the Voisey's EIA as effectively as it might have been.

Of course, the time allotted for community consultations and public hearings does not, in and of itself, guarantee the successful inclusion of native knowledge and perspectives in the process. Despite the consultation periods in both the BHP and the Military Flying assessments, most observers agree that these processes failed miserably in their attempts to include the voices of native peoples affected by the development (Nikiforuk 1997; O'Reilly 1996). As well, the differences in the time periods for community consultations between the North Central Project and the Berger Inquiry are evidence that inquests of a greater or lesser duration can still result in equally effective processes.

More than the time period involved, it appears to be the personal integrity and commitment of the Panel membership itself that goes a long way towards insuring that the participation of native communities takes place and that their concerns are effectively heard. Both the North Central Panel and Justice Berger were strongly committed to the principle of native people taking part in the decisions that would affect them, and this commitment was reflected in the end result and outcomes of both assessments.

The Voisey's Bay Panel appears to mirror this spirit to some extent, based upon both the EIS Guidelines issued and the recommendations outlined in their final report, most notably the recommendations regarding land claims settlement and native involvement in monitoring activities (CEAA 1999). However, their decision and many of the public hearings were carried out in light of the Delgamuukw ruling, a factor noted by the Panel during its discussion, and one wonders if a different political atmosphere would have resulted in a substantially different outcome.

The fact that the Guidelines permitted VBNC to incorporate aboriginal knowledge either directly into the EIS or through facilitation of its presentation at the public hearings has both positive and negative aspects. On the one hand, by allowing projects such as the Innu Ecological Knowledge Project to remain under the control of aboriginal organizations the Panel was ensuring that knowledge received through these projects remained the property of the respective native group. This permitted the Innu Nation to determine exactly how much and what kinds of information would be shared with the Panel and VBNC executives during the public hearings, and helped to avoid the potential abuse of intellectual property rights discussed by Stevenson (1996). On the other hand, the fact that relevant knowledge was not presented directly to the company during preparation of its EIS meant that its influence on project design and mitigation measures was limited. In addition, by allowing the parties to operate almost totally independently of each other, the Panel did not help to facilitate the formation of positive relationships or trust building that were such beneficial aspects of the North Central Project. In fact, a confrontational attitude between Innu Nation and VBNC officials seems to have prevailed throughout much of the Voisey's Bay process.

However, the fact that the EIS was completed prior to the Innu Ecological Knowledge contract even being signed meant that this information could not have been included in the written document anyway. Examination of the EIS itself raises the question of whether VBNC officials were truly open to incorporating aboriginal knowledge and concerns in the project design and discussion of impacts. The Labrador Inuit Association managed to present aspects of its knowledge to VBNC in time to be included in the EIS. However, for the most part their perspectives and information ended up mostly being written in the margins of the pages and did not seem to be considered seriously in the main body of the report. In addition, the effort VBNC made to research past compilations of available data on things such as Innu and Inuit placenames was largely inadequate. The use of names in the documents such as “Discovery Hill” and “Camp Pond” also shows a lack of respect by disregarding the names that had already been given to these areas by the Innu and Inuit (VBNC 1997). In actual fact, the Voisey’s Bay EIS suffered from the same limitations and ignorance as the EIS completed earlier for the BHP mine.

Examination of the Voisey’s assessment process in light of Stevenson’s (1996) three phases for inclusion of aboriginal knowledge and participation also shows some limitations. Although Innu and Inuit people did take part in the identification of VECs for the study, their concerns were expressed to the Panel and not directly to the developer as Stevenson advises. In addition, although various projects were funded by VBNC in association with the two native groups, there were no real partnerships formed between the company and aboriginal organizations. Both the Innu and the Inuit seemed to have little direct influence on the design of mitigation activities outlined by VBNC officials. Stevenson’s third phase of having aboriginal people involved in monitoring the project’s activities was repeatedly stressed as a

necessary aspect of the mine's approval by the Innu Nation (Innu Nation 1998b). However, the lack of any real progress towards this inclusion during the assessment process itself leaves the final decision largely up to the government.

In comparison, the North Central Project included all of Stevenson's three phases, as aboriginal people were able to discuss the transmission route directly with the company and have a real impact on the project design. Individuals from the community were also significantly involved in monitoring during the project's construction through their role as Environmental Protection Workers and Community Liaison Committee members (Manitoba Hydro 1996a&b).

In the end, the Voisey's Bay assessment did have some very positive aspects that should be followed by other EA Panels wishing to provide an optimum environment for native participation in the process. The involvement of both native groups in the area in drafting the Terms of Reference is particularly commendable. As well, the Panel's recognition of the full range and value of all native knowledge and concerns about the project, as evidenced by their emphasis of aboriginal knowledge over TEK, is also a positive step. Notwithstanding the concerns mentioned earlier, the fact that the Panel provided for independent studies funded by the proponent but carried out by the native organizations also shows their recognition of issues such as intellectual property rights. Finally, the Panel recommendations show an understanding on the part of the Panel that native peoples in Labrador must be involved in developments carried out on their traditional lands (CEAA 1999). The most sincere way of doing this is through the settlement of native land claims and the involvement of the Innu and Inuit in monitoring the project's activities and impacts.

5.3.2 Including TEK Through the Innu Ecological Knowledge Project

In evaluating the IEK Project, the first issues raised are in regards to the negotiation process that led up to the project contract. First of all, several of the key elements identified by Mitchell (1997) as being essential to successful partnerships were missing from the process. In particular, Innu Nation was not able to negotiate from the same position of power as Voisey's Bay officials, nor, of course, did it have access to the same level of resources enjoyed by the company (financial assets, support of an international parent company, etc.). The reliance of Innu Nation upon the company for project funding limited their standing in the negotiations and placed them in an inferior bargaining position. As well, there was a lack of respect and trust on both sides of the bargaining table, due in part to ignorance of company officials regarding the value of aboriginal knowledge (Christine Cleghorn pers. comm. 1999). Past actions by VBNC executives and consulting groups hired by the company, including an attempt to surreptitiously gather TEK through employee interviews and the company's move to have the mine infrastructure exempted from the EA process, also harmed the company's reputation with the Innu (Tompkins 1996). Innu Nation's court actions and litigation, however, did not help to improve the organization's standing in the eyes of VBNC (Napier 1998). In addition, the Innu people's experience in several other EIAs, most notably the military flying assessment discussed earlier, had made them suspicious of the motives of industries like Voisey's Bay Nickel Company. All of this served to foster an atmosphere of tension and mistrust between negotiators. As a result, although the negotiations did result in a contract to fund and carry out the Innu Ecological Knowledge Project, they did not help to ease tensions between the two sides or to facilitate future communication or cooperation.

The negative aspects of this partnership arrangement carried over into the research project itself. Suspicion and mistrust remained an issue and this had implications for the ability of the research team and VBNC officials to effectively communicate throughout the summer. Members of the research team were often unwilling to deal directly with VBNC officials. Attempts by Voisey's Bay workers to participate in events such as the group interview and on-site visit, rightly or wrongly, were seen as just another way for the company to furtively obtain traditional knowledge of the Innu people. In addition, it was felt that many elders would not feel comfortable sharing their knowledge or raising concerns or questions if faced with company administrators. All of this conflict and suspicion meant that opportunities for communication and clarification between the two sides were limited. In fact, this was one of the main limitations of the project's success in terms of both negotiation delays that prevented its inclusion in the EIS and also the poor start towards building an effective relationship between the parties.

This lack of communication also limited the ability of individuals in the communities to become educated about project issues and impacts. Although VBNC offered to hold information sessions in both Sheshatshiu and Utshimassit, their offers were rebuffed due in part to this problem with behavioural conflict. This could imply that many of the elders and hunters interviewed during the course of the IEK Project did not have access to adequate information in order to fully address the range of possible project impacts. During the group visit to the site, the author noticed that many of the elders did not seem to have a complete grasp of the mining process or the project proposal in general. As well, the methods and explanations from the fisheries technicians regarding the benthic survey they were performing seemed to confuse some of the elders. At the same time, however, scientists are often

ignorant or sceptical of the techniques and methods relied upon by aboriginal elders in their understanding of the land. This two-way misunderstanding and ignorance would seem to imply the need for communication and discussion between the two groups so that each side can come to an appreciation of the other's techniques, even if they are not necessarily in agreement with them.

The poor communication between the company and the communities also resulted in spawning rumors that did not improve the reputation of VBNC in the communities. Although company officials often expressed frustration with the stonewalling that developed, it is necessary for them to attempt to understand the Innu's position on this issue and the factors that have influenced these attitudes.

There were also a number of limitations and obstacles encountered that were directly related to the research methods and attributes of the project team. One factor that had to be considered was the geographical distance involved. As noted earlier, the community of Utshimassit is almost 80 kilometres south of the Voisey's Bay mine site. The boat trip to the site taken by the research team took more than three hours one way. As well, the campsite itself is approximately eleven kilometres inland from Voisey's Bay so it would have required an overland hike from the shore. This was beyond the capabilities of some elders and would have been unattainable from the time factor as well. The one on-site visit by helicopter had to be arranged through VBNC officials well in advance of the trip. It was also clear from the team's first meeting with company officials that the team would have very limited access to use of the helicopters as priority would be maintained for travel to the camp by workers. As a result, maps were used throughout most of the research period, which, as previously described, made it difficult for some elders to situate their knowledge of the region.

The time period and budget available were also extremely limiting factors throughout the summer. The reduced time frame from the year long project initially proposed by the Innu Nation to a three month project occurring almost entirely in the summer season had many implications for the project results. First of all, it meant that it was more difficult to gather Innu knowledge relating to other seasons and time periods, for example, wildlife breeding or migration periods. Attempts were made to obtain this information through the questionnaire but being able to place the knowledge within the appropriate context would have almost certainly led to a greater breadth and detail in the project results. In addition, the limited time period available required the research team to restrict the number of species and topics that could be raised for discussion. As well as restrictions on the number of subjects, it was also necessary to limit the time available for information gathering on each point. Finally, the short time period restricted the number of elders who could be interviewed for the project.

Some of these limitations could have been overcome if the team had access to adequate funds. For example, more group interviews could have been conducted or elders could have been taken out on the land to a greater extent. This could have elicited additional information for the research team. Unfortunately, the budget received by Innu Nation barely covered the salary and travel expenses of the research team. The limited amount of funding left over for elders' honoraria disappeared quickly and in many ways was as much of a constraint on the number of interviews completed as the time period itself.

There were also a number of obstacles that became evident during the summer and that had to be dealt with to the extent possible. The first among these were cultural differences. Two members of the research team belonged to the white Canadian majority and three were Innu people. Throughout the summer, different points of view and work habits

arose and compromises were required. For the most part, these were successful but some tensions remained unresolved over the summer.

An obstacle that became evident as the summer progressed was the difficulty with translation. The fact that one of the Innu translators had spent years in a white culture certainly meant that he had a good command of the English language. Unfortunately, it also meant that he had been out of touch with his culture for many years and consequently, specialized terms for hunting or fishing concepts were unfamiliar to him. Having a senior researcher acquainted with some of these terms became extremely valuable, as he was able to note that this researcher had oversimplified some words or concepts in translation. It is certainly possible that some such cases were overlooked, however, and could have influenced the results. The second Innu researcher certainly had an extensive knowledge of many of these specialized concepts but he was sometimes unable to explain them fully in English. As a result, it was often necessary to have the two translators in the same room together so that between the two of them a comprehensive translation could be offered. However, about two thirds of the way thorough the research the first assistant had to leave for personal reasons and subsequent translations were performed solely by the remaining person. Unfortunately, the author could offer no assistance in this task, as her knowledge of the Innu language was still extremely limited.

On a final note, there was an additional obstacle to be overcome by the author herself. This was related to her personal biases as a member of the white English Canadian majority and a person trained in the scientific tradition. Throughout the summer she had to acknowledge the influence of stereotyped views of native cultures and traditions on her outlook. In addition, she had to struggle to reconcile some of the knowledge or perspectives

offered by Innu elders with what she had been taught in her biological science background. As a result, the author feels that, to some extent, the conflict between Western science and traditional knowledge being raised in the larger society was reflected in her own attitudes and experiences over the summer.

Despite these drawbacks, however, the IEK Project did include most of the elements for a successful outcome. First of all, in line with Stevenson's (1996) argument for including the totality of people's knowledge in environmental assessment, it looked at issues covering the range of Innu knowledge and concerns relating to the potential development. In addition to worries about the mine's impacts upon the land and wildlife specifically, the project also documented the social and cultural implications of these impacts upon the Innu, for example in terms of traditional medicines, hunting patterns, etc. As a result, it would seem to fit into at least the second level of Stevenson's arrangement with partial forays into the third level.

The project also included all four of Johannes' (1993) elements required for proper TEK research. In addition to the taxonomic perspective included through the documentation of toponyms and species names, the spatial element was included through the use of mapping, ethnocartography, and GIS analysis. The temporal requirement was also fulfilled to some extent through the structure of the interview questionnaire, which covered seasonal changes and migration patterns. However, if the year-long study initially proposed by Innu Nation had been accepted this temporal element could have been expanded. The final component Johannes identifies as necessary to successful TEK research is social and this was covered by the discussion of social and cultural impacts discussed above.

The project was also helpful in validating the need to include aboriginal knowledge along with scientific studies when determining factors such as baseline data and project

impacts. In the final report, Clément (1998) gives several cases where the elders had a better knowledge of the project area and species distribution than the consultants hired by the company. He also identifies impacts on several species important to the Innu that the EIS had not even mentioned (porcupine, for example).

The fact that the interview questionnaire had been designed with the help of Innu researchers was also a positive aspect of the project. It helped to ensure that the questions were posed in a way that was culturally relevant to the informants and also limited the influence that outsider bias regarding topics for discussion could have on the investigation. The only concern with this project tool is that the correctness of the bilingual translation was not checked until after the research concluded when it was revealed that some terms had not been interpreted properly. This could have had an impact on the information received on those topics.

The gathering of culturally relevant placenames for the Voisey's Bay area and their spatial situation on maps was important, as noted by other researchers in the area of aboriginal land use (Hrenchuk 1993). In addition to providing a geographical perspective on the information gathered, toponyms may also be beneficial during the land claims negotiations currently proceeding with the government. Having correct Innu placenames on maps will also provide a starting base for subsequent research investigations in the area.

5.4 Suggestions for Improving Innu Participation in EIA

Despite the relative success of the Voisey's Bay EIA and the Innu Ecological Knowledge Project in promoting aboriginal values and priorities, there is still room for improvement. In order to expand and enrich Innu participation in future environmental assessments a number of factors need to be considered. First of all, there is the need to

address issues such as the problems with behavioural conflict noted during the project and the assessment in general. Possible ways to resolve disputes using methods such as the Alternative Dispute Resolutions (ADR) outlined by Mitchell (1997) or the principled negotiation technique discussed by Fisher and Ury (1991) should be investigated by both company officials and the Innu Nation.

Training initiatives are also needed to allow Innu people to become more adept at participating in projects such as the IEK study. In particular, there is a lack of people sufficiently capable of translating Innu terms and phrases, especially in written form. This resulted in the need to engage a linguist based in St. John's in order to ensure the correct spelling and grammar of the questionnaire and interview transcripts. In addition to translation, however, having Innu people trained in research methodology would mean that there would not be a need to engage the services of outsiders like Dr. Clément and the author. This would allow the social and financial benefits of projects such as the IEK study to accrue entirely to members of the affected communities. There is also the potential for it to result in more information being elicited on the topics under discussion, as elders would probably be more willing to discuss their knowledge with individuals of the same culture.

Greater cooperation and communication between the Innu Nation and the Labrador Inuit Association (LIA) could also have gone a long way towards improving their role in environmental assessments. Throughout much of the assessment process, the two organizations operated independently of each other in their dealings with Voisey's Bay officials. If they had worked together for their mutual benefit, they could have presented a united front to the company that would have significantly increased their bargaining positions. As it was, VBNC was able to play the two groups against each other to a certain extent and

this had implications for all the aboriginal studies that were developed during the assessment both in terms of their design and level of funding.

Of course, there is also the need for action on the part of both government and company officials. Governments should adopt the policy of required communication with native groups in the affected area at the earliest stage of any potential development. Communities should be informed regarding the nature and scale of the project as well as any political procedures or approvals that may be required. This will allow native people time to organize and have their say in the crucial decisions and strategies that are discussed early on in the process. In this way, developments that are inappropriate to the area or culture of the people can be stopped or modified prior to the expense of huge amounts of time and money. This early communication is especially important when one considers the fact that 95% of all developments never make it to the environmental assessment stage but are approved in government screenings or reviews (Henley, 1999).

In order to facilitate this notification and communication, however, there is a need for legislative changes in some areas, especially in terms of the free entry system that currently dominates Canadian mining. Mining companies and prospectors wishing to acquire mineral rights in Newfoundland at the present time only have to stake a claim and they are guaranteed a Crown lease which permits mining and exploration activities to occur (Barton 1993). This system has led to the rights of aboriginal people being abused and ignored in other northern areas of Canada and Labrador is no exception. Since the growth in exploration activity in the province in the early 1990's, hundreds of claims have been made throughout the countryside, despite the fact that Innu Nation and the Newfoundland government are still in the process of negotiating a land claims settlement (Keith 1996). The irony of the Innu people having to go

through a long and lengthy political process to assert their ownership over land they have occupied for centuries while an American prospector can lay claim to an area on a sports fishing vacation is outrageous. To add insult to injury, the island of Utshimassit as well as the site of their new town at Natuashish have also been staked (Keith 1996). It seems that no matter where the Innu go they cannot escape the intrusion of the dominant society that surrounds them. This situation requires change and the first step is to convert the Newfoundland system to the type that exists in Alberta and Prince Edward Island where the allocation of mineral rights is subject to government approval (Barton 1993). Besides allowing the Innu people a greater deal of protection from mines appearing in their backyards, this change will also permit the government to remain informed and up to date on all mining activities occurring in the province. In turn, they will also be able to pass this information along to native groups like the Innu so that they may investigate the potential development and decide upon a course of action.

In terms of environmental impact assessments in general, there is a need for the Canadian Environmental Assessment Agency to allow communities more time to become informed and knowledgeable about the issues and the proposed development prior to beginning community consultations on a topic. This additional time period would also allow Innu elders and hunters time to use their traditional knowledge and observe any current impacts of the development activity on the landscape and wildlife of the region.

As well, attempts should be made to involve people in addition to those community individuals who normally speak out or are members of organizations like the Innu Nation. It is important that the participation of less prominent persons, the so-called "inactive public",

also be included in order to reflect all of the viewpoints and concerns related to a particular issue (Mitchell 1997).

There is also an important role for industry in the process. Businesses interested in pursuing development options should initiate and maintain communication with native groups throughout the lifetime of the project. Long-term team building and communication attempts between native groups and developers are essential if any progress is to be made on resolving the ideological conflicts and mistrust that currently exists. The cooperation and communication required are sure to be difficult at first but ways must be found to promote them, perhaps through the use of the conflict resolution techniques mentioned earlier.

By contacting native communities early in the project's development, the company could benefit from their knowledge of the surrounding area and reduce the need for expensive investigation into the geography of the region. As well, early communication with aboriginal groups could identify sensitive species or ecological features (so-called *valued ecosystem components*) and help prevent unexpected impacts on these components that could lead to tension between the parties. For example, during the Innu Ecological Knowledge Project possible impacts on species such as whitefish and porcupine were identified by the Innu while the company's EIS failed to even discuss the presence of these species in the project area (Clément, 1998). It would also be beneficial for the company to include native people in monitoring activities as their long-term experience with the animals and geography of the area would help them perceive even slight differences quickly. This would also assist in the establishment of prolonged team building and trust between the two groups.

Historical and cultural concerns regarding an area should also be respected by the development company. For example, the bush medicine component of this study showed that

the Innu consider the Voisey's Bay area to be an important gathering location for medicinal plant species. As a result, VBNC should ensure that its presence and activities in the area have the most minimal impact possible on this practice in both the short and long term. This would involve taking steps throughout the development process, such as keeping road and infrastructure construction to a basic level, preventing water pollution, and guaranteeing that soil and vegetation replacement occurs during decommissioning. Innu people should be involved in all these activities to contribute their specific skills and knowledge and so that they may remain aware and informed of the company's activities. This would allow the Innu some measure of confidence that the area and their way of life were being protected. Even though the Innu may be able to obtain the specific plant species for their medicine in other areas, the cultural relevance of Voisey's Bay should not be lost and their presence and use of the area should be encouraged by VBNC.

Sensitivity training on the part of company executives and contractors and the education of shareholders regarding the issues and obstacles being faced by native people could also go a long way towards elevating the needs and concerns of the Innu within the corporation. In any case, businesses should be encouraged to respect and acknowledge the traditional customs and practices of aboriginal people. At the very least, this requires using the original Innu and Inuit names for geographical features in the project area on any reports, studies or environmental impact statements released by the company. In addition, company scientists and technicians should be encouraged to accompany elders and hunters onto the land in order to gain an appreciation for the context and complexity of their knowledge. These trips could also facilitate the mutual sharing of information and increase respect on both sides.

Unfortunately, all of these efforts require something the Innu do not have: *time*. The rapid explosion of development activities in Labrador has resulted in a struggle on their part simply to remain informed on the various issues. There is little time or money for involving themselves in grandiose schemes that will probably not show significant results until sometime down the road. The current Newfoundland government has also shown a persistent willingness to ignore the Innu people and their predicaments. What the government and the rest of the country must come to understand, however, is that this is a struggle that affects and involves the future of all Canadians. The direction taken with regards to the conflicts in Labrador will have far-reaching implications for this entire country. At its heart is the question of how far we are willing to let “progress” and “development” proceed and at what cost to the natural beauty that is an essential part of this country’s identity? The Innu made their choice long ago and have shown their commitment to the ideals that they live for. With the recognition and support of people across this country the Innu will finally have the ability to effectively challenge the governments and developers that are destroying their land. Their close association to the land has enabled them to see the dangerous impacts of these activities and their understanding of natural cycles and events has led them to the conclusion that the situation cannot continue unchecked. All they are asking for is a chance to prevent and mitigate the impacts of development activities on the land and wildlife they depend upon. It is an opportunity they richly deserve.

Chapter 6: Summary and Recommendations

The Innu culture in Labrador is based on a rich tradition that has much to offer to its younger members and society as a whole. Their historical dependence upon the land resulted in a system of knowledge containing incredible detail on ecosystem components and relationships. In addition, they also gained an appreciation and acceptance for the place of humans within that natural order. The example of traditional medicines discussed in this thesis is only one element of this knowledge. Nevertheless, it is a significant aspect in terms of both its historical and modern relevance. The effectiveness of these remedies in the past and their potential to contribute to the continuing health and well being of Innu in the future should not be ignored.

Unfortunately, threats to maintaining this knowledge are growing. Perhaps most devastating is the gradual erosion of the Innu presence upon their landscape. Due to community settlement and job pressures, many Innu families are simply not participating in land based travel to the extent that they did in the past. Cut off from the site of knowledge transmission and learning, many young people are not being educated in the ways of their culture. Without a substitute way of passing this information on it is sure to be lost forever.

An additional threat to keeping the richness of Innu knowledge alive is the increase of large-scale development projects in Labrador. The negative impacts of activities such as the Voisey's Bay Nickel mine and low-level flying activities upon the ecosystem is resulting in a further reduction in the ability of the Innu to continue their way of life. Polluted lakes and rivers, damaged soils, and sick and injured wildlife are all contributing to a loss of the land base available to the Innu for their traditional pursuits. In turn, this is affecting their ability to pass their knowledge on to their children.

This thesis attempted to assist the Innu in their struggle to maintain their culture in two ways. First of all, the author documented the use of twenty-two plant species used by the Innu in their traditional medicine. In this way, a permanent record of their use will remain with the communities in the years to come and may help stimulate interest in the topic among young people. The report “Plant Medicine of the Innu” produced on this topic is an additional source of information for interested individuals.

In addition, two strategies were proposed as ways for the Innu to combat the threats to their culture. The educational system was recommended as an alternative way of transmitting cultural knowledge such as bush medicine to the young. Secondly, involvement in the environmental assessment process was also explored as a way for the Innu to regain some measure of control over the development activities impacting their land.

The recommendations and strategies related to these topics are listed below.

Recommendations

1. That the Innu develop courses on topics such as bush medicine that are credited to students within the junior high school curriculum and that educational materials be produced for these courses, such as the technical report generated during this research, so that a permanent record of this knowledge will be maintained
2. That Innu Nation and/or the Band Councils improve cultural transmission and facilitate the interaction of elders and youth through events such as Heritage Fairs, camping excursions, and school workshops, and that information exchanges be encouraged between Sheshatshiu and Utshimassit elders to increase the knowledge base available to youth in both communities

3. That Innu Nation document geographical areas important to bush medicine in terms of species distribution or cultural value and take steps to protect these areas through the environmental assessment process and/or a land claims agreement
4. That Innu seek to include in their land claims agreement a hunter's income security program, similar to that developed for the Cree during the James Bay- Northern Quebec Agreement, for families who spend four months or more on the land (Berkes pers. comm. 1999c)
5. That the Newfoundland government implement legislative changes to modify the free entry system that currently exists in provincial mining to one in which claims approval is granted at the discretion of the government and that, upon the introduction of this new system, a Mineral Rights Advisory Board be established, with representatives from Innu and Inuit communities, to advise the government on the approval or denial of mining claims
6. That native groups like the Innu be involved throughout the lifecycle of a development project, from design and operation, to monitoring and decommission and that they work with company officials to minimize impacts upon important cultural activities like medicinal plant collection
7. That Innu Nation, together with the LIA, work with government and industrial officials on resolving conflicts and ensuring mutual benefits from development initiatives
8. That investigations into the traditional knowledge of a community or group begin early in the assessment process and last at least one year in order to allow for investigation into any temporal and seasonal differences that may occur, and that land based interviews with

informants be emphasized over community interviews in order to provide a context for the knowledge being discussed

9. That both levels of government and Innu Nation initiate training programs for Innu people in the areas of linguistics and ethnobiological research so they may carry out further studies on their own

If progress is made on a few of these items, the Innu people will be further along the road to preserving their traditional knowledge and way of life for future generations of Innu children. The decline in the number of Innu families pursuing land-based activities requires that alternative methods be used for cultural transmission. The formal educational system seems to provide the best opportunity for fulfilling this need at the present time.

However, being informed about cultural activities is useless without a forum available to practice this knowledge. The presence of a healthy ecosystem with all the necessary elements is required if the traditions and customs of the Innu people are to survive. Their comprehensive environmental knowledge and personal interest in preventing negative development impacts makes the Innu ideal participants in the field of environmental assessment. Recent court decisions and a gradual acceptance of alternative knowledge and perspectives support the need for Innu and other First Nations groups' involvement in decisions which impact their land and culture. If the Innu are to have any hope of preventing irreversible damage to their landscape, however, the pace and extent of their involvement must increase substantially, and soon. The above recommendations are intended to contribute to that process.

References

- Agrawal, Arun. 1995. Indigenous and scientific knowledge: some critical comments. *Indigenous Knowledge and Development Monitor* 3(3): 3-5.
- Alcorn, J.B. 1995. The scope and aims of ethnobotany in a developing world. In: *Ethnobotany: Evolution of a Discipline*. Richard Evans Schultes and Siri von Reis, editors. Dioscorides Press: 23-39.
- Alcorn, J.B. 1984. *Huastec Mayan Ethnobotany*. Austin: University of Texas Press
- Armitage, Peter. 1997. The Innu. Newfoundland and Labrador Heritage: Aboriginal Peoples. (Available at: [<http://www.newfoundlandes.nf.ca/aboriginal/innu.html>] April 12, 1998)
- Ashini, Jodie, and Rich. Nadine. 1998. *Innu Life in the Country*. Project for Regional Heritage Fair. May, 1998.
- Barreiro, J. 1992. The search for lessons. *Akwe:kon Journal* 9(2): 18-39.
- Barton, Barry. 1993. *Canadian Law of Mining*. Canadian Institute of Resources Law.
- Begossi, A., Leitao-Filho, H.F., and Richardson, P.J. 1993. Plant uses in a Brazilian coastal fishing community (Buzios Island). *Journal of Ethnobiology* 13(2): 233-256.
- Berger, Robert P. 1995. *Fur Feathers, and Transmission Lines: How Rights of Way Affect Wildlife*. Manitoba Hydro.
- Berger, Thomas R. 1988. *Northern Frontier, Northern Homeland: The Report of the MacKenzie Valley Pipeline Inquiry* (Revised Edition). Minister of Supply and Services Canada.
- Berkes, Fikret. 1999a. *Sacred Ecology: Traditional Ecological Knowledge and Resource Management*. Taylor and Francis.
- Berkes, Fikret. 1999b. Class discussion during Environmental Impact Assessment course of the Natural Resources Institute. University of Manitoba. March 9.
- Berkes Fikret. 1999c. Personal communication during thesis meeting at the University of Manitoba. August 11.
- Berlin, Brent. 1992. *Ethnobiological Classification: Principles of Categorization of Plants and Animals in Traditional Societies*. Princeton University Press.
- Berlin, Brent, Breedlove, Dennis E., and Raven, Peter H. 1974. *Principles of Tzeltal Plant Classification*. New York Academic Press.
- Black, Meredith Jean. 1973. *Algonquin Ethnobotany: An Interpretation of Aboriginal Adaptation in Southwestern Quebec*. University of Michigan. Anthropology PhD.

- Canadian Arctic Resources Committee. 1996. Critique of the BHP environmental assessment: purpose, structure, and process. *Northern Perspectives* 24(4): 7-9.
- Canadian Environmental Assessment Agency. 1995. *Military Flying Activities in Labrador and Quebec: Report of the Environmental Assessment Panel*. Government of Canada.
- Canadian Environmental Assessment Agency. 1996. *The NWT Diamonds Project: Report of the Environmental Assessment Panel*. Government of Canada.
- Canadian Environmental Assessment Agency. 1997a. *Memorandum of Understanding on Environmental Assessment of the Proposed Voisey's Bay Mining Development*. (Available at: [http://www.ceaa.gc.ca/204.225.191.209/Panels2/voisey/mou_e.html] April 3, 1999)
- Canadian Environmental Assessment Agency. 1997b. *Environmental Impact Statement Guidelines for the Review of the Voisey's Bay Mine and Mill Undertaking*. (Available : [http://www.ceaa.gc.ca/Panels2/voisey/guidelines_e.htm] May 23, 1999)
- Canadian Environmental Assessment Agency. 1999. *Voisey's Bay Mining Development: Report of the Environmental Assessment Panel* (Available at: [<http://www.ceaa.gc.ca/Panels2/voisey/report.html>] April 9, 1999)
- Canadian Institute of Resources Law. 1997. *Independent Review of the BHP Diamond Mine Process*. Minister of Public Works and Government Services Canada.
- Chevalier, Andrew. 1996. *The Encyclopedia of Medicinal Plants*. Reader's Digest Association (Canada) Ltd.
- Cotton, C.M. 1996. *Ethnobotany: Principles and Applications*. England: John Wiley and Sons, Ltd.
- Cleghorn, Christine. 1999. Personal communication. March 6 telephone interview.
- Clément, Daniel. 1990. *L'ethnobotanique Montagnaise de Mingan*. Quebec: Centre d'études nordiques.
- Clément, Daniel. 1995a. *La Zoologie des Montagnais*. Paris: Peeters.
- Clément, Daniel. 1995b. Why is taxonomy utilitarian? *Journal of Ethnobiology* 15 (1): 1-44.
- Clément, Daniel. 1997. *Ecological Knowledge and EIS Guidelines for the Review of the Voisey's Bay Project: Final Report to the Panel*. Innu Nation.
- Clément, Daniel. 1998. *Innuat Utashinimau: The Innu People's Rock*. Innu Nation.
- Davis, Wade E. 1995. Ethnobotany: and old practice, a new discipline. In: *Ethnobotany: Evolution of a Discipline*. Richard Evans Schultes and Siri von Reis, editors. Dioscorides Press: 40-51.

- Doubleday, Nancy C. 1993. Finding common ground: natural law and collective wisdom. In: *Traditional Ecological Knowledge: Concepts and Cases*. Julian T. Inglis, editor. International Program on Traditional Ecological Knowledge and International Development Research Centre: 41-53.
- Emery, Alan R. and Associates. 1997. *Guidelines for Environmental Assessments and Traditional Knowledge*. Canadian International Development Agency and Environment Canada.
- Ecological Stratification Working Group. 1996. *A National Ecological Framework for Canada*. Agriculture and Agri-Food Canada, Research Branch; Centre for Land and Biological Resources Research; and Environment Canada, State of the Environment Directorate, Ecozone Analysis Branch. Ottawa/Hull.
- Elders Response to *Fur, Feathers and Transmission Lines* Report. 1995. Manitoba Hydro.
- Federal-Provincial Environmental Assessment Panel. 1992. *Appendix of Written Presentations to Community Meetings: An Appendix to EIS Guidelines*. Federal Environmental Assessment and Review Organization and Manitoba Environment.
- Federal-Provincial Environmental Assessment Panel. 1993. *North Central Transmission Line Project: Final Report*. Federal Environmental Assessment and Review Organization and Manitoba Environment.
- Figuciredo, Gisela M., Hermogenes, F., Leitao-Filho, and Begossi, Alpina. 1993. Ethnobotany of Atlantic forest coastal communities: diversity of plant uses in Gamboa (Itacururça Island, Brazil). *Human Ecology* 21(4): 419-430.
- Fisher, Roger and Ury, Willam. 1991. *Getting to Yes: Negotiating Without Giving In*. 2nd Edition. Edited by Bruce Patton. Houghton Mifflin Company.
- Freeman, Milton M.R. 1992. The nature and utility of TEK. *Northern Perspectives* 20 (1): 9-12.
- Gadgil, Madhav, Berkes, Fikret, and Folke, Carl. 1993. Indigenous knowledge for biodiversity conservation. *Ambio* 22(2-3): 151-156.
- Gottesfeld, Leslie M. Johnson. *Plants, Land, and People: A Study of Wet'suwet'en Ethnobotany*. Master of Arts Thesis. University of Alberta. Edmonton.
- Government of Newfoundland and Labrador. 1992. *Our Children, Our Future: Royal Commission of Inquiry into the Delivery of Programs and Services in Primary, Elementary, and Secondary Education*. March 2. (Available at: [<http://www.stemnet.nf.ca/DeptEd/royal/document/ourchild/html>] July 30, 1999)
- Gray, John. 1998. Innu chart path to Tobin table. *The Globe and Mail*. May 2.
- Healey, Chris. 1993. The significance and application of TEK. In: *Traditional Ecological Knowledge*. Nancy M. Williams and Graham Baines, editors. Australia: Centre for Resource and Environmental Studies.

- Henley, Thomas. 1999. Discussion during classes of Environmental Impact Assessment course at the Natural Resources Institute, University of Manitoba.
- Heyd, Thomas. 1996. Comments on article by Arun Agrawal. *Indigenous Knowledge and Development Monitor* 4(1): 12.
- Hopkinson, Jennifer, Stephenson, Peter H. and Turner, Nancy J. 1995. Changing nutritional diet and nutrition in aboriginal peoples of coastal British Columbia. *A Persistent Spirit: Towards Understanding Aboriginal Health in British Columbia*. Peter H. Stephenson, Susan J. Elliot, Leslie T. Foster, and Jill Harris, editors. Canadian Western Geographical Series volume 3. University of Victoria, Department of Geography: 129-165.
- Howard, Albert and Widdowson, Frances. 1996. Traditional knowledge threatens environmental assessment. *Policy Options*. November: 34-36.
- Hrenchuk, Carl. 1993. Native land use and common property: whose common? In: *Traditional Ecological Knowledge: Concepts and Cases*. Julian T. Inglis, editor. International Program on Traditional Ecological Knowledge and International Development Research Centre: 69-86.
- Hunn, Eugene. 1993. The ethnobiological foundation for TEK. In: *Traditional Ecological Knowledge: Wisdom for Sustainable Development*. Nancy M. Williams and Graham Baines, editors. Centre for Resource and Environmental Studies, Australian National University, Canberra.
- Independent Environmental Monitoring Agency. 1999. *Annual Report 1998-1999* (on the NWT Diamond Mine). Yellowknife.
- Inglis, Julian T., editor. 1993. *Traditional Ecological Knowledge: Concepts and Cases*. International Program on Traditional Ecological Knowledge and International Development Research Centre.
- Inkpen, Tracey. 1998. *Plant Medicine of the Innu*. Report prepared for Innu Nation.
- Innu Ecological Knowledge Project Agreement. 1998. *Innu Ecological Knowledge in the Voisey's Bay Mine Mill Project Environmental Assessment*. Innu Nation and Voisey's Bay Nickel Company Limited.
- Innu Nation. 1996. *Mineral Exploration in Nitassinan: A Matter of Respect: Innu Nation Guidelines for the Mining Industry*. Innu Nation.
- Innu Nation, 1998a. *Money Doesn't Last, the Land is Forever: Innu Nation Community Consultation on Land Rights Negotiations Final Report*. Innu Nation.
- Innu Nation, 1998b. *If We Wait and See It will Be too Late: Innu Nation Critique of Approach to Environmental Management by Voisey's Bay Nickel Company*. Public hearings document #139 of the Voisey's Bay Environmental Assessment.
- Innu Nation Task Force on Mining Activities. 1996. *Ntesinan Nteshiniminan Nteniunan: Between a Rock and a Hard Place*. Innu Nation

- Johannes, R.E. 1993. Integrating traditional ecological knowledge and management with environmental impact assessment. In: *Traditional Ecological Knowledge: Concepts and Cases*. Julian T. Inglis, editor. International Program on Traditional Ecological Knowledge and International Development Research Centre: 33-39.
- Keith, Robert F. 1996. *Aboriginal Communities and Mining in Northern Communities*. Canadian Arctic Resources Committee.
- Keith, Robert and Mulvihill, Peter. 1995. Organizational development and environmental assessment in Canada's North. *Environments* 23 (1): 71-81.
- Kuhlein, Harriet V. and Turner, Nancy J. 1991. Traditional Plant Foods of Canadian Indigenous Peoples: Nutrition, Botany, and Use. *Food and Nutrition in History and Anthropology* volume 8. Gordon and Breach.
- Lamont, S.M. 1977. *The Fisherman Lake Slave and their Environment: A Story of Floral and Faunal Resources*. Master of Science Thesis. University of Saskatchewan.
- Leighton, Anna L. 1985. *Wild Plant Use by the Woods Cree (Nihithawak) of East-Central Saskatchewan*. National Museum of Man Mercury Series. Canadian Ethnology Service paper #101.
- Mailhot, Jose. 1986. Territorial mobility among the Montagnais-Naskapi of Labrador. *Anthropologica New Series* 28 (1-2): 93-107.
- Mailhot, Jose. 1993. *Traditional Ecological Knowledge: The Diversity of Knowledge Systems and Their Study*. Great Whale Environmental Assessment: background paper #4. Great Whale Public Review Support Office.
- Mailhot, Jose. 1997. *The People of Sheshatshit: In the Land of the Innu*. Translated by Axel Harvey. Institute of Social and Economic Research. Memorial University of Newfoundland.
- Manitoba Hydro. 1993. *North Central Project Environmental Impact Statement*.
- Manitoba Hydro. 1996a. *Environmental Protection Worker Reference Manual*.
- Manitoba Hydro. 1996b. *North Central Project: Environmental Protection Plan Field Guide*. Volume IV.
- Marles, Robin J., Clavelle, Christina, Monteleone, Leslie, Spence, Natalie, Burns, Donna, Paquette, Donna Rea and Rudiak, Chad. 1997. *Plants Used by First Nations People in Canada's Northwest Boreal Forest*. Report submitted to the Canadian Forest Service, Northwest Region, Edmonton.
- Mitchell, Bruce. 1997. *Resource and Environmental Management*. Addison Wesley Longman Limited. Chapters 8 & 11: 155-177; 218-239.
- Napier, William. 1998. Letter to Mr. Brian Torrie. Public hearings document #329. Voisey's Bay Environmental Assessment.

- National Centre for Homeopathy. 1999. *Introduction to Homeopathy*. (Available at: [http://www.healthy.net/par/pa/homeopathic/natcenhom/index.html] July 26, 1999)
- Nikiforuk, Andrew. 1997. *The Nasty Game: The Failure of Environmental Impact Assessment In Canada*. (Available at: [http://www.carc.org/alerts.html] May 12, 1999)
- Ohmagari, Kayo. 1996. *Social Change and Transmission of Knowledge and Bush Skills Among Ohmuskegowuk Cree Women*. PhD thesis, Department of Anthropology. University of Manitoba. Winnipeg.
- Ohmagari, Kayo and Berkes, Fikret. 1997. Transmission of indigenous knowledge and bush skills among the Western James Bay Cree women of subarctic Canada. *Human Ecology*, 25 (2): 197-222.
- O'Reilly, Kevin. 1996. Diamond mining and the demise of environmental assessment in the North. *Northern Perspectives* 24(4): 1-4.
- Penashue, Pien and Penashue, Lizette. 1998. Innu environmental knowledge. In: *Terra Borealis: Traditional and Western Scientific Environmental Knowledge*. Proceedings of the Aboriginal Environmental Knowledge Workshop. North West River, Labrador. September, 1997. Institute for Environmental Monitoring and Research.
- Ruddle, Kenneth. 1993. The transmission of traditional ecological knowledge. In: *Traditional Ecological Knowledge: Concepts and Cases*. Julian T. Inglis, editor. International Program on Traditional Ecological Knowledge and International Development Research Centre: 17-30.
- Ryan, J. and Robinson, M.P. 1990. Implementing participatory action research in the Canadian North: A case of the Gwich'in language and cultural project. *Culture* 10(2): 57-65.
- Sallenave, John. 1994. Giving traditional ecological knowledge its rightful place in environmental impact assessment. *Northern Perspectives* 22 (1) (Available at: [http://www.carc.org/D/TEK and EIA paper.html] December 26, 1998)
- Smith, Harlan I. 1997. *Ethnobotany of the Gitksan Indians of British Columbia*. Canadian Museum of Civilization.
- Siegfried, Evelyn Vicky. 1994. *Ethnobotany of the Northern Cree of Wasbasca/Desmarais*. Master of Arts Thesis. University of Calgary.
- Stevenson, Marc G. 1996. Indigenous knowledge in environmental assessment. *Arctic* 49 (3): 278-291.
- Stevenson, Marc G. 1998. *In Search of Inuit Ecological Knowledge: a Protocol for its Collection, Interpretation, and Use* (draft). Prepared for: Hunters and Trappers Associations of the Qikiqtaaluk Regions of Nunavut; Department of Renewable Resources; Qikiqtaaluk Wildlife Board; and Parks Canada.
- Supreme Court of Canada. 1997. *Delgamuukw vs. British Columbia*. (Available at: [http://www.cstc.bc.ca/treaty/delgamuukw.htm] May 19, 1999)

- Thompkins, John. 1996. Innu accuse miners of 'knowledge theft.' *The Evening Telegram*. St. John's, Newfoundland. July 26, 1996
- Turner, Nancy J. 1975. *Food Plants of the British Columbia Indians: Part I Coastal Peoples*. British Columbia Provincial Museum Handbook. No 34.
- Turner, Nancy J. 1995. Ethnobotany today in Northwestern North America. In: *Ethnobotany: Evolution of a Discipline*. Richard Evans Schultes and Siri von Reis. editors. Dioscorides Press: 264-283.
- Turner, Nancy J. 1997. Traditional ecological knowledge. In: *The Rain Forests of Home: Profile of a North American Bioregion*. Peter K. Schoonmaker, Bettina von Hagen, and Edward C. Wolf. eds. Washington: Ecotrust/Interrain Pacific Island Press: 275-298.
- Turner, Nancy J. and Efrat, Barbara S. 1982. *Ethnobotany of the Hesquiat Indians of Vancouver*. Cultural Recovery Paper No 2. British Columbia Provincial Museum.
- Turner, Nancy J., Thompson, Lawrence C., Thompson, M. Terry, and Yirk, Annie Z. 1990. *Thompson Ethnobotany: Knowledge and Usage of Plants by the Thompson Indians of British Columbia*. Royal British Columbia Museum, Memoir #3.
- Vogel, Virgil J. 1970. *American Indian Medicine*. University of Oklahoma Press.
- Voisey's Bay Nickel Company Limited (VBNC). 1997. *Environmental Impact Statement of the Voisey's Bay Mine/Mill Site*.
- Voisey's Bay Nickel Company Limited (VBNC). November 13, 1998. *Aboriginal Knowledge*. Public hearings submission # 320 during the Voisey's Bay environmental assessment.
- Veilleux, Connie; and King, Steven R. *An Introduction to Ethnobotany* Linda Morgenstein. ed. Available at: [<http://www.gene.com/ac/RC/Ethnobotany/page2.html>] (October 15, 1997)
- Wadden, Marie. 1996. *Nitassinan: The Innu Struggle to Reclaim Their Homeland*. Vancouver: Douglas and MacIntyre.
- Warren, D. Michael. 1996. Comments on article by Arun Agrawal. *Indigenous Knowledge and Development Monitor* 4(1): 13.
- Warren, D. M., Slikkerveer, L.J., and Brokensha, D., editors. 1995. *The Cultural Dimension of Development: Indigenous Knowledge Systems*. London: Intermediate Knowledge Publications.
- Wiebe, Bernie. 1991. *Traditional Innu Health and Medicine Interviews*. Tape #90, 291, 293, 306. Innu Nation.
- Wisner, Susan. 1996. The nasty game. *Alternatives* 22(4): 10-17.
- Young, David, Ingram, Grant, and Swartz, Lise. 1989. *Cry of the Eagle: Encounters with a Cree Healer*. University of Toronto Press.

Zieba, Richard. 1990. *Healing and Healers Among the Northern Cree*. Master of Natural Resource Management Practicum. University of Manitoba. Winnipeg.

Appendix 1

Plant Specimens Collected During Research Period

ID #	WIN access #	INNU NAME	ENGLISH NAME	SCIENTIFIC NAME	FAMILY
*1	61725	<i>uátshinákan</i>	larch; tamarack; juniper tree	<i>Larix laricina</i> (DuRoi) K. Koch	Pinaceae
*2	61731	<i>innashit</i>	balsam fir	<i>Abies balsamea</i> (L.) P. Mill.	Pinaceae
3	61736	<i>tshitshue-shakau</i>	willow	<i>Salix planifolia</i> Pursh	Salicaceae
*4	61690	<i>inneshit</i>	black spruce	<i>Picea mariana</i> (P. Mill.) B.S.P.	Pinaceae
*5	61692	<i>minamuk</i> ^u	white spruce	<i>Picea glauca</i> (Moench) Voss	Pinaceae
6	N/A	<i>uapitsheushkamik</i> ^u	reindeer lichen	<i>Cladina stellaris</i> (Opiz) Brodo	Cladoniaceae
7	61735	<i>kauapashiti-uapikuna</i>	cotton-grass	<i>Eriophorum callitrix</i> Cham. ex C.A. Mey.	Cyperaceae
8	61721	<i>shikuteu uapikun</i>	bakeapple plant	<i>Rubus chamaemorus</i> L.	Rosaceae
*9	61680	<i>mikuta</i>	Labrador tea	<i>Ledum groenlandicum</i> Oeder	Ericaceae
*10	61687	<i>ashishiminakashi</i>	black crowberry	<i>Empetrum nigrum</i> L.	Empetraceae
11	61719	<i>ashtassiminakashi</i>	bog bilberry	<i>Vaccinium uliginosum</i> L.	Ericaceae
*12	61737	<i>kakauashit</i>	stiff clubmoss	<i>Lycopodium annotinum</i> L.	Lycopodiaceae
13	N/A	<i>uapikun-uapitsheushkamik</i> ^u	leaf lichen	<i>Nephroma</i> sp.	Nephromataceae
14	61745	<i>amu-mitshim</i>	roseroot	<i>Sedum rosea</i> (L.) Scop.	Crassulaceae
15	61747	<i>mashkushu</i>	wild rye; lyme grass	<i>Leymus arenarius</i> (L.) Hochst	Poaceae
16	N/A	<i>nishkimitshima</i>		unknown	
17	61728	<i>muteu-mitshim</i>	silverweed	<i>Argentina anserina</i> (L.) Rydb.	Rosaceae
*18	61727	<i>minamuk</i> ^u	white spruce	<i>Picea glauca</i> (Moench) Voss	Pinaceae
*19	61740	<i>nasht-shakau</i>	mountain alder	<i>Alnus viridis</i> (Vill.) Lam. & DC. ssp. <i>crispa</i> (Ait.) Turrill	Betulaceae
*20	N/A	<i>uishtshitak</i> ^u ; <i>kushkushkatuk</i> ^u	rotten wood chips	<i>Picea</i> sp.	Pinaceae
*21	N/A	<i>uishauashkamik</i> ^u	peat moss	<i>Sphagnum subsecundum</i> Nees in Sturm	Sphagnaceae
22	61741	<i>anikiminakashi</i>	silverweed	<i>Argentina anserina</i> (L.) Rydb.	Rosaceae
*23	N/A	<i>massekushkamik</i> ^u	peat moss	<i>Sphagnum warnstorffii</i> Russ.	Sphagnaceae

*24	61689	<i>nishatshimnakashi</i>	mountain cranberry	<i>Vaccinium vitis-idaea</i> L.	Ericaceae
*25	61716	<i>imaitik</i> (= <i>inneshit</i>)	black spruce	<i>Picea mariana</i> (P. Mill.) B.S.P.	Pinaceae
*26	61723	<i>imashit</i>	balsam fir	<i>Abies balsamea</i> (L.) P. Mill.	Pinaceae
*27	61675	<i>utshinakkan</i>	larch ; tamarack	<i>Larix laricina</i> (DuRoi) K. Koch	Pinaceae
*28	61682	<i>amu-nipisha</i>	bog laurel	<i>Kalmia polifolia</i> Wang.	Ericaceae
29	61743	<i>kakutshimni</i>	bog bilberry	<i>Vaccinium uliginosum</i> L.	Ericaceae
30	61729	<i>amu-mitshim</i>	fireweed	<i>Epilobium angustifolium</i> L.	Onagraceae
*31	61683	<i>kakatshiminakashi</i>	common juniper	<i>Juniperus communis</i> L.	Cupressaceae
32	N/A	<i>ishakai massak</i>	moss	<i>Oncophorus wahlenbergii</i> Brid.	Dicranaceae
33	61746	<i>amu-mitshim</i>	alpine campion	<i>Lycnis alpina</i> L.	Caryophyllaceae
34	61722	<i>munskaitminakashi</i>	bunchberry	<i>Cornus canadensis</i> L.	Cornaceae
35	61720	<i>shakan</i>	(tundra) dwarf birch	<i>Betula nana</i> L.	Betulaceae
36	61748	<i>shakan</i>	long-barked willow	<i>Salix (bebbiana</i> Sarg.?)	Salicaceae
*37	61739	<i>shakan</i>	pussy willow	<i>Salix discolor</i> Muhl.	Salicaceae
*38	61676	<i>kamshiuakai-shakan</i> ; <i>kanshkuetshit-shakan</i>	mountain alder	<i>Alnus viridis</i> (Will.) Lam. & DC. ssp. <i>crispa</i> (Ait.) Turill	Betulaceae
39	61718	<i>amu-mitshim</i>	sea lungwort; oyster leaf	<i>Merrenisia maritima</i> (L.) S.F. Gray	Boraginaceae
40	61717	<i>nanimissiu-napikan</i>	Scotch lovage	<i>Ligusticum scoticum</i> L.	Apiaceae
*41	61726	<i>nishatshimnakashi</i>	mountain cranberry	<i>Vaccinium vitis-idaea</i> L.	Ericaceae
42	61734	<i>napikan</i>	chickweed	<i>Stellaria crassipes</i> Hult.	Caryophyllaceae
*43	N/A	<i>shipku-</i> <i>massekushkamik</i>	peat moss	<i>Sphagnum warnstorfi</i> Russ.	Sphagnaceae
*44	N/A	<i>shipku-</i> <i>massekushkamik</i>	peat moss	<i>Sphagnum warnstorfi</i> Russ.	Sphagnaceae
*45	N/A	<i>nekan-massekushkamik</i>	hairy screw moss; sidewalk moss	<i>Tortula ruralis</i> (Hedw.) Gaertn. et al.	Pottiaceae
46	N/A	<i>napitshenshukamik</i>	coral lichen and moss	<i>Stereocaulon</i> sp. mixed with <i>Tortula ruralis</i> (Hedw.) Gaertn. et al.	Stereocaulaceae and Pottiaceae

47	61738	<i>amu-mitshim</i>	broad-leaved willow	<i>Epilobium latifolium</i> L.	Onagraceae
48	61744	<i>shikueuminkakashi</i>	three-toothed cinquefoil	<i>Sibbaldopsis tridentata</i> (Ait.) Rydb.	Rosaceae
49	N/A	<i>napsitshenshkanik</i>	lichen	<i>Cladonia</i> sp.	Cladoniaceae
*50	61742	<i>mashkuminkakashi</i>	dogberry; showy mountain-ash	<i>Sorbus decora</i> (Sarg.) Schneid.	Rosaceae
*51	61689	<i>imashi</i>	balsam fir	<i>Abies balsamea</i> (L.) P. Mill.	Pinaceae
*52	61724	<i>iknia</i>	Labrador tea	<i>Ledum groenlandicum</i> Oeder	Ericaceae
*53	61696	<i>sheshanik</i>	black spruce	<i>Picea mariana</i> (P. Mill.) B.S.P.	Pinaceae
*54	61696	<i>ushkneini</i> of <i>sheshanik</i>	cones of black spruce	<i>Picea mariana</i> (P. Mill.) B.S.P.	Pinaceae
*55	61681	<i>mashkuminkakashi</i>	dogberry; showy mountain-ash	<i>Sorbus decora</i> (Sarg.) Schneid.	Rosaceae
*56	61679	<i>shakan</i>	speckled alder	<i>Alnus incana</i> (L.) Moench ssp. <i>rugosa</i> (DuRoi) Clausen	Betulaceae
*57	61678	<i>napineu-mitshima</i>	pussy willow	<i>Salix discolor</i> Muhl.	Salicaceae
*58	64309	<i>minaik</i>	white spruce	<i>Picea glauca</i> (Moench) Voss	Pinaceae
*59	61693	<i>apueminanakakashi</i> ; <i>uiminda</i>	pin cherry	<i>Prunus pensylvanica</i> L. f.	Rosaceae
*60	61685	<i>pineu-minakashi</i> ; <i>pineu-minaish</i>	creeping snowberry	<i>Gaultheria hispida</i> (L.) Muhl. ex Bigelow	Ericaceae
*61	61733	<i>uainanis</i>	larch; tamarack; juniper tree	<i>Larix laricina</i> (DuRoi) K. Koch	Pinaceae
*62	61691	<i>ushkuai</i>	white birch	<i>Betula papyrifera</i> Marsh.	Betulaceae
63	61697	<i>mushumini</i>	squashberry	<i>Viburnum edule</i> (Michx.) Raf.	Caprifoliaceae
64	61698	<i>nitisshimini</i>	skunk currant	<i>Ribes glandulosum</i> Grauer	Grossulariaceae
65	61732	<i>mushumini</i>	squashberry	<i>Viburnum edule</i> (Michx.) Raf.	Caprifoliaceae
*66	61730	<i>apueminanakakashi</i> ; <i>uiminda</i>	pin cherry	<i>Prunus pensylvanica</i> L.	Rosaceae
*67	N/A	<i>kakawai</i>	stiff clubmoss	<i>Lycopodium amotinum</i> L.	Lycopodiaceae

*68	N/A	<i>anikapagua</i>	leaf lichen	<i>Nephroma</i> sp.	Nephromataceae
*69	61677	<i>atigumindanakashi</i>	northern comandra	<i>Geocaulon lividum</i> (Richards.) Fern.	Santalaceae
*70	61686	<i>uishatshiminkashi</i>	partridgeberry; mountain cranberry	<i>Vaccinium vitis-idaea</i> L.	Ericaceae
*71	61694	<i>innashi</i>	balsam fir	<i>Abies balsamea</i> (L.) P. Mill.	Pinaceae
*72	N/A	<i>massekushkamik</i> ^a	peat moss	<i>Sphagnum warnstorffii</i> Russ.	Sphagnaceae
*73	61695	<i>pineu-minanakashi</i> ; <i>pineu-minash</i>	creeping snowberry	<i>Gaultheria hispidula</i> (L.) Muhl. ex Bigelow	Ericaceae

^adenotes plants identified as having medicinal value

Note: Innu names for plants may differ between the two communities and between informants. First fifty specimens were collected in and around Urshimassit, last twenty-three in Sheshatshuu. Plant names and authorities are based on entries in the USDA Plants National Database, available at: <http://plants.usda.gov/plantproj/plants/plntmenu.html>

Appendix 2
List of Interview Participants

INTERVIEWEE IDENTIFICATION	AGE	SEX	COMMUNITY AFFILIATION
A	39	F	Sheshatshiu (originally Utshimassit)
B	84	M	Utshimassit
C	79	F	Utshimassit
D	61	F	Utshimassit (originally Sheshatshiu)
E	59	F	Utshimassit
F	57	F	Utshimassit
G	66	M	Utshimassit
H	66	F	Sheshatshiu
I	61	F	Sheshatshiu
J	59	F	Sheshatshiu

Appendix 3
Interview List and Schedule

Interview #	Tape #	Date	Place of Interview	Type of Interview	Subject of Interview	Length of Interview	Interview Participant(s)
1	1	June 4, 1998	Sheshatshiu	individual	educational transmission	30 minutes	A
2	1	June 23, 1998	Utshimassit	individual	plant uses	30 minutes	B*
3	1	June 28, 1998	Utshimassit	individual	transmission	60 minutes	C
1	2	June 28, 1998	Utshimassit	group	transmission	60 minutes	B&C
2	2	July 1, 1998	Utshimassit	individual (plus field survey)	plant uses	120 minutes	D*
1	3	July 4, 1998	Voisey's Bay	group (field trip)	plant uses	75 minutes	B, D, E, F, G*
1	4	July 21, 1998	Utshimassit	group	plant uses	60 minutes	B&E*
1	5	August 11, 1998	Sheshatshiu	individual	transmission and plant uses	60 minutes	H
1	6	August 13, 1998	Sheshatshiu	individual	transmission and plant uses	60 minutes	I
1	7	August 16, 1998	Sheshatshiu	group (field trip)	plant uses	150 minutes	H&I
1	8	August 17, 1998	Sheshatshiu	group (field trip)	plant uses	210 minutes	H, I, J
2	8	August 18, 1998	Sheshatshiu	individual	transmission/ educational system	75 minutes	J

*denotes those interviews that took place within the context of the Innu Ecological Knowledge Project