APPENDIX D

To Registration Document for

USE OF LONGER-RANGE PRACTICE MUNITIONS AT 5 WING GOOSE BAY PRACTICE TARGET AREA

Reports by

JACQUES WHITFORD ENVIRONMENT LIMITED

JWEL PROJECT NO. 1638

PTA LAND USE STUDY

And

WOLVERINE & ASSOCIATES

INNU LAND USE IN RELATION TO THE PROPOSED PTA SAFETY TEMPLATE

Peter Armitage
For Innu Environmental Limited Partnership

NOVEMBER 2001

JWEL PROJECT NO. 1638

PTA LAND USE STUDY

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EXECUTIVE SUMMARY

The following information is in support of an Environmental Screening related to allied training with updated practice laser guided munitions at the 5 Wing Practice Target Area near Minipi Lake. Specifically, this report examines air and ground conflicts with existing and future land use as a result of adding a safety template beyond the Practice Target Area to provide for public safety. Due to the deployment of this system at higher altitudes and speeds, the restricted area around the Practice Target Area will need to be expanded, with control transferred to the Federal Government from the Province of Newfoundland and Labrador. To determine current land and airspace use of the general area, Jacques Whitford Environment Limited was contracted by the Goose Bay Office of National Defence to complete the necessary land use research of Labrador residents and others. Innu Environmental was subcontracted specifically to examine existing (from 1990 to present) land use by the Innu of Labrador. Interviews for all those contacted followed a prepared template where appropriate and examined a variety of aspects related to the environment, resources, land use (hunting, fishing, trapping, and other activities), land use settlement, concerns and guidelines (possible mitigation). The researchers also attended a public information session and worked closely with staff from the Goose Bay Office, 5 Wing Goose Bay and in particular the Wing Community Liaison Officer. For the non-Innu component, interviewees were considered in terms of Commercial and non-Commercial activities from air charters and outfitting to recreational hunting and fishing. The primary air and land use activity at present and predicted at this time is the outfitting activity in the vicinity of Minipi Lake. Two outfitters, Cooper's Minipi Lake Camps and Labrador Outdoors use a large area immediately north of, and overlap to a slight degree of the proposed safety template. Float plane and helicopter operations in this region are predominantly in support of these two Outfitters. To that end significant attention was placed with these owner operators, to explain the Project and examine potential conflicts. In both of these cases, no opposition to proceeding with the initiative was expressed by them or other non-Innu interviewees. Several people suggested mitigation measures that were either part of the existing proposal or could be incorporated into its design.

To understand the recent land use of the area in question by the Innu of Labrador, Jacques Whitford Environment Limited sub-contracted Innu Environmental, a wholly-owned (by the two Innu Band Councils of Labrador) company. This document (Wolverine & Associates 2001) is presented as an attachment to this report. Within Québec, a similar exercise by the Mamut-Inuat was undertaken but not yet available at the time of writing.

1.0 INTRODUCTION

The Department of National Defence (DND) Goose Bay Office is considering requests from Allied Nations at Goose Bay to authorize training with a newer version of inert Laser Guided Bomb system. Authorization of this request will require the prior implementation of a Safety Exclusion Zone to the existing perimeter of the Practice Target Area (PTA) to ensure public safety in the event of a malfunction. The actual safety template would be located within a 30 nautical miles (NM) radius Study Area, from the centre of the PTA, approximately 125 km SSW of Happy Valley-Goose Bay (Figures 1 and 2).

Before this request from Allied Nations can be approved, an Environmental Screening of the activity must be conducted. A vital component of the screening is an examination of current and projected land use by Others (Aboriginal and Non-Aboriginal residents of Labrador and Quebec North Shore) so the potential impact of the Safety Exclusion Zone on subsistence and commercial activities can be assessed. From this information, DND will determine what management or mitigation measures would be appropriate to de-conflict land use and the military training requirement. Jacques Whitford Environment Limited (JWEL) was contracted to conduct a land use study on behalf of the DND – Goose Bay Office.

The requirements of this study were to compile current (since 1990) land use information obtained through a consultative process with selected residents (including outfitters) of Aboriginal and non-Aboriginal communities and other persons involved or active within the Study Area. This report describes the results of information associated with non-Innu respondents in Labrador and a review of existing and available literature. An accompanying phase of investigations was completed by Innu Environmental to address Innu respondents from Sheshashit (Labrador) (Wolverine & Associates 2001). Within Québec, a similar exercise by the Mamut-Inuat was undertaken but not yet available at the time of writing.

Archaeological records (MCC 2001 and PAO 2001) confirm a lengthy Aboriginal presence in coastal Labrador and on the Côte-Nord. Numerous sites relating to the following cultures have been be found: Paleo-Indian (9000-8000 BP), Maritime Archaic Indian (8000-3000 BP), Groswater Palaeoeskimo (2800-2100 BP), Dorset (2000-860 BP), Intermediate and Recent Indian (1900-500 BP), Historic Inuit (1500-1800AD) and Historic and Contemporary Innu (1500 to present). Most sites are located on the coast or near major lakes and rivers in the interior.

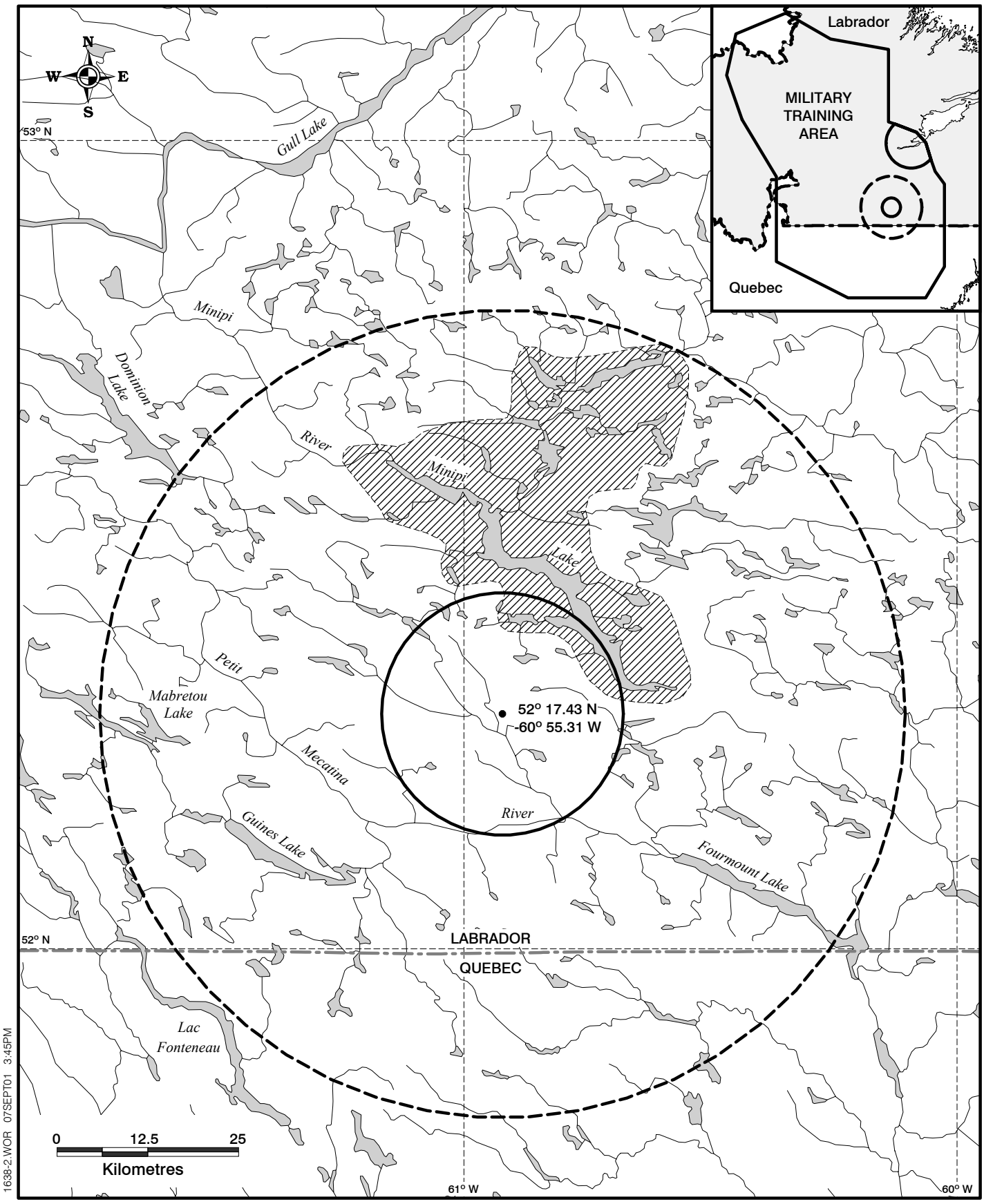

FIGURE 1. EXTENT OF LANDUSE ACTIVITY, COOPER'S MINIPI CAMPS

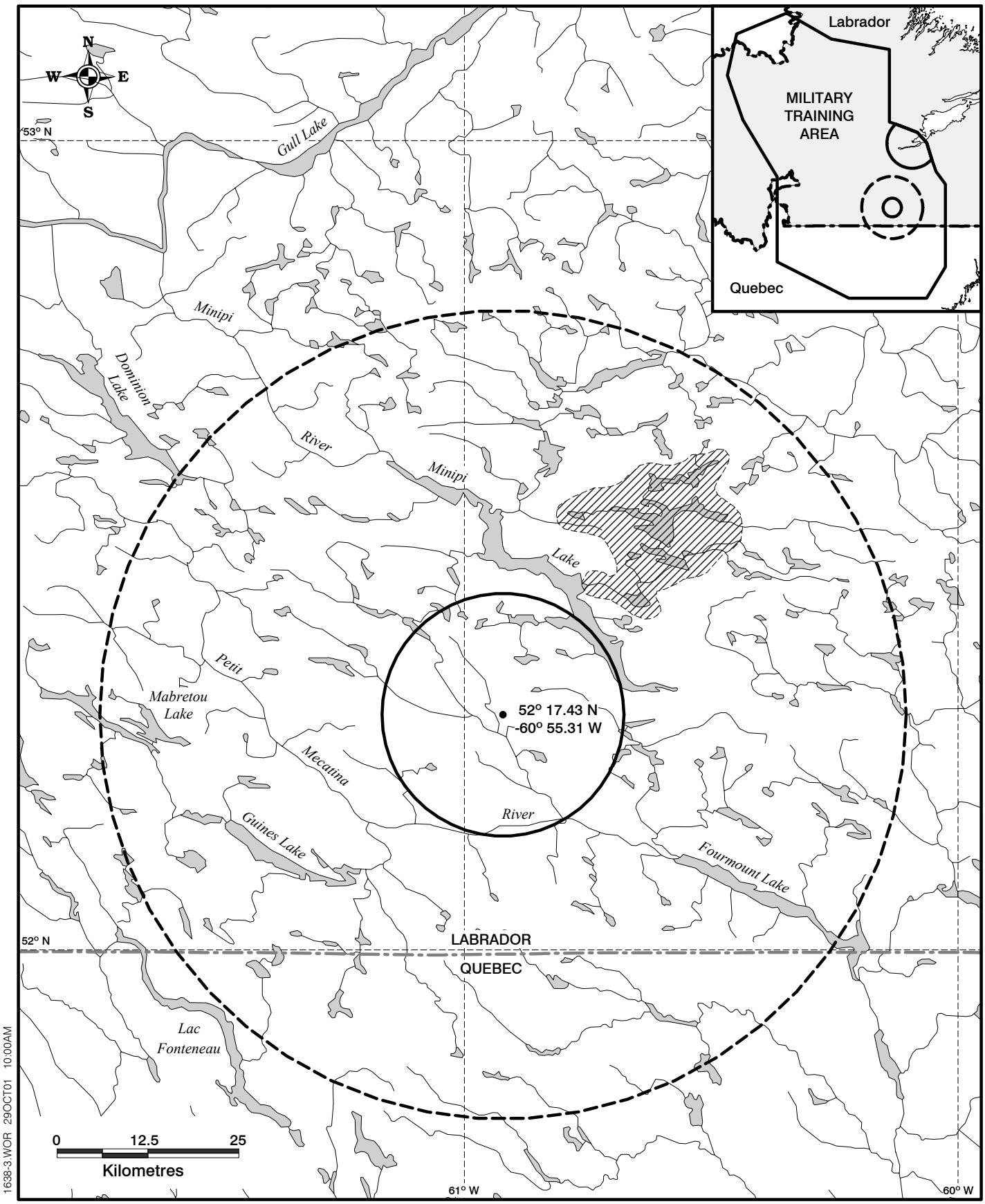

FIGURE 2. EXTENT OF LANDUSE ACTIVITY, LABRADOR OUTDOORS

The most extensive regional context mapping program conducted to date in Quebec-Labrador (JWEL/INEN 2001) employed archaeological site distribution and Innu land use data to depict regional variation in settlement-subsistence patterns in south-central Labrador and the Côte-Nord. Despite regional variation in research effort and data gaps, it appears that in general, both archaeological site distribution and Innu camp locations are normally associated with the coastline and with freshwater (lake and river) shorelines. Harvesting areas are also associated with the coastline and with freshwater shorelines, however, they also extend further into interfluvial upland areas.

Archaeological and historical records also confirm a lengthy European presence on the Quebec North Shore and coastal Labrador from the Sept-Iles to Hamilton Inlet. This was one of the first areas of North America to come to the attention of Europe and beginning with a probable Norse occupation in the 11th century. Since that time, the area has seen almost continuous occupation or exploitation by the French, Basques and British during the past five centuries. Past and present land use studies to depict non-aboriginal occupation and activities in the Quebec-Labrador hinterland include DND (1994), JWEL (1998), IEDE/JWEL (2000). The Outfitting industry, support and other activity by air charter companies, mineral exploration and so on are additional areas for consideration. Therefore, the compilation of land use information for this study will be based on current activity obtained through a consultative process with residents of local communities and other knowledgeable persons.

While DND is completing this screening at the request of the Allies, to a view of supporting ongoing military training at 5 Wing Goose Bay, the department is not wanting to affect other economic and non-economic activity. The Outfitting industry in Labrador in particular generates several million dollars to the Provincial economy, and is a well-established and sustainable industry (G. Price, *pers. comm.*). Therefore any new activity that may interfere with this important aspect of the economy raises concern. To that end, careful consideration of possible mitigation measures are also included in this assessment.

2.0 METHODS

The approach to collecting information on existing land use within the study area involved a combination of informant interviews and land use mapping, discussions with knowledgeable persons and a review of available literature. The interview results, were used in conjunction with baseline information collected during the 1980s (DND 1994) to assess any changes in land use during recent years. For the extensive interviews (e.g. those with Outfitters) Standard techniques followed a prearranged template for questions (Appendix A) and topographic map sheets at a scale of 1:250,000.

For the non-Innu phase of interviews, Inuit, Metis and non-Aboriginal outfitters, trappers, fishermen and hunters were contacted in person. Selection of the participants/respondents was made in close consultation with the Wing Community Liaison Officer (Mr. S. Bird), appropriate organizations and community leaders.

The main objective of the interviews on contemporary (1990-2001) land use and occupancy was to provide valuable information to define the nature, timing and extent of land use within the affected area. Where possible, activities were quantified by month rather than by season. Commercial- and non-commercial related interviews, attempted to establish the percentage of time, income and activity spent in the study area. Interviews were conducted with individuals who have used the Study Area in recent years and/or are knowledgeable about land use activity. The style of the interview was designed to encourage and enable the respondent to present his own facts, observations, explanations and ideas about present land use and about the environment. Respondents were carefully advised as to the purpose of the interviews, before starting.

A five-page questionnaire was used (Appendix A) in conjunction with NTS 1:250,000-scale topographic map sheets 13C/12N to collect the information. Maps used during the interviews contained reference to the proposed PTA. Upon completion of the interview, the interviewer prepared a summary and preliminary analysis of the interview using the Interview Synoptic Forms (Appendix C) based on Interview Record Forms, maps, recording tapes and notes. If respondents encountered problems deciphering landmarks on the maps, this was noted in the remark section of the interview record form or in a field logbook. Where possible, each area or location discussed during the interview should include a reference to the map.

Five sets of questions were developed:

1. ENVIRONMENT (Page 1/5): description of natural areas.

2. RESOURCES (Page 2/5): description of animals, birds and fish geographic distribution; this included areas of concentration (e.g., ducks nesting areas, fish spawning areas, migratory routes).

3. HUNTING, FISHING, TRAPPING AND OTHER ACTIVITIES (Page 3/5) such as wood cutting (domestic) and berry picking. It was important to indicate preferred areas on the maps provided and use a code/number to link the information on the map with the interview questionnaire.

4. LAND USE AND SETTLEMENT (Page 4/5): topics include place names, travel routes, features and buildings.

5. CONCERNS AND GUIDELINES (Page 5/5): this section summarized the informants' sense of place, appreciation of the importance of the area and its resources, concerns and expectations regarding the preservation of hunting and fishing areas, camps and other facilities.

For others interviewed such as Air Charter Companies, the diversity of questions was more focused examining issues related to temporal and spatial overlap with the Study Area. Relevant and available literature was also reviewed. To identify potential spatial and/or temporal conflicts with the proposed activity by DND, results were considered in light of possible mitigation measures that could be introduced into the proposed undertaking.

3.0 RESULTS

In association with DND (1994), a significant land-use study was completed of non-Innu communities adjacent to the Military Training Area (MTA). The interviews were conducted in 1987-1989 following similar methods (to this study) with the results presented in text and map summaries. While dated, this information provides an excellent indication of the relative importance of the study area within the regional context.

In general, most land-use activity conducted by non-Innu in the Lake Melville region was formerly outside the study area (Table 1). Exceptions were low-level activity by residents of Happy Valley-Goose Bay and North West River essentially year round for trapping, small game and waterfowl hunting, and fishing. Areas used in the late 1980's included Minipi Lake, Anne Marie Lake, Minonipi Lake, the headwaters of the Kenamu River, Traverspine River, and adjacent sections of the Petit Mecatina and Little Drunken River (Figure 3).

3.1 Commercial Activities

3.1.1 Outfitting

The outfitting industry in Labrador comprises a significant portion of the regional economy with approximately 46 operators offering hunting and fishing experiences (AMEC and Gardner Pinfold 2000). The Outfitting Industry of Quebec would be even larger (C. Myrden, pers. comm). Within the Study Area, are two active Outfitting operations based at Minipi Lake and environs that represent the most significant land-use activity at present. Cooper's Minipi Camps in particular occupies approximately 25% of the entire study area, from mid-June until at least mid-September (Figure 4). The operation is well established and offering world class trout fishing experiences with over 300 clients generating revenues in excess of $1 million annually. A smaller operation, Labrador Outdoors also uses a portion of the same area and during a similar season. In total, six lodges and several trails, boats and other infrastructure exist immediately north of the current PTA, with plans to extend both the season of occupation and the variety of activities and clientele. Over 30 seasonal and five full-time employees are associated with these operations.

Almost 100% of the current activity with these operations concern trout fishing. Cooper's Minipi Camps have offered some waterfowl hunting during late season fishing trips in the past during September and early October. This same operator is currently planning to establish a mini-hydroelectric source for their main lodge, near the outlet on Minipi Lake. The plan would be to offer non-consumptive winter activities and create a year round operation.

Table 1 Summary of non-Innu land-use activity from Lake Melville Region during 1987-1989, within the Military Training Area of Labrador and Quebec (DND 1994).

Lake Melville Community[1]	Activity	Temporal/Spatial Overlap With Study Area
Mud Lake	Fishing	Nil
Mud Lake	Small Game Hunting	Nil
Mud Lake	Trapping	Nil[2]
Mud lake	Small Game Hunting	Nil
Mud Lake	Wood/Berry Gathering	Nil
Happy Valley-Goose Bay	Fishing	Minipi L. and Anne Marie L. received low-level use during July-September
Happy Valley-Goose Bay	Small Game Hunting	Sections of Petit Mecatina R. (adjacent to PTA), Minipi L. received low-level use during October-March; Minonipi L. and headwaters of Kenamu R. received low-level use during January-March
Happy Valley-Goose Bay	Trapping	Sections of Petit Mecatina R. (adjacent to PTA), Minipi L., Anne Marie L. and Minonipi L. received low-level use during October-March; headwaters of Kenamu R. and Traverspine R. received low-level use during January-March
Happy Valley-Goose Bay	Waterfowl Hunting	Sections of Petit Mecatina R. (adjacent to PTA) received low-level use during October-November
Happy Valley-Goose Bay	Wood/Berry Gathering	Nil
North West River	Fishing	Nil
North West River	Small Game Hunting	Nil
North West River	Trapping	Anne Marie L., headwaters of Kenamu R. and Little Drunken R. received low-level use during April-May
North West River	Waterfowl Hunting	Nil
North West River	Wood/Berry Gathering	Nil

Notes:

1. Does not include the Innu Community of Sheshashit
2. Nearby Salmon R., tributary of Kenamu R. received low-level use during October-March

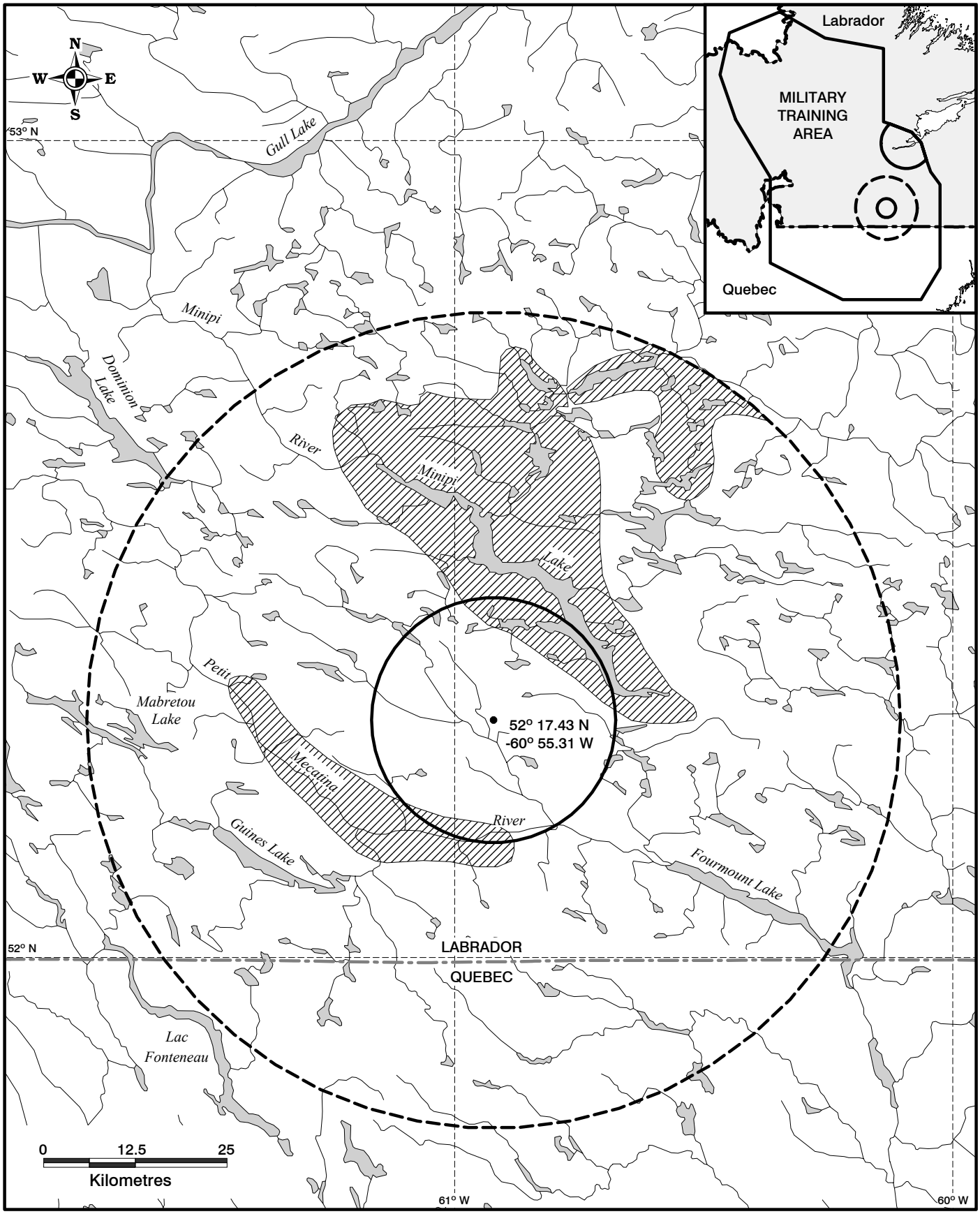

FIGURE 3. COMPILATION OF LANDUSE ACTIVITY BY LAKE MELVILLE COMMUNITIES, 1987 - 1989 ((DND 1994).

Clients and operators access these sites by float planes and helicopters on an almost daily basis during mid-June to mid-September. Both operators reported that conflicts with existing low-level training activities have been rare to date, and there were no concerns expressed regarding disturbance from overflights (Section 1.1.2).

3.1.2 Air Charters

In support of the Outfitting industry and other activity in the Study Area are at least two commercial fixed-wing and two helicopter companies all based in Happy Valley-Goose Bay who conduct regular charters from late May until the end of September annually. The frequency for Tamalik Air (Single and Twin Otter Aircraft on Floats) is typically twice on Thursday and Friday, and twice again in the week to support Cooper's Minipi Camps and at least once on Sunday to Labrador Outdoors. Labrador Outdoors and some clients also have their own float-planes that may travel to the area from Happy Valley-Goose Bay or from southern locations such as Sept-Iles/Baie Commeau depending on weather and loads. Most of these trips are destined for lodges operated by the two active Outfitters. Helicopters are used infrequently by the Outfitters (K. Williams and H. Blake, pers. comm.) as they are more expensive with lighter payloads. However, when weather is marginal for float planes, helicopters are often used assuming the weather is not severe (W. Roberts, pers. comm.).

In addition to flying to Outfitter operations, aircraft often ferry through the Study Area enroute to Goose Bay from Natashquan in particular (G. Goodyear and H. Blake, pers. comm.). These aircraft are operating in airspace up to 6,000 to 7,000 feet above-ground-level (agl) (helicopters generally under 1,000 feet agl) and under visual flight rules (VFR). According to the Air Charters (R. Dawe, pers. comm.), the existing regime of flights should continue in the foreseeable future and could possibly expand, at least for Tamalik Airways into Instrument Flight Rule (IFR) capabilities.

3.1.3 Mining

Following the discovery of the nickel deposit at Voisey's Bay, mineral exploration expanded dramatically throughout Labrador including the Study Area. During this period, the Provincial Government also conducted a series of surveys to identify mineral resource potential in the Minipi Lake area (James and Nadeau 1999, 2000, 2001). The area has some potential for hosting Ti (Fe) oxide deposits and Ni-Co-Cu mineralization in anorthosite (James and Nadeau 2001). Exploration activity in the Study Area is presently considered low to nil.

3.1.4 Snowmobile Industry

With the recent trend in warmer winter weather throughout North America, regions such as Labrador (that still exhibit approximately six months of snow cover), are becoming attractive for snowmobile

enthusiasts. For the last several years, Labrador has been moving to establish one of the premier destinations for snowmobile enthusiasts (G. Price, pers. comm.). Significant efforts have been extended on behalf of the Provincial Government in this Region (and of that in adjacent Quebec), to develop a series of high quality, groomed snowmobile trails over a vast area. Much of the planning and development to date has been to create a circular route connecting communities and coast lines, thereby avoiding the interior such as the Study Area (M. Watkins, pers. comm.).

3.2 Non-Commercial

3.2.1 Trapping

Currently, there are no known trappers working within the Study Area with the exception of some incidental activity associated with the owners of Cooper's Minipi Camps. The downturn in the fur industry coupled with increasing expenses (particularly the price of gasoline) has meant a decrease even from the low-level of activity identified in the late 1980's (DND 1994). This activity occurs during October to March.

3.2.2 Fishing

It is believed that the fishing reported by DND (1994) in the Study Area was primarily associated with the outfitting operations that still exist today. Other fishing was reported by outfitters although this was infrequent and reportedly associated with uninvited helicopter activity.

3.2.3 Hunting

With the exception of waterfowl hunting during the end of the fishing season at Cooper's Minipi Lake Camps (late September), no other hunting activity was documented in the Study Area.

3.2.4 Innu Land Use

Refer to supplementary report prepared by Innu Environmental (Wolverine & Associates 2001, Appendix). Informants during this study commented that the only observations of the Innu and Montagnais in recent years have been of a few individuals (<10) on an exploratory walk from Minipi Lake to Kenamu River during June. Otherwise, the Outfitters reported that they do no encounter Innu or Montagnais in their area of interest.

4.0 EFFECTS ASSESSMENT

Physical Infrastructure

The non-military infrastructure presently within the Study Area are the Outfitting Operations of Cooper's Minipi Camps and Labrador Outdoors. While not provided by the owners, the estimated value of these and associated buildings would cost millions of dollars to replace. However, none of these six lodges (nor plans for additional lodges) occur within the proposed location of the safety template for the LGB training (Figure 2). In fact, as a proactive mitigation feature, the three options for approaching the PTA also avoid over flying this infrastructure enroute to the PTA. Therefore damage to existing infrastructure and private property as a result of this new training is not expected. No additional mitigation is identified.

Human Occupation

Current practice at 5 Wing Goose Bay is to avoid areas of human occupation within the MTA through the issuing of Operational Directives to training pilots (S. Bird, pers. comm.). Both Outfitters within the Study Area (Cooper's Minipi Camps and Labrador Outdoors) and a third located on the approach to the PTA from Goose Bay (6 North Fishing Lodge) reported occasionally observing/hearing military aircraft conducting training exercises in their respective areas. However, none of these Outfitters expressed concern in terms of disturbance or other noise effects to either themselves or their clients as a result of current operations. The higher altitude and infrequent nature of the proposed LGB training is not expected to change this opinion. These characteristics caused the Outfitters in the Minipi Lake system, to state clearly that they were comfortable with the proposal (J. Cooper and H. Calden, pers. comm.).

Other human (non-commercial) presence in the Study Area and more specifically the safety template are considered low to non-existent in terms of hunting, trapping, fishing or other land use activity. Of these, only fishing would generally occur during the months of the potential LGB training, and again would occur outside the Safety Template. No negative effects on human occupation of the Safety Template are predicted. Ongoing consultation in the form of briefings to Community Groups and media announcements will assist in enhanced public awareness of the change in training activities at this location.

Airspace Use

The current activities conducted by 5 Wing Goose Bay are not causing serious problems for float plane operators (R. Dawe, pers. comm.). Tamalik Air as most companies, operate on a 'see and be seen' policy in the MTA and particularly in the vicinity of the PTA. Their pilots regular observe military jets and other aircraft adjacent to the Operational Directive around the Outfitting Operations on the Minipi

system. Close attention is paid by these pilots who become familiar with the LLF techniques and are careful to avoid conflicts. With each new pilot or technique however, the companies are required to ensure these persons are well-briefed and act accordingly.

In terms of avoiding temporally any conflicts in future, Tamalik Air suggested that LGB activity be conducted during Monday through Wednesday when there are typically few charters in this area (R. Dawe, pers. comm.). The fact that Tamalik may be moving to IFR capability should not pose any additional constraint for DND, given the requirement of deploying LGB systems under VFR conditions. This requirement will also allow Outfitters the opportunity to use helicopters in marginal weather when fixed-wing float planes are not able to access the area.

The proposed location of the Safety Template already considers much of the potential conflict with existing users by locating the area south of the Outfitting Operations at Minipi Lake. Additional mitigation regarding airspace would be the flexibility of temporal restrictions associated with the safety template. Pilots and Charter Companies proposed and/or agreed with the following procedures:

- Prior to the initiation of the flying season, MCC briefings with Air Charter Companies would identify the LGB training schedule, including procedures and other issues.
- During the flying season, from mid-April to mid-October (dates would vary annually), access to airspace within the safety template would require permission from the Military Co-ordination Centre (MCC).
- As with current procedures at the PTA, access during this time would be granted on days when LGB training is not scheduled (i.e. Thursday through Sunday).
- On prolonged periods of poor weather when helicopter access is still possible, the Companies may request access assuming LGB training was not feasible.

Other Development

At this time, no additional development is known to be under consideration within the Study Area and specifically within the Safety Template. Mineral exploration is a possible future activity as potential for some minerals has been previously identified by the Provincial Government (James and Nadeau 1999, 2000, 2001). The rapidly expanding snowmobile industry and associated trail network has no intention of placing groomed trails within the Study Area (M. Watkins, pers. comm.). No other development or industrial activity is known to be comtemplated for the Study Area at this time.

5.0 CONCLUSIONS

Based on interviews, consultations and correspondence during the course of this investigation, no significant issues or opposition was identified with the incorporation of mitigation identified previously. The following conclusions were reached:

1. No opposition by persons engaged in some form of land-use activity within the Study Area, was identified.
2. During the projected period of activity (i.e. mid-April to mid-October), the Safety Template would be occupied (<10%) on a predictable basis only during August, and in association with the Outfitting activities on Minipi Lake. No other terrestrial use of the area during this period was identified.
3. Air spatial conflicts could be accommodated within the context of proposed mitigation, by local air charter companies.
4. Terrestrial related conflicts exist only in a portion of the proposed Safety Template and during the month of August.

Continuing with the ongoing community consultation at least at the start of each training season will enhance understanding and co-operation between the residents and land users of the entire MTA and those responsible for the Allied Training at 5 Wing Goose Bay.

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6.1 Personal Communications

Baker, Maureen	Institute for Environmental Monitoring and Research, Happy Valley-Goose Bay, Labrador
Bird, Silas	5 Wing Community Liaison Officer, Happy Valley-Goose Bay, Labrador
Calden, Harvey	Labrador Outdoors, Happy Valley-Goose Bay, Labrador
Chubbs, Tony	Mitigation Officer, 5 Wing Goose Bay, Happy Valley-Goose Bay, Labrador
Cooper, Jack	Cooper's Minipi Camps, Happy Valley-Goose Bay, Labrador
Dawe, Rick	Charter Manager, Tamalik Air, Happy Valley-Goose Bay, Labrador
Emmens. Mick	Outfitter, 6 North Fishing Lodge, Happy Valley-Goose Bay, Labrador
Gear, Wilson	Trapper, Happy Valley-Goose Bay, Labrador
Goodyear, Geoff	President, Universal Helicopters Newfoundland Limited, Happy Valley-Goose Bay, Labrador
Hinchey, Jim	Claims Division, Mines and Energy, St. John's, Newfoundland
James, Donald	Geological Survey, Mines and Energy, St. John's, Newfoundland
Myrden, Chris	Senior Analyst, Tourism, Recreation and Culture, Happy Valley-Goose Bay, Labrador
Phillips, Frank	Wildlife Division, Forestry and Agrifoods, North West River, Labrador
Price, Gorongwy	Regional Director, Tourism, Recreation and Culture, Happy Valley-Goose Bay, Labrador
Roberts, Wayne	Pilot, Canadian Helicopters, Happy Valley-Goose Bay, Labrador
Watkins, Michelle	Executive Director, Labrador Winter Trails, Happy Valley-Goose Bay, Labrador
Williams, Kay	Universal Helicopters Newfoundland Limited, Happy Valley-Goose Bay, Labrador
Williams, Paul	Trapper, Happy Valley-Goose Bay, Labrador

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APPENDIX A

Interview Record Form

JWE PROJECT NO. 1638 **INTERVIEW RECORD FORM**
PTA LAND USE STUDY **1/5**

LOCATIONAL DATA

Area (name and ref. # on map):_____
Major river, bay or inlet: _____
Closest settlement: _____
Topographic Map (1:250,000) indicate with : 13C (__) 12N (__)

ENVIRONMENT

Describe the area?_____
_____

Explain how this area is suitable for your activity (travelling, camping, hunting, trapping or fishing)_____
_____

Is the area accessible all year round? When would you preferably use the area (Month? Year?)_____
_____

Name major (size or productivity) lakes and rivers that you use?
_____
_____

What about landforms (hills and valleys, plain): is this rough country or is it easy to travel or settle in this area?_____
_____

Is vegetation sparse (barren or bog) or is it densely forested? Mark on the map areas that have been affected by forest fire or other impact agent_____
_____
_____

JWE PROJECT NO. 1638 **INTERVIEW RECORD FORM**
PTA LAND USE STUDY **2/5**

RESOURCES

Animals: For each category or species identified or valued by the respondent (e.g. moose; marten), ask the following question: Is the population dense, moderate or sparse? Indicate any areas of concentration (location and timing on the map_____
_____
_____
_____
_____

Birds: For each category or species identified or valued by the respondent (e.g. ducks; grouse), ask the following question: Is the population dense, moderate or sparse? Indicate any areas of concentration on the map_____
_____
_____
_____
_____

Fish: For each category or species identified or valued by the respondent (e.g. brook trout; whitefish), ask the following question: Is the population dense, moderate or sparse? Indicate any areas of concentration on the map _____
_____
_____
_____
_____

Other Resources: For each category identified or valued by the respondent (e.g. birch; bakeapple), ask the following question: Is the population dense, moderate or sparse? Indicate any areas of concentration on the map_____
_____
_____
_____

JWE PROJECT NO. 1638 **INTERVIEW RECORD FORM**
PTA LAND USE STUDY **3/5**

HUNTING, TRAPPING AND FISHING

Estimate what percentage (%) of your income is based on activities conducted in the area?_____

Hunting: Indicate preferred location (s) and timing (Date, Month). Refer to a code/number or on the map_____
_____
Indicate what type and % of total: Subsistence (__) Recreation (__) Commercial (__)

Trapping: Indicate preferred location (s) and timing (Date, Month). Refer to a code/number or on the map _____
_____
Indicate what type and % of total: Subsistence (__) Recreation (__) Commercial (__)

Fishing: Indicate preferred location (s) and timing (Date, Month). Refer to a code/number or on the map_____
_____
Indicate what type and (%) of total: Subsistence (__) Recreation (__) Commercial (__)

Other Activities: Indicate preferred location (s) and timing (Date, Month). Refer to a code/number or on the map_____
_____
Indicate what type and (%) of total: Subsistence (__) Recreation (__) Commercial (__)

Who is normally participating in the following activities? (e.g., man, woman or both; adults only or parents and children)
Hunting: _____
Trapping: _____
Fishing: _____
Wood cutting: _____
Berry Picking: _____

Remarks: _____
_____
_____
_____

LAND USE AND SETTLEMENT

When did you start using this area? Do you use the area year after year?_____

How much time (days or months per year) do you spend in the area? _____
_____
Is this amount of time constant, year after year? _____
_____
Did you ever consider living there year round and why? _____
_____
List any place names, explain their meaning and mark them on the map_____
_____

Buildings or Features

List any buildings or features associated land use (e.g., cache, cellar**,** hunting blind, trap, fish-weir, shelter or cabin). Mark any known location on the map_____

_____
Who is normally using this camp or these features? Are you normally part of this group? Are they relatives or friends? Where were they from (if from a different community? _____
_____
_____

Travel Routes and Transportation

List and indicate on the map any travel routes, existing trails, roads, portage sites and landing areas_____
_____
_____
How do you travel to, from and within the area (e.g., aircraft, boat, snowmobile?)_____
_____
_____
How long does it normally take and how much does it cost you to get there?_____
_____

JWE PROJECT NO. 1638 **INTERVIEW RECORD FORM**
PTA LAND USE STUDY **5/5**

CONCERNS AND GUIDELINES

You have identified important animals, birds and fish in the area. Are you aware of any reduction or increase in certain species that may have occurred in recent years (1990-2001)?

_____
_____
_____

Sensitive wildlife areas may be affected by the proposed LGB program. Ask the respondent to comment and list any questions or suggestions.

_____
_____
_____

Camps or hunting/fishing facilities may be affected by proposed development. Ask the respondent to comment and list any questions or suggestions. (e.g., move or relocate the cabins or other facilities; stop military training; no change).

_____
_____
_____

Remarks:_____
_____
_____

REFERENCE

Name of Respondent: _____
Age: _____ Sex: _____ Occupation:_____
Address:_____
_____ Telephone:_____
Date: _____ Name of Interviewer: _____

Names of other Respondents that should be interviewed:_____
_____
_____
_____
_____

APPENDIX B

Interview Consent Form

JWEL PROJECT No. 1638 **INTERVIEW CONSENT FORM 1/2**
PTA LAND USE STUDY

CODE _____ PLACE _____ DATE _____

INFORMANT'S NAME _____

ADDRESS _____

_____ PHONE NUMBER _____

AGE _____ SEX _____

STATUS _____ OCCUPATION _____

SOURCE LANGUAGE_____

INTERVIEWER'S NAME _____

TIME INTERVIEW STARTS_____ TIME INTERVIEW ENDS _____

We are researchers from Jacques Whitford Environment Limited. We are undertaking interviews on behalf of the Department of National Defense (DND) in the context of a land use study associated with the PTA. We are interested in asking you a number of questions about areas where you and your relatives are hunting, trapping, fishing, camping and travelling. Your answers to our questions will help us to locate camps and other facilities as well as natural resources and areas of significance and to make appropriate recommendation for the preservation of these valuable resources and facilities. This information will be used to prepare a report that will be submitted to the DND. DND has the right to use the information for this project and subsequent environmental screening in relation to this project. DND will retain a copy of the interview (tape and record forms). If you wish, a copy of the taped interview will be sent to you.

Your participation in this project is completely voluntary and there will be no consequences whatsoever if you decide not to participate. The interview will last about 90 minutes and will be recorded on tape. Whenever you are uncomfortable with a question, you can tell us you do not wish to answer.

JWEL PROJECT No. 1638 **INTERVIEW CONSENT FORM 2/2**
PTA LAND USE STUDY

Your name, your address, or any identifying information will remain confidential. That means no one other than we will be able to identify or link your name to the things you tell us. This identifying information (above) will never be used when we discuss the findings of this study.

If you have any questions or if you want information from us during or after the interview, we will do our best to answer your questions or give you the name of someone who can help. If you have questions after the interview, you can contact us at:

Perry Trimper or Caroline Hong
Jacques Whitford Environment Ltd.
Goose Bay, Labrador
709 896-5860

or

Yves Labrèche
Jacques Whitford Environment Ltd.
St. John's, Newfoundland
709 576-1458

Again, we would like to stress that your participation is completely voluntary, and what you say will be protected with the strictest confidentiality. Thank you very much for your assistance in this project.

Respondent: _____

Interviewer: _____

Date: _____

APPENDIX C

Summary of Mamut-Inuat Land Use from DND (1994)

The most recent information available on land use activities by the Mamut-Inuat of Quebec is from the Environmental Impact Statement on military flying activities in Labrador and Quebec (DND 1994). At that time, the Conseil des Atikamekw et des Montagnais (CAM) did not participate in preparation of the EIS, therefore the land use information presented was based mainly on documentary research. The land use data was compiled for the Quebec North Shore communities of Mingan, Natashquan, La Romaine and Pakua Shipi.

Statements made by the Mamut-Inuat during the review process indicated that camping in the country and harvesting wildlife were important to them, and that they have traditionally gone into the interior to hunt, trap and fish (DND 1994). The primary species harvested include moose, waterfowl, salmonids, caribou, beaver and hare. Other furbearers are also harvested according to market value and may include marten, mink, otter, muskrat, lynx and red fox (DND 1994). Historically, North Shore residents used navigable waterways to access the interior with few travelling further than 190 km inland. This pattern changed following the advent of aircraft and snowmobile travel that allowed residents to cover larger areas in a more widely scattered pattern than before (DND 1994).

Mapping of resource harvesting areas used by Quebec North Shore residents indicates that the northern limit of areas where regular fishing and hunting activity occur are approximately 45 km south of the Quebec/Labrador border (and south of the Study Area for this environmental screening) and take place predominantly from July through November. Trapping activity generally occurs further south, within 60 km of the coast (DND 1994). Fishing is a summer pastime in communities although few people travel into the interior primarily to fish (DND 1994). The EIS also notes that traditionally some hunters and trappers from the Lower North Shore would travel inland and hunt in Labrador. For example, as the range of caribou began to shift northward from the Quebec North Shore region 30 to 35 years ago, residents followed and many Quebec hunters established cabins in Labrador in areas such as Birchy Lakes and White Hills. However, in more recent years this cross-boundary movement has declined (DND 1994). Recent anecdotal evidence suggests that some Quebec North Shore residents continue to travel to Labrador although the number of individuals and details on seasonal activities are not available.

The Wolverine & Associates

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Innu Land Use in Relation to the Proposed PTA Safety Template

Peter Armitage
For Innu Environmental Limited Partnership

31 October 2001

Report to Goose Bay Office, Department of National Defence

Contents

1. Study objectives[1]

This report has been prepared on the basis of an understanding between the Department of National Defence (DND) and the Innu Nation. I was authorized by the Innu Nation to compile proprietary Innu data in order to produce a profile of historic and contemporary Innu land use in the vicinity of the Minipi Lake Practice Target Area (PTA).

The data are required in order to facilitate the environmental assessment of a proposed "safety template" around the PTA. The template is an area of land and airspace in which human access will be restricted in order to permit the safe release of inert, Laser Guided Bombs from military aircraft based at 5 Wing Goose Bay.

This report presents the results of a compilation of Innu land use data generated in the context of previous research projects dating back to the late 1970s as well as supplementary data required to fill specific data gaps related to the safety template area. Data have been compiled for a study area radiating 30 nm (55 km) around the PTA, centered at N 5217.4, W 6057.3 (see Map 1).

2. Research methods

In creating this profile of Innu land use in the vicinity of the Minipi Lake PTA, data from several sources were used. Data from previous Innu Nation land use and occupancy research included:

- Armitage, 1991
- Sakauye, et al., 1979
- LAMAP, 1980

Data from José Mailhot's life histories collected in the context of the Sheshatshit Socio-Linguistic Variability Study, the Sheshatshiu Innu Band Council Outpost Programme records, aircraft charter company invoices to the Band Council, and DND Operations Directives were also used.

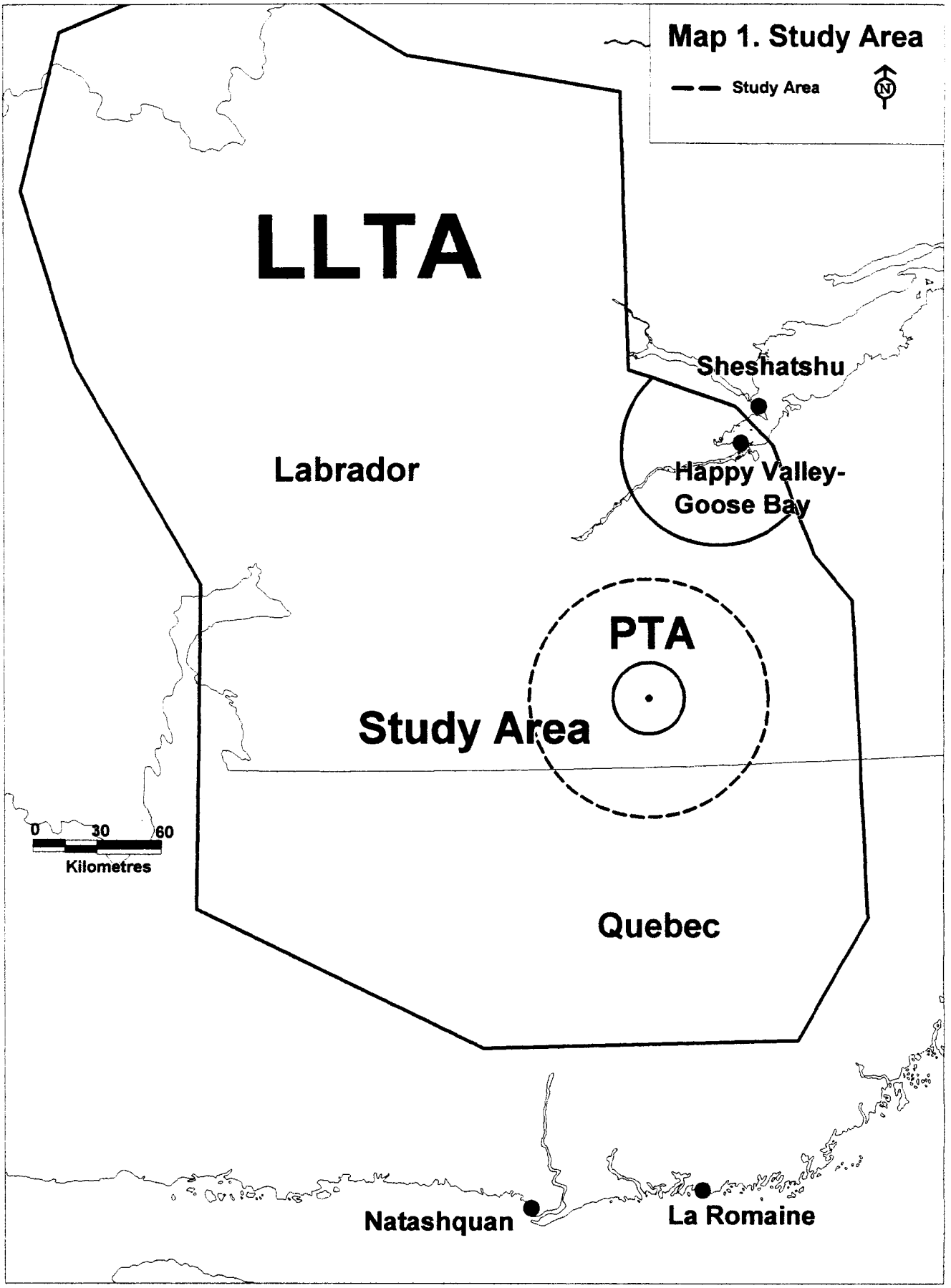
Additional land use research, focused on the Safety Template study area, was conducted during October 2001 in an effort to fill data gaps in the other studies listed above.

2.1 Data from previous land use and occupancy research

2.1.1 Armitage 1991 landuse and occupancy data

Under contract to the Innu Nation, I conducted several weeks of research into contemporary Innu land use and occupancy during the summer of 1991. The purpose of this research was to supplement other Innu Nation research that covered earlier time periods. I had previously

[1]Acknowledgements. I wish to thank the Innu people of Sheshatshit who shared their knowledge and experience concerning the Minipi Lake area. Thanks are also due to Paula Reid of Innu Environmental Limited Partnership for her logistical and editorial support.


Map 1. Study Area
Study Area
LLTA
Sheshatshu
Labrador
Happy Valley-
Goose Bay
PTA
Study Area
0
30
60
Kilometres
Quebec
Natashquan
La Romaine

gathered land use data for the period 1979 to 1987, and prior to that, Brenda Sakauye, Alexander Andrew and George Gregoire had gathered such data for the pre-1979 period.

Land use and occupancy research for all of these time periods relied heavily on the map biography method. Each biography is based on "informant recall" and constitutes, therefore, a record of an individual harvester's land use both as part of community-based and country-based harvesting activities. The biographies record the locations of campsites, travel routes, birth and death locations, harvest areas for various animal species and wild fruit, and other information. In this context, harvesting behaviour

> is comprised of several distinct components, including search or scan, location of fish or game, pursuit and retrieval (primarily in the case of game), and dispatch or harvest. In association with these behavioral phenomena are corresponding spatial phenomena which include travel corridors, camp sites, net sites, intercept points, trap lines, kill or harvest sites, pursuit or retrieval paths, general harvesting or search areas, specific search areas, and harvest areas (Ellanna, et al., 1985: 236-238).

The methods used in the preparation of Innu map biographies were in most respects similar to the land use mapping methodologies employed during the last 20 years by various First Nations in the Canadian north as integral parts of land use and occupancy studies.[2]

> The main intent of such studies has been to:
>
> - document the extent of land use and provide the basis for claims to ownership or usufruct property rights to the land by traditional occupants (Ellanna, et al., 1985:7
> - provide an appropriate measure of compensation to Aboriginal peoples for loss of or disruptions to the use of traditional lands and resources (ibid.).

To a far lesser extent, land use mapping has been undertaken in the context of environmental impact assessment research and conflicts over land use (e.g. Canada, 1989). In general, however, researchers have applied mapping methodologies to document locations where Aboriginal peoples harvested particular wildlife species, determine the spatial and temporal aspects of harvesting activities, ascertain changes in land use patterns, and obtain data on the cultural value of land use and land tenure mechanisms (i.e., rules for determining human access to land and resources).

In 1991, Innu co-researchers were retained in Sheshatshiu and Utshimassiu to work on the research project. They acted as translators and consultants during the interviews, facilitating both questions and the exchange of information. They were encouraged to ask their own questions of

---

[2]The concepts "land use" and occupancy have often been conflated in the literature. Land use "is what is documented by means of the map biography technique...which results in a land use map, and refers to activities such as hunting, fishing and travel. Occupancy refers to the territory which a particular group regards as its own by virtue of continuing use, habitation, naming, knowledge, and control. Both use and occupancy are discoverable facts which can be mapped, but they are not necessarily coterminous" (Usher, 1992:10-11). For a detailed historical review of land use mapping in Canada and Alaska, see Ellanna, et al. (1985).

the informants in order to explore new and productive avenues of inquiry I had neglected. They also played an extremely important role in translating the spatial knowledge of informants (particularly those who are map illiterate) into the two dimensional cartographic representations recorded on the map biographies.[3]

In order to facilitate map literacy and navigation during interviews, my co-researchers and I used a toponymic base map generated during previous land use research. In 1987-88, I asked key informants to provide Innu toponyms for important geographic features in the harvesting territories of the Sheshatshiu and Utshimassiu Innu to assist in the production of the map biographies and the preparation of toponym maps. These toponyms were recorded directly on the 1:250,000 scale National Topographic System (NTS) base. Revisions to the toponymic base map were made during the 1991 research in light of new information from informants, and with the addition of place names generated during the LAMAP project in 1980 (see below).

Land use data were obtained from informants in the context of paid, formal (structured) interviews. I conducted interviews entirely by myself without the aid of translation in only a few cases. These were instances where I considered the informant to have a good command of English. Nevertheless, I used Innu words in referring to animal species so as to avoid confusion about which species the informant was discussing.

Interviews were mostly conducted in offices belonging to the Innu Nation, Band Councils, and Catholic Church, but on occasion, when a harvester preferred to be interviewed at home, the research materials and equipment were transported there. All interviews were audio-recorded using a cassette tape deck so that testimony in Innu-aimun could be transcribed and translated, and data from the map biographies checked at a later date once the fieldwork period had ended.

Both 1:50,000 and 1:250,000 scale NTS base maps were used in the 1991 research. The smaller scale topographic maps were trimmed and taped together to produce larger base maps of the major land use areas for each community. In total four such base maps were created: one for the region south west of Sheshatshiu, covering the Mealy Mountains area; one for the region west of Sheshatshiu covering an area between Minipi Lake in the south and Shipiskan Lake in the north; one for the area west of Churchill Falls covering the area of Lobstick Lake, Schefferville, and Menihek Lakes; and a fourth one covering the region west of Utshimassiu, bordered by Shapio Lake in the south, Lac aux Goelands in the west, and Nutak in the north.

In many instances where I thought that the informant's land use activities could be recorded at larger scale, 1:50,000 scale maps were used instead. These afforded a far greater level of geographic detail to the informants and greatly facilitated navigation across the maps and elicitation of land use and occupancy testimony.

Prior to the commencement of the interviews, clear plastic overlays (acetate) were secured on top of these base maps. Informant identification, topographic map number, control points for subsequent digitizing, and other relevant information were written on them.

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[3]This process of translation requires a great deal of additional research.

My co-researchers and I drew coloured lines on these overlays to indicate various details of land use. In some cases, however, I asked harvesters to record their own data on the overlays having determined in advance the person's drafting capabilities. By having the harvester plot some of his own data, I was able to eliminate the constant stops and starts and corrections that occurred frequently when I had pen in hand. In any event, I constantly supervised the work of the harvesters when it was they who did the plotting. I assisted them with the identification of toponyms whenever the lack of detail on the 1:250,000 scale maps made route identification difficult. As in previous research (Armitage 1990), the placement of toponyms on the NTS base maps was absolutely essential to the conduct of the research as harvesters frequently referred to toponyms in order to orient themselves on the base maps.

Primary and secondary camp sites, travel routes, and harvesting areas for numerous wildlife species were recorded on the overlays. Harvesters were asked to delineate both the places where they killed individual animals species, but also the areas in which they traveled in search of game (i.e., scan and pursuit areas). Different colours were used to demarcate different seasons of land use on each map, not distinctive harvests of individual species. The totality of an informant's land use in a particular geographic area was usually recorded on a single overlay sheet.[4]

Harvesting areas for the following species categories were recorded:

- caribou, moose and black bear;
- furbearers (including martin, mink, weasel, beaver, muskrat, fox, and lynx);
- fish;
- small game (including porcupine, spruce grouse, willow ptarmigan and hare);
- migratory waterfowl;
- wild fruits;
- seals.

With respect to camps, the primary camps were usually occupied on a lengthy basis throughout the entire time that a hunting group was in the country. They were established on lakes large enough to allow float- and ski-equipped aircraft to land and take off, or during the winter months, in places where there are brooks, rapids, or thin ice that eliminated the need to chop through a metre or more of ice in order to obtain drinking water. Two to eight tents were set up on the north or south sides of lakes in locations that made possible a commanding view of the lake, where swimming muskrat, waterfowl, and even caribou could be spotted (see Armitage, 1990;47).

Secondary or satellite camps on the other hand were established in the context of hunting, fishing, or trapping trips away from the primary camps so that distant beaver lodges and other

[4]In general, one plastic overlay was used for each informant, However, in some cases, a single overlay was used to record the map biographies of two or three informants. In these circumstances, great care was taken to clearly label the land use areas of each informant.

wildlife "hotspots" could be accessed. In general, such camps were established for a short duration – one to three days depending on the nature of the harvesting activity, weather conditions and other factors.

The locations of boilups were recorded on the biographies to the maximum extent possible. Trap lines, fish net and trap locations were also recorded to the maximum extent possible, but especially when the biographies were generated using 1:50,000 scale base maps.[5]

Travel routes and narrow harvest corridors were recorded on the overlays as lines. Camp, net, trap and boilup locations were recorded as points. Harvest locations were recorded either as polygons, lines, or points depending on whether they were generalized harvest areas or specific kill sites (moose and black bear).

The map biographies record the maximal extent of hunting, trapping, fishing, gathering and travel by individual harvesters. The lines, points and circles on the plastic overlays of the base maps denote, therefore, the furthest a harvester traveled in any direction from a primary or secondary hunting camp. They designate the total area around a camp or community in which a hunter scanned, retrieved, and killed game or harvested wild fruits.[6]

Harvesters were asked to delineate their land use activities in a given season between January 1, 1988, and July 1, 1991. The interviews commenced with questions about the locations of hunting camps during the study period. Data on hunting camp locations were also obtained from the Sheshatshiu Innu Band Council "Outpost Programme" records. The data obtained from this source were useful in crosschecking the data provided by the harvesters concerning hunting group composition and the dates that they occupied specific camp locations.

In mapping projects of this kind, harvesters may have trouble determining exactly when they occupied a specific campsite given the fact that they may have repeatedly changed harvesting areas and camp locations from one season to the next. As a result, ensuring that the informants do not become confused in remembering their land use at particular locations in specific seasons can be a painstaking and time-consuming process.[7]

Nonetheless, as the time period covered in the project was relatively short (i.e., <4 yrs.), virtually all of the harvesters were able to remember in considerable detail which particular season they spent at a given location. In attempting to avoid confusion, I commenced the questioning with the most recent period, that is, the spring 1991 season, and then moved slowly backward in time, season by season, trying to ensure that the harvester's land use at a given location during one season was not confused with his activities there during another season.

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[5]A trapline is defined as "a conceptualization of points in space joined together by the travel route between them" (Freeman, 1976:50).

[6]The total aggregate of such lines or circles around a camp in a given season constitutes the effective perimeters of a hunting range (see Freeman, 1976, vol.3, p.54).

[7]See Ellanna, et al, (1985: 182-183) for a discussion of the reliability of informant recall over time.

Nevertheless, despite the care taken during the interviews to avoid confusion, there may still be inaccuracies in the temporal aspects of the data.

With respect to the sample of harvesters interviewed during this research, the sampling methodology must permit the generalization of mapped data to the community as a whole. As Ellanna, et al. (1985:166) note, sample size and composition "should be driven by research questions or problems" which, in the case of the 1991 mapping work, meant a focus on the extent of contemporary Innu land and resource use. This research problem biased the selection of informants in favour of those people with the most active and extensive land and resource use, in particular, those people who harvested from base camps in the country or who were frequent participants in community-based harvesting activities. Thus, "key informants" were harvesters of any age who frequently participated in country and community-based harvesting activities, in particular, older harvesters with extensive harvesting experience. For more on sampling methods in other land use mapping studies, see Ellanna, et al. (1985:164-166).

In total, there were 112 adult males in Utshimassiu who were 15 years or older as of January 1, 1988. The theoretical population of active harvesters in the community was determined to be 86 adult males (76.8% of the total adult male population). The sample was developed as a result of consultation with four experienced harvesters as well as on the basis of interviews conducted in the 1987 to 1989 period.[8] The criterion used to define a person as an active harvester was participation in a single harvesting activity.

Of the 86 active harvesters, 29 were not available for interviews, so the study population consisted of 57 people. Of these, 25 harvesters were interviewed giving a response rate of 43.9%. However, the harvesting activities of many of the men who were not interviewed were described by the 25 informants because I consistently asked them to list the members of their hunting groups whenever they described a particular hunting trip. In fact, an additional 37 harvesters were mentioned by the Utshimassiu informants as having accompanied them in their harvesting activities. This means that land use was described, although incompletely, for a total of 62 harvesters, that is, 72.1% of the theoretical population of 86 harvesters who could have been interviewed for the study.[9]

With one exception, women were not interviewed in either community due to time constraints, and the fact that the geographic extent of harvesting by women is small in comparison to that of men. Priority was assigned to identifying land use by men with the maximal geographic extent of harvesting activity.

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[8]The delineation of active harvesters was cross-checked in the course of the interviews by comparing the list of harvesters compiled during these consultations and the list of harvesters obtained by questioning informants about their hunting group composition.

[9]The problem of harvester reluctance to describe the harvesting activities of other people does not apply to caribou hunting groups when the hunters conduct their harvesting activities as a production unit. As a result, it is sufficient to interview one hunter from a large group in order to determine where all the members of the group traveled in the pursuit of caribou. Of course, additional interviews facilitate cross-checking and validation of individual map biographies.

In total, there were 177 adult males in Sheshatshiu who were 15 years or older as of January 1, 1988. The theoretical population of active hunters in the community was determined to be 96 adult males (54.2% of the total adult male population). The sample was developed as a result of consultation with two experienced harvesters as well as on the basis of interviews conducted in the context of earlier research (Armitage, 1990). The criterion used to define a person as an active harvester was participation in a single harvesting activity.

Of the 96 active harvesters, 21 were not available for interviews, so the study population consisted of 75 men. Of these, 25 harvesters were interviewed giving a response rate of 33.3%. However, as in the case of the Utshimassiu Innu, the harvesting activities of many of the men who were not interviewed were described by the informants because, as stated previously, I consistently asked them to list the members of their hunting groups whenever they described a particular hunting trip.

Mapping in both communities captured both community and country-based land use activities. Community-based land use refers to hunting, trapping, fishing and gathering activities of short-term duration where either the community of Sheshatshiu or Utshimassiu is used as the base of operations. Harvesters leave the community and return later in the day or at the most one to two weeks later. Harvesting activities, with the exception of caribou hunting trips by aircraft are generally restricted to a 70 km radius of the community.

Country-based harvesting, on the other hand, refers to hunting, trapping, fishing, or gathering activities conducted for relatively long periods of time, where a base camp is established, and where the household is actually moved from the village to the country. In both Sheshatshiu and Utshimassiu, transportation to the country is financed primarily by community funds administered by the Band Councils, but in Utshimassiu, such harvesting also occurs without Outpost Programme funding in the spring months when all-male hunting parties and families travel out to neighbouring bays and rattles for one to four weeks of fishing, and duck and goose hunting.

As far as mapping country-based land use is concerned, the sampling technique consisted of determining the location of hunting camps each season on the basis of Band Council records and discussions with Outpost Programme coordinators and informants themselves.[10] Evidently, the number and location of occupied camps vary from one season to the next. However, once the locations and occupants of hunting camps had been established for each season, every effort was made to interview at least one adult male hunter from each camp. This provided a response rate of close to 100% given that the sample unit was really hunting groups.

With respect to data verification, no community review of the map biographies was undertaken, however, the data were cross-checked using the aircraft charter forms that list hunting group members and destinations of flights (i.e. camp locations), by reference to Sheshatshiu Innu Band

[10]The coordinators are responsible for organizing the air charters that transport Innu to and from the country.

Council Outpost Programme records, and by comparing testimony from two or more informants at a given camp with the view to identifying inconsistencies.

2.1.2 Sakauye, Andrew and Gregoire 1979 land use and occupancy data

Brenda Sakauye was retained by the Innu Nation in 1978 to conduct a detailed land use and occupancy study. Sakauye had previously worked on the Labrador Inuit Association's land use research project coordinated by Carol Brice-Bennett (Sakauye, personal communication). In conjunction with Innu co-researchers Alexander Andrew and George Gregoire, Sakauye recorded a variety of data on mylar overlays of 1:250,000 scale NTS base maps.[11] The data included travel routes, camp sites, locations of caches, grave sites, birthplaces, toponyms, caribou calving and migration areas, and harvest areas for furbearers, small game, fish, migratory waterfowl, bear, moose, wolf, caribou, and berries.

The data were recorded for three time periods: 1900 to 1930; 1931-1950; and 1951 to 1979. However, the specific years of land use (e.g. the year that someone traveled along a specific route) were often recorded on the map biographies.

In the early 1990s, I contacted Sakauye to discuss her research and reviewed her correspondence and methodological notes. The research followed the standard map biography approach. It recorded data at 1:250,000 scale. Species codes and other symbols used in making the biographies were fully comprehensible. Twenty-three middle-aged and elderly people were interviewed in Sheshatshiu including one woman. Twenty-eight people were interviewed in Utshimassiu including three women.

2.1.3 Sheshatshiu Innu Band Council Outpost Programme Records

For more than 25 years, the Sheshatshiu Innu Band Council has run an Outpost Programme that finances travel by Innu families to and from camps in the interior of Labrador. Each year, a programme coordinator was hired whose responsibilities included determining the names of prospective participants, organizing aircraft charters and supplies, and communications with participants while in the country. Invariably, the coordinators prepared lists of people who participated in the programme each season. I retrieved many of these lists from the Band Council files, but also asked the coordinators to provide lists at the end of each new season.

Starting in the mid-1990s, therefore, I compiled a database of Outpost Programme participants and camp locations, and continued to update this whenever new information became available. The database covers the period 1973 to 1998.

Geocoding of the camp locations was undertaken using the Innu Nation's toponymic database that has coordinates linked to each place name.

---

[11]Limited mapping was also conducted at 1:500,000 and 1:1,000,000 scales.

2.1.4 Mailhot 1982 life history data

In the context of the Sheshatshit Socio-linguistic Variability Project in the early 1980s, José Mailhot produced biographies of the "territorial backgrounds" of 34 Innu people who have spent at least part of their lives as members of the Sheshatshiu band. She obtained data on land use in the territory of the band and that of other Innu bands by linking informant harvesting activities to "important" life events of each informant. The Innu used time markers in her interviews such as "'the year my younger sister was born,' 'the winter before I got married' or 'the day my mother died.'" These events could be independently dated with considerable accuracy using dates of birth, baptism, marriage, death, and burial that had been compiled from church records and genealogies (Mailhot, 1982:1-2; 1997:130-164).

Mailhot subsequently georeferenced the land use activities by linking them to toponyms that could be located using data from other land use research.[12] Finally, in order to incorporate these data into a larger Innu Nation GIS database, I distilled the life histories recorded by Mailhot into simple attribute data that could be linked to the toponyms and geographic coordinates.

2.1.5 LAMAP 1980 landuse data

LAMAP refers to a research project undertaken by the Innu Nation in the summer of 1980 when male hunters from Sheshatshiu and Utshimassiu were interviewed concerning their historic land use. 1:50,000 scale NTS map sheets were trimmed, joined together and laid out on the school gym floors in each community. Guided by Innu researchers, the hunters were taken across the maps in their stocking feet and questioned about their travel routes, camp locations, birth and grave sites, and toponyms.

In 1985 and 1986, José Mailhot, in conjunction with Anne-Marie Baraby, organized the maps, entered the toponyms and some other data recorded on them into a computer database, and made considerable progress in standardizing the spelling of the toponyms (Mailhot, 1986). Mailhot is responsible for giving the mapping project its name.

Mailhot reports that "the more I consult LAMAP, the more I note that this database is incredibly rich. It is too bad that we have not been able to elucidate all the remaining problems. But even in it's present state, I find it to be an inexhaustible source. I consult it constantly (translated from French, personal communication, 21 Dec. 1999).

LAMAP has one great advantage over other land use studies in that whereas the majority of these have been conducted at 1:250,000 scale, LAMAP used 1:50,000 scale maps thereby affording, at least potentially, greater location accuracy and interpretative power for informants (who sometimes remark that they have trouble reading maps at 1:250,000 scale). Approximately 550 NTS map sheets were required to cover most of the Labrador Innu territory that extends well into Quebec.[13]

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[12]Innu harvesters describe their activities on the land using toponyms. This means that a reasonably good idea of the geographic location of land use activities can be obtained even if informants are map illiterate.

[13]Map coverage does not extend to Fort Chimo (Kuujjuaq).

Only one time period was used in the project - living memory. This means that land use activities cannot be queried using temporal variables. However, some indication of seasonality is assigned to many of the travel routes (not the camps) but the seasonal attributes are inconsistently applied across the study area.

Fifteen people were interviewed in Sheshatshiu and 20 people in Utshimassiu. As most of them are now deceased, it is extremely difficult to determine their levels of map literacy.[14] The interviewing capabilities of most of the Innu researchers are unknown, although one researcher has raised questions about the rigour applied in interviewing informants regarding land use in some sectors of the territory. For example, some travel routes traverse unlikely terrain such as extremely steep cliffs. The Innu researchers appear to have received no detailed instruction in cartography, geography, or interviewing techniques prior to the commencement of the research. The project was not supervised by a qualified researcher.

The maps record both major travel routes and "hunting pathways." These latter features are confusing in that they suggest that the informant actually traveled along the indicated paths, when in fact they represent generalized harvest areas. In other mapping projects, such areas are represented by polygons.

Full appreciation of the accuracy of the LAMAP dataset awaits independent verification that may be provided by future land use research or archaeological surveys. Surveys by Doug Robbins at *Kakuseukakants* (1995, north of Harp Lake), Fred Schwarz in the headwaters of the Eagle River (1997), and members of the Labrador Hydro Project archaeological team on the Churchill River (1998-1999), have generated some data that can be used for verification purposes. Sightings of numerous abandoned Innu camps along the Adlatok River by four recreational canoeists (including archaeologist Stephen Loring) who traveled along the river in September 2001 also lend some credibility to the LAMAP data (Bill Ritchie, personal communication).

In 1990, I retained the services of Polaris Communications which copied all of the LAMAP maps using Photomechanical Transfer (PMT) technology, and generated several composite maps of the travel route and camp data from LAMAP at 1:250,000 scale. I subsequently digitized the data from these composite maps for inclusion in the Innu Nation's digital land use and occupancy database. They comprise two MAPINFO layers – one for travel routes, the other for camps.

[14]Some of the informants, e.g. Pien-Joseph Selma and Joseph Nuna (Sr.), are the only sources of mapped land use data in large portions of the Innu Nation's claim area.

2.2 Supplementary Research

Previous Innu Nation research generated land use data for the Minipi Lake PTA area up until July 1991. However, the Sheshatshiu Innu Band Council Outpost Programme records and DND Operations Directives indicate that the area has been used frequently since that time. For that reason, supplementary research was required in order to obtain data on the most recent land use, in particular, the geographic extent of the activities taking place there. Such research was undertaken during a five-day period in October 2001 and is referenced as Armitage 2001 for the purposes of this report.

Map biographies were generated once again using exactly the same methodology as that employed in 1991. Land use in the Minipi Lake was mapped at 1:50,000 scale while that at Lac Fourmont it was mapped at 1:50,000 scale.

Eighteen potential informants were identified from the Outpost Programme records. Unfortunately, of these only a small sample consisting of four people (3 men and 1 woman) was obtained. Four people are no longer living in the Upper Lake Melville region, six people said they were too busy to be interviewed,[15] and four people were not approached for interviews. Given my understanding that virtually all Innu land use in the Minipi Lake area currently occurs in the context of the Outpost Programme, no attempt was made to identify any itinerant harvesters who may have accessed the area by snowmobile or aircraft chartered independently of the Band Council. Also, information concerning a spring walk to Minipi Lake organized by an Innu woman from Sheshatshiu each year for the last four years was not obtained even though the walk is a form of land use in the study area.

Of the four people interviewed, one person, a woman, is map illiterate meaning that no map biography could be made with her. Map biographies were made with three of the informants, three at 1:50,000 scale and one at 1:250,000 scale. Translators assisted me with two of the informants who are functionally unilingual.

2.3 Digitizing methods, data compilation, cartography

Between April 1996 and April 1998, I digitized data from numerous map biographies for inclusion in an Innu Nation Geographic Information System (GIS) database. As noted previously, the biographies were prepared using UTM base maps at 1:250,000 and 1:50,000 scales (NAD 1927).

The GIS database is SPANS GIS Version 7.1 compliant and is managed with a programme called "CREATOR." Written in Visual Basic by Scott Ennis, CREATOR is an interface for querying large quantities of landuse and environmental knowledge data stored in SPANS 7.1 GIS (vec/veh/tba) format. Once line, polygon and point data are digitized from the map

[15]The research period included a weekend, a time when several potential informants were away from the village harvesting along the Trans-Labrador Highway or preoccupied with shopping and other activities in Happy Valley-Goose Bay. The research period also coincided with Innu Nation elections. Two of the potential informants are senior leaders and were preoccupied with election matters.

biographies, CREATOR provides the means to efficiently query the digitized "layers" from multiple map biographies according to any combination of variables. For example, using CREATOR, one can easily generate new composite maps showing travel routes, camp locations, and/or harvest areas for one or more informants, for any consecutive period of time (Armitage and Ennis, 1998).

The universe for the SPANS database is a Lambert Azimuthal Equal Area Projection, ellipsoid GRS 1980.

I used CREATOR to conduct specific queries of the total land use database. These included the following:

- all camp locations (primary and secondary) for the period 1969 to 1991, corresponding to the post-settlement period of land use.
- all camp locations (primary and secondary) for the period 1900 to circa 1968, that is, as far fact as possible in the living memory of the informants, corresponding to the pre-settlement period of land use.
- all harvest areas (polygons and vectors) for 1969 to 1991.
- all harvest areas pre-1969.
- all travel routes (vectors) for 1969 to 1991.
- all travel routes pre-1969.
- important wildlife habitat and other areas comprising Innu environmental knowledge.

The results of these queries were processed as new layers within the SPANS GIS environment, however, due to the fact that the common GIS platform for Innu Nation land rights negotiations is MAPINFO, the composite layers were exported to MAPINFO. The universe of this MAPINFO dataset is Universal Transverse Mercator, NAD 1927.

Data from the October 2001 map biographies were also digitized in SPANS GIS and imported into the MAPINFO environment. Thus, all of the data used for this report were selected from the MAPINFO dataset, and cartographic output was generated completely in MAPINFO.

3. Results

3.1 Historic land use (pre-settlement period)

Sakauye, et al. data (see Map 2). Three of Brenda Sakauye and Alexander Andrew's informants identified land use in the safety template study area in the pre-1969 area (see testimony Appendix 2). They were members of groups that established camps at Minipi Lake between 1939 and 1948. Some of the camps were occupied in the spring and winter. Waterfowl eggs were harvested in the vicinity of one camp. A winter caribou harvesting area in a burnt area to the west of Minipi Lake was identified for the period 1946 to 1948. An abundance of berries at this location attracted black bears. Both bears and berries were harvested here in the summer.

Camps were also established between 1926 and 1948 at *Kukumeu-nipi*, about 28 km north of Minipi Lake, by groups belonging to two of the informants.

Travel routes identified in the study area include routes across Minipi Lake from the direction of the Churchill River, one from the north end of Minipi Lake to Dominion Lake (spring 1945), and another along the Little Mecatina River used at some point between 1926 and 1948 (date unclear). Lynx were harvested along the route from Minipi Lake to Dominion Lake.

No other data were provided on wildlife species harvested in this area or the temporal nature of the activities.

Mailhot data (see Map 2)

Mailhot lists three people who were members of hunting groups that occupied the study area between 1946 and 1948. All three of these people traveled to La Romaine on the Quebec Côte-Nord from here.

LAMAP data (see Map 3)

One or more Innu elders who participated in the 1980 mapping project using 1:50,000 scale base maps identified numerous travel routes, place names and camps in the study area. The travel routes and camps are depicted in Map 3.

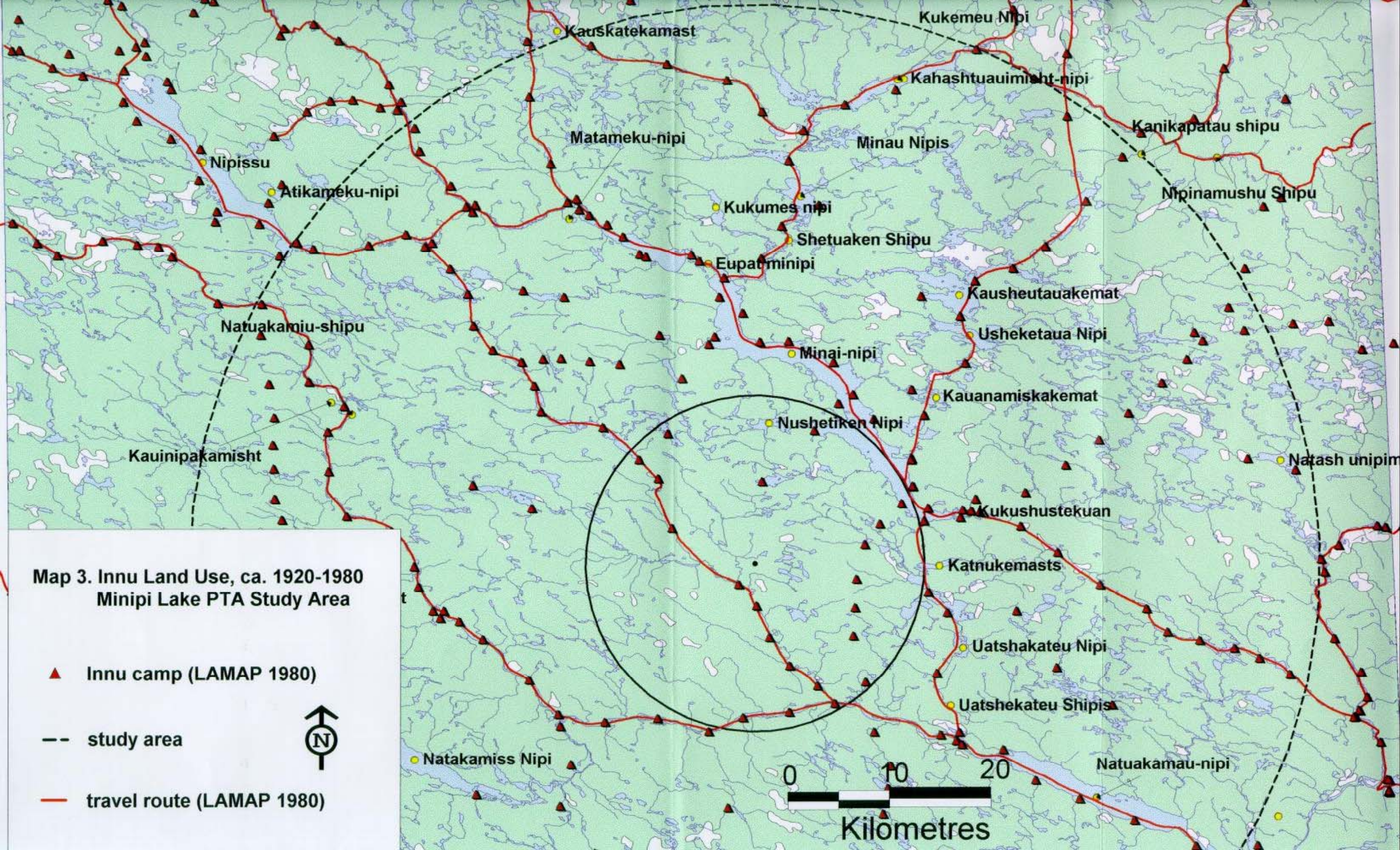
Armitage 2001 (see Map 2)

While it was not my intention to discuss historic land use in the study area in the course of the supplementary research, one of the informants volunteered such information. He described travel in the area as a member of a small hunting group when he was a teenager, prior to marriage. With the aid of birth date information for him, his wife, and eldest child, I estimate the time period for their land use at Minipi Lake to be sometime between 1956 and 1961.

The hunting group consisted of the informant, his father, mother, older sister and older brother. They arrived at the north end of Minipi Lake early in the spring and camped near what is today a fishing lodge. An area of open water, called an *ashkui*, is located at the outlet (*kupitan*) of the lake. The current here is quite strong, according to the informant, which is why no ducks or geese were observed there with the exception of two harlequin ducks.

As spring progressed, the family moved south down the lake to the major *ashkui* area that is the center of contemporary land use by Sheshatshiu Innu. Migratory waterfowl, ptarmigan/grouse, fish, and beaver were harvested at this second location. The informant's older brother killed a black bear during their stay in the *ashkui* area. Two harlequin ducks were observed in the *ashkui* shortly after their arrival here.


Kauskatekamast
Kukemeu Nipi
Kahashtuauimisht-nipi
Kanikapatau shipu
Matameku-nipi
Minau Nipis
Nipissu
Atikameku-nipi
Nipinamushu Shipu
Kukumes nipi
Shetuaken Shipu
Eupat minipi
Kausheutauakemat
Natuakamiu-shipu
Usheketaua Nipi
Minai-nipi
Kauanamiskakemat
Nushetiken Nipi
Kauinipakamisht
Kukushustekuan
Katnukemasts
Uatshakateu Nipi
Uatshekateu Shipis
Natakamiss Nipi
Natuakamau-nipi
0
10
20
Kilometres
N
Map 2. Innu Land Use, Pre-1969
Minipi Lake PTA Study Area
Innu camp
(data from Sakauye et al., Armitage 2001)
area occupied (Mailhot data)
toponym
study area
travel route
(data from Sakauye et al., Armitage 2001)
harvest corridor
harvest area
(data from Sakauye et al., Armitage 2001)


Kukemeu Nipi
Kauskatekamast
Kahashtuauimisht-nipi
Kanikapatau shipu
Matameku-nipi
Minau Nipis
Nipissu
Atikameku-nipi
Nipinamushu Shipu
Kukumes nipi
Shetuaken Shipu
Eupat minipi
Kausheutauakemat
Natuakamiu-shipu
Usheketaua Nipi
Minai-nipi
Kauanamiskakemat
Nushetiken Nipi
Kauinipakamisht
Natash unipim
Kukushustekuan
Katnukemasts
Uatshakateu Nipi
Uatshekateu Shipis
Natakamiss Nipi
Natuakamau-nipi
0
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Kilometres
Map 3. Innu Land Use, ca. 1920-1980
Minipi Lake PTA Study Area
Innu camp (LAMAP 1980)
study area
travel route (LAMAP 1980)
N

3.2 Contemporary land use (settlement period)

Sheshatshiu Innu Band Council Outpost Programme Records & Aircraft Charter Company Invoices

Whatever Outpost Programme records were kept by the Sheshatshiu Innu Band Council since 1998 have been lost. Prior to 1999, Outpost Programme records show occupancy at Minipi Lake at the following times:

Spring 1998 – 1 family
Spring 1997 – 3 families
Spring 1996 – 3 families
Spring 1990 – 3 families
Spring 1989 – 5 families

Aircraft charter company records indicate that Innu people were taken to Minipi Lake in the spring, 2001. Innu people interviewed as part of the supplementary research conducted in October 2001 indicated that they established a camp and harvested at Minipi Lake in the spring of 1999 as well.

For a comparison of these periods of occupation, see DND's listing of Innu camps according to the Goose Bay Operations Directives between 1989 and spring 2001 (Appendix 1).

Armitage 1991, 2001 (see Maps 4 and 5)[16]

Two of the informants interviewed in October 2001 were included in the 1991 research. The focus of the most recent interviews was on their land use in the Minipi Lake area since 1991. One of the informants who did not participate in the earlier research was a woman. Although map illiterate and therefore not able to make a map biography, she provided valuable information on women's land use activities and provided a better understanding of their geographic extent.[17]

Another one of the informants, who had not participated in the earlier research, joined his family at the Lake in 1996 and in subsequent years. Sometime between 1988-1991, he was also the member of a small group that established a base camp at the north end of Lac Fourmont and harvested northwest along the Little Mecatina River. This camp appears to have been established at least in part with the view to providing a staging ground for travel into the PTA as part of the campaign of political protests waged by the Innu during the 1980s and early 1990s.

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[16]I have combined the discussion of the 1991 and 2001 research results because exactly the same research methods were employed in both cases.

[17]This helped to validate my earlier observations that the extent of women's land use is not as great as male harvesters. Where determining the maximum extent of land use is a key research goal, informant samples will be comprised primarily of male harvesters.

Since 1988, all of the occupants of the Minipi Lake PTA area have been residents of Sheshatshiu, with the exception of one year when a family from La Romaine joined the Sheshatshiu group for a month. The number of people present at a camp in any given year has ranged from one to two dozen people living in anywhere from two to four tents. While I do not have accurate information on the dates when Innu arrived at and then left the lake, the normal period of occupancy appears to be from the end of April to the end of the first week in June. DND's Operations Directives show the first date of occupancy between 1989 and 1998 as April 19th and the last date as July 27th, although this latter date appears to be an error. Travel to and from Minipi Lake was undertaken by helicopter or float- and ski-equipped, fixed wing aircraft.

With respect to the extent of land use by Innu people in the study area, the large *ashkui* area in the central part of the lake is the prime harvesting location due to its superior biological productivity. Since 1988, most Innu land use took place within an eight kilometre radius of this *ashkui* (centered at –60.96 W, 52.55 N). However, Innu people have circumnavigated the lake on more than one occasion and have traveled south to Lac Fourmont, east up the river connecting to Anne Marie Lake, east up a brook to a lake called *Kauanamiskakemat*, and west along a brook to a lake called *Nushetiken-nipi*, approximately three kilometres west of Minipi Lake. Innu also traveled to the PTA area a few times in the context of political protests against military fight training.

The travel routes, camp locations and other land use information recorded on the map biographies are shown on Maps 4 and 5.[18]

Besides harvesting standing, dead, spruce trees for firewood and spruce and fir boughs for tent floors, Innu people present in the Minipi Lake PTA area harvested a variety of wildlife species.[19] These included:

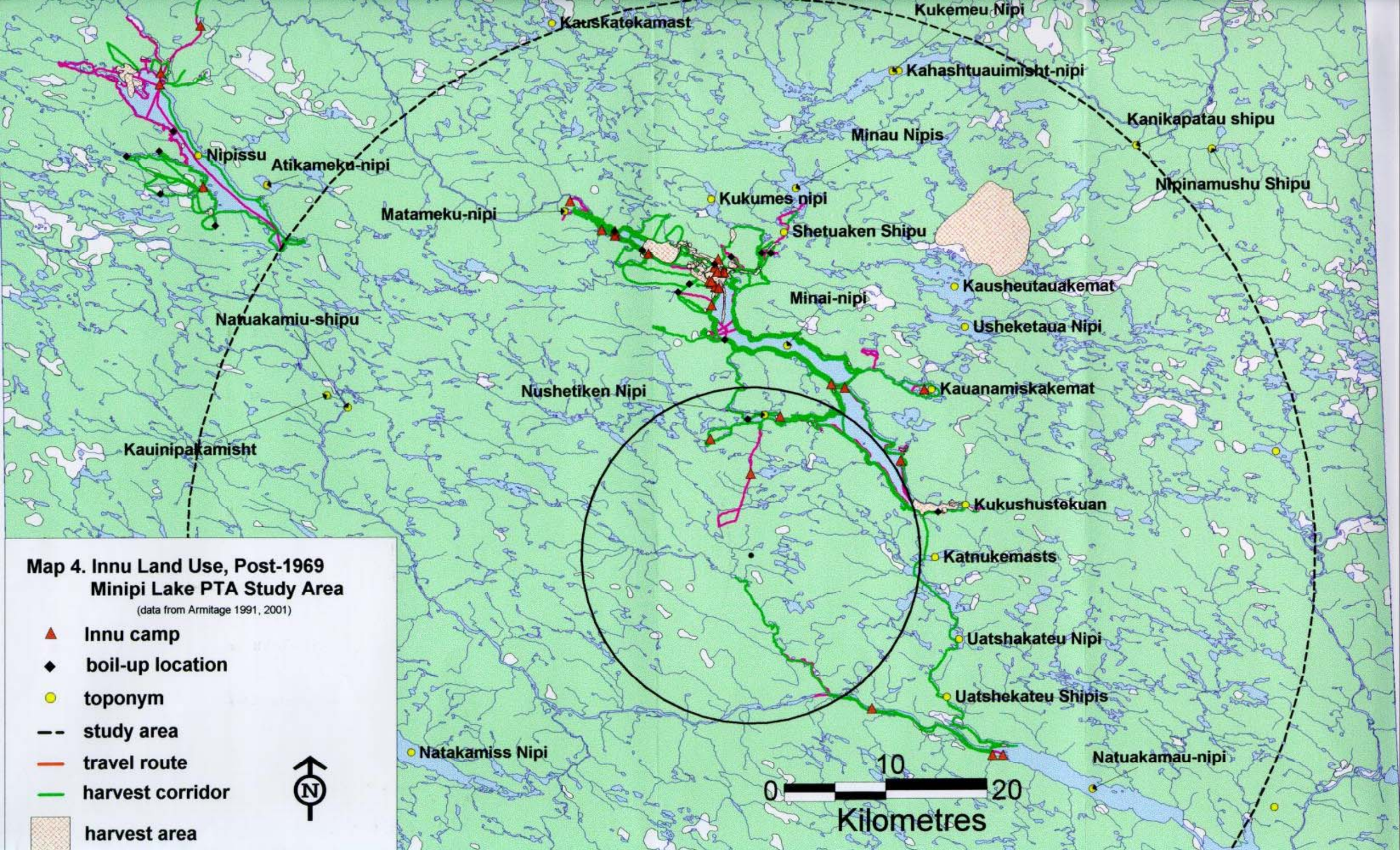
caribou	black bear	beaver	porcupine
arctic hare	spruce grouse	willow ptarmigan	muskrat
Canada goose	American black duck	northern pintail duck	merganser
goldeneye duck	surf scoter	black scoter	white-winged scoter
oldsquaw duck	brook trout	burbot	suckers

Wildlife observed but not harvested included:

wolf	fox	otter	marten
moose	common Loon	red-throated loon	bald eagle

[18]It is important to note that the lines, polygons and symbols on these maps do not indicate intensity of land use. The apparent density of lines and symbols in any portion of a map may simply be an artifact of the map biography method and subsequent incorporation into a GIS database rather than any real indication of heightened land use there. A single line could indicate a travel route used by a large hunting party of 12 people or one used by a solitary person checking his or her snares. Similarly, multiple lines in an area could represent one trip by several informants who were members of the same hunting group not several trips by several individuals or on several different occasions.

[19]Apparently, no wild berries were harvested in the Minipi Lake area.


Kauskatekamast
Kukemeu Nipi
Kahashtuauimisht-nipi
Kanikapatau shipu
Minau Nipis
Nipissu
Atikameku-nipi
Nipinamushu Shipu
Kukumes nipi
Matameku-nipi
Shetuaken Shipu
Kausheutauakemat
Minai-nipi
Natuakamiu-shipu
Usheketaua Nipi
Nushetiken Nipi
Kauanamiskakemat
Kauinipakamisht
Kukushustekuan
Katnukemasts
Uatshakateu Nipi
Uatshekateu Shipis
Natakamiss Nipi
Natuakamau-nipi
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Kilometres
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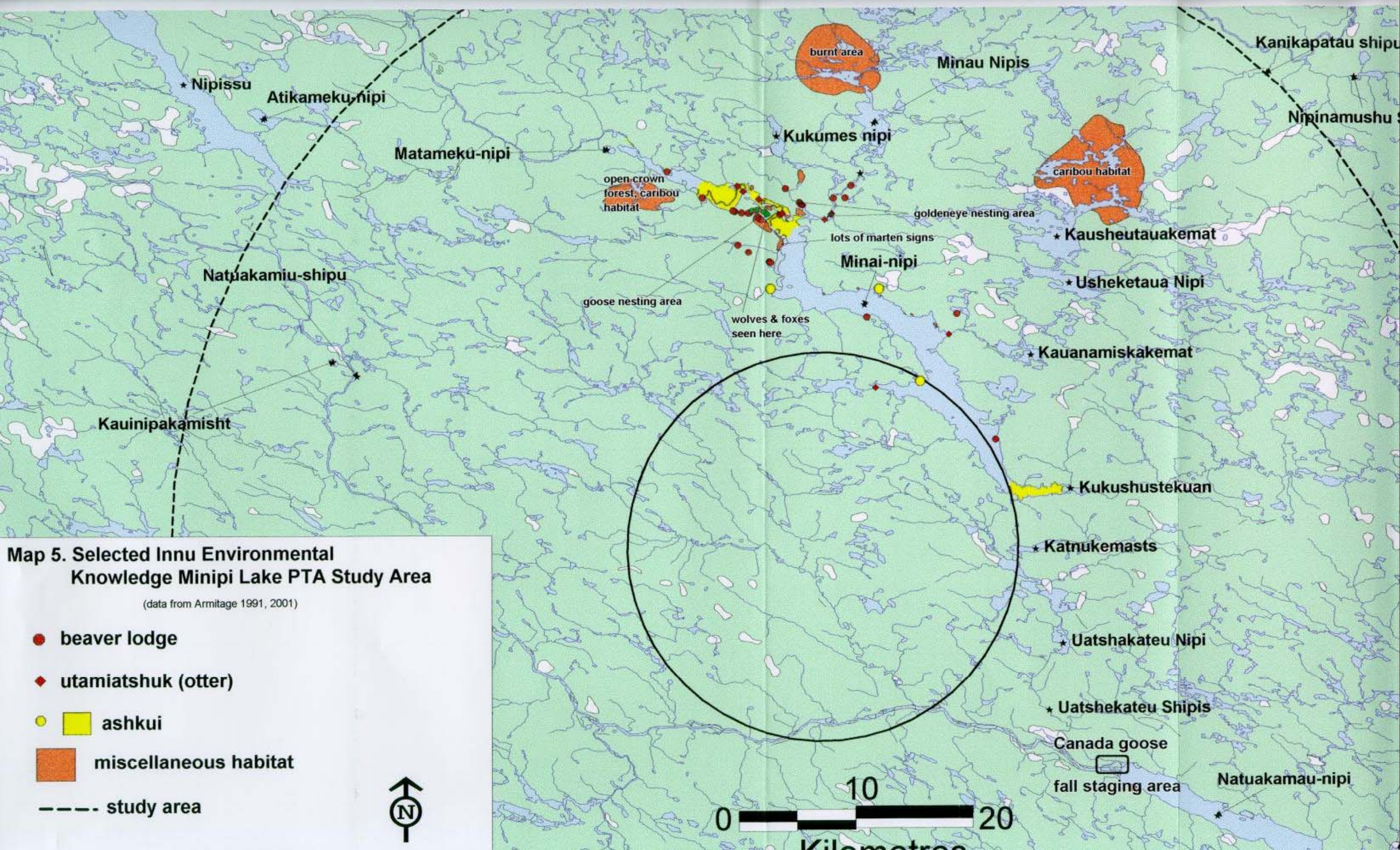
Map 4. Innu Land Use, Post-1969
Minipi Lake PTA Study Area
(data from Armitage 1991, 2001)
Innu camp
boil-up location
toponym
study area
travel route
harvest corridor
harvest area


burnt area
Minau Nipis
Kanikapatau shipu
Nipinamushu
Nipissu
Atikameku-nipi
Kukumes nipi
Matameku-nipi
open crown forest, caribou habitat
caribou habitat
goldeneye nesting area
lots of marten signs
Kausheutauakemat
Minai-nipi
Natuakamiu-shipu
Usheketaua Nipi
goose nesting area
wolves & foxes seen here
Kauanamiskakemat
Kauinipakamisht
Kukushustekuan
Katnukemasts
Uatshakateu Nipi
Uatshekateu Shipis
Canada goose
fall staging area
Natuakamau-nipi
Map 5. Selected Innu Environmental Knowledge Minipi Lake PTA Study Area
(data from Armitage 1991, 2001)
beaver lodge
utamiatshuk (otter)
ashkui
miscellaneous habitat
study area
N
0
10
20
Kilometres

Harvesting areas for the above species were accessed by snowmobile, canoe or foot (with the assistance of snowshoes in many cases). Travel to the most distant parts of the lake was usually undertaken by snowmobile at which time Innu hunted grouse, willow ptarmigan, porcupine and migratory waterfowl whenever the opportunity arose. Canoes were the vehicles of choice when Innu hunted migratory waterfowl. Hunters would hide behind a white, canvas blind placed in the bow of the canoe so that they could sneak undetected within firing range. Both canoes and snowmobiles would be used when Innu searched for beaver lodges (*uisht*). Body-grip traps would be placed at the entranceways to the lodges depending on ice conditions in the vicinity. On occasion, satellite (secondary) camps would be established where the men would spend one or more nights so that they could better exploit the wildlife resources in the area.

The daily routine of Innu women consisted of caring for children, chopping firewood, cooking, airing the bedding, washing clothes, butchering animals, cleaning furs, gathering boughs for the tent floor, and checking fishing nets placed near the base camp. Harvesting boughs in the vicinity of the camp or at more distant locations accessed by snowmobile would provide opportunities for hunting grouse and porcupine. The lone Innu woman interviewed for this report usually took her hunting dog with her when she went to pick boughs; the dog would flush grouse into the trees and spot them so that they could be shot with a small caliber rifle. Depending on how much camp labour was required on a given day, she and other women would travel occasionally with the men when they went to check traps, hunt geese and other species. On such occasions, they would tend fires and cook for the men nearby the harvest locations.

The knowledge acquired by Innu people in the context of their harvesting activities forms part of their environmental knowledge, often referred to as "Traditional Ecological Knowledge." Observations of wildlife behaviour, population dynamics, predator-prey relationships, and habitat are also part of this body of knowledge. In the Minipi Lake PTA area, informants mentioned several points of interest:

- leading edges along the ice beside an *ashkui* where migratory waterfowl and gulls would rest, preen, etc.
- small areas along the shore of rivers and Minipi Lake where otter would eat, defecate and engage in mating rituals. Innu refer to such areas as *utamiatshuk*.[20]
- otter "portage" routes.
- not being particularly intelligent creatures, muskrat would sometimes build their lodges (*uisht*) on the ice, where the exits to the water would freeze thereby sealing the occupants inside to await death by starvation.
- open-crown forest areas suitable for caribou habitat.
- nesting areas for Canada geese (e.g. a marshy area near the central *ashkui*).
- nesting areas for goldeneye ducks. My informants identified two locations. One is near the central *ashkui*, the other on the north side of the river leading to Anne Marie Lake. The ducks have established nests in standing, dead juniper trees situated in these areas.
- the timing and progress of the *ashkui* as spring advances.

[20]Cognate terms include: *utameu*, otter portage; *utametsheu*, the otter makes a path (Drapeau, 1991:876).

- the timing of the arrival of waterfowl species. Canada geese, American black ducks, northern pintail ducks, goldeneye ducks, and mergansers arrive first. Next to arrive are surf scoters and white-winged scoters, followed by oldsquaw ducks, then black scoters. Last to arrive are the common and red-throated loons.
- bald eagles have been seen in recent years flying high above the *ashkui.*
- the presence of lots of small burbot in certain areas when the lake waters warm somewhat.
- a possible caribou migration route at the narrows in the middle of Minipi Lake.
- differences in the fat of various duck species. One informant said her favourite waterfowl is the oldsquaw duck. Its "grease" is very clear unlike the yellow grease of other ducks. Her father used to mimic the sound made by this duck – *shauneitaunkut*!
- empty beaver lodges attributed in part (speculation) to the possible impacts of low flying military aircraft. One informant said that beaver have sensitive hearing and may be disturbed by the jet aircraft. This may explain why some beaver would not exit their lodges at their normal feeding time, after 3:00 pm.
- A dead merganser was found on the snow near the brook leading to Anne Marie Lake. The bird was very fat and looked healthy. They plucked the bird but could not find any evidence of gun shot. Not knowing its cause of death, they decided not to eat it. It may have been frightened or struck by a low-flying military aircraft.
- alert behaviour by Canada geese in response to low flying military aircraft. One informant identified a large autumn concentration of Canada geese in a grassy channel at the north end of Lac Fourmont. The channel runs perpendicular to the Little Mecatina River, a popular route for low flying pilots. The informant said he witnessed geese "crouching down" whenever jets flew unexpectedly across the end of the channel as they headed southeast across Lac Fourmont. They would start honking once the noise from the jets hit them.

4. Summary, data gaps and omissions

The extant land use data generated in the context of Innu Nation research and supplementary interviews conducted in October 2001 indicate that Innu people have been living at Minipi Lake and harvesting various wildlife in its vicinity since at least 1939.[21] Whether or not land use occurred prior to that time is a question that can only be answered through archaeological investigation and possibly research among elder Innu resident on the Quebec Côte-Nord.

It appears that little if any use of the area occurred between the period of early settlement at Sheshatshiu in the late 1950s and 1989 when several families established a base camp there for spring harvesting activities. The fact that Innu people have recommenced use of this area after 40 years absence is not surprising. In recent years, Innu from Sheshatshiu and Utshimassiu have begun to explore and reoccupy a number of areas that their parents and grandparents once lived in, but which were neglected for a variety of reasons in the decades immediately following settlement (e.g. *Kapnien-nipi*, near Fig River, and *Mistinipi* in northern Quebec, etc.).

[21]The history of their land use in the area must be at least as old as the place name "Minipi Lake," an English derivation of the Innu toponym, *Minai-nipi*, meaning Burbot Lake.

In any event, the Minipi Lake area has seen frequent land use during the spring over the last 12 years. I have been unable to determine the exact dates of spring occupancy from one year to the next.[22] This constitutes a data gap.

The primary attraction of the place is the highly productive *ashkui* in the central portion of the lake. The *ashkui* provides habitat for, and relatively easy access to, a variety of migratory waterfowl and other aquatic species including beaver, muskrat and fish. It also provides opportunity for travel by canoe at a time of the year when the soft, melting snow makes travel by foot and snowmobile difficult.

Occasionally, Innu harvesters have traveled to more distance parts of Minipi Lake in recent years (e.g., 35 km to the south end of the lake from base camps at the central *ashkui*), but such travel occurred only once or twice during a season. Most of the land use in the spring took place within an eight kilometre radius of the *ashkui* (centered at –60.96 W, 52.55 N).

Land use in the fall, should Innu hunting groups ever visit the lake during this time, could well extend over a different area as both the constraints and benefits of the *ashkui* would not be present. In the context of the 2001 interviews, one informant identified an autumn land use area – the area he would "need" - ranging between 10 and 25 kilometres away from the spring base camps situated at the central *ashkui* (see Map 6).

Apart from these general observations, the data presented in this report provide only a limited understanding of the intensity of Innu land use in the Minipi Lake PTA area. They show where my informants said they traveled and harvested but not necessarily how frequently they did so in each portion of the territory occupied, nor how many animals they harvested while there.

As mentioned previously, I have not included information on the spring walks to Minipi Lake organized by an Innu woman from Sheshatshiu, even though the walks are a form of land use. Despite this omission, I am reasonably confident that the data presented in this report capture the geographic extent of the land use activities in the Minipi Lake PTA area. Nonetheless, there remains the possibility that I have not included someone in the sample whose activities extend beyond those described here. Time constraints made community review of the land use maps and other data presented with this report impossible. Such a review should be undertaken to better guarantee that no one with significant land use in the area has been omitted.

With respect to Innu environmental knowledge of the Minipi Lake PTA area, the discussion in this report is quite superficial as limited attention was paid to this topic during the 2001 and

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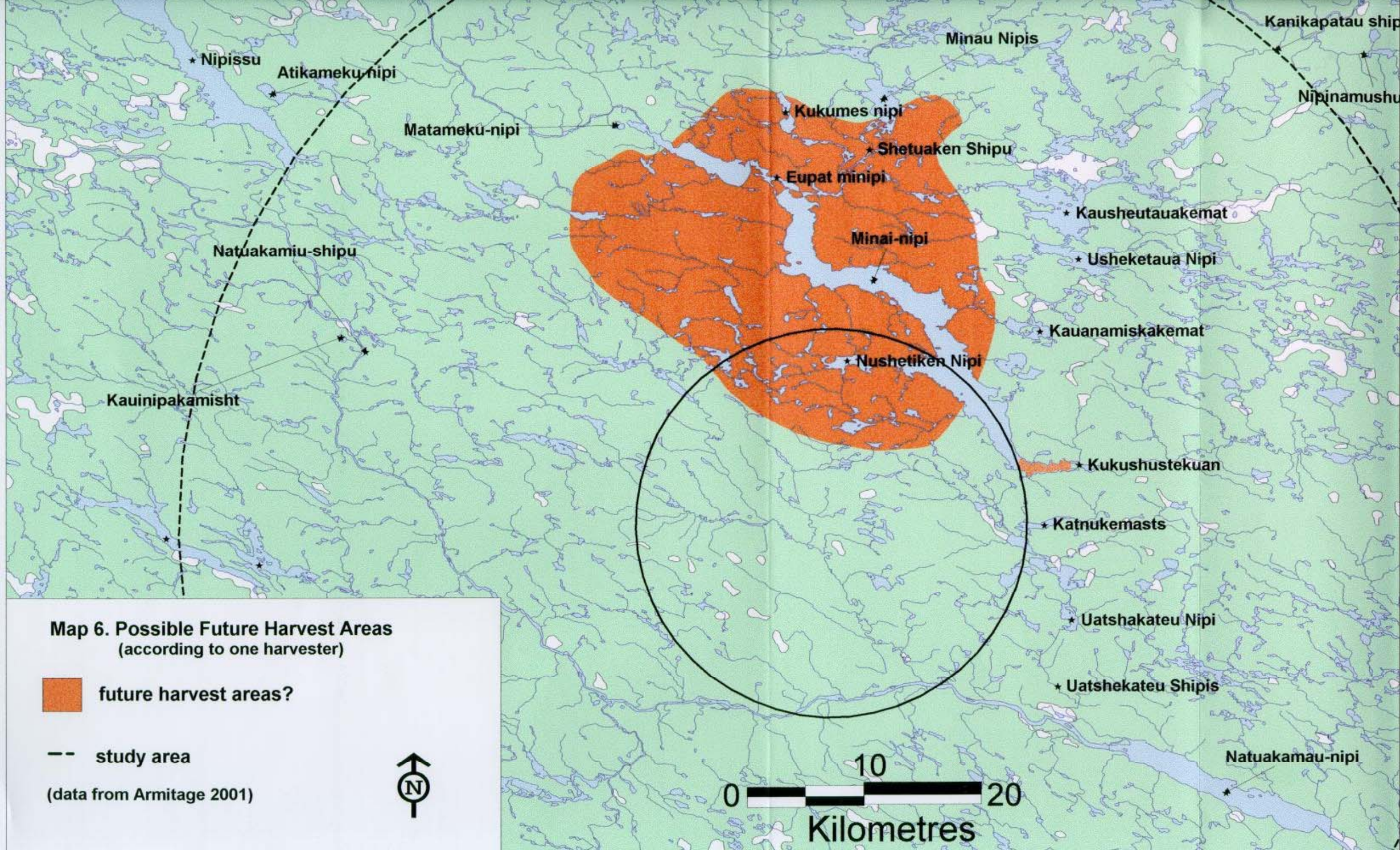
[22] I was unable to reconstruct the dates of occupancy because I had access to a very limited selection of air charter invoices, and the Outpost Programme records do not contain camp occupancy dates. Furthermore, informants could not parse these dates from their memories of multiple trips to Minipi Lake over a 10 year period. The Goose Bay Operations Directives are not a source of accurate occupancy dates because the Innu Nation and Outpost Programme coordinators have not always communicated camp start-ups and closures to the Community Liaison Officer on a timely basis. For example, the Innu camp established at Minipi Lake during the spring, 2001, was not included in these directives due largely to a communication breakdown on the part of the Innu Nation and Sheshatshiu Innu Band Council.

1991 interviews. No observations of passerines, wading birds, corvidae and many other species are presented. The environmental knowledge that is discussed here appears to be the "tip of the iceberg" - focused research using the map biography method would likely generate considerably more data about the area and its wildlife.

Finally, Innu from La Romaine and other communities on the Quebec Côte-Nord are known to establish camps at Lac Fourmont and to harvest along the Little Mecatina River.[23] Also, as previously mentioned, an Innu family from La Romaine spent one month at Minipi Lake in the company of a Sheshatshiu Innu hunting group. A complete account of Innu land use in the study area would therefore have to include the activities of these and other Innu from the Quebec Côte-Nord.

[23]They are represented by the Conseil de Bande de La Romaine and Mamit Innuat.



Map 6. Possible Future Harvest Areas
(according to one harvester)

future harvest areas?

study area

(data from Armitage 2001)

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Appendix 1. Goose Bay Operations Directives listing camps for Minipi Lake & Lac Fourmont

Ops. Dir.	Date of directive	Date active	Date closed
98-19	20.5.98	21.5.98	9.6.98
97-14	2.5.97	3.5.97	21.6.97
96-10	19.4.96	20.4.96	30.4.96
96-27	9.5.96	10.5.96	22.5.96
96-37	21.5.96	22.5.96	25.5.96
96-41	24.5.96	25.5.96	7.6.96
90-9	19.4.90	19.4.90	25.4.90
90-17	25.4.90	25.4.90	16.5.90
90-22	16.5.90	16.5.90	26.7.90
89-10*	8.5.89	8.5.89	30.6.89
Lac Fourmont			
96-108	27.9.96	28.9.96	9.10.96
90-57	11.9.90	11.9.90	27.9.90
Kaushetauakamat (12 km NE Minipi Lake)			
99-35	21.05.99	21.5.99	25.5.99

*this Directive lists two camps at two separate locations at Minipi Lake.

Appendix 2. Excerpts from Informant Testimony

Informant 1. Interviewed by B. Sakauye and A. Andrew. 30 January 1979.

Another usual place they had hunted and trapped around is the Minipi Lake area. And he pointed out the boundary of where he has hunted and trapped; and this includes the Little Mecatina River (Natuakamau Shipu), up to Dominion Lake and the Kenamu River; also along these rivers he has used steel traps for all types of fur-bearing animals like the beaver, otter, mink, marten, fox, lynx, and muskrat.

From Minipi he said he has walked with his father to the St. Augustine River, to trade and get some supplies for their camp. This was over twenty years ago. His family would set out on foot for their camp in early winter and it took three weeks travel.

He also states where the caribou would be plentiful in the winter times, and that this is close by the Minipi Lake where the area has been vastly burnt. The reason the caribou "hang around" here in the winter times is because this area is like a barren country. Another area is at the Mealy Mountain barren.

Two areas where the black bear have been shot during the summer months are indicated on the map: one near Minipi Lake and the other close by Park Lake. The reason the black bear like these areas is because they have been burnt and berries have grown there.

"We hang up caribou antlers and bones in memory of the caribou and in hope that they ill always be plentiful.

Fish nets used to be plentiful in the lakes mentioned above; open water in June would mark duck and geese hunting. One nesting area he pointed out to collect eggs was Minipi.

Informant 2. Interviewed by A. Andrew. ca. 1979.

I have hunted at the Gull Lake (Ishiauskueshit) area and along the Minipi River area. Also at the Minipi Lake was my usual hunting and trapping territory. There are sports fishermen camps there at the mouth of the lake. Aside from that, there is a river from the Minipi Lake called Minao-Nipi. Map that as well, I have hunted and trapped along there as well, and then there is another one called Shetauakenipi-Shipu.

Was Hamilton River used in those times as a travel route to the country?

"Yes, it was used and as you go further in, it gets narrower. It is narrow way past Churchill Falls."

Indicate your campsites at the Minipi Lake?