THE INFLUENCE OF OIL SANDS DEVELOPMENT ON TRAPPING IN THE FORT MCMURRAY REGION

by

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ABSTRACT

A study of trapper demography, motivations, and trapping patterns was done in the area around Fort McMurray, Alberta for the Alberta Oil Sands Environmental Research Program. The objectives of the study were: (1) to establish baseline information; (2) to predict the future of trapping in the region; and (3) to propose a management survey that will lessen the negative effects of oil sands development on trappers.

Data were collected from the trappers by the use of two interview schedules and winter trapline visits. Secondary data from the Alberta Fish and Wildlife Division were also used in the study. Interviews with Fish and Wildlife management and enforcement officials were tapped.

Registered trappers were 70 percent native; the average age was 46. The majority held other jobs concurrently, and spent less than two months on the trapline in 1975-76 (a low year on the fur cycle).

Several trapline variables were analyzed for their effect on trapping income. Trapper effort was found to be the most significant, followed by distance from the trapper's home and trapline size. Method of travel and use of different trapping devices did not correlate with income.

Trapping incomes in Fort McMurray, Fort MacKay, and Anzac were calculated at $64,000, $28,000, and $11,625, respectively. Trapping is still an important source of income in the native village of Fort MacKay.

The most significant motivation for trapping was found to be enjoyment of lifestyle. Tradition and need of meat were also important, while financial need seems to be declining in importance.

A development scenario for the region was evaluated for its effect on trapping. A new town, the clearing of oil sands leases, and a large population increase will likely have the greatest adverse effects on trapping.

A management strategy was evolved to protect trappers and ensure future viability of the trapping industry in northern Alberta. Compensation procedures to cover trapper losses, and a program for upgrading of the fur industry in Alberta was proposed.

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The first author of this report (M. Fox) served as principal researcher and writer. The second author (W.A. Ross) served as principal investigator.

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1. INTRODUCTION

Trapping is perhaps the oldest industry in Canada. It is one to which Canadians owe a great debt, because representatives of that industry mapped and charted much of this country and opened it up for settlement. The Fort McMurray area is one of the first parts of this country to be explored by the fur traders, who, incidently, were the first white people to make note of the existence of the oil sands. It is paradoxical, then, that the oil sands industry, one of Canada's newest, is now potentially in conflict with the trapping industry.

1.1 STUDY OBJECTIVES

The purpose of this project was to investigate the influence of oil sands development on the trapping industry around Fort McMurray, with special emphasis placed on the participants, the trappers. The intent is to provide recommendations for environmental management that will anticipate and alleviate the negative effects of oil sands development on trappers.

The objectives of this investigation are as follows:

1. Establish baseline information about the trapping taking place in the region;
2. Predict the future of trapping from current trapper attitudes; and
3. Propose management considerations that will lessen the negative effects of tar sands development on trappers.

1.2 TIME FRAME AND STUDY AREA DEFINITION

The study was conducted in the period from May 1976 to November 1977.

The study area was selected to focus on individuals trapping out of Fort McMurray and two proximal native villages Fort MacKay and Anzac. All of these communities are in the southern half of the Alberta Oil Sands Environmental Research

Program (AOSERP) study area (Figure 1). The area these trappers use approximates the lower Athabasca watershed in Alberta from the Grand Rapids, 140 river kilometres southwest of Fort McMurray, to the mouth of the Firebag River, 132 km north of that town. It lies almost entirely within the mixedwood section of the boreal forest region (Rowe 1972), much of which is covered by muskeg [Intercontinental Engineering of Alberta Ltd. (Integ) 1973]. It is predominately flat lowland, with four raised areas, one in each quarter of the project study area. The largest of these, the Birch Mountains, gradually rise to a height of 600 m above the river.

The project study area can be approximated by a rectangle having as its corners: Twp. 84, R. 1; Twp. 84, R. 18; Twp. 101, R. 18; Twp. 101, R. 1. This rectangle covers 30 000 km^2.

This large area was registered to 127 treaty Indian, Metis, and white trappers from Fort McMurray, Fort MacKay, and Anzac in 1975-76.

1.3 CURRENT STATE OF KNOWLEDGE RELEVANT TO THIS STUDY

Several trapping and community studies in the Fort McMurray area have been undertaken in the last five years, some of which are relevant to this study. The Northeast Regional Planning Commission sponsored community profiles studies of Anzac (Hastie 1976), Fort MacKay (Marino 1975), and Fort Chipewyan (Sims 1975). The Alberta Department of Recreation, Parks and Wildlife conducted a series of analyses of trapline records on the province as a whole (Boyd 1977; Boyd et al. 1976), and the AOSERP study area specifically (Todd 1976). Todd has classified beaver and muskrat habitat on planimetric map-sheet 74-D. About 40 percent of this is within the AOSERP study area. One other relevant analysis of trapping records, covering northeastern Alberta, was done by Renewable Resources (1975).

There are at least four good reports that cover the historical developments of the AOSERP study area. The most general of these are MacGregor (1974) and Comfort (1973). Dempsey (1974) details the Indian groups hunting and trapping in the area, and

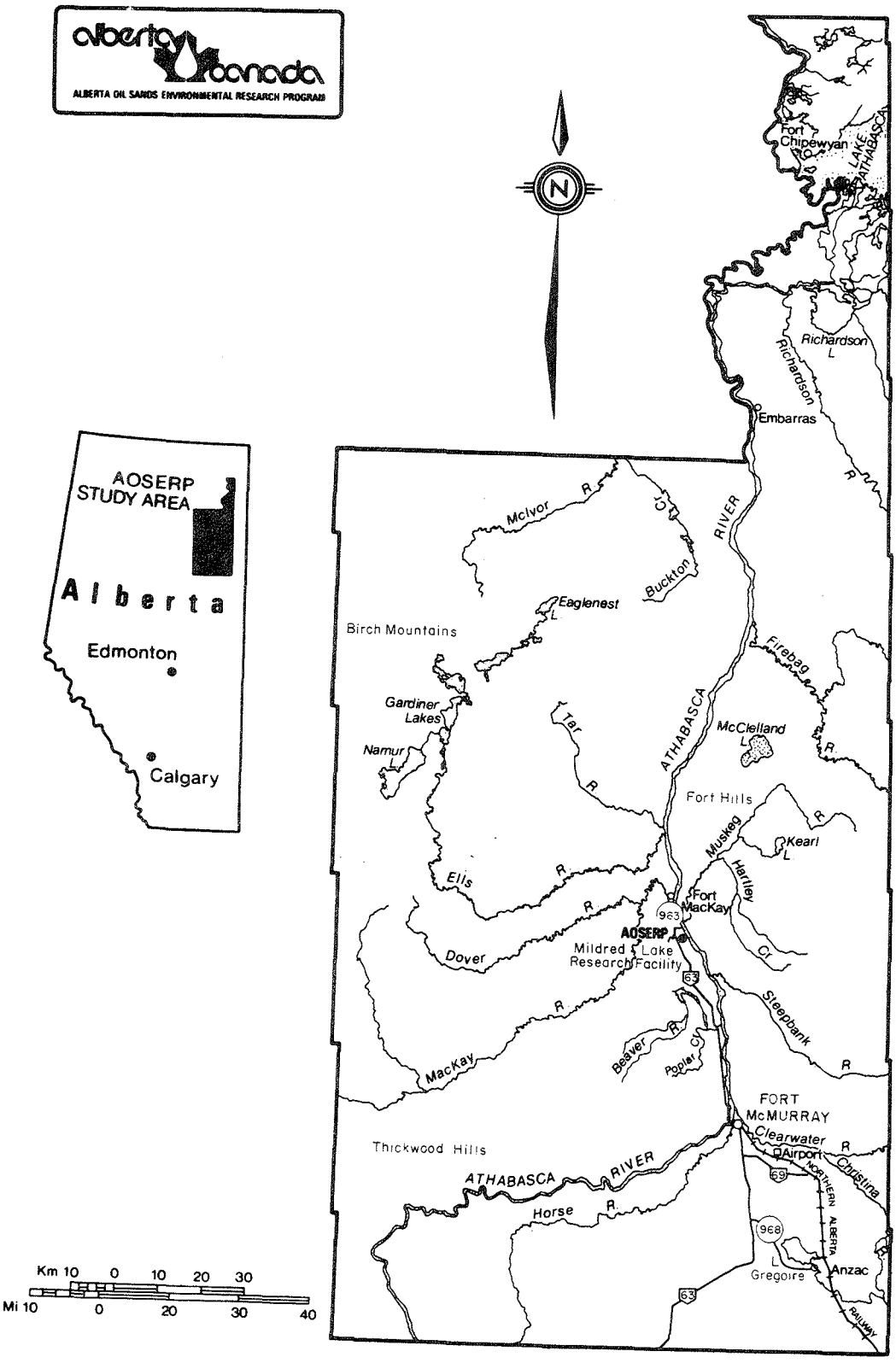

Figure 1. Map of the AOSERP study area.

Fumoleau (1975) provides a detailed historical account of events leading up to and including the signing of Treaties 8 and 11. (Treaty 8 was signed in the AOSERP study area.) These historical documents provide some details of Indian movements and trapping patterns.

A number of hunting/trapping studies are available that provide insights into the motivation and trapping patterns of northern native people. These studies deal with Indian communities in northern Quebec (Knight 1968), northern Ontario (Honigmann 1962), the Northwest Territories (Helm and Lurie 1961; Usher 1971), and the Yukon (Tanner 1966). More recent documents have been written about native hunters and trappers in the Mackenzie Valley who could be potentially affected by a pipeline (Asch 1977; Berger 1977; and Rushforth 1977).

The population ecology of furbearing animals is also of some relevance to this paper, particularly the subject of furbearer cycles. Keith (1974) contains a comprehensive summary of what is known about furbearer cycles. Much of his original research was done in the boreal forest south of the AOSERP study area.

1.4 A HISTORICAL SUMMARY OF TRAPPING IN THE PROJECT STUDY AREA

This summary is condensed from the author's Master's Degree Project (Fox 1977).

Historical documents show that the Beaver, Chipewyan, and Cree Indians were the region's first trappers. The ancestral families of the Chipewyan and Cree who are living in the project study area have used the land in the vicinity of Fort McMurray for more than two centuries. Starting with the establishment of trading posts, native people in the area altered their way of life from one of total subsistence off the land to one of partial dependency on the traders. The establishment of a permanent post at Fort Chipewyan

(and much later, at Fort MacKay and Fort McMurray) began to change the settlement pattern of the area Indians from one of restricted wanderers to one of settlement dwellers. This change was helped along by the invasion of the missions, the Klondike, the signing of Treaty 8, and the opening up of the area by transportation and resource development.

Metis trappers entered the area from the Red River to the east. Others were born here, from unions of white fur traders and Chipewyan and Cree women.

It is difficult to trace the pattern of Indian and Metis trappers in the project study area during the fur trading period because there were no permanent trading posts there until 1870. It appears that the whole area was being used by Cree, Chipewyan, and Metis hunters and trappers, especially around the Athabasca River and the Birch Mountains. Historical documentation of trapping in the area improves considerably with the permanent establishment of Fort McMurray in 1870.

Whites en masse did not enter the project study area as trappers until the time of the Yukon Gold Rush (1898). The Gold Rush and other developments brought in from the outside induced significant effects in trapping patterns before oil sands projects were ever conceived. Indian people were induced to live in settlements, and the introduction of poison and the steel trap nearly wiped out the beaver by 1930.

The first step toward the current system of trapline management was taken around 1940, when the Forest Service began to map and register traplines. Before that, a person could get a license and trap anywhere.

At the time of the mapping, many lines were reserved for treaty Indians. (This may have been to protect them from the competitive white trappers.) These "treaty lines" are still in existence today, and are registered only to treaty Indians.

The administration of trapping areas (traplines) was slowly transferred from the Alberta Department of Lands and Forests to Department of Recreation, Parks and Wildlife, Fish and Wildlife Division, from 1955-67. Fish and Wildlife has had sole responsibility for trapline administration (and management) since that time.

2. METHODOLOGY

2.1 METHODS USED IN DATA COLLECTION

Fieldwork for this project began in May 1976, lasted through the summer, and was continued on an intermittent basis until May 1977. The researcher took up residence in Anzac for the first two months in order to get adjusted to the lifestyle of native people in the area. The researcher moved to the AOSERP field camp (16 km south of Fort MacKay) for the remainder of the field time, except for trapline visits, which involved overnight stays in trappers' line cabins. Fieldwork in the communities included interviews and some participant observation. Observations were made primarily during informal visits to peoples' homes. The researcher was occasionally able to participate in activities such as water collecting, fishing, snowmobile repair, Christmas shopping, etc.

2.1.1 Fish and Wildlife Sources

Some secondary data were intially available from the files of the Fish and Wildlife local office in Fort McMurray, as well as the administrative headquarters in Edmonton. The files are indexed by trapline number, and provide a record of the trappers registered to each trapline that is complete back to 1965. Each file has a record of all trapline applications, sworn affidavits listing the reported catch of trappers for each season, and any special written communication between the trapper and enforcement officials or administrators (such as complaints). Trapline applications usually listed the man's age, occupation, and most recent trapping experience. (Only the age was used from these applications.) Trapline catch affidavits date back to 1970-71.

Fish and Wildlife also has a record of furs purchased by licensed buyers each year. These buyer records report the seller's name, registered trapline number, home residence, and the kind and numbers of pelts sold.

Interviews were held with enforcement and management officials of the Fish and Wildlife Division, Alberta Department of Recreation, Parks and Wildlife. The purpose of these interviews was to familiarize the researcher with the trapline management system, including its history, purpose, and flexibility, to respond to the potential loss of large parcels of land concurrently being trapped in the project study area. The interviews were initially informal and exploratory in nature. Later, they were taped. The subjects were M. Doran, a local enforcement officer in Fort McMurray (20 July 1976), C. Hambling, a senior trapline administrator, A. Todd, a provincial fur biologist, and D. Unger, who is responsible for trapper education in Alberta. The latter three officials were taped on 21 March 1977, in Edmonton.

2.1.2 First Trapper Interviews

The first interview schedule was conducted from May to July 1976, at the summer homes of trappers selected for the study. Subjects were selected by random sample. A disproportional sample, stratified by comminity origin, was used. Tables 1 and 2 break down the sample of 63 interviewed trappers by community and ethnic origin.

The names and origins of trappers were obtained from a Fish and Wildlife list of registered trappers for the 1975-76 season in the Fort McMurray detachment area.[1] Trappers reporting residences outside the project study area (such as Edmonton, Lac La Biche, etc.) were not sampled.

Interviews were conducted in an informal, conversational manner. All but three of them were conducted in English. (The others were conducted in Cree through an interpreter.) Interviews varied in length from 20 minutes to three hours; the average was about one hour.

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[1] The boundaries of the Fort McMurray Detachment Area are slightly larger (in the north-south direction) than those of the project study area. One Fort McMurray trapper is known to trap in the Fort Chipewyan Detachment Area, immediately north. He was included in the first interviews.

Table 1. Number of trappers interviewed by community of origin, summer 1976.

No. of	Fort McMurray	Fort MacKay	Anzac
Reg. Trappers	80	31(34)[a]	15(17)
Interviewed	35	16	12

[a]Numbers in parenthesis include trappers with traplines, who did not officially register their lines in 1975-76.

Table 2. Number of trappers interviewed by ethnic origin, summer 1976.

No. of	Indian	Metis	White
Reg. Trappers	26(28)	66(69)	34
Interviewed	15	31	17

The questions asked of each trapper are listed in Figure 2. The actual wording used was varied, but comparable. All but the most straightforward questions were phrased in an open-ended manner to promote detailed answers. All were phrased in as non-suggestive a manner as was possible. This was done to reduce the degree of deference. (Deference, a trait commonly found in north American Indian culture, manifests itself as a tendency to submit to the opinions of others.)

The questions listed in Figure 2 can be classed into four groups: demographic, trapping/employment pattern, problems on the trapline, and trapper motivation. The last group was the most difficult to interpret. This was expected, and not considered a detriment to the interview schedule because the answers were used to help make up a second interview schedule that concentrated on trapper motivation.

Each interview began by explaining that the study was being done to learn how development in the area was affecting the trappers and their trapping. The subject was told that the researcher worked for AOSERP and not Fish and Wildlife. This was emphasized because some of the trappers hold a negative view of the latter. The trappers were also told that the information they gave would be treated as confidential.

Attempts were made to get the study known to trappers before they were actually interviewed. An exploratory trip was made by the researchers, four months prior to the fieldwork, at which time key community members in Fort MacKay and Anzac were told about the study. A trappers' meeting was held in Anzac (advertised a week in advance) which attracted six of 16 local trappers. The meeting helped to introduce the researcher to some of the problems trappers had in the area. The researcher also visited the band chief and the leader of the local Metis Association chapter in Fort MacKay. The purpose of the study was explained to them and they were asked permission to allow the researchers to conduct interviews in that community. This action paid an immediate

I. DEMOGRAPHY

1. Age
2. Ethnic Origin
3. Education Level
4. How long have you lived in the area?

II. TRAPPING/WORKING PATTERN

5. Number of years of trapping experience.
6. Number of traps owned. How many are conibear? Which are used primarily, snares or traps?
7. Number of cabins on the trapline. Any put up within the last five years?
8. Travel to line by:
9. Get around on line by:
10. Trap alone or with others?
11. Effort: this past season and over the last five years, if a change.
    - -when were you on your line? For how long?
    - -overnights or day trips?
    - -what were you setting for?
12. Other employment this year and over the last five years, if a change.

III. PROBLEMS ON THE TRAPLINE

13. How do you think development in the region has changed your life? Has it affected your trapping?
14. Any problems with Fish and Wildlife, trapline registration, hunters, exploration outfits, etc?

IV. MOTIVATION

15. Dependent on trapping income or the bush for food?
16. Any furs kept for clothing or other private use?
17. Reason for trapping. Do you like your line? Why or why not?

Figure 2. Questions from first interview schedule, summer 1976.

dividend, as the chief (the late M. Orr) volunteered to act as an interpreter for the interviews that could not be conducted in English. In retrospect, the community visits and the trappers' meeting prior to the start of the interviews were well worth the time and effort in terms of the good feelings they germinated between the researcher and the trapper.

2.1.3 Trapline Visits

During the 1976-77 trapping season, 16 trappers on 12 different traplines were visited. With one exception, these visits were all conducted during the winter months of December, February, and March. Safety was the most important factor in determining which traplines would be visited. In most cases the researcher was travelling alone on a snowmobile in unknown territory, so the traplines selected were those where the trapper's main cabin was located along the Athabasca River or a winter road.

Ethnic origin and home community of the trapper were secondary considerations. Table 3 shows the ethnic and community origins of the trappers that were visited.

The purpose of these visits was to make firsthand observations of the trapper in his work setting. In particular the researcher was interested in observing: (1) trapping methods; (2) the types of trails and roads used by the trapper; (3) damage due to seismic crews or others; (4) trapper diet; and (5) capital equipment used and its condition.

The locations of the 12 traplines visited are shown in Figure 3, along with the winter roads that were available for travel to these traplines. (These roads are not opened every year, nor are they in every case the sole means of access for the trappers of these lines.) The majority of the visits lasted at least two days and a night.

Table 3. Number of trappers visited on traplines in the project study area by ethnic and community origin.

	Fort McMurray	Fort MacKay	Anzac	Total
Indian	0	4	0	4
Metis	1	0	2	3
White	7	0	2	9
TOTAL	8	4	4	16

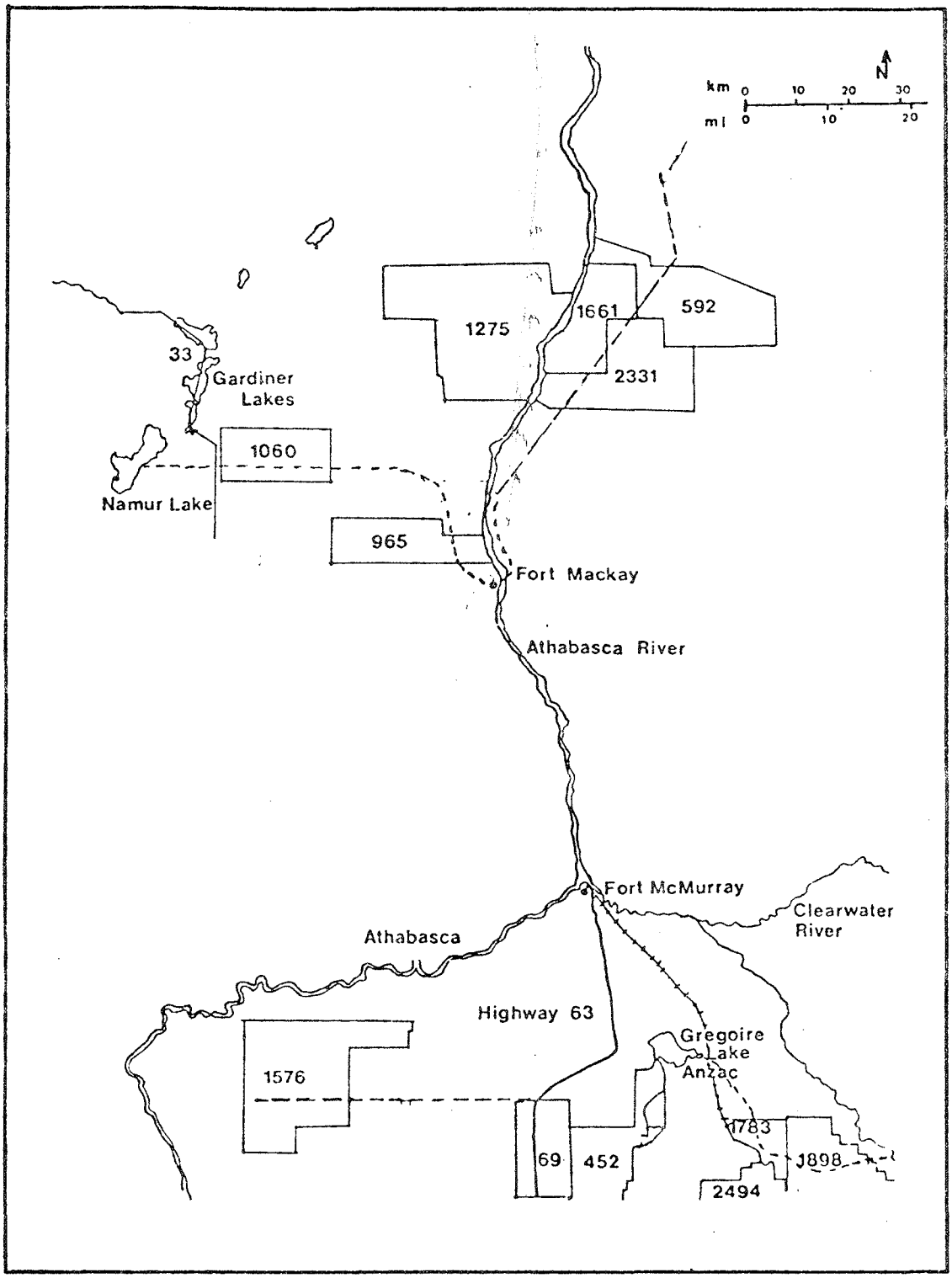

Figure 3. Location of traplines visited during the 1976-77 season.

2.1.4 Second Trapper Interviews

A second set of trapper interviews was conducted in April and May 1977. Subjects were selected by a random sample of trappers who were interviewed the previous summer. A disproportionate sample, stratified by trapper effort in the past season, was used. Trappers were sampled from two effort groups as indicated in Table 4.

This interview schedule was used primarily as an instrument for assessing trapper motivation. It was less structured and more conversational than the first interview schedule.

The second interview served not only to collect data, but also to share information with the trapper. Old questions were answered and the trapper was thanked for specific points he made that the researcher considered important. The trapper was also informed of some of the preliminary results of the study. These often served as a lead-in to conversation about the trapper's motivations.

The use of such preludes differed for each trapper. Examples of information shared are: study findings about trapper effort and employment; problems and solutions for claiming seismic damage; game laws; and the proportion of trappers who experienced some kind of damage to their traplines. Trappers were thanked for comments on trapping methods, concerns about oil sands development, and humane trapping legislation, feelings they expressed about trapping, etc.

The questions asked in the second interview are listed in Figure 4. No trapper was pushed into answering any question he seemed uncomfortable with. Questions II and III are listed with a number of expected answers, generated from previous trappers' comments during interviews and visits. The trapper was asked if these answers were relevant to him only after he was given sufficient time to answer the questions in an open-ended form. Thus, a trapper would not have been asked if trapping money is important to him until he was first asked why trapping was important to him.

Table 4. Number of trappers given a second interview, according to trapping effort in 1975-76.

Trapping Effort for 1975-76	First Interviews	Used in Second Interview
Less than two months	47	14
Two months or more	16	14

I. WHY TRAPPING (THE TRAPLINE) IS IMPORTANT

1. Money
2. Financial Need
3. Meat
4. Enjoyment of the Activity
5. Tradition
6. Solitude
7. Hold line for security or pass it to another

II. MEAT TAKEN FROM THE TRAPLINE

1. Fish
2. Small Game
3. Big Game

III. SCENARIO:
What would you do if your trapline was going to be cleared for oil sands development? If the company wanted to compensate you, what would you ask for?

1. Money - lump sum or payments
2. Another trapline - of what quality?
3. A job from the company - guaranteed as long as you work.
4. The company pays you to continue to trap the line for them. You keep the fur.

Figure 4. Second interview schedule, summer 1977.

The answers to questions were sometimes tricky to interpret. For example, a trapper saying that he traps when prices are good for fur may be motivated by money, but not financial need. In such cases the trapper would be asked further questions to clarify his motivations. With the above example the trapped would be asked, "Does the money you make trapping give you most of your money for the winter?", or "Is there anything you couldn't do if you didn't have your trapping money?". The answers helped in clarifying the trapper's motivations.

2.2 DATA ANALYSIS

Formal data analysis for statistical purposes was done with both the first and second sets of interviews.

2.2.1 First Interview

The coding format used for the first interview is shown in Figure 5. Categories 1 to 29 were extracted from notes taken during the interview.

For Category 33, traplines were grouped into six blocks according to the location of the line. Physiography and transportation are the two main factors used in delineating the groups. Categories 30 to 32 are three measures of trapping income; they required a more detailed treatment.

2.2.2 Measures of Trapping Income

All three measures of trapping income were calculated from annual trapline catch affidavits and the average dollar value of the different furs in the year they were caught. The Alberta Fish and Wildlife Division gives the average dollar value of the furs in their annual reports.

Trapline catch affidavits are one of two sources of trapline furbearer harvest information, the other source being fur buyer records. The two are compared as a means of evaluating the accuracy of the affidavits in Appendix 9.1.

1. Name (#)	_ _
2. Age	_ _
3. Ethnicity	_
4. Home Community	_ _
5. Trapline No.	_ _ _ _
6. Owner of Line?	_
7. Location of Line Access	_
8. Distance Travelled to Start of Line	_ _ _
9. Shape of Line	_
10. Size	_ _
11. Travel to Line by:	_
12. Travel on Line by:	_
13. Change in Method of Travel on Line	_ _ _
14. Number of Traps Owned or Accessed	_ _ _
15. Use of Conibears	_
16. Use of Snares vs Traps	_
17. Number of Cabins	_
18. Number of Cabins Built in Last 5 Years	_
19. Experience	_ _
20. Code for Experience	_ _ _
21. Companions When Trapping	_
22. Effort Classification for 1975/76	_
23. Change in Effort Class. in Last 5 Years	_
24. Seasons of Year Trapping	_
25. Reason for Trapping	_
26. Resident for __ Years in the Area	_ _
27. Grade Completed	_ _
28. Employment Status in 1975/76	_
29. Change in Employment Status in Past 5 Years	_ _ _
30. 1975/76 Calculated Personal Trapping Income	_ _ _ _
31. 1973-76 Avg., Calculated Personal Trapping Income	_ _ _ _
32. 1970-74 Avg., Trapline Income from Renewable Res.	_ _ _ _
33. Trapping Block	_

Figure 5. Coding format for the first interview.

The three measures used are: 1975-76 personal trapping income; three-year average income for the trapper (1973-76); and a three-year average for the trapline (1971-74). The trapline average was taken directly from an unpublished report (Renewable Resources 1975).[1] The three-year average trapper income was computed by adding together the annual incomes for the years trapped out of the past three, and dividing by that number of years. Missing affidavits were considered to be years not trapped and, if two of the three years were not trapped, the three-year average was not computed.

2.2.3 Second Interviews

The coding format used in the second set of interviews is shown in Figure 6. Old information (Part 1) comes entirely from the first interview. Five of the second trapper interviews were not coded for effort. In these cases, it was felt that the 1975-76 effort would be misleading because it changed substantially in 1976-77. The rest was extracted from notes taken during the second interview.

2.2.4 Data Handling and Statistics

Both sets of coded data were analyzed by computer using the Statistics Package for Social Sciences (SPSS) program. Statistical treatment was kept simple. The SPSS program was used in four ways:

1. Generation of one-way frequency tables, histograms, and descriptive statistics;
2. Cross-tabulation of two or more grouped data categories;

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[1] There are two slight differences between my method of calculation and the method used by Renewable Resources. I omitted any bears or rabbits reported taken (Renewable did not) when my fieldwork made it apparent that many more of these animals were taken than were reported. In addition, I lumped all coloured foxes into one category, while Renewable reported them separately. Since very few bears, rabbits, or foxes were reported on trapline affidavits, the calculated values should be comparable.

I. OLD INFORMATION

1. Name (#) __
2. Age __
3. Ethnicity _
4. Effort for 1975/76 _

II. REASONS FOR TRAPPING

5. Enjoyment of Lifestyle _
6. Tradition _
7. Money _
8. Financial Need _
9. Meat Needed _
10. Hunting _
11. Security for Later/Pass on _
12. Prestige _

III. SCENARIO

13. Lump Sum _
14. Payments _
15. New Trapline _
16. Trapping Job _
17. Regular Job _

IV. TAKEN FROM TRAPLINE

18. Big Game _
19. Small Game _
20. Fish _
21. Hides and Skins _

Figure 6. Second interview coding.

3. Correlation analysis of numerical data; and
4. T-tests to detect significant differences between pairs of numerical data.

3. TRAPPER DEMOGRAPHY, TRAPPING PATTERNS AND MOTIVATION IN THE PROJECT STUDY AREA

This section of the report will present the results of the trapper interviews and trapline visits as described in Section 2.1. The first section of this chapter provides a demographic description of the trappers, including relevant statistics about their employment, trapping income, and education. Following this is a description of the trapping patterns currently in use, and an effort to relate components of these patterns with trapping dollars earned. Finally, data on trapper motivation will be presented.

3.1 TRAPPER DEMOGRAPHY

3.1.1 Ethnicity

The entire list of 1975-76 registered trappers was divided into three ethnic groups: white, Metis, and treaty Indians, according to information provided by trappers, community residents, and Fish and Wildlife personnel. For the purposes of this study, a Metis is defined as a person having Indian ancestry, but not treaty Indian status.

Table 5 displays the distribution of three ethnic groupings of trappers living in Fort McMurray, Fort MacKay, and Anzac.

The Table shows that Metis comprise just over half of the trappers studied. Over 70 percent of the area trappers are native, and most of the trappers that are white live in Fort McMurray. Sixty-five percent of the treaty Indian trappers live in Fort MacKay.

3.1.2 Residence

The trapper's home community is relevant to this study for two reasons:

1. The number of trappers trapping from a community can be used as one measure of the importance of trapping to that community; and
2. The oil boom may be affecting the trapper partly through its effect on the community where the trapper lives.

Table 5. Ethnicity of registered trappers in the project study area, by community.

Community	White	Metis	Indian	TOTAL
Fort McMurray	31	44	5	80
Fort MacKay	1	13	17	31
Anzac	2	9	4	15
TOTAL	34	66	26	127

Source: Fish and Wildlife Division, Fort McMurray, 1975-76 registration figures.

Table 6 shows the percentage of trappers in the three communities to their total population.

3.1.3 Age

Trappers' ages were obtained for 121 of 127 registered trappers from either Fish and Wildlife records or the trapper, himself. The mean age was calculated directly for each of the three communities studies. Ages were then grouped into six categories for further analysis (Figure 7).

It is interesting to note the high average age of trappers from the Anzac community and its lack of young replacement trappers. The situation is not unbalanced in Fort MacKay, although that community has few trappers under 25 or over 55. Fort McMurray is the most balanced of the three with respect to trappers' ages.

3.1.4 Length of Residence in the Project Study Area

Trappers were asked how long they had lived in the project study area in order to determine the number who had recently entered the area. It was found that eight of 60 trappers have lived for less than 10 years in the area. Half of the eight were white; the others were Metis who moved from other northern settlements. Seven of the 60 trappers were whites who had spent less than 20 years in the area.

3.1.5 Education Level

Education level was determined by asking trappers what the last grade was that they had attended in school. Fifty-seven trapper responses were coded for education level. The sample was a grade five education. Only 13 of these trappers made it as far as grade nine, and seven as far as grade 10. Of the 13 grade nine's or better, seven currently hold full-time jobs, and two others are over 60 years of age.

Table 6. Percentage of 1975-76 registered trappers to the total population of three communities.

Community	No. of Trappers	Total Population	Percentage of Trappers
Fort McMurray	80	15 424[a]	<1
Fort MacKay	30	254[b]	12
Anzac	15	154[c]	10

[a]Source: Statistics Canada, 1976 population figure.

[b]Source: Marino, 1975. 1974 population figure.

[c]Source: Hastie, 1976. 1974 population figure.

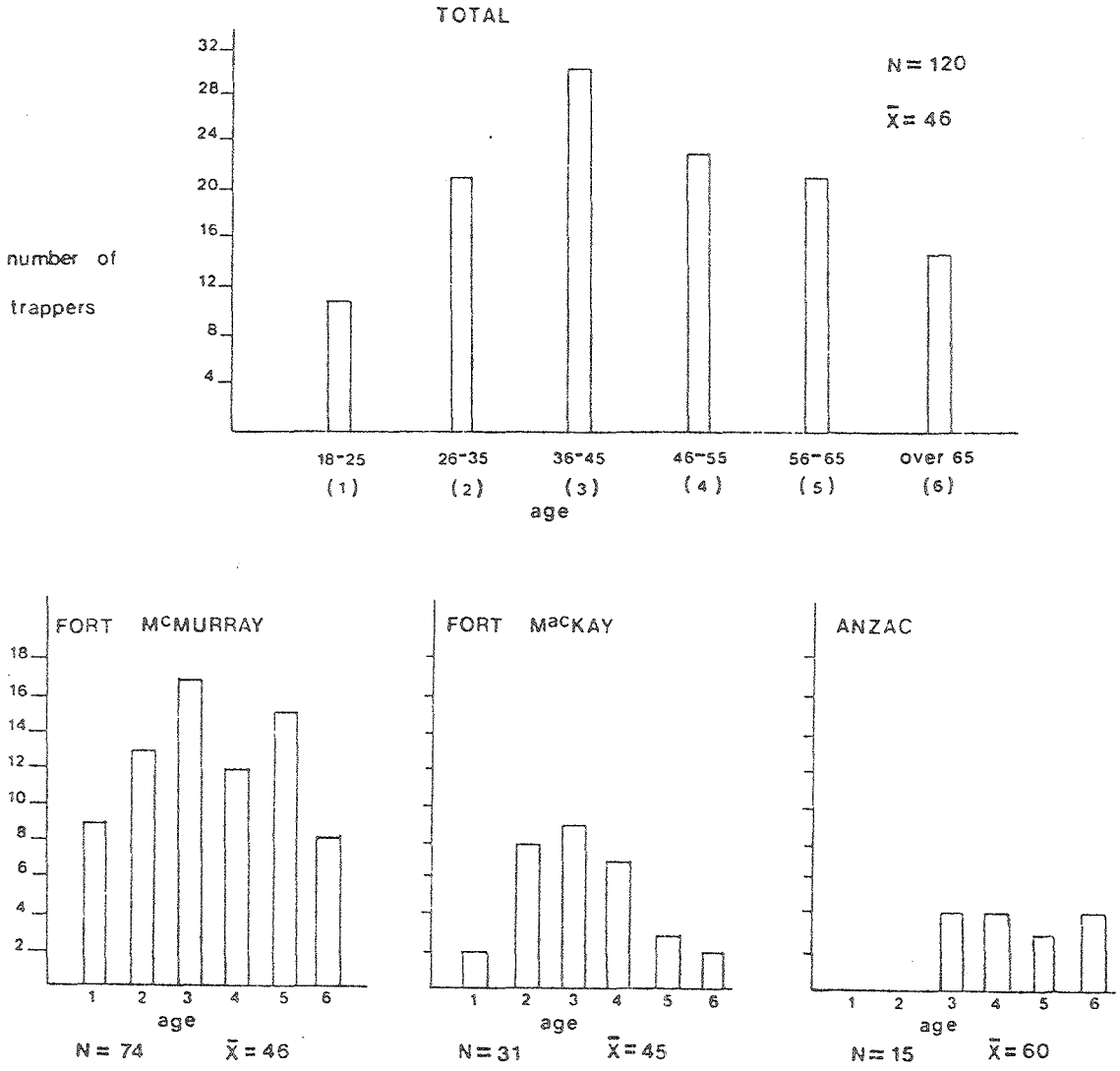

Figure 7. Trapper ages in the project study area.

3.1.6 Employment

Trappers were asked in the first interview what level of wage employment they held over the past year and whether it had changed over the past five years. Employment levels were classed as full-time, part-time (or full-time for part of the year), occasional, unemployed, and retired. The results for 1970-71 and 1975-76 employment status were broken down by community and ethnicity (Tables 7 and 8).

Table 7 shows that 60 percent of the sampled trappers were employed either full- or part-time, aside from trapping. Just over half the Fort MacKay sample were employed at this level, and more than 70 percent of the Fort McMurray sample were so employed. From an ethnic standpoint, 62 percent of the white trappers, 65 percent of the Metis trappers, and 47 percent of the treaty Indian trappers sampled held part- or full-time employment last year.

These proportions did not differ greatly five years ago, according to these data.

3.1.7 Trapping Income Statistics

Mean incomes from the 1975-76 trapping season, the three-year average trapper income, and the three-year average trapline income were calculated for the entire sample (Figure 8).

As expected, a high significant correlation exists between the trappers' 1975-76 income and three-year average income ($R2 = 0.76$, $p<0.01$). A paired t-test revealed that 1975-76 incomes were significantly higher than the three-year average ($p<0.05$).

Trapline income averages in the project study area are comparable to figures for the province as a whole. Boyd et al. (1976) calculated the 1970-75 average income per trapline in Alberta as $1,208. The average in the project study area for the years 1971-74 as calculated by the researcher is $1,097). This is not to say that the incomes produced are high. Seventy-eight percent of the sampled trappers averaged less than $1,000 annual income from their traplines, and only 2 percent averaged more than $2,000 (Figure 8b).

Table 7. Employment status by community in 1975-76 and 1970-71. Data from trapper interviews, summer 1976.

Community	Full-Time	Part-Time	Occasional	Unemp.	Retired
1975-76					
Fort McMurray	14	11	2	2	6
Fort MacKay	2	6	4	3	0
Anzac	4	0	6	0	2
TOTAL	20	17	12	5	8
1970-71					
Fort McMurray	12	14	5	0	2
Fort MacKay	2	7	4	2	0
Anzac	4	2	6	0	0
TOTAL	18	23	15	2	2

Table 8. Employment status by ethnicity in (a) 1975-76 and (b) 1970-71. Data from trapper interviews, summer 1976.

Ethnicity	Full-Time	Part-Time	Occasional	Unemp.	Retired
1975-76					
White	6	4	1	1	4
Metis	11	9	9	0	2
Indian	3	4	2	4	2
TOTAL	20	17	12	5	8
1970-71					
White	5	8	3	0	0
Metis	10	10	9	0	0
Indian	2	7	2	2	2
TOTAL	17	25	14	2	2

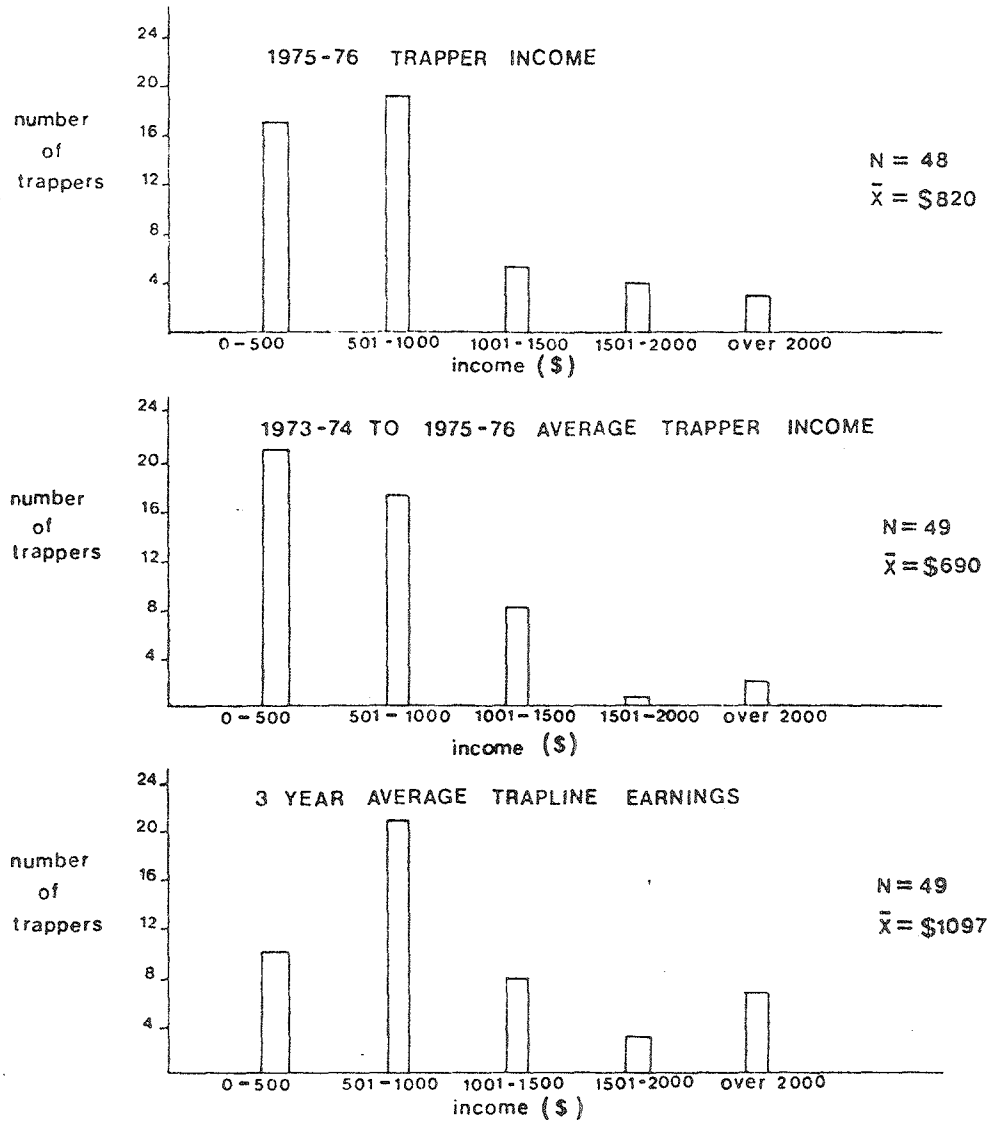

Figure 8. Calculated trapping income figures for the project study area.

In order to determine how trapper income was distributed, several t-tests were run comparing income along some of the demographic characteristics already discussed (Table 9).

The table shows that Fort MacKay trappers sampled averaged the highest per trapper income of the three communities, significantly higher than the Anzac sample in the 1973-76 average income category.

The 1975-76 per trapper income figures for the three communities can be used with the trapper registration figures of the same season to produce an estimate of trapping dollars earned by the communities (Table 10). These numbers are subject to the same inaccuracies as all other income figures based on trapper affidavits and provincially calculated pelt values (see Appendix 9.1).

Fort McMurray shows the largest fur revenue of the three, but this is to be expected because of the large number of trappers living there. Trapping income could not be compared here with other income sources because these figures were not available at the time of writing.

Trapping income was cross-tabulated against 1975-76 employment levels, in order to determine whether a relationship exists between the two variables. Employment categories were grouped into two sets; those who worked at least part-time last year, and those who worked occasional jobs or no jobs at all. A t-test comparing 1975-76 trapping income for the two groups revealed no significant difference between them ($839 to $794, respectively).

In order to see whether ethnicity affects the relationship between trapping income and wage employment, two-way frequency tables were constructed separately for each ethnic category (Table 11). It appears that the employment status of native trappers has a different effect on trapper income than employment status of white trappers. White trappers who were employed or retired last year tended to earn less trapping money; while the low trapping income earners among native people tended to be those with full-time jobs.

Table 9. Comparison of calculated mean trapping incomes in project study area communities.

Community	1975-76 Income per Trapper	1973-76 Income per Trapper
Fort McMurray	$800 (n=24)	$716 (27)
Fort MacKay	904 (12)	842 (11)[a]
Anzac	775 (12)	473 (11)[a]

[a]Significant difference at $p \leq 0.05$.

Table 10. Estimates of fur income produced in 1975-76 by trappers of three communities, using data from Tables 1 and 9.

Community	1975-76 Average Income	No. of Registered Trappers	Fur Income
Fort McMurray	$800	80	$64 000
Fort MacKay	904	31	28 024
Anzac	775	15	11 625

Table 11. Relationship of employment level to calculated trapping income in 1975-76 for white, Metis, and Indian trappers in the project study area.

Trapping Income	White Trappers (N=12)			Metis Trappers (N=26)			Treaty Indian Trappers (N=10)		
	Full-Time	Part-Time and Occasional	No Job	Full-Time	Part-Time and Occasional	No Job	Full-Time	Part-Time and Occasional	No Job
$ 0- 250	0	0	2	55	0	0	1	0	0
251- 500	0	0	0	2	3	1	2	0	1
501-1000	3	2	1	2	7	1	0	2	1
1001-2000	1	1	1	1	3	0	0	1	1
over 2000	0	1	0	0	1	0	0	1	0

3.2 TRAPPING PATTERNS

The term "trapping patterns" refers to a description of the trapping process, from transportation, to trap setting, to effort put into the activity. The trapping patterns reported here are very general, having been ascertained by a small number of trapline surveys and the questioning of local trappers. They are, nevertheless, useful from a management standpoint because they reveal a land use pattern which can be related to other considerations, such as furbearer distribution, or the introduction of oil sands plants.

3.2.1 Effort

Inquiry into trapping effort proved to be a very difficult matter. It was initially hoped that trappers would be able to recall in detail the number of sets they put out and the frequency with which they were checked. This was not possible for the majority of trappers.

One measure of effort that could be reasonable ascertained by interview was the amount of time spent on the trapline during the 1975-76 trapping season.

Trappers were also asked how last year's effort compared with their effort five years ago. Unfortunately, no useful data could be obtained from this question because of its ambiguity.

Trapper effort in 1975-76 was coded into seven groupings for further analysis, and is displayed in Figure 9.

It is significant that only 26 percent of the trappers reported spending more than two months on the trapline during a season that lasted 6 1/2 months. (The trappers' responses were not coded for time spent during the closed season. Such preparation time varies greatly among trappers.) Twenty-nine percent of the trappers reported spending only three weeks or less on their lines last year. It is worth noting that 40 percent of the Metis, 33 percent of the treaty Indians, and only 6 percent of the whites interviewed trapped less than three weeks last season (Table 12).

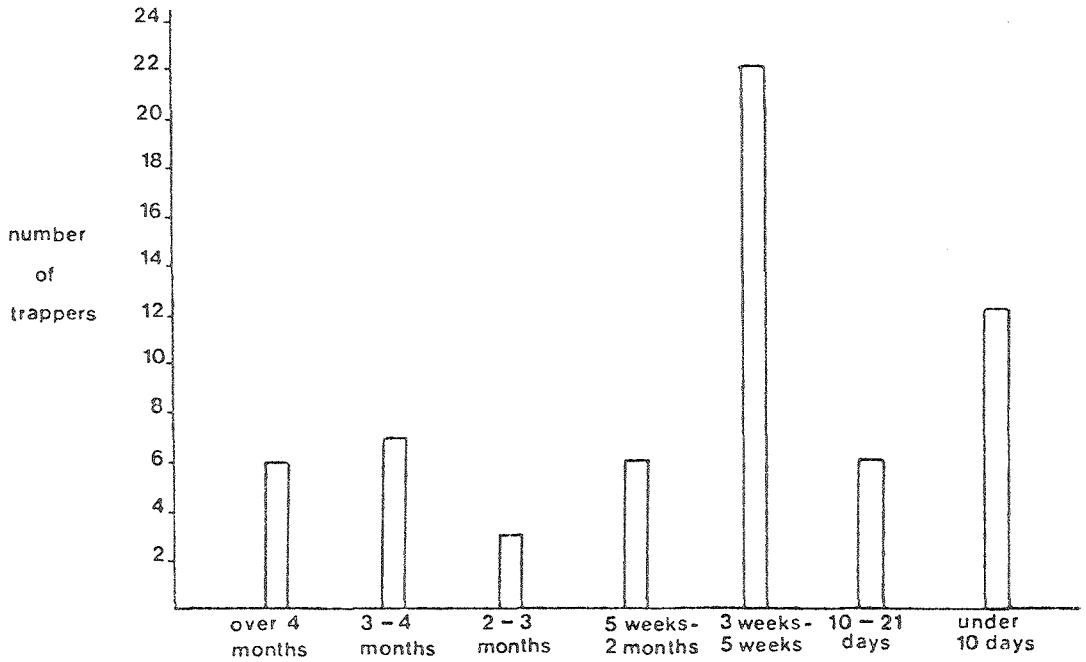

Figure 9. Amount of time trappers reported spending on their traplines in the 1975-76 season.

Table 12. Trapper effort in 1975-76 broken down by ethnic group. (From trapper interviews in the project study area).

Effort	White	Metis	Indian
2 months or more	6 (35)[a]	6 (20)	4 (27)
3 weeks to 2 months	10 (58)	12 (40)	6 (40)
3 weeks or less	1 (6)	12 (40)	5 (33)

[a]Column percentages in brackets.

Effort measures were also broken down by community; it is clear that no significant differences exist here (Table 12).

3.2.2 Time of Year Trapping Takes Place

Trappers were asked what time of year they normally trap. Ten percent indicated they only trapped in the spring, and an additional 34 percent said they do not normally trap in the cold months (usually January and February).

3.2.3 Method of Travel

Figure 10 shows that the snowmobile and the car or truck are the two most common methods of travel to the trapline. Often a snowmobile is carried on the back of a truck to the closest point of road access. The truck is then left hidden in the bush, or driven home by a friend, and the trapper snowmobiles the rest of the way. Dogs or foot travel may also follow a car or truck ride. Trappers were asked how they get to and from their traplines as well as how they travel on their lines and whether this mode changed over the past 10 years. Responses were coded according to the most common mode of travel reported by the trapper. Trappers who have access to their line by either the Clearwater or the Athabasca river usually take a boat to their line in the fall, whether their snowmobile was left for winter use.

Trappers with lines along the Northern Alberta Railroad right of way generally use the train to go to and from their traplines. The train conductor lets trappers off anywhere along the way, and work cars travelling in between regular runs often give trappers a lift to town.

Trappers living in Fort MacKay have few cars or trucks to ferry them around. However, most of their lines are in the proximity of the Muskeg River or the Birch Mountains. These areas are readily accessible via winter roads and cut lines, and most Fort MacKay trappers use either snowmobiles or dogs to get to them.

Table 13. Trapper effort in 1975-76 broken down by community (From trapper interviews in the project study area).

Effort	Fort McMurray	Fort MacKay	Anzac
2 months or more	9 (26)[a]	5 (31)	2 (17)
3 weeks to 2 months	14 (41)	6 (38)	8 (67)
3 weeks or less	11 (32)	5 (31)	2 (17)

[a]Column percentages in brackets.

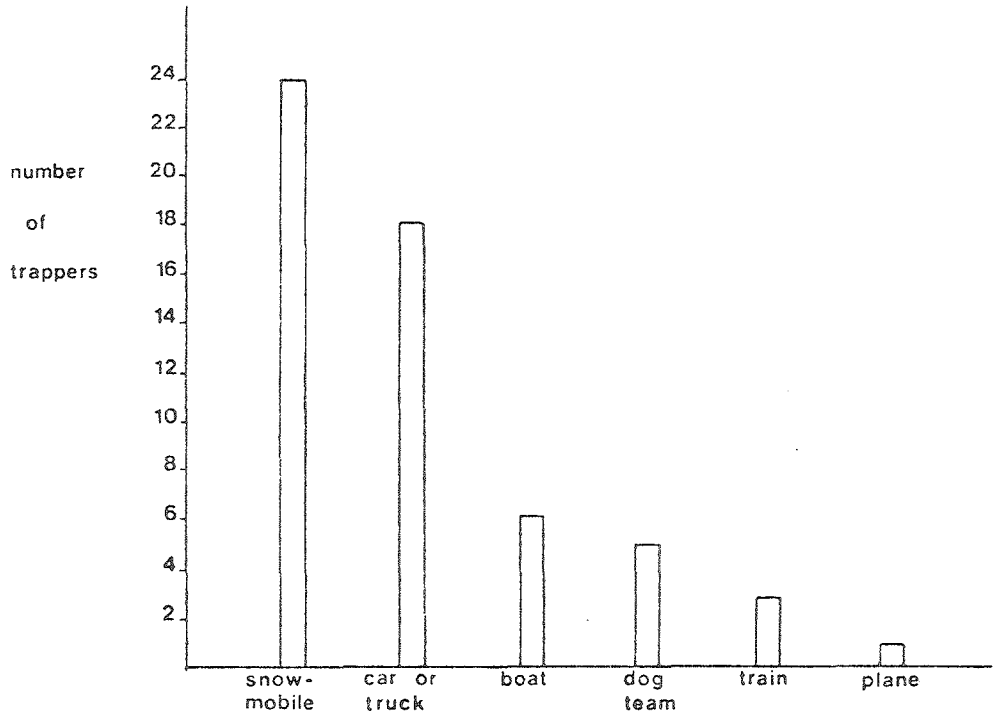

Figure 10. Modes of travel on project study area traplines over the past 10 years. (Data from trapper interviews).

Access into most of the traplines in the project study area is relatively fast and safe in the winter. All but the farthest traplines can be reached from one of the three settlements in less than five hours by snowmobile.

The three main modes of travel on the traplines are snowmobile, dog team, and foot. As Figure 11 shows, snowmobiles have almost totally replaced dogs within the last five years.

Trapline surveys revealed that three types of trails were available for use by the trapper. The highest quality of the three is the winter road, a major passageway through the bush that is used and maintained by either forestry or seismic crews after freeze-up.

They are preferred by most trappers when available, but there are two problems associated with them, as follows.

The most commonly used trails are the cut lines. Cut lines are old roads made by survey or exploration crews. They are narrower than the newer roads; many are partially grown over. They are found extensively in the project study area. There is some work involved for the trapper in maintaining them, especially after freak windstorms which fell a lot of trees.

Finally there are the trails that are built and maintained by the trappers. While old trappers' trails were being used on most of the traplines visited, the importance of trappers' trails appears to have been relegated to a secondary role. Occasional trappers do not maintain those in areas of the line that are not being used and, as a result, they become overgrown and impossible to locate when the trapline changes hands.

3.2.4 Use of Trapping Devices

Trappers were asked in their interviews about their relative usage of three kinds of trapping devices: snares, leghold traps, and conibear traps (see Figure 12). The results (Figure 13) showed snares to be the most common device in use. This was true for both

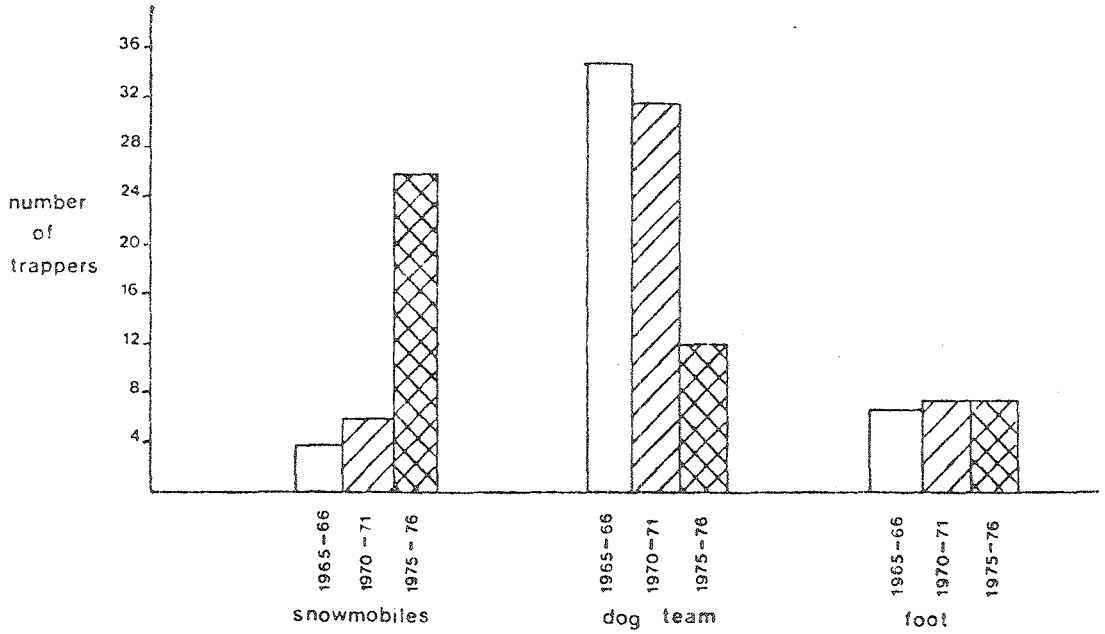

Figure 11. Changes in mode of travel on the trapline over the past 10 years. (Data from trapper interviews.)

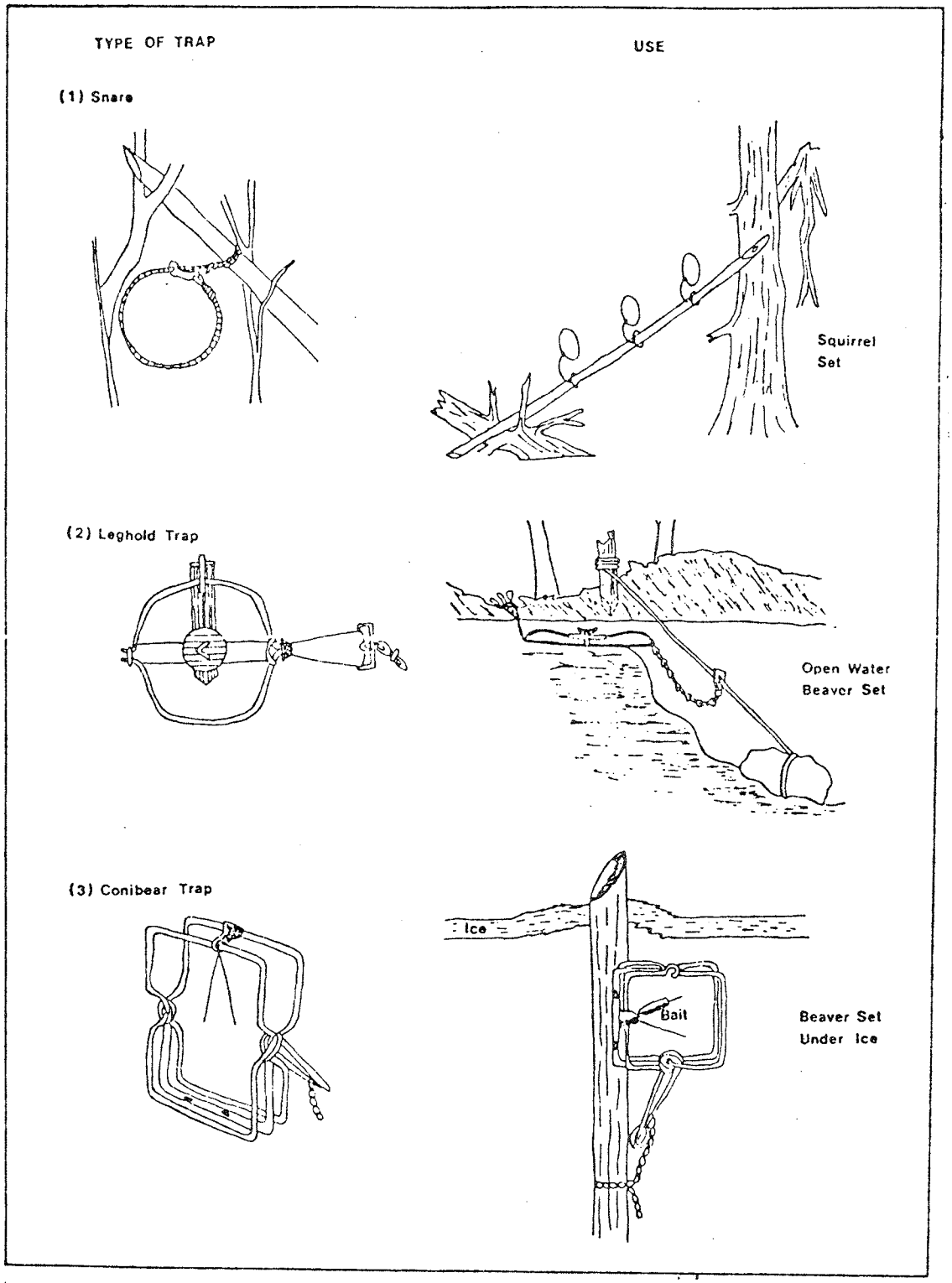

Figure 12. Trapping devices with examples of use in the project study area.

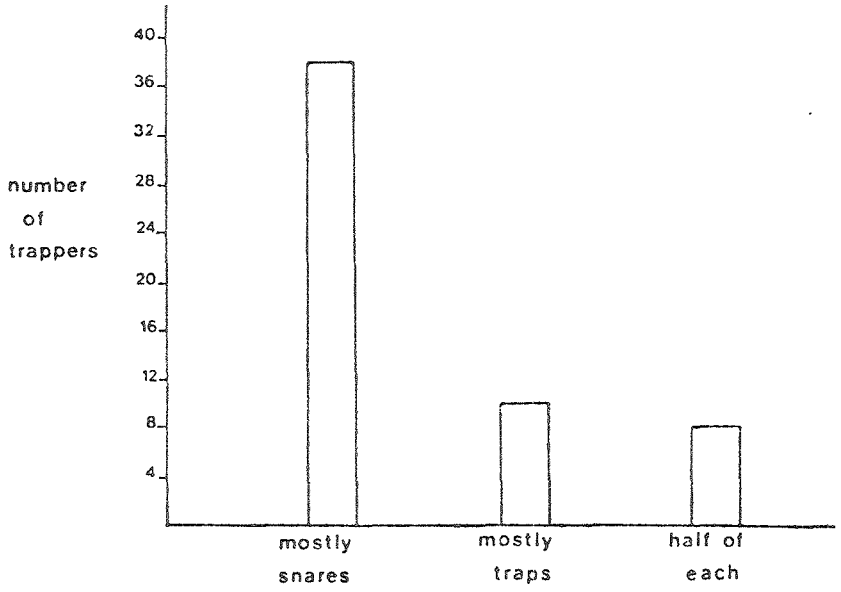

Figure 13. Reported use of traps and snares by trappers in the project study area.

native and non-native people, and the use of snares was evenly distributed among the different age groups sampled. Probable reasons for the prevalence of snares in the project study area are their low cost, light weight and compactness, and their tradition of use.

Interviewed trappers were asked to give the total number of traps they either owned or had access to. The number ranged from 0 to 350; the mean was 71.

Practically all of the interviewed trappers had heard of conibear traps, and 78 percent of 58 responding trappers own at least one conibear trap.

Trapline observations enabled the researcher to get a better picture of the way these devices were being used by local trappers. These observations are summarized in Table 14.

Of particular interest was the observation that trappers make sets for lynx, fox, wolf, and coyote right on the trails they travel on, including winter roads.

Discussions with trappers emphasized the relative importance of firearms (as opposed to traps and snares) in catching spring beaver. "Spring hunt" is a significant event for trappers. In Fort MacKay, it is a group activity partaken by almost every available male in the village. It begins at spring breakup. The men travel in small groups on foot or by snowmobile, or along the Athabasca River by boat. Beaver, otter, and muskrats are shot along creeks of sloughs, and some of the meat is eaten. Most of the men stayed out for 7-21 days in 1977, and returned with not only pelts, but also meat for the family table. "Spring hunt" appears to be the most common way of taking beaver in the project study area, and the main fur-catching technique for the large number of occasional trappers in the area.

Table 14. Commonly used methods of catching furbearers in the project study area.

Animal	Device(s)	Details
Bear	Firearm	Shot in fall or spring
Beaver	Firearm	Shot in open water
	Snare	Runways under ice[a]
	Leghold trap	Runways under ice[a], Drowning set near shore
	Conibear	Runways under ice[a], or open water
Coyote	Snare, leghold trap	Trial set[a]
Fisher	Leghold trap	Pen set[a]
Fox	Snare, leghold trap	Trail[a] or pen set[a]
Hare	Snare	Trail set[a]
Lynx	Snare, leghold trap	Trail[a] or pen set[a]
Martin		no data
Mink	Leghold trap	Around old beaver dams[a], Under creek ledges[a], On muskrat pushups[a], Pen set[a]
Muskrat	Leghold trap	In pushups[a] and houses
	Gun	Shot in open water
Otter	Conibear	Creeks[a]
	Leghold trap	Trail set[a]
		Under running water[a]
	Firearm	Shot in open water
Squirrel	Snare	Squirrel snare poles[a]
Weasel	Leghold trap	Around cabin[a], squirrel dens[a]
Wolf	Snare, Leghold trap	Trail set[a]
	Firearm	Shot on frozen water on muskeg

[a]Observed in the field.

3.2.5 Trapping Companionship

Under the regulations set up by Fish and Wildlife, each trapline is registered under one senior trapper, who is permitted to take one or more registered partners. The wife of a trapper and his sons and daughters under age 18 need not register to trap. Some area trappers also take friends and non-immediate relatives onto the traplines as companions. These companions often do some trapping, which is technically illegal unless they are registered on that trapline. Trapping partnerships are permitted on adjacent traplines if papers are signed and presented to the local Fish and Wildlife officers. There is only one known partnership of adjacent trappers in the project study area.

As shown in Table 15, more than half of the trappers interviewed reported doing most of their trapping with another person. The other person is often a registered trapper, but field observations revealed that the other trapper is sometimes registered on a different trapline. Trappers who register a partner on their line do not always trap with that person. As often as not, the men will split up their territory, and each will keep his own catch.

Table 15 shows one other interesting detail that was confirmed in field observations; that treaty Indians are the least likely group to trap alone. In the case of Fort MacKay, the most traditional settlement of the three studied, three of 14 trappers do most of their trapping alone. Only one of these is a treaty Indian. The majority of Fort MacKay trapping partnerships observed, registered and otherwise, were partnerships of kin.

3.2.6 Trapping Equipment and Supplies

Interviewed trappers were queried about the number of cabins that exist on their traplines and the number that were built in the past five years. Information collected from 40 area traplines showed the median number of cabins to be two. The usual practice is to have a main cabin, and one or more line cabins for brief stays.

Table 15. Companions when trapping in 1975-76 as reported by project study area trappers.

Companion(s)	White	Metis	Indian	Total
Registered Partners	7	6	6	19
Friends or Family	2	8	4	14
Trapped Alone	6	15	4	25

Forty-four percent of the traplines had cabins built on them within the past five years.

Trapline surveys showed a great deal of variation in the quantity of equipment and supplies kept on the trapline. All trappers visited had certain basic equipment such as a stove, lantern, power saw, axe, and ice chopper. However, beyond that, certain white trappers had noticeably more power equipment on their lines than average. For example, three traplines registered to white senior trappers had the following equipment in total; two propane refrigerators, a television set, two power generators, an automatic washing machine, an all-terrain vehicle, a small caterpillar, an acetylene torch kit, and a portable sawmill. All three of these senior trappers spent the entire season on their traplines, not one of which is located within 25 km of a community or all all-weather road.

Trapline visits also confirmed that a great deal of variation exists in food supplied. Five of six white trappers visited were observed to have a variety of fruits, vegetables, and even store-bought meats to supplement bush food. Three treaty Indians visited during the survey showed a much greater reliance on wild meat (particularly hare, grouse, ptarmigan, and beaver), most of which was taken on a day-to-day basis.

The differences between Indians and whites in food and supplies use on the trapline are probably a result of two things; differences in economic status, and differences in lifestyle between most whites and northern Indians.

3.3 POSSIBLE DETERMINANTS OF TRAPPING SUCCESS IN THE PROJECT STUDY AREA

Trapping success is defined as tangible success, measurable in number of pelts or, in this case, potential dollar value. This does not cover other things trapping contributes to the trapper and the trapping community, such as bush food (and thus a reduction in expense for purchased food), material for clothing,

happiness at performing the activity, self-pride, etc. However, as information was readily available only on fur catches, this section will only point out correlations between fur catches and other variables.

3.3.1 Effort

One would intuitively expect that, for a large sample of trappers, more time spent in the activity would result in more money earned. This was indeed the case and was shown with both t-tests and cross-tabulations. Effort was coded into three categories (the middle category being two weeks to two months on the trapline), and cross-tabulated against 1975-76 trapping income, coded into five categories. A chi square test showed the three effort categories to be significantly different from one another ($p<0.01$).

Next, a t-test was run comparing last year's trapping earnings of those trappers who spent two months or more on their lines with those who spent less then two months on their line. The former averaged $1,114 compared with $526 for the later ($p<0.01$).

Trapper effort (measured indirectly here by time spent on the trapline) was found to be the most important variable in explaining differences in trapline incomes in the project study area. Of course there are a number of items that affect trapper effort, including fur prices, fur abundance (based on both furbearer habitat quality and fur cycles), variations in weather patterns, and variations in personal situations, such as need, available alternatives to trapping, etc. These items are discussed elsewhere in this report.

3.3.2 Method of Travel on the Trapline

Since snowmobiles appear to be replacing dogs as the major method of travel on the trapline, it was questioned whether the replacement might produce higher trapping incomes. This question was tested indirectly by comparing the incomes of the trappers using snowmobiles and those using dogs. Snowmobile users were

found to average only $25 (3%) more income in 1975-76 than dog team users, and the difference was not significant. (Note that capital and operating costs were neglected in this comparison.) The researcher hypothesizes that changing to snowmobiles makes trapping more convenient in the project study area, but does not, in itself, make a more efficient trapper.

3.3.3 Use of Traps and Snares

Two t-tests were run comparing tnapper income figures for trappers who use mostly snares to trappers who use mostly traps. No significant difference was found between the two groups.

Usher (1971) reported in a Banks Island, N.W.T. study that a number of traps used correlated highly with the number of white foxes caught. A similar analysis was performed on project study area trapper data, using number of traps, and calculated trapper income figures as an indirect measure of the number of animals caught. The correlation analyses performed considered only trappers who use traps and snares equally, or mostly traps. The results show that no significant correlation exists between number of traps owned or accessed and trapping income produced.

3.3.4 Trapline Area

Trapline areas were tabulated from the trapline maps in the local Fish and Wildlife Branch office. Linear traplines were eliminated from this analysis because there is evidence to indicate that they were trapped more intensively than area traplines (Boyd et al. 1976). Trapping areas were correlated with three different measures of trapper and trapline income, with the results shown in Table 16.

While the results are not conclusive, they do strongly suggest that trapline size is one of several contributors to trapline success.

Table 16. Correlation analysis of trapline size with fur dollars produced in the project study area.

Income Measure	R	R2	Significance
1975-76 Income per Trapper	0.31	0.09	0.03
1973-76 Avg. per Trapper	0.58	0.34	0.0001
1970-74 Avg. per Trapline	0.19	0.04	0.12

3.3.5 Distance of the Trapline from the Trapper's Home

This information was obtained from the interviewed trappers or, when in doubt, calculated from a 1:250 000 mapsheet. Distance was correlated with measures of trapper and trapline income, with the results shown in Table 17.

These low, significant correlations suggest that, as distance travelled to the trapline increases, so does trapping income.

3.3.6 Trapping Blocks

The study area was broken down into six trapping blocks in order to examine the value of each to trappers using them (Figure 14). These blocks differ from one another in proximity to settlements, terrain, and principal means of access.

A cross-tabulation of three-year average trapper and trapline incomes with trapping blocks reveals that seven of 11 sampled trappers averaged more than $1,000 from their traplines trapped in either the North Athabasca or Birch Mountain blocks, despite the fact that only 35 percent of the trappers sampled trapped on this blocks. Furthermore, these two blocks contain all seven of the traplines averaging more than $2,000 worth of fur. The North Athabasca block is the likely location of the majority of new oil sands developments (see Section 6.1.1).

3.4 TRAPPER MOTIVATION

3.4.1 Enjoyment of the lifestyle

There is a very general motivational category that indicates trappers perform the activity because they like the lifestyle. Table 18 shows that, for 18 of 23 trappers scored on the second interview, enjoyment was a strong motive for the activity. This was consistent with earlier fieldwork.

Table 17. Correlation analysis of trapline accessibility (distance from trapper's home to trapline) with fur dollars produced in the project study area.

Income Measure	R	R2	Significance
1975-76 Income per Trapper	0.40	0.16	0.002
1973-76 Avg. per Trapper	0.50	0.25	0.0002

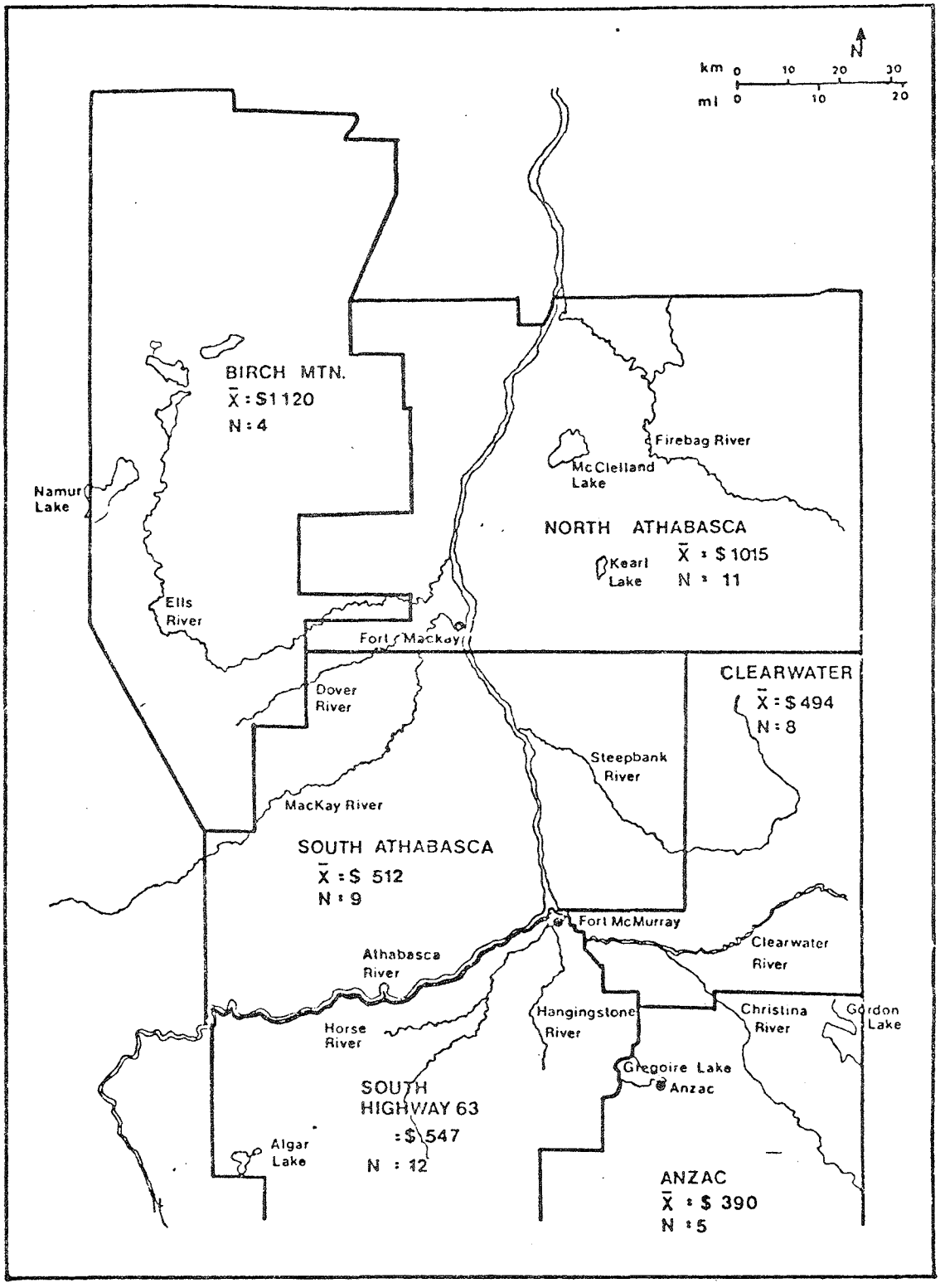

Figure 14. Average (1973-74 to 1975-76) trapper income means in six trapping blocks in the project study area.

Table 18. Enjoyment of lifestyle as a motivation for trapping in the project study area.

Code	Abs. Freq.	Rel. Freq.(%)	Adjusted Rel. Freq.(%)
Strong Motive	18	64	78
Motive	5	18	22
Not a Motive	0	0	0
Not Coded	5	18	-

Source: 28 trapper interviews, May 1977.

The following comments made by trappers explain best what they enjoy about the lifestyle:

"I like being out there. It's good for me."

"I like to be in the bush."

"There's no clock there. I work when I want."

"I like being my own boss."

"It's a good life. Lots of old people get pensions but you can't chase them out."

"Just to be out there alone...nobody bothers me."

"I feel happier to be in the bush...I'd die if I was put in the city."

"Good food."

3.4.2 Tradition

Tradition is used here in the broad sense to mean not only a cultural pattern that is passed down the generations but also a personal pattern, formed early in life, and continually maintained. Coding for tradition required a lot of extrapolation from actual statements and, in the process, the researcher was possibly more inclined to assume tradition as a trapping motive for native people than for whites (as native society has been committed to a hunting-trapping lifestyle for centureis). Native people were more often brought up on traplines than whites.

The researcher found tradition to be a motive of almost three quarters of the coded trappers, particularly treaty Indians and older trappers (Table 19).

In addition, there appears to be a connection between tradition as a motive and trapping effort, although a chi square test just missed detecting this at the 0.05 level of significance ($p=0.07$ for the test).

Sample responses of trappers motivated by tradition are:

"Ever since all may life, (sic) that's all I've been doing. Since my dad was alive, I was a trapper."

" Grandchildren have to learn (the) Indian way, too."

Table 19. Tradition as a motivation for trapping in the project study area.[a]

Code	Abs. Freq.	Rel. Freq.(%)	Adjusted Rel. Freq.(%)	Ethnicity			Age			Effort	
				Whi.	Met.	Ind.	18-35	36-55	over 55	<2 mo.	>2 mo.
(1) Strong Motive	13	46	59	3	3	7	1	6	6	3	8
(2) Motive	3	11	14	0	2	1	1	2	0	2	0
(3) Not a Motive	6	21	27	4	2	0	1	4	1	3	1
(4) Not Coded	6	21	-								

[a]28 trapper interviews, May 1977.

"When you spend all your life at it, you seem to need it."
"Because I was trapping all my life..."
"That's how I make my living."[1]

3.4.3 Financial Need

Trappers considered here as being motivated by financial need are those who trap to support themselves or their families, those who depend on trapping money during the trapping season, and those who need the money in order to do things they consider a part of their lifestyle (boating, snowmobiling, etc.). A special effort was made to get the trappers to talk about financial need without biasing the responses by asking a direct question. In addition, trappers were assumed to trap out of economic necessity (for purpose of coding) unless it was clearly indicated in the interview that this was not the case.

The results show that financial need is not a trapping motive for over 50 percent of the interviewed trappers. However, treaty Indians are apparently more motivated by financial necessity than either Metis or white trappers.

Motivation due to financial need shows a significant relationship with trapping effort ($p<0.01$). The researcher suspects that the relationship between financial need motivation and actual trapper behaviour is causal (Table 20).

3.4.4 Money as a Motivating Factor, Without Financial Need

Aside from financial need (as already defined), it was established that the desire for money itself is a motivating factor for trappers. This factor was examined indirectly by asking the trapper how he reacts to high prices offered for furs. Those trappers saying they were more motivated to trap when fur prices were high were considered to be motivated by money (Table 21).

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[1]The term "make my living" was used often by native people in the project study area, even by trappers who were clearly "not making their living" at trapping. The researcher, after enquiring, was forced to conclude that this expression meant a major activity done over a person's life.

Table 20. Financial need as a native for trapping in the project study area.[a]

Code	Abs Freq	Rel. Freq(%)	Adjusted Rel. Freq(%)	Ethnicity			Age			Effort	
				Whi.	Met.	Ind.	18-35	36-55	over 55	<2 mo.	>2 mo.
(1) Strong Motive	3	11	11	0	1	2	0	2	1	0	2
(2) Motive	10	36	36	2	4	4	3	5	2	0	8
(3) Not a Motive	15	54	54	6	7	2	4	7	4	11	2
(4) Not Coded	0	0	-								

[a]28 trapper interviews, May 1977.

Table 21. Money as a motive for trapping in the project study area.

Code	Abs. Freq.	Rel. Freq.(%)	Adjusted Rel. Freq.(%)
Strong Motive	7	25	26
Motive	12	43	44
Not a Motive	8	29	30
Not Coded	1	4	-

Source: 28 trapper interviews, May 1977.

Table 21 shows that 70 percent of the interviewed respondents are motivated to trap to some degree by money. Money motivation appears to be strongest for treaty Indians, and weakest for trappers over 55, but data are lacking to establish significance on these points. Money motivation also appears related to trapper effort, but this relationship was not demonstrated at the 0.05 level ($p=0.23$ for the test).

3.4.5 Need of Meat

Trappers were queried about the importance of meat supplied from the trapline, for use either on or off the trapline.

Table 22 shows that 60 percent of the sampled respondents feel that they need the meat from their traplines, including seven treaty Indians.

Trappers, asked about their use of different animals on the trapline, reported taking small game for food most frequently (Table 23). This includes hares, grouse, and ptarmigan as well as small furbearers such as beaver and muskrat. Big game animals, such as moose and woodland caribou, are taken on the trapline by about half the trappers on a regular basis. Fish are rarely taken from traplines due to the scarcity of production lakes and streams on project study area traplines. Most trappers who fish on a regular basis, such as for feeding dogs, obtain them from the Athabasca River with a gill net.

A chi square testing the relationship between need for meat and trapping effort provides significance at the 0.01 level. It is easier for trappers to obtain bush food than it is for them to haul and store large quantities of food from home. This may explain why trappers who are not financially dependent on trapping still require meat from the trapline.

Table 22. Importance of the trapline for supplying meat to project study area trappers.[a]

Code	Abs. Freq(%)	Rel. Freq(%)	Adjusted Rel. Freq(%)	Ethnicity			Age			Effort	
				Whi.	Met.	Ind.	18-35	36-55	over 55	<2 mo.	>2 mo.
(1) Very Important	3	11	12	0	2	1	0	2	1	0	3
(2) Important	12	43	48	3	4	5	4	4	4	0	8
(3) Not Important	10	36	40	4	5	1	3	5	2	9	0
(4) Not Coded	3	11	-								

[a]28 trapper interviews, May 1977.

Table 23. Use of meat and fish from the trapline by project study area trappers.

Code	Big Game	Small Game	Fish
Taken most years	10	19	4
Taken some years	3	3	1
Rarely or never taken	8	3	21
Not Coded	7	3	2

Source: 28 trapper interviews, May 1977.

3.4.6 Fur Abundance

The strength of motivation to trap due to the abundance of fur is an important question, especially since the 10-year cycle was at its bottom point when the study was undertaken. Unfortunately, the importance of this question was not recognized until after the second interviews were given, so no statistics are available.

3.4.7 Other Reasons Given for Trapping or Holding a Trapline

Other motives exist for trapping or holding a trapline and, while they are less significant for the trappers as a whole, they are very important to certain individual trappers.

Two motives reported by 10 of 28 trappers interviewed are holding the trapline for either personal security, or to pass on to a young relative. Although no statistics were compiled on this point, security appears to be a strong motive for native trappers who currently hold other jobs. Several native residents who hold traplines but work full-time expressed skepticism about the tenure of their jobs. They view the trapline as something they can always go back to, as a retreat from the drudgery of wage work they do not like, or out of economic necessity, if need be.

At least four trappers from Fort McMurray and Fort MacKay view their traplines as something that will bring them money in the future through compensation by oil companies ready to develop their leases. Two compensation settlements already made, awarding $6,500 and $10,000 to native trappers whose lines were lost to Syncrude development (interview, 21 July 1976 with T. Garvin, Community Relations Co-ordinator, Syncrude Canada, Fort McMurray, Alberta), are viewed by some of the trappers as an easy way to get money. The temptation to hold a trapline for this reason is strong for trappers with lines on the east side of the Athabasca River, which is rumoured to be the next area developed.

Passing down a trapline from father to son was a common practice among native people, and the desire to do so continues to exist today. Under Fish and Wildlife regulations, there is no guarantee that, when a line is relinquished, it will automatically go to the trapper's son, nephew, or grandson, but the researcher knows of no case where such a request by the trapper was denied.

The last motive to be discussed here is prestige. Historically, hunting and trapping excellence was looked up to in the Chipewyan and Woodland Cree cultures. Because of this, it was hypothesized that prestige would be an important motive for trapping in the project study area. No direct evidence was found to support this idea. Perhaps trappers gain status among their peers by bragging about their skill or catch. Trappers queried about this denied it, saying, "Everybody is the same". Two white trappers did mention that they get prestige from being associated with trapping. One is a writer; the other is oten invited to talk about trapping to young people in the schools.

4. DISCUSSION

One caution in the use of this data should be stated at the outset. The data were collected over two trapping seasons during which the "10 year" fur cycle (Keith 1974) was at its low point. This 8- to 11-year cyclic fluctuation of snowshoe hares and several furbearer species that prey on the hares is a natural phenomenon in Canada's boreal forests. Furbearing animals, such as lynx, fox, and coyote, were very scarce in northern Alberta during the study period. Lynx has been cited as a valuable furbearing animal in the AOSERP study area, second only to beaver in fur dollars produced (Renewable Resources 1975). Although lynx prices are up tenfold from what they were at the peak of their cycle ($238 in 1975-76 compared with $23 in 1970-71 according to Fish and Wildlife Annual Reports), this is irrelevant to those trappers who have seen no sign of lynx on their traplines for the last two years.

Evidence that fur scarcity has a dampening effect on trapping effort is provided by other trapping studies (Honigmann 1962; Tanner 1966; and Usher 1971). In my own study, 16 interviewed trappers referred to the scarcity of fur in the last few years (particularly lynx and fox). Some of the trappers told me that, upon seeing no sign of fur on their lines early in the season, they did not return to trap until spring.

The apparent effect of fur scarcity on trapping effort suggests that the effort data collected may underestimate the level of trapper activity over a several-year span. This should not be the case for trapper employment data, since employment statistics for the 1975-76 and 1970-71 seasons (cyclic low and high years, respectively) show little difference.

4.1 STUDY DATA IN THE CONTEXT OF OTHER TRAPPING STUDIES AND THE HISTORY OF THE REGION

4.1.1 Ethnicity

Demographic data for the 1975-76 trapping season show that 27 percent of the registered trappers were white. An important point to be raised is the extent to which oil sands development is responsible for this large percentage of white trappers.

Many of the interviewed trappers told me that they entered the area before the 1940's, before the GCOS project was even conceived. Statistics compiled from the trappers interviews show that only 12 percent of the trappers entered the project study area after the year 1956. While this suggests that oil sands development is not largely responsible for the high percentage of white trappers, this situation could change as older trappers relinquish their lines if young native people are not encouraged to take their places.

4.1.2 The Native Communities in the Project Study Area

It is enlightening to consider the villages of Fort MacKay and Anzac in the context of other native communities reported in the literature. In general, Fort MacKay and Anzac are less physically isolated and more tied into the wage economy than the other communities studied. Despite their isolation, other northern communities have experienced a decline in trapping activity, which researchers such as Liebow and Trudeau (1962), Knight (1968), and VanStone (1963) attribute largely to the availability of other sources of income. It is reasonable to expect that this also applies to Fort MacKay and Anzac, where the opportunity for wage employment is so great. Trapper motivation and effort data support this explanation, but long term data are needed to offset the possible influence of the fur cycle on trapping effort.

4.1.3 Trapping Income

It should be emphasized that the income figures are calculated using the average pelt prices paid by the major fur buyers in the province. Many of the area trappers do not sell their furs directly to those sources, but rather to local fur buyers at a fraction of their average provincial value. Results of the trapper affidavit/buyer record collective comparison also support the notion that actual trapper income is somewhat lower than the calculated figures for most figures.

Trapping in the North has traditionally been a low income occupation, as evidenced by figures reported in other studies. Trapping incomes in the project study area are much higher than trapping incomes reported a decade ago in the MacKenzie Valley (Slobodin 1966) and the Yukon (Tanner 1966), and comparable to recent figures for the province of Alberta as a whole (Boyd et al. 1976).

It should be realized that the majority of trappers have very low living expenses. Much of their food comes from the trapline and, with the exception of those who rent or own conventional homes in Fort McMurray, trappers in the project study area have few home expenses to meet. Thus, a small amount of trapping money can go a long way.

4.1.4 Trapping Income Correlates

While other trapping studies gave clear description of trapping patterns, they did not deal quantitatively with variables that relate to trapping income. One exception is the Usher (1971) study, which showed that, on Banks Island, the number of white fox caught correlated highly with the number of traps set and checked. The relationship between trap sets and animals caught was indirectly tested in the project study area by correlating the number of traps owned or accessed with trapping income. No relationship was apparent.

This test does not prove that a relationship does not exist between number of traps used and trapping income produced, since not every trap owned or accessed is actually used in a given season. However, the researcher doubts that a significant relationship between the variables exists in the project study area, where snares (which could not be counted) are used so frequently, and the trapping techniques and number of furbearing species available (14) are greater than on Banks Island.

The correlation between trapping income and distance travelled to the trapline is interesting because there has been a general trend in native trapping communities for trappers to trap closer to settlement (Brown 1966; Buckley 1963; and VanStone 1963). M. Doran, the chief Fish and Wildlife enforcement officer in Fort McMurray, noted that this trend is occurring in the project study area (conversation, 5 July 1976). He pointed out that many of the more distant "treaty lines" are vacant.[1] Traplines near to town are very much in demand. The data suggest that most trappers who opt for lines nearer to their homes are making less effort to trap than those who opt for the more remote lines. The distance-income correlations might be stronger except that there are some intensive trappers who got their traplines near settlements before these areas were developed.

The researcher is convinced that the income-distance correlation is not due in any major part to the absence of furbearing animals near the settlements. Initial beaver counts in the vicinity of Fort MacKay suggest that furbearers are far from being trapped out in the vicinity of settlements (conversation 15 May 1977, F. Gilbert, principal investigator, AOSERP semi-aquatic mammal study, Fort McMurray, Alberta).

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[1] In the Fort MacKay area, at least five "treaty lines" and six other lines have been left unused by trappers from the settlement over the past three years. Five of these lines are in the Birch Mountains, and two others are 80 or more kilometres from the village.

The positive correlation between trapline size and income is noteworthy, but must be considered in light of another study done in the Fort McMurray area. Todd (1976) found that a negative correlation exists between cash value per unit area and trapline size. He points out that this is due to decreasing trapping intensity with increasing trapline size. His results may be more important to management in the oil sands area than whether or not trapline size contributes to trapper income because there is very little vacant trapping area available to be used in the expansion of current traplines.

4.2 TRAPPING PATTERNS

It is clear from the data presented that trapping has undergone a rapid modernization in the project study area. The recent popularity of the snowmobile, itself part of this trend, appears to accelerate the trend. For example, the population of trappers in the project study area now includes individuals who trap distant areas on a day-trip basis, returning to their homes in the evening. Other individuals hold full-time jobs and trap on weekends. The extent to which both of these situations are now possible is a result of the introduction of the snowmobile.

With the added convenience of the snowmobile has come a greater dependence on winter roads and cut lines. These roads are faster to travel on, and require less maintenance than the winding, narrow trails that trappers used to build in large numbers. Many of the old trapper trails have become overgrown as a result, which is unfortunate because some of the good trapping spots they led to are now inaccessible.

The extensive use of winter roads and cut lines has created conflict between recreationists and seismic crews, and trappers. For example, trail and pen sets made near winter roads and well-used cut lines were occasionally disturbed by snowmobilers and seismic crews. Such disturbance was rare for creek sets or trail sets on more remote parts of the trappers' lines. In addition,

seismic crews often clear the snow off of the winter roads they are using, making trapper snowmobile or dog team use difficult or impossible. The Department of Energy and Natural Resources requires seismic crews to push trees back on the roads when they are finished with them. (Six interviewed trappers voiced complaints about this practice.) This renders the road totally useless to trappers. Land use conflicts involving trappers are likely to intensify in the future unless steps are taken to manage the situation.

4.3 TRAPPER MOTIVATION

The trapper motivation data collected suggest the following hypothesis: Trapping is becoming less important as a profession, but is retaining its significance as a lifestyle activity. This is supported by trapper employment data, and is consistent with the trend toward modernization of trapping activities.

Most trappers made reference to the wholeness of the activity in commenting about the lifestyle. It seems that, to the trapper, the trapping activity is viewed as only part of a total lifestyle that includes being in the wilderness, and enjoying self-reliance and freedom. This was true for white and native trappers alike . This view of the trapping activity is very different from the official view of trapping, as evidenced by the game laws which differentiate the trapping activity from other parts of trapping life (such as hunting and fishing). This was an often-heard complaint from area trappers, and suggests that, even if trapping is no longer to be carried out as a profession, its integrity as a self-sufficient activity must be preserved if it is to continue to be satisfying to trappers.

5. SUMMARY

Trapper interviews done in the project study area show that 70 percent of the project study area trappers registered in 1975-76 are native, and almost 30 percent of these are treaty Indians. The mean trapper age was 46 for the entire study area, and 60 in the village of Anzac. Less than 10 percent of the registered trappers were under 25. Sixty percent of the interviewed trappers held other part-time or full-time jobs in 1975-76, while registering a trapline. This cannot be accounted for by the bottoming of the fur cycle because the percentage of the same trappers that were similarly employed five years ago (at the peak of the fur cycle) has changed little.

A survey of trapper effort showed that only 26 percent spent more than two months on the trapline, while 29 percent spent less than three weeks in 1975-76. This is significant because trapper effort was found to be the most significant determinant of trapping income. However, this should not be taken as an effort baseline without further study, because the scarcity of long-haired fur may have had a major depressing effect on trapper effort.

Correlation analyses revealed that larger traplines and those more distant from the trapper's home tended to produce higher trapping incomes. The latter appears to be a function of choice; more motivated trappers tend to choose traplines that are far away from heavy human pressure. Trapping incomes were not affected by the type of trapping devices most commonly used, nor by method of travel on the trapline.

Project study area trappers have almost entirely replaced their dog teams with snowmobiles within the last five years. They travel to their lines mostly by car, truck, or snowmobile. The average trapline has two cabins on it. Almost 50 percent of the cabins have been constructed in the past five years. A power saw is used for cutting wood on almost every trapline, and other modern equipment such as generators, refridgerators, and propane stoves were often found on lines registered to white trappers.

Access to most of the traplines is good. The majority can be reached by snowmobiles in less than five hours by travelling on a major river, winter road, or cut line. Trappers are heavily dependent on winter roads and cut lines for travel, and in many cases set their traps right on them. These traps are, then, vulnerable to disturbances by both seismic and recreational activities.

A trapper motivation survey done in the summer of 1977 showed that the most widespread motivating factor for trapping is enjoyment of the lifestyle. Trappers hold an holistic view of the lifestyle; they see trapping as only one component of a bush existence that includes subsistence activities. This may not be as inconsistent with their trapping levels as it might appear, if one considers that human pressures on the environment, coupled with restrictive game laws, make a full-time bush existence very difficult today.

Another motivating factor is tradition, important particularly to treaty Indians and older trappers. While more than 70 percent of the trappers are motivated to some degree by money, less than half said they are motivated by financial need. This represents an important change from the past that can be attributed to changes in the local economy.

Another important motivating factor is the need for meat. Sixty percent of the trappers surveyed expressed this motivation. Fifty percent reported taking big game animals on a regular basis, and 75 percent, small game. The animals most commonly eaten are rabbit, beaver, grouse, ptarmigan, muskrat, moose, and lynx. Fish are rarely taken off the trapline because of the lack of good fish lakes and the fact that trappers have few dogs to feed.

Specific data were not collected to indicate the value of fur abundance as a motivator for trapping. The research suspects it is a strong motivator, as it was indicated in several trapper interviews and in trapping studies done in other parts of northern Canada.

There are at least three motives that make project study area trappers want to hold traplines even if they don't trap. One is the desire to pass on the trapline to a younger relative. This has been a tradition with Indian people. A second is to use the trapline for recreation; hunting, snowmobiling, etc. The third is to hold it for job or old age security. This motivation was associated mostly with native people who had full-time jobs, and reflects a culture conflict as well as a degree of uncertainty about the tenure of their jobs.

Trapping income in Fort McMurray, Fort MacKay, and Anzac in 1975-76 was calculated at $64,000, $28,000, and $11,625, respectively. Trappers in the project study area earned very little money from the trapline in the past three years. Seventy-eight percent of the sampled trappers averaged less than $1,000 annual income for 1973-76. Only two percent earned over $2,000. However, it can be concluded that full-time trappers can make a living at this activity, because living expenses in the bush are very low.

The project study area was divided into six trapping blocks and compared in terms of the fur incomes produced. Traplines in the Birch Mountains and along the Athabasca River north of Fort MacKay were found to produce the highest trapper incomes. It is the latter area where future oil sands development is most likely to take place.

A literature review of trapping studies done in other communities of northern Canada show that trapping has generally been declining in the North. Three major factors appear to be responsible for the decline: (1) the movement of native people into permanent settlements; (2) the unreliability of trapping income; and (3) the recent availability of other sources of income and employment. The latter two factors apply to the project study area.

At least four signs of this decline were evident during the study:

1. Trapline vacancies in the less accessible areas, particularly on treaty lines;
2. The under-utilization of certain fur species in the project study area, in particular, the beaver (Todd 1976);
3. The lack of young replacement trappers and the high average age of trappers; and
4. The presence of large numbers of part-time and occasional trappers.

All of these signs, in particular the first two, must be considered in light of the fur cycle, which was at its low point when the study was done. This points to the need for long-term data collected over the entire fur cycle in order to establish a reliable trapping baseline.

6. IMPLICATIONS OF THE STUDY FINDINGS

6.1 THE POTENTIAL EFFECTS OF OIL SANDS DEVELOPMENT ON TRAPPING

6.1.1 Future Development in the Project Study Area

The scenario development here is based on 1977 predictions of the development of oil sands plants by the Long Term Energy Assessment Program (LEAP) of the federal government (Fisheries and Environment Canada 1977). This scenario is similar to, but more recent than, two other scenarios written for oil sands development (Integ 1973; and Hydrocarb 1975). It should be noted that the actual rate of development will depend mainly on factors which are very difficult to predict; such as future oil prices, plant construction costs, supply from other sources, demand, and government policy towards domestic production and importance of oil. The uncertainty of these factors limits the predictablity of the future with any scenario.

Oil sands development brings with it other forms of industrial development, as well as municipal and recreational development. The scenario was expanded to include these other forms of development, which also have the potential to affect trapping.

The reader should bear in mind that the scenario developed here is based on a great deal of speculation. It is meant to be used only as a reference point from which effects can be predicted, and not as an end in itself.

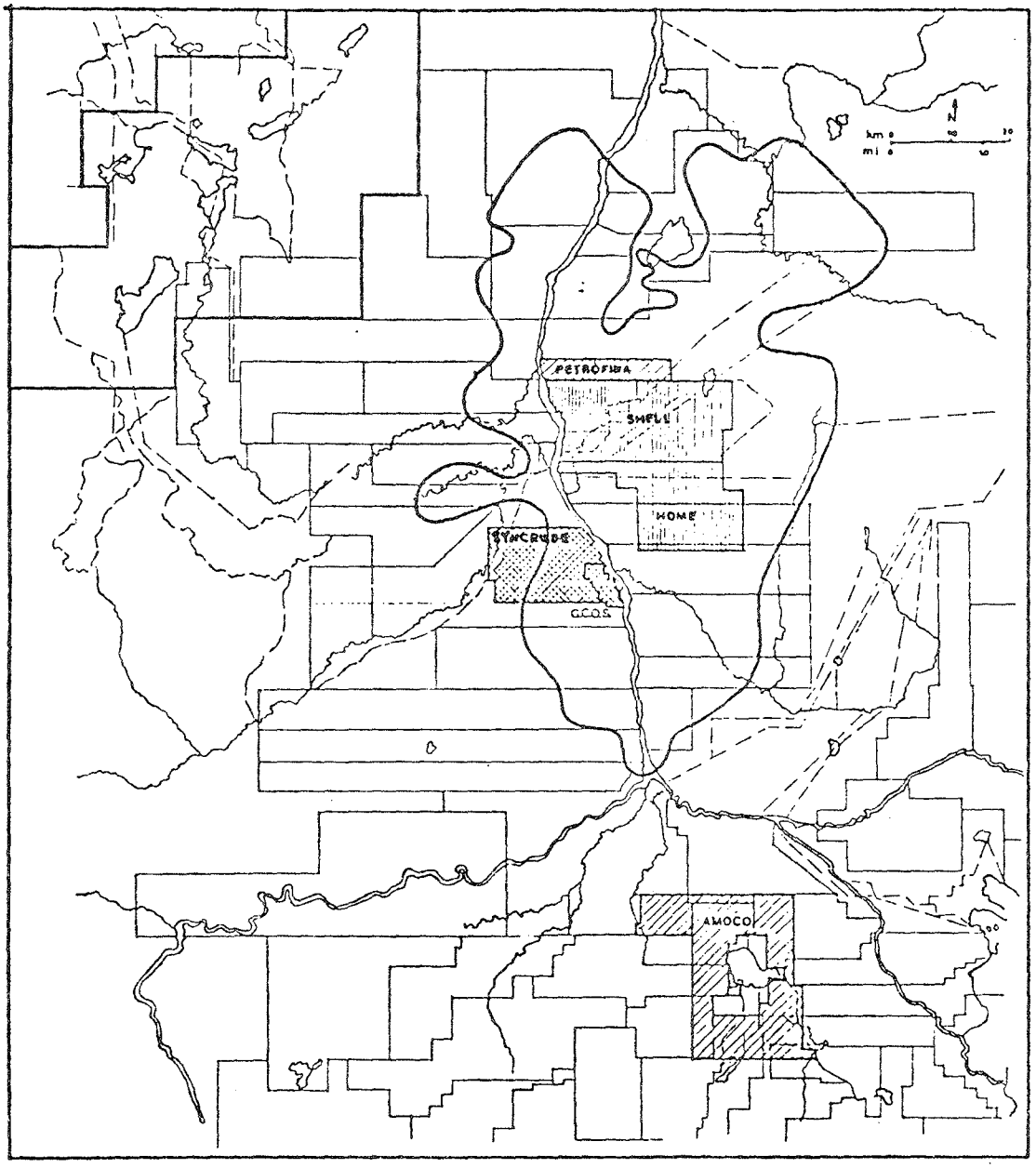
The scenario used in this report includes the following potential developments to the year 2000:

1. Development of four new oil sands plants based on surface mining, in addition to the Syncrude plant currently under construction and the already operating GCOS plant. The leases predicted to be developed are shown in Table 24 and Figure 15.

Table 24. Predicted amount of land to be cleared in the project study area by oil sands development to the year 2000.[a]

Lease No.	Developer	Area (km^2)	Area Cleared (km^2)
86	GCOS	18	16
17	Syncrude	201	108
13	Shell	202	36
30	Home	153	47
12, 34 73, 76	Petrofina	54	22
IR 176	Amoco	425	35
	TOTAL	1053	264

[a]Lease areas calculated from acreages in Alberta Mines and Minerals (1974). Amoco figure, which includes Indian Reserve lease, comes from Lombard North (1974). Areas cleared calculated from company figures supplied in Alberta Energy Resources Conservation Board reports.



Key

- Leases Developed by 2000
- Leases Developed by 1990
- Leases Developed by 1980
- Provincial Park within this area by 1980
- Area Containing < 200' Overburden

Figure 15. Author's scenario for development of surface mines, in situ mines, and provincial parks in the project study area to the year 2000.

2. Development of an in situ plant in the Gregoire Lake area (Figure 15).
3. Two new major roadways, one west from Fort MacKay into a provincial park in the Birch Mountains; another along the east shores of the Athabasca River, north to the Wood Buffalot Park area.
4. The building of a new town near Bitumount and McClelland Lake.
5. A population increase of 50 000 to 80 000 in the project study area.

The rationale behind the scenario is detailed in Appendix 9.2.

6.1.2 Implications of Future Development on Trapping

It should be re-emphasized here that the concerns of trappers include not only furbearing animals, but also any animals trappers use for food. Thus, any activity affecting populations of moose, woodland caribou, upland game birds, waterfowl, and edible fish may have an impact on trapping. Since furbearing and food animals can be adversely affected by activities causing loss of habitat, interference with migration patterns, or environmental pollution, overall environmental effects are effects on trapping. This report is not intended to be a general environmental impact assessment; it is primarily concerned with the human element of trapping. Therefore, environmental considerations affecting furbearers and other wildlife will be examined only in a cursory manner.

Research into the effects of oil sands development on animal populations in the AOSERP study area is currently being done for moose, caribou, aquatic furbearers, birds, waterfowl, and fish. Most of these sub-projects are still at the inventory stage, and will not be available until after this report is published.

The reader is once again reminded that the effects described here are based on a scenario that is purely speculative. Variances from the scenario is either the rate or actual location of development in the project study area would change the impacts described here.

6.1.2.1 Loss of trapping areas. According to Table 24, the total area of the leases to be developed by the year 2000 is 1053 km^2, or 3.5 percent of the entire project study area. Lease development will have a negative influence on trapping in at least two ways: loss of land for the production of furbearers and food animals, and loss of land formerly accessible to trappers. The former is relevant to more than just the trappers in the immediate vicinity of these leases, as animals such as the lynx (Saunders 1963) and beaver (Gunson 1970) have been shown to migrate great distances in search of food or suitable habitat.

Accurate calculations of the amount of land lost for the production of furbearers and other wildlife on these leases could not be made due to the indefinite nature of the developments. Instead, conservative estimates of land to be cleared were made from Alberta Energy Resources Conservation Board (ERCB) reports on the Syncrude, Shell, Home and Petrofina applications for development (Table 24).[1] It is assumed here that no cleared land will be returned to wildlife production by the year 2000.[2]

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[1] Estimates were based on company-supplied figures estimating the size of mining areas, tailings ponds, overburden storage, and plant sites. Mining areas not required for the 20-year life of plant at the level of production designated by LEAP (Table 24) were not included in the calculations. Estimates do not cover transporation corridors. Note that ERCB estimates of plant life are greater than the 20 years used in the LEAP scenario, and ERCB estimates the areas suitable for surface mining are as much as 80 percent higher than company figures.

[2] The lag time between stripping and revegetation for any single area is assumed to be 10 years (Bresee and Tyler 1975), with at least another 10 years for the land to regain wildlife capability. Under these assumptions, only a small area on the GCOS leas may be reclaimed by the year 2000.

In situ assumptions used for the Amoco leases are slightly different. Here it is assumed that 23.5 km^2 of land will be cleared for initial production in the year 2000, and an additional 50 percent of this will be cleared for plant facilities and future well sites.[1] Land cleared for urban development would be very small in comparison to the oil sands lease areas. It is estimated to be 30 km^2, approximately 70 percent of the figures used by Underwood McLellan (1973) for the new town. Their figures are based on six oil sands plants north of Fort MacKay, where the scenario used in this report assumes only four.

With all of these assumptions, 294 km^2 of land would be cleared in the project study area by the year 2000, which is 1 percent of the entire project study area. It is probable that the actual amount of land taken out of wildlife production lies somewhere between the total land cleared and the total area of developed leases, because untouched land proximal to disturbed areas may not be suitable habitat for some wildlife species.

The value for furbearer production of the land to be developed can be indirectly evaluated by an examination of trapping harvest records, although using these records as indicators of actual furbearer populations is risky at best, and any findings based on them must be treated with caution.

Comparisons made between regional harvest data and data specific to areas of future development (Table 25) suggest that the traplines affected by future development are average for the project study area in their ability to produce furbearers. Differences between regional data and the local areas assessed are generally less than one standard deviation of the local means. If in fact the developing areas are not atypical of their region in ability to

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[1] This is based on 10.4 km^2 of land covered with wells per 100 000 barrels of oil per day (BOPD) (Lombard North 1974) 50 percent of which would have to be cleared. (Research Council of Alberta 1973). The scenario calls for 450 000 BOPD by the year 2000.

Table 25. Comparison of fur harvests in two areas of future development with regional data.

Animals	Mean Annual Harves per Trapline (No. of Animals)			
	AOSERP Study Area[a]	South Section N.E. Alta.[b]	Pred. Surf. Mining Dev.[c]	Pred. In-Situ Dev.[d]
Beaver	21.9	18.6	18.5(17.9)[e]	10.3 (6.9)
Coyote	0.8	1.0	0.8	0.5
Fisher	0.6	0.4	0.2	0.2
Fox	0.7	1.3	1.1	0.8
Lynx	4.7	7.3	13.2(13.8)	3.8 (5.3)
Marten	0.1	0.1	0.0	0.0
Mink	4.1	3.8	3.2 (3.4)	4.7 (4.2)
Muskrat	115.8[f]	5.5	7.2 (8.5)	4.9 (9.4)
Otter	0.2	0.4	<0.1	0.1
Squirrel	63.6	54.2	45.0(86.7)	28.7(33.4)
Weasel	5.6	2.2	2.0	2.2
Wolf	0.2	0.3	0.3	0.3

[a] Data from Todd (1976). Based on analysis of 1970-75 trapline records, 131 traplines.

[b] Data from Renewable Resources (1975). Based on analysis of 1970-74 trapline records, 165 traplines.

[c] 1970-75 trapline affidavits for six traplines expected to incur losses to future surface mining developments (see Table 27).

[d] 1970-75 trapline affidavits for eight traplines predicted to incur losses in future in situ development.

[e] Numbers in brackets are standard deviations from the mean.

[f] Todd (1976) notes that almost all of these muskrats came from the delta area north of the project study area.

produce furbearers, an estimate of this lost capability can be made using trapline harvest data from Boyd (1977). Boyd provides average annual production figures for furbearers important to the project study area (Table 26).

If Boyd's figures are indicative of the furbearer production capability of the areas to be lost to future oil sands development, it can be seen that their loss could mean the loss of productive habitat for squirrel, mink, and, to a lesser extent, beaver and lynx. Actual on site research is necessary to confirm this, as trapline harvest figures may not be representative of either production capability or habitat quality.

Turning now to the question of land lost to trapping, the researcher first wishes to assume that surface mining leases are not trappable over their period of production. The reason for this is that the trapper needs unrestricted access to the good parts of his line, while the developer needs to control access to the lease. In the past, trapping was completely closed down on the GCOS lease, and much the same is happening on the developing Syncrude lease. Out of three traplines crossing the Syncrude lease, two trappers have been compensated, and their areas closed down. One trapper, whose line is not entirely within the Syncrude lease, is currently negotiating with Syncrude and trapping on their lease at the same time.

The complete loss of trapping areas on the Amoco lease is certain for several reasons. First of all, the developed area predicted by the scenario to the year 2000 is very small in comparison to the size of the leases. Secondly, within the area covered with well sites, 50 percent of the vegetation could be left intact (Research Council of Alberta 1973). Finally, no precedent has yet developed for dealing with the conflict between trapping and oil production on the in situ leases. Assuming Amoco proceeds in the vicinity of their test plant and that developed areas cannot be trapped, the researcher predicts that only one trapline will be

Table 26. Production of economically important furbearers in two regions containing areas of future oil sands development.

Furbearer	Square Miles Trapped per Animal Caught	
	NTS Mapsheet 74D (In Situ Development)	NTS Mapsheet 74E (Surface Mining Development)
Beaver	4.7	2.9[a]
Lynx	23.4[a]	10.8[a]
Mink	18.4[a]	23.6[a]
Muskrat	8.5	5.2
Squirrel	0.9[a]	0.7[a]

[a]Denotes high production figure compared with the rest of Alberta (see Boyd 1977).

Source: Boyd (1977); based on 1970-75 trapline affidavits.

completely closed down on the in situ leases by the year 2000, and seven others could incur a loss of trapping area ranging from 5 to 50 percent (Table 27 and Figure 16).

Traplines are not expected to be closed down in the Gardiner-Namur lakes area where the provincial park will be developed. Should a new town be built, a small amount of land would be permanently lost to trapping, but the rest could still be trapped. This is not to say that its trapping value would not be reduced by the proximity of a settlement.

With the assumptions and the development scenario given, 15 traplines out of a total of 105 traplines in the project study area would lose upwards of 5 percent of their trapping area by the year 2000 (Table 27). Native people, particularly those from Fort MacKay, would be the most affected, assuming the ownership of most of these traplines stays in the same familes. Table 27 assumes that trappers will be able to gain access to the remaining portions of their lines through the leases or in some other convenient way. If this is not the case, those traplines crossing the Shell and Home leases (four in all) would be rendered useless. (Trappers affected by the Amoco development could still gain access by Highway 63 or the Northern Alberta Railroad. Most of them use these thoroughfares anyway. Trappers affected by Syncrude developments have a number of alternative routes to research their lines, including a major winter road and cut lines.)

Furbearer harvest figures on traplines likely affected by development are provided in Appendix 9.3. These figures provide a rough indicator of the value of these traplines to the current line holder.

6.1.2.2 Loss of trapping equipment. At the present time, exploration crews are active throughout the project study area, and this activity can be expected to increase as the pace of oil sands development increases.

Table 27. Estimated trapline losses in the project study area to the year 2000, assuming development scenario in section 6.1.1.

Trapline No.	Lost to	Senior Trapper in 1975-76 Home[a]	Cult[b]	Trapline Earnings[c]	Est. Loss (% of line)[d]
162	Amoco	an	I	$ 287	20
272	Amoco	fm	M	919	15
452	Amoco	an	M	602	20
587	Syncrude	mk	I	1,206	20
1071	Amoco	an	M	281	20
1650	Shell	mk,	M	2,825	100
1694	Amoco	fm	M	170	5
1714	Home/Shell	mk	M	767	50
1716	Home/Shell	mk	M	255	40
1855	Amoco	an	M	627	100
2006	Home	fm	M	814	30
2013	Amoco	an	I	842	50
2015	Amoco	fm	M	1,760	15
2137	New Town	mk	W	2,842	10
2172	Home/Shell	mk	M	4,680	60

[a] fm=Fort McMurray; an=Anzac; mk=Fort MacKay.

[b] W=white; M=Metis or nonstatus Indian; I=treay Indian

[c] 1971-74 three-year calculated average

[d] Losses on Amoco leases assume initial development to be located in southern portion of lease area, proximal to IR 176 test site.

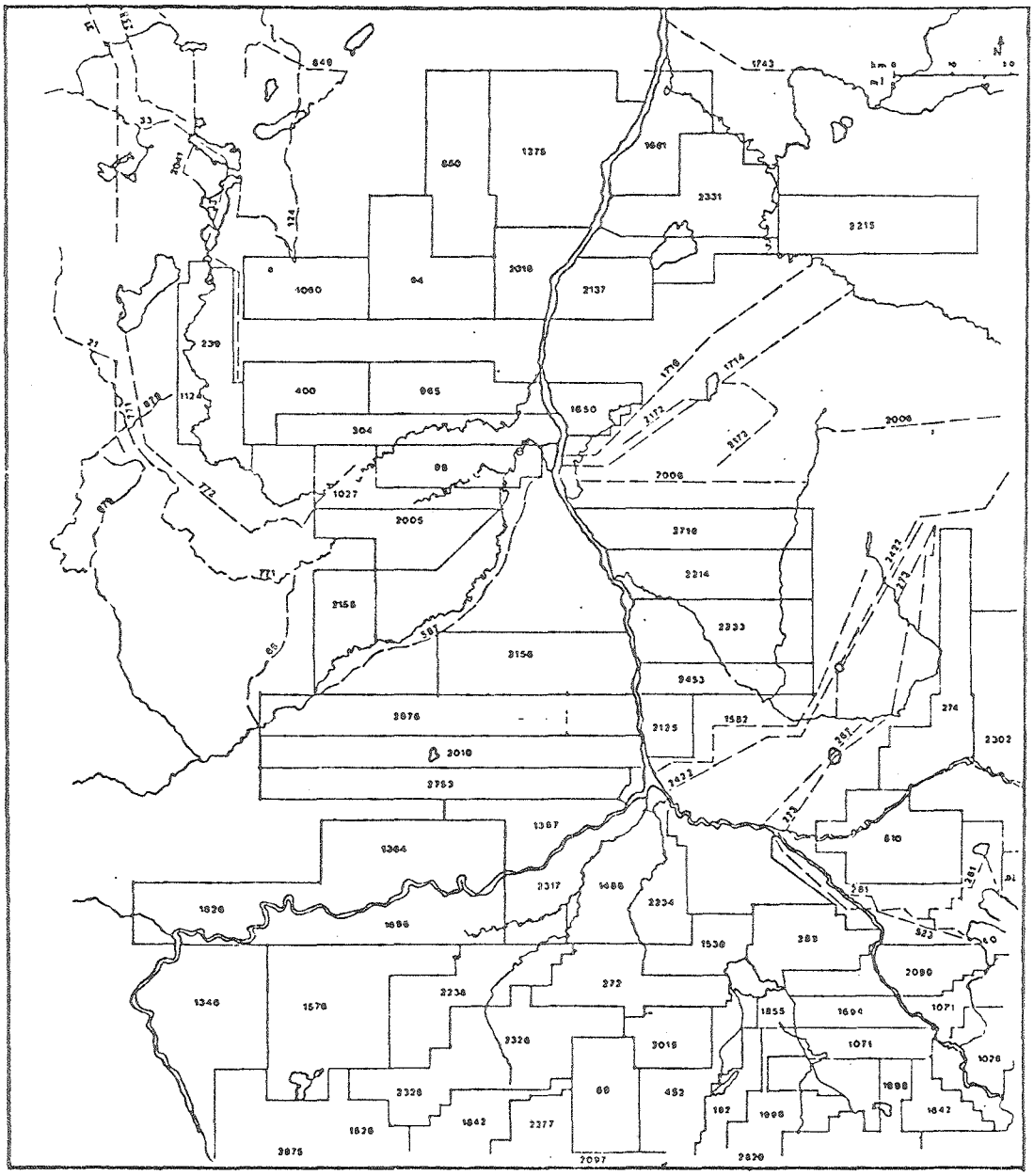

Figure 16. Map of registered traplines in the project study area (1975-76).

Trappers rely to a great extent on roads used and maintained by oil companies, as both means of access and a place to set traps and snares. Much of the exploration activity takes place during the winter months and, inevitably, conflicts occur between seismic crews and trappers. Twelve interviewed trappers noted problems with seismic crews; five of these involved loss or damage to trapping equipment, or the theft of trapped animals. Part of the problem lies with the seismic companies themselves, who have not concerned themselves with policing employees who shoot animals while working, or steal animals and traps.

Another source of trapper losses are hunters and snowmobiles in the autumn and winter, respectively. Seventeen interviewed trappers reported problems with visitors, 14 of which involved loss or damage.

The problems caused go beyond the trappers; increasing numbers of law-breaking sportsmen have necessitated the staffing of an additional enforcement officer in the Fish and Wildlife detachment in Fort McMurray.

The Fish and Wildlife Division serves as the agency for reporting and handling losses due to hunters or exploration crews, but their work load is already beyond the point where they can serve the trappers in this way. The problem of uncompensated losses can only increase with the predicted increases of population, exploration, and construction activity throughout the area.

6.1.2.3 Effects of Park, Roadway, and Urban Development on Trapping Patterns. While negative effects stemming from extensive land clearing are fairly obvious, this is not the case with roads and parks. Roads and parks would serve to open the wilderness in the project study area, and their effect on trapping would not be entirely negative. The building of all-weather roads into the bush does have very definite advantages for trappers with access to cars

or trucks. Several vacant traplines in the Birch Mountains would be attractive to those trappers if the park road is built. Other trappers having but not using cars or trucks could benefit from any all-weather road by year-round access to their traplines, and increased speed and safety.

As has been shown earlier, accessibility of a trapline is a positive asset to the majority of area trappers, but the important question is whether accessibility to the trapper will be improved by the developments being discussed.

The majority of area trappers appear to depend on means other than car or truck for travelling to and on the trapline. For these trappers, good access routes already exist into the areas where the roads will be built though they are not all useable before freeze-up.

Unfortunately, these advantages help out a particular segment of the trappers; most of whom are white and live in Fort McMurray. Native trappers living in Fort MacKay (where few people own cars) would likely suffer from the road projected into the Birch Mountains due to increased competition for traplines from trappers who own vehicles. Increased traffic could drive fur-bearing animals away from the road, and if the new road destroys the major winter road, access into the area may actually be hindered for trappers without vehicles. In addition, native Fort MacKay trappers depend to some extent on fish obtained in the Gardiner Lake narrows. Lake whitefish frequent these narrows, one of the few open water areas in the winter. The fishery could be adversely affected by increased utilization if a road and provincial park are built to the Gardiner Lakes.

A similar problem could occur if a road is built on the east side of the Athabasca River. The road would cross the Firebag River, where moose are commonly taken by trappers from Fort McMurray and Fort MacKay. Hunters and heavy traffic in the area might disperse the moose population to the point where the ability of local trappers to obtain one is seriously hampered.

Urban development near McClelland Lake could probably cause changes in trapping patterns similar to, but of greater magnitude than, the development of roads and parks. The habitat directly affected is jack pine forest, where red squirrels and long-haired furs (particularly the lynx) have provided relatively good incomes for trappers in this area. The location of a town and a road here would bring many people into close contact with what is now relative wilderness. The influx of sportsmen from the new town and Fort McMurray would devalue those traplines near to the new town. As has happened near Fort McMurray, full-time trappers might be replaced by occasional trappers in the vicinity of the new town, resulting in a decrease of fur yields. The number of traplines affected would depend on the size and population of the new town, oil sands plants nearby, the roads built into what is now wilderness, and the attitudes of the trappers using the area.

6.1.2.4 Effect of Economic Development on Trappers and Trapping Patterns. The employment data collected during this study suggest that the majority of trappers are being attracted by available wage work in the area. New job opportunities can have a positive impact on trapping, as they supply money to trappers that is needed for the acquisition and maintenance of modern trapping equipment. The negative aspect is that trappers doing wage work often reduce the amount of time spent trapping, or reject it altogether.

Trapping patterns exhibited by trappers with other employment often conflict with the principal aim of trapline management: maximum sustained yield of all furbearer species. Such trappers have less time to cover their areas and check their traps (taped interview, 20 July 1976 with M. Doran). Many also attempt to maximize economic gain over the short run by concentrating on only the most economic species (Todd 1976). To the extent that these practices cause a buildup of surpluses that would otherwise be harvested, and to the extent that furbearer population quality is adversely

affected by the underharvesting of certain furbearer species (Todd 1975), the spread of this kind of trapping pattern should be judged a negative effect of economic development on trapping.

6.1.3 The Future of Trapping in the Project Study Area

The following assumptions are made for predicting the future of trapping to the year 2000:

1. Development in the project study area will proceed along the lines of the developed scenario. This includes the addition of five oil sands plants, two major roads, a new town, a provincial park in the Birch Mountains, and a threefold area population increase.
2. Neither the federal nor the provincial governments will intervene to stabilize prices paid to trappers for their furs (or to provide significant financial incentives to trappers).
3. Fur prices will continue to fluctuate as they always have, and will not significantly increase over the next 25 years any faster than the rate of inflation.
4. Trapline management policies in Alberta will not change significantly.

These are conservative but reasonable assumptions, given the current priorities for the development of non-renewable versus biological resources. (They are not, however, the optimum policies for the upgrading of trapping in the area.)

If these assumptions are accurate, current employment and demographic trends among Fort MacKay and Anzac trappers suggest a decline in the importance of trapping to the total income of the two communities. This will include a decline in the number of trappers from Anzac, starting in about 10 years. The number of trappers from Fort MacKay will probably not decline significantly over the next 10 years, but the actual area trapped and time spent trapping may.

Trappers from Fort MacKay will continue to hold most of the traplines they do now, although the more distant ones may be used to a lesser degree. The opposite could happen if Fort MacKay residents begin to buy cars and trucks by the time a road into the Birch Mountains is constructed. This would result in an increase of trapline usage in the Birch Mountain area by residents of both Fort MacKay and Fort McMurray.

Changes in trapper motivation will likely continue into the year 2000, although Fort MacKay trappers, coming from a community that is still fairly traditional, may lag behind in that aspect. Although there will be some who quit trapping to take better paying wage jobs, a significant number of these trappers will continue to trap on a part-time or occasional basis. Traplines should continue to be in demand because there should be a continuing surplus of "hobby trappers" to take up the vacated lines. Trapline vacancies will continue in the more remote areas not accessible by boat or truck, notably the southwestern and eastern portions of the project study area.

Finally, given the current trapping output of occasional trappers in the area and a predicted increase in the number of occasional trappers, fur yields will decline in the long run, although annual yields will continue to vary with fur abundance (and fur prices to a lesser extent).

At least half of the trappers who are currently trapping will have retired by the year 2000. Those who remain will likely be more fully integrated into wage employment.

6.2 MANAGEMENT CONSIDERATIONS

Two basic types of management alternatives will be examined in this report. They are: (1) compensation to the trapper for losses suffered, and (2) upgrading of the trapping industry to keep it viable in the face of further development. Two other options,

the cessation or retardation of oil sands development, and the planning of lease developments around trapper use, were not seriously considered, for reasons of government policy and economics, respectively.

6.2.1 Organizations and Trapline Management

Management alternatives are easily proposed, but their actual imposition is subject to the constraints of the organizations charged with carrying them out. For this reason it is important to review the organizations that have the most potential for administering trapping compensation or upgrading programs; Fish and Wildlife, the oil companies, and the Federal Department of Indian Affairs.

6.2.1.1 Fish and Wildlife. The Alberta Fish and Wildlife Department is the organization responsible for managing the fur resources in the province. Fur management in Alberta consists mainly of trapline management at this time. Trapline management is done through the licensing and regulatory management of trappers.

Direct contact between trappers and Fish and Wildlife is at the local level, through enforcement officers located throughout the province. One such office is located in Fort McMurray.

Local officers are responsible for collecting trapline affidavits and fur buyer records, interviewing applicants for vacant traplines, and enforcement of trapping regulations. In addition, they document trapper complaints and make recommendations on items of importance to local trappers. These items include the removal of a trapper for mismanagement of his line, suggestions for the filling of a vacant line, and changes in trapline boundaries. Since the recommendations of local enforcement officers are normally followed by the head officer responsible for decision making, it can be seen that the local officers have a lot of say in the affairs of trappers.

As the great majority of direct communication between trappers and Fish and Wildlife officials is done at the local level, it is important for this study to know something about the relationship between the two in Fort McMurray. Discussions with trappers and Fort McMurray enforcement officials lead the researcher to believe that this relationship is less than optimal. There are several reasons for this, the foremost being that trappers as a group have a fear of the officials. Others are: past misunderstandings in communication[1], inconsistency in the enforcement of laws (with the frequent changing of enforcement personnel), and anger on the part of trappers over some of the laws being enforced. The lack of sufficient staff to handle the rapdily growing Fort McMurray population was one major contributor to problems in the past; the hiring of an extra staff member in 1976-77 was certainly a step in the right direction. This will hopefully give the enforcement staff more flexibility to meet the needs of the trapper, including time to investigate complains, and service in the village of Fort MacKay.[2]

Trappers in Alberta have one channel directly to management staff, through the Alberta Trappers Central Association (ATCA). The ATCA holds annual meetings which are attended by at least one management official. The association submits resolutions which are formally reviewed by a management staff committee (taped interview, 21 March 1977 with D. Unger). An ATCA chapter opened in Fort

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[1] A good example of this took place while the researcher was doing the second interviews. Local officials sent out notices to trappers still holding linear traplines, to get them to come into the office and get their lines changed into areas. The notice said that their traplines would "cease to exist" next year. Trappers were worried and angry about these notices, which were obviously misleading.

[2] Many Fort MacKay trappers complained about having to make a special trip into Fort McMurray to register their lines. There is no bus service connecting the two places, and a taxi costs $60 per round trip. Last year several trappers had to go to the Fort McMurray office more than once because new registration forms arrived a month late.

McMurray in the summer of 1976, giving project study area trappers the potential to input into trapline management through that source.

Of special relevance to the project study is the role of Fish and Wildlife as an intermediary between seismic companies and the trappers.

Seismic companies are required to sign an agreement in this province that makes them responsible for any damage caused to trappers by their operations. The agreement is made with the Department of Energy and Natural Resources (see Appendix 9.4), and is then turned over to the local Fish and Wildlife Office. A trapper with a complaint is expected to deal with the company who caused the damage. Fish and Wildlife cannot enforce the agreement; it can only make information available to both the trapper and the company (taped interview, 21 March 1977 with C. Hambling). If neither the Department of Energy and Natural Resources nor the Fish and Wildlife Department has the power or the inclination to help the trapper, this leaves the trapper in the unenviable position of having to depend on the goodwill of the company for compensation. This is a bad situation, for the trapper lacks an understanding of the legal system, as well as the education and sophistication to deal with large oil companies. In all fairness to Fish and Wildlife, the problem has been recognized by the Working Fur Committee (an ad hoc committee, Alberta Fish and Wildlife Division, Edmonton), although no solution has yet been reached.

6.2.1.2 The Federal Department of Indian Affairs and Northern Development (DIAND). The Department of Indian Affairs has little to do with trapping in Alberta, except for the payment of trapping licenses for treaty Indians.

The Department of Indian Affairs became involved in the promotion of trapping when they entered into the Manitoba Wild Fur Program with the provincial government in 1975 (Manitoba Mines,

Resources and Environmental Management (Manitoba Mines hereafter) 1975). A similar arrangement could be worked out in Alberta, if both provincial and federal governments were willing to fund it.

6.2.1.3 Oil Sands Industry. As the oil sands industry is leveling large parcels of land that are currently being used by trappers, an important issue is the degree of corporate responsibility that these industries can be expected to assume towards the people whose traplines are being destroyed. Legally, oil sands leases take precedent over trapping rights. Trapline registration gives the trapper no right to the land which he uses, only the right to harvest furbearers. Corporate lease holders have only the legal responsibility to compensate trappers for physical losses, such as damage to equipment (taped interview, 21 March 1977 with D. Unger). Compensation for loss of livelihood is at the discretion of the company at this time.

Past interaction between trappers and oil sands companies is worth examining. GCOS did not compensate the trappers working on that lease, but that was almost two decades before corporate social and environmental responsibility in Canada became a serious issue. Syncrude Canada has already compensated two trappers and is negotiating with a third (interview, 21 July 1976 with T. Garvin, Community Relations Co-ordinator, Syncrude Canada). One other trapper who was adversely affected by Syncrude's diversion of Poplar Creek was not compensated.

According to T. Garvin, negotiations with trappers were done slowly, allowing the trappers plenty of time to think about what they wanted. A guideline formula was used, the aim of which was to cover 10 to 12 years of lost income. Loss of improvements were considered separately from loss of income, and trapline lineage was also taken into account. One of the trappers was represented by legal counsel; an interpreter was employed with another.

While Syncrude Canada has been negotiating with trappers suffering major losses, it does not follow that other companies will choose to do the same without any form of coercion. This must be borne in mind in considering whether it is sufficient for the government to allow enlightened corporate self-interest to be the sole guiding principle for future negotiations.

6.2.2 Compensation for Losses

The researcher proposes that three different kinds of compensation be considered for trappers suffering major losses of trapping area to oil sands and related developments. They are: (1) monetary compensation; (2) relocation of the trapper; and (3) alternative employment. These suggestions cover the range of compensation alternatives suggested by the trappers.

It was hoped initially that statistical data could be collected in this study on trapper preferences for compensation. Trappers were asked to discuss the subject in the second interviews, but unfortunately the answers cannot be considered reliable. This is because most trappers not threatened with losses did not relate to the question, and those that did were reluctant to discuss specifics without having more time to think about it. Nevertheless, some general feelings did come out about the alternatives for compensation, and they will now be discussed.

6.2.2.1 Monetary Compensation. Any discussion with trappers about compensation usually brought up the subject of money. Some trappers tended to emphasize the value of the trapping lifestyle, saying that money cannot buy this, while others emphasized that it would be expensive, but satisfactory, to compensate the individual for the effort put into setting up the trapline. Here are some sample comments made by trappers on the question of monetary compensation:

1. Money doesn't mean anything to a person losing a trapline.
2. If they offered me enough to start another living, there would be no problem.

3. Offering money for a trapline is not the point.
4. Now much a guy can do. Try to get money.
5. The developer should pay for cabins and traps.

Monetary compensation has been considered for two kinds of losses: tangible loss of equipment (such as traps, snares, and cabins); and the loss of land improvements (such as trails), and livelihood. [This is consistent with the stand taken by the ATCA on compensation (Calgary Herald 1977)]. Equipment loss is applicable to traplines affected by exploratory operations as well as development for the production of oil, although losses caused by the former are minor in relation to losses caused by the latter.

The trappers themselves stated that traplines have other properties which tend to increase their value to the user. They include the value of the line as a source of meat, the amount of time the line has been held by the trapper, and the time the line has been in the trapper's family. (These properties have been considered by Syncrude in previous compensation settlements.) The latter two are intangible values and, as such, cannot really be compensated for with money, job, or a new trapline.

6.2.2.2 Trapper Relocation. Trappers as a group were not totally for or against this alternative. Some trappers with a heavy time or emotional commitment to their traplines were not content with the idea of relocation (or any form of compensation for that matter). Others were in favour of relocation but expressed the concern that the new trapline should be at least as good as the old.

6.2.2.3 Alternative Employment. If the object of a compensation settlement is to cover a trapper's lost income, one way this can be accomplished is with a guaranteed job. Trappers queried about this alternative were suspicious of such a concept, perhaps because they

believe that nothing can be guaranteed. Their comments about this alternative were generally negative:

1. No job is guaranteed for life.
2. Not at my age.
3. You don't have to buy a job.

Alternative employment would normally take the form of labour jobs, given the limited educational background of trappers (see Section 3.1.5). However, there is another form which appealed to the majority of the trappers queried about it. This is a trapping job for the company.

There are distinct advantages to this kind of arrangment. To the trapper, it means a guaranteed income at a desirable job. The company can use the research data collected by the trapper, as well as the favorable publicity gained from the offer. The government also benefits from the data (if it is shared), and the area economy benefits from the harvesting of animals that might otherwise be lost.

The advantages of this arrangement should make it high on the list of compensation alternatives. That it is feasible is suggested by the existence of one such arrangement in the project study area. However, one must keep in mind that it can only work if both the trapper and the company are willing to adjust their activities to the presence of the other.

6.2.3 Upgrading of the Fur Industry

Strategies considered for the upgrading of the fur industry in the project study area are: trapper eduction, liberalization of game laws for trappers, economic incentives, increased marketing of fur products, and intensive habitat management. The ideas discussed here have been considered or employed in fur programs across Canada. The need for some forms of upgrading was also noted by local trappers.

Emphasis will be placed on the Manitoba Wild Fur Program, a joint federal-provincial program administered by the Manitoba Department of Mines, Resources, and Environmental Management. Committed to spend over $8 million in five years (beginning in 1976) to upgrade the fur industry, it is the most extensive program of its kind in Canada.

6.2.3.1 Trapper Education. Trapper education programs are run in every province of western Canada. The course given in Alberta covers items such as: proper skinning and pelt preparation techniques, techniques of humane trapping, and an exchange of methods used by trappers who take the course. Success of the program is measured by acceptance of the new techniques, and the actual financial gain attributable to the production of a more saleable product (Banks n.d.). Courses last three weeks, and trappers are paid during the time they are on course.

According to D. Unger, who is responsible for trapper education in Alberta, the success of these courses goes beyond the small number of trappers actually taking the course. The students take the new knowledge with them into their home community, and pass it on to other trappers. The course itself does more than just teach techniques. It brings trappers from many communities together to learn from one another, restoring a badly needed sense of pride to the profession. In addition, the course exposes trappers to the marketing end of the fur industry. The reader will recall that it is the sale of the raw fur which losses the project study area trapper much money.

It is not known what the demand is for trapper education in the project study area. The researcher knows of no local trapper who has applied for or taken the course, but then most trappers were not informed about the program.

6.2.3.2 Liberalization of Game Regulations for Trappers. It has already been pointed out that trappers regard their profession as a way of life that goes beyond the taking and selling of furs. One possible explanation for the decline in trapping in the project study area is that this way of life has been fractured by conditions which make it difficult for the trapper to live off the land. According to some trappers, the current game regulations have served to do just that.

The regulations that trappers complain about are those which restrict their right to take game food from the bush to the normal hunting season. This creates a hardship on trappers for two reasons. First of all, trappers are forced to compete with large numbers of hunters (many of whom do not need the meat) for a limited supply of game. Secondly, the migration of hunters into the bush during hunting season tends to disperse the game, making it necessary for trappers to spend more of their time obtaining food than was necessary before the project study area was heavily populated. This time could be used for fixing cabins and trails if the trapper was able to take game while he was trapping.[1]

While arguments have been advanced for not giving trappers extended hunting privileges, it seems clear that: (1) trappers, by reason of their occupation, are different from sport hunters; (2) trappers are lifely to need wild meat from the trapline (see Section 3.4.5); and (3) granting trappers extended privileges to hunt game animals can be an incentive to trap under certain conditions. The conditions are that trappers not be allowed to waste

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[1] This statement is not valid for those trappers who break the law and hunt out of season on the trapline. The researcher saw evidence that the majority of trappers do break the law to some extent. They do this at the risk of fines and prosecutions, however, and the researcher heard of several instances where trappers were caught.

game, and that the meat must be consumed on the trapline. This would ensure that they stay on the trapline if they want to make use of the privileges, and that the privilege is not misused.

It may be argued that granting the trappers this privilege would threaten certain game species such as moose or caribou. However, the game meat used by trappers is likely small in comparison to the total amount taken annually. In addition, if a particular species is deemed to be threatened, it can be protected (from both hunters and trappers) with the already existing game management tools in the province.

It is interesting to note that at least one province, Ontario, gives its northern trappers extended rights to hunt game animals, through a policy of differential enforcement (interview, 15 August 1977 with M. Novak, Ontario Ministry of Natural Resources, Toronto, Ontario). It is not known what effect this had had on trapping in northern Ontario, nor whether a similar situation would work to stimulate trapping in northern Alberta, but the researcher recommends that it be tried as part of a fur development package. A game regulation already exists in Alberta giving northern trappers the right to hunt one extra bear (Alberta Game Hunting Regulation 183/75, No. 8), so a precedent already exists for extended game hunting privileges for trappers.

6.2.3.3 Economic Incentives to Trappers. At the present time at least three provinces and a territory are using economic incentives as a way to upgrade the fur industry. Ontario flies in some of its northern trappers under a Resource Development Program (interview, 15 August 1977 with M. Novak). Saskatchewan has a similar program for trappers who take a certain amount of fur, as well as a provincial market service which advances 60 percent of the fur value to trappers (H. Strom, Fur Administrator in Saskatchewan, in a presentation delivered to the annual Western Fur Managers Conference, 19 April 1977, in Edmonton, Alberta).

The Northwest Territories funds its trappers association local chapters, gives interest-free loans to individual trappers, gives grants for establishing and maintaining hunting-trapping camps, and pays out a subsidy based on the dollar value of the trapper's catch (R. Williams, Supervisor, N.W.T. Trapline Management, in a presentation delivered to the 1977 Western Fur Managers Conference).

The Manitoba Program is the most extensive of all fur development programs in Canada. Its economic incentives were developed in consultation with the trappers to aid them with specific problems (Manitoba Mines 1975).

Trappers in northern Manitoba noted that certain conditions, such as social isolation, poor access, and poor communication, were inhibiting factors to trapping in the more isolated areas. The Wild Fur Development Program (WFDP), as a result, funds infrastructure improvements such as the establishment of base camps with radios, and the building of access trails. Inadequate sources of credit were also cited as a problem by the trappers. The WFDP deals with this by funding loans for equipment, improvements, and grubstakes. Local Fur Councils (set up by the Manitoba Registered Trappers Association) are provided with management services and, where deemed necessary, fur collection depots for the storage and shipping of wild furs to the auction. In addition, loans are made available to pay out advances to trappers shipping their furs, but needing money right away. All of these incentives are components of the overall WFDP, which includes trapper education, marketing strategies, and research and habitat management.

An evaluation of the applicability of the aforementioned economic incentives to the Alberta situation is risky at this time. Fur managers in Saskatchewan and the N.W.T. have been discouraged by the results of their programs, but in Manitoba, where the program is more co-ordinated and comprehensive, a real increase in production of over 10 percent has been reported in the first year of the

program (E. Engen, Manitoba Fur Manager, in a presentation delivered to the 1977 Western Fur Managers Conference). While program management in that province admits that the increase is not entirely due to the program, they feel it has helped. They note a 78 percent increase in pelt production for the second (1976-77) season up to February, over the same time a year ago.

While it is not certain than an economic incentive program will revitalize the trapping industry in northern Alberta, the researcher feels it should be seriously considered as part of an overall fur development program in light of the apparent Manitoba success.

In determining whether it is worthwhile to fund such a program, the government might consider the value of the trapping jobs to the trappers and their dependents. A minimal way of doing this is to consider the trapping dollars earned by the trappers but, from a government standpoint, it is more relevant to consider the potential cost in public monies of providing for trappers if trapping should become unviable, versus the cost of keeping it viable. This comparison is rational if one assumes that displaced trappers will either turn to public assistance or take a job which would otherwise go to someone else. In either case, it would result in one person plus dependents having to go on public assistance in some form or other.

If we assume that half of the area trappers are economically dependent on their trapline incomes, and that this percentage of trappers would require public assistance for their families if trapping were no longer viable, then the breakdown of trapping in the project study area could result in the loss of some 62 trappers plus their dependents. Public support would include, but not be limited to, welfare. (For example, there would be medical care, dental care, and, perhaps, housing costs.) If one assumes a figure of $10,000 per year per family of public support, then the present value of the future costs to care for the families (assuming a 10 percent discount) would be $6.2 million.

Admittedly this calculation is very rough, and overstated in the sense that trappers economically dependent on this activity may already be collecting public assistance. On the other hand, $10,000 per family is likely a conservative estimate of the cost of switching from the current trapping lifestyle to one that is more typical of a southern Canadian in the Fort McMurray area. It is significant to note that this figure is of the same magnitude as the $8 million invested in the Manitoba Wild Fur Program, particularly when one considers the 1/2.7 estimated cost/benefit ratio for the latter (Manitoba Mines 1975).

Other factors that should be considered are the importance of economic diversity to the northern economy (see Alberta Energy and Natural Resources 1976), and the potential value of trapping as a source of jobs for northern native people in the province. If trapping can be expanded to employ native people that are currently unemployed, the governments should also consider the reduced social costs that might result; reduced welfare payments and, perhaps, lowered costs for social services.

If such a program was to be undertaken in Alberta, the researcher recommends that it be planned in conjunction with the Alberta Trappers Central Association, the Indian Association of Alberta, and the Metis Association of Alberta. This would ensure that the program be beneficial to those people it is designed to help. A large scale program of this nature need not give the same incentives to every region in the province, because the needs of every region are different. For example, north-central Alberta is more isolated and offers less employment alternatives to trapping than is the case with the project study area. Thus they need to be handled differently.

Interviews with local trappers helped to identify several trapping problems in the project study area that are potentially solveable with economic incentives. They are:

1. Trappers (particularly those from Fort MacKay) are getting low monetary returns for their product. This

is because they sell their furs to local buyers instread of shipping them to fur auctions;

2. Extreme fluctuations in the prices paid for furs makes trapping an unreliable source of income;
3. Trappers tend to take only those species which are worthwhile in terms of effort and monetary return. This has resulted in the underutilization of squirrel and beaver, two fur species that were traditionally staples in Alberta (Todd 1976); and
4. Trappers appear to be abandoning the more distant and less accessible traplines in favour of those that are easier to reach.

The solution for the first problem is some sort of marketing assistance for the trappers. This could take the form of a marketing or transportation co-operative, or the establishment of a fur depot (preferably in Fort MacKay) similar to those established in northern Manitoba. This would ensure that the furs are shipped directly to one of the major auctions, giving trappers a better return for their product. An important feature of this plan would be that the depot or co-operative has enough cash on hand to give trappers significant advance for their product. (The co-operative or depot might eventually get into items such as the sale of equipment or grubstakes at prices comparable to those paid in Edmonton.)

The problem of unstable incomes and trapping for only the economic furbearer prices could be solved by subsidies for uneconomic fur species. This would guarantee the trapper a reasonable return for all furbearer species, and ensure that he always had an incentive to keep his line trapped. These subsidies could be tailored to provincial trapping patterns and species management objectives, so that, for example, trappers get subsidies for taking beaver and squirrels, which are greatly under utilized at the present. Subsidies should be based on the price actually received for the animals.

This is important because it would give the trapper extra incentive to trap prime animals, and to get the best price possible for the pelt (via a co-op or fur depot). The money could be paid at the end of the trapping season, at which time trappers could present their bills of sale to the local Fish and Wildlife office.

Finally, incentives could be applied to get trappers back into the most distant traplines. The WFDP in Manitoba funds base camps and trail building to make these areas more accessible and less isolated, and the researcher proposes that a similar program would work in the project study area. Only one or two base camps would be needed here, because most areas are already accessible, or will likely be so within the next 10 years. The areas that might still be deficient of good accessibility are in the extreme east and west of the project study area.

6.2.3.4 Increased Marketing of Fur Products. Another step that could be taken to upgrade the fur industry is funding the promotion and development of fur products. This is one component of the WFDP in Manitoba. The WFDP is investigating uses for low grade furs and fur by-products (Manitoba Mines 1975).

Another interesting idea that was suggested in Ontario (Novak n.d.) is that the marketing of furbearer meat be considered. Novak points out that, with the widespread use of snowmobiles, carcasses of animals such as beaver and muskrat could be taken out of the bush with a minimum of trouble. With the excalating cost of meat protein in North America, markets for furbearer meat could be a reality with a well planned promotion program.

6.2.3.5 Intensive Habitat Management. This is perhaps the most controversial step that could be taken to upgrade the fur industry in the project study area, because not all biologists (or self-educated laymen) feel that wildlife management is warranted in

wilderness regions. Todd (1975) discusses the biological desirability of trapping in northern Alberta, and concludes, after considering the "balance of nature" argument[1] advanced by preservationists and protectionists:

> ...furbearer management, or lack of it, in wilderness regions may have important ramifications in adjoining fringe and agricultural areas.

The ramifications he was referring to include livestock and nuisance damage by carnivores and beavers, respectively, that are forced to disperse into other areas by overpopulation. Also, overpopulation of furbearers, such as the beaver, risks outbreaks of disease (tularemia, for example), which is transmittable to humans.

While animals such as the beaver and squirrel can best be managed by more intensive trapping, there are other furbearers in the project study area that would be trapped more intensively if their numbers were greater. For example, carnivores such as lynx, fox, and coyote are currently bringing trappers good prices, but were scarce in 1975-77 due to the bottoming of the fur cycle. Keith (1974) points out that these populations are largely dependent on the cyclic fluctuations of the major prey species, the snowshoe hare. Since this cycle occurs almost synchronously throughout North America, intensive management of hare populations is likely impossible to achieve. There is, however, at least one furbearer in the project study area that has a much greater potential for management, the muskrat.

Muskrats are currently being intensively managed in Manitoba as part of the Wild Fur Development Program. Habitat

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[1] The "balance of nature" argument is, in a nutshell, that natural systems have managed and perpetuated themselves in North America for centuries, without man's scientific management. Todd (1975) points out that this is a truism as long as one considers the "balance" to be dynamic, with continual and possible violent fluctuations in animal numbers, precipitated by mass starvation and disease.

improvement is being accomplished through stabilization and regulation of marsh water levels in order to increase the number of muskrats that can be locally sustained. MacKay (1977) points out that these animals are extremely prolific, and are the only furbearers which can be easily increased in numbers right out in the trapping areas. One muskrat habitat project in Oak Hammock Marsh (24 km north of Winnipeg) was able to increase populations levels 23 times in three years (to near 10 000 individuals). These surplus individuals were then harvested on a sustained yield basis by local trappers.

Todd points out that suitable muskrat habitat is lacking in the project study area, but that this is mostly due to the lack of suitable standing water (telephone conversation, 5 October 1977). If this is the only reason for low muskrat populations, intensive habitat management could be considered to bring up the number of muskrats in the area. Small water control projects involving dyking or ditching could be tried in areas with good potential, and the projects expanded to traplines where the interest in muskrats is high. This could be done by the government as part of a more comprehensive upgrading package. In addition, it might be considered by the oil industry as a form of rehabilitation of tailings ponds. Admittedly, research would be required to determine if such projects are both economically and environmentally feasible.

6.2.4 Summary of Management Considerations

Clearly, trapping in the project study area is economically insignificant in comparison to the billions spent by the oil sands industry. Be that as it may, trapping is still an important source of livelihood to many who participate in it, as well as an element of economic and cultural diversity in the Fort McMurray area. Trapping is in some danger of decline, at least partly due to oil sands development, and the researcher believes that saving it makes good social and economic sense.

This section has served to discuss two possible management strategies for mitigating the negative impacts of oil sands development on trapping in the project study area. The first, compensation for losses, could be administered by either the government alone, or a combination of government and industry. It could be applied specifically to regions affected by large scale developments; it does not have to cover the entire province. The second strategy, to upgrade the fur industry, is more preventative and more universal than the first. It could be locally tailored to handle problems specific to a region, but the program itself could not logically be restricted to just one region. The upgrading strategy assumes that trapping is desirable for a number of social, economic, and biological reasons, and that the fur industry needs assistance if it is to remain viable in the north.

The discussion in this section of two strategies is not meant to imply that, if one is chosen, the other should be rejected. Rather, it is hoped that the governments (federal and provincial) and industry consider adopting all or parts of the two to protect trappers and trapping, particularly in the areas of future oil sands development, from the negative impacts of this development.

The strategies evolved here are either derived from, or consistent with, comments made by local trappers about the future of the trapping industry in their area. It is hoped that future trapper input will be solicited and used in the eventual selection of a management strategy for the industry.

7. RECOMMENDATIONS

Two sets of recommendations are provided. The purpose of the first is to improve compensation procedures for trappers adversely affected by oil sands lease development, seismic activities, or damage from recreational useage of the land. The second set of recommendations suggests a program for upgrading of the trapping industry in northern Alberta, to reverse a trapping decline due in part to industrial development.

7.1 COMPENSATION

1. Trappers should be legally entitled to compensation for loss of potential income as well as damage to equipment. Compensation should be paid for losses due to seismic and recreational activities, as well as the development of oil sands leases.
2. Compensation for large losses of trapping area (greater than 10 percent) should be negotiated in the presence of the trapper, a representative of the provincial government, and the oil company. The trapper should be entitled to legal representation.
3. These negotiations should be based on a standard formula that covers loss of fur income and meat from the trapline. Other factors to be considered in the settlement are: (1) the length of time the trapline has been in the trapper's family; (2) the improvements made by the trapper; and (3) the trapper's age and employability.
4. Other forms of compensation besides money should be considered and encouraged. These include relocation of the trapper, guaranteed wage work, and employment trapping for the oil company.
5. Negotiations should not be finalized in less than six month's time. This allows the trapper the necessary time to think over his future.

6. Compensation procedures for seismic losses or lease development affecting less than 10 percent of a trapline need not be as lengthy or complex as those for large losses.
7. A trapper's appeal board should be established by the provincial government to determine and enforce a fair settlement where negotiations have failed.
8. Local Fish and Wildlife offices should be allocated enough man-hours to effectively investigate trapper damage complaints. In cases where the damage is caused by individuals, Fish and Wildlife should be given the power to prosecute in the name of the offended trapper.

7.2 UPGRADING OF THE FUR INDUSTRY

1. The researcher strongly recommends that the provincial government create a fur industry upgrading program in Alberta, preferably with the Department of Indian Affairs.
2. The program should be administered by the Alberta Fish and Wildlife Department in a manner similar to that of the Manitoba Wild Fur Development Program.
3. The following should be considered as program components:
   a. Expansion of the existing trapper education program;
   b. The establishment of marketing or transporation co-operative, or fur collection depots;
   c. Financial subsidies to trappers for harvesting "uneconomic" furbearer species;
   d. Funding for the construction of base camps and new trails to decrease isolation and increase accessibility into remote areas;
   e. Trapper loans for equipment and grubstakes;
   f. Funding for Trapper Association locals to help them better organize and represent trappers;

g. Funding of research, development, and marketing of furs and fur by-products; and

h. Increased financial support for research into furbearer ecology and management.

4. The program should be designed in conjunction with the Alberta Trappers Central Association, the Indian Association of Alberta, and the Metis Association of Alberta.

5. The program should be allowed 10 years to produce significant results. This would allow evaluation over the entire period of the 10-year fur cycle.

7.3 OTHER RECOMMENDATIONS

1. That the hunting season be expanded for trappers north of the agricultural fringe.

2. That trappers be required to consume on the trapline, all game meat taken out of the regular season.

3. That the duties of the Fish and Wildlife Department in Fort McMurray be expanded to include summer visits to Fort MacKay for the purpose of trapper registration.

4. That the Fish and Wildlife Division consider the possibility of creating smaller traplines in easily accessible areas of the project study area. These could then be used by occassional, or even recreational, trappers. Changes in trapline boundaries could be made on vacant traplines and, in some cases occupied lines with the consent of the affected trapper.

5. That the rehabilitation of strip-mined areas in northern Alberta be done with the intention of providing at least as good furbearer habitat as was there previously.

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9. APPENDICES

9.1 ACCURACY OF TRAPPER AFFIDAVITS

Records of furs caught are available, not only from the trapper affidavits, but also from the fur buyer records. Buyers are required to send these records to the Alberta Fish and Wildlife Division. Fish and Wildlife also keeps holding slips and export permits, which the trapper is required to fill out if he plans to sell fur privately, hold it until the next season, or ship it directly to another province.

It was decided to check the accuracy of trapper affidavits by cross-checking them against buyer records, export permits and holding slips. Twenty-four 1975-76 trapline records were used for this purpose. They were compared individually and collectively, species by species, and dollar by dollar. (Dollar values were calculated by the method discussed in Section 2.) The results of the collective comparison are shown in Table 28. It shows that trappers reported higher catches than buyers for all animals except muskrats, and that the difference for some animals, such as squirrels, is substantial. Only 25 percent of the trapline statements checked were close matches for all animals. Of the remainder, another 25 percent were close matches for most of the animals, and 17 percent were badly distorted in both numbers of animals and dollar value. Two of the distorted returns reported high catches and almost no sales to buyers. When these returns were removed from the tally, the comparison improved measurably.

There are many reasons why either of the two record types could misrepresent the actual catch. Probably the three most significant reasons for the discrepancies are the selling of fur under a different line number, the unwillingness of many trappers to keep records, and the keeping of fur for personal use (Table 29). The first of these can explain discrepancies in individual trapline records, but cannot account for the differences in totals.

Table 28. Comparison of trapper and buyer reports of numbers of furbearing animals caught on traplines. 1975-76 data.

	Using 24 Traplines			Without 2 Traplines Reporting Extreme Differences (22 lines)		
Pelt	Trapper	Buyer	% diff.	Trapper	Buyer	% diff.
Beaver	735	508	37	605	494	30
Coyote	2	3	-40	2	3	-40
Fisher	22	20	9	21	20	5
Fox	2	2	0	2	2	0
Lynx	22	17	26	21	17	21
Marten	8	6	29	7	6	15
Mink	114	92	21	103	92	11
Muskrat	282	279	1	200	276	-32
Otter	16	15	6	16	15	6
Squirrel	3,412	2,215	43	3,300	2,215	39
Weasel	241	217	10	236	217	8
Wolf	4	1	120	4	1	120
Value	$28,572	$21,175	30	$25,148	$20,891	18

[a] % diff. = 100(Trapper-Buyer)/((Trapper+Buyer)/2)

Table 29. Some possible reasons for misrepresentation in trapline affidavits and buyer records of fur caught.

Record	Direction of Misrepresentation	Reasons
Trapper Affidavit	Understate catch	Avoid Income Tax. Preserve income-dependent transfer payments (pension, welfare, etc.)
Trapper Affidavit	Overstate catch	Avoid loss of trapline Boasting Ensure a good settlement with an oil company in the future. Partner duplication in reporting.
Trapper Affidavit	Mistake in either direction.	Does not keep a record. Cannot express a number in English (if trapper speaks native language).
Buyer Accounts	Understate catch	Black market. Avoid taxes. Do not show furs not sold by trappers (worthless or for personal use).
Buyer Accounts	Mistake in either direction.	Trapper has another trappers sell furs for him, under different line number.

It is interesting to note that six of eight treaty Indian records used were included in the traplines having poor matches. This is logical since fieldwork showed that Indians tended not to keep records, or trust Fish and Wildlife officials. In addition, the researcher believes that Indians are the greatest users of fur, for making clothes, etc.

Trappers asked about the percentage of fur kept repored numbers as high as 20 percent for some species, such as beaver. Technically, furs kept for personal use must be registered with Fish and Wildlife, with the trapper paying a small fur tax. In practice, this is rarely done.

This exercise in comparison is inconclusive in determining the accuracy of trapline affidavits, since it is far from certain that the buyer records represent what was actually taken off each trapline. However, the difference in the collective comparison, where the buyer total is likely accurate when averaged over 24 traplines, leads the researcher to suspect that the tendency exists for the trapper to overstate his catch. Individual comparisons show that at least half of the trapline records matched fairly closely. The researcher suspects that approximately one quarter of the affidavits badly distort the actual catch. Since the distorted ones cannot be separated from the accurate ones without a lot of time and effort, all affidavits from the interviewed trappers were used for subsequent data analysis.

9.2 RATIONALE BEHIND THE DEVELOPMENT SCENARIO USED IN THIS REPORT

9.2.1 Shallow Surface Mining

The projected establishment of specific oil sands plants as predicted by the Long Term Energy Assessment Program (LEAP) is shown to the year 2000 in Table 30, and mapped on Figure 15.

Table 30. Predicted development of oil production from surface mines in the project study area.

Date	Total Capacity (Bbls. per Day)	Oil Company
By 1980	185 000	GCOS, Syncrude I
By 1990	510 000	GCOS, Syncrude I, Syncrude II, Home Oil, Shell Oil.
By 2000	550 000	Syncrude II, Home Oil, Shell Oil, Petrofina

Source: LEAP, May 1977.

The rate of development of surface mining oil sands plants was assumed to be approximately one every six years after 1978, with a gradual phasing out of surface mining operations after the year 2000.

These plants are expected to operate on a technology similar to that of GCOS; based on the hot water extraction of bitumen mined subsequent to the stripping of forests and non-bituminous overburden. This includes the use of tailings ponds for storage of waste from bitumen separation and purification. The tailings include water with suspended mineral fines and unextracted bitumen, and sand.

A map produced for an industrial development study of the Fort McMurray region (Hydrocarb 1975) shows that the ultimate development of five oil sands leases by the major companies already named may consume half of these lease areas. This includes mining areas, tailings ponds, and plant sites, but not roadways, power lines, or pipelines.

9.2.2 In Situ Extraction

LEAP assumes a sustained level of production from the Athabasca Oil Sands of one million barrels per day of synthetic crude oil after the year 2000. It includes the development of an in situ Amoco plant in the Gregoire Lake area. The three Amoco leases in the area cover 265 km^2 (Figure 15), and the Amoco lease on the Gregoire Lake Indian Reserve is currently undergoing in situ testing.

In situ operation involves underground burning of the bitumen, which develops heat in the formation, reduces the viscosity of the bitumen, and displaces it to producing wells (Lombard North 1975). The pattern of injection and production wells to produce the 450 000 barrels per day suggested by LEAP would cover about 46 km^2 of land.

9.2.3 Recreation Developments

Continuing growth in Fort McMurray has resulted in the need to supply a new provincial park to the area. Currently, there is only one, at Gregoire Lake. While there are plans to expand its facilities, a new provincial park will be definitely needed in the early 1980's (interview, 23 March 1977, with C. Lacey, Regional Parks Planner, Alberta Department of Parks, Recreation and Wildlife, Edmonton). The Minister of Recreation, Parks and Wildlife has already announced his intention to develop a park in the Gardiner-Namur lakes area (Campbell 1976). In fact, a Land Notation has been placed on a large block of land around these lakes (Figure 15).[1]

Other areas such as Gordon and Bypsy lakes are also being considered for future parks, but planners do not know if and when these areas will be developed (interview 23 May, 1977 with C. Lacey).

The scenario used in this report includes the development of a major park in the Gardiner-Namur lakes area by 1980, in which trapping will not be prohibited.[2] Also assumed is an all-weather road from Fort MacKay to the park, following closely the path of the major winter road in that area (see Figure 3).

9.2.4 Road to Wood Buffalo Park Area

At the present time, Alberta Transportation is examining several alternatives for a surface transportation corridor to the Wood Buffalo Park area, as part of an overall transportation study

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[1] A Land Notation is a form of surface reservation, in which any outside applications for improvement are referred for scrutiny to the department making the reservation.

[2] Mr. Adair, the Minister of Parks, Recreation and Wildlife, stated "...and traditional hunting...should not be taken away from local people", referring to the new park to be built in the Namur-Gardiner lakes area (Campbell 1976).

of northeastern Alberta (conversation, 12 October 1977 with G.A. Ross, consultant and advisor for Alberta Transportation, Faculty of Environmental Design, University of Calgary). Three of the four routes being examined would connect Fort McMurray with either Fort Chipewyan, or the Wood Buffalo Park road. This could mean an all-weather road paralleling either the east or the west bank of the Athabasca River, within the project study area. Construction could begin in the next five years.

Presently there is not enough information to determine the route, or indeed if a highway link will be chosen at all. If a road is chosen, it appears more likely that it will be built from Fort McMurray rather than from the Peace River country to the west. This is because of Fort McMurray's potential size and importance, and because a road from the west could run into jurisdictional complications since it would have to be built through a National Park.

This report assumes a road will be built by 1982, parallel to the east bank of the Athabasca River, north from Fort McMurray. If in fact it is built on the west bank, the impact on trapping would similar, although different trappers would be affected.

9.2.5 Regional Growth and a New Town

At least one study done in the project study area attempts to make a strong case for a new town. It points out several disadvantages of having Fort McMurray service the entire area population in the future. Underwood McLellan (1973) projects an increase of 20,000 to 50,000 people solely for the development of new oil sands plants north of Fort MacKay, and suggests that Fort McMurray cannot comfortably handle the growth. The report goes on to point out that future plant sites will likely be too distant from Fort McMurray for comfortable commuting (58-74 km for the Shell, Home, and Petrofina plants), and that the costs of such commuting are unfavourable for the companies involved.

Current Alberta government policy states, "The Government will encourage the improvement and growth of existing towns and facilities rather than the development of new ones" (Alberta Energy and Natural Resources 1976). This makes the prediction of a new town in northeastern Alberta a tenuous one at best. However, considering the factors already mentioned, as well as the LEAP scenario (which considers two new towns by the year 2025), a new town will be used in the scenario in this report. Its location is assumed to be near Bitumount and McClelland Lake (Figure 15), consistent with the Underwood McLelland recommendations.

Underwood McLellan population projects are based on a figure of 1500 employees per plant, to which any natural population increases must be added. Even the 1500 figure may be low, as Hydrocarb (1975) predicts a average of 1800 employees for future plants.

9.2.6 Coal Development

At one time, Shell Oil was considering the prospect of using locally mined coal to fuel an oil sands plant. They were granted the right to explore land near the Firebag River that is under their lease application. However, exploration to date has had disappointing results, as the limited extent and discontinuity of the coal seams make development uneconomic (telephone conversation, 5 October 1977 with M. Mahannah, Manager of Coal Development, Shell Oil Company, Calgary). For this reason, coal development was not considered in this scenario.

9.3 MEAN ANNUAL FURBEARER HARVEST ON TRAPLINES DIRECTLY AFFECTED BY PREDICTED OIL SANDS DEVELOPMENT TO THE YEAR 2000

Table 31. Mean annual furbearer harvest on traplines directly affected by predicted oil sands development to the year 2000.

Furbearer	Trapline Number (Years Trapped in Parenthesis)[a]														
	162(4)	272(4)	452(4)	587(4)	1071(2)	1650(2)	1694(3)	1714(3)	1716(4)	1885(4)	2006(4)	2013(4)	2015(2)	2137(4)	2172(4)
Beaver	7.5	17.8	4.0	41.5	5.0	61.0	3.0	10.3	11.0	9.2	21.2	12.2	24.0	43.5	26.2
Coyote		0.2		0.2	1.0	2.0				1.0	1.2	0.5	1.0	0.8	1.2
Fisher			1.0	0.2							0.5		1.0	2.8	0.2
Fox	0.2	0.8	1.0		1.0		1.0	1.3		1.2	1.0	0.5	1.0	3.0	4.5
Lynx	1.0	3.0	4.0	5.0	1.0	23.0		5.3	1.2		5.0	4.8	17.0	8.8	39.8
Marten															
Mink		4.5	3.0	1.0	1.0	5.0	4.0	2.0	0.2	4.8	0.8	5.0	15.0	2.8	10.0
Muskrat	0.5	0.2	29.0	13.0			1.0		0.8		6.5	8.2		5.8	23.0
Otter		0.5												1.0	0.2
Squirrel	10.0	79.0	87.0	119.0		204.0	3.0	26.3	1.8	12.5	27.8	37.8		350.0	
Weasel		12.0	3.0	2.5		5.0	2.0	1.0		0.8	2.5			7.8	1.2
Wolf		0.2	1.0		1.0					0.2				0.5	1.8

[a]Calculated from 1970-75 trapline affidavits. Missing records and nil catches were considered years not trapped.

9.4 REQUIREMENTS OF SEISMIC PROGRAMS, RETRAPPERS. (ALBERTA DEPARTMENT OF ENERGY AND NATURAL RESOURCES)

"A representative of your company must contact the District Fish and Wildlife Officer at _____(phone_____) at least five days prior to initiating your program. This is to provide you with information concerning registered trap lines in the area as your company may be held responsible for any damage to traps, snares or other improvements made thereon."

9.5 GLOSSARY OF TRAPPING TERMS USED IN THIS REPORT

Set--a site prepared for entrapment of an animal or animals. The set includes bait, trap(s) or snare(s), and logs, branches, etc., used for hiding the trap, making a cubby, or used as an anchor for the trap.

Trail sets are placed on an animal trail. No bait is normally used as the animal is expected to cross the path naturally.

Pen sets are cubbies made of branches, and placed off the trail, under a tree. One opening is made into the cubby, which is either covered by a snare, or a leghold trap is placed inside the cubby. Bait is normally used.

Creek sets are sets placed under ice or open water.

Trapline--the land a trapper is legally entitled to use for the taking of furbearing animals. There are two types of traplines in the project study area.

Linear traplines are mile-wide traplines which tend to follow natural features of the land (streams, ridges, etc.).

Area traplines (or trapping areas) are generally rectangular, and conform to the boundaries of townships and ranges.

10. AOSERP RESEARCH REPORTS

1.		AOSERP First Annual Report, 1975
2.	AF 4.1.1	Walleye and Goldeye Fisheries Investigations in the Peace-Athabasca Delta--1975
3.	HE 1.1.1	Structure of a Traditional Baseline Data System
4.	VE 2.2	A Preliminary Vegetation Survey of the Alberta Oil Sands Environmental Research Program Study Area
5.	HY 3.1	The Evaluation of Wastewaters from an Oil Sand Extraction Plant
6.		Housing for the North--The Stackwall System
7.	AF 3.1.1	A Synopsis of the Physical and Biological Limnology and Fisheries Programs within the Alberta Oil Sands Area
8.	AF 1.2.1	The Impact of Saline Waters upon Freshwater Biota (A Literature Review and Bibliography)
9.	ME 3.3	Preliminary Investigations into the Magnitude of Fog Occurrence and Associated Problems in the Oil Sands Area
10.	HE 2.1	Development of a Research Design Related to Archaeological Studies in the Athabasca Oil Sands Area
11.	AF 2.2.1	Life Cycles of Some Common Aquatic Insects of the Athabasca River, Alberta
12.	ME 1.7	Very High Resolution Meteorological Satellite Study of Oil Sands Weather: "a Feasibility Study"
13.	ME 2.3.1	Plume Dispersion Measurements from an Oil Sands Extraction Plant, March 1976
15.	ME 3.4	A Climatology of Low Level Air Trajectories in the Alberta Oil Sands Area
16.	ME 1.6	The Feasibility of a Weather Radar near Fort McMurray, Alberta
17.	AF 2.1.1	A Survey of Baseline Levels of Contaminants in Aquatic Biota of the AOSERP Study Area
18.	HY 1.1	Interim Compilation of Stream Gauging Data to December 1976 for the Alberta Oil Sands Environmental Research Program
19.	ME 4.1	Calculations of Annual Averaged Sulphur Dioxide Concentrations at Ground Level in the AOSERP Study Area
20.	HY 3.1.1	Characterization of Organic Constituents in Waters and Wastewaters of the Athabasca Oil Sands Mining Area

21.		AOSERP Second Annual Report, 1976-77
22.	HE 2.3	Maximization of Technical Training and Involvement of Area Manpower
23.	AF 1.1.2	Acute Lethality of Mine Depressurization Water on Trout Perch and Rainbow Trout
24.	ME 4.2.1	Air System Winter Field Study in the AOSERP Study Area, February 1977.
25.	ME 3.5.1	Review of Pollutant Transformation Processes Relevant to the Alberta Oil Sands Area
26.	AF 4.5.1	Interim Report on an Intensive Study of the Fish Fauna of the Muskeg River Watershed of Northeastern Alberta
27.	ME 1.5.1	Meteorology and Air Quality Winter Field Study in the AOSERP Study Area, March 1976
28.	VE 2.1	Interim Report on a Soils Inventory in the Athabasca Oil Sands Area
29.	ME 2.2	An Inventory System for Atmospheric Emissions in the AOSERP Study Area
30.	ME 2.1	Ambient Air Quality in the AOSERP Study Area, 1977
31.	VE 2.3	Ecological Habitat Mapping of the AOSERP Study Area: Phase I
32.		AOSERP Third Annual Report, 1977-78
33.	TF 1.2	Relationships Between Habitats, Forages, and Carrying Capacity of Moose Range in northern Alberta. Part I: Moose Preferences for Habitat Strata and Forages.
34.	HY 2.4	Heavy Metals in Bottom Sediments of the Mainstem Athabasca River System in the AOSERP Study Area
35.	AF 4.9.1	The Effects of Sedimentation on the Aquatic Biota
36.	AF 4.8.1	Fall Fisheries Investigations in the Athabasca and Clearwater Rivers Upstream of Fort McMurray: Volume I
37.	HE 2.2.2	Community Studies: Fort McMurray, Anzac, Fort MacKay
38.	VE 7.1.1	Techniques for the Control of Small Mammals: A Review
39.	ME 1.0	The Climatology of the Alberta Oil Sands Environmental Research Program Study Area
40.	WS 3.3	Mixing Characteristics of the Athabasca River below Fort McMurray - Winter Conditions
41.	AF 3.5.1	Acute and Chronic Toxicity of Vanadium to Fish
42.	TF 1.1.4	Analysis of Fish Production Records for Registered Traplines in the AOSERP Study Area, 1970-75
43.	TF 6.1	A Socioeconomic Evaluation of the Recreational Fish and Wildlife Resources in Alberta, with Particular Reference to the AOSERP Study Area. Volume I: Summary and Conclusions
44.	VE 3.1	Interim Report on Symptomology and Threshold Levels of Air Pollutant Injury to Vegetation, 1975 to 1978
45.	VE 3.3	Interim Report on Physiology and Mechanisms of Air-Borne Pollutant Injury to Vegetation, 1975 to 1978

46.	VE 3.4	Interim Report on Ecological Benchmarking and Biomonitoring for Detection of Air-Borne Pollutant
47.	TF 1.1.1	A Visibility Bias Model for Aerial Surveys of Moose on the AOSERP Study Area
48.	HG 1.1	Interim Report on a Hydrogeological Investigation of the Muskeg River Basin, Alberta
49.	WS 1.3.3	The Ecology of Macrobenthic Invertebrate Communities in Hartley Creek, Northeastern Alberta
50.	ME 3.6	Literature Review on Pollution Deposition Processes
51.	HY 1.3	Interim Compilation of 1976 Suspended Sediment Data in the AOSERP Study Area
52.	ME 2.3.2	Plume Dispersion Measurements from an Oil Sands Extraction Plant, June 1977
53.	HY 3.1.2	Baseline States of Organic Constituents in the Athabasca River System Upstream of Fort McMurray
54.	WS 2.3	A Preliminary Study of Chemical and Microbial Characteristics of the Athabasca River in the Athabasca Oil Sands Area of Northeastern Alberta.
55.	HY 2.6	Microbial Populations in the Athabasca River
56.	AF 3.2.1	The Acute Toxicity of Saline Groundwater and of Vanadium to Fish and Aquatic Invertebrates
57.	LS 2.3.1	Ecological Habitat Mapping of the AOSERP Study Area (Supplement): Phase I
58.	AF 2.0.2	Interim Report on Ecological Studies on the Lower Trophic Levels of Muskeg Rivers Within the Alberta Oil Sands Environmental Research Program Study Area
59.	TF 3.1	Self-Aquatic Mammals. Annotated Bibliography
60.	WS 1.1.1	Synthesis of Surface Water Hydrology
61.	AF 4.5.2	An Intensive Study of the Fish Fauna of the Steepbank River Watershed of Northeastern Alberta.
62.	TF 5.1	Amphibians and Reptiles in the AOSERP Study Area
63.		An Overview Assessment of <u>In Situ</u> Development in the Athabasca Deposit

These reports are not available upon request. For further information about availability and location of depositories, please contact:

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